

# gW dmj Dr cv` tbi tgšj bWZ I Lvgvi e`e`v

BASIC PRINCIPLES OF FIELD CROP PRODUCTION AND FARMING SYSTEMS

BAE 1303

Kwl. I cj # Dbqb `jz

SCHOOL OF AGRICULTURE AND RURAL DEVELOPMENT



ersj v#` k D>gy# nek#e` `ij q



This book is licensed under a  
Creative Commons Attribution 4.0 International License.



# gW dmj Drcv`tbi tgšj bWZ I Lvgvi e`e`v

(MAATH FASAL UTPADONER MOULONITI O KHAMAR  
BABOSTHA)

mauv`bv cwi I`

mfvcuZ t **W. Aveynbv tgv dvi k**  
evsj v`k Dbkš wekpe`ij q  
m`m` t **W. Gg. j tnvmb**  
evsj v`k Kul .MteI Yv KvDwYj  
**W. m. g. Avj Zvd tnvmb**  
evsj v`k Kul .wekpe`ij q  
**W. tgv tZvdvšj Bmj ug**  
evsj v`k Dbkš wekpe`ij q  
**W. tgv tgvkšy ingub**  
evsj v`k Dbkš wekpe`ij q  
**W. Av b g Augbj ingub**  
evsj v`k Dbkš wekpe`ij q  
**W. tgv kun Avj g mi Kvi**  
evsj v`k Dbkš wekpe`ij q  
**tgv mi I qvi tnvmb tšajk**  
evsj v`k Dbkš wekpe`ij q

mweR ZEyeartb

Wxb

Kul .I c j Dvqb`z

evsj v`k Dbkš wekpe`ij q

MAATH FASAL UTPADONER MOULONITI O KHAMAR BABOSTHA (Basic Principles Of Field Crop Production And Farming Systems), a 3-Credit Coursebook for the Bachelor of Agricultural Education Programme, Written by Dr. Md. Mahbulul Karim, Dr. Md. Abdus Samad and A. B. M. Mahbulul Alam, Edited by Dr. Md. Shafiul Alam (2<sup>nd</sup> edition), Dr. Md. Tofazzal Islam and Md. Sorowar Hossain Chowdhury (1<sup>st</sup> edition), Published by Publishing, Printing and Distribution Division, Bangladesh Open University, Gazipur-1705. © Bangladesh Open University. First edition: December 1996, Second edition : April 2004. Publication Time : 2013. Computer Compose & D.T.P. Md. Al Amin (2<sup>nd</sup> edition), Md. Mamun Miah, Md. Enamullah & S.M. Mizanur Rahman (1<sup>st</sup> edition). Cover Design: Md. Monirul Islam. Illustration: Raisul Islam Khan & S.M. Mizanur Rahman. Printed by Printed by Bangla Bazar Press & Publication, 53, North Brook Hall Road, Bangla Bazar, Dhaka-1100.

ISBN 984-34-5004-3





## ciw ubt` Rbv

ÒgvV dmj Drcv` tbi tgšj bwiZ I Lvgvi e`e`v0 tKvm@Biu wekI fite Kul. I cj# Dbaqb `z  
Gi weGwRGW tciM@tgi QvT`i Rb` tj Lv ntqtQ| Arcub Rvttb, `f` wkŋŋY wkŋŋKi  
mveŋŋYK Dciv`wZ tbB| ZvB cvtVi tKvtrv KwB wclq thb Avcbvi ešZ Ampeav bv nq  
tmw`kK `w0 tiLB tKvm@Biu tj Lv ntqtQ| tKvm@BiuI AwvK I Dc`vcbv ZvB cŋŋj Z  
cW`eB t`kK wKQYv wfbœaitbi | thnZzmiwmi wkŋŋKi mrvv` QvovB tKvm@Biu AvcbvK  
ubtR cto ešZ nte, ZvB GuU Kxfite coteb cŋŋB Zv tRtb wbb| GtZ tKvm@Biu cotZ  
I ešZ Avcbvi mpeav nte|

### eBili iŋtiLv

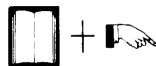
ÒgvV dmj Drcv` tbi tgšj bwiZ I Lvgvi e`e`v0 tKvm@Biu `ŋU Astk wef<sup>3</sup>| cŋŋ Askuli  
wkŋŋivbg ÒgvV dmj Drcv` tbi tgšj bwiZ0, GuU QquU BDubtU wef<sup>3</sup>| wZxq Askuli wkŋŋivbg  
ÒLvgvi e`e`v0, GuU wZbW BDubtU wef<sup>3</sup>| cŋŋZu BDubtU GKwaK cvW itqtQ| cvW mSL`v  
wbaŋY Kiv ntqtQ cŋŋZu BDubtU wclqe`i I ci wbfP Kti | BDubtU cvW, tj vK Avj`v  
Kti mrvtrv ntj I Gt`i gta` GKwU thvMm` itqtQ| GtZ Arcub BDubtU i iŋZB tRtb  
hrt`Ob cvtVi gj- Avtj vP`mP Kx?

### cvVi Df`k`

j ŋŋ` Kiteb cŋŋZu cvtVi i iŋZ GK ev GKwaK mrvv` ŋ Df`k` t`qv AvtQ| cŋŋZu Df`k`k  
tK`a KtiB cvtVi wclqe`i mnRfite eYŋv Kiv ntqtQ| cvW tkŋl cvtVi Df`k`, tjv ARŋ  
Kiv mpe ntqtQ Kx bv Zv ubtR ubtRB gj`vqb Kiteb| Gi Rb` cvW tkŋl `ŋj`vqb cŋŋ  
itqtQ| GtZ Arcub cvWU KZUK ešZ cvi tj b Zv wbaŋY Kitz cviteb|

### AvBKtbi e`envi

cvtVi wclqe`i, tjv GK`w0tZ ešS tbqvi Rb` cŋŋvRb Abvnti tKvm@BiuI wewfbœRvqMvq  
wewfbœaitbi cŋŋK ev AvBKb e`envi Kiv ntqtQ, hv t`L Arcub mntrB wclqe`i  
Dc`vcbv Ges Avcbvi KiYxq Kx Zv ešZ cvi teb| ubt`wG tKvm@Btq e`eüZ wewfbœaitbi  
AvBKtbi A`ubt`R Kiv ntjv-



= cob I j ŋŋ` Kily



= Avek`K cvW/mvi gg©



= One t`Lly



## BDibU 1 gV dmj cwiPvZ

### BDibU 1 gV dmj cwiPvZ

gVbY c0qvRtb th mKj MvQ cijvi Pvlver` Kti tm,tjvKB Avgiv dmj ej tZ cwi | t9tZ Lvgvti th mKj dmtji Avev` nq tm,tjvB gV dmj (Field crops) intmte cwiPZ | AZGe me MvQcijvB thgb dmj bq, tZgub gvV Rtb# Ggb me MvQcijvL gV dmj bq | gV dmjtji msL`v AtbK | Gi gta` KZK,tjv teuk cwiPZ I euj e`euZ | euglx dmj Drcv`tbi jt9t` mKj dmj m`utK©we`lwiZfvte cwiPvZ Avek`K | G dmj,tjv m`utK© hZB Avgiv Avb jvf KitZ cvie I ,iaZj Abgweb KitZ cvie, ZZB Zt`i Pvlver` m`c0hvi Y mnRZI nte |

evsj vt`tk c0vb Lv` km`  
intmte avb I Mg euj  
e`euZ | Drcw`Z Lv`  
ktm`i kZKiv c0beYB  
fivM`Lj Kti AvtQ avb |

evsj vt`tk c0vb Lv` km` intmte avb I Mg euj e`euZ | Drcw`Z Lv` ktm`i kZKiv c0beYB fivM`Lj Kti AvtQ avb | A\_90wZKfvte ,iaZcY©A\_P Aetnij Z tek wQy`vbr dmtji Drcv`b tguU Lv` km` Drcv`tbi gvT kZKiv cv0fivM | `f c0nij Z `vbr`vi km` intmte f9v, KvLb, Pxbv, tRvqvi, he, evRiv BZ`w` wtklfvte Djt0LthvM | avb I Mtgi mnthvMx intmte c0ZKj c0KwZK cwi teuk Awak Drcv`b9tg GmKj `f c0nij Z `vbrkm` Drcv`tbi ht\_0 A\_90wZK m`0ebv\_vKv mtZj | Pvlver`i KjvtKSkj I G,tjv m`utK©c0p Avtbi Afve, Lv`vfvim cwieZ9b Abxvvi Kvity Gme Lv` ktm`i c0hvi m`e nt`Q br | 1970 mij t`tk Pttji Drcv`b e9x mtEj | RbmsL`vi e9xi Kvity Gi Mo c0c`Zv e9x cvqub | ZvQvov avb I Mg e`ZxZ Ab`vb` `vbrkm`, Wj RvZxq km`, ^Zj exR, tMv-Lv` dmtji Drcv`b A\_90wZKfvte jvfRbK bq etj B gj-Z G`9lv c0vb Lv` ktm`i Dci Pvc metPtq teuk | m9zivs Lv` w0ivcE`v w0w0ZKiY Ges `vbr RvZxq Lv` ktm`i Drcv`b e9xi aviewnKZv i 9lvi mvt\_ Ab`vb` dmj ,tjvi euj Drcv`b G t9t9t ht\_0 ,iaZjenb Kti |

Avgt`i t`tk c0ZeQib Kg teuk Lv`i NvUwZ t`Lv h9q | Lv` I c09i NvUwZ tgvKmejvq Lv` Avg`wb eve` K0wR9 `e9`ukK g9v mvt9qi Rb` avb I Mg Drcv`tbi cvkvcwK Ab`vb` gvVdmj Drcv`tbi wKí tbB | ZvQvov ktm`i mvt\_ Ab`vb` gV dmj m`utK fvgKv cvj b, 9lav I `wi`a``hKiY Ges A\_90wZK fivmvg` i 9lvi t9t9t ,iaZcY©fvgKv ivLtZ m9tg |

GB BDibU cvV Kti Avcub gV dmjtji cwiPvZ I c0pMZ ,iaZj eY0v KitZ cviteb, dmj tK wewfbæfvte tk0YKiY KitZ cviteb, wewfbæcdmtji evsjv, BstiWR I Dv`c ZvE9K big ukLtZ cviteb |

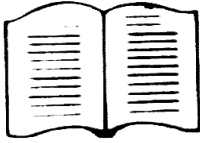


### cvw 1.1 dmj cwiPvZ I cymZ , iaZj



G cvV tkfI AvciB

- ◆ gvV dmtj i cwiPvZ vj LtZ cvi`teb|
- ◆ gvV dmtj i cymZ , iaZj; e`vL`v Ki tZ cvi`teb|



gvbly hfZie mvt\_ MvQciv v  
 tRvMvo Kti A\_ %bWZK  
 , iaZj; m=ubeth mg`l  
 Dw`mC RvZ Drcb`e`e` gvV  
 t\_ tK Drcv`b Kti  
 tm\_ tj v`K gvVdmj  
 (Field crops) etj |

Aw` Kvj ntZB gvby weifb`ei Kg MvQmVov`K Lv`" nmvte e`envi Kti Avmtj I μgvštq  
 gvby eštZ m`lg nq th, weifb`ei Kg MvQciv v t\_ tK weifb`ei Kg Drcb`e`e` cvl qv hvq| tKvb  
 MvQ t\_ tK `vbr, tKvb MvQ t\_ tK vPvb Avevi tKvb MvQ t\_ tK Avka, BZ`w` weifb`eDrcb`e`e`  
 cvl qv hvq| gvby GmKj Dw`mC tK tRvMvo Kti hfZie mvt\_ Rb`fZt\_ v`K Ges weifb`ei Kg  
 MvQciv vRvZ `e` Drcv`b Kti vbtR`i c`qvrB vglvq| mZivs gvby hfZie mvt\_ MvQciv v  
 tRvMvo Kti A\_ %bWZK , iaZj; m=ubeth mg`- Dw`mC RvZ Drcb`e`e` gvV t\_ tK Drcv`b Kti  
 tm\_ tj v`K gvVdmj (Field crops) etj |

gvfvi me MvQB dmj bq| gvby c`qvrB hv Dw`mC t\_ tK Drcv`b Kti ZvB dmj | dmj  
 gvby i Lv`" I cymI Pvn`v vglvq| Avgiv th mg`l Dw`mC RvZ c`v\_ QlvB, Zvi meB Lv`" bq|  
 Rxeb aviY, t`n`K mY`mej, Kg`lg I t`tni e`v` mva`bi Rb`" th me Dw`mC RvZ Drcv`v`bi  
 c`qvrB, tmme Drcv`b weik`o e`-tK Dw`mC RvZ Lv`" etj | gvV dmj gvby i Lv`" i c`vb  
 Dm|

Rvg Pvl t\_ tK i ia Kti exR Drcv`b chSf c`ZvU c`f`c c`qvrBvq hfZie ZviZtg`i  
 v`f`E`Z gvVdmj i `eik`o`\_ tj v`ub`e`f`c:

1. mvariYZ gvVdmj thgb avb, cvU, Mg BZ`w` mgw`MZfite Pvl Kiv hvq| vKŠ` Kjv,  
 Avg, Rvg BZ`w` dj RvZxq dmtj mvariYZ c`ZvU MvQ`K GKKfite hZ`bqv nq|
2. mvariYZ gvV dmj teov vbg`f`Yi c`qvrB nq bv| vKŠ` mevR P`fI teov vbg`f`Yi c`q  
 Avek`K e`v`v|
3. gvV dmj mvariYZ GK mg`tq cwi`c` nq Ges GK mg`tq mS`M` Kiv nq| Aci c`f`  
 mevR RvZxq km` thgb- Utg`lv, te\_ b BZ`w` av`c av`c cwi`c` I mS`M` Kiv nq|
4. gvV dmj thgb-avb, cvU, Wvj, `Zj exR BZ`w` mvariYZ i vK`K`q e`envi Kiv nq| vKŠ`  
 mevR I dj RvZxq dmj mvariYZ ZvRv Ae`v`q e`envi Kiv nq|

Dctiv` e`ik`o`\_ tj v` gvV dmtj i Rb`" tKvb m`v`v` e`ik`o`\_ bq| mvariYfite gvV  
 dmj , tj v`K KvlZv`E`K dmj (Agronomic crops) Ges evMvb dmj (Garden crops)  
 , tj v`K D`" v`Zv`E`K dmj (Horticultural crops) ej v` nq|

gvVdmj , tj vi gta` avb,  
 Mg , f`f`v, he BZ`w` ZU`Z  
 RvZxq km` (Cereal  
 crops) | G\_ , tj vi gta`  
 avb Avgt` i c`vb Lv`" |

G gvVdmj , tj vi gta` avb, Mg , f`f`v, he BZ`w` ZU`Z RvZxq km` (Cereal crops) | G\_ , tj vi  
 gta` avb Avgt` i c`vb Lv`" | vek| RbmsL`vi c`q A`a`R`B c`vb Lv`" nmvte Pvj e`envi  
 Kti | fvi`Z me tP`tq teik Rvg avb P`fI e`e`vZ nq| evsj v`tk tgvU Avev` Rvgi c`q  
 80% Rvg`Z av`bi Pvl nq| cymI v`P`fI avb Avgt` i kK`v (Carbohydrates) RvZxq  
 Lv`" i c`vb Pvn`v vglvq\_ v`K| kK`v QvovI G`Z kZKiv 8 f`vM Avv`I (Protein)  
 i`q`Q| M`v`v` (Gramineae/Poaceae) cwi`et`i AŠ`f`y GB ZU`Z RvZxq dmj , tj v`  
 Avgt` i c`vb Lv`" nmvte e`e`vZ n`q Avm`Q| vki` t\_ tK Av`c`Kti mKj eq`fmi gvby G  
 L`v`v` v`v`c`f` M`Y Ki`Z c`fI | vki` t\_ tK c`q g k` L`v`v` nmvte ZU`Z RvZxq Lv`" B` t` qv  
 nq| gvby i cym`Z G RvZxq dmtj i v`vU Ae`v`b i`q`Q|

gvV dmj , tj vi gta` gmj, tQjv, gvI, gM, Aoni, tLmvi, gUi, BZ`w` Wvj RvZxq dmj |  
 G dmj , tj v`Z c`f`Z cwi`gt`Y Avv`I v`" gv| Kvl.c`vb evsj v`tki fvg e`e`v`v`v` Rb`" G

dmj Awak ,iazcyf RngtZ mbwofite km Pvl Kitj gmlU i Re c`v Avt`I Avt`I Ktg hvq| A\_P GB Wvj RvZxq km Pvl Kitj gmlUz igt\_vRwe cluqvq bVbtUtRb mshy nta gmlU DePZv I Drcv`b qgZv mK ivtL| G dmj iaygvbt i cyotZB bq, Mpcwv Z ci i I Ab`Zg Lv` Drm| G me dmtj i fukl D`P Avgl mgx ci Lv` intmte e`euZ nq|

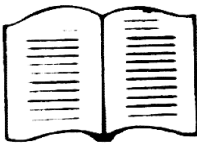
Avgt`i t`tk ci Lv`i Rb` PriY fvgi fvgKvl ,iazcyf met`tk PriY fvgtZ Nvm RvZxq ktm`i mvt\_ wewfbae Kg Omj ,gO (Legume) RvZxq ktm`i wgaPvl Kti Rvgi cyoKi Lv`i Pwn`v wglvbtv nq| PriYfvgtZ ci i eR`e` wj ,g RvZxq ktm`i Dcv`wZtZ Lv`ivcr`vb Ptui mgst mirab Kti| dtj PriYfvgtZi wj ,g km Lv`ivcr`vb e`vcrbvq ,iazcyf fvgKv cij b Kti| gvV dmtj i Aš-fy `Zj exR dmj Avgt`i kixti t`m RvZxq c`vt`P thvMvb t`q| mqvexb GKB mt½ Wvj I `Zj exR dmj wmwte cyotZ ,iazcyf fvgKv cij b Kti|

gvV dmj ,tjv Avgt`i clqvRbxq cyoi clq mKj Dcv`vbi thvMvb w`tZ cvti| Lwvtti th tKvb GKw Dcv`vb μgvmZfite AchfB \_vKtj A\_ev mawYfite ev` cotj t`tn tm Dcv`vbi Afite tivtMi j qY t`Lv t`q| G Ae`vK cyonxbZv etj| cyonxbZvi KvitY evsj vt`tk clq eQtii Kg eqtmi eu wki wewfbaetivtM Avwvšl nq ev AKvtj gZzgtL cwZZ nq| AvbgnvbK wmwte evsj vt`tki clq kZKiv 80 Rb tjvK tKvb bv tKvb cyonxbZvq Avwvšl| dtj Zit`i t`v` `y nta cto| Kg qgZv Ktg hvq Ges Zviv AKvtj gviv hvq| gvV dmtj i eAvvbK Pvlver` Lv` wivcEv wvōZ KitZ I cyonxbZv `y KitZ Dttj LthvM` fvgKv ivLtZ cvti|

AvbgnvbK wmwte evsj vt`tki clq kZKiv 80 Rb tjvK tKvb bv tKvb cyonxbZvq Avwvšl|

gvV dmj gvby I Ab`vb` cOYxi cyoi thvMvb t`q| cyo cluqvq cvK`jxtZ Lv` e` tft½ mij Dcv`vrb cwvYZ nq Ges t`tni cbMfB I ewxi Rb` Zvc mwv Kti| G Qvovl cyo t`tn tivM clZti vaK qgZv ewx Kti| t`tni cyo mratbi Rb` Lv` mvg cyo Dcv`vb \_vKv clqvRb| t`tni Rb` clqvRbxq cyo Dcv`vb gj-Zt` fvlv Drm t`tk cvl qv hvq| G` fvlv Drm ntjv Dw`c I cOYx| Gi gta` Aek` clbR tclvUb` fveZB fij RvZi tclvUb| wKš wewfbae KvitY Dw`c RvZxq tclvUb clbR tclvUbtv tPtq ,iazcyf D`vniY`tfc clbR tclvUb t`tni Rb` AtbK t`qit AvZ mntrB KvhRix ntj I t`v`i Rb` Sdkcyf Ges Gt`i `vgl tewk| Lwmi gism I tMv-gism cyoi ,tjv Dbz ntj I u`ti vMmn wewfbae`v`MZ Ae`vq tek Sdkcyf Gt`qit Dw`c RvZ Avgl Avgt`i kixti cOqvRbxq cyoi thvMvb w`tZ cvti| Wvj I `Zj exR RvZxq dmj AvZ mntr Kg LitP Drcv`b Kti t`tni clqvRb wglvbtv hvq| t`tki mvariY gvby %Zj exR I Wvj RvZxq km` e`envi Kti Zvt`i clqvRbxq Avgl ev gvsmti Pwn`v wglvtq \_vtK| Wvj RvZxq dmj Avgl mgx etj Gme dmj tK Mixtei gism (Poor man's meat) etj AwfwnZ Kiv nq|

Wvj RvZxq dmj Avgl mgx etj Gme dmj tK Mixtei gism (Poor man's meat) etj AwfwnZ Kiv nq|



**mvi gg**  
dmtj i mt½ gvbt i cwvPvZ AtbK w`tbi| gvV dmj ,tjv gvby htZe mvt\_ wbtRi clqvRtb gvfv Rvb`q \_vtK| gvV dmj gvbt i Lv` I cyoi clvb Drm| Avgiv` fvlv Drm t`tk cyoi Pwn`v wglvB, Gi GKw clvX Avi Ab`w Dw`c | gvV dmj ,tjv Dw`c RvZ cyoi Ab`Zg Drm hv Kg Sdkcyf wivc`| mKj eqtmi mKj tkwYi gvby Kg LitP G Drm t`tk cyoi Pwn`v ctY KitZ cvti| G dmj ,tjvi gta` avb, AvL, mwi lv, Wvj, `Zj exR BZ`w` dmj gvbt i cyo Pwn`v tglvbtv chfB Dcv`vrb mgx| t`tki RbmsL`vi GKw epr msL`v Acyō I Abivnti fvtQ| evsj vt`tki mvariY KIKivl G dmj ,tjv AvZ mntr Drcv`b Kti Zvt`i G Pwn`v tglvtZ m`qg| GB cyo Pwn`v tglvbtv Rb` G dmj ,tjvi Dbqb I eAvvbK Dcv`vrb Pvlver` i gva`tg dj b evovtBv DwPZ|



### cvWĒi gj`iqb 1.1

mWVK DĒti i cvkqUK wPy (√) w`b|

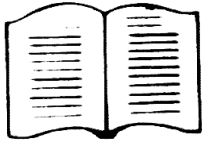
1. tKvbW gvV dmj bq?  
(K) avb (L) Kjv (M) Mg (N) tRvqvi
2. PvDtj kZKiv KZ fvM Avngl \_vK?  
(K) 8 (L) 10 (M) 12 (N) 14
3. tKvb dmj tK Mixtei gvsm ejv nq?  
(K) Wvj dmj (L) %Zj exR dmj  
(M) `vbn RvZxq km` (N) Pvi Y figi dmj |
4. tKvbW Wvj I `Zj exR dmj ?  
(K) tLmwi (L) mqvexb (M) gmjy (N) Pxbvev`vg
5. t`tni Rb` cŃqvRbxq Avngl cvl qv hvq tKvb Drm t`K?  
(K) cŃYx (L) Dw`mĉ (M) Dw`mĉ I cŃYx (N) gvQ I gvsm



### cw 1.2 dmtj i wefba`kiv`efw

G ciV tk`l Avci b

- ◆ wefba`vte gvV dmtj i tk`Yieb`vm Ki`Z cvi`b |
- ◆ dmtj i tk`Yieb`v`mi w`f`E D`tj`L Ki`Z cvi`teb |
- ◆ dmtj i tk`Y Ab`v`q`x`b`v`g` l` e`nvi` ej`Z` cvi`teb |



gvby c`q`v`R`b` th` m`Kj` M`v`Q`v`j` vi` P`v`l`v`e`v` K`ti` Z`v`K`B` Av`g`iv` dmj` ej`Z` cwi` | GB` dmj` ev` km` m`v`t`U` w`e`v`i` Z`f`v`te` ch`q`j` v`P`v` l` m`g`z`v`te` A`v`b`v`R`B` Ave`k`K` | Kul` w`e`A`v`b` l` c`h`v`p`i` w`e`f`b`e` A`v`t`bi` Av`t`j` v`t`K` dmtj i tk`Yieb`vm Kiv` ntj`v`:

### gv dmtj i tk`iv`efw

gvV dmj` t`K` w`b`v`j` w`L`Z` c`K`v`ti` tk`Y`K`i`Y` Kiv` hv`q`-

### 1. Kul`Z`w`E`K` D`c`v`q` tk`iv`K`i`Y`

#### (K) Z`U`z`R`v`Z`x`q` km` (Cereals)

M`h`g`b`x` (Gramineae) ev` N`v`m` cwi` ev`t`i` i` A`S`M`Z` av`b` Mg` he` f`j`v` ev`R`iv` t`R`v`q`vi` P`x`b`v` K`v`l`b` i`v`B` B`Z`w` km` Av`g`v`t`i` i` w`b`K`U` cwi` w`P`Z` | G` cwi` ev`t`i` i` Av`v`t`i`v`c`t`h`v`M`x` `v`b`v` R`v`Z`x`q` km` `t`j` v`B` ntj`v` Z`U`z` dmj` (Cereal crops) |

M`h`g`b`x` (Gramineae) ev` N`v`m` cwi` ev`t`i` i` A`S`M`Z` av`b` Mg` he` f`j`v` ev`R`iv` t`R`v`q`vi` P`x`b`v` K`v`l`b` i`v`B` B`Z`w` km` Av`g`v`t`i` i` w`b`K`U` cwi` w`P`Z` | G` cwi` ev`t`i` i` Av`v`t`i`v`c`t`h`v`M`x` `v`b`v` R`v`Z`x`q` km` `t`j` v`B` ntj`v` Z`U`z` dmj` (Cereal crops) |

#### (L) W`j` dmj` (Pulses or Grain legumes)

w`j` `v`g`t`b`w`m` (Leguminosae) cwi` ev`t`i` i` c`w`c`w`j` l` t`b`w`m` (Papilionaceae) D`c`-cwi` ev`t`i` i` th` m`Kj` `v`b`v` R`v`Z`x`q` dmj` W`t`j` i` R`b` P`v`l` Kiv` nq` t`m` `t`j` v`t`K` W`j` dmj` ej`v` nq` | g`m`j` (Lentil), t`Q`v`j`v` (Chickpea), t`L`m`w`i` (Grasspea), g`U`i` (Pea), g`v`l` (Black gram), g`M` (Green/Golden gram), A`o`n`i` (Pigeon pea), e`i`e`w`U` (Cowpea) B`Z`w` W`j` dmj` i` A`S`f`v` |

w`j` `v`g`t`b`w`m` (Leguminosae) cwi` ev`t`i` i` c`w`c`w`j` l` t`b`w`m` (Papilionaceae) D`c`-cwi` ev`t`i` i` th` m`Kj` `v`b`v` R`v`Z`x`q` dmj` W`t`j` i` R`b` P`v`l` Kiv` nq` t`m` `t`j` v`t`K` W`j` dmj` ej`v` nq` | g`m`j` (Lentil), t`Q`v`j`v` (Chickpea), t`L`m`w`i` (Grasspea), g`U`i` (Pea), g`v`l` (Black gram), g`M` (Green/Golden gram), A`o`n`i` (Pigeon pea), e`i`e`w`U` (Cowpea) B`Z`w` W`j` dmj` i` A`S`f`v` |

#### (M) `Z`j`e`R` (Oil seed) dmj`

G` km` P`w`e`q`K`sev` t` `w`R`v`Z`x`q` D`c`v` v`t`bi` c`a`v`b` D`r`m` | th` m`Kj` dmj` i` e`x`R` t` `t`K` `Z`j` m`S`M`h` Kiv` nq` t`m` `t`j` v`t`K`B` `Z`j`e`R` dmj` e`t`j` | m`w`i` l`v` (Rape or Mustard), P`x`b`v`e`v` i`g` (Peanut or Ground nut), w`Z`j` (Sesame), m`q`v`e`x`b` (Soyabean), m`h`g`v`l`x` (Sunflower), K`w`y`g` d`z` (Safflower), M`R`B` w`Z`j` (Niger), w`Z`w`m` (Linseed), t`i`w`o` (Castor) B`Z`w` `Z`j`e`R` dmj` i` D`v`ni`Y` |

G` km` P`w`e`q`K`sev` t` `w`R`v`Z`x`q` D`c`v` v`t`bi` c`a`v`b` D`r`m` | th` m`Kj` dmj` i` e`x`R` t` `t`K` `Z`j` m`S`M`h` Kiv` nq` t`m` `t`j` v`t`K`B` `Z`j`e`R` dmj` e`t`j` | m`w`i` l`v` (Rape or Mustard), P`x`b`v`e`v` i`g` (Peanut or Ground nut), w`Z`j` (Sesame), m`q`v`e`x`b` (Soyabean), m`h`g`v`l`x` (Sunflower), K`w`y`g` d`z` (Safflower), M`R`B` w`Z`j` (Niger), w`Z`w`m` (Linseed), t`i`w`o` (Castor) B`Z`w` `Z`j`e`R` dmj` i` D`v`ni`Y` |

#### (N) w`P`v`b` dmj` (Sugar crops)

th` m`Kj` dmj` i` i`m` t` `t`K` w`P`v`b` `o` w`g`Q`w`i` B`Z`w` w`g`w`o` R`v`Z`x`q` c` `v` `D`r`c`v` t`b`i` R`b` P`v`l` Kiv` nq` t`m` `t`j` v`t`K` w`P`v`b` dmj` e`t`j` | Av`L` (Sugarcane), e`x`U` (Sugarbeet) B`Z`w` w`P`v`b` R`v`Z`x`q` dmj` i` A`S`f`v` | t`L`R`j`y` Z`v`j` h`v` l` g`v`V` dmj` i` A`S`f`v` b`q` G` `t`j` v`l` w`P`v`b` dmj` i` A`S`f`v` |

th` m`Kj` dmj` i` i`m` t` `t`K` w`P`v`b` `o` w`g`Q`w`i` B`Z`w` w`g`w`o` R`v`Z`x`q` c` `v` `D`r`c`v` t`b`i` R`b` P`v`l` Kiv` nq` t`m` `t`j` v`t`K` w`P`v`b` dmj` e`t`j` | Av`L` (Sugarcane), e`x`U` (Sugarbeet) B`Z`w` w`P`v`b` R`v`Z`x`q` dmj` i` A`S`f`v` | t`L`R`j`y` Z`v`j` h`v` l` g`v`V` dmj` i` A`S`f`v` b`q` G` `t`j` v`l` w`P`v`b` dmj` i` A`S`f`v` |

#### (O) A`v`k`a` dmj` (Fibre crops)

th` m`Kj` dmj` A`v`k` D`r`c`v` t`b`i` R`b` P`v`l` Kiv` nq` t`m` `t`j` v`t`K` A`v`k` dmj` e`t`j` | c`v`U` Z`j`v` k`b`c`v`U` (Sunnhemp), t`K`b`v`d` (Kenaf), i`v`g`x` (Ramie) B`Z`w` D`t`j` L`t`h`v`M` A`v`k` dmj` |

th` m`Kj` dmj` A`v`k` D`r`c`v` t`b`i` R`b` P`v`l` Kiv` nq` t`m` `t`j` v`t`K` A`v`k` dmj` e`t`j` | c`v`U` Z`j`v` k`b`c`v`U` (Sunnhemp), t`K`b`v`d` (Kenaf), i`v`g`x` (Ramie) B`Z`w` D`t`j` L`t`h`v`M` A`v`k` dmj` |

**(P) tbkv RvZxq dmj (Narcotic crops)**

th mKj dmj tbkvRvZxq `e` Drcv`tbi Rb` Pvl Kiv nq, tm,tjv`K tbkv RvZxq dmj etj | G RvZxq dmj mivaiYZ qWZKviK c`v`\_v`K hv Ng I AjmZv Avtb Ges e`\_v te`br`i` Kti | wPwKrmv kv`i;Gmtei weiea e`enri AvtQ| wKŠ`mivaiYZ Gt`i e`enri nq gv`K `e` wnmvte| ZvgvK (Tobacco), Avwdg (Opium poppy), MvRv (Indian hempplant), Kw`c(Kumbhi), tnbteb (Henbane) BZ`w` GB RvZxq dmj i Ašf`y |

**(Q) cubxq dmj (Beverage crops)**

cubxq `e` Drcv`tbi Rb` th mKj dmj Pvl Kiv nq, tm,tjv`K cubxq dmj etj | G me dmj mivaiYZ t`tn c`p mieivn Kti bvl Pvl (Tea), Kw`d (Coffee), tKv`Kv (Cocoa), tKvjv (Cola) BZ`w` cubxq dmj | G RvZxq dmj t`\_tK D`ixcK cubxq `e` Drcv`b Kiv nq etj G,tjv`K D`ixcK cubxq Drcv`bKvix km` bvtg AvfwnZ Kiv nq|

**(R) ci`Lv` dmj (Forage crops)**

th mKj dmj ci`i Lv` wnmvte Rb`tbn nq, tm,tjv`K ci`Lv` dmj etj | Avevi th mg`i ci`Lv` PviY fvgtZ Pvl Kiv nq, tm,tjv`K PviY fvgi km` (Pasture crops) ejv nq| PviY fvgtZ mivaiYZ ZY RvZxq Dw`c Pvl Kiv nq Ges ci` wPviY Kti km` Lvq| f`y (Maize), tRvqvi (Sorghum) `vbn RvZxq km` Qvovl ci`Lv` wnmvte Pvl Kiv nq Ges Avgiv c`Pvj Zfvte Fodder crop etj \_wK| Avevi `e`P Nvm (Bermuda grass), Kv`c` Nvm (Carpet grass) I wvfbacKvi tKv`vi (Clovers) PviYfvg ci`Lv` `i D`vniY|

evsj v`tki KIKMY tLmvi x ev Nvm Kvj vB t`q`tZ Mew` ci` Lv` tMto teta w`Z GKmgq| dmj ,tjv` Forage crop wnmvte e`eüZ ntZv|

th mKj dmj ci`i Lv` wnmvte Rb`tbn nq, tm,tjv`K ci`Lv` dmj etj | Avevi th mg`i ci`Lv` PviY fvgtZ Pvl Kiv nq, tm,tjv`K PviY fvgi km` (Pasture crops) ejv nq|

**(S) meR mvi dmj (Green manuring crops)**

th mKj meR km` gvUv miv` wgvktq w`tq` Re mvi `Zwi i Rb` Pvl Kiv nq, Zv`i`K meR mvi dmj etj | aBÁv (Dhaincha), kbcvU (Sunnhemp) BZ`w` meR mvi dmj |

th mKj meR km` gvUv miv` wgvktq w`tq` Re mvi `Zwi i Rb` Pvl Kiv nq, Zv`i`K meR mvi dmj etj |

**2. Drcv`tbi tgšny Ablyqx tkw`KiY**

K. i we km` : t`v`iv avb, Mg, he, mvi Iv, Wvj RvZxq dmj thgb gmiy, tQvjv BZ`w` |

L. Lwi c km` : (1) Lwi c 1 km` - AvDk avb, cvU, f`y BZ`w` |

(2) Lwi c 2 km` - Avgb avb, mh`y, mqv`xb BZ`w` |

M. Dfq tgšny km` : wZj , KvI b, f`y, P`bv ev`vg BZ`w` |

**3. ci`wq`tbi (Pollination) w`v`ÉtZ**

K. ^ci`vMx : avb, Mg, ZvgvK, Wvj dmj BZ`w` |

L. ci-ci`vMx : mvi Iv, f`y, d`Kw, evav Kw, MvRi BZ`w` |

M. ^i ci`vMx : Z`v, mh`y BZ`w` |

**4. R`ebKv`j i (Life cycle) w`v`ÉtZ**

K. GKel` (Annual) dmj : avb, cvU, ZvgvK BZ`w` |

L. w`-el` (Biennial) dmj : m`vi exU, MvRi BZ`w` |

M. eü el` (Perennial) dmj : Pvl, Kw`d, Avg, Rvg, K`v`v BZ`w` |

**5. exRcĭi (Cotyledon) mSL'vi vfiĖtZ**

K. GK exRcĭx dmj : avb, Mg, fĖv, Pxbv, Kvl b BZ'w` |

L. wĖexRcĭx dmj : cvU, mwi lv, ZvgvK, Wvj km BZ'w` |

**6. dĵ Drcv`tb w`tbi ˘Nq vfiĖtZ**

K. LıfUv w`em (Short day) dmj : cvU, AvL, wgwó Avj yAvgb avb BZ'w` |

L. ˘Nq em (Long day) dmj : mMyi exU, etavKuc, cij s kvK BZ'w` |

M. w`b wbi tCq (Day neutral) dmj : mqvexb, fĖv, AvDk avb, tevfi v avb BZ'w` |

**7. gvUli A=Zj vfiĖtZ**

K. A=amnbkxj dmj : Pv, Kucd BZ'w` |

L. q|vi mnbkxj dmj : mMyi exU, avb BZ'w` |

M. wbi tCq gvUli dmj : cvU, Mg, AvL BZ'w` |

**8. AvfthvRb Zvcgvıvi vfiĖtZ**

K. Dò Rj evqj dmj : AvL, cvU, avb BZ'w` |

L. AeDò Rj evqj dmj : gmj, tQvj v, Aoni BZ'w` |

M. kxZj Rj evqj dmj : Mg, he, mMyi exU BZ'w` |

**9. gvUli Av`Zvi vfiĖtZ**

K. mvariY fvgi dmj (Mesophyte) : cvU, Mg, wgwó Avj yBZ'w` |

L. giæAAtj i dmj (Xerophyte) : tRvqvi, evRiv, Kivvfv, dmbgbmv, kZgj-x, Avbvi m BZ'w` |

M. Rj xq dmj (Hydrophyte) : Rj x avb, cvbKPz AvfRvj v, WvKDBW, kvcj v, cU BZ'w` |

N. jeYv<sup>3</sup> Gj vKvi dmj (Halophytes) : nıRfMvRv, WvUvi tKvb tKvb cRwZ (Amaranthus spp.), MKĵ KvUv (Asteracantha longifolia), tKl ov, tMvovb, mxi x - hv l Gi me, tj v dmj bq|

**10. dmtj i cwi evi vfiĖK tkvKiy**

K. Mhgbx (Gramineae) ev Nvm cwi evfi i dmj : avb, Mg, fĖv, AvL BZ'w` |

L. gvj tfvm cwi evfi i dmj : tKbvd, Zĵv BZ'w` |

M. wj , wgtbvm ev Wvj cwi evfi i dmj : gmj, tQvj v BZ'w` |

N. wUvj tqvm cwi evfi i dmj : cvU |

O. tmvj vtvm cwi evfi i dmj : ZvgvK, Avj yBZ'w` |

P. mntdwi cwi evfi i dmj : dĵ Kuc, etavKuc, I j Kuc, mwi lv, gj-v, kvj Mg BZ'w` |

Q. Kt=úwRwU cwi evfi i dmj : mhgyx, Kmg dĵ BZ'w` |

**11. dmtj i wekl tkwefwl (Special classification)**

eQtii cãvb`jlv dmtj i  
AšëZx Kij xb mgtq hw`  
GKuU`f Rieb Kij wekó  
dmtj (Short duration  
crop) Pvl Kiv nq Zte  
ZtK Catch crop ev  
AšëZx Kij xb dmtj ejv  
nq|

**K. AšëZx dmtj (Catch crop)**

eQtii cãvb`jlv dmtj i AšëZx Kij xb mgtq hw` GKUU`f Rieb Kij wekó dmtj (Short duration crop) Pvl Kiv nq Zte ZtK Catch crop ev AšëZx Kij xb dmtj ejv nq| Avgv`i t`tk tev`iv avb I tivcv Avgb avb Pvl i gvSigmS AšëZx Kij xb Pxbv ev Kvl b dmtj Pvl G dmtj i D`vni Y| AšëZx Avevi GtK Gi`fc msÁmqZ Kt`itQb th, wejfc cKwZi Kvi tY cãvb dmtj mclj Kvg br n`tj`f Zg msu`fB mgtq th dmtj Pvl Kiv nq ZtK Catch crop ev weKí dmtj etj (Avj g I Ab`vb`, 1988)|

**L. A`Rix (Cash) dmtj**

mivavi YZ th dmtj wep`u Kti Pvl x Zvi Ab`vb` Li t`Pi thvMvb t`q, tmB dmtj tK A`Rix dmtj etj | thgb ZvgvK, cvU, AvL BZ`w` |

**M. Av`Qv`b (Cover) dmtj**

cãvbZ fvg`f q tiva Kivi Rb` th dmtj Oviv Rvg Av`Qv`Z Kti ivLv nq, tm dmtj tK Av`Qv`b dmtj etj | Pxbv ev`vg, tKv`fvi, Kt`fcØ Nvm, `e`Nvm BZ`w` G dmtj i D`vni Y|

**N. msiw`fZ tMv-Lv` dmtj (Silage crop)**

fivel`tZ ev tgšmg Ovov Ab` mgtq e`enrti i j`t`f` Pvl Kti meR I imvj Ae`vq wekl c`xwZtZ cãquRvZ Kti`Zwi dmtj tK msiw`fZ tMv-Lv` dmtj etj | f`zv, tRvqvi, tbwqvi Nvm BZ`w` dZ Avmvi cte`meR I imvj Ae`vq cãquRvZ Kti tMv-Lv`i Rb` msiw`fY Kiv nq|

**O. w`k` (Mixed) dmtj**

GKwaK dmtj i exR GK mvt` w`k`tq GKB RvgtZ Pvl KZ. dmtj tK w`k` dmtj etj | gmj Wvj I MgeXR GK mvt` w`k`tq w`QuU`tq tevbr Rb`t`bv dmtj B w`k` dmtj |

cãvb dmtj i mwi i gv`S  
Ab` dmtj Pvl Kivi  
c`xwZtK Avš` dmtj etj |

**P. Avš` dmtj (Inter-cropping)**

cãvb dmtj i mwi i gv`S Ab` dmtj Pvl Kivi c`xwZtK Avš` dmtj etj | cãvb dmtj Mtgi mvt` gmj i exRvii Kvgtq GK mvt` Pvl Ktj Avš` dmtj Pvl ejv nq|

**Q. mww (Relay) dmtj**

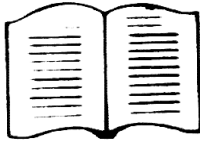
GKB RvgtZ`w` dmtj i Pvl nq Ges GKwU Rieb Pp` tkl nI qvi cte`B Ab`wU H RvgtZ ecb Kiv nq| Avgb avt`bi RvgtZ mww dmtj wnmite tLmwi i Pvl Gi D`vni Y|

**R. eü, Y dmtj (Multiple cropping)**

GKB RvgtZ GK eQtii GKwaK dmtj Pvl Kiv tK eü, Y dmtj Pvl etj | GKB RvgtZ eQtii AvDk, Avgb Ges tev`iv avt`bi Pvl eü, Y dmtj Pvl i D`vni Y|



**Ablyj b** (Activity): Avcbvi GjvKvq mPivPi Drcbenq Ggb gvVdmj mgtni tkivYefvM Kiab/



**mvi gg**

dmj tk we lwi Zfvte Rvbvi Rb" we wfbte tkivYKiY Kiv ntqtQ/ Kwl ZvEJ Dcvtaq dmj tk ZUj, Wvj dmj, Zj exR dmj, wPib dmj, Atk dmj, tbkv RvZxq dmj, civxq dmj, ciLv" dmj I meR mvi dmj fivM Kiv ntqtQ/ Drcv`b tgSmg Ablyvqx iwekm", Lwi c km" I Dfq tgSmg ktm" tkivYKiY Kiv ntqtQ/ civMvqtb i wfvEzZ ^civMx, ci-civMx, I ci-civMx ktm" tkivYKiY Kiv ntqtQ/ RiebKvtji wfvEzZ GK el, wdel I eu el dmj fivM Kiv ntqtQ/ exRcti msLvi wfvEzZ GK exRcti (Monocotyledonous) dmj, wOexR cix (Dicotyledonous) dmj tkivYKiY Kiv ntqtQ/ dz Drcv`tb w`bi `tnq wfvEzZ LvUv w`em dmj, `xNw`em dmj I w`b wbi`c q dmj fivM Kiv ntqtQ/ gwU i A`Zji wfvEzZ A`mnbkxj dmj, qvi mnbkxj dmj I wbi`c q gwU i dmj fivM Kiv ntqtQ/ Awf`thvRb gvivi wfvEzZ D` Rjevqj dmj, Ae D` Rjevqj dmj I kxZj Rjevqj dmj tkivYKiY Kiv ntqtQ/ cwbi c`qvRbxqZvi wfvEzZ mviY fvgi dmj, giaz AAji dmj, I jeYv<sup>3</sup> GjvKvi Rjxq dmj fivM Kiv ntqtQ/ dmj i cwi evfii wfvEzZ Mhgbx, gvj`fw, wj , wgtbw, wUvj`qum, tmvj`vbw, m`ntdwi, Kt`u`wRuU cwi evfii dmj wnmvte tkivYKiY Kiv ntqtQ/ dmj i we`kl tkivYKiYi gva`tg A`S`ZxRijxb ev weK i dmj, A`Rix dmj, Av`Qv`b dmj, msiw`qZ tMv-Lv" dmj, w`gk<sup>a</sup> dmj, Avst dmj, mvl dmj I eu , Y dmj fivM Kiv ntqtQ/





### cuVhEi gj`iqb 1.2

mWVK DĒti i cuKqUK wPy (√) w`b

1. tKvbwU tbrv RvZiq dmj ?

K. Pr L. tnbteb

M. ivgx N. tiwo

2. tKvbwU Avk RvZiq dmj ?

K. tKbrd L. tiwo

M. Kēc N. exU

3. tKvbwU A\_Rix dmj ?

K. avb L. tRvqvi

M. ZiqvK N. gmj

4. tKvbwU giæ AĀtj i dmj ?

K. avb L. cvU

M. Zjv N. tRvqvi

5. tKvbwU LvUv w`em DwM ?

K. cvU L. exU

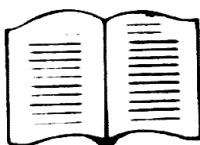
M. mqvxb N. fĒv

### cW 1.3 wefbaedmtji BstiiR I DiiZweEK big



G ciV tkfi Avciib

- ◆ wefbaedmtji ejsjv I BstiiR big wj LtZ cvi teb|
- ◆ dmtji DiiZweEK MY I cRmZi big DtiL KiZ cvi teb|



gv dmj , tj vK wefbaevte bigKiY Kiv ntqQ| tKvb tKvb dmtji Avevi GKwaK ejsjv I BstiiR big itqQ| DiiZweEK bvtgi mvariYZ žbv Ask itqQ| cŭg bvgU MY big (Generic name) Ges wZxquU cRmZ big (Species name)| GB bigKiYi cxwZK wC` bigKiY (Binomial nomenclature) etj| GLb wefbaegv dmtji ejsjv bvtgi mvt\_ BstiiR I DiiZweEK big t`qv ntjv:

DiiZweEK bvtgi mvariYZ žbv Ask itqQ| cŭg bvgU MY big (Generic name) Ges wZxquU cRmZ big (Species name)| GB bigKiYi cxwZK wC` bigKiY (Binomial nomenclature) etj|

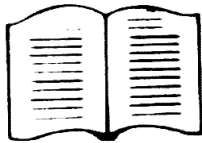
μgK bs	ejsjv big	BstiiR big	DiiZweEK big
1.	avb	Rice	<i>Oryza sativa</i> L.
2.	Mg	Spelta wheat Duram wheat	<i>Triticum aestivum</i> L. <i>Triticum durum</i> L.
3.	wUwKij	Triticale	<i>Titcale</i>
4.	fzv	Maize, Corn	<i>Zea mays</i> L.
5.	he	Barley	<i>Hordeum vulgare</i> L.
6.	RB	Oat	<i>Avena sativa</i> L.
7.	tRvqi	Sorghum	<i>Sorghum vulgare</i> L.
8.	eRiv	Bajra	<i>Pennisetum typhoides</i> L.
9.	Pxbv	Italian millet	<i>Panicum miliaceum</i> L.
10.	Kvl b	Foxtail millet	<i>Setaria italica</i> L.
11.	Aoni	Redgram, Pigeon pea	<i>Cajanus cajan</i> L.
12.	tQjv	Gram, Chickpea	<i>Cicer arietinum</i> L.
13.	gUi	Pea	<i>Pisum sativum</i> L.
14.	gvl	Black gram	<i>Vigna mungo</i> L.
15.	gM	Green gram, Golden gram	<i>Vigna radiata</i> (L.) (Wilezck)
16.	gmj	Lentil, Chickling pea	<i>Lens culinaris</i> Medic
17.	tM-gUi	Cowpea, Yard long bean	<i>Vigna sinensis</i> L.
18.	tLmvi	Grasspea, Chickling vetch	<i>Lathyrus sativus</i> L.
19.	mqvxb	Soyabean	<i>Glycine max.</i> L.

μiγK bs	evsj v big	Bst i R big	Dir` ZwiEK big
20.	evKj v Kj vB	Broad bean	<i>Vicia faba</i> L.
21.	Pxbr ev` ig	Groundnut, Peanut	<i>Arachis hypogaea</i> L.
22.	mwi l v	Rape/Mustard	<i>Brassica napus</i> L. <i>B. campestris</i> L.
23.	f` vbe; ti ox	Castor	<i>Ricinus communis</i> L.
24.	wZim	Linseed, Flax	<i>Linum usitatissium</i> L
25.	mhgylx	Sunflower	<i>Helianthus annuus</i> L.
26.	wZj	Sesame	<i>Sesamum indicum</i> L.
27.	Kzgy djz	Safflower	<i>Carthamus tinctorius</i> L.
28.	MRB wZj	Niger	<i>Guizotia abyssinica</i> Call.
29.	Kvj wRi v	Black cumin	<i>Nigella sativa</i> L.
30.	AvL, Bq.	Sugarcane	<i>Saccharum officinarum</i> L.
31.	mMvi exU	Sugarbeet	<i>Beta vulgaris</i> L
32.	Avj .	Potato	<i>Solanum tuberosum</i> L.
33.	wgwó Avj .	Sweet potato	<i>Ipomoea batatas</i> L.
34.	ZvgvK	Tobacco	<i>Nicotiana tabacum</i> L.
35.	MuRv	Indian hemp	<i>Canabis sativum</i> L.
36.	Awcdg	Opium poppy	<i>Papaver somniferum</i> L.
37.	f` kx cvU	Deshi jute	<i>Corchorus capsularis</i> L.
38.	f` Zv l cvU	Tosha jute	<i>Corchorus olitorius</i> L.
39.	Zzv	Cotton (American) Cotton (Deshi)	<i>Gossypium hirsutum</i> L. <i>G. arboreum</i> .
40.	tg` v	Mesta	<i>Hibiscus sabdariffa</i> var. <i>altissima</i> Wester
41.	f` Kbvd	Kenaf	<i>Hibiscus cannabinus</i> L.
42.	kbcvU	Sunnhemp	<i>Crotalaria juncea</i> L.
43.	Pv	Tea	<i>Comellia sinensis</i> L.
44.	Kwd	Coffee	<i>Coffea arabica</i> L.
45.	c` vi v Nvm	Para grass	<i>Brachiaria mutica</i> Forsk.
46.	f` wicqvi Nvm	Napier grass	<i>Pennisetum purpureum</i>

μngK bs	evsj v big	BstiiR big	Dwmc ZwiEK big
			Schum.
47.	m̄ywb Nvm	Sudan grass	<i>Sorghum sudanese</i> Stapf.
48.	Wwb Nvm	Guinea grass	<i>Paricum maximum</i> Jacq.
49.	Avj dv-Avj dv	Lucerne/Alfa-alfa	<i>Medicago sativa</i> L.
50.	evi wmg	Berseem	<i>Trifolium alexandrium</i> L.



**Ablyj b (Activity):** Avcbvi GjvKvq mPivPi Drcbwng Ggb gvVdmj mgfni evsj v, BstiiR Ges Dwmc ZwiEK bvtgi Zvij Kv Zwi Kiab/



**mvi gg<sup>©</sup>**

dmj m̄útk̄c̄wi wPwZ nI qvi m̄p̄avt\_ ©Gi Dwmc ZwiEK big, BstiiR big I evsj v big Rvbn Avek̄K/ Binomial nomenclature Gi c̄lḡw̄tk̄ MY (Genus) big I w̄Zx̄q̄w̄ c̄Rw̄Z (Species) big ejv nq/ gvV dmj ,tjvi mefgvU 50 w̄li evsj v big, BstiiR big I Dwmc ZwiEK big GB cvtV D̄tj L Kiv ntq̄0/



### cuVhEi gj`iqb 1.3

mWVK DEti i cu#kqUK wPy (v) w b |

1. tKvbiU MY big?
  - (K) Rice      (L) *italica*      (M) Triticale      (N) *Cajanus*
2. tKvbiU cRwZ big?
  - (K) Corn      (L) *Setaria*      (M) *sativa*      (N) *Coffea*
3. tKvbiU Binomial nomenclature -Gi`enkó` enb Kti ?
  - (K) Pigeon pea      (L) Italian millet
  - (M) Broad bean      (N) *Corchorus capusularis*
4. tKvbiU wmi qyj ?
  - (K) Aoni      (L) tRvqvi      (M) mqvexb      (N) gUi
5. tKvbiU wPib dmj ?
  - (K) *Saccharum officinarum*      (L) *Ipomoea batatas*
  - (M) *Glycine max*      (N) *Pisum sativum*
6. tKvbiU cvbixq dmj ?
  - (K) *Camellia sinensis*      (L) *Canabis sativa*
  - (M) *Sesamum indicum*      (N) *Ricinus communis*



### Pevš'gj`vqb

#### msvŋB I iPbvj-K ckae

1. Dv<sup>m</sup>c RvZ Avvgl cŋbR Avvgl t\_†K vbi vc` tKb?
2. Wvj RvZxq dmj †K Mi xtei gvsm ej v nq tKb?
3. gvV dm†j i `ewkó` ,†j v vj Lb|
4. gvV dmj ,†j vi GKuU msvŋB cwi Pq Z†j ai ab|
5. gvV dmj ,†j vi cŋMZ , i æz;e`vL`v Ki ab|
6. msÁv vj Lb|

- dmj
- ZŪz RvZxq dmj
- Wvj dmj
- ^Zj exR dmj
- vPvb dmj
- Avk dmj
- tbkvRvZxq dmj
- cvbxq dmj
- ci`Lv` dmj
- meR mvi dmj
- weKí dmj
- A\_Rix dmj
- Av`Qv`b dmj
- msvŋZ tMv-Lv` dmj
- vqk<sup>a</sup> dmj
- Avš' dmj
- mvv\_ dmj
- eŪ\_Y dmj |

7| vbtP D†j vLZ cŋZ`KwU v†tgi Aš'f' dmj ,†j vi bvg vj Lb|

- Wvj dmj
- ^Zj exR dmj
- vPvb dmj
- Avk dmj
- cvbxq dmj
- ci`Lv` dmj
- meR mvi dmj
- Df<sup>q</sup> tgšm<sup>g</sup> dmj
- ^ci vMx dmj
- ci ci vMx dmj
- GK elP dmj
- vŪ-elx<sup>c</sup> dmj
- eŪelP dmj
- GK exRcÍx dmj
- vŪ-exRcÍx dmj
- Lv†Uv v`em dmj
- `xNŋ v`em dmj
- v`b vbi †cŋ dmj
- A=omnbkxj dmj
- ŋvi mnbkxj dmj
- vbi †cŋ gvUi dmj
- jeYv<sup>3</sup> Gj vKvi dmj
- Dò Rj evqjy dmj
- AeDò Rj evqjy dmj
- kvZj Rj evqjy dmj
- mavi Y fvgi dmj
- giæAĀ†j i dmj
- Rj xq dmj |

8. uJKv ij Lšj

- Wvj dmj
- ciLv` dmj
- Drcv`tbi tgšmg Abšvqx dmtj i tkšYKiY
- dmtj i nekI tkšYKiY
- eü,Y dmj
- msiw[Z tMv-Lv` dmj
- A\_Rix dmj
- nekI dmj
- ugk<sup>a</sup>dmj
- mw\_ dmj

9. th tKvb `kuU ZÜžRvZiq ktm`i evsj v, BštiiR big I Dwi`c ZwiEšK big ij Lšj/

10. th tKvb `kuU Wvj RvZiq ktm`i evsj v, BštiiR I Dwi`c ZwiEšK big ij Lšj/

11. th tKvb cššU `Zj exR dmtj i evsj v, BštiiR I Dwi`c ZwiEšK big ij Lšj/

12. th tKvb cššU Avš RvZiq dmtj i evsj v, BštiiR I Dwi`c ZwiEšK big ij Lšj/

13. uJKv ij Lšj/

K. MY      L. cššvZ      M. Binomial nomenclature

14. Pvi Yfugi km` KvšK etj ? KšqkuU Pvi Yfug dmtj i bvg ij Lšj/

15. tbkv RvZiq dmj KvšK etj ? cššU tbkv RvZiq dmtj i BštiiR I Dwi`c ZwiEšK big ij Lšj/

16. eü,Y dmj KvšK etj ? KšqkuU eü,Y dmtj i D`vniY w`b/

17. i ne, Lwi c-1 I Lwi c-2 ktm`i cššZ`kuU cššU Kši gv dmtj i bvg ij Lšj/



DĖi gvj v

cW 1.1:

1| L      2| K      3| K      4| L      5| M

cW 1.2:

1| L      2| K      3| M      4| N      5| K

cW 1.3:

1| N      2| M      3| N      4| L      5| K      6| K



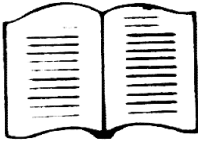


### cw 2.1 Kul.Rug I fig KI`Yi aviYv I D`I`k`



G civ tk`I Avcib

- ◆ Kul.Rug I fig KI`Yi aviYv e`Lv Ki`Z cvi`teb|
- ◆ fig KI`Yi D`I`k` ij Lt`Z cvi`teb|
- ◆ KI`Y e`e`vi , Yv, Y Dt`j L Ki`Z cvi`teb|



evsj v`k GKwU Kul. c`avb t`k| Gt`tk tgvU Rugi cwi gvY 1,47,03,000 tn`i | Avev`thvM` Kul. Rugi cwi gvY 1,14,97,000 tn`i Ges Avev`x Rugi cwi gvY 1,08,33,000 tn`i | G Kul. Rug Avev D`Pfig, gvSwi D`Pfig, ga`g Rug, gvSwi ubPzGes ubPzcFwZ tkWt`Z nef<sup>3</sup> | D`P fig , t`jv tKvb mgqB c`eb 0viv cmeZ nq br| Avev ubPzRug eQ`ti i KtqK gvm cmbi ubtP \_vtK| Kv`RB figi D`PZii I ci ubfP Kti Kul. Rug Prlver` Kiv nq|

Kul. Rug , t`jv t`Z weifbædmt`j i Prl Kiv nq| tKvb dmt`j i cmbi Pwin`v tenk Avev tKvbUli Kg| fig KI`Y Kti gnuU`Z weifbægv`vq cmb msi`j Y Kiv m`æ| weifbædmt`j i exR Avev weifbæi Kg| tKvbUli exR L`gB tQvU Avev tKvbU tek eo| ex`Ri AvKvi Abt`vqx fig KI`Y c`qvRb| evsj v`k eQ`ti Mo ep`ocvZ c`q 203 tm.ug. | ep`ocvZ eQ`ti i me mgq mgvbfv`te nqbr| t`tki me RvqMvq ep`ocvZ mgvbfv`te c`wZ nq br| Kv`RB eQ`ti i weifbæmgq I t`tki weifbæRvqMvq weifbæi Kg Av`Zv Rugt`Z weivR Kti | tmRb` weifbæi Kg Rugt`Z weifbæmgq weifbæi Kg fig KI`Y c`qvRb|

t`tki weifbæRvqMvq gnuU GK iKg bq| tKvb G`jvKvi gnuU tet`j , tKv`vl Gt`lj Avev tKv`vl ev t`v-Atk gnuU| gnuU A`z`i I `jvi Z`i weifbæi Kg| Kv`RB fig KI`YI weifbæi Kg Rugt`Z weifbæi Kg n`qv hv`h`v | Gme weP`ti evsj v`k i Kul. Rug m`u`tk`I Zv`i fig KI`Y c`xwZ m`u`tk`A`v`v`RB c`qvRb|

weifbæRugt`Z gnuU weifbæe`jU I MVb cwi j`jZ nq| gnuU e`jU I MVb t`f` fig KI`Y dmt`j i dj b`tk A`tbKv`stk c`f`meZ Kti | A`tbK mgq Av`Zii<sup>3</sup> fig KI`Y Kti gnuU t`f`S`Z , Yvej x b`o Kiv nq| Kv`RB Kul. Rugt`Z gnuU MVb`tk mivK ti`L fig KI`Y Kiv Dv`PZ| GRb` t`UKmB fig KI`Yi aviYv c`wZ`Z n`qt`Q| mPivPi c`xwZi fig KI`Yi t`P`q t`UKmB fig KI`Y aviYv c`wZ`Z , i`æ`j t`qv n`qt`Q| mivKfv`te fig KI`Y Kti Kul. Rugi weifbæ t`f`S`Z , Yvej x Db`z Kiv hvq|

weifbæRugt`Z gnuU weifbæe`jU I MVb cwi j`jZ nq| gnuU e`jU I MVb t`f` fig KI`Y dmt`j i dj b`tk A`tbKv`stk c`f`meZ Kti | A`tbK mgq Av`Zii<sup>3</sup> fig KI`Y Kti gnuU t`f`S`Z , Yvej x b`o Kiv nq| Kv`RB Kul. Rugt`Z gnuU MVb`tk mivK ti`L fig KI`Y Kiv Dv`PZ| GRb` t`UKmB fig KI`Yi aviYv c`wZ`Z n`qt`Q| mPivPi c`xwZi fig KI`Yi t`P`q t`UKmB fig KI`Y aviYv c`wZ`Z , i`æ`j t`qv n`qt`Q| mivKfv`te fig KI`Y Kti Kul. Rugi weifbæ t`f`S`Z , Yvej x Db`z Kiv hvq|

weifbæRugt`Z gnuU weifbæe`jU I MVb cwi j`jZ nq| gnuU e`jU I MVb t`f` fig KI`Y dmt`j i dj b`tk A`tbKv`stk c`f`meZ Kti | A`tbK mgq Av`Zii<sup>3</sup> fig KI`Y Kti gnuU t`f`S`Z , Yvej x b`o Kiv nq| Kv`RB Kul. Rugt`Z gnuU MVb`tk mivK ti`L fig KI`Y Kiv Dv`PZ| GRb` t`UKmB fig KI`Yi aviYv c`wZ`Z n`qt`Q| mPivPi c`xwZi fig KI`Yi t`P`q t`UKmB fig KI`Y aviYv c`wZ`Z , i`æ`j t`qv n`qt`Q| mivKfv`te fig KI`Y Kti Kul. Rugi weifbæ t`f`S`Z , Yvej x Db`z Kiv hvq|

weifbæRugt`Z gnuU weifbæe`jU I MVb cwi j`jZ nq| gnuU e`jU I MVb t`f` fig KI`Y dmt`j i dj b`tk A`tbKv`stk c`f`meZ Kti | A`tbK mgq Av`Zii<sup>3</sup> fig KI`Y Kti gnuU t`f`S`Z , Yvej x b`o Kiv nq| Kv`RB Kul. Rugt`Z gnuU MVb`tk mivK ti`L fig KI`Y Kiv Dv`PZ| GRb` t`UKmB fig KI`Yi aviYv c`wZ`Z n`qt`Q| mPivPi c`xwZi fig KI`Yi t`P`q t`UKmB fig KI`Y aviYv c`wZ`Z , i`æ`j t`qv n`qt`Q| mivKfv`te fig KI`Y Kti Kul. Rugi weifbæ t`f`S`Z , Yvej x Db`z Kiv hvq|

weifbæRugt`Z gnuU weifbæe`jU I MVb cwi j`jZ nq| gnuU e`jU I MVb t`f` fig KI`Y dmt`j i dj b`tk A`tbKv`stk c`f`meZ Kti | A`tbK mgq Av`Zii<sup>3</sup> fig KI`Y Kti gnuU t`f`S`Z , Yvej x b`o Kiv nq| Kv`RB Kul. Rugt`Z gnuU MVb`tk mivK ti`L fig KI`Y Kiv Dv`PZ| GRb` t`UKmB fig KI`Yi aviYv c`wZ`Z n`qt`Q| mPivPi c`xwZi fig KI`Yi t`P`q t`UKmB fig KI`Y aviYv c`wZ`Z , i`æ`j t`qv n`qt`Q| mivKfv`te fig KI`Y Kti Kul. Rugi weifbæ t`f`S`Z , Yvej x Db`z Kiv hvq|

A`tbK Kul. Riw g`vMZ Prtli dtj k<sup>3</sup> jv0j `fii (Plough pan) mwó nq| dtj Riw`Z cwb Rtg `vtK| fig KI`Yi gva`tg G iKg jv0j `li tft½ w`tq Kul. Riw Dbaq b`N`itv h`q|

k`tm`i exR g`vMZ mw`z`ite ecb I Zvi A`zi`v`Mg, Piv`i`v`Y Ges Mt`Qi ep`x I Dbaq b`w`DZ Kivi Rb` g`vMZ t`f`S`Z, i`m`v`q`b`K I `R`ie`K c`w`ie`Z`f`bi gva`tg Ab`K`j Ae`v `Zwi K`f`i Kul. h`S`C`w`Z O`v`i`v` g`v`M`i Av`j`v`ob`t`K fig KI`P etj |

fig KI`P`K w`w`f`b`e`v`te ms`A`w`q`Z Kiv n`q`q`Q| k`tm`i exR g`vMZ mw`z`ite ecb I Zvi A`zi`v`Mg, Piv`i`v`Y Ges Mt`Qi ep`x I Dbaq b`w`w`DZ Kivi Rb` g`vMZ t`f`S`Z, i`m`v`q`b`K I `R`ie`K c`w`ie`Z`f`bi gva`tg Ab`K`j Ae`v `Zwi K`f`i Kul. h`S`C`w`Z O`v`i`v` g`v`M`i Av`j`v`ob`t`K fig KI`P etj |

A`ov`k k`Z`v`xi c`l`g w`t`K (1739) t`R`t`U`v`j b`r`tg G`K`R`b w`e`l`U`K Kul. w`e` c`i`k`w`<sup>3</sup> O`v`i`v` jv0j P`w`j`tg K`x`f`ite D`E`g`i`f`c Riw P`v`l K`f`i d`m`j D`r`c`v`b Kiv h`v`q Zv t`L`v`b| Zvi g`z`Z Riw D`E`g`i`f`c Kul`Z n`j M`v`Q w`k`K`to`i m`v`v`t`h` Kul`Z g`v`M`i m`y`f` K`Y`v L`v` w`m`v`te m`i`v`m`i M`h`Y K`f`i | KI`P`B m`v`i etj w`Z`v`b D`t`j`L K`f`i`b |

c`ie`Z`f`Z M`v`Q`c`j`v`i L`v`v`c`v`v`b m`u`t`K`w`e`A`b`x`iv m`g`K av`i`Y`v` j`v`f` K`f`i`b| g`v`M`i m`y`f` K`Y`v M`v`Q Av`t`S` L`v` w`m`v`te M`h`Y K`f`i b`v`| g`v`M`i`Z w`w`f`b`e`c`K`v`i t`g`S`j`K D`c`v`v`b`t`K M`v`Q w`w`f`b`e` Av`K`v`i L`v` w`m`v`te M`h`Y K`f`i | fig KI`P`Yi dtj GB L`v`v`c`v`v`b`\_t`j`v` g`w`E`K`w`Z c`w`b`i m`v`t`\_`e`x`f`Z n`q` L`v` w`m`v`te A`w`f`m`E`Y (Osmosis) c`h`j`q`v`q` M`v`Q t`c`h`t`Q| g`v`M`i Kul`Z n`l`q`v`i dtj g`j` I w`k`K`o` g`v`M`i M`f`x`i` c`h`ek K`i`z`Z c`v`t`i | dtj g`v`M`i c`w`b av`i`Y `f`l`g`Z`v` ep`x` c`v`q` Ges Ab`w`t`K Av`M`v`Q`v``g`b`n`q`|

A`ab`v` g`v`M`i`K b`b`Z`g` KI`P` K`f`i i`f`l`Y`K`j` KI`P` c`x`w`Z`i (Conservation tillage) av`i`Y`v` Ae`Z`v`i`Y`v` n`q`q`Q |

D`w`f`i` ep`x`i Rb` fig KI`P` Kivi ci g`v`M`i` th` t`f`S`Z Ae`v` c`w`b`n`q` Z`v`t`K KI`e`v` (Tilth) etj |

D`w`f`i` ep`x`i Rb` fig KI`P` Kivi ci g`v`M`i` th` t`f`S`Z Ae`v` c`w`b`n`q` Z`v`t`K KI`e`v` (Tilth) etj | KI`e`v` g`v`M`i M`i`Z`K`j` (Dynamic) Ae`v`i` G`K`i`U` i`j`c`| h`L`b` t`K`v`b` g`v`M`i`K` ex`f`R`i A`zi`v`M`g` I d`m`j` ep`x`i Rb` D`ch`y` K`f`i P`v`l Kiv n`q` Z`L`b` Z`v`t`K` ex`R`Z`j`v` (Seed bed) etj v`n`q` Ges g`v`M`i` H` Ae`v`t`K` f`ij` KI`e`v` etj |

KI`e`v` K`\_`v`U` G`K`i`U` h`\_`v`h`\_`k`a` b`v` n`j` I` Gi` O`v`i`v` Kul. w`e` M`Y` w`w`f`b`e`m`g`q` w`w`f`b`e`i` Kg` Ae`v` etj \_v`t`K`b`| Av`e`v`i` w`w`f`b`e`c`K`v`i` d`m`t`j`i` ex`R` w`w`f`b`e`i` Kg` KI`e`v`i` D`c`h`v`M`x`| ex`f`R`i` Av`K`v`i` h`Z` t`Q`v` n`q` KI`e`v`i` Z`Z` m`y`f` n`l`q`v` ev`A`b`x`q`| t`h`g`b` Z`v`g`v`K` I` w`c`q`v`t`R`i` ex`f`R`i` Rb` L`y` w`P`K`b` KI`e`v` c`h`q`v`R`b`| A`c`i` c`t`f`l` f`z`v` I` t`Q`v`v`i` ex`R` eo` Av`K`v`i`i` etj` G`t`i` ex`f`R`i` Rb` g`v`S`w`i` i`K`f`g`i` KI`e`v`i` D`c`h`v`M`x`| K`v`t`R`B` KI`e`v`i` e`S`v`t`Z` K`I`K`f`i` i` w`b`K`U` f`ij` , g`v`S`w`i` ev` w`b`a`g`v`t`b`i` KI`e`v`i` etj` e`S`v`t`b`v` n`q`|

**f`v`j` KI`e`v`i` , Y`e`j`x` (Qualities of good tilth)**

f`v`j` KI`e`v`i`q` Riw`g`i` w`b`a`g`v`t`b`i` L`Z` , Y`e`j`x`\_`v`K`v` ev`A`b`x`q`:

1. ch`f`b` c`w`i` g`v`Y` Av``Z`v`
2. ch`f`b` ev`q`y`p`j` v`P`t`j`i` Ae`v`
3. ep`i` c`w`b`i` `z` Ab`g`v`t`ek` `f`l`g`Z`v`
4. g`v`M`i` e`U`z`Z`v`

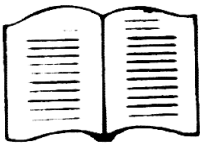
g`v`M`i` L`y` m`y`f`v`ite` KI`e`v`i`q`\_`v`K`f`j` (Fine tilth) ep`i` c`i` i`w`k`t`q` w`c`v`v`i` g`Z` t`e`t`K` h`v`q`| dtj` c`ie`Z`f`Z` H` g`v`M`i`Z` c`w`b` w`t`j` , t`m` g`v`M`i` Av`i` c`w`b` t`k`v`l`Y` K`i`z`Z` c`v`t`i` b`v` Ges` d`m`j` P`r`t`l`i` Rb` A`t`K`f`R`v` n`q` c`t`o`|

### fiq KIYi Dtik

fiq KIYi gj- Dtik  
nt"Q GKiu DEg exRZj v  
`Zwi Kiv, AvMvQv ubqšp  
Kiv Ges Dv"e evxi  
Abkjtj gmlU tfsZ  
Yiej xi Dbqb mvab Kiv|

fiq KIYi gj- Dtik" nt"Q GKiu DEg exRZj v `Zwi Kiv, AvMvQv ubqšp Kiv Ges Dv"e evxi Abkjtj gmlU tfsZ , Yiej xi Dbqb mvab Kiv| G. tjt v ubqšp Dtj L Kiv ntjv:

1. c0 ugKfite `p RgvUex Pivv gmlU Avj Mv Kiv|
2. iKtbr RigtZ gmlU vjv tft½ SzSzv Kiv hvZ exR gmlU mvt\_ Nubofite vgtk thZ cvti | extRi Avkcvtk extRi AvqZtbi mgvb AmsL" evqzY"dvKv `vb \_vKtj extRi A½zv`Mg fij nq|
3. Avj Mv Kiv gmlUk GKUv mvi`0 `pZv `vb Kiv hvZ gmlU, evqyl Av`Zv GKiu mekl AbqvZ me`gvb \_vtK|
4. Rigi AvMvQv ašm Kiv Ges cPbthvM" AvMvQv gmlU m½ vgvktq t`qv|
5. mvi I `Re c`v\_ gmlU mvt\_ vgvktq t`qv|
6. RigtZ m0 qvZKvi K vevfbac`v\_° i- Kiv Ges tcvKv-gvKo ašm Kiv|
7. iKtbr RigtZ gmlU %KukKbvj x (Capillary pore) tft½ v`v`q cvmbi ev"uvqb Kgvb|
8. gmlU DcKiv x RievYvgtni esk evx mnRZi Kiv|
9. fiq qvqvvtai Rb" Rigi Dcvi fivM mgvb Kti `Zwi Kiv|



### mvi gg

kfm"i exR gmlUz m0z vte ecb I Zvi A½zv`Mg ev Pivv tivoY Ges cieZp chq Pivi evx I Dbqb vbw0Z Kivi Rb" gmlUz tfsZ, ivmivqvbK I `RieK cvieZpbi gva`tg Abkjtj Ae`v `Zwi Kti Kul. hšcvmZ 0viv gmlU Avtj vobtk fiq KIY evj nq| fiq KIYi Dtik" ntjv GKiu DEg exRZj v `Zwi Kiv, AvMvQv ubqšp Kiv Ges Dv"e evxi Abkjtj gmlU tfsZ , Yiej x Dbqb mvab Kiv| Dv"e`i evxi Rb" fiq KIY Kivi ci gmlU th tfsZ Ae`v c0B nq ZvtK gmlU KIe`v etj | gmlU KIe`v fij, gvSmi I vbgvvtbi ntZ cvti | GKiu fij KIe`v c0B RigtZ chfb Av`Zv I evqyPj vPtj i Ae`v, evpi cvmbi `z Abgdek qvgZv I gmlU f½jZv \_vKv evAbvq|



**cuVhEi gj`iqb 2.1**

mWVK DEti i cuKqUK wPy (v) w b

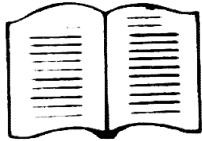
1. Pvlvef` i cUg KVR Kx?  
 K. exR ecb    L. tmP cUvb    M. fig KI?    N. mvi cUqM
2. KI?Yi mrvvth` Kx ubqšY Kiv nq?  
 K. KxU cZ½    L. AvMvQv    M. tivM ejvB    N. tcvKv-gvKo
3. fig KI?Yi cAvb Dfík` Kx?  
 K. GKwU DEg exRZjv ^Zwi Kiv    L. gvUj ZvcgvTiv ubqšY Kiv  
 M. gvUtZ mvi cUqM Kiv    N. gvUj wXjv fv½v
4. tKvbuU gvUj KI?e`v?  
 K. fig KI?Yi ci gvUj tfSZ Ae`v    L. gvUj PvlvcfhwMZv  
 M. cvbi Abzdek 1lgZv    N. gvUj AvMvQv gY Ae`v
5. tKvbuUj cvigvYi Dci gvUj , Yv, Y ubfP Kti?  
 K. `Re c`vL©    L. Rjxq ev@ú    M. ZvcgvTiv    N. evqyPj vPj
6. KI?Yi dtj gvUtZ Kx evx cvq?  
 K. cvbi cvigvY    L. mfi i cvigvY    M. ZvcgvTiv    N. AvMvQv
7. KI?Y Kx ubab nq?  
 K. DcKvix RxevYy    L. AcKvix KxU-cZ½    M. KvKov    N. tKtPv

### cW 2.2 fig KI<sup>o</sup> c<sup>x</sup>uZ, g<sup>u</sup>Li Av`Zv I fig KI<sup>o</sup>Yi mgq



G cvV tkfI Avciob

- ◆ fig KI<sup>o</sup> c<sup>x</sup>uZ m<sup>o</sup>u<sup>t</sup>K<sup>o</sup>qj LtZ cvi teb|
- ◆ c<sup>o</sup>ij Z fig KI<sup>o</sup> I i<sup>o</sup>YKxj fig KI<sup>o</sup>Yi avi Yv D<sup>t</sup>jl Ki<sup>t</sup>Z cvi teb|
- ◆ g<sup>u</sup>Li Av`Zv u<sup>b</sup>Y<sup>o</sup>q K<sup>t</sup>i fig KI<sup>o</sup>Yi mgqK<sup>v</sup>j u<sup>b</sup>Y<sup>o</sup>q Ki<sup>t</sup>Z cvi teb|



mvdj`RbKfite dmj Drcv`tbi GK<sup>u</sup> Ab`Zg ce<sup>o</sup>kZ<sup>o</sup>ntjv fig KI<sup>o</sup>| fig KI<sup>o</sup> u<sup>e</sup>fb<sup>o</sup>e ai<sup>t</sup>bi ntq`\_vtK| Rigi t<sup>f</sup>SZ Ae`v, Av`Zvi c<sup>u</sup>i g<sup>v</sup>Y, KI<sup>o</sup>Yi mgq, k<sup>l</sup>gtKi ch<sup>o</sup>BZv, figi eU<sup>z</sup>Zv c<sup>f</sup>uZi Dci u<sup>f</sup>iE` K<sup>t</sup>i fig KI<sup>o</sup>Yi ai<sup>b</sup> u<sup>b</sup>a<sup>f</sup>Y Kiv nq|

fig KI<sup>o</sup>tK c<sup>o</sup>v<sup>b</sup>Z`g<sup>f</sup>v<sup>t</sup>M f<sup>v</sup>M Kiv nq h\_v:

#### 1. c<sup>o</sup>ugK KI<sup>o</sup> (Primary tillage)

dmj g<sup>v</sup> t`\_tK m<sup>s</sup>M<sup>o</sup>ni ci H g<sup>v</sup>V cieZ<sup>o</sup>dm<sup>t</sup>j i exR te<sup>v</sup>br I Priv tiv<sup>o</sup>tYi ce<sup>o</sup>ch<sup>o</sup>S<sup>l</sup>th mg`IKI<sup>o</sup> K<sup>v</sup>R Kiv nq Z<sup>v</sup>tK m<sup>v</sup>avi Y KI<sup>o</sup>/ce<sup>o</sup>KI<sup>o</sup> er c<sup>o</sup>ugK KI<sup>o</sup> etj |

dmj g<sup>v</sup> t`\_tK m<sup>s</sup>M<sup>o</sup>ni ci H g<sup>v</sup>V cieZ<sup>o</sup>dm<sup>t</sup>j i exR te<sup>v</sup>br I Priv tiv<sup>o</sup>tYi ce<sup>o</sup>ch<sup>o</sup>S<sup>l</sup>th mg`IKI<sup>o</sup> K<sup>v</sup>R Kiv nq Z<sup>v</sup>tK m<sup>v</sup>avi Y KI<sup>o</sup>/ce<sup>o</sup>KI<sup>o</sup> er c<sup>o</sup>ugK KI<sup>o</sup> etj |

G KI<sup>o</sup> K<sup>v</sup>tR g<sup>u</sup>Li tek f<sup>v</sup>tj v<sup>f</sup>ite Z<sup>z</sup>b<sup>v</sup>g<sup>j</sup>-K<sup>f</sup>ite te<sup>u</sup>k M<sup>f</sup>ixi Z<sup>v</sup>q Av<sup>t</sup>j u<sup>o</sup>oZ nq| G<sup>t</sup>Z e`eU<sup>z</sup> j<sup>v</sup>o<sup>j</sup> mg<sup>r</sup> f<sup>v</sup>mi I eo Av<sup>k</sup>v<sup>t</sup>i i nt<sup>z</sup> nq| Rigi Av<sup>k</sup>v<sup>t</sup>i t<sup>o</sup>u<sup>l</sup> n<sup>l</sup> q<sup>v</sup>i Rb` j<sup>v</sup>o<sup>j</sup> N<sup>j</sup>v<sup>t</sup>Z Am<sup>o</sup>ear nt<sup>j</sup> eo Av<sup>k</sup>v<sup>t</sup>i i t<sup>k</sup>v`v<sup>j</sup> <sup>o</sup>iv<sup>l</sup> c<sup>o</sup>ugK KI<sup>o</sup> K<sup>v</sup>R Kiv hvq|

Av<sup>o</sup>S<sup>l</sup>KI<sup>o</sup> K<sup>v</sup>R Kiv nq exR ecb er Priv tiv<sup>o</sup>tYi ci t`\_tK Av<sup>o</sup>c<sup>o</sup>K<sup>t</sup>i dmj m<sup>s</sup>M<sup>o</sup>h Kiv ch<sup>o</sup>S<sup>l</sup>|

#### 2. Av<sup>o</sup>S<sup>l</sup>KI<sup>o</sup>/g<sup>v</sup>a`ugK KI<sup>o</sup> (Inter tillage)

G KI<sup>o</sup> K<sup>v</sup>R Kiv nq exR ecb er Priv tiv<sup>o</sup>tYi ci t`\_tK Av<sup>o</sup>c<sup>o</sup>K<sup>t</sup>i dmj m<sup>s</sup>M<sup>o</sup>h Kiv ch<sup>o</sup>S<sup>l</sup>| Rigi t<sup>x</sup>j v`\_t<sup>o</sup>v Kiv, Av<sup>o</sup>M<sup>o</sup>Q<sup>v</sup> c<sup>u</sup>i<sup>o</sup>vi Kiv, Av<sup>o</sup>Bo<sup>v</sup> t`qv, M<sup>v</sup>t<sup>o</sup>Q<sup>i</sup> t<sup>l</sup>M<sup>v</sup>o<sup>v</sup>q g<sup>u</sup>Li Z<sup>z</sup>j t`qv BZ`w` K<sup>v</sup>R<sup>t</sup>K Av<sup>o</sup>S<sup>l</sup> KI<sup>o</sup> ejv nq|

fig KI<sup>o</sup>Yi c<sup>v</sup>iZ<sup>b</sup> I bZ<sup>b</sup> avi Yvi Av<sup>t</sup>j vtK`j<sup>u</sup>v KI<sup>o</sup> c<sup>x</sup>uZi AeZ<sup>v</sup>i Yv ntq<sup>t</sup>o:

#### 1. c<sup>o</sup>ij Z fig KI<sup>o</sup> c<sup>x</sup>uZ (Conventional tillage)

G c<sup>x</sup>uZ<sup>t</sup>Z R<sup>u</sup>gtK u<sup>e</sup>fb<sup>o</sup>e i Kg fig KI<sup>o</sup> h<sup>o</sup>S<sup>o</sup>c<sup>u</sup>WZ u<sup>o</sup>tq P<sup>v</sup>l Kiv nq| Av<sup>g</sup>v<sup>t</sup>`i t`tk G c<sup>x</sup>uZB c<sup>o</sup>ij Z|

#### 2. i<sup>o</sup>YKxj fig KI<sup>o</sup> c<sup>x</sup>uZ (Conservation tillage)

G c<sup>x</sup>uZ<sup>t</sup>Z KI<sup>o</sup> m<sup>o</sup>u<sup>b</sup>eKi<sup>t</sup>Z`e<sup>o</sup>A<sup>u</sup>bK u<sup>f</sup>iE<sup>t</sup>Z b`bZg j<sup>v</sup>o<sup>j</sup> P<sup>v</sup>l I gB t`qv nq| GL<sup>v</sup>t<sup>b</sup> i<sup>v</sup>m<sup>v</sup>q<sup>u</sup>bK D<sup>c</sup>itq evj v<sup>b</sup>`gt<sup>b</sup>i Dci u<sup>e</sup>t<sup>k</sup>l t<sup>r</sup>vi t`qv nq| Av<sup>g</sup>v<sup>t</sup>`i t`tk G c<sup>x</sup>uZi e`en<sup>v</sup>i G<sup>t</sup>Ke<sup>t</sup>i B Kg| u<sup>e</sup>t`tk G c<sup>x</sup>uZ<sup>t</sup>Z dmj Drcv`tbi Rb` u<sup>e</sup>fb<sup>o</sup>e i Kg h<sup>o</sup>S<sup>o</sup>c<sup>u</sup>WZi m<sup>v</sup>v<sup>o</sup>t<sup>h</sup> g<sup>u</sup>Li t<sup>k</sup> h<sup>o</sup>u<sup>o</sup>e Kg Av<sup>t</sup>j u<sup>o</sup>oZ K<sup>t</sup>i g<sup>u</sup>Li M<sup>v</sup>b<sup>t</sup>K A<sup>o</sup>Y<sup>o</sup>t<sup>o</sup>i t<sup>l</sup> P<sup>v</sup>l Kiv nq|

#### i<sup>o</sup>YKxj fig KI<sup>o</sup>Yi m<sup>o</sup>ear I Am<sup>o</sup>ear

m<sup>o</sup>ear (Advantages)

1. g<sup>u</sup>Li M<sup>v</sup>b (Structure) Db<sup>z</sup> K<sup>t</sup>i Ges`Re c`vt`\_P c<sup>u</sup>i g<sup>v</sup>Y e<sup>u</sup>x K<sup>t</sup>i |
2. R<sup>j</sup>v u<sup>b</sup>, k<sup>l</sup>gK I h<sup>o</sup>S<sup>o</sup>c<sup>u</sup>WZi LiP e<sup>o</sup>t<sup>o</sup>P|
3. g<sup>u</sup>Li <sup>o</sup>q<sup>t</sup>i<sup>v</sup>a K<sup>t</sup>i Ges c<sup>o</sup>eng<sup>v</sup>b c<sup>u</sup>mbi (Run off water) , Y<sup>v</sup>, Y e<sup>u</sup>x K<sup>t</sup>i |
4. g<sup>u</sup>Li KI<sup>o</sup>e`v Ges g<sup>u</sup>Li nt<sup>z</sup> M<sup>v</sup>t<sup>o</sup>Q<sup>i</sup> c<sup>u</sup>mb D<sup>t</sup>E<sup>v</sup>j b <sup>o</sup>g<sup>z</sup>v m<sup>u</sup>Wk i vtL er Db<sup>z</sup> K<sup>t</sup>i |
5. dm<sup>t</sup>j i dj b c<sup>o</sup>ij Z fig KI<sup>o</sup>Yi gZB nq|

6. gmltZ AbRitei epX Niluq gmlU `RieK Ae`vi DbmZ NUvq|

**Amzar (Disadvantage)**

- 10 weirfbacKvi A\_er weikl ai`Yi fig KI` hšcwiZi c`qvrBxqZv t`Lv t`q|
- 20 mvaviYZ ivmqubKfite dmtj i evj vB `gtbi Dci wbfPkjy Zv evto | ivmqubK AvMvQv `gb c`wZ AKvhRi ntj AvMvQvi c` g`re tefo thtZ cvti |
- 30 c`rij Z fig KI`Yi Z`bvq G c`wZtZ Pz, mvi I AvMvQvirkK (Weedicide) gmltZ fvtj vfvte uguk`q c`qvm Kiv hvq bv|
- 40 bvBtUtRb I mjj dvi RvZxq mvti i mnRj f`Zv Ktg hvl qvq teuk mvi c`qvm Ki`Z nq|
- 50 gmlU pH Ktg hvq| dtj teuk `Re c`v`q Pz c`qvm Ki`Z nq|
- 60 A`bK mgq dmtj i ecb I tivcY mgq wcuQtq hvq|

**gmlU Av`Zv I fig KI`Yi mgq**

Rug Pvl menxb Ae`vq `vKtj Gi Dcwi fM k<sup>3</sup> `vtK| dtj epoi cmb mnR gmlU wFZti c`ek Ki`Z cvti bv Ges epoi cmb c`vngvb ntq Mmota hvq| fig KI`Yi gva`tg Rugi Dcwi fvtMi gmlU Avj Mv Kiv nq| dtj epoi cmb gmltZ c`ek Kti Ges Avt`Avt`I gmlU GB cmb tkvly Kti tbq| h\_vh\_fite fig KI`Yi dtj gmlU `vby` tjj v mgsMwZ ntq gmlU MvB `Zwi Kti Ges gmlU cmb aviy qigZv epX cvq| GB mgsMwZ gmlU thgb cmb tkvlb Kti ati ivL`Z cvti tZgnb `vbi dtk dtk evqy Ae`vb Ki`Z cvti | dmtj i ep`xi Rb` gmlU GB Av`Zv I evqyDf`ti B c`qvrB|

gmlU Av`Zv I fig KI`Yi mgq- G `w` w`elq m`u`k`KI`Ki mivK aviyv `vkv c`qvrB| Rugi Av`Zv Abyvzi fig KI`Yi Ki`Z nq| Rugi mivK Av`Zvq fig KI`Yi bv Ki`Z fij KI`e`vi m`o` nq bv|

Rug Pvl Kivi Rb` c`qvrBxq cwi gvY gmlU Av`ZvK OtRv` Ae`v ej v nq| gmlU OtRv` Ae`v ejS c`g Pvl w`Z nq| GtKB Kul.ue`MY ūgv qigZv (Field capacity) etj b|

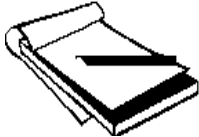
Rug Pvl Kivi Rb` c`qvrBxq cwi gvY gmlU Av`ZvK OtRv` Ae`v ej v nq| gmlU OtRv` Ae`v ejS c`g Pvl w`Z nq| GtKB Kul.ue`MY ūgv qigZv (Field capacity) etj b| Gil Ggb GKw Ae`v hLb gmlU m`y` dtk, tjj v (Micropores) cmb ōviv c`Y`vtK Ges GKUzeo dtk, tjj v (Macropores) evZvm ōviv c`Y`vtK|

mivKfvte GK LŪ Rugi gvV qigZv wby` Ki`Z ntj gvVutK c`Y`mP w`tq GKw w`cj w`tq tXtK w`Z nte| gmlU ev`urfeb tiva Kivi Rb` gvVutK w`cj w`tq tXtK t`I qv nq| ZvtZ gmlU mivK Av`Zvi cwi gvY Rvrv m`e| g`y` w`v`k`bi gva`tg G gmlU t`tK AwZwi<sup>3</sup> cmb w`v`nkZ ntq hvte| GB g`y` w`v`nkZ gmltZ cmb I evqyGKv mgZvq Avmte| G Qvovl KtqK tKwR gmltK fij fvte wfvRtq GK LŪ Kvc wKsev e`vq Sij`tq ti`LI gvV qigZv wby` Kiv m`e| wfvR gmlU G iKg Sij`tq ivL`tj AwZwi<sup>3</sup> cmb S`ti c`ti hvte Ges gmlU m`y` I eo dtk, tjj v cmb I evZvm ōviv c`Y`ntq GKv mgZvq Avmte, hLb cmb Aviy S`ti c`te bv|

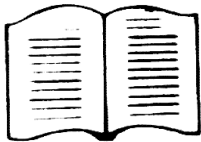
gvV ch`q Pvlxv nvtZi Abyvzi gva`tg gmlU GB ūgv qigZv ev OtRv` Ae`v wby` Kti `vtK| G c`wZtZ GK gmlU nvtZ wbtq Pvc t`qvi ci tQto w`tj hw` t`Lv hvq Zv Pvc Lvl qv AvKwZtZB itqtQ Zvntj G gmltK OtRv` cix`qvi cieZ`c`t`q`c thtZ nte| nvtZi P`tc H gmlU w`tq gmlU ej `Zwi Kti 1 ugUvi Dpzt`K mvavi Y k<sup>3</sup> gmlU Dci Avt`ItQto w`Z nte| tQto t`evi mgq ej c`qvm wKsev 1 ugUviti i Kg ev teuk nI qv DvPZ bq| `Zwi ej wU gmltZ cZtbi ci hw` t`Lv hvq th Zv Pvc Lvl qv Ae`vq itqtQ Zvntj e`stZ nte

gmltZ KIŦ DcŦhvlx ōtRvŦ AvŦm bvB| G Ae`vq RvŦ Pvl Kij jvŦtj gml AvUŦK hvte,  
dmj i gml Dēvte bv Ges KIŦYi KvŦR mgq tevk tbe| G iKg Ae`vq fvŦ KIŦY gmlI  
Mvb bŦ ntq hvq| Avi hv` cWZZ ejw tft½ Qnotq hvq Zvtj eŦZ nte gmltZ ōtRvŦ  
GŦmtQ| AvfÁ Pvlxv RvŦi gmlŦK G iKg gvl gv`tg ej`Zwi i cixŦv bv KŦiI RvŦi  
Dci w`tg tntw wŦtqB eŦZ cvŦi RvŦtZ ōtRvŦ GŦmtQ wKbv?

wfRv RvŦtZ Kv`v PŦŦI i (Pudding) Rb` gmltZ ōtRvŦ Avmvi cŦqvRb tbB| th tKvb mgq  
Kv`v Kivi Rb` RvŦ Pvl Kiv tŦtZ cvŦi | ZvB AvDk avb I cvU dmj KZŦbi ci wfRv RvŦ  
cŦg evi KIŦ Kij dmj i AemkŦisk gmltZ vgtk hvq Ges `Re mŦi cwi YZ nq|



**AbŦxj b (Activity):** fvŦ KIŦYi cŦeŦfvŦi DchŦ Av`ZvŦK tKb , iazj t`qv DŦPZ? fvŦ  
KIŦYi DcŦhvlx Av`Ae`v Kxfvte kbr³ Kiteb?



**mivgg®**

fvŦ KIŦ cāvz `ŦKvi - cŦvŦK KIŦ I gv`vŦK KIŦ| GŦK Avevi cvŦZb I bZb avi Yvi  
AvŦj vŦK cŦvŦj Z KIŦ cxvZ I iŦYKxj KIŦ cxvZ AvŦvŦi AvŦj vPbv Kiv ntqŦQ| cŦvŦj Z  
KIŦ cxvZtZ RvŦtK wvfbv iKg fvŦ KIŦ hŦŦwzi mrvŦh` hŦ ōfvte Pvl Kiv nq|  
iŦYKxj cxvZtZ b`bZg msl`K Pvl t`qv nq Ges ivmŦvŦK DcvŦq AmvŦv I evj vB  
e`e`vcbvi Dci tRvi t`qv nq| gmlI ōtRvŦ Ae`v eŦS RvŦtZ cŦg Pvl w`tZ nq| RvŦ Pvl  
Kivi Rb` cŦqvRbxq cwi gvY Av`ZvŦK gmlI tRv Ae`v ev gvW ŦŦgZv ev v nq| gmlI ōtRvŦ  
Ae`v wYŦ KŦtZ GK gvl gml wŦtq GKwU ej`Zwi KŦi 1 vŦvŦi DŦt`ŦK mŦavi Y k³ gmlI  
Dci AvŦ`ŦŦto w`tj hv` cWZZ ejw tft½ Qnotq hvq Zvtj eŦZ nte gmltZ ōtRvŦ  
GŦmtQ| wfRv RvŦtZ Kv`v PŦŦI i Rb` gmltZ ōtRvŦ Avmvi cŦqvRb tbB|



### cuVhEi gj'iqb 2.2

mWVK DEti i cuKqUK wPy (v) w b

1. mvari Y KIYi Aci big Kx ?

K. cU'igK KIY

L. gva'igK KIY

M. Avst KIY

N. fig KIY

2. Avst KIYi Aci big wK ?

K. cU'igK KIY

M. mvari Y KIY

L. ceK KIY

N. gva'igK KIY

3. i qbkxj fig KIY dmtj i dj b tKgb nq?

K. Kg nq

L. cDij Z fig KIYi tPtq Kg nq

M. tewk nq

N. cDij Z fig KIYi gZ ewx cvq

4. fig KIY tKvb Ae'iq Ki tZ nq?

K. mWVK Zvcgv'iq

L. mWVK Av'Z'iq

M. wFRv Ae'iq

N. fij KIe'iq

5. wFRv gWUtZ tKvb Ae'iq Pvl w tZ nq?

K. 0tRv0 Ae'iq

L. mWVK Zvcgv'iq

M. fij Avenl qvq

N. wFRv Ae'iq th tKvb mgq



### e`enwiK

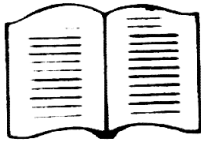
### cw 2.3 gmlj eljU I Av`Zv Abjnti gmlj Pvlvc`thmZv ibYq



G cvV tk`l Avcub

- ◆ gmlj eljU kbr<sup>3</sup> Ki`Z cvi`teb|
- ◆ gmlj eljU I gmlj Av`Zv m`utK`e`enwiK Avb jvf Ki`Z cvi`teb|
- ◆ gmlj eljU I Av`Zv Abjnti gmlj Klb Pvl Ki`Z nte Zv ibYq Ki`Z cvi`teb|

### c`umwK Avtj vPbv



gmlj DePZv ibfP Kti  
gmlj Mvb, eljU ev Mub,  
im aviY qgZv BZ`w`i  
Dci |

gmlj c`kuzK e`l gmlj ntjv Dv`c Rbvtbvi c`vb gra`g| G gmlj LvbR`e`, c`vb, evqyl  
`Re c`vt`P mgstq GKw th`smK c`v`q gmlj DePZv ibfP Kti gmlj Mvb, eljU ev Mub,  
im aviY qgZv BZ`w`i Dci | gmlj eljU, Avz; qviZ; `vbieUb Ges`Re c`vt`P cwi gvY  
BZ`w`i Dci ibfP Kti gmljZ tkvb&dmj Pvl Kiv hute| dmj Drcv`tbi m`1/2 gmlj  
DePZv I Drcv`b qgZv ibeofite RwoZ| Kw.Drcv`tb mdj Zv I `qZv AR`bi Rb`  
gmlj eljU I gmlj Av`Zv mek- l`yi gra`tg eljU I Av`Zv ubafY Qvovl Avf`AZv ibfP  
c`xwZ G m`utK`qgvlvgm Avb AR` Kiv m`e| nvtZi Abjnti gra`tg G m`utK`Rvbi  
Rb` gmlj cix`qv c`xwZ ibtP Avtj vPbv Kiv ntjv |

tKvb g`EKvq eZ`vb emj,  
cuj I K`g Kvi  
Avtcr`qK AbsvZ`K gmlj  
eljU etj |

**msAv:** tKvb g`EKvq eZ`vb emj, cuj I K`g KYvi Avtcr`qK AbsvZ`K gmlj eljU  
etj | Rvq Pvl Kivi Rb` c`qvRbxq cwi gvY gmlj Av`ZvK gmlj otRv` Avmv etj | Kw.  
meAvtb G`K ogv qgZv` (Field capacity) etj |

### Z`Ej (Theory)

1. tKvb gmljZ tKvb c`kvti i KYv Kx cwi gvY AvtQ Zv RvbtZ cvi`tj Gw tKvb tkbxi gmlj  
Zv e`sv hvq| gmlj newfbec`kvi KYv newfbec`AbjntZ wgtk cvi`umiK mgstq newfbec`  
tkvYi gmlj m`o Kti | thgb- t`v-Atk gmlj, tetj t`v-Atk gmlj, GtWj t`v-Atk gmlj  
BZ`w`i |
2. gmlj Av`Zv tR`tb Pvlvc`thmZv ibYq Kiv|

### KvRi aviv

#### 1. gmlj eljU ibYq

gv t`tk msMpxZ bgbv mg`ni c`Z`KwLi 50 Mtg Kti Avjv`v Avjv`vrite nvtZi Zvj`jZ  
ibtq c`vb vvi v m`3 Kiab| Zvici GB m`3 gmlj nvtZi mrvth` ej, tmvRv``K, Pm c`fuz  
Avkuz. t`qvi tPov Kiab|

μngK bs	chfeŋY	mmxvš
1	gmlU KYv,tjv AvVtjv AbfZ nq  ej, ˘PK, Pμ, w fRvKwZ. cfwZ. wevfbaAvKwZ. t`qv hvq  gmlU dvtU bv	GtUj gmlU
2	gmlU KYv,tjv LmLtm  gmlU KYv,tjv PKPK Kti Ges RgvU exa bv  tKvb AvKwZB t`qv hvq bv	tejt gmlU
3	i agvI ej ˘Zwi Kiv hvq	tejt t`v-Auk gmlU
4	˘PK, exKvfbv I Pμ ˘Zwi Kiv mæe nq	GtUj t`v-Auk gmlU
5	tmvRv ˘PK ˘Zwi Kiv mæe nq	t`v-Auk gmlU

**gšé:** gmlU eju ubaŋY Kti tm Abynti dmj Pvl Kitj AwaK dmj Drcv`b ubwōZ nte|

**2. gmlU Av`Zv Abynti gmlU PvlcthmZv ubYq**

GK LŪ PvlthvM` RngtZ wMtq GK gw gmlU nvtZ wbb| G gmlU `B nvtZi Zvj j mrvvth` Pvc w`b| hv` GB Pvc t`qv gmlU Pvc Lvl qv Ae`vq bv \_vtK Zte tm gmlUZ ōtRvŌ Avtm bvB| Avi hv` Pvc Lvl qv Ae`vqB \_vtK Zvntj `B nvtZi Zvj j mrvvth` gmlU ej ˘Zwi Kiab| GLb gmlU ˘Zwi GB ej wUtK GK wgvUvi Dpzt\_ŋK mvariY k<sup>3</sup> gmlU Dci Avt`ItŌto w`b| tŌto t`evi mgq tKvb cKvi ej cŌqvM wKsev D`PZv GK wgvUti i Kg ev tenk nI qv DvPZ bq|

μngK bs	chfeŋY	mmxvš
1	ej ˘Zwi KitZ Pvc t`qvi mgq Pvc Lvl qv Ae`vq _vtK bvB	ōtRvŌ Avtm bvB
2	gmlU ˘Zwi ej wU cZtbi ci Pvc Lvl qv Ae`vq iŋtŋQ	ōtRvŌ Avtm bvB
3	cwZZ ej wU tft½ Qwŋq ctoŋQ	gmlUZ ōtRvŌ GtmŋQ

mmxvš ōtRvŌ Avmv Ae`vq Rng Pvl Kitj gmlU mnŋR Pvl Kiv hvte, gmlUZ eo eo wJv ˘Zwi nte bv Ges KIŋYi KvR mgq Kg j wMte|



**Pəvšigj`iqb**

**msvŋŋB I iPbuĵj-K cĳæ**

1. fiĵ KIŦ ej tZ Avcub Kx eĵSb? fiĵ KIŦYi Dŧi`k` eYŦv Ki ab|
2. fiĵ KIŦ KZ cĳvi I Kx Kx? newfbæcĳvi fiĵ KIŦYi msÁv ij Lĵ|
3. i ŋŋbkxj fiĵ KIŦYi mĵear I Amĵear, tĵ v ij Lĵ|
4. ĵmŬi ōŧRvŌ Ae`v ej tZ Kx eĵSb ? ŋKfivte ĵmŬi ōŧRvŌ Ae`v kbr<sup>3</sup> Ki ŧeb?
5. ĵmŬi Av`Zvi mŧ½ fiĵ KIŦYi mæúKŦKx?
6. msvŋŋB ŋKv ij Lĵ|
  - cŧij Z fiĵ KIŦ
  - i ŋŋYkxj fiĵ KIŦ
  - fiĵ KIŦYi mgq
  - Rigi ĵv ŋŋgZv
  - mvali Y KIŦ
  - Avšĳ KIŦ



**DĒiĵvĵv**

**cŬ 2.1:**

1| M 2| L 3| K 4| K 5| K 6| M 7| L

**cŬ 2.2:**

M 1| K 2| N 3| N 4| L 5| N

**BDibU 3 mavi Y Pvl cŕvj x**

**BDibU 3  
mavi Y Pvl cŕvj x**

exRi A¼ziv`Mti Rb`  
cwi tek m¼p, gþj i ep  
mMg Kiv, AvMvQv I tiM-  
¼cvKv `gb BZ`w` KviþY  
Rug Pvl Kiv cŕqvRb|

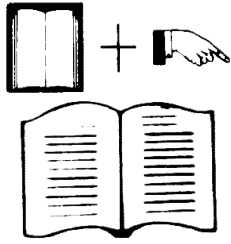
Aw`Kvtj gvbly eb` ci-cvML, MvtQi j Zv-cvZv I dj gj- tL¼q Rxeb aviY KiZ| wKŠ`  
Gfite cŕB Avvvh`e` Kvj ¼tg RbmsL`vi Zþbvq AcZþ n¼q t`Lv w`þZ j vMj | weÁvb I  
cŕhvj`i Dbmzi dtj Aw`g KwL. weeZþbi gra`tg AvR `eÁmbK KwL.þZ ifcvišti Z n¼q¼Q|  
gvbly dmtj i Pvl cŕvuj þK AvqZ; Kti Gi KwLZ dj b ARB KiþZ m¼g n¼q¼Q| mV`Rfite  
dmj Drcv`b KiþZ n¼j wewfbedmtj i Pvl cŕvj x m¼utK`Rvbn cŕqvRb|

exRi A¼ziv`Mti Rb` cwi tek m¼p, gþj i ep m¼g Kiv, AvMvQv I tiM-¼cvKv `gb  
BZ`w` KviþY Rug Pvl Kiv cŕqvRb| th dmtj i gj- gvwUi Mfiti cŕek Kti Zvi Rb` Mfvi  
Pvtli cŕqvRb| exR tQvU n¼j gvwU tek cwi cvwU Kti `Zwi KiþZ nq| Avevi gvwUi eþU,  
Mvb, Av`Zv, j v0tj i `þZv BZ`w` Ablyvqx Rug AvovAvnofite Pvl I gb Pvl w`þZ nq thb  
grfvv tKv\_vl AKwL`Z Rug bv `vtK| j v0j w`þq Pvtli dtj Rugi gvwU Avj Mv nq| Ab`w` þK  
gBPvl w`þq w¼j v tft¼ Rugi Dcwi fivM mgvb KiþZ nq| ce`ZP`dmtj i Aewkóvsk cwi`wi  
KiþZ nq| tmtPi cvnb I mvti i AcPq tivtai Rb` Rugi AvBj teta w`þZ nq| avb tivcþYi  
Rb` Pvi v l i Kþbv I wFRv Dfq exRZj vtZB`Zwi Kiv hvq| A\_v` avb Pvtli Rb` i Kþbv I  
wFRv Rug cŕ`Z cŕvj x m¼utK`e`mwi Z Rvbn Avek`K|

Rug `Zwi Kti dmtj i exR ecb ev Priv tivcY KiþZ nq| wewfbedmtj i Rb` wewfbei Kg  
ecb I tivcb c¼wZ i¼q¼Q| wewfbedmtj i MvQ Avevi wewfbe`iþZj j vMtvb nq| dmtj i  
t¼þZ Privi NbþZi Dci dmtj i Drcv`b wbfþKxj | KvþRB dmj Pvtli Rb` figKIþ, Rug  
`Zwi, exRZj v `Zwi, exR ecb, Priv tivcY, Privi NbZ; m¼utK`Rvbn cŕqvRb| Avevi wewfbe  
dmtj i Rb` Rug `Zwi c¼wZ Avj v`n n¼q `vtK| tZgwb gvwUi c¼wZ Abymti I Rug `Zwi i  
wfbz v i¼q¼Q|

G þkþI Avcvb gvwUi c¼wZ. Abymti fig KIþ I Rug `Zwi i bwiZgvj v, i Kbv I wFRv gvwUþZ  
KIþ I exRZj v `Zwi Ges wewfbedmtj i Rug `Zwi i bwiZgvj v RvbþZ cvi þeb| exR ecb,  
Priv tivcY, Privi NbZ; wbaþY I m¼e` dj b m¼utK`avi Yv cvþeb| t`kx j v0j Pvl I gb  
w`þq fig KIþ, exRZj v `Zwi I AvL tivcþYi cwi Lv `Zwi m¼utK`e`enwii K Ávb jvf KiþZ  
cvi þeb|

### cw 3.1 gwli ckwZ.Abynti fig KI P I Rng `Zwi i bmxgijv



G civ tkfI Avciob

◆ gwli ckwZ.Abynti fig KI P I Rng `Zwi i bmxgijv DfjL KiZ cvi teb|

me gwltZ me iKg dmj djvfbv hvq bv| dmj djvfbvi DfjLk`B fig KI P Kiv nq| ZvB gwli ckwZ.Abynti fig KI P Kiv DvPZ| fig KI P Yi Rb` ub`mj mLZ bmxgijv m`utK` mg`K avi Yv`vKv ev`Abxq|

#### 1. gwli eju I MVb (Soil texture and Structure)

gwli eju Z`v gwltZ enj , cij , K`g KYv BZ`w`i Dcv`wZ KZUv AvtQ Zv nbYq Kti fig KI P Kiv DvPZ| gwli eju m`utK`avi Yv`vKtj RngtZ tkvb aitYi dmtj i Pvl Kiv hvte Zv ubePtb minv` Kti | tkbbv, th tkvb gwltZ th tkvb dmj Pvl Kiv hvq bv|

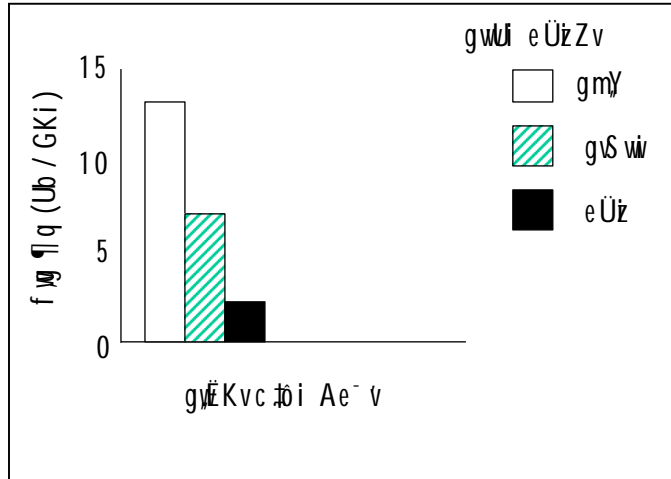
enj gwli KYv,tjv tek eo| enj gwli `jv MVb flgZv Lg Kg | G gwltZ `Re c`vt`P cwi gvY Lg Kg Ges gwli dmj Drcv`tbi Rb` Dc`thvMx bq| c`flvS`fi Gtlj gwli KYv,tjv Lg tQvU, Gi MVb Lg k<sup>3</sup>| Gtlj gwltZ `Re c`vt`P cwi gvY tenk`\_vtK| G iKg gwli cwb aviY flgZv AtbK tenk| G Rb` dmtj i Pvl KiZ ntj Gtlj gwli t`tK cwb ub`vktbi fij e`e`v`vKv`iKvi| w`f`R Ae`vq Gtlj gwli gvL`tbi gZ big nq Ges Kr`v mup Kti | Kr`v gwltZ fig KI P KóKi | Kr`v gwli i`wKtq tMj Ggb k<sup>3</sup> nq th jvOj Pjvfbv tek KóKi ntq cti | Zte avb P`tli Rb` Gtlj gwli tek Dc`thvMx| Kr`v gwli DePZv msi flY flgZv tenk Ges tmL`v`b m`fl`R`xevYj KivRj v`tci nvi | tenk| ZvB G gwltZ me`tkl mvi c`qvm bv Kti | dmj Pvl Kiv hvq|

th gwltZ enj , cij I Kr`vi fivM c`q mgvb Absv`tZ`\_vtK, tmB gwltK t`v`Avk gwli etj | G gwli MVb, cwb I `Re c`vt`P aviY flgZv Ges ebtUi AvKvi gvSmi aitYi | t`v`Avk gwltZ fig KI P tek mnR| e`p`ocvZ I Zvcgv`v h`w` Abj`j`\_vtK; ti vM`evjvB, AvMvQv BZ`w` h`w` mgqgZ`gb ev c`Z`iva Kiv hvq, Zte t`v`Avk gwltZ th tkvb dmj Rb`t`bv thZ cvi |

th gwltZ enj , cij I Kr`vi fivM c`q mgvb Absv`tZ`\_vtK, tmB gwltK t`v`Avk gwli etj | G gwli MVb, cwb I `Re c`vt`P aviY flgZv Ges ebtUi AvKvi gvSmi aitYi | t`v`Avk gwltZ fig KI P tek mnR| e`p`ocvZ I Zvcgv`v h`w` Abj`j`\_vtK; ti vM`evjvB, AvMvQv BZ`w` h`w` mgqgZ`gb ev c`Z`iva Kiv hvq, Zte t`v`Avk gwltZ th tkvb dmj Rb`t`bv thZ cvi |

#### 2. gwli eUzZv (Soil roughness)

th gwli Dcvi fivM hZ mgZj , tm gwltZ ZZ tenk duk, divUj , wPo I MZ`vKvi `iab c`evngvb cwb (Run off water) Kg Mvte| mvari bZ mgZj gwli cwb cwi`tkvly flgZv tekx|

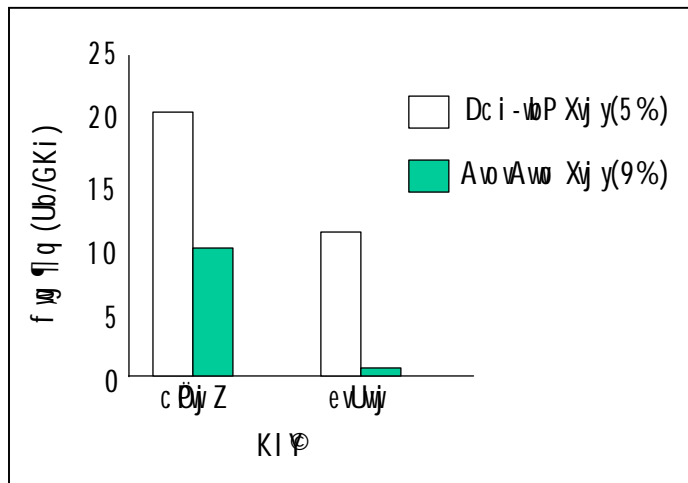


npT - 1: fug t q gml e U z v i c f v e (Rbmb I Ab'vb", 1979)

G avi Yv t t K msi t Y fug KI t avi Yvi D m e n t q t Q | h i r d m t j i A e i k o i s k A \_ e v A b ' v b " R v e i v R v Z i q c ` v \_ g m l i D c t i \_ v t K Z i n t j e w o i c m b i c e i t n m g Z j R i g i f u g t q K g n q , d t j g m l i m s i t Y m n R Z i n q |

### 3. fug KI t i w K (Direction of tillage)

Xij y R i g t Z d m j e c b I t i v c Y , f u g K I t B Z w ` K v R D c i - u b P ( U p a n d D o w n ) w ` t K b v K t i A v o i A m o f i t e ( A c r o s s ) K i t j f u g t q A t b K v s t k K g u t b v h i q | m s i t Y f u g K I t Y i t t j e v U m j P v l ( C h i s e l p l o u g h i n g ) \* D c i - u b P w ` t K b v K t i A v o i A m o f i t e P v l K i t j g m l i t q K g n q |



npT - 2: fug KI t Y i w ` t K i R b " c t j z I m s i t Y f u g K I t Y g m l i t q |

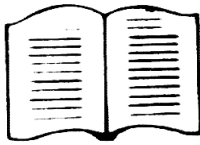
\* e v U m j P v l ( C h i s e l p l o u g h i n g ) : G c x u z t Z G K u u w e t k l Q u j A v K u z i h t s j ( e v U m j ) m i n i t h " k 3 g m l i " i t K t f t z u t ` q v n q | D t j L " t h , e v U m j P v l m a v i Y Z t e k M f x i Z v i ( 3 0 - 6 0 t m . u g ) g m l i " i f i v u n q u K S " g m l i t K D i e t q t ` q v n q b v |

2 bs ti LwP`T t` Lv`bv ntqtQ th c`Dij Z figKI`Y evUwj P`tl i tPtq A`bK tenk gmlUj `lq nq| AvovAvno P`tl gmlUj `lq c`q A`aR| AvovAvno evUwj P`tl gmlUj `lq G`KextiB Kg|

#### 4. evj vB `gb

fig KI`Yi gv`vi Dci  
(Degree of tillage)  
evj vB `gb A`bKvstK  
wbf`Kvj |

fig KI`Yi gv`vi Dci (Degree of tillage) evj vB `gb A`bKvstK wbf`Kvj | c`eB D`j L Kiv ntqtQ th, msi `lY fig KI`Y c`wZ`Z AvMvQv, tcvKv-gvKo I tivM-evj vB `g`bi Rb` i vmvqwbK w`qS`Y e`e`vi (Chemical control) Dci mgvaK wbf`Kvj ntZ nq| msi `lY figKI`Y c`wZ`Z AvAK cwi gv`Y dmtj i Aewkóvsk gmlU`Z vKvq AvMvQvbk`Ki KvR`vi Zv Ktg th`Z cvti | G i Kg fig KI`Y P`tl i gv`v Kg vKvq wewfb`c`Kvi evj vB (Pest) gaj v AveR`vq tetP vK`Z cvti Ges cieZ`P`tgsm`tg evj vB`tqi Dc`e Zxe`n`Z cvti | avb P`tl gvRiv tcvKv (Stem borer) `g`bi t`l`l G i Kg mgm`v t`Lv w`Z cvti |



#### mvi gg©

me gmlU`Z me i Kg dmj djv`bv hvq bv| gmlU c`KwZ. Avgy`ti fig KI`Y Kiv DvPZ| fig KI`Yi Rb` gmlU e`jU I MVb, gmlU e`U`Zv, fig KI`bi w`K I dmtj i evj vB e`e`vcbv m`ú`K`etePbv Ki`Z nq| gmlU`Z evj, c`ij, K`g Kyv BZ`w` i AvgyvZ Rvbn c`q`Rb| gmlU cwb I `Re c`v`P avY `lqZv, gmlU DeP`Zv I Drcv`b `lqZv BZ`w` gmlU MV`bi Dci A`bKvstK wbf`Kvj | dmtj i Aewkóvsk `Re c`v`q`ntk`te gmlU Dc`ti vK`j fig`lq Kg nq Ges gmlU msi`w`Z nq| Avevi Dci-w`P P`tl i tPtq AvovAvno P`tl I fig`lq A`bK Kg nq| dmtj i evj vB e`e`vcbv I figKI`Yi gv`vi Dci wbf`P K`ti | msi `lY fig KI`Y c`wZ`Z i vmvqwbK evj vB w`qS`Yi Dci wbf`Kvj Zv teto hvq|



### cuḥwēi gj'iqb 3.1

mḥwK Dēti i cuḥk'qUK ḥPý (√) ḥ b

1. tKvb gḥUi ḥ j v MVb ḥḡZv ḥḡZv Lḡ Kg?

K. evj gḥU L. cuj gḥU M. Gḥḡj gḥU N. ḥv-Aḥk gḥU

2. tKvb gḥUḥZ j v fRbK fḥḥ th tKvb dmj Rbḥḥḥv hḡq?

K. Gḥḡj gḥU L. cuj gḥU M. ḥv-Aḥk gḥU N. tetj gḥU

3. Dci-ḥbP Pḥḥ i ḥḥḡ AvovAḥḥo fḥḥ Pḥḥ Kiḥj Kḥ nḡ?

K. gḥU biḡ nḡ L. gḥUi ḥḡḡḡḡ nḡ M. gḥUi ḥḡḡ Kg nḡ

N. dmḥj i dj b ḡḡḡ nḡ|

4. i ḥḡḡḡḡ fḥḡ KIḥY Kḥ nḡ?

K. ḥi vM-evj vB Kg nḡ L. ḥi vM-evj vB ḡḡḡ nḡ

M. Rḡḡḡḡ ḡḡḡ mSL'K Pḥḥ ḥ ḥZ nḡ N. Rḡḡḡḡ mḥi ḡḡḡ ḥ ḥZ nḡ|

5. i ḥḡḡḡḡ fḥḡ KIḥY avb Pḥḥ i Kḥ ḥZ cuḥi?

K. ḡvRiv ḥcivKvi Avḡḡḡ evotZ cuḥi

L. Rḡḡḡḡ avb MḥḥQi evḡ Kg ḥZ cuḥi

M. Rḡḡḡḡ ḡḡḡ mḥi ḥ ḥZ ḥZ cuḥi

N. Rḡḡḡḡ avb Mḥḥ ḥḥḡ cotZ cuḥi |

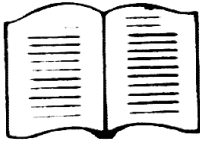


### cvW 3.2 i`Ktbv I wFRv gmltZ KI` I exRZjv`Zni



G cvV tkfI AvciB

- ◆ gmlJi Av`Zvi m½ Riq KI`Yi m`uKqj LtZ cvi`teb|
- ◆ i`Ktbv I wFRv RiqtZ fig KI`Yi avi Yv Dfj L Ki`Z cvi`teb|
- ◆ i`Ktbv I wFRv Ae`vq fij fite Pvl KZ.Riqi , Yvej x wj LtZ cvi`teb|



gmlJi Av`Zvi Dci wbfP Kti RiqtK i`Ktbv Ae`vq wKsev wFRv Ae`vq KI` Kiv nq| Avgv`i t`tk eQtii wewfbemgq Riqi Av`Zv wewfbæiKg \_v`K| Avevi Riqi Ae`v`bi Dci wbfP Kti I gmlJi kktbv A\_ev wFRv ntZ cvti | Riqi Ae`vb Dpztj gmlJi Av`Zv Kg \_vKv `vfwek| Aci w`tk Riqi Ae`vb wPzntj eQtii Awakvsk mgq Zv cwb Øviv w<sup>3</sup> \_vKtZ cvti |

avb evsj v`tki c`vib Lv` dmj | Gml GKw AwZxq dmj hv i`Ktbv I wFRv Dfq RiqtZ Pvl Kiv hvq| GRb` Avgv`i cwi`tek cwi`wZtZ i`Ktbv I wFRv Riqi c`wZ m`u`K`f`ewk Kti Rvbi AeKiv itqtQ| A\_P c`w`exi Ab`v` t`tk thLv`b avb Pvl Kiv nq bv - tmLv`b wFRv Riqi c`wZ I , Yvej x m`u`K`q qmKenj nI qv ZZUv , iazc`v`bq|

avb evsj v`tki c`vib Lv` dmj | Gml GKw AwZxq dmj hv i`Ktbv I wFRv Dfq RiqtZ Pvl Kiv hvq| GRb` Avgv`i cwi`tek cwi`wZtZ i`Ktbv I wFRv Riqi c`wZ m`u`K`f`ewk Kti Rvbi AeKiv itqtQ| A\_P c`w`exi Ab`v` t`tk thLv`b avb Pvl Kiv nq bv - tmLv`b wFRv Riqi c`wZ I , Yvej x m`u`K`q qmKenj nI qv ZZUv , iazc`v`bq|

Gt`tk mvari YZ avb Pvl i Rb` `w c`wZtZ Riq `Zni Kiv nq| Gi GKw i`Ktbv Riq `Zni Avi Ab`w wFRv Kv`vgq Riq `Zni | c`Kfite G`w c`wZ wbtP Avtj wPZ ntj v:

### i`Ktbv Riq `Zni

AvDk avb Pvl i Rb` i`Ktbv Riq `Zni Kti exR miwmi gtv`ejb t`qv nq| AvDk avtbi exR miwmi gtv`tebvi Rb` 5-6 evi jvOj I gB w`tq Riq `Zni Ki`Z nq|

AvDk avb Pvl i Rb` i`Ktbv Riq `Zni Kti exR miwmi gtv`ejb t`qv nq| tivcv Avgb ev tev`iv avb Kivvi ci mvari YZ gvP`gvtmi w`tk A\_ev tgsm`gi c`g ewocv`Zi ciciB RiqtZ c`g jvOj Pvl t`qv nq| H mgtq RiqtZ hLb ØtRvØ Avtm ZLbB GB Pvl t`evi DrKó.mgq| G m`u`K`K`w.L.Riq I fig KI` BDwbtU w`wZ ejv ntqtQ|

AvDk avtbi exR miwmi gtv`tebvi Rb` 5-6 evi jvOj I gB w`tq Riq `Zni Ki`Z nq| mvari bZ c`Z jvOj Pvl I AvovAwv jvOj Pvl i ciciB gB w`tZ nq| AvMvQv I ce`Zx` dmtj i AveRØv gmlJi mit` wgwktq t`qv nq A\_ev mSmb` Kti c`v`tq tdjv nq| hv` c`g Pvl I exR tebvi mg`qi `N` Lg msKxv`nq, Zte Gme AveRØv tRvMv Kti c`v`tq tdjvB fij | Zv bv ntj AveRØv cP`bi mgq A`wZ Pvi vI `wZ Ki`Z cvti | extRi m½ gmlJi mshy` wbeo nI qvi Rb` Riqi KI`v DEg nI qv DwPZ| hv` exR tebvi ciciB ewo nq Zvntj exR I gmlJi mshy` mgm`v t`qv t`q bv|

AvDk avtbi Rb` i`Ktbv KwZ RiqtZ wbe`w`wZ `enkó` , tjv \_vKv DwPZ:

- 10 fvtjv ntZ gvSwi ai`bi KI`v \_vKtZ nte hvi dtj exR wbeofite gmlJi mit` mshy` \_v`K Ges Gi Askzi`v Mg mnRZi nq|
- 20 wKko gmltZ fvtj v`vte w`vi jv`fi Rb` KI`Yi c`w`Rbxq Mfvi Zv eRvq \_vKtZ nte|
- 30 RiqtK AvMvQv I ce`Zx`dmtj i AveRØv t`tk g`v i vL`Z nte|
- 40 gvSwi wPzRiqtZ ewo`i cwb ati i vLvi Rb` ØAvBj Ø \_vKv DwPZ|
- 50 KI`Yi ci RiqtZ tKvb AKwZ dmj \_vKte bv
- 60 extRi A`z`v`Mg I Pvi vew`xi Rb` gmltZ chwB im \_vKtZ nte|

**wfRv Kv`vgq Rwg`Zwi**

tivcv Avgb I teftiv avb  
Pvfl i Rb` wfRv Kv`vgq  
Rwg`Zwi Kiv nq| Rwg`Z  
4-5 evi AvovAwio j v½j  
Pvl I gB w`tq Rwg`Zwi  
Kiv nq|

tivcv Avgb I teftiv avb Pvfl i Rb` wfRv Kv`vgq Rwg`Zwi Kiv nq| Rwg`Z 4-5 evi AvovAwio j v½j Pvl I gB w`tq Rwg`Zwi Kiv nq| cŁg 2 evi jv0j Pvl I gB t`qv nq Rwg`Z `Re c`v\_©AvMvQv I Ab`vb` AveRĐv gmlU mvt\_ wgwktq t`evi Rb`| GtK Rvei t`qv ejv nq| Gici big Kv`vgq Rwg`Zwi i Rb` cieZPvL\_ t jv t`qv nq| tivcv Avgb avtbi Rb` Kgc t`q tivctYi 15 w`b ctePvl i iæKiv DvPZ| GB mgtaqi gta` `Re c`v\_©ctP Ggb GKUv Ae`vq Avtm hLb cPbkxj `Re c`v\_©ntZ A`vtgmbqv wbmZ nq hv tivcYKZ.Pvivi Rb` Mhb Dc`thvMx | Avi hw` mgq 15 w`tbi Kg nq Zvntj AvsukK cPbkxj `Re c`v\_©ntZ KveB-WvB-A· vBW, `Re GvmlW Ges Ab`vb` Aevqexq cPbkxj `e` wbmZ ntZ cvti hv tivcYKZ.Pvivi Rb` qvZKi ntZ cvti | teftiv tgdmtg G mgtaqi `N`15 w`tbi tenk nI qv DvPZ| tKbbv GB mgq A`v wltm`f I Rvbgvni gvtm Zvcgvv Kg\_vKvq `Re c`v\_©cP`bi nvi Kg ntq\_vtK|

wfRv Kv`vgq gmlU`Zwi i  
mgq Rwg`Zwi cmbi D`PZv  
Kg\_vKv DvPZ| G aitYi  
Rwg`Zwi jv0j Pvl I gB  
w`tq\_K\_`tK Kv`vgq Rwg`  
Zwi Kiv hvq|

wfRv Kv`vgq gmlU`Zwi i mgq Rwg`Zwi cmbi D`PZv Kg\_vKv DvPZ| G aitYi Rwg`Zwi jv0j Pvl I gB w`tq\_K\_`tK Kv`vgq Rwg`Zwi Kiv hvq| Avi hw` Avak cmbi Rb` Rwg`Wze\_vtK Zvntj Pvl x jv0j dvij i mivK `vb wvK t`Ltz cvti bv| dtj AKvLZ Ragi dvij t`tK thtz cvti Ges fvtj vfvte Rwg`Zwi nq bv|

fvtj vfvte `Zwi wfRv Kv`vgq Ragi wbevj wLZ `enkó`\_ t jv\_vKv DvPZ:

- 10 `Re c`v\_©thgb- AvMvQv, ceZP`dm t j i Lo I AveRĐv m`úYfvte ctP gmlU mvt\_ wgtk hvq|
- 20 Rwg`K`g v³ Ges mygfvte Rwg`Zwi cmbi weivR Kti |
- 30 AvBj k³fvte evav\_vKte Ges `fvmeK evocvZ I tmtpi cmbi DctP cov evavM` nte|
- 40 cmbi Mfxi Zv GiKg\_vKte hvtz tivctYi ci Pviv Wze bv hvq|
- 50 gmlU\_K\_`tK Kv`vhy n t j Pviv tivcY mnRZi nte|
- 60 Rwg`Zwi cmbi a ti ivLvi Rb` k³ jv0j `ti (Plough pan) tKvb fv½tbi miv nte bv|

QK 1: i`Kt b v I wfRv gmlU`Z Rwg`Zwi i Z`z bvgj-K wP`

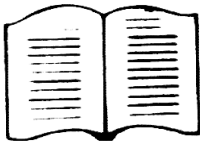
<b>i`Kt b v gmlU`Z Rwg`Zwi</b>	<b>wfRv gmlU`Z Rwg`Zwi</b>
1. G Rwg`Zwi tZ mivavYZ 5-6 evi jv0j Pvl I gB cŁqvRb nq	1. G Rwg`Zwi tZ Pvfl i Rb` mivavbZ 4-5 evi jv0j Pvl I gB Pvfl i cŁqvRb
2. Rwg`Zwi gmlU Av`Zv ev ōtRvō Ae`vi Dci wbfPkvj	2. Rwg`Zwi ōtRvō Ae`vi Dci wbfPkvj bq eis Rwg`Zwi cmbi mivav KtiB Pvl Kiv nq
3. gmlU MvB Ggb nI qv DvPZ thb exR gmlU mvt_ t j tM_vtK	3. Kv`v Rwg`Zwi gmlU tKvb mivK MvB_vtK bv
4. `Re c`v_© evqexq Ae`vq ctP  cP`bi nvi tenk	4. `Re c`v_© Aevqexq Ae`vq ctP  cP`bi nvi Kg
5. bvBtU`Rb RvZxq `Re c`v_© ctP	5. bvBtU`Rb RvZxq `Re c`v_© ctP

biBtUtU cwi YZ nq/	Gtgmbqvq cwi bZ nq/
6. biBtUtRtbi NH <sub>4</sub> <sup>+</sup> Ges NO <sub>3</sub> <sup>-</sup> Dfq Ae <sup>-</sup> itZB MtQi Rb` KvhRix/	6. biBtUtRtbi i'ay NH <sub>4</sub> <sup>+</sup> Ae <sup>-</sup> itZB KvhRix/
7. pH Acwi emZ` _vtK/	7. pH ubi t`c¶Zvi w` tK cwi emZ` nq/
8. mvari bZ Zn Gi Afve t`Lv hvq bv/	8. Zn Gi Afve t`Lv w` tZ citi /
9. wiW. ctUbukqj ** tenk/	9. wiW. ctUbukqj Kg/

RigtZ exR ecb I Priv tivctYi Rb` Rwg `Zwi Qvovl arfbi Priv `Zwi tZ i`Ktbr I wFRv Dfq cxwZtZB exRZjv `Zwi Kiv nq/ arfbi Priv `Zwi i Rb` exRZjv `Zwi m`umKZ ZEj I Z` 3.7 bs e`enwi K ctv me`wi Zfite Avtj vPbv Kiv nte/



**Ablyj b (Activity):** i`Ktbr I wFRv Ae<sup>-</sup>vq DEgijc `ZixKZ.Rwgi `enkó` \_tjv Avtj vPbv Kiab/



**mvi gg<sup>©</sup>**

gwi Av`Zvi Dci wbfP Kti arv Pitli Rb` i`Ktbr Rwg A\_er wFRv Kiv`vgq Rwg `Zwi Kiv nq/ AvDk arfbi exR tevvi Rb` i`Ktbr RigtZ 5-6 evi jv0j Pvl I gB w` t`q gvSwi ntZ fitjv KIe<sup>-</sup>vq Avbv nq/ tivcv Avgb I tev tiv arfbi Rb` 4-5 evi jv0j Pvl I gB w` t`q wFRv Kiv`vgq Rwg `Zwi Kiv nq/ kktbr Rwg `Zwi i Rb` gwi OtRv0 Avmtj cUg Pvl w` tZ nq/ Kiv`v Rwg `Zwi OtRv0 Ae<sup>-</sup>vi Dci wbfPkj bq eis RigtZ cwb mieivn KtiB `Zwi Kiv hvq/ i`Ktbr RigtZ gwi mt½ extRi mshyP ubieo Kiv ubw0Z KitZ nq/ wKŠ wFRv Kiv`vgq RigtZ gwi tKiv mivK Mvb \_vtK bv/ dtj gwi I extRi ubieo mshyP tKiv mgm`v wvmt`e t`Lv t`q bv/ i`Ktbr RigtZ `Re c`vt`P cPti nvi I wiW. ctUbukqj tenk A\_P wFRv Kiv`vgq RigtZ Kg \_vtK/ gwi w.GBP i`Ktbr gwi tZ Acwi emZ` \_vtK wKŠ wFRv gwi tZ ubi t`c¶Zvi w` tK cwi emZ` nq/ exRecb I Priv tivcY Qvovl arfbi Priv `Zwi i Rb` i`Ktbr I wFRv cxwZtZ exRZjv `Zwi Kiv nq/

\*\* tKiv gwi tZ me`gub ivmivbK c`v`fjg ntK H gwi KZR.Rwi Z ev wFRwi Z Kivi cEYZvtK H gwi wiW. ctUbukqj (Redox potential) etj/ Gi GKK ntjv t`fiv`e A\_er wgvj t`fiv`e Ges GtK E<sub>h</sub> Ovi cKik Kiv nq/ tKiv gwi E<sub>h</sub> abizK ev tekx ntj tm gwi Rvib ¶jgZv m`ubwGes FYvZK ev Kg ntj wFRv ¶jgZv m`ubw Gkiv mjb`wKZ Rigi E<sub>h</sub> mvari YZ 0.4 t` tK 0.7 Volt ntq \_vtK/



**cuVhEi gj`iqb 3.2**

mWk DEti i cuKqUK wPy (√) w`b

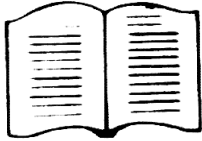
1. AvDk arabi exR mi vmi gv#V tevbi Rb` Riq `Zwi KitZ KZevi j v½j Pvl I gB w`tZ nq?  
 K. 3-4 evi      L. 4-5 evi      M. 5-6 evi      N. 6-7 evi
2. tivcv Avgb arabi Rb` Kg ct¶¶ KZ w`b AvM Pvl ii€ Kiv DmPZ?  
 K. 10 w`b      L. 15 w`b      M. 20 w`b      N. 25 w`b
3. i Ktbr gmltZ Riq `Zwi wKtmi Dci wbf¶Kij ?  
 K. 0tRv0 Ae`v      L. ZicgrvIv      M. `Re c`v\_©      N. e¶U
4. i Ktbr RiqtZ bvBtUtRb Riviq `Re c`v\_©ctP Kx i vmiqubK c`v\_©cwi YZ nq?  
 K. bvBtUU      L. A`vtgmbqv      M. BDwi qv      N. A`vtgmbqv mij tdu
5. wFRv Kv`vgq RiqtZ gmlU i pH tKgb \_vtK?  
 K. Acwi ewZ      L. wbitc¶¶      M. ¶vixq      N. A¶iq

### cw 3.3 weifbædm̄tj i Rb` Rwg `Zwi i bwiZgvj v



G civ tk̄tI Avciḅ

- ◆ weifbædm̄tj i Rb` weifbæi Kg Rwg `Zwi i Kvi Y ij LtZ cviṭeb|
- ◆ dmj Ablyq̄x Rwg `Zwi i bwiZgvj v Dt̄j L KiṭZ cviṭeb|



Avt̄MB ej v nt̄qt̄Q th, weifbædm̄tj i Rb` weifbæfv̄te Rwg `Zwi Kiv nq| Avevi GKB k̄tm̄`i weifbædm̄tj i Rb` Rwg `Zwi i c×wZ Avj v`v nt̄Z cviṭi | hv̄tnvK Rwg `Zwi i m̄vav̄i b bwiZgvj v v̄b̄t̄P eYḅv̄ Kiv nt̄j v:

#### 1. dm̄tj i tḡšm̄g

dm̄tj i tḡšm̄g Ablyq̄x Rwg `Zwi i bwiZgvj v v̄b̄aḅi Z nq| thgb av̄t̄bi wZb̄wU dmj - AvDk, Avgb I teṭiv- GKB eQ̄ti Pvl Kiv th̄t̄Z cviṭi | Kv̄t̄RB AvDk tḡšm̄g av̄b Pvl Kivi Rb` thfv̄te Rwg `Zwi Kiv nq, teṭiv tḡšm̄g tm̄fv̄te `Zwi Kiv nq bv| Avevi ṭKv̄b ṭKv̄b km̄` i v̄e I Lvi c-` ṭtḡšm̄gB Pvl Kiv nq| thgb- P̄x̄v̄ ev̄`v̄g, f̄x̄v̄, ḡM̄ K̄j v̄B BZ`w̄ | Gme dmj P̄t̄i i Rb` weifbætḡšm̄g weifbæi Kg Rwg `Zwi i c×wZ Av̄ȳi Y KiṭZ nq|

#### 2. km̄` Drcv` b c×wZ

GKB km̄` GK̄w̄aK c×wZt̄Z Pvl Kiv th̄t̄Z cviṭi | thgb: t̄M̄j Avj ȳḡj P&c×wZt̄Z, A\_ev m̄v̄i t̄Z D̄P̄zK̄ti ḡm̄U Z̄t̄j w̄`t̄q Pvl Kiv nh| gv̄j P&c×wZt̄Z t̄M̄j Avj ȳiv̄cY K̄ti K̄P̄i cubv, Lo BZ`w̄ w̄`t̄q t̄X̄t̄K ṭ`qv̄ nq| GB `Re Av`liṭ̄Yi gv̄t̄S Avj ȳDrcv` Z nq| w̄K̄S` Ab` c×wZt̄Z Avj ȳm̄v̄i t̄Z j v̄M̄t̄q D̄P̄zK̄ti ḡm̄U Z̄t̄j w̄`t̄q (Earthing up) Pvl Kiv nq| Kv̄t̄RB G `v̄j c×wZt̄Z Rwg `Zwi i w̄f̄bæc×wZ Av̄ȳi Y Kiv nq|

#### 3. ecb I tiv̄cY c×wZ

ecb I tiv̄cY c×wZi Rb` w̄f̄bæw̄f̄bæfv̄te Rwg `Zwi Kiv nq| AvL P̄t̄i cwi Lv c×wZ, Gm̄.w̄.w̄c (Spaced transplanting) ev Ab`v̄b` c×wZi Rb` w̄f̄bæw̄f̄bæfv̄te Rwg `Zwi Kiv nq| cwi Lv c×wZt̄Z m̄vi cwi Lv̄q mieiv̄n Kiv nq A\_P Ab`v̄b` c×wZt̄Z Zv Kiv nq bv| G ṭ̄ṭ̄t̄I Rwg `Zwi i w̄f̄bæc×wZ Av̄ȳi Y Z nq|

#### 4. c̄h̄ȳM̄Z m̄ȳeav

Av̄ḡiv Avt̄MB ṭR̄t̄b̄w̄ th, AvDk av̄b i K̄t̄bv Rwḡt̄Z A\_ev w̄f̄R̄v Rwḡt̄Z f̄vḡ K̄Iḅ K̄ti Pvl Kiv hv̄q| c̄h̄ȳM̄Z m̄ȳeav-Av̄ȳeav̄i Rb` G Pvl c×wZ Av̄ȳi Y Kiv nq| hv̄` tm̄t̄Pi ch̄ḅ m̄ṭh̄v̄M̄ m̄ȳeav `v̄t̄K Zv̄nt̄j Rwḡt̄Z Kv̄`v̄ K̄ti (Puddling) AvDk av̄b Pvl Kiv nq, Av̄i tm̄ m̄ȳeav bv `v̄K̄t̄j i K̄t̄bv Rwḡt̄Z f̄vḡ K̄Iḅ K̄ti G av̄b Pvl Kiv nq|

#### 5. f̄vḡ K̄Iḅ c×wZ

c̄ḅ̄j Z f̄vḡ K̄Iḅ I m̄si ḡ̄Y f̄vḡ K̄Iḅ Rwḡt̄Z `Zwi i c\_`K c×wZ iṭ̄qt̄Q| c̄ḅ̄j Z f̄vḡ K̄Iḅ c̄ḅ̄v̄q Rwḡt̄K D̄Ēḡiṭ̄c Pvl K̄ti exRZjv `Zwi Kiv nq| w̄K̄S` m̄si ḡ̄Y f̄vḡ K̄Iḅ c×wZt̄Z ḡm̄U t̄f̄S `Ȳej ṭ̄K Db̄z̄ Kivi Rb` b`b̄Zḡ m̄sL`K Pvl w̄`t̄q `Zwi Kiv nq| m̄si ḡ̄Y c×wZt̄Z ev̄Uv̄j Pvl I m̄iv̄m̄i w̄M̄j̄s K̄ti Rwḡt̄Z exR ecY Kiv nq| Aṭ̄bK mḡq f̄vḡ K̄Iḅ i w̄eK̄i w̄m̄v̄te Av̄M̄v̄Qv̄b̄r̄kK e`en̄vi Kiv nq|

c̄ḅ̄j Z f̄vḡ K̄Iḅ c̄ḅ̄v̄q Rwḡt̄K D̄Ēḡiṭ̄c Pvl K̄ti exRZjv `Zwi Kiv nq| w̄K̄S` m̄si ḡ̄Y f̄vḡ K̄Iḅ c×wZt̄Z ḡm̄U t̄f̄S `Ȳej ṭ̄K Db̄z̄ Kivi Rb` b`b̄Zḡ m̄sL`K Pvl w̄`t̄q `Zwi Kiv nq|

**6. exRi AvKvi I AvqZb**

dmTj i exR hZ tQvU tm  
dmTj i Rb` ZZ teik  
cwi cwiU Kti exRZjv`Zwi  
Kiv nq|

exRi AvKvi I AvqZb Ablyvq Riq `Zwi KiZ nq| th dmTj i exR hZ tQvU tm dmTj i Rb` ZZ teik cwi cwiU Kti exRZjv`Zwi Kiv nq| exRZjvq exR ectbi ci exRi m1/2 gwiU ms`uk`hZ wbeo nq, exRi AvZiv`Mtgi nvi I tm Ablyvq ZZ teik nq| exRi AvKvi eo ntj Kg msL`K PtiI c0qvRb nq| thgb tQvjv I fXv PtiI Rb` thfite RiqTz Pvl w`tZ nq ZivgK A`ev ucqvRi Rb` Zvi tPtq AtbK teik Pvl w`tq mxi I cwi cwiU Kti exRZjv`Zwi KiZ nq| KvRB exRi AvKvi I AvqZb Ablyvq Riq `Zwi cxiZ cwi ewZ nq`vK|

**7. AvMqv e`e`icbv**

AvMqv e`e`icbvi Rb` wfbwfdmTj i Rb` Riq `Zwi wfbwfbwfcxiZ Ablyvq Y Kiv nq| dmTj i tTtZ AvMqv cwi Pvl R cxiZ, i mvqubK cxiZ Ges`RweK cxiZtZ`gb Kiv hq| th dmTj i AvMqv`gbi Rb` i mvqubK cxiZ e`envi Kiv nte Zvi tPtq thLvB cwi Pvl R e`e`v tbqv nte- G tTtI wfbwfbwftTtI wfbwfbwfbite Riq `Zwi Kiv nq| MRvbi AvMB AvMqv bvkK c0qm (Pre-emergence application of weedicide) Kti AvMqv`gb Kiv hq| evsvt`tk thtnZz AvMqv bvkK e`envi miKwi Abtgv`b tbB, ZvB cwi Pvl R cxiZtZ AvMqv`gb KiZ RiqTz exR ectbi cteB fvtjvite AvMqv cwi`vi Kti Riq `Zwi KiZ nq| Avevi AtbK AvMqv bvkK thgb c`ivvKivU fig KIYi weKí wmwte e`envi Kti mgwSZ AvMqv`gbi tTtI AvMqv gwiU mvt`wguktq w`tq Riq `Zwi Kiv nq| KvRB AvMqv`gbi Rb`I Kul..Riq `Zwi cxiZ wfbwfbwfcvT|

**8. gTj i MfxiZv**

wfbwfdmTj i gj`wfbwMfxiZv chStctQ| A`P tKvb dmTj i gj`gwiU Mfxi c0ek Kti Avevi tKvbu gwiU Dctii`tiB`vK| wbtP KtqKwU dmTj i gTj i MfxiZv t`qv ntjv|

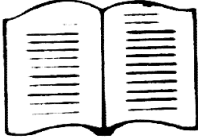
QK 1: KtqKwU cavb dmTj i gTj i MfxiZv

kTm`i bug	gTj i MfxiZv (`N`tm.wg.)	gTj i MfxiZvi gvTv
avb	27	AMfxi
Avj	50	gvSwi Mfxi
mwi Iv	60	gvSwi Mfxi
gmj	60	gvSwi Mfxi
Mg	120	Mfxi
AvL	150	Mfxi

KZ Mfxi Ziv Riq Pvl  
Ktj dmTj i dj b fvtjv  
nte Zv wbfP Kti dmTj i  
gTj i`ewkt0`i I ci|

KvRB KZ Mfxi Ziv Riq Pvl Ktj dmTj i dj b fvtjv nte Zv wbfP Kti dmTj i gTj i`ewkt0`i I ci| avb GKwU AMfxi gj`x dmj| Gi Rb` Mfxi fite PtiI c0qvRb nq bvl Ab`w`tK AvL dmTj i Rb` Riq Mfxi fite PtiI c0qvRb itqtQ|

Aveni Pi GjvKvq gwUj Dcti i t`i Ar Mfxi Zim`ubæcij ev tetj t`v-Auk ebyUi wbtP  
tgUv emj \_vKtj Mfxi fite Pvl bv KivB fvj | c`qRtbi AvZwi<sup>3</sup> Mfxi Zvq Pvl Kitj  
tKej ktj, mgq I At`PB AcPq nq bv, AtbK t`t`Rigi Drcv`b t`lgZvl Ktg thtZ  
cvti |



**mvi gg<sup>©</sup>**  
wewfbaetmj i Rb` wewfbaei Kg Rwg `Zwi KitZ nq| dmtj i tgsmsr, Drcv`b cxwZ, ecb I  
tivcY cxwZ, chw<sup>2</sup>MZ mjeav, figKI<sup>9</sup> cxwZ, extRi AvKvi I AvqZb, AvMvOv e`e`vcbv,  
gtj i Mfxi Zv BZ`w` wltqi c`Z j`q` ti tL Rwg `Zwi KitZ nq| GKB dmj iwe I Lwi c  
tgsmtg Pvl Kitj wfbævte Rwg `Zwi KitZ nq| Aveni GKB dmtj Drcv`b cxwZi wfbævi  
Rb` Rwg `Zwi tZl cv`R` t`Lv hvq| ecb I tivcY cxwZi wfbævi Rb` GKB dmtj  
wfbævte Rwg `Zwi KitZ nq| tmtPi mjeav \_vKtj AvDk avtbi Rwg Kv`v Kti Pvl Kiv  
hvq| Zv bv \_vKtj i Ktbr RwtZ Pvl cxwZ Avjv`v| c`Pvj Z fig KI<sup>9</sup>Yi tPtq msi qY fig  
KI<sup>9</sup>Y AtbK Kg Pvl t`qv nq| extRi AvKvi I AvqZb Abjvqx Rwg `Zwi wfbæng| extRi  
AvKvi tQvU ntj Rwg wgvn (Fine) Kti `Zwi KitZ nq| dmtj i gtj i Mfxi Zv Pvl i  
Mfxi Zvi mt½ m`uK<sup>9</sup>| dmj Mfxi gj-x ntj Rwg Mfxi Kti Avi AMfxi gj-x ntj Rwg  
AMfxi Kti Pvl Kiv nq|



### cuVhEi gj`iqb 3.3

mWVK DEti i cuVhEi UK wPy (v) w b

1. KZ Mfxi fite Rig Pvl Ki tZ nte Zv wKtmi Dci wbfP Kti?

K. Rig DePZvi Dci                      L. exRi IRtbi Dci

M. gj i Mfxi Zvi Dci                      N. Rig i tmi cwigvYi Dci

2. Rig KZ wgn (Fine) Pvl nte Zv wKtmi Dci wbfP Kti?

K. Avenl qvi Dci                      L. exRi AvKwZi Dci

M. gwLi i tmi cwigvYi Dci                      N. gwLi `Re c`vt`P cwigvYi Dci

3. tmPti mear wKtj tKvb Rig tZ AvDk avb Pvl mearRbK?

K. i Ktbr Rig tZ                      L. wFRv Kiv`vgq Rig tZ

M. DEzRig tZ                      N. UtRv Ae`vq Pvl t`qv Rig tZ

4. tKvbU mWVK?

msi wY fig KlP Y gwLi , Yv, Y Dbz Kivi Rb` -

K. tek msL`K Pvl t`qv nq                      L. Kg msL`K Pvl t`qv nq

M. tKvb Pvl B t`qv nq bv                      N. Rig wgn Kti `Zwi Kiv nq|

5. tKvbU mWVK?

c`vi vtKvU e`envi Ki tj -

K. tek Pvl w tZ nq                      L. fig KlP Yi weKí aiv nq

M. Rig cwi cwU Kti `Zwi Ki tZ nq                      N. dmj i Drcv`b Kg nq

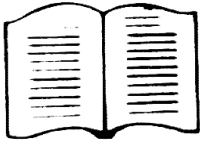


### cw 3.4 exR ecb I Priv tivcY



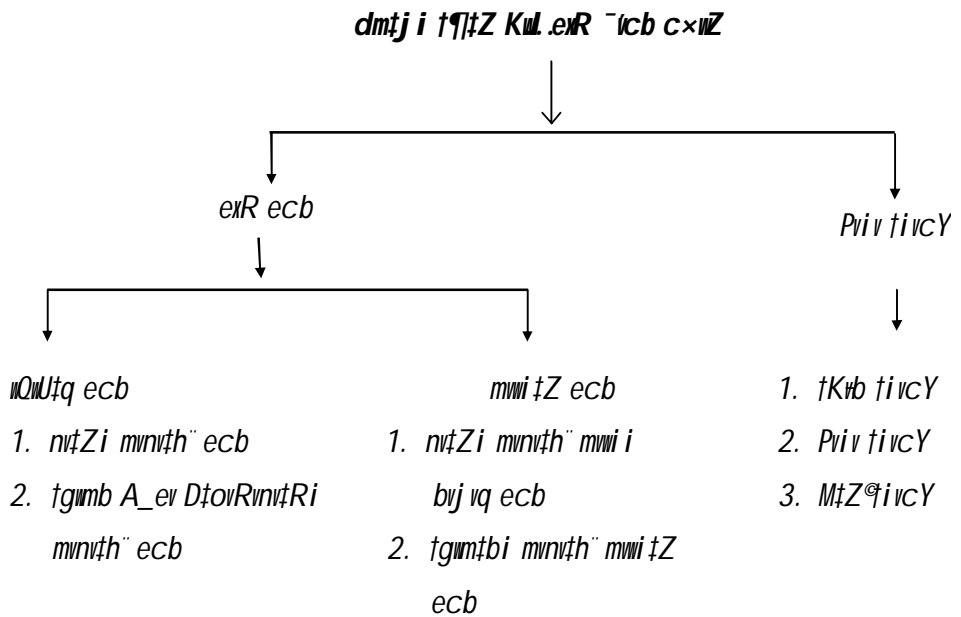
G cvV tkfI Avcb

- ♦ dmtj i tftZ exR `vcb cxwZ Dfj L KitZ cvi teb|
- ♦ exR ecb I Priv tivcY cxwZi mjev I Amjev, tjv wj LtZ cvi teb|
- ♦ dmtj i exR ecb I Priv tivcY cxwZi vbePb KitZ cvi teb|



dmj PrfIi AwZ ,iaZcY©DcKiY ntjv exR| exR DwMf`i esk me`fii gva`g| ZUj dmtj i km`vbn (Food grain) thgb avb, Mg, fZv BZ`w` cKZ.exR (True seed); Avevi DwMf`i kvimmi K Ask t\_tK Avcb RvZi bZb DwMf`i Rbft`qvi fJgZv ivtL GB At\_ AvtLi KvU, tMj Avj y Kf`i (Tuber) gZ kvimmi K Ask t\_tK `iaKti avb ev Mg extRi gZ RvbubK Ask meB Kul.exRi Ašf| Ggubfite kvLv Kjg, ivBtRvg, K>, ejvvej, ,uOK>, K>gj-, tkvlK, ukKo Kjg, cvZv BZ`w` t\_tKl MvQ Rbftb hvq| AZGe Gme, tjvB Kul.exRi Ašf| extRi iKg ftf` ecb I tivcY cxwZ wfbang| thgb cKZ. cvU exR wQuUtg tevbn hvq A\_P cvfUi WmV tivcY KitZ nq| km` PrfIi Rb` exR `vcb cxwZmg ntk vbtPi QtK t`Lvtrv ntjv:

ZUj dmtj i km`vbn (Food grain) thgb avb, Mg, fZv BZ`w` cKZ.exR (True seed); Avevi DwMf`i kvimmi K Ask t\_tK Avcb RvZi bZb DwMf`i Rbft`qvi fJgZv ivtL GB At\_ AvtLi KvU, tMj Avj y Kf`i (Tuber) gZ kvimmi K Ask t\_tK `iaKti avb ev Mg extRi gZ RvbubK Ask meB Kul.exRi Ašf|



#### exR ecb

dmj PrfIi Rb` Rvg fvj fite jv0j Prl I gB Prl w`tg `Zwi Kti exR ebtZ nq| exR tevbn mgq RibtZ nte extRi A`zivr`Mtgi Rb` RvgZ Dchj im AvtQ wKbv| gwUtg chfB im `vKtj extRi A`zivr`Mg fvj nq Ges Priv my` I mej ntq teto DfV| Gi#c Rvgi OtRv0 estS exR ebtj PrfIi mvdj` AtbKvstK Avkv Kiv hvq|

extRi AvKvi I AvqZb Abjvqx exRZjvi gwU `Zwi KitZ nq| mvariBZ exR hZ tQuU AvKwZi nq exRZjv ZZ cwi cWU Kti `Zwi KitZ nq| tevbn ci extRi mt` gwUj mshj hZ vbeo nte, extRi A`zivr`Mtgi nvi ZZ temk nte| ZIB cvU, mwii Iv, ucqvR, ZvgvK,

mvavi bZ exR hZ tQvU  
AvKwZi nq exRZjv ZZ  
cwi cwi Kti Zwi KiZ  
nq|

BZ`w` dmtj i exR ecb KiZ ntj gwi Ki e`v fij ntZ nq| tek KtqKevi jvOj Pvl I  
gB Pvl w`tq Riq `Zwi KiZ nq| A\_P extRi AvKvi eo ntj gvSmi iKtgi Kl e`vB  
ht\_ó| f`v, tQvj v, gUi BZ`w` dmtj i exR ectbi Rb` A`bKuv Kg Pvl Kti exR ebtj I  
dmtj i dj`b tKvb Zvi Zg` NtUv| Avevi extRi AvKvi AvKwZi Dci exR ectbi Mfxi Zv  
w`f`Pkj | extRi AvKvi tQvU ntj Kg Mfxi Zvq ebtZ nq Avi eo ntj w`KQytenk Mfxi Zvq  
ecb Kiv nq|

exRZjvi cKvif` i lci l exR ecb w`f`Pkj | exR ectbi Rb` i Ktbr l w`Rv GB `jKg  
exRZjv `Zwi Kiv nq| mvaviYZ th mg`l extRi tLmv cvZjv l big tm,tjv ectbi cje`  
w`Rv`bvi c`qvRb nq| thgb cvU, mwi lv, gmy BZ`w` dmtj i exR i Ktbr Ae`vq i Ktbr  
exRZjvq ecb Kiv nq| w`KŠ` tLmwi tQvj v, gUi c`wZ dmtj i exR 2/1 w`b w`Rv`q ebtZ  
nq| Avevi avb Pvl i Ktbr exRZjvq i Ktbr exR Avi w`Rv exRZjvq w`Rv exR ebtZ nq|  
tgsmg t`f` l exR w`Rv`bvi t`f` Zvi Zg` i tqtQ| AvDk l Avgb tgsmg avb exR c`q 48  
Nuv Ges textiv tgsmg c`q 72 Nuv w`Rv`q ivL`Z nq| w`bP exR ecb c`wZ,tjv Avtj vPbv  
Kiv ntjv:

**w`Qv`q exR ecb**

**1. n`Zi m`v`h` w`Qv`q tebv**

G c`wZ`Z GKwU cv`T exR w`bq g`v g`v exR w`Qv`q tebv nq| GKwU Riqi `N`A`ev c`  
eivei cijv Kti tntU mg`l Riq`Z exR w`Qv`q t`qv nq| G`f`f`T Aek`B tLqj ivLv Riavi  
h`Z Riqi tKvb RvqMv ev`bv h`q| G c`wZi m`v`v l Am`v`v,tjv w`bP t`qv ntjv:

**m`v`v**

- ZrovZwv ecb Kiv m`v`v`nq|
- mgq, kigK l LiP Kg j`v`M|

**Am`v`v**

- exR mgvbfv`te mgM`gv`v tebv m`v`v bq|
- extRi cwi gvY tenk j`v`M|
- AvMvQv evQvB l dmtj i cwi Ph`K`i`Z Kó nq Ges mgq A`bK tenk j`v`M|
- AvŠ` cwi Ph`K`i`Z Kul.hšc`wZ e`env`ti evavi m`v`v nq|
- dmtj i Drcv`b LiP tenk nq|
- AvMvQvi c`Kvc Ly tenk ntj Pvlxiv dmj bó Kti w`tq cieZx`dmj Pvl i D``v`M  
tbq|
- dmtj i m`½ msNex AvMvQv (Crop associated weed) `gb Kiv mnR bq|

**2. tgumb A`ev D`ovR`v`Ri m`v`h` ecb**

G c`wZ`Z ectbi KivRwU i aytgumb A`ev D`ovR`v`Ri m`v`h` m`v`v`Kiv nq| G c`wZi  
m`v`v l Am`v`v,tjv n`Z w`Qv`q tebv gZB|

**mwi tZ exR ecb**

mwi tZ `fite exRecb Kiv nq| nvtZi mnvth` jvOj A\_ev Ab` tKvb UvBb e`enri Kti ecb Kiv A\_ev tgm tbi mnvth` ecb Kiv| eZv tbi newfbæi Kg exR ecb hš; cvl qv hvq| Avgv t` i t`tk evsj t`k Kul.Mtel Yv KvDvYj KZR.D`weZ exR ecb hš; mnvth` GK ev GKwaK jvB tbi avb, cvU, Mg, gUi BZ`w` exR ecb Kiv hvq| me t`tk AvaybK exR ecb hš; mnvth` mōzI mygfite exR ecb Kiv hvq| GB c×wZi mjev I Amjev, t jv vbtP D t j L Kiv ntj v:

**mjev**

- dmtj i Avštcwi PhP thgb AvMvQv evQvB, mvi cōqm BZ`w` hveZiq dmj cwi PhP Kiv mn tR m=ubæKiv hvq|
- Zj bvgj-K fite extRi cwi gvY Kg j vtM|
- mgvb Mfvi Zvq exR ecb v bqšY Kiv hvq|
- extRi A tzi v` Mg fvj nq|
- dmtj i m t\_ msNe× AvMvQv `gb Kiv mnRZi nq|
- mwi tZ Aew`Z MvQ, t jv tgvUvgnv mgfite Av t jv, evZvm I Lv t`vcr`vb cvq etj mvari YZ dj b tewk nq|
- dmj KivUv I tZvj v mnR nq|

**Amjev**

- mgq I kigK tewk j vtM etj LiP A t bK tewk| Aek` AvaybK hš; thgb ÷`vb tn t c m k b w f (Stan Hay Precision drill) e`enri Kiti mgq I kigtKi AcPq Ktg hvq| mwi tZ exR ectbi Rb` cōvK LiP tewk ntj I cieZvZ dmtj i AvMvQv evQvB mn Ab`vb` Avštcwi Phr`mnR nq etj mefvK t j` Drcv`b LiP Ktg hvq Ges g v c v d t e t o hvq|

**exR tivcY**

dmj Drcv` tbi Rb` Kul.exR tivcY KitiZ nq| AvL, tMj Avj y v g i o Avj y BZ`w` dmtj i Kul.exR Ab`vb` dmtj i extRi gZ teivv hvq bv| Avevi A t bK dmj thgb Pv, Kwd, avb, ZvqvK BZ`w` dmtj i Priv`Zwi Kti RvgtZ tivcY KitiZ nq| newfbæcKivi exR tivcY c×wZ vbtP evYZ ntj v:

**K. tKvb tivcY (Clone planting)**

tKvb thgb Av`v, nj y BZ`w` i exR RvgtZwi Kti mwi tZ tivcY Kiv nq| A t bK mgq G t j v t g t j v f i t e l t K v b t i v c Y K i v n q |

**L. Priv tivcY**

RvgtZwi Kti cōvRbxq mvi mieivn Kti Priv tivcY Kiv DvPZ| avb P t l i R b` c ũ t g exRZjvq Priv Rb t b v n q | P r i v t i v c t Y i R b` R i g t Z c w b m i e i v n K t i K r`v (Puddling)

tKvb thgb Av`v, nj y BZ`w` i exR RvgtZwi Kti mwi tZ tivcY Kiv nq|

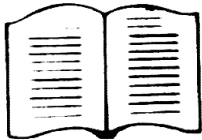
KiŹZ nq| big Kiv`vhy RwgŹZ wbr` ˘ ˘ŹZ; tMvQvq tMvQvq KŹqKwU KŹi Priv GKŹŹ tivcY Kiv nq|

**M. MŹZŹivcY (Dibbling)**

G c×wZŹZ MZŹKŹi exR tivcb Kiv nq| AvDk avb A\_ev mewR RivZxq dmtj i tŹŹŹŹ MZŹKŹi exR ˘nivcb Kiv nq| Gfvte exR GŹj vtgtj vfvte A\_ev mwiiŹZ tivcY Kiv nq| exR wQwUŹq eŹŹŹ hw AvDk avŹbi MvQ tntj covi m˘tebr ˘ŹK Zvntj exR MŹZŹivcY KiŹj mŹŹj cvl qv thŹZ cvŹi |



**AbŹŹj b (Activity):** wQwUŹq exR ecb I mwiiŹZ exR ecb c×wZi mŹear I AmŹear, tjv AvŹj vPbv Ki ab|



**mvi gg**

dmj Drcv`Źbi Rb` KwL exR ecb ev tivcY Kiv nq| tŹŹŹZ KwL exR ˘nivcbi c×wZŹK exRecb I Priv tivcŹY fivM Kiv hvq| exR wQwUŹq I mwiiŹZ nŹŹŹi mivŹh` A\_ev tgumŹbi mivŹh` teivb hvq| Priv tivcYI GŹj vtgtj vfvte A\_ev mwiiŹZ Kiv nq| wQwUŹq exR eŹŹŹ mgq, kŹŹK I LiP KŹj vŹM| wKŹ' dmtj i cieZŹcwi PhŹŹ LiP teik cŹo| mwiiŹZ exR ecb KiŹj cŹ\_wgK LiP teik ntj I cieZŹŹZ AvMvQv evQvB mn Ab`ib` AvŹŹcwi PhŹŹ KivR mnR nq etj meŹivKŹj` Drcv`b LiP KŹŹ hvq Ges gŹvdr teŹo hvq| mwiiŹZ exRecb ev Priv tivcY KiŹj dmtj i mŹ½ msNex AvMvQv mntR `gb Kiv hvq| wQwUŹq ev GŹj vtgtj vfvte exRecb ev Priv tivcY KiŹj MŹŹQi msL`v mŹŹg ivLv hvq bv etj dj b mvariYZ KŹŹ hvq| wKŹ' AvŹŹŹK DbŹ hŹŹcwiZi mivŹh` RwgŹZ mŹŹg I mŹŹfvte wbr` ˘ msL`K dmtj i MvQ RvŹŹŹq KwLZ dj b jvf Kiv hvq|



### cvWĒi gj`iqb 3.4

mWk DĒti i cvkqUK wPy (√) w`b|

1. dmj i cKZ.exR Kx?

K. DwMf` i kvixi K Ask

L. DwMf` i RvibK Ask

M. kvixi K I RvibK Ask

N. tKvUvB bq|

2. wbtPi tKvUv cKZ.exR ?

K. kvLv Kj g

L. K` gj-

M. cvU exR

N. w K`

3. wbtPi tKvUv KwL.exR bq ?

K. AvLi KvU

L. AvLi cvZv

M. tMj Avj y K`

N. cv\_i KPi cvZv

4. ZvgvKi exR ectbi Rb` gWUv KI`nv tKgb nŕZ nq?

K. fvj nŕZ nq

L. gvSwi nŕZ nq

M. fvj nŕZ gvSwi nŕZ nq

N. gvSwi nŕZ wbtbi nŕZ nq|

5. cvU I mWv Iv exR tKv ai tbi exRZj vq ebtZ nq ?

K. i Ktbr exR i Ktbr exRZj vq

L. i Ktbr exR wFRv exRZj vq

M. wFRv exR i Ktbr exRZj vq

N. wFRv exR wFRv exRZj vq|

6. tev i v tgsnjg avb exR wFRv exRZj vq tev i v cteAvbgmbK KZ NvUv wFRv i vLŕZ nq?

K. 24 NvUv

L. 48 NvUv

M. 60 NvUv

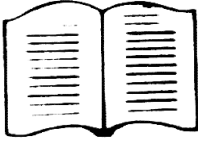
N. 72 NvUv|

### cw 3.5 Pvi NbZ; ubaŋ Y I mte` dj b



G ciV tkfI Avci b

- ◆ dmtj i exR nvi Ges dmtj i tŋtZ Pvi NbZ; ubaŋ Y Ki tZ cvi teb |
- ◆ dmtj i tŋtZ Pvi NbZ; Zvi Zg` Ges Gi Kvi Y e`vL`v Ki tZ cvi teb |



GKwU ubw`ŋ GKK cwi gvY RigtZ mv`R fite GKwU dmj dj vtZ th cwi gvY exR ecb Ki tZ nq ZvtKB H dmtj i exRnvi eŋvq | GKwU ubw`ŋ AvqZtbi RigtZ th cwi gvY Pvi v MvQ \_vKtj GKwU dmtj i D`P dj b nq, tm cwi gvY Pvi v Dcv`wZtK H dmtj i Pvi v NbZ; etj | Pvi v NbZ; Dci dmtj i dj b AtbKLmb wbfPkyj | AZGe RigtZ Kw`LZ Pvi v NbZ; Rb` GKwU ubw`ŋ cwi gvY exR RigtZ ecb Kiv nq | ubw`ŋ GKK RigtZ ubw`ŋ mSL`K MvQ mlyg` itZ; Ae`vb Kti fij fite Rbvtj B mte`P dj b cvl qv mte` | extRi nvi Kgtewk ntj MtQi NbZ; mSL`v Kg ev tewk nq | dtj dmtj i ew` I Dbaq b Zvi Zg` nq hv dtj tbi Dci cŋve tdtj |

GKwU ubw`ŋ GKK cwi gvY RigtZ mv`R fite GKwU dmj dj vtZ th cwi gvY exR ecb Ki tZ nq ZvtKB H dmtj i exRnvi eŋvq | GKwU ubw`ŋ AvqZtbi RigtZ th cwi gvY Pvi v MvQ \_vKtj GKwU dmtj i D`P dj b nq, tm cwi gvY Pvi v Dcv`wZtK H dmtj i Pvi v NbZ; etj |

exRnvi extRi weifbæ` Yv` tYi Dci wbfP Kti | G mg`l` Yvejxi gta` itqtQ extRi weix`Zv, A`ziv` Mg ŋgZv, IRb, AvKvi, AvKwZ, mgveqZv, cwi c`Zv BZ`w` | exR hZ weix` nq exRnvi ZZ Kg nq Ges extR tRvtj i cwi gvY hZ tewk nte exRnvi tm nvti evote | Avevi extRi A`ziv` Mtgi nvi hZ tewk nte exRnvi tmB AbsvtZ Kgte | extRi AvKvi AvKwZi Zvi Ztg`i Rb` exRnvi Kg ev tewk nte | extRi IRtbi Zvi Ztg`i Rb` tMj Avj yexRnvi tnzt 20 t`K 75 gY chS I Vbvgv Ki tZ cvti | G Qvovl extRi mgveqZv I cwi c`Zvi Rb` exRnvi Kg ev tewk ntZ cvti |

AvtMB ej v ntqtQ, dmtj i tŋtZ Pvi NbZ; I dj b ubw`e fite RwoZ | Kw`LZ dj tbi Rb` Pvi v NbZ; ubaŋ Y cŋve we`vi Kvi x Kvi Ymga` wtp Avtj vPbv Kiv ntj v:

#### 1. KwŋZ Dv`c mSL`v (Desired plant population)

GKwU ubw`ŋ GKK cwi gvY RigtZ ubw`ŋ mSL`vi MvQ msKzv v nevi ci dj b mte`P mxyq tcSvq | GB ubw`ŋ mSL`vi MvQ H GKK RigtZ cwi tetki fvimig` i ŋv Kti | RigtZ Kw`LZ MtQi mSL`v evotj A`ev Kgtj dmtj i tŋtZ MtQi Lv` Dcv`vb cŋbi Zvi Zg` t`Lv` itZ cvti, tŋtZi Av`Zv, evqPj vPj, mthP Avtj v Kg ev tewk ntZ cvti | MtQi mSL`v Awak ntj dj b KgtZ \_vKte | AZGe, GKK RigtZ meŋak hZUv MvQ \_vKtj dmtj i dj b meŋak nq, tmB MtQi mSL`vtKB H RigtZ Kw`LZ Dv`c mSL`v etj | weifbæ dmtj i Rb` GB mSL`v weifbæi Kg ntq \_vtK, Avevi GKB dmtj weifbæKvi tY weifbæntZ cvti |

GKK RigtZ meŋak hZUv MvQ \_vKtj dmtj i dj b meŋak nq, tmB MtQi mSL`vtKB H RigtZ Kw`LZ Dv`c mSL`v etj |

#### 2. cŋZŋ gv`v (Establishment allowance) ev ubivcE`vmsi ŋYx gv`v (Percent safety allowance)

AtbK extRi MtelyMvti A`ziv` Mg nq wKs` gv`v cŋZKj Ae`vq A`ziv` Mg nq bv | Kvi Y`fc ej v hvq gv`vi me`P mgvb im \_vtKbv | Avevi AtbK exR gv`vi tek Mfxti A`ev GtKeiti B Dcti \_vtK | k<sup>3</sup> exR (Hard seed) mvari bZ MtelyMvti A`ziv` Z nq bv wKs` gv`vi cŋZKj Ae`vq k<sup>3</sup> extRi A`ziv` Mg ntZ cvti |

GQvovl weifbæcKvi Rxe thgb KxU cZ½ ev cML exR tLtg` dtj tZ cvti | dtj dmtj i tŋtZ Pvi v NbZ; Ktg` thtZ cvti | Gi Kg wKQy Pvi v ŋwZtK cŋZŋ ŋwZ (Establishment

mvaviYZ gvW dmtj Priv  
tivrctbi tjtj 5-15%  
nvti Ges exR ectbi  
tjtj 10-15% nvti  
cZB gvW thM Kiv nq

loss) ejv nq| G aitYi cZKj Ae`vtK KwUtq I Wi Rb` exR ectbi mgq A\_ev Priv  
tivrctYi mgq cZB gvW Abjvqx teuk exR ecb Kiv nq| mvaviYZ gvW dmtj Priv tivrctYi  
tjtj 5-15% nvti Ges exR ectbi tjtj 10-15% nvti cZB gvW thM Kiv nq, hvZ  
cZKj Ae`vi ci I KwLZ Privi msL`v WK`vtK|

**3. Rigi DePZv I Drcv`b tlgZv (Soil fertility and Productivity)**

Rigi DePZv I Drcv`b tlgZv weifbweletqi Dci wbfPkj | MtQi ep` I Dbq Rigi  
DePZv I Drcv`b tlgZv mt` Nubofvte RvZ| Kg DePZv m`ubegmUtZ MtQi ep` Kg  
nte Ges tm Abjvqx teuk msL`K MtQi msKjvb nte| Avevi thLvtb gmlI Drcv`b tlgZv  
teuk tmLvtb MtQi ep`i nvi teuk etj Kg msL`K Privi msKjvb nte| KvRB Privi NbZ;  
wbaftj gmlI DePZv I Drcv`b tlgZv c`ve itqtQ|

**4. dmtj i e`envi (Use of crop)**

dmtj i e`envi Privi NbZ; wbaftj c`ve we`vi Kti | D`vniY`tfc tMv-Lv` I `vbm dmj  
wmmte fZv Pvl i K\_v ejv hvq| `vbm dmj wmmte Pvl Kitj Privi th NbZ; `iKvi Zvi tPtq  
A`bK teuk Privi NbZ; c`qvRb tMv-Lv` wmmte Pvl Kitj | G iKg aB`v, kYcvU, BZ`w  
dmj meR mvi wmmte A\_ev exR Drcv`b ev Atk dmj wmmte Pvl Kitj Privi NbZ; A`bK  
cv`R` i vLv nq|

**5. dmj Rbvtbvi FZz (Growing season)**

hv` tKvb dmj i we Ges Lwi c Dfq tgsmtg Pvl Kiv nq Zte Privi NbZ; Zvi Zg` nZ  
cvti | Zzv dmj i we tgsmtg Pvl Kiv ntj MtQi `wK ep` Kg nq| ZvB G FZz Privi  
NbZ; emotq w`tZ nq| Aci w`tK Lwi c tgsmtg GKB RvtZi Zzv dmtj `wK ep` teuk  
nI qvi Rb` Privi NbZ; Kwgtq t`qv nq|

**6. dmj jvMtbvi cxwZ (Planting method)**

tjtj Privi NbZ; dmj jvMtbvi cxwZi vvin c`vemsZ nq| thgb, AvL dmj Pvl Pj gvb  
mmtZ AvtLi KvU tivrctYi Kitj tn`icZ c`q 100 gY AvL exR LtUi c`qvRb| A\_P  
AtKvetKv cxwZtZ tivrctYi Kitj Gi w`Y AvL exR LtUi c`qvRb nq| cvU Pvl i tjtj hv`  
cvU exR wUtq tevbn nq Zte tn`i cZ 10-12 tKwR exR Ges jvBtb ecb Kitj 5-8 tKwR  
exR `iKvi nq|

hv` cvU exR wUtq tevbn  
nq Zte tn`i cZ 10-12  
tKwR exR Ges jvBtb ecb  
Kitj 5-8 tKwR exR  
`iKvi nq|

**7. Priv jvMtbvi mgq (Planting time)**

exR ecb ev tivrctbi mgq Abjvnti Privi NbZ; Kg teuk nZ cvti | dmj hLb tgsmtgi c`g  
w`tK jvMtbv nq ZLb Priv, tjv ep`i Rb` c`Z mgq cvq etj Privi NbZ; Kwgtq w`tZ nq|  
wKŠ tgsmtgi tktli w`tK jvMtbj MvQ `wK ep`i Rb` mgq Kg cvq| dtj Privi NbZ;  
emotq w`tZ nq| tivrctv Avgb avtbi tjtj tgsmtgi c`g w`tK cZ tMvQv 2-3w Priv Ges  
tgsmtgi tkl w`tK 3-4w Priv tivrctYi Kiv nq|

### 8. Kuk Drcv b cKuz.(Tillering habit)

avb, AvL, Mg, he, Pxbv, Kvl b BZ-wi ZUz RivZiq dmtji (Cereals) Privi NbZ;ubYfqi Rb" G mKj dmtji i weifbaRivZi Kuk Drcv b qgZv wefePbv Ki+z nq|

Mingbx (Gramineae) cwi etji i Ašf9 km" RivZi Kuk Drcv b qgZv Privi NbZ; ubaſi tY cſve we-vi Kti | th RivZi Kuk Drcv b qgZv tenk tm RivZ Privi NbZ; Kugtq w tZ nq| D`vni Y`fc ej v hvq Mtgi BDubKj g (Uniculm) RivZ i agvI GKU Kuk B\_vtK uKŠ` Ab`vb" RivZ GKwaK Kuk Drcvba nq| avb, AvL, Mg, he, Pxbv, Kvl b BZ-wi ZUz RivZiq dmtji (Cereals) Privi NbZ;ubYfqi Rb" G mKj dmtji i weifbaRivZi Kuk Drcv b qgZv wefePbv Ki+z nq|

### 9. Pifli cKvi (Type of cultivation)

dmi Drcv`tbi j`fſ" Rigi m9ze`envti i Rb" `ſai tYi Pvl c-xwZ AbyriY Kiv nq| Gi GKUv e`vcK Pvl (Extensive cultivation) Avi Ab`wU ubweo Pvl (Intensive cultivation) | G `wſtK Avevi h\_vu`tg Avb`vugK we`li (Horizontal expansion) Ges Dj`a`we`li (Vertical expansion) | ej v nq| e`vcK Pifli Rb" GKU t`tki ev Ligv`ti mKj Pvl`thwM" Riq Pifli Avl Zvq Avbv nq| PiflvcthwMx cſZ BwA Riq Pvl Kti Drcv b evovt`bvi tPov Kiv nq| Aci c`fſ ubweo Pifl GKB Riq tZ mKj cKvi chv9 e`envi Kti dmtji m`tebvq dj b (Potential yield) Drcv b Kiv nq| ubweo Pifl h\_vh`fite mvi, tmP I D`P dj bkxj RivZ e`envi Kti dj b evovt`bvi tPov Kiv nq| dtj GKB Riq tZ ubweo Pifli Rb" Privi NbZ;e`vcK Pifli tP`q tenk ubaſi Y Kiv nq|

**Abyj b (Activity):** tKvb dmtji i exRnvi I Privi NbZ; ej tZ Kx eſSb? exR ecb ev Privi tivctYi t`fſI cſZ9 gvIv (Safety allowance) m`utK`Avtj vPbv Ki ab|



**mvi gg®**  
GKU ubw`9 AvqZtbi Riq tZ th cwi gvY Privi MvQ Rb`ſtj GKU dmtji m`tePP dj b nq, tmB cwi gvY Privi MvQi Dcw`wZ tK H Riq tZ H dmtji Privi NbZ; etj | Avevi GKU ubw`9 AvqZtbi Riq tZ th cwi gv b exR ecb Kij GKU dmtji i Kvw`LZ dj b cvl qv hvq ZvtK H dmtji exRnvi etj | exRi we`xZv, A`z`v`Mg qgZv, I Rb, AvKvi, AvKwZ, mgveqeZv, cwi c`Zv BZ-wi i Dci exRnvi ubf`P`Kxj | t`fſZ Privi NbZ; I dmtji dj b ubweofite m`uKſ9 | GKUv ubw`9 msl`vi MvQ GKK Riq tZ cwi t`tki fvimig" i qv Kti dmtji i Kvw`LZ dj b w`tq `vtK | H ubw`9 MvQi msl`vi tP`q H GKK Riq tZ MvQi msl`v Kg ev tenk n`tj dmtji i t`fſZ Avenrl qv I Ab`vb" Lv" Dcv`vb cſi cv`K" i Rb" dmtji i dj b cſve w`S Z nq| dmtji i t`fſZ Privi MvQi Kvw`LZ NbZ; i Rb" exRi cKZ.gvb tR`tb cſZ9 gvIv cſqM Kiv DvPZ | DeP gml`tZ MvQi ew`xi nvi tenk etj Privi NbZ; cſve we`li Kti | Avevi dmtji e`envi, dmi Rb`ſt`bvi FZz dmi j`vMv`bvi c-xwZ, Privi j`vMv`bvi mgq, Pifli cKvi Ges Privi Kuk Drcv b qgZv dmtji i t`fſZ Privi NbZ; ubaſi tY cſve we`li Kti | cwi w`Z t`fſ` dmtji i exRnvi A`ev Privi NbZ; Kugtq uKsev emotq dmtji i Kvw`LZ dj b cvl qv m`e |





### cvVĖi gj`iqb 3.5

mĭWK DĖti i cvtkqUK ĩPý (√) ĩ b|

1. tKvbĭU mĭWK? exR hZ ĩei x nq exRnvi ZZ -  
K. Kg nq L. tek nq M. Dj x^nĭti evto N. AvbyĭgK nĭti Kĭg
2. gvV dmtj Priv tivcĭYi mgq cĖZĖ gvĭv (%) KZUKzĭ tZ nq?  
K. 5-10 L. 5-15 M. 15-20 N. 10-15
3. gvV dmtj exR ectbi mgq cĖZĖ gvĭv (%) KZUKzĭ tZ nq?  
K. 5-10 L. 10-15 M. 10-20 N. 5-15
4. cvU exR ĩQĭUĭq eĭtj tn±i cĖZ KZ tKĭR extRi cĖqvRb ?  
K. 10-12 tKĭR L. 5-8 tKĭR M. 10-15 tKĭR N. 12-15 tKĭR
5. cvU exR jvBb Kĭi eĭtj tn±i cĖZ KZ tKĭR extRi cĖqvRb ?  
K. 5-10 tKĭR L. 5-8 tKĭR M. 8-12 tKĭR N. 10-12 tKĭR
6. ĩbĭeofĭte PĭtI i gva`ĭg dmtj i dj b evovĭbvĭK Kx ejv nq?  
K. AvbyĭgK ĩe`ĭi L. Dj x^ ĩe`ĭi M. ĩĭvĭmĭ ĩe`ĭi N. m`Ėebvgq ĩe`ĭi

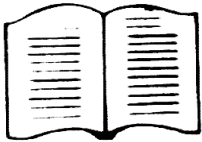
e˘enwiK

cw 3.6 t˘kxjvOj I gBtqi mrvth˘ fig KIŸ



G cvV tkfI Avcwb

- ◆ tKb jvOj w˘tq Rwg Pvl Kiv nq Zv ej tZ cvi˘eb|
- ◆ KLb Ges Kxfvte jvOj w˘tq Rwg Pvl w˘tZ nq Zv ej tZ cvi˘eb|
- ◆ Kxfvte iKtbr I wFRv Rwg ˘Zwi Ki tZ nq Zv eY˘v Ki tZ cvi˘eb|
- ◆ Rwg ˘Zwi m˘uukZ AvbywzK w el qvej x ej tZ cvi˘eb|
- ◆ jvOj I gB ˘viv Rwg Pvl Ki tZ cvi˘eb|



mrvviY fig KIŸY jvOj I gB ˘viv KtqKevi AvovAmofvte Pvl w˘tq Rwg ˘Zwi Kiv nq| jvOj PftI ci gB w˘tq gwU tftz mgvb Kiv nq| Rwi Dci Ae wZ AvMvQv I cteŸ dmtj i AveR˘v cwi ˘vi A\_ev gwUj mvt\_ wgwktq w˘tq DEg tFzZ Ae vi GKwU Rwg ˘Zwi Kiv nq| jvOj I Pvl gB m˘utK ˘w ˘wv Z Avtj vPbv wbt˘˘ qv ntj v:

Kx Rb˘ jvOj w˘tq Rwg Pvl Kiv nq ?

- jvOj w˘tq Rwg PftI dtj k<sup>3</sup> gwU tftz hvq|
- AvMvQv wbtqŸz nq|
- ˘Re c˘v\_Ÿ i mrvqwbK mvi gwUtZ wgtk hvq|
- Piv tivctYi DcthwMx Kv˘vhŸ big Rwg ˘Zwi nq|
- RwtZ GKwU k<sup>3</sup> jvOj ˘fti mrv nq hv cvwb I Lv˘vcv˘vb ati ivL tZ mrvth˘ Kti|
- iKtbr RwtZ evqPj vPj mnRZi nq|

Avgt˘ i t˘tk hM hM ati t˘kxjvOj w˘tq Rwg ˘Zwi Kiv nt˘Q| G hŸjUi MvB I wbgŸY AvZ mrvviY| GtZ GKwU w˘tKvYvKvi Kv˘vi kixi (Body) AvtQ| kixti i wQb w˘tK\_vtK GKwU nvZj (Grip)| GB nvZj ati KIK Rwg Pvl Kti| kixti i AMftM tjrvvi avitjv I m Pftjv dvj (Share) j vMv˘v\_vtK| GB dtj i mrvth˘ Rwg Pvl Kiv nq| kixti i gvSLv˘b wQ˘Kti Kxj K w˘tq Kv˘vi GKwU CI (Beam) j vMv˘v\_vtK| CtI i AMftM tRvqj teta GK tRvov Miæ ev gwU w˘tq jvOj Uvbn nq| GB t˘kxjvOj i mrvth˘ 8-10 tm.wg. Mfxi Kti Rwg Pvl t˘qv hvq| c˘Zw b G hŸj w˘tq c˘q GK wvNv Rwg Pvl Kiv hvq|

t˘kxjvOj i mrvth˘ 8-10 tm.wg. Mfxi Kti c˘Zw b c˘q GK wvNv Rwg Pvl Kiv hvq|

Rwg ˘Zwi cKvi

mrvviYZ t˘kxjvOj w˘tq ˘cKvi Rwg ˘Zwi Kiv nq:

1. iKtbr Rwg ˘Zwi Kiv nq AvDK, Mfxi cvbi Avgb avb ev tevbn Avgb avb, cvU, mvi Iv BZ˘w PftI i Rb˘|
2. wFRv Kv˘vhŸ Rwg tivcv AvDK, Avgb I tev˘iv avb PftI i Rb˘|

Dtj L˘ th, GLv˘b jvOj I gBtqi mrvth˘ iKtbr Rwg ˘Zwi i c˘wZ Avtj vPbv Kiv nt˘Q|

**Kxfite jv0j w`tq Riq Pvl Kiteb?**

1. tRivqtj i mvrith` GKtRivov ej t` i mvt\_ jv0j Rto w`b|
2. gvtVi GK cšl nřZ j vřj Pvl Avl Kily| mgvšlvj `iřZ Avm-hvl qv Kti Pvl w`řZ \_vKb hZřY bv mšYřRiq Pvl nq|
3. Zvi ci AvovAvovfite Aci cšl t`K Pvl Avl Kily|
4. Dcti i gmlU `li fv Mvi Rb` hZevi cšqvRb cb: cb: Pvl w`řZ \_vKb hZřY chšl GKlv mgvb mšMvZcYř pZv bv Avřm|

**Kxfite iKtbn Riq `Zvi Kiteb?**

1. tevřiv A\_ev tivcv Avgb ev tgšmřgi cšl t`cšg evi Ae`evnZ cti B Riq Pvl i Rb` Dbš Kily|
2. RiqřZ gvV řlgZv (řtRvř Ae`v) \_vKv Ae`řq jv0j w`tq Pvl w`b| GK gvd gmlU nřZi Zvj řZ vbtq cixřlv Kily| nřZ GKlv gmlU ej `Zvi Kti mvari Y kř gmlU Dci tQto w`b| hv `Zvi gmlU ej vU cZřbi ci třřř Qvotq hvř Zvřtj eřteb Riq řtRvř Ae`řq GřmřQ Ges jv0j Pvl i Rb` Dchř nřtřQ|
3. jv0j I gB w`tq 5-6 evi Pvl w`b| GřZ Riq AvMvQvř nře A\_ev AvMvQv\_ řj v gmlU mvt\_ vřtk hvře Ges mgvb mšMvZcYř pZvř Riq `Zvi nře| jv0j Pvl I gBřqi cwi gvV Riqi Ae`vi I ci vřřř Kti |
4. hZ` j mšE Mřvi Kti Riq Pvl Kily|
5. AvMřMvov Riq Pvl Kti gB w`tq řřj vřře mgvb Kily|

**tKb gB Pvl t`qv nq?**

1. gmlU tXj v fvřvi Rb`|
2. Riq mgvb Kivi Rb`|
3. Ařvi Z AvMvQv\_ řj vřK gmlU mvt\_ vřtkřtq t`qvi Rb`|

Gřřk Avv Kvj t`řKB evřki `Zvi gB w`tq gB Pvl t`qv nq| GB gB-Gi AvKvi, AvKvZ t`řki vevřvřvřvřvř vevřvřvřvř Kg| tKvřvřvř eo Avevi tKvřvřvř tQvU| tKvřvřvř `řv evi (Bar) Avevi tKvřvřvř vřvřvř evi mšřř| cšvř evi řj vř tQvU tQvU řmervi (Cross bar) w`tq Avřvřvř Kti j vřvřvřvř vřK|

tRivqtj i mvt\_ gB teta GK tRivov A\_ev `ř tRivov ej ` ev gmlU w`tq gB Pvl t`qv nq| gB Pvl t`evi mgq tKv`vj I Sřo mřřř i vLv DřPZ| tKv`vj AKvřř Riq I AvMvQv Dřřvj řb e`envi Kiv nq hv jv0řj i mvrith` Kiv hvřvř| Avi Sřo w`tq mšMvřZ AvMvQv I ggvv AveRřv cwi řvi Kiv nq|

KwL.I c j n Dbq b -z

**Kxfite gB Pvl w` teb?**

1. tRiqvj Rto ej t` i mrt\_ gB teta w` b|
2. gvtVi GK cš/nZ gB Pvl Avic Kily| mgvšij `tZ; Gcvk I cvk Pvl Kti mg`l Rvg Pvl Kily|
3. Zvi ci AvovAmo fite Ab` cš/nZ gB Pvl w` b|
4. Zvi ci j vj n^l AvovAmo fite Avei I gB Pvl w` tq Rvg mgvb Kily|

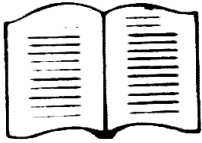
### e`enwiK

#### civ 3.7 exRZjv`Zwi



G civ tk`l Avciab

- ◆ wefbaexRZjvi cwiwPZ ej tZ cvi teb|
- ◆ GKw Av`k`exRZjv nvtZ Kj tg`Zwi Ki tZ cvi teb|
- ◆ exRZjvi hZaGes cwi Phm`utK`ej tZ cvi teb|



#### c`umwK Avtj vPbv

avb evsj v`tki GKw c`avb Lv` dmj | mvari bZ exRZjvq Priv Drcv`b Kti tmB Priv RigtZ tivcY Kti G dmj Pvl Kiv nq| evsj v`tk eQti i wefbaemgtqi Avenl qvi Dci wbfP Kti exRZjv`Zwi Kiv nq| mvariYZ tev`iv tgsm`tg wFRv Kv`vgq exRZjv, AvDk I Avgb tgsm`tg i`Kbv I wFRv - Dfq cKvi exRZjvB`Zwi Kiv nq| thme GjvKvi Rig DEz Ges gml t`v-Atk cKwZi tmLvtb mvariYZ i`Ktbv exRZjv`Zwi Kiv nq| Gtlj gmltZ c`avbZ wFRv exRZjv`Zwi Kiv nq| i`Ktbv I wFRv exRZjv Qvov WvtcM I cwi ewZ` WvtcM c`wZtZ exRZjv`Zwi Kiv hvq| Avevi wefc cKwZK Ae`vq fimgvb exRZjv`Zwi Kiv nq|

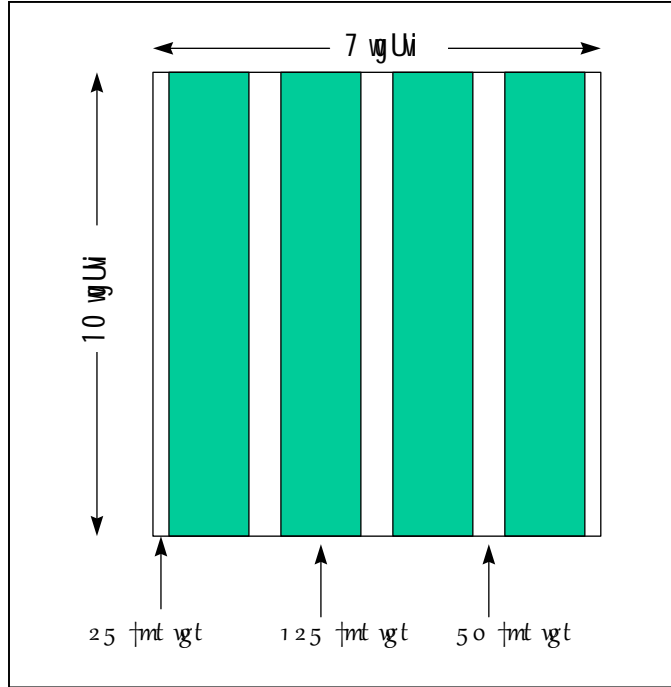
**msAv:** th gmltK exRi m`zAv`ziv`Mg I Priv MRvtbvi Rb` `Zwi Kiv nq ZvtK exRZjv etj |

avb Pvl i t`jt` GK weNv RigtZ Priv tivcYi Rb` mvari bZ GK KvW RigtZ Priv Drcv`b Kiv nq| A`v` GK KvW Drcv` Z Priv w`tq 20 KvW ev GK weNv RigtZ Priv tivcY Kiv hvq| Gt`tk Rigi cwi gvY KIK ch`q weNvtZB m`zwiwPZ| exRZjv`K m`z`vte hZa I cwi Ph` Rb` w`v` cwi gv`c `Zwi Kiv nq| w`v` cwi gv`c i`Ktbv ev wFRv RigtZ `Zwi GK KvW GB exRZjv`K GKw Av`k`exRZjv ej v n`q`\_v`K|

avb Pvl i t`jt` GK weNv RigtZ Priv tivcYi Rb` mvari bZ GK KvW RigtZ Priv Drcv`b Kiv nq| A`v` GK KvW Drcv` Z Priv w`tq 20 KvW ev GK weNv RigtZ Priv tivcY Kiv hvq| Gt`tk Rigi cwi gvY KIK ch`q weNvtZB m`zwiwPZ| exRZjv`K m`z`vte hZa I cwi Ph` Rb` w`v` cwi gv`c `Zwi Kiv nq| w`v` cwi gv`c i`Ktbv ev wFRv RigtZ `Zwi GK KvW GB exRZjv`K GKw Av`k`exRZjv ej v n`q`\_v`K|

#### Av`k`exRZjv`Zwi i KvtRi aviv

GKw Av`k`exRZjv`Zwi i Rb` 10 wUvi `N`I 7 wUvi c`v`RvqMv tg`c wbb| `N`P GK cvk t`\_tK 25 tm.wg. RvqMv ev` w`tq evi cwi w`v`k I Priv MvtQi cieZ`cwi Ph` Rb` 125 tm.wg. Plov Pviw c`K c`K exRZjv wP` Abv`ti fivM Kti wbb| c`Z `B LÜ exRZjvi gv`S 50 tm.wg. RvqMv brjv`Zwi i Rb` ivL`|



**ħPĤ 3 : GK KvVvi GKĤU exRZj v|**

exRZj vi gmlU cwi cmlU KĤi Ĥwi KĤi i KĤbv exR mgvbvĤe exRZj vi Dci ĤQĤtq eĤb gmlU ĤĤ\_ ĤĤj vĤe ĤgĤtq Ĥb| exR\_Ĥj v bvoĤPvov KĤi 2.5-4.0 Ĥm.Ĥg. gmlU MĤĤi Ĥvcb KiĤ| cĤqvRb ĤeĤa Ĥj Kv gmlU Av Ĥi Y ĤĤqI exR\_Ĥj v ĤĤĤK ĤĤZ cĤĤi b|

DĤj Ĥ th, GK KvVvi exRZj vi Rb DcĤiv<sup>3</sup> gvc Ĥbqv nq| cĤqvRb ĤeĤa ĤN<sup>10</sup> ĤgĤĤi i ĤeĤk eĤoĤtq Ĥbqv ĤĤe|

**Ab Ĥb exRZj vi cwi ĤvZ**

**ħFRv Kv Ĥgq exRZj v**

ħFRv exRZj v Ĥwi i Rb RĤĤK cĤb Ĥvi v Ĥm<sup>3</sup> KĤi 2/3 ĤU j vOj Pvl I gB Pvl ĤĤq 7-10 Ĥb chĤĤ cĤb AvĤĤK i vLv nq GB Ae ĤĤK Rvei Ĥ I qv eĤv nq| Rvei Ĥ Ĥvi dĤj RĤgi Av ĤvOv, ceĤZĤdĤĤj i AeĤkĤvsk BZ ĤĤ cĤP gmlU ĤĤ\_ ĤĤk ĤRe ĤĤi i KvR KĤi | Ĥi cĤi RĤĤK j vOj Pvl I gB ĤĤq \_K\_ĤK Kv Ĥgq KiĤZ nĤe| i KĤbv exRZj vi gZ cĤĤg 25 Ĥm.Ĥg. I Pvi ĤU exRZj vi cĤZ ĤĤi gĤS 50 Ĥm.Ĥg. dĤk ĤiĤL exRZj v Ĥwi KiĤZ nĤe| dĤk i vLv RvqMv Ĥ\_ĤK 10 Ĥm.Ĥg. MĤĤi gmlU ZĤj ĤĤĤki exRZj vi Dci ĤĤZ nĤe| exRZj vi DcĤi gmlU nĤZ, eĤk ev KvĤVi ĤvĤĤĤ Ĥgvb KĤi Ĥwi KiĤZ nĤe| exRZj vi Kv Ĥ Lg big nĤj exR ĤeĤvi mgq Kv Ĥq WĤe ĤĤe ĤvB G i Kg Ae Ĥq KĤqK NĤUv ĤiĤL ĤĤj Kv Ĥ ĤKQĤv RĤg ĤĤe Ges Ĥi cĤi A Ĥi Z exR ĤeĤv ĤĤe|

**WĤcĤM exRZj v**

ĤeĤkI cwi ĤĤZĤZ WĤcĤM cĤĤZĤZ exRZj v Ĥwi Kiv nq| Ĥvavi bZ evoxi DVĤb ev th ĤKvb i KĤbv RvqMvq GK eMĤgĤvi GKĤU cĤj Ĥ\_b e ĤM ĤeĤtq GB exRZj v Ĥwi Kiv nq| gmlU mgZj KĤi gvSLĤb GKUz MĤĤi KĤi cĤj Ĥ\_b ĤeĤtq ĤĤqv nq| Ĥi cĤi cĤZ eMĤgĤĤi 2.5-

3.0 tKwR A%mi Z exR uQuUtg cje Kti etj w`tz nq| exR hvzZ i`iKtg bv hvq tmRb` extRi Dci Ar Kti cwb uQuUtg nq| G iKg exRZj vq PviMvQ exRcI t`tK c`qRbxq Lvei MhY Kti etj GB exRZj vi mekl hZæbtZ nq| cwb t`evi mgq cwb mvt\_ BDm qv ugnkZ Kti w`tj Pvi vi ewx fvj v nq|

eb`v Kewj Z GjiKvi Rb` cwi ewZ` WtciM exRZj v`Zwi Kiv thtZ cti | cwi ewZ` WtciM c`wZtZ Kv`ugq mgZj RigtZ Kv, KjvcvZv, KjvMtQi evKj w`tj tPstKvYv Nti gZ KitZ nte| exRZj vi wbtP KjvcvZv ev cwi u\_b weUtg Zvi gta` A%mi Z exR eb`tZ nq| gnuU t`tK tKvb cKvi Lv`vcv`vb MhY KitZ cti bv etj GB exRZj vi mekl hZæbtZ nq, Ab`vq Pvi MvQ Lv`i Afite gvi hvq|

**fimgub exRZj v**

eb`v Kewj Z nq hw` iKtbn I wFRv exRZj v Kivi gZ RivMv bv `vtK Ges hw` eb`vi ci ciB, Pvi vi c`qRbxqZv `vtK Zte fimgub exRZj v`Zwi Kiv nq| eb`vi cwb, c`kz, tWvev I Ltji Dci GB exRZj v`Zwi Kiv nq| G c`wZtZ exki PUVB Øviv`Zwi gvPv A`ev KjvMtQi fvj v`Zwi Kti Zvi Dci 2-3 tm.ug. cvZj v Kv`vi Av`li Y w`tj wFRv exRZj vi gZ Dcwi fiv mgub Kti GB exRZj v`Zwi Kiv nq| G exRZj v cwb Dci fimgub `vtK etj tmP t`qv c`qRb nq bv| exRZj v th cwbZ tftm bv hvq tmRb` GtK Ljdi mvt\_ teta ivLv evAbxq| c`Z eMgUti G iKg exRZj vq 80 t`tK 100 Mtg A%mi Z avb exR ecb Kiv nq|

**exRZj vi hZæ**

mY` I mej Pvi vi Rb` exRZj vi hZæbqv DvPZ| wFRv exRZj vq me mgq cwb ivLv DvPZ| WtciM exRZj vq Si Yvi mrvth` cwb w`tz nte Ges exR, tj v GK mt½ tPtc ivLtz nte|

**tmP I cwb w`ukb**

exR ectbi ci t`tK Pvi MRvbtv chS` cwb Øviv bji v fiv`ivLtz nte| exRZj vq cwb AvUtk `vKtj Zv w`ukb KitZ nte|

**mvi c`qum**

mrvvi YZ DeP I gvSmi DeP RigtZ mvi bv w`tqB exRZj v`Zwi Kiv nq| Rigj DePZv Kg `vKtj c`Z eMgUti `B tKwR cPv tMvei ev Kt`uv` ev Lvgi Riv mvi c`qum Kiv thtZ cti |



**Pəvšigj`vqb**

**msuŋB I iPbvj-K cke**

1. gvuji cKwZ. Abvnti fig KIŋYi Rb` Kx Kx bwiZgij v Abvni Y Kiv DvPZ?
2. gvuji eŋU I MVb Abvnti Kxfvte fig KIŋ Kiv hvq?
3. gvuji eÜžZvi m½ fig KIŋYi m`úKŋKx?
4. fig KIŋYi w` K cwi eZŋbi gva`tg Rvq Pvl Kti Kxfvte fig msi ŋY Kiv hvq?
5. AvDk avtbi Rb` `Zwi i`Ktbr KwlZ Rvqi `enkó` , tj v wj Lj|
6. avb Pvl i Rb` wRv Kv`vq Rvqi `enkó` , tj v wj Lj|
7. i`Ktbr gvUžZ Rvq `Zwi I wRv gvUžZ Rvq `Zwi i cv`ŋ` wj Lj|
8. i`Ktbr I wRv gvUžZ Rvq `Zwi Kivi c`wZ eYŋv Ki ab|
9. iPbvj-K cke wvfbadmtj i Rvq `Zwi i bwiZgij v Avtj vPbv Ki ab|
10. exRi AvKvi Abvqx fig KIŋ Kitz nq tKb?
11. dmtj i gŋj i Mfxi Zvi m½ Pvl i Mfxi Zvi m`úKŋKx?
12. dmtj i Drcv`b c`wZ wfbzvi Rb` Rvq `Zwi žZ tKvb cv`ŋ` AvtQ wK?
13. GKB dmj wvfbatgšmžg Pvl Kitz Rvq `Zwi žZ cv`ŋ` nq tKb?
14. Kwl exR `vcŋbi wvfbacKvi c`wZi bvq wj Lj|
15. exRecb I Priv tivctYi c`wZ , tj v Avtj vPbv Ki ab|
16. dmtj i tŋžZ wvfbacKvi exR `nvcb c`wZi mjev I Amjev , tj v wj Lj|
17. msÁv wj Lj: K. Privi NbZj; L. exRnvi M. KwlZ Dv`c msL`v N. cžZŋ gvŋv
18. Priv tivctY I exR ectb cžZŋ gvŋvi , ižZ; eYŋv Ki ab|
19. dmtj i e`enit i Dci wfiE Kti dmtj i exRnvi Kxfvte cŋvewšZ nq?
20. KwlZ dj žbi j tŋ` dmtj i tŋžZ Privi NbZj; wbaŋ žY cŋve w`li Kvi x Kvi Ymgr e`vL`v Ki Lj|





**DĒ igjv**

**cW 3.1:**

1| K    2| M    3| M    4| L    5| K

**cW 3.2:**

1| L    2| L    3| K    4| K    5| L

**cW 3.3:**

1| M    2| L    3| L    4| L    5| L

**cW 3.4:**

1| M    2| M    3| L    4| K    5| K    6| N

**cW 3.5:**

1| K    2| L    3| L    4| K    5| L    6| L

**BDibU 4 gmlU DePZv msi ǞY**

**BDibU 4  
gmlU DePZv msi ǞY**

evsj v`tki gmlUz AtbK ai`bi dmj Rb`q| wKš` dj b me RvqMvq GKIKg nq bv|  
dm`j i wewfbraai`bi Pwn`v ci-Y bv n`j Zvi `rfweK ep` I weKvk NtU bv, ZvB dj bl  
Avkvb`jfc nq bv| dm`j i Pwn`vi gta` i tq`Q c`p ev Lv` , cimb, mha`j vK, evZvm, Zvcgv`v,  
gmlU i fS`Z , Yvej x, Drcv`b e`e`vcv BZ`w` |

gmlU`K Dv`M` i Lv` `vcv`vbi `rfweK Drm wntmte aiv nq| μgvmZ dmj Drcv`vbi d`j  
dmj KZR.c`Zv`bqZ Lv` `vcv`vbi , t`j v cwi`tkml Z n`q gmlU t`tK P`j h`q| Gme Lv` ` c`yt  
mieivn bv n`j gmlUz Lv` `vcv`vbi NvUwZ t`Lv t`q| we`tkl Kti thme Lv` `vcv`vbi  
cwi`gvYMZ Pwn`v tewk (thgb t`bvBtU`Rb, dmdivm, cUw`kqvg BZ`w`) tm , t`j vi NvUwZB  
tewk NtU Ges Zv` i Afve AvtM t`Lv h`q| Avi Acwi`vnh`Lv` `vcv`vbi th`tkv GKwU  
Afve ev Abg`w`wZ`Z dm`j i `rfweK ep` wewNv` nq|

evsj v`tki gmlU DeP Ges  
eu` iKg dmj P`tl i  
Dc`thvMx| wKš` μgvmZ  
dmj Drcv`vbi d`j  
gmlU DePZv I Drcv`b  
ǞgZv w`b w`b Ktg  
Avm`Q|

evsj v`tki gmlU DeP Ges eu` iKg dmj P`tl i Dc`thvMx| wKš` μgvmZ dmj Drcv`vbi  
d`j gmlU DePZv I Drcv`b ǞgZv w`b w`b Ktg Avm`Q| mv`Rfivte dmj Drcv`vbi `v`  
t`Ǟt`Zi DePZv I Drcv`b ǞgZv a`ti ivL`Z nte Ges GiRb` c`qvrB` f`ugi DePZvi Dci  
c`fve we`li Kvix Kvi Ymgn` m`u`K m`PZbZv I DePZv i Ǟvi Rb` c`qvrB`xq c`t`Ǟc M`hY|  
Zv bv n`j gmlU DePZv I Drcv`b ǞgZv A`i f`iel`t`Z t`jvc c`vte, dm`j i Drcv`b nwm  
c`vte Ges Lv` `rfve t`eto h`vte|

`Re c`v`\_gmlU DePZv w`bqš`fY gy` f`ugKv cvj b Kti | `Re c`v`\_P Kvi`fY gmlU , Yvej xi  
Zvi Zg` nq Ges dm`j i dj b c`fweZ nq| evsj v`tki gmlUz `Re c`v`\_P cwi`gvY w`bZv`S`B  
A`i | ZvB Rvq`Z `Re c`v`\_P msi ǞY I ep` i c`t`Ǟc w`b`Z nte Ges c`qvrB`xq Kwl Zv`wZK  
Dcvq , t`j vi Dci , i a`z; w`t`q dj b`tk w`wZkxj t`tK Db`z Kivi c`t`Ǟc M`hY Ki`t`Z nte|

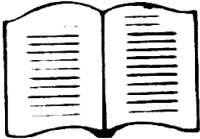
GB BDib`tU cv`vU cv`vV Rvq i DePZv, DePZvi c`fveKmg`n, gmlUz `Re c`v`\_P Drm, `Re  
c`v`\_P Kvi`fY gmlU , Yv , f`Yi Zvi Zg`, gmlUz `Re c`v`\_ep` i mgm`v I m`v`ebv Ges gmlU  
DePZv k`v` eRvq ivLvi Kwl Zv`wZK Dcvq Avt`j vPbv Kiv n`t`q`Q|

### cw 4.1 Rigi DePZv - msAv I figKv



G cvV tkfI AvciB

- ◆ Rigi DePZvi msAv ej tZ cvi teB |
- ◆ gmi DePZv m`utK`ej tZ I vj LtZ cvi teB |
- ◆ gmi DePZv I Drcv`b f`lgZvi gta` cv`R` mbyq Ki tZ cvi teB |



GKuU Rig DeP bv AbgP Zv gmi cix`lv Kti Rvbr hvte | gmi DePZvi mt½ gmi Drcv`b f`lgZvi mvgAm` \_vKtj I G`\$lv gmi vfbæ`enkó` | thgb - gmi DeP ntj I Drcv`b f`lg bvl ntZ cvti | GKU Rig tZ me, t jv Acwi nvh`Lv`vcr`vb c`qvRbxq cwi gvtY I AbgvtZ \_vKvi ci I hv` t`Lv hvq th, tmLvKvi ZvcgvIv Lv Kg ev AZ`sl teuk A`ev RigUtZ c`qvRbxq cwi gvtY cwb tbB A`ev tmLvB Rjve`Zv AvtQ | H Rig tZ dmj ecb Kij Zv Rbvt`e bv A`ev Rbvtj I f`ij dj b cvl qv hvtebv | Zvntj t`Lv tmj Rig tZ c`qvRbxq cwi gvtY Lv` (DePZv) \_vKv mtEj RigUt Kg Drcv`bkj ev Drcv`b f`lg bq | DeP gmiUtZ Lv`vcr`vb hv`ó cwi gvtY \_vKtj I A`bK mgq Zv MvtQi MhY`thvM` Ae`vq \_vtK bv | ZLb H gmiUtK DeP ev v ntj I Drcv`b f`lg ev v hvte bv | gmi Drcv`b f`lgZv nj tKvb Rigi dmj Drcv`tbi mvg`ev f`lgZv | gmi Drcv`b f`lgZv dmj Drcv`tbi nvi ev dj b Øviv vbi f`cZ nq | c`Z GKK Rig tZ dmj Drcv`b Kg ntj tm Rig tK Kg Drcv`bkj Ges Drcv`b teuk ntj teuk Drcv`bkj ev v nte |

DeP gmiUtZ Lv`vcr`vb hv`ó cwi gvtY \_vKtj I A`bK mgq Zv MvtQi MhY`thvM` Ae`vq \_vtK bv | ZLb H gmiUtK DeP ev v ntj I Drcv`b f`lg ev v hvte bv |

DeP gmiUtK Drcv`bkj bv Kiv ntj tKvb jvf nq bv, KviY dmtj i dj bB hv` bv cvl qv hvq Zte tm Rig \_vKv bv \_vKv GKB K\_v | ZvB DeP gmiUtK Drcv`bkj Ki tZ ntj gmi e`e`vcbv AZ`vek`K | thgb - nvj -PvI, mvi c`qvM, exR ecb, tmP c`qvM, AvMvQv, tcvKgvKo I ti vMevj vB `gb BZ`w` | GQvor thme Kvi tY DeP Rig Drcv`b f`lg nq bv Zvi gta` i tqtQ AvZvi<sup>3</sup> A`vZj ev f`lv Zj j eYv<sup>3</sup> Zv, vbo`vktbi AcL`Zj Zv, vev<sup>3</sup> `te`i Dcv`vZ BZ`w` |

dmtj i Pvn`v Ablyqx tKvb Rigi Lv`vcr`vb mieivtni f`lgZvtK figi DePZv etj |

dmtj i Pvn`v Ablyqx tKvb Rigi Lv`vcr`vb mieivtni f`lgZvtK figi DePZv etj | GKU Rigi gmi hv` dmtj i Pvn`v Ablyqx me, t jv Acwi nvh`Lv`vcr`vb mieivn Kti Zvntj H gmiUtK DeP gmi ev v nte | vKs` Acwi nvh`Lv`vcr`v`tbi gta` th`Kvb GKU Afie \_vKtj ZvtK DeP gmi ev v hvtebv, AbgP gmi ev v nte |



### mvi gg®

dmj Drcv`tbi Rigi DePZv AZ`sl, iazcY® DePZv msi f`lv I evxi c`t`f`lc MhY` bv Kiv ntj dj tbi Dci vefc c`Zmuv nte | dtj dmj Drcv`b vevvZ nte, Lv`v`vve teto hvte |



### ci#V#i gj`vq b 4.1

m#VK D#ti i ci#k#UK #P#y (v) #` b

1/ f#gi Lv` `vcv`vb mi eiv#ni #lgZv#K Kx ej v nq?

K) f#gi Drcv` b #lgZv

L) f#gi De#Zv

M) f#gi cvb avi Y #lgZv

N) f#gi p<sup>H</sup> gvb

2/ De# ev Ab#P g#U#K Kxfv#e kbr<sup>3</sup> Kiv hvq?

K) g#U cix#lv K#i

L) g#U#Z dmj Drcv` b K#i

M) g#Ui is t` #L

N) g#Ui `Re c`v#\_#P c#i gvc K#i

3/ g#Ui Drcv` b #lgZv Kx #viv #bi #vcZ nq?

K) g#U v#tk#Y K#i

L) g#Ui p<sup>H</sup> gvb t` #L

M) dm#j i dj b #` #q

N) g#Ui MVb t` #L

4/ De# g#U#K Drcv` bkxj Ki#Z Kx Kiv c#qvRb?

K) R#g Pvl em Kiv

L) R#gtZ mri c#q#M Kiv

M) exR ecb Kiv

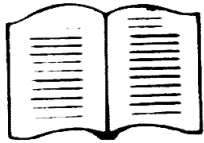
N) g#Ui m#ze`e`vcv Kiv

### ceW 4.2 Rıgi DePZvi cřveKmgř



G cıV tkřl Avcıb

- ♦ Rıgi DePZvi cřveK, řj v m=úřKřj LřZ l ej řZ cvi řeb|
- ♦ gıUı DePZvi Dci cřve me`lı Kvi x Kvi Ymgř kbr<sup>3</sup> Kři Kx c`řřc MřY Ki řZ nře Zv ej řZ cvi řeb|



gıUı DePZv ııwřb=řtb ııwřb=ři Křgi nřq \_řřK| GgbıK GKB Rıgi ııwřb=řstki DePZvi gıřv ııwřb=ři řbi nřZ cıři | thme Kvi Ymgř gıUı DePZvi Dci cřve me`lı Kři tm, řj řřK gj-Zř `řřřM řřM Kiv thřZ cıři- cřřKřZK ev `řřřmeK cřveK Ges Křřřg cřveK|

#### 1| cřKřZK ev `řřřmeK cřveK

Gme Kvi Y gıUı mřři mřř m=úřKřř thgb -

#### K) gıUı Awı ıkj v

gıUı thme ıkj v `řřı v MıVZ řřme ıkj v q me`gıv Lřř `ıcr`řřbi msL`v Ges cıı gıY hZ teık řm gıUı ZZ teık DeP|

gıUı thme ıkj v `řřı v MıVZ řřme ıkj v q me`gıv Lřř `ıcr`řřbi msL`v Ges cıı gıY hZ teık řm gıUı ZZ teık DeP|

#### L) gıUı eqm

th gıUı eqm Lř teık řm gıUı ııwřb=řKvi řY řřcřř nřq Zvi DePZv kř<sup>3</sup> nııı řq řđř |

#### M) Rj eqyř Mřcřř v

gıUı `Re c`řř\_P cıı gıY, řřg řřq, Lřř `ıcr`řřb Pqřııi gıřv l cıı gıY BZ`ıı i Dci gıUı DePZvi Zvi Zg` nq|

cıı exı ııwřb=řAĀřři Rj eqyřııwřb=řıřřı, hvi đřř ııwřb=řAĀřři eřřKřřı ııwřb=řı nq| gıUı `Re c`řř\_P cıı gıY, řřg řřq, Lřř `ıcr`řřb Pqřııi gıřv l cıı gıY BZ`ıı i Dci gıUı DePZvi Zvi Zg` nq| thgb- AııđKvi ııı řřq AĀřř cřřř eıřcřřZi đřř Mřř l Vı Nb ebrĀřři gıUı řřř Lřř `ıcr`řřb Pßřq Přř hıq Ges řmLřřb DePZv Kg| AbıřřřK bıwZKřřZıřř AĀřři gıřııı aıřřı eıřcřřZ AĀřř mřř nřqřQ ZY.řřgı| řmLřřb ZY. AıřřQıı Z RıgřřZ `Re c`řř\_P teık thřM nı qıq gıUı Lřř DeP| thgb - DĒı Aıřřgıı Kvi řcßıř AĀřř, iııkqıı řřcřř AĀřřı řřıřřřřg (Chernozem) gıUı| Zıřřııı Dřř AĀřř `Re c`řř\_P `řř meřřıřřı đřř DePZv Lřř Zııııııı bř nq| AbıřřřřK Kg Dřř AĀřř eıř l Zıřřı cřřKıv Kg \_ıřřq `Re c`řř\_P mřřR bř nq bı|

#### N) řřgı eÜřřZv

řřgı eÜřřZv gıUı DePZvi Dci ııwřb=řřřte cřve me`lı Kři | cııııı Gıı vKıq eıřcřřZ nřř řřgřřq teık nq Ges mřř mřř Lřř `ıcr`řřb cııııı mřř `řřřř nřq ııbřP Přř Aıřřı| Gřř cııııı Rıg Kg DeP Ges cıııııı cıřřřřı gıUı AııK DeP nřq \_řřK| b`x eııııZ cııı gıUıııı Gııı Kvi gıUı AııKZı DeP nřq \_řřK|

#### O) Rj ııxZv

řřkřıı b ařř Rj ııx Ae`ıř \_ıřKřř gıUıřZ bııııııı i ııııııııK ııııııııı đřř AřřK mgq MřřQı Mřřřřřřřřř Lřř `ıcr`řřb AııMřřřřřřřřř nřq hıq| thgb- MÜK, `řř BZ`ıı |

řřkřıı b ařř Rj ııx Ae`ıř \_ıřKřř gıUıřZ bııııııı i ııııııııK ııııııııı đřř AřřK mgq MřřQı Mřřřřřřřřř Lřř `ıcr`řřb AııMřřřřřřřřř nřq hıq| thgb- MÜK, `řř BZ`ıı |

**P) gmlji weliqvn (p<sup>H</sup> gub)**

gmlji MVtbi mgq Avw ʿmkjvi cǰkuz Ablyvqx gmlji p<sup>H</sup> gvʿtbi Kg tenk nq | GRb<sup>n</sup> gmljʿZ dmdim, tj ʿsn, Gj ʿwqvbvq, tevi Y, gwj eʿtWbvq BZ<sup>w</sup> Lvt<sup>n</sup> ʿvcr<sup>n</sup> vb ʿeY dmtj weliqvni mʿo Kʿi |

**Q) fiqʿlq**

gmlji Dcʿii ʿtʿi i DeʿZv mePvBʿZ tenk | wewfbæʿbmiMR KviʿY (eʿpvcvZ, evqzævn BZ<sup>w</sup>) gmlji GK<sup>n</sup> vb t<sup>n</sup>ʿK Ab<sup>n</sup> ʿvʿtbi ʿvbvʿſni Z nʿq hvevi ʿi ab gmlji DeʿZv bó nq | th ʿvb t<sup>n</sup>ʿK gmlji ʿlq nʿq Pʿtj hvq tm ʿvb Abyʿ nʿq cʿo Ges ʿmLvtb dmtj i Pvlv ʿAmæ nʿq cʿo |

**R) gmlji ebtj**

gmlji ebtj wzb cǰkvti i gmlji KYv ʿviv ʿbawʿi Z nʿq ʿvʿK | Avi gmlji KYv bvgKiY Kiv nq gmlji KYv eʿvʿmi Dci wʿwE Kʿi, thgb- tetj KYv gvc nʿtj v 0.02-2.0 wjwUvi, cij KYv 0.002-0.2 wjwUvi Ges K<sup>n</sup> ʿKYv 0.002 wjwUvi Gi Kg eʿvʿmiwʿkó | th gmlji hZ tenk nʿq Kv ebtji, A<sup>n</sup> vr tetj aiti tm gmlji ZZ tenk Abyʿ | Avi fvi x ebtji gmlji A<sup>n</sup> ʿGʿij aiti gmlji tenk Deʿ nʿq ʿvʿK |

th gmlji hZ tenk nʿq Kv ebtji, A<sup>n</sup> vr tetj aiti tm gmlji ZZ tenk Abyʿ

**2) Kulg cʿveK**

thme weliq ev KvhRjvc dmj Drcv<sup>n</sup> tbi e<sup>n</sup> ʿvcbvi mʿ½ m<sup>n</sup>úKʿ ʿGes gvbly KZR. cwi Pwj Z tm, tj v Kulg cʿveK | wbt<sup>n</sup>uG, tj vi eYv<sup>n</sup> t<sup>n</sup> qv nʿtj v:

**K) fiq KIʿ**

gmlji Avtjvob ev Prʿli i gva<sup>n</sup> ʿg Dv<sup>n</sup> t<sup>n</sup> i eʿx i mniqK KvhRjv cʿtK fiq KIʿ etj | wbgg gZ I mʿwii Kw<sup>n</sup> Z fiʿte Pvl Kiv bʿv nʿtj fiq i DeʿZv euj vʿtK nʿw cʿvq | Rwg DEgiʿc Pvl I gB w ʿtq cʿZ Kiv nʿtj MvʿQi wKko mʿwK vʿte eʿx cʿvq, ʿRe I A<sup>n</sup> Re me aiti mvi fiq vʿte gmljʿZ wgtk mgvʿte meʿ P<sup>n</sup> Lvt<sup>n</sup> ʿvcr<sup>n</sup> vb mieivn KiʿZ mniqZv Kʿi | AKw<sup>n</sup> ʿZ ev Am<sup>n</sup> uY<sup>n</sup> vʿte Kw<sup>n</sup> ʿZ gmljʿZ Zv nq bv | GLvtb Dʿtj ʿL<sup>n</sup> thm<sup>n</sup> th, AvZwi ʿZ Kw<sup>n</sup> ʿZve ʿv fiq ʿlq tK Zj wʿS Z KiʿZ cvʿi |

AvZwi ʿZ Kw<sup>n</sup> ʿZve ʿv fiq ʿlq tK Zj wʿS Z KiʿZ cvʿi |

DEwbPzev cvniʿoi Xvtj Pvlv ʿKivi mgq RwtZ Xvj eivei Ges AvovAmvʿvʿte Pvl w ʿtj I tkl Pvlw Aek<sup>n</sup> B Xvtj i AvovAmvʿvʿte nʿZ nʿte | bʿtj eʿo i cwbʿZ Aek<sup>n</sup> B fiq ʿlq Ges Lvt<sup>n</sup> ʿvcr<sup>n</sup> vʿtbi AcPq nʿte |

**L) gmljʿZ mvi cǰqm**

dmj Drcv<sup>n</sup> tbi Rb<sup>n</sup> RwtZ mvi cǰqvtmi dtj Rwi DeʿZv eʿx cʿvq | mʿvʿi gva<sup>n</sup> ʿg mʿvʿi YZt gʿy<sup>n</sup> Lvt<sup>n</sup> ʿvcr<sup>n</sup> vb, tj vi ʿgʿZbUv gvʿi mieivn Kiv nq | Kvi Y MwQ bʿvʿtUʿtRb, dmdim I cʿUmkvq Avak cwi gvʿY cwi tʿkvl Y Kʿi etj gmljʿZ Gʿi Afie ZivvZmo t<sup>n</sup> Lv t<sup>n</sup> q | Ab<sup>n</sup> vb<sup>n</sup> tʿMʿY Lvt<sup>n</sup> ʿvcr<sup>n</sup> vb Lʿy Af cwi gvʿY cwi tʿkvl Z nʿl qvq mʿvʿi YZt gmljʿZ mw<sup>n</sup> ʿZ cwi gvʿYB hʿó nq | Zʿe Gʿi Afie j ʿlY t<sup>n</sup> Lv w ʿtj Aek<sup>n</sup> B Gme Lvt<sup>n</sup> ʿvcr<sup>n</sup> vb cǰqm Kivi cǰqRb t<sup>n</sup> Lv hvq | thgb, ʿv I MUK |

**M) ʿRe c<sup>n</sup> v<sup>n</sup> ʿn<sup>n</sup> t<sup>n</sup> j v gmlji cǰv tʿc |**

ʿRe c<sup>n</sup> v<sup>n</sup> ʿn<sup>n</sup> t<sup>n</sup> j v gmlji cǰv tʿc | ʿRe mvi cǰqvtmi dtj gmlji tʿS Z ʿyvej xi Dbwz nq | ʿRe c<sup>n</sup> v<sup>n</sup> ʿn<sup>n</sup> t<sup>n</sup> j v gmljʿZ gmlji KYv tʿk ci ʿui t<sup>n</sup> ʿK ʿtj tʿtj w ʿtq gmljʿZ Avtjvzv I cwb Gʿij gmljʿZ gmlji KYv tʿk ci ʿui t<sup>n</sup> ʿK ʿtj tʿtj w ʿtq gmljʿZ Avtjvzv I cwb

ʿRe c<sup>n</sup> v<sup>n</sup> ʿn<sup>n</sup> t<sup>n</sup> j v gmlji cǰv tʿc | ʿRe mvi cǰqvtmi dtj gmlji tʿS Z ʿyvej xi Dbwz nq |

Re mvi tMvei, Kt`uvó I meR mti i gva`tg c`qum Kiv thtZ cti |

Pj vPtj i mthvM mvo Kti | Re c`v`gmltZ c`qum Kiv ntj gmlU Dckvix AYRtpei msL`v I Kvh`gZv ep` Kti, Rulj Re imvqubK wep`uqv NuUtq Lv`vcr`vb MhY`thvM Ae`vq AvbtZ mnvqZv Kti | Re c`v`gmltZ wef`bwtMSY Lv`vcr`vb thvM Kti gmlU DePZv msi`jY I ep`tZ mnvqZv Kti | Re mvi tMvei, Kt`uvó I meR mti i gva`tg c`qum Kiv thtZ cti |

**N) dmj Pti i ubeoZv**

GKw RigtZ GK ermti hZevi dmj Dvrbv nq Zvi kZKiv mmve gvbtk dmj Pti i ubeoZv etj | thgb, GKw Rigt t`tk GK ermti GKw cvU dmj I GKw tivcr Avgb avb Pvl Kij G Rigi dmj Pti i ubeoZv nte 200% | dmj Pti i ubeoZv hZ teuk nte Rigi DePZv ZZ Kgte | KviY GKw RigtZ hZ teukevi dmj Pvl Kiv nte, tm gmlU Lv`vcr`vb I ZZ ZvovZvvo tkl nq DePZv Ktg Avmte |

**O) AvMqv`gb**

dmj Drcv`tbi mgq Aek`B AvMqv`gb Kitz nq | GtZ AvMqv KZR MpxZ wKQycwi gvty Lv`vcr`vb RigtZ tdir`v I qv m`e nq, hv` AvMqv RigtZ cPtZ`v I qv hvq | GtZ gmltZ wKQyRe c`v`thvM nq v`K | Zte AvMqv hrtZ Rigt t`tk Lv`vcr`vb MhY` Kti Rigi DePZv KgtZ bv cti, tmw`tk j`j` ti`L mgqgZ AvMqv`g`tb Zrci nte |

**P) meR mvi dmj Pvl**

meR mvi dmj thgb-`aAv, kbcvU, ei euU (tMv-gUi) BZ`w` dmj Pvl Kti big Ges meR Ae`vq gmlU mt`z w`gk`tg w`tj gmltZ cPz`v cwi gvty Re c`v`thvM nq | GtZ gmlU DePZv evto Ges gmlU t`f`S`Z` Yvejxi DbwZ nq |

**Q) km`chq**

dmj Drcv`tbi thme t`j`t` Dchj km`chq Aeja`b Kiv nq, tmme t`j`t` gmlU DePZv msi`jY nq v`K | thgb, GKw m`zvi Kvir Z km`chq Mfvi I AMfvi g`x dmj gmlU vbtPi Ges Dctii`v`i Lv`vcr`vb cwi tkvly Kite | ZUj RvZiq dmj, mwa` dmj I Avk ev`j RvZiq dmj Lv`vcr`vb`tjv mgfvte MhY` Kti bv | Avw`tk RigtZ GK RvZiq dmj evi`evi Pvl Kij w`tkl KZK`uj Lv`vcr`vb teuk cwi gvty cwi`tkvml Z nq | dtj Aí mgtg Gme Lv`vcr`vb Dcv`v`bi NuUwZ`v`Lv`w`tZ cti | m`zvi Kvir Z fvte km`chq Aeja`b Kij Lv`vcr`vb m`yg fvte e`euZ nq | GRb` m`zvi Kvir Z km`chq gmlU DePZv msi`jY mrvh` Kti | km`chqi meR mvi dmj RigtZ cPz`v cwi gvty Re c`v`thvM Kti | Av`Qv`b dmj I cwi`Qb`k`l`p dmj (thgb- ZivvK, Avj`y AvMqv`g`tb mrvh` Kti |

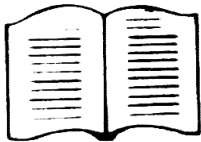
m`zvi Kvir Z km`chq gmlU DePZv msi`jY mrvh` Kti |

**R) cvb e`e`icbv**

dmj Drcv`tbi wef`bwechq RigtZ cvbi Afve`v`Lv`v`q, w`tklZ hLb ep`ocvZ Kg nq A`ev Av`S` nq bv ZLb t`m`Pi gva`tg cvb mieivn Kiv nq v`K | cvb t`m`Pi dtj Lv`vcr`vb cvbtZ`v`v`fZ nq AvqubK AvKv`i MvtQ c`ek Kti | Avw`tk AvZep`, eb`v`ev Rigi Rjve`x`Zvi mgq cvb AcmviY bv Kiv ntj MvtQi k`m`Kvh`w`K`gZ Pj bv | Zivov A`tbK Lv`vcr`vb Acwi`tkv`l`b`thvM AvKv`i i`f`v`sh`i Z nq gmlU DePZv Dci wej`c` c`Z`v`u`q` m`v`o Kti |

**S) Pvlver` cxiZ**

eisjvt`tki me AA`tj Pvlver`i cxiZ c`q GKIKg ntjI gvtS gta` Zvi e`wZmgl  
cwi j w`fZ nq| thgb, cwnmo AA`tj i Sg Pvl | cwnvtoi Mvtq wKQyMrQciv v cwp`q tek wKQy  
RvqMv cwi`vi Kti gwU Kuc`q ZvtZ wefbaeRvtZi dmtj i exR GKmt`j j vMvtbv nq| dmj  
e`envtvc`thvMx ntj wefbaedmj wefbaengtq mslMh Kiv nq| Ai w`tbi gta` tm `tbi gwU  
Abg`P n`q Avmtj Avevi bZb `tbi GKB c`uq`q Pvlver` Ptj | GtZ gwUi DeiZv Ktg  
AvmtQ| Gme GjvKvq Kt`uvi Pvl (Contour cultivation) (mg D`PZvq mwi ex`fite MvQ  
j vMvtbv), w`c Pvl (Srtip cultivation) (mg D`PZvq GK RvtZi MtQi KtqK mwi i ci  
Ab` RvtZi MvQ KtqK mwi tZ) A`ev tUt`im Pvl (Terrace cultivation) (cwnvtoi Xij  
RvqMvq mg D`PZvi mi`atmivb ev wmwotZ) Pvl Kiv ntj fig`f`q Ges De`Zv n`tmi gv`v  
Kg nq| Zte `xN`gqvt` Sg Pvl i weKí cxiZmg` Sg Pvl i Z`bvq teik DcKvix wK bv  
tm m`ut`K`Mtel Yij ex` Avb GLbl Ac`Z`



**migg**<sup>©</sup>  
dmj t`f`Zi De`Zvi c`fveKmg` c`vbZ `ycKvi | h\_v - c`KwZK ev `fveK c`fveK Ges  
Kw`g c`fveK | c`KwZK c`fveK, t`jv ntjv: gwUi Aw` wkv, gwUi eqm, Rj evqyl MvQciv,  
figi eU`Zv, RjvexZv, gwUi pH gvb, fig`f`q Ges gwUi ebU | Kw`g c`fveK, t`jv ntjv:  
figKI`P, gwUtZ mvi c`qvm, `Re c`vt`\_P c`qvm, dmj Pvl i wbeozv, AvMvQv `gb, meR  
mvi dmj Pvl, km` ch`q, cwb e`e`vcbv Ges Pvlver` cxiZ | De`Zvi c`fveKmg`K  
h\_vh\_ , iaZ; c`vb Kti dmj Drcv`b Ktj dmtj i dj b fij nq Ges gwUi De`Zvi  
msi f`Y Kiv hvq |





**civhEi gj`iqb 4.2**

mivK DEti i civkqUK iPy (v) ir b

1/ givUi eqm teik n`j givUi DePZi kv<sup>3</sup> tKgb nq?

K) evto

L) Ktg

M) tKvb civ eZ<sup>8</sup> nq bv

N) C/r civ eZ<sup>8</sup> nq

2/ K`gKYvi e`im KZ?

K) 0.02-2.0 igig

L) 0.002-0.02 igig

M) 0.0002-0.002 igig

N) 2.0-2.5 igig

3/ dmj Drcv`tbi Rb` tKvb ai`tbi givU mePvBtZ fij?

K) t`vAuk

M) tetj t`vAuk

L) tetj

N) GtUj t`vAuk

4/ bxtPi mel q`tj vi tKvbU fig`q Zj mS`Z Kti?

K) mvi c`qUM

L) `Re c`v`<sup>o</sup> c`qUM

M) AvZi<sup>3</sup> fig KI<sup>9</sup>

N) km` chq Aej =b

5/ bxtPi Lv`vcr`vb`tj vi gta` Dw` tKvbU teik civ givY MhY Kti?

K) `i (iR<sup>1/4</sup>)

L) bvBtUitRb

M) MUK (mij div)

N) K`ij imqig

6/ bxtPi mvi`tj vi gta` tKvbU `Re mvi?

K) meR mvi

L) BDvi qv

M) iUc`j mgvi dmtDU (iUGmuc)

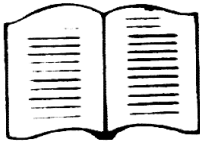
N) igDti U Ae cUrk |

**cw 4.3 gwltZ `Re c`vt\_P Dm, `Re c`vt\_P Kvi tY gwli , Yv, tYi Zvi Zg`**



G ciV tktl Avci b

- ◆ gwli `Re c`vt\_P Dm m=utK@ej tZ cvi teb|
- ◆ `Re c`vt\_P Kvi tY gwli , Yvej xi Zvi Zg` e`vL`v Ki tZ cvi teb|



`Re c`v`\_civPnU tgšij K Dcv`vbi GKwU| Ab`vb` Dcv`vb, tju n tju LubR `è, evqycmb I AYRxe| `Re c`v`\_PK gwli cŃY etj AwfwnZ Kiv nq, Kvi Y `Re c`v`\_B gj-Z gwli DePZv ubqšY Kti \_vtK|

**gwltZ `Re c`vt\_P Dm**

Dw`c I cŃYi t`nvetkl gwltZ `Re c`vt\_P cŃv Dm| gwltZ emevmKvix weifbœaitbi Rxe, AYRxe Ges Ab`vb` cŃYi gZt`n, gj gT BZ`w` cŃZw` bB gwltZ thwM n t`Q| `Re c`vt\_P Dm wntmte cŃYi PvBtZ Dw`t` i Ae`vb m=ez A t b K teuk| Kvi Y dmtj i cwi Z`<sup>3</sup> Ask- thgb wkKo, cvZv, LoKlv, dmj msMŃni ci Rwg tZ td t j Avmv gj-mn Mv t Qi w t Pi Ask, AvMvri t`nvetkl BZ`w` Qvovl emŃNi, iv`NvtUi AveRv I ebr`Atj i MvQcvjvi AsmL` Siv cvZv, tQvU Wj cvj v, d j d t j i Ask we t kl cŃZw b q Z gwltZ c P z cwi g t Y `Re c`v`\_thwM Kti P t j t Q|

Re c`vt\_P Dm wntmte cŃYi PvBtZ Dw`t` i Ae`vb m=ez A t b K teuk|

gwltZ cŃqMKZ. `Re mvi thgb- tMvei, K t = ú v =, Lvgrv RvZ mvi, meR mvi, `Lj, nvt oi , av, gvt Qi , av BZ`w` I gwltZ `Re c`vt\_P Dm|

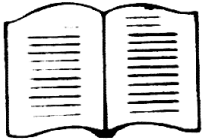
**`Re c`vt\_P Kvi tY gwli , Yv, tYi Zvi Zg`**

`Re c`v`\_gwli , Yv, tYi Dci `úo cŃve we`li Kti thgb -

- K) `Re c`v`\_gwli `j veUt b mivh` Kti | n v j K v e b t U i R w g t Z ( t e t j g w l t Z ) `Re c`v`\_ wntgtUi gZ emj KYtK GKt` at i iv t L, hvi dtj gwli dukv`vb K t g h v q Ges c w b a v i Y Ń g Z v e p x c i q | A b `w ` t K f v i x e b t U i G t l j g w l t Z `Re c`v`\_gwli K Y v , t j v t K c i `ú i t `t K ` t j t v t j w t q G t ` i g t a ` Ae`vb MŃY Kti, hvi dtj gwli g t a ` d v k v R v q M v e r t o Ges Av t j v e v Z v m I c w b i P j v P j m n R Z i n q |
- L) `Re c`v`\_gwltZ Dw`t` i weifbœLv t `vcv`vb thwMv t`q etj gwli DePZv e p x c i q | `Re c`vt\_P gva`tg wKQybvB t U t R b, d m d i v m I c U w k q v g Q v o v l A t b K , t j v t M S Y L v t `vcv`vb thwM n q etj gwltZ mvavi YZ tMSY Lv t `vcv`vbi Afie n q b v |
- M) `Re c`vt\_P w t q v R t b i d t j g w l t Z w n D g v m ( H u m u s ) m j o n q h v g w l t Z L v t `vcv`vb t K a t i i v L v i Ń g Z v e p x K t i | h v i d t j g w l t Z A e w ` Z A \_ e v c Ń q v M K Z . m v i I t m t P i c w b i A c P q K g n q | w n D g v m m g x g w l U b i g \_ v t K , G t Z f i g K I Ń m n R Z i n q Ges e x R Z j v t `t K P r i v I V t b v i m g q w k K t o i t Z g b Ń w Z n q b v |
- N) `Re c`v`\_gwli DcKvix RievYj Lv` mieivn Kti, Zvt`i eske p x I Kv h R j v c e p x t Z Ges w n D g v m M V t b m n i q Z v K t i | G Q v o v % R e c `v t \_ P w e t q v R t b m o K v e t b K G i m W I A b `v b ` `Re G i m W t K v b t K v b L v t `vcv`vb t K A ` e r f Z A e `v t `t K ` e r f Z A e `v q A v b t Z m n i q Z v K t i Ges gwli DePZv e p x K t i |

Re c`v`Rigi Aazj I  
Ivi KZj mnR I Vbvgv  
KiZ t`qbr A`R gmltZ  
evditi i (Buffer) gZ  
KvR Kti |

- 0) Re c`v`Rigi Aazj I Ivi KZj mnR I Vbvgv KiZ t`qbr A`R gmltZ evditi i  
(Buffer) gZ KvR Kti | dtj , gmltZ Lv`vcv`vb Dv`i MhYthM Ae`vq\_vtK |
- P) Re c`v`Rigi I q tiva Kti hvi dtj Rigi DePZv msi wqZ nq |



**migg®**  
 Re c`v`gmlti cY t`c | Re c`v`gmlti DePZv vbqšy Kti, gmlti tšZ Yvej xi  
 Dbz mvab Ges wKQyly Lv`vcv`vbmn wvfbatMSY Lv`vcv`vb mi ei vn Kti dj b evoiq |



### ci#V#i gj`iqb 4.3

m#VK D#i i ci#k#UK #P# (√) # b

1/ gmU#Z `Re c`#\_# c#vb Dm tK#b#?

K) D#m# t`nve#k#

L) c#Y# t`nve#k#

M) gm#i R#e I A#R#e

N) D#m# I c#Y# t`nve#k#

2/ f#i e#t#i gmU#Z `Re c`#\_#K# K#R K#i?

K) gm# KY#K a#i i#L

L) gm# KY#K ci`#i t`#K`#i t#j t`q

M) K`j #mqg th#M K#i

N) f#g#q Z#i #S#Z K#i

3/ `Re c`#\_# #etq#R#bi d#j gmU#Z K#t#i m#o nq?

K) j e#Y#

M) #Dg#t#i

L) #t#i i

N) A# #R#bi

4/ `Re c`#\_# c#q#M K#i#Z gmU#Z K# K#R nq?

K) A#Z#e#x# cvq

L) #t#i Z#e#x# cvq

M) A#Z# K#g h#q

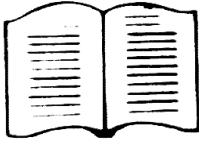
N) e#d#i i g#Z K#R K#i

### cvl 4.4 gmlʔZ ʔRe c`v\_ʔeʔxi cʔZeÜKZv I mʔtebv



G cvl tkʔl Avciɔ

- ◆ gmlʔZ ʔRe c`v\_ʔeʔxi Drʔmi AcPʔqi Kvi Y ej ʔZ cvi ʔeb|
- ◆ ʔRe c`v\_ʔeʔxi Dcvq, ʔjv ʔij LʔZ I ej ʔZ cvi ʔeb|
- ◆ gmlʔZ ʔRe c`v\_ʔeʔxi Rb ʔAvBbMZ Kx c`ʔʃc ʔbqv hvq Zv ej ʔZ cvi ʔeb|



dmtʃi RvʃʔZ kZKiv cʔq 5 fʔM AvqZbʔfʔEʔK ʔRe c`v\_ʔeʔxi vKv DvPZ| ʔKS ʔevsj vʔ ʔki gmlʔZ ʔRe c`v\_ʔeʔxi cʔi gvY AZ ʔʃl Kg, kZKiv gvʔ 0.3-2.1 fʔM| ʔʃʔMʔij K Ae ʔvbMZ Kvi ʔY evsj vʔ ʔki Rj evqyDò I Av ʔnevi dʔj Ges ʔvbeo Pʔʔli Kvi ʔY gmlʔi ʔRe c`v\_ʔeʔxi AvZ ʔʔZ meʔqmʔZ I cʔi ʔkwʔl Z nʔq ʔb ʔb Kʔg hvʔʔQ| dʔj gmlʔi DePʔZv I Drcv ʔb ʔʃgZv DfʔqB nʔm cvʔʔQ|

evsj vʔ ʔki gmlʔZ ʔRe c`v\_ʔeʔxi cʔi gvY AZ ʔʃl Kg, kZKiv gvʔ 0.3-2.1 fʔM|

### gmlʔZ ʔRe c`v\_ʔeʔxi cʔZeÜKZv

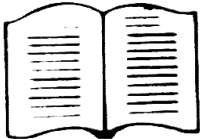
evsj vʔ ʔki KʔlʔZ meʔ cʔi kʔv³ e ʔeüz nʔj I AvRKij RvʃʔZ ʔMvei e ʔenvi Kiv hvʔʔQ bʔj Kvi Y Mʔg MʔÄ Rjy vbi cʔKU Afive tgʔvʔvbi Rb ʔcʔʔ cʔi gvY ʔMvei Rjy vb ʔntmʔe e ʔeüz nʔʔQ| Zv ʔvov ʔevʔbʔedmj thgb- arb, Mg BZ ʔw ʔmsMʔni mgq Mʔʔi ʔMvovi ʔʔKi th AskÜKzRvʃʔZ ʔ\_ʔK hvq ʔmÜKz Mixe ʔj vKRb Rjy vb ʔntmʔe e ʔenvi Kivi Rb ʔKʔU ʔbʔq hvq| Avq, Rvq, Kvʔj I ebuʔʔj i SivcvZv I AvRKij gmlʔZ ʔRe c`v\_ʔeʔxi Kiv ʔZ cvi ʔQ bʔj cʔq cʔZ ʔbB G, ʔjv Kʔvʔq Rjy vbi Rb ʔbʔq hvʔ qv nq| Dvʔ ʔʔk meʔ mvi ʔntmʔe ʔaʔv, kbcvU, ei eʔU BZ ʔw i Pʔl nq| ʔKS Avqvʔ ʔi ʔʔk ʔj vKmsL ʔi AbʔvʔZ Avev ʔx Rvq Kg ʔvKvi Rb ʔcʔv dmj (thgb- arb, cvl) ev ʔʔq meʔ mvi dmj Avev Kiv mʔe nʔʔQ bʔj|

### gmlʔi ʔRe c`v\_ʔeʔxi Dcvq

1. ʔMvei, Kʔʔv÷, cvZv cPʔ mvi RvʃʔZ ʔbqvʔZ cʔqʔM Kivi gvʔʔg Rvʃʔ ʔRe c`v\_ʔeʔxi cʔi gvY ʔeʔx Kiv ʔʔZ cvi ʔ|
2. ʔʔv cʔvb dmtʃi ga ʔeZʔmgʔq GKʔU meʔ mvi dmj Pʔl Kivi gvʔʔg RvʃʔZ cʔʔ cʔi gvY ʔRe c`v\_ʔeʔxi Kiv ʔʔZ cvi ʔ|
3. dmj mʔMʔni mgq dmtʃi ʔMvovi ʔKQʔv Ask RvʃʔZ ʔi ʔL ʔʔq ʔʔZ cvi ʔ|
4. fʔʃʔʔq ʔiva Kivi gvʔʔg Rvʃʔ ʔRe c`v\_ʔeʔxi ʔʔʔʔ Kiv ʔʔZ cvi ʔ|
5. AvDk aʔʔbi mʔ½ ʔgk³ dmj ʔntmʔe ʔaʔvi Pʔl Kʔi I RvʃʔZ ʔRe c`v\_ʔeʔxi Kiv ʔʔZ cvi ʔ|

ʔʔv cʔvb dmtʃi ga ʔeZʔmgʔq GKʔU meʔ mvi dmj Pʔl Kivi gvʔʔg RvʃʔZ cʔʔ cʔi gvY ʔRe c`v\_ʔeʔxi Kiv ʔʔZ cvi ʔ|

AvBb cʔʔqʔbi gvʔʔg ʔMvei, Mʔʔi SivcvZv I dmtʃi cʔi Zʔ³ Ask Rjy vb ʔntmʔe e ʔenvi ʔvʔl x Kiv nʔe| Zʔe ʔmB mʔ\_ gvʔʔj i ʔbʔ ʔb e ʔenvi i Rb Rjy vbi mʔvb Kiv nʔe|



**mvi gg**<sup>©</sup>  
ʔMvei, Mʔʔi SivcvZv, dmtʃi cʔi Zʔ³ Ask BZ ʔw Rjy vb ʔntmʔe e ʔeüz nevi dʔj RvʃʔZ G, ʔjv ʔRe c`v\_ʔeʔxi ʔntmʔe ʔhʔM nʔʔQ bʔj ʔMvei, meʔ mvi, Kʔʔv÷, cvZvcPʔ mvi BZ ʔw RvʃʔZ cʔqʔM Kʔi gmlʔZ ʔRe c`v\_ʔeʔxi Kiv mʔe| ʔMvei, SivcvZv, dmtʃi cʔi Zʔ³ Ask BZ ʔw Rjy vb ʔntmʔe e ʔenvi eÜ Kiv AZ ʔek ʔK| Zʔe Gme Rjy vbi meKʔ DcKiv ʔi mʔvb GKB fʔʔe AZ ʔek ʔK|



**civēi gj'iqb 4.4**

mVK DĒti i civkqUK wPy (√) w`b

1/ dmtj i RvgtZ kZKiv KZ fM `Re c`v`\_vKv DvPZ?

- K) 7 fM
- L) 3 fM
- M) 5 fM
- N) 2 fM

2/ tMvei dmj tvtZ e`eüZ bv ntq Ab`T Kx wntmte e`vcKfvte e`eüZ nq?

- K) Ni tj civZ
- L) gvQI Lvevi
- M) Rvj vb
- N) nva-gjvMi Lvevi

3/ GKvU c`vb dmj tK ev` w`tq Kxmi Avev` Kiv m`e nt`Q bv?

- K) avtbi
- L) AvtLi
- M) meR mti i
- N) `Zj dmtj i

4/ AvDk avtbi mti tKvb dmtj i vkg`PvI Kti Rvgi `Re c`v`\_vKv Kiv thtZ civi?

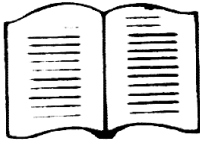
- K) Avgb avb
- L) cvU
- M) tMlv` dmj
- N) `aAv

### cw 4.5 gwli DePZv kir<sup>3</sup> eRvq ivLvi Kul.ZwEjK Dcvq



G cvV tkfI Avciob

- ◆ gwli DePZv kir<sup>3</sup> eRvq ivLvi Dcvq, tjv eY<sup>0</sup> Ki tZ cvi teb|
- ◆ gwli DePZv kir<sup>3</sup> msi qI tYi Dcvq, tjv wj LtZ I ej tZ cvi teb|
- ◆ fvg qI q c<sup>0</sup>uqv Kxfvte gwli DePZv b<sup>0</sup> Kti Zv ej tZ cvi teb|
- ◆ fvg qI q ti va Kivi e`e`v m<sup>0</sup>utK<sup>0</sup>ej tZ cvi teb|



gwli DePZv tK ati bv ivLv tMtj ev epx Ki tZ bv cvi tj A`i fivel`tZ km` Drcr`b Am<sup>0</sup>e ntq` wvte|

evsj v`tki gwli Lg DeP etj L`vZ ntj I tjvKmsL`v epx i Pvc Rvq dmj Drcr`tb e`vcKfvt e`euZ nt`Q Ges Acwi Kir Z eb`v ubqšy` eta` Zwi Kivi dtj RvgtZ AvtMi gtZv cvj gwli Avtm bv| dtj gwli DePZv w` b<sup>0</sup> Ktg hv`Q| gwli DePZv tK ati bv ivLv tMtj ev epx Ki tZ bv cvi tj A`i fivel`tZ km` Drcr`b Am<sup>0</sup>e ntq` wvte| Gi Rb` gwli DePZv kir<sup>3</sup> tK tKej ati ivLv h<sup>0</sup> nte bv, epx i c<sup>0</sup>P<sup>0</sup>ol ubtZ nte|

bv bvea Dcvq gwli DePZv i qI v I epx i c` t q c M<sup>0</sup>hY Kiv th tZ cvi | Zte t` Lv tMtQ th, th tKvb GKwU c<sup>0</sup>wZi tPtq GKwaK c<sup>0</sup>wZi mgšy` AwaKi Zi dj c<sup>0</sup>h`ntq` v tK|

gwli DePZv i qI vi Kul.ZwEjK Dcvq, tjv ubtP mst qI t c Avtj vPbv Kiv ntj v t

#### 1. mlyg mti i e`envi

thme mti dmtj i c<sup>0</sup>qvRbxq Lv` vcr`vb thgb bvBtUtRb, dmdim I cUwmgvq AvbgwZK gvT vq me` gvb` v tK Zvt` i tK mlyg mvi etj |

m<sup>0</sup>te` mKj c<sup>0</sup>wZi gta` mlyg mvi c<sup>0</sup>qv tMi gva`tg AZ`šI Aí mgq I Kg Li tP Rvqi DePZv kir<sup>3</sup> msi qI Y I epx Kiv m<sup>0</sup>e| thme mti dmtj i c<sup>0</sup>qvRbxq Lv` vcr`vb thgb bvBtUtRb, dmdim I cUwmgvq AvbgwZK gvT vq me` gvb` v tK Zvt` i tK mlyg mvi etj | tKej GKwU ev` qI Lv` vcr`vbm g<sup>0</sup> mvi c<sup>0</sup>qv MB h<sup>0</sup> b q| me, tjv mvi B dmtj i cwi t kv tbi AvbgwZK nvti c<sup>0</sup>qv M Ki tZ nq| Kvi Y gwli tZ me, tjv Lv` vcr`v tbi gta` GKwU gvT Dcr`v tbi AvbgwZK tZ ev Afive NU t j I DePZv i qI v nq bv| AwaKš` emw` Kfvt e` f mgq i gta` tKvb GKwU mti i DcKvix c<sup>0</sup>ve cwi j w qI Z ntj I Zv gwli Ges dmtj i Rb` AZ`šI Lv` vcr`v c<sup>0</sup>Zi uqv i m<sup>0</sup>o Ki tZ cvi | D`vni Y` t f c ej v hvq 1950 Gi` k tK mi Kvi KZR. c<sup>0</sup> E Gtgmbqvq mij t dU, wJGwic, Ges Ggic mti i gta` Pvlxv tKej gvT Gtgmbqvq mij t dU e`envi Kti Rvqi DePZv Ges dj b qI gZv Df t q i B c<sup>0</sup>U qI wZ mvab Kti t Q b| DePZv i qI vq (w<sup>0</sup>tkl Kti gwli A<sup>0</sup>z` i` h Ki tYi Rb`) Gtgmbqvq mij t dU mti i m t 1/2 eva` Zvgj-Kfvt e P<sup>0</sup> bv ubtj mvi t` qv eU Kti t` qv ntj Pvlxv wKB P<sup>0</sup> M<sup>0</sup>hY Ki tZ b wKš` t` Lv th tZv wKQy`-AM<sup>0</sup>hi ntq iv`vi wKbv t i P<sup>0</sup> t dtj w` t q tKej mvi ubtq hv`Q| Gi Kvi Y wQj m<sup>0</sup>eZ mvi e`envi Pvlxv` i AAZv| Gici Kul. m<sup>0</sup>ut hvi Y KgRvU epx cvevi dtj RvgtZ P<sup>0</sup> e`envi Kti Rvqi DePZv msi qI Y Kivi th e`e`v Kiv ntq wQj Zv tek KvhRi I dj c<sup>0</sup>h, ntq wQj | Zv B m<sup>0</sup>ut hvi Y KgRvU i mrvqZvq gwli DePZv msi qI Y m<sup>0</sup>ut K<sup>0</sup> Pvlxv` i tK D<sup>0</sup> y Kivi c<sup>0</sup>qv Rb i t q t Q|

gwli A<sup>0</sup>z; t efo hvevi Rb` Gtgmbqvq mij t dU mvi evRvi RvZ Kiv nt`Q bv| ZvQvov t` tki mvi Kvi Lvbv, tjv tZ c<sup>0</sup>z BDwi qv mvi` Zwi nt`Q| eZ<sup>0</sup> v t b BDwi qv Ges WvBA` v t gmbqvq dmt dU (wJGwic) mvi w<sup>0</sup> v n t`Q hv gwli A<sup>0</sup>z; Kgvt b tZ mrvqK|

#### 2. Re mvi c<sup>0</sup>qvM

ivmrvqubK mti i e`envi gwli mshy` i AebwZ NtU hv` Re mvi c<sup>0</sup>qv tM mst kvab Kiv m<sup>0</sup>e|

Re Drm t` tK c<sup>0</sup>z ev c<sup>0</sup> ZKZ. mvi B ntj v` Re mvi | ivmrvqubK mti i e`envi gwli mshy` i AebwZ NtU hv` Re mvi c<sup>0</sup>qv tM mst kvab Kiv m<sup>0</sup>e| `Re c` v` t Mei, Kt<sup>0</sup> v ÷ I

meR mvtii gva`tg c`qM Kiv thZ cvti | tMiei AvRKvj Rjvnb I Ab`vb` KivR e`vcKfite e`envtii dtj RigtZ mvi wntmte e`envtii Rb` cvlqv LqB KwB | eZgvtb Rjvmbi Afve c`KU nI qvZ MvtQi cvZv ev dmtji cwiZ`<sup>3</sup> AskI Mive tjvKRb Rjvnb wntmte e`envi KivQ | ZvB weKv wntmte Kt`uv` - I meR mvtii gva`tgB` Re c`v`<sup>3</sup> gmltZ thvM Kti gmlU DePZv epx Kivi Dci tRvi teik w`tZ nte |

### 3. km` chq Aej`b

GKB fLtu` chqutg ubw` e` mgqi e`eavtb wefbaedmtji Pvl KivK km` chq etj | km` chq Aej`b Kij ub`ewYZ Dcvq gmlU DePZv kw`<sup>3</sup> epx I msiw`qZ nq | km` chq chqutg Mfrixg`x (civ, Zjv) I AMfrixg`x (avb, Mg) dmj, Wvj -KjvB, ZUj` dmj (avb, Mg, fZv, Pxbv, KvDb), cwi`QbeKI`P dmj (ZvgvK, Avj), gmlU Av`Qv` bKvix dmj (tLmvi, gvmKjvB, gmvj), kvKmeiR, meR mvi dmj (aAv, kbcvU) BZ`w` A`sf`<sup>3</sup> vKvi Rb` Rigi me`ti i Lv`vcr`vb mgfite cwi`tkwLZ nq | cwi`QbeKI`P dmj vKvq RigtZ AvMvQv RbvtZ cvti bv Ges GKB mt`<sup>2</sup> fvgim ev`urFeb c`p`vq b`o bv ntq RigtZ t`tk hvq hv dmtji KivR jvtM | GKrvZxq dmj evievi bv Kivq D`<sup>3</sup> dmtji AvZwi`<sup>3</sup> Pwv`vi Lv`vcr`vb thgb- meir dmtji Rb` bvBtUtRb, `vbr ev exR dmtji Rb` dmdium, Avk ev gj- RvZxq dmtji Rb` cUwmgvq BZ`w` A`i w`tbi gta` tkI nevi m`ebv v`k bv | Wvj RvZxq dmj Pvl i dtj RigtZ wgt`vRme ivBtRmeqvg e`vt`w`i qv KZ`R evZvtni bvBtUtRb Ges meR mvi dmj KZ`R. c`p`<sup>3</sup> cwi`gvY` Re c`v`<sup>3</sup> gmltZ Rgv nevi dtj gmlU DePZv epx cvq, tfsZ Ae`vi DbaZ nq, gmltZ evqyPj vPj, cwb aviY` qvgZv epx cvq Ges DcKvix AYR`tei esk epx I KvRj`vc epx cvq |

### 4. AvMvQv`gb

AvMvQv (AvKw`LZ fite Rbvtbv MvQ) dmtji cwb, Lv`vcr`vb I Avtjv evZvtni fivM eimtg dmtji dj b Kigtq t`q Ges gmlU DePZv kw`<sup>3</sup> b`o Kti t`q | KvRB AvMvQv Rbvtbv gvIB Rvg t`tk mmitq tdj tZ nte | AvMvQv Aek`B dj`-dj` aivi AvtM nitZ tUt, wbo ev tKv htsj mrvth` Dcto tdj w`tZ nte | DVt`bv AvMvQv Rigi I cti weQtq w`tj RigtZ MvtQi Lv`vcr`vbmn wKQyRe c`v`<sup>3</sup> thvM Kite hv DePZv i`qvi mrvqK | Zte j`q` iLv DvPZ, AvMvQv hvZ clyvq w`kKo MvRtg RbvtZ bv cvti |

### 5. cwb e`e`vcbv

RigtZ we`gvb MvtQi Lv`vcr`vb h`o cwi`gvY` vKtj I tm`<sup>2</sup> tjv MvtQi MhY`thvM` AvKvfi Avmvi Rb` gmltZ ch`B cwi`gvY` im`vKv c`qvRb |

RigtZ we`gvb MvtQi Lv`vcr`vb h`o cwi`gvY` vKtj I tm`<sup>2</sup> tjv MvtQi MhY`thvM` AvKvfi Avmvi Rb` gmltZ ch`B cwi`gvY` im`vKv c`qvRb | fvgitmi Drm epx ev fMF`<sup>3</sup> cwb bv cvlqv tMj tm`Pi gva`tg RigtZ cwb mieivn Kiv thZ cvti | Ab`v`tk Rvg teik w`b Rjvex Ae`vq vKtj wKQyMvQyLv`vcr`vb (thgb- MUK, `v) MvtQi AMhY`thvM` Ae`vq Pj hvq | G Ae`vq AvZwi`<sup>3</sup> cwb w`vktbi gva`tg Rvg t`tk t`i Kti w`tZ nte | ZvB DePZv i`qvi t`<sup>3</sup> RigtZ c`qvRbxq cwb mieivtni Ges AvZwi`<sup>3</sup> cwb w`vktbi e`e`v iLv Acwivh`<sup>3</sup>

### 6. gmlU wep`qv (p`h gvb) wq`S`

gmlU wep`qv (A`zj` ev qviZ) wbjctbi gvcKwLZ (p`h wglvi) 0-14 ch`S` gvc vKtj I ev`te 3.5 t`tk 10.5 Gi teik ev Kg A`zj` ev qvitZji gmlU cvlqv hvq bv | gmlU p`h gvb hLb 7 nq ZLb ZvtK wbi`c`q gmlU ejv nq A`v`<sup>3</sup> Gw A`zq` bq, qviag` bq | p`h gvb 7 Gi I cti tMj nq qvixq gmlU Avi Gi wbtP bvgtj nq A`zq` gmlU |



AwaKusk dmj ubiɕɕɐ ev  
nij Kv Aɕɕɐ t\_ɕK nij Kv  
ɕɕɐɕɐ gnuU (p<sup>H</sup> 6.5-7.5)  
cO` Kɕi |

AwaKusk dmj ubiɕɕɐ ev nij Kv Aɕɕɐ t\_ɕK nij Kv ɕɕɐɕɐ gnuU (p<sup>H</sup> 6.5-7.5) cO` Kɕi |  
Gi e`iɕɕɐɕɐ gɕɕɐ gɕɕɐ tPɕɕɐ cɕo| Pɕ MɕO ɕKQɕɕɐ Aɕɕɐ gnuU cO` Kɕi Aveɕi tjeɕMɕɕɐ  
cO` ɕKQɕɕɐ ɕɕɐɕɐɕɐ| ZɕB Pɕ evMɕɕɐ Aɕɕɐɕɕɐ Gɕgɕɕɐɕɐ mɕɕɐɕɐ mɕi e`enni Kɕi  
hɕɕɐhɕɐ, ɕKɕɕɐ tjeɕMɕɕɐ Avɕɕɕɐ cɕɕɐɕɕɐɕɐ ɕKQɕɕɐɕɐ gɕɕɐ Pɕ cɕɕɐɕɐ Kɕiɕ nq| Gɕɕɐɕ  
gnuU ɕɕɐɕɐɕɐ ubiɕɕɐɕɐ eɕɕɐ iɕɕɐ hɕɕɐ|

### 7. jeYv<sup>3</sup>Zv`iKiy

ubiɕɕɐ (A\_ɕ p<sup>H</sup> gɕɕ 7 Gi Kɕɕɕɕɕ) jeY mgɕ gnuUɕ jeYv<sup>3</sup> gnuU eɕɕ nq| GLɕɕ  
gnuU ɕɕɐɕɐɕɐ gɕɕ cɕɕ tɕɕɕɕ 7 Gi Lɕ Kɕɕɕɕɕ| Awɕɕ<sup>3</sup> jeYv<sup>3</sup>Zv MɕO mn` Kɕiɕ cɕɕ  
bɕ| ZɕB gnuU jeYv<sup>3</sup>Zv`iɕɕ Kɕi DeɕZv mɕiɕɕ Kɕiɕ nq| cɕeY tɕɕɕ (Flood  
irrigation) gɕɕɕ Rɕɕɕ cɕɕ mɕiɕɕ Kɕi nɕɕ cɕɕɕ jeY`eɕɕ nq Ges ɕɕɕɕ  
gɕɕɕ jeYv<sup>3</sup> cɕɕ Acɕɕɕ Kɕi Rɕɕɕ jeYv<sup>3</sup>Zv t\_ɕK gɕɕ Kɕi nq| jeYv<sup>3</sup>Zv`iKiy  
iɕɕɕɕ`e`i e`eɕɕ nɕɕ\_ɕɕ|

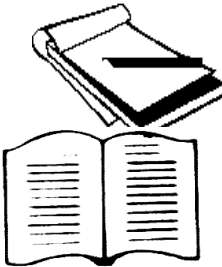
### 8. fiɕɕɐ tiva/fiɕɕ mɕiɕɕ

gnuU GK`ɕ t\_ɕK tKɕ Gɕɕɕɕ (cɕɕ, evɕɕZ`ɕ) gɕɕɕ Ab`ɕɕ Pɕɕ hɕeɕ cɕɕɕ  
fiɕɕɐ (Soil erosion) eɕɕ | fiɕɕɐ ɕɕɕɕɕɕ nɕɕ cɕɕ | gnuU I cɕi i cɕɕɕ GK`ɕ  
Ab`ɕ Pɕɕ tMɕ Zɕɕ Oɕɕ fiɕɕɐ (Sheet erosion) eɕɕ | Aveɕi cɕɕ Mɕɕɕ hɕeɕ mgɕ  
gnuU tKɕ ubɕ Avɕɕ i Qɕɕi gZ Mɕɕ ɕɕɕ nɕɕ Zɕɕ Oɕɕ fiɕɕɐ (Reel  
erosion) eɕɕ | cɕɕ cɕɕɕ cɕɕ tɕɕɕ gnuU tKɕ hLb Lɕ` ev bɕɕ mɕɕ nq ZLb Zɕɕ eɕɕ  
Oɕɕ fiɕɕɐ (Gulley erosion) | fiɕɕɐ th aɕɕɕ tɕɕ tKɕɕ gnuU Rb` fiɕ bq|

fiɕɕɐ th aɕɕɕ tɕɕ  
tKɕɕ gnuU Rb` fiɕ  
bq|

thɕɕZgɕɕ I cɕi i`ɕ mɕɕPɕ tɕɕ Deɕ Ges me aɕɕ fiɕɕɐ cɕɕɕ I cɕi i gnuU  
mɕi AvɕM Pɕɕ hɕɕ, ZɕB Gi iɕɕɕɕ Awɕ , iɕɕɕ gnuUɕ memgɕ dmj\_ɕɕ, fiɕ  
Av`Qɕ bKɕɕ dmj thɕɕ- tLmɕɕ, gɕɕɕɕ, gɕɕ BZ`ɕ i Pɕ Kɕi nɕɕ, cɕɕ cɕi gɕɕ `Re  
c`v`cɕɕɕ gɕɕɕ eU`ɕ P Kɕiɕ kɕɕ fiɕɕɐ tiva Kɕi thɕ cɕɕ | wɕɕi gɕɕ  
Aveɕɕ tɕɕ wɕ gnuUɕ eU Kɕi thɕ cɕɕ | Mɕɕ fiɕɕɐ tɕɕɕ Rb` Aek` Mɕɕ i gɕɕ  
eɕɕ wɕ cɕɕ tɕɕ AvUɕɕ wɕɕ nɕɕ| ZɕOɕɕ DEɕPzɕ gnuU Rb` iɕɕQ Kɕɕ Pɕ  
(Contour cultivation), tɕɕɕ Pɕ (Terrace cultivation) Ges Rɕɕɕ ɕKQɕɕ`cɕi  
evZɕɕi Mɕɕɕ tivaK j ɕɕ Mɕɕɕ mɕi i mɕɕ|

**Abɕɕ b (Activity):** Avɕɕi GɕɕKɕ gnuU mɕiɕɕ mPɕɕ Kɕ Kɕ e`e`v tɕɕ nq  
AvɕɕPɕ Kɕɕ|



**mvi gg<sup>©</sup>**  
evsj vt`ki gnuU DeɕZv mɕiɕɕ I eɕɕi cɕɕɕ tɕɕ qv GKɕɕ/cɕɕɕ| tKɕ GKɕ cɕɕɕ  
tPɕ GKɕ cɕɕɕ mgɕɕ AwɕZi dj cɕɕ- gnuU DeɕZv mɕiɕɕ Rb` ɕɕɕɕ  
cɕɕɕ Kɕɕ j vMɕɕɕ thɕ cɕɕ thɕɕ: mɕɕ e`enni, `Re mɕi cɕɕɕ, km` cɕɕ Aej ɕɕ,  
AvMɕɕ `gb, cɕɕ e`ɕɕ, gnuU p<sup>H</sup> gɕɕ ɕɕɕ, jeYv<sup>3</sup>Zv`iKiy, fiɕɕɐ tiva cɕɕɕ|



### cuVhEi gj'iqb 4.5

mWVK DEti i cuKqUK wPy (v) w b

1| eij vt`tk tj vKmsL'v ewxi P'ic Ges dmj Drcv`tb Riq e'vcKf'ite e'euZ nevi dtj w`b w`b gnuLi Kx Ktg Avm'Q?

- K) cumb avi Y 'lgZv
- M) De'PZv

- L) gnuLi Zvcgv'v
- N) gnuLi wep'v 'lgZv

2| m'yg mvi e'envi Kti AwZ A' mg'q I Kg Li'P Riqi tKvb ,Y msi 'Y I ewx Kiv m'q?

- K) Drcv`b 'lgZv
- M) cumb avi Y 'lgZv

- L) De'PZv
- N) w'Dgvm Drcv`b 'lgZv

3| tKvb RvZxq mvi e'envi i dtj gnuLi mshy' i AebwZ N'U?

- K) i vmiqubK mvi
- M) R'evYmvi

- L) 'Re mvi
- N) K'v'v'v mvi

4| dmj D'v' i m'½ Lv` , cumb, Av'tj v I evZ'v f'vM eum'q dm'tj i dj b I gnuLi De'PZv kv' tK b' Kti?

- K) t'vKv gvKo
- M) Av'MQv

- L) ti vMej vB
- N) e'v'v'v qv



### Persigj`iqb

#### msu`B I iPbvj-K ckae

- 1| gnuJi DePZvi msAv`ij Lb|
- 2| gnuJi DePZv I Drcv`b`f`gZvi gta` cv`R`ij Lb|
- 3| `DgnuJ DeP`ntj I Drcv`b`f`g br-I`ntZ cvti`0 - e`vL`v Ki ab|
- 4| Rvgi DePZvi c`fveKmgfni bvg`ij Lb|
- 5| Rj evqy` MvQciv`v gnuJi DePZvi Dci Kxfvte c`fve`ve`li Kti Avtj`vPbv Ki ab|
- 6| `Re c`v`f`K gnuJi c`Y`ej`v`nq`tkb?
- 7| gnuJi DePZvi Dci Pvlver`c`v`zi c`fve Avtj`vPbv Ki ab|
- 8| gnuJtZ `Re c`v`f`P`Drm m`u`f`K`Avtj`vPbv Ki ab|
- 9| `Re c`v`f`P`Kvi`f`Y`Kxfvte gnuJi `Yvej`xi`Zvi`Zg`nq`Dtj`L`Ki ab|
- 10| ersj vt`tki gnuJtZ `Re c`v`Qg`v`Kvi`Kvi`Y`Dtj`L`Ki ab|
- 11| gnuJtZ `Re c`v`e`v`xi`Rb`Kx`c`f`c`tbqv`hvq`Dtj`L`Ki ab|
- 12| gnuJtZ `Re c`v`e`v`xi`c`Ze`U`K`Zv`mgt`U`mst`f`tc`Avtj`vPbv Ki ab|
- 13| c`v`b`tkvb`dmj`f`K`ev`br`v`f`q`Kxfvte RvgtZ `Re c`v`e`v`xi`Kiv`thtZ`cvti`ij`Lb|
- 14| fig`f`tqi`gva`tg`gnuJi`DePZv`Kxfvte`bo`nq`ij`Lb|
- 15| myg`mvi`Kv`K`etj`?`ev`stq`ej`b|
- 16| `Re`mvi`Kv`K`etj`?`gnuJtZ`Re`m`f`i`i`Kv`R`Kx`e`Y`v`Ki ab|
- 17| km`ch`q`Aej`f`bi`m`glj`e`Y`v`Ki ab|
- 18| Rj`ex`Zv`gnuJtZ`Kx`Am`v`avi`m`v`Kti`e`Y`v`Ki ab|
- 19| fig`f`q`Kv`K`etj`?`Kxfvte`fig`f`q`ti`va`Kiv`hvq`ij`Lb|



## **DËigjv**

### **cW 4.1:**

1| L 2| K 3| M 4| N

### **cW 4.2:**

1| L 2| M 3| K 4| M 5| L 6| K

### **cW 4.3:**

1| N 2| L 3| M 4| N

### **cW 4.4:**

1| M 2| M 3| M 4| N

### **cW 4.5:**

1| M 2| L 3| K 4| M

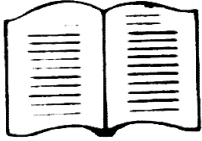


### cw 5.1 Re mvi m<sup>u</sup>tK<sup>o</sup>avi Yv I msAv



G cvV tkfI Avciob

- ◆ Re m<sup>u</sup>t i msAv ej tZ cvi teb |
- ◆ Re mvi m<sup>u</sup>tK<sup>o</sup>e<sup>o</sup> hwi Z eY<sup>o</sup> Ki tZ cvi teb |



Avqv<sup>o</sup> i Avkcv<sup>o</sup>ki D<sup>o</sup> RvZ I c<sup>o</sup>YRvZ A<sup>o</sup>tbK e<sup>o</sup> tKB mi v<sup>o</sup>mi A<sup>o</sup>ev c<sup>o</sup>quvRvZ K<sup>o</sup>i RvgtZ mvi v<sup>o</sup>ntmte e<sup>o</sup>envi Kiv thtZ cv<sup>o</sup>i |

**msAv:** %Re D<sup>o</sup>m t<sup>o</sup> tK c<sup>o</sup>KuZKfv<sup>o</sup>te c<sup>o</sup>B A<sup>o</sup>ev c<sup>o</sup>ZKZ.mvi tK Re mvi etj |

#### Re mvi m<sup>u</sup>tK<sup>o</sup>avi Yv

##### %Re mvi

evsj v<sup>o</sup> tK e<sup>o</sup>euZ Re m<sup>u</sup>t i g<sup>o</sup>ta i tqtQ tM<sup>o</sup>vei, K<sup>o</sup>t<sup>o</sup>uv<sup>o</sup>, me<sup>o</sup>R mvi, we<sup>o</sup>fb<sup>o</sup>ai tbi Lj, n<sup>o</sup>foi av, gv<sup>o</sup>Qi av BZ<sup>o</sup>w | Ab<sup>o</sup>v<sup>o</sup> t<sup>o</sup> tK gv<sup>o</sup>bj i gj g<sup>o</sup>f, n<sup>o</sup>ra-g<sup>o</sup>jiMi we<sup>o</sup>o<sup>o</sup>, Lv<sup>o</sup>gi RvZ mvi, ci<sup>o</sup> c<sup>o</sup>Li i<sup>o</sup> BZ<sup>o</sup>w Re mvi v<sup>o</sup>ntmte e<sup>o</sup>euZ nq | Zv<sup>o</sup>ov<sup>o</sup> Avqv<sup>o</sup> i t<sup>o</sup> tK Ges we<sup>o</sup> t<sup>o</sup> tK c<sup>o</sup>YR mvi (Remvi) v<sup>o</sup>ntmte A<sup>o</sup>v<sup>o</sup>th<sup>o</sup>v<sup>o</sup> (Azolla), b<sup>o</sup>ij me<sup>o</sup>R tkl j v (Blue Green algae) I R<sup>o</sup>ievY<sup>o</sup>mvi (Biofertilizers) e<sup>o</sup>euZ n<sup>o</sup>tq v<sup>o</sup>tK |

evsj v<sup>o</sup> tK e<sup>o</sup>euZ Re m<sup>u</sup>t i g<sup>o</sup>ta i tqtQ tM<sup>o</sup>vei, K<sup>o</sup>t<sup>o</sup>uv<sup>o</sup>, me<sup>o</sup>R mvi, we<sup>o</sup>fb<sup>o</sup>ai tbi Lj, n<sup>o</sup>foi av, gv<sup>o</sup>Qi av BZ<sup>o</sup>w | Ab<sup>o</sup>v<sup>o</sup> t<sup>o</sup> tK gv<sup>o</sup>bj i gj g<sup>o</sup>f, n<sup>o</sup>ra-g<sup>o</sup>jiMi we<sup>o</sup>o<sup>o</sup>, Lv<sup>o</sup>gi RvZ mvi, ci<sup>o</sup> c<sup>o</sup>Li i<sup>o</sup> BZ<sup>o</sup>w Re mvi v<sup>o</sup>ntmte e<sup>o</sup>euZ nq | Zv<sup>o</sup>ov<sup>o</sup> Avqv<sup>o</sup> i t<sup>o</sup> tK Ges we<sup>o</sup> t<sup>o</sup> tK c<sup>o</sup>YR mvi (Remvi) v<sup>o</sup>ntmte A<sup>o</sup>v<sup>o</sup>th<sup>o</sup>v<sup>o</sup> (Azolla), b<sup>o</sup>ij me<sup>o</sup>R tkl j v (Blue Green algae) I R<sup>o</sup>ievY<sup>o</sup>mvi (Biofertilizers) e<sup>o</sup>euZ n<sup>o</sup>tq v<sup>o</sup>tK |

##### tM<sup>o</sup>vei

Mi<sup>o</sup> g<sup>o</sup>ni, QvMj, t<sup>o</sup>fo<sup>o</sup> BZ<sup>o</sup>w i gj tK tM<sup>o</sup>vei etj | tM<sup>o</sup>vei mvi v<sup>o</sup>ntmte e<sup>o</sup>euZ nq | ev<sup>o</sup> t<sup>o</sup> t<sup>o</sup> tM<sup>o</sup>vei me<sup>o</sup>UKB tM<sup>o</sup>vei v<sup>o</sup>tK b<sup>o</sup>v Gi g<sup>o</sup>ta LoK<sup>o</sup>lv, P<sup>o</sup>b<sup>o</sup> BZ<sup>o</sup>w I v<sup>o</sup>gv<sup>o</sup>kZ v<sup>o</sup>tK | c<sup>o</sup>Z<sup>o</sup>w b<sup>o</sup> t<sup>o</sup>fv<sup>o</sup>ti Mi<sup>o</sup> tM<sup>o</sup>vqj Ni c<sup>o</sup>vi<sup>o</sup> K<sup>o</sup>i tM<sup>o</sup>vei GK<sup>o</sup>U P<sup>o</sup>v<sup>o</sup> v<sup>o</sup> b<sup>o</sup>tP M<sup>o</sup>tZ<sup>o</sup> t<sup>o</sup>dtj c<sup>o</sup>P<sup>o</sup>tZ nq | c<sup>o</sup>P<sup>o</sup>t<sup>o</sup>b<sup>o</sup>tZ 2/3 gym ch<sup>o</sup>l mgq t<sup>o</sup> tM<sup>o</sup> hvq | Gmgq tM<sup>o</sup>vei AY<sup>o</sup>R<sup>o</sup>tei K<sup>o</sup>h<sup>o</sup>R<sup>o</sup>vc N<sup>o</sup>tU I we<sup>o</sup>lv<sup>o</sup> M<sup>o</sup>vm t<sup>o</sup>evi t<sup>o</sup>q hvq | Av<sup>o</sup>M<sup>o</sup>v<sup>o</sup>vi ex<sup>o</sup>R v<sup>o</sup>K<sup>o</sup>tj Z<sup>o</sup>v A<sup>o</sup>v<sup>o</sup> Z<sup>o</sup> nq A<sup>o</sup>ev g<sup>o</sup>ti hvq | Avqv<sup>o</sup> i t<sup>o</sup> tK GK<sup>o</sup>U Mi<sup>o</sup> v<sup>o</sup> b<sup>o</sup>K 12-15 t<sup>o</sup>K<sup>o</sup>R Ges GK<sup>o</sup>U gym 20-25 t<sup>o</sup>K<sup>o</sup>R tM<sup>o</sup>vei t<sup>o</sup>q |

##### K<sup>o</sup>t<sup>o</sup>uv<sup>o</sup> ev AveR<sup>o</sup> b<sup>o</sup> c<sup>o</sup>P<sup>o</sup> mvi

LoK<sup>o</sup>lv, Av<sup>o</sup>M<sup>o</sup>v<sup>o</sup>, d<sup>o</sup>mtj i c<sup>o</sup>vi<sup>o</sup> Ask, K<sup>o</sup>P<sup>o</sup>i c<sup>o</sup>lv BZ<sup>o</sup>w AveR<sup>o</sup> v<sup>o</sup> tK v<sup>o</sup> b<sup>o</sup> c<sup>o</sup>qu<sup>o</sup>vi g<sup>o</sup>ta t<sup>o</sup>g v<sup>o</sup>K<sup>o</sup>Y tM<sup>o</sup>vei mn c<sup>o</sup>P<sup>o</sup>tq c<sup>o</sup>ZKZ. mvi tK K<sup>o</sup>t<sup>o</sup>uv<sup>o</sup> ev AveR<sup>o</sup> b<sup>o</sup> c<sup>o</sup>P<sup>o</sup> mvi etj |

LoK<sup>o</sup>lv, Av<sup>o</sup>M<sup>o</sup>v<sup>o</sup>, d<sup>o</sup>mtj i c<sup>o</sup>vi<sup>o</sup> Ask, K<sup>o</sup>P<sup>o</sup>i c<sup>o</sup>lv BZ<sup>o</sup>w AveR<sup>o</sup> v<sup>o</sup> tK v<sup>o</sup> b<sup>o</sup> c<sup>o</sup>qu<sup>o</sup>vi g<sup>o</sup>ta t<sup>o</sup>g v<sup>o</sup>K<sup>o</sup>Y tM<sup>o</sup>vei mn c<sup>o</sup>P<sup>o</sup>tq c<sup>o</sup>ZKZ. mvi tK K<sup>o</sup>t<sup>o</sup>uv<sup>o</sup> ev AveR<sup>o</sup> b<sup>o</sup> c<sup>o</sup>P<sup>o</sup> mvi etj | G mvi Z<sup>o</sup>vi tZ 3-4 gym mgq j v<sup>o</sup> tM<sup>o</sup> | G m<sup>o</sup>ti i Y<sup>o</sup>MZ gv<sup>o</sup> b<sup>o</sup> tM<sup>o</sup>vei m<sup>o</sup>ti i Ab<sup>o</sup>ijc |

##### Lv<sup>o</sup>gi RvZ mvi

k<sup>o</sup>vZ c<sup>o</sup>lv t<sup>o</sup> tK Mi<sup>o</sup> ev<sup>o</sup>Q<sup>o</sup>tK e<sup>o</sup>Q<sup>o</sup>ti i A<sup>o</sup>vaK<sup>o</sup>vk mgq N<sup>o</sup>ti t<sup>o</sup>fv<sup>o</sup>ti iv<sup>o</sup>lv nq | Z<sup>o</sup>Lb Mi<sup>o</sup> ev<sup>o</sup>Q<sup>o</sup>ti i we<sup>o</sup>Q<sup>o</sup>v<sup>o</sup> v<sup>o</sup>ntmte LoK<sup>o</sup>lv, N<sup>o</sup>vm BZ<sup>o</sup>w we<sup>o</sup>Q<sup>o</sup>tq t<sup>o</sup> qv nq | v<sup>o</sup>K<sup>o</sup>Y b<sup>o</sup> ci<sup>o</sup> ci we<sup>o</sup>Q<sup>o</sup>v<sup>o</sup> e<sup>o</sup> j K<sup>o</sup>i v<sup>o</sup> tZ nq | we<sup>o</sup>Q<sup>o</sup>v<sup>o</sup> v<sup>o</sup>ntmte e<sup>o</sup>euZ tM<sup>o</sup>vei, P<sup>o</sup>b<sup>o</sup>mg<sup>o</sup> LoK<sup>o</sup>lv Lv<sup>o</sup>gi Av<sup>o</sup>tb GK Rv<sup>o</sup>qv<sup>o</sup> Rgv K<sup>o</sup>i iv<sup>o</sup>lv nq | v<sup>o</sup>K<sup>o</sup>Y b<sup>o</sup> ci G<sup>o</sup> t<sup>o</sup> v<sup>o</sup> c<sup>o</sup>tP m<sup>o</sup>ti c<sup>o</sup>vi YZ nq | G mvi tK Lv<sup>o</sup>gi RvZ mvi (Farm yard manure) etj |

##### me<sup>o</sup>R mvi

RvgtZ a<sup>o</sup>Av, kbc<sup>o</sup>v, ei<sup>o</sup>ev BZ<sup>o</sup>w dmj M<sup>o</sup>Q Rub<sup>o</sup>tq big I me<sup>o</sup>R Ae<sup>o</sup> v<sup>o</sup>q RvgtZ v<sup>o</sup>gv<sup>o</sup>tq c<sup>o</sup>ZKZ.mvi tK me<sup>o</sup>R mvi etj |

RvgtZ a<sup>o</sup>Av, kbc<sup>o</sup>v, ei<sup>o</sup>ev BZ<sup>o</sup>w dmj M<sup>o</sup>Q Rub<sup>o</sup>tq big I me<sup>o</sup>R Ae<sup>o</sup> v<sup>o</sup>q RvgtZ v<sup>o</sup>gv<sup>o</sup>tq c<sup>o</sup>ZKZ.mvi tK me<sup>o</sup>R mvi etj | me<sup>o</sup>R mvi RvgtZ Re c<sup>o</sup>v<sup>o</sup> Q<sup>o</sup>rov<sup>o</sup> tek v<sup>o</sup>K<sup>o</sup>Y b<sup>o</sup>v<sup>o</sup> t<sup>o</sup> t<sup>o</sup> Rb th<sup>o</sup> v<sup>o</sup> K<sup>o</sup>i | GK<sup>o</sup>U me<sup>o</sup>R mvi dmj t<sup>o</sup> tK t<sup>o</sup> n<sup>o</sup>±i c<sup>o</sup>Z 10-50 Ub Re c<sup>o</sup>v<sup>o</sup> (mgR) Ges 50-150 t<sup>o</sup>K<sup>o</sup>R b<sup>o</sup>v<sup>o</sup> t<sup>o</sup> t<sup>o</sup> Rb cv<sup>o</sup>l qv hvq |

**^Lj**

mvaviYZ ^Zj Drcv`bKvix dmtji exR t\_#K ^Lj ^Zwi nq| Nmb ev G. tcjv`ii (Expeller) gva`tg exR t\_#K tZj tei Kti vbtj evKx AskUv ^Lj vntmte A\_ev mvi vntmte RvgtZ c`qM Kiv hvq| %j vevfbv`ai tbi ntZ cvti, thgb - mvi Iv, vZj, vZim, Zjyv, mh`jx c`vZi ^Lj | Gme mvti i c`vb Dcv`vb bvBtUtRb|

**nvtoi ,ov**

ci cvLi nvo t\_#K Pve`RvZxq c`v`ev` w`tg nvo ,ov Kti th mvi ^Zwi Kiv nq Zv#K nvtoi ,ov mvi (Bone meal) etj | nvo tm` Kti ,ov Kiv ntj mvti dmdiv`mi cvigvY ev` cvq|

**gv#Qi ,ov**

gv#Qi cvi Z` Ask Ges evRvi RvZ Kiv gv#K ,ov Kti mvi vntmte e`envi Kiv nq| gv#Qi ,ov nva-gj`Mi Lvevi vntmteI tek mgv`Z| gv#Qi ,ovI gj-Z bvBtUtRb mg` mvi |

**iKbv i<sup>3</sup>**

cv`exi vevfbv``k Mi` evQj hT`ZT RevB bv Kti GK RvqMvq (k`bvi nvDtm) RevB Kti Gf` i i<sup>3</sup> msi`Y Kiv nq Ges i`Ktq ,ov Kti mvi ^Zwi Kiv nq| iKbv i<sup>3</sup> bvBtUtRb mg`|

**QvB**

c`Zw`b ivv`vbi jvKvo cvotq th QvB Drcv`enq Zv cUv`mqv mg` mvi vntmte RvgtZ c`qM Kiv nq|

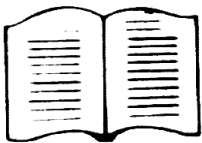
wbP weifbæ`Re mvti i bvtUtrb (N), dmdim (P<sub>2</sub>O<sub>5</sub>) I cUvk (K<sub>2</sub>O) Dcv`vtbi Zvvi Kv t`qv nj t

QK 1: weifbæ`Re mvti i bvtUtrb (N), dmdim (P<sub>2</sub>O<sub>5</sub>) I cUvki (K<sub>2</sub>O) cwi giY

mvti bug	N%	P <sub>2</sub> O <sub>5</sub> %	K <sub>2</sub> O%
nvtoi ,av (teivigj)	3.0-4.0	20.0-25.0	-
vmx nvtoi ,av (vmx teivigj)	1.0-2.0	25.0-30.0	-
gvfQi ,av (vdm igj)	4.5-10.0	3.9-9.0	0.3-1.5
iKbvi 3	10.0	1.5	1.0
Zjvi `Lj	5.0-7.0	2.0-3.0	1.0-2.0
mvi lvi `Lj	5.2	1.8	1.2
vZj `Lj	6.2	2.0	1.2
vZvm `Lj	5.5	1.4	1.3
Kvgy dj (tLvm mn)	4.9	1.4	1.2
Kvgy dj (tLvm Qiov)	7.9	2.2	1.9
Kvvi QvB	-	1.5	2.3-12.0
tMvei	0.3-0.4	0.2	0.1
Kt`uv÷	0.4-0.8	0.3-0.6	0.7-1.0
meR mvi	0.5-0.7	0.1-0.2	0.5-0.8
gibyl i gj	1.2-1.3	0.8-1.0	0.4-0.5
Lvgvi RvZ mvi	0.4-1.5	0.4-0.8	0.5-1.9



**Ablyj b (Activity):** %Re mvi ej tZ Kx tevtSb? Avcbvi Gj vKvq mPi vPi e`euZ `Re mvi m`fU GKvU msuq]B i Pbv wj Lj|



**mvi gg®**

`Re Drm t`K cUkZKfvte cUv A\_ev cU`ZKZ.mvi tK `Re mvi etj | tMvei, Kt`uv÷ meR mvi, weifbæi tbi `Lj, nvtoi ,av, gvfQi ,av BZ`w `Re mvti i A`sf9 |





### cuVhEi gj`iqb 5.1

mivK DEti i cuKqUK wPy` (v) w` b

1/ ubtPi tKvbu cNYR mvi?

- K) Kt`uv÷
- M) meR mvi

- L) Lvgvi RvZ mvi
- N) A`vthuj v

2/ ersj vt`k GKw Mi æ` ubK KZUKzMvei t`q?

- K) 7-8 tKwR
- M) 12-15 tKwR

- L) 10-12 tKwR
- N) 16-18 tKwR

3/ Kt`uv÷ mvi `Zwi ntZ KZ gvm mgq j vtM?

- K) 1-3 gvm
- M) 3-4 gvm

- L) 2-3 gvm
- N) 4-6 gvm

4/ GKw meR mvi dmj tn±i cWZ KZUKzRe c`v` (meR) DrcbaKi tZ cvti?

- K) 10-20 Ub
- M) 10-40 Ub

- L) 10-30 Ub
- N) 10-50 Ub

5/ nvo tm× Kti , av Ki tj Ktmi cwi gvY ep× cvq?

- K) bvBtUtRb
- M) g`vMt`bwkqvg

- L) dmdi vm
- N) cUwvkqvg

6/ i`Kbr i t`3 tKvb&Lvt` vcv`vb tewk \_vtK?

- K) Aw` tRb
- M) bvBtUtRb

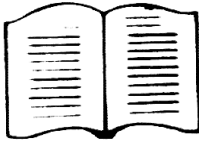
- L) nvBtWtRb
- N) teri b

### cw 5.2 Re mvi Drcv bKvix Dwmc mgn



G cvV tkfI Avcib

- ◆ Re mvi Drcv bKvix Dwmc mgn bvg ej tZ cvi teb |
- ◆ Gme Dwmc i enko'vej x eYv Ki tZ cvi teb |
- ◆ Gf i tK KvR j vMrbvri e e v v b t Z cvi teb |



Ggb AfbK Dwmc i tqtQ hviv Re mvi Drcv tb cZ ev ctiv fite e euZ ntq AvmtQ | Re Drtmi ew t tK mivmvi cB A ev cZKZ.mv tK Re mvi ejv nq | Avi thme Dwmc Re mvi Drcv tb e euZ nq tm, tjtK Re mvi Drcv bKvix Dwmc etj | MiaevQyi i tMveI GKvU Re mvi | tMveI th KZ aitbi Rvbn ARvbn Dwmc ev AvMvQv i tqtQ Zv ejv KvVb | tZgubfite Kt v v ev AveRv cPr mvi Zvi tZl vefbraitbi Dwmc e euZ ntq v tK | GQvovl meR mvi Drcv tb th me Dwmc tK KvR j vMrbvri n t Q Gf i gta aAv, AvndKvb aAv, kbcvU, tMvgUi ev eiev BZ v c v b | gvmKj vB I tLmvi xKj vB tKl gvtS gta meR mvi Drcv tb e envi Kiv ntq v tK |

Gme Qvovl tek vKQv b v g v t b i Dwmc i tqtQ, hv i tK v b : m t n Re mvi Drcv bKvix Dwmc v n t m t e M Y Kiv tM t j I Gf i tK c v Y R mvi Drcv bKvix Dwmc ejv ntq v tK | Gf i gta i tqtQ b j m e R t k l j v, A v t h j v B Z v | R x e v Y m v i e v B t b v K z v g e t j L v Z m v i n t j v g j - Z c v U g v U t Z v g v k Z v e f b e R v t Z i i v B t R m e q v g e v t v i q v | W j R v Z i q d m t j i e x R e c t b i c t e R x e v Y m v i t i m t v g v k Z K t i e c b K i t j d m t j i d j b 30-150 k Z i s k c h S e v x t c t Z c v t i G e s d m t j i Y M Z g v t b i I D b v Z n q | v b t P Re mvi Drcv bKvix c v b K t q K v U D w m c i v e e i Y D c v c b K i v n t j v |

Wj RvZiq dmtj i exR ectbi cte R x e v Y m v i t i m t v g v k Z K t i e c b K i t j d m t j i d j b 30-150 k Z i s k c h S e v x t c t Z c v t i |

aAv (Sesbania aculeata), vkg (Legume) RvZiq Mvp meR cTeuj, v e a b k j e l R m e Dwmc | Gf i KvU big Ges cPZ Wj c j v h v Ges 3-4 v g U v i j v n q | Gf i v k K t o b v B t U t R b A v e x K v i x i v B t R m e q v g e v t v i q v i K t j v b v e v v U v t K h v i g r a t g G i v e v Z v t m i g v b v B t U t R b g v U t Z t h v M K t i M v t Q i c v p t h v M v q I c P Z c v i g r Y Re c v l m i e i v n K t i | G i v v c P b k j |

B v b x s A v n d K v g n v t k t t K m s M v x Z A v n d K v b a A v (Sesbania rostrata) b v g K c R v n Z i U D r K o . g v t b i m e R m v i D r c v b K v i x D w m c | G f i D P Z v 3-5 v g U v i , K v U A v a K Z i b i g I c T e u j , K v t U i I c v Z v i i s M v p m e R | G M v Q A v Z v c P b k j | v k K t o i b v g G f i m v i v K v U R j o 5-6 m v i t Z b v B t U t R b A v e x K v i x v U D r c b e n q G e s G i v A v a K c v i g v Y Re c v l m i b v B t U t R b g v U t Z m i e i v n K i t Z m v l g | Z i Q v o v A v n d K v b a A v e x R G e s K v U D f t q i v i v e s k v e l i K i t Z c v t i | t f R v g v U t Z e v c v b t Z K v t U i L U (Cutting) v t q G f i t K R b v t b v L v m n R |

c t q 8 m B v n e q t m i t k x a A v G e s A v n d K v b a A v G K t n e i R i g t Z h v v m t g 20-25 I 30-35 U b Re c v l Ges 100 I 250 t K v R b v B t U t R b m i e i v n K i t Z c v t i |

t k x aAv Ges AvndKvb aAv GK tn e i R i g t Z h v v m t g 20-25 I 30-35 U b Re c v l Ges 100 I 250 t K v R b v B t U t R b m i e i v n K i t Z c v t i |

### kbcvU

GvU I GKvU vkg RvZiq el Rme big KvU i cTeuj Dwmc | Gi D'PZv 2-3 v g U v i | KvU Wj c j v t Z g b v t K b v | A v a K Z i D e z R i q M v q f v j R t b f G e s A v Z A i c v b t Z m n t R c t P | k b c v U 7-8 m B v n e q t m t n e i c Z 15-16 U b Re c v l Ges 60-65 t K v R b v B t U t R b t h v M K i t Z c v t i |

kbcvU 7-8 mBv n eqtm tn e i cZ 15-16 U b Re c v l Ges 60-65 t K v R b v B t U t R b t h v M K i t Z c v t i |

Re mvi Drcv`bKvix Ab`vb` dmtj i gta` tMigUi ev ei euU, tLmvi x Ges gvmKj vB Avgrt`i  
f`tk AwZ cwi uPZ | Gme MvQ ukg RvZxq etj Gt`i ukKto cPz cwi grtY uU vtK I  
RigtZ bvBtUtRb thM KiZ cvti | Gme MvQ j Zv RvZxq Ges MtQi D`PZv tZgb nq bv  
etj RigtZ `Re c`v`Kg thM nq | gnuUz Ai cwb\_vKtj I Gme MvQ mntR ctP hvq |  
Giv cZ tn±i RigtZ 3-8 Ub `Re c`v`Ges 12-25 tKwR bvBtUtRb thM KiZ cvti |

**A`vthj v (Azolla)**

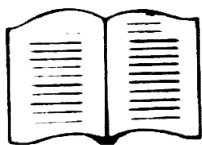
A`vthj v GK cKvi Rj R dvY(tXukKvK) RvZxq fimgvb Dw`c | newfbæAAtj A`vthj v qjz`  
civr, Kvjdcivr, tZZq qv civr, myZcivr BZ`w` bvtg cwi uPZ | A`vthj v „QvKvfi Rbvtq |  
w`tkvYvKvi cZwU „Q``N`10-15 ugug. Ges c0` 10-12 ugug. nta vtK | A`vthj v thSb  
(Sexual) I A½R (Vegetative) Dcvtq `f cwbZB (5-10 tmig) esk we`li Kti | Kv`v  
gnuUzI A`vthj v eutZ cvti | maviYZ 25-30` tm: Zvcgvvq `Z A½R eskepx Kti |  
tn±i cZ 8-10 tKwR uJGmuc c0qvM Kij eskepx AwZ `Z nq | cZKj- Avenl qiq  
cvZvi ub`vstk t`uvi (Spore) `Zwi Kti Ges Dchj cwi tatk thSb c0qvq esk we`li  
Kti |

c0vgKfite cZ eMigUti 100-200 Mtg Nvm (A`vthj v) exR intmte Ai cwbhj RigtZ  
Qvotq w`tj 10-12 w`tb Rigi I cti GKwU `t`i mjo Kite | RigtZ `tk cwb mvi tq vbtq  
`li uU gnuU m½ uguktq w`tZ nq | Gfite GKwU avb dmtj 2/3 evi A`vthj v c0qvM KiZ  
nq | GK `li A`vthj v tn±i cZ 10-15 Ub meR mvi Drcv`b KiZ cvti | A`vthj v th  
RigtZ Rbvtb nq tm RigtZB A`ev Ab` RigtZI gnuU m½ uguktq t`qv hvq | avb t`qjZ  
2-3 tm.ug. Rgv cwb\_vKtj avb ecb ev t`vctYi ci tmLv`b mivmvi A`vthj v Rbvtb hvq |  
A`vthj v tn±i cZ 30-40 tKwR bvBtUtRb thM KiZ cvti |

**bij meR tklj v (Blue Green Algae)**

G tklj v Pzj i gZ miæ j`r I wcv`Qj, t`Ltz bij vf meR etYp nq | G tklj v ex cwbZB,  
bij v, tWiev ev avb ev cvUt`qjZ RbvtZ t`Lv hvq | BtUi cjt`bv t`qj ev m`vntmZ  
tgtS`ZI G tklj v Rtbv`vtK | tklj v Drcv`tbi Rb` 1 x 2 x 0.2 NbigUvi AvKvfi tjvvi  
cvZi GKwU cvt` 10 tKwR gnuU fiv`Kti 10 tm.ug. D`PZvq cwb w`tZ nte | GtZ 70 Mtg  
uJGmuc uguktq c0q 200 Mtg i Kt`bv tklj v uQuUq w`tj GK msvn ci GKwU cje `t`i mjo  
nte | cvt`i cwb i`Ktq i Kt`bv tklj v mvi intmte e`envti i Rb` t`tL w`tZ nte |

avb t`vctYi 7 w`b ci RigtZ 5-10 tm.ug. D`PZvi cwbZB tn±i cZ 15 tKwR tklj v  
uQuUq c0qvM KiZ nq | GtZ cZ tn±i 20-25 tKwR bvBtUtRb thM nq |



**mvigg®**  
t`kx `aAv, AwdKvb `aAv, kbcvU, ei euU, tLmvi x, gvmKj vB, A`vthj v, bij meR tklj v  
BZ`w` n`Q `Re mvi Drcv`bKvix Dw`c | t`kx I AwdKvb `aAv tn±i cZ h\_vvtg 100 I  
250 tKwR, bvBtUtRb thM Kti | kbcvU, A`vthj v I bij meR tklj v h\_vvtg tn±i cZ  
10-15 tKwR, 30-40 tKwR Ges 20-25 tKwR bvBtUtRb thM Kti | G Qvovl ukg RvZxq  
newfbædmj I gnuUz newfbæcwi grt`b bvBtUtRb mi ei vn Kti |



**cuVhEi gj'iqb 5.2**

mWk DEti i cuKqUK wPy (v) w b

1/ Re Drm t\_tK cS mvi tK Kx ej v nq?

- K) cKZ.mvi
- M) Re mvi

- L) i vmiqubK mvi
- N) ARe mvi

2/ AvndKvb aAv MtQi KvU Kq mmi Kti bvBtUtRb AveXKvix uU vtK?

- K) 2-3
- M) 5-6

- L) 4-5
- N) 6-7

3/ kbcvU meR mvi wtmte Pvl Kitj gvUtZ tn+i cZ KZUKzvBtUtRb thvM Kti?

- K) 40-50 tKwR
- M) 60-65 tKwR

- L) 50-60 tKwR
- N) 65-70 tKwR

4/ Avthvj v KZ wmm tm. ZvcgvIiq eskewx KitZ cti?

- K) 10-15<sup>0</sup> tm.
- M) 20-25<sup>0</sup> tm.

- L) 15-20<sup>0</sup> tm.
- N) 25-30<sup>0</sup> tm.

5/ tn+i cZ KZ tKwR bxj meR tkIj v avb tqtZ cqvM KitZ nq?

- K) 10 tKwR
- M) 20 tKwR

- L) 15 tKwR
- N) 25 tKwR

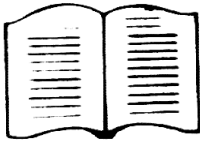
### e`enwiK

#### cw 5.3 meR mvi `Zwi



G cvV tkfI Avciub

- ◆ meR mvi i msAv, cwi i PwZ I `enkóvej x ej tZ cvi teb|
- ◆ meR mvi `Zwi Ki tZ cvi teb|
- ◆ meR mvi i Dckwi Zv eYbv Ki tZ cvi teb|



meR mvi dmj i gta` aAv, kbcvU, eieU BZ`w` Dtg-LthvM`| Avgv`i t`tk euj cwi i PZ `aAv ev t`kx `aAv (Sesbania aculeata) QvovI B`vbx AvvdKv gnv`k t`tk AvvdKvb `aAv (Sesbania rostrata) bvgK GKvU cRvWZ Gf`tk cEzB Kiv ntqtQ, hvI ukKto igt`vRme (Symbiotic) ivBtRmeqvg e`v`±wivi qvi uU QvovI mivv`tn (KvU) 5-6 mvi tZ AmsL` uU RbVq| G cRvWZvU exR I KvU`i mivv`th` esk me`vi Ki tZ m`lg| tFRv I i Ktbr Dfq gvUtZB th tKvb mgq KvU`i mivv`th` GB MvQ RbVtbr m`e|

t`kx Ges AvvdKvb `aAv GKK dmj vntmte ev mvi dmj (Relay crop) vntmte Pvl Kiv hvq| thgb AvDK ev tev`iv avb KvUvi 10/12 w`b AvtM aBÁvi exR ecb A`ev KivUs (Cutting) j vMv`bvi ci avb tKtU vbtj `aAv mxi fivte evx` cvq|

#### meR mvi i msAv

me`kl ai`bi uKQyDw`c`tk RvgtZ Rvb`q meR I big Ae`vq gvUtZ vgvktq Ges cvPtq th mvi c`Z Kiv nq Zv`K meR mvi (Green manure) etj |

me`kl ai`bi uKQyDw`c`tk RvgtZ Rvb`q meR I big Ae`vq gvUtZ vgvktq Ges cvPtq th mvi c`Z Kiv nq Zv`K meR mvi (Green manure) etj | G cRvWZvU exR I KvU`i mivv`th` evqsgU`j i g` bvtU`Rb gvUtZ hv` Ki tZ cvi |

#### meR mvi dmj i `enkóvej x

meR mvi dmj `z eaBkij ntZ nte, KvU big I imv`jv nte| ZvQvov G MvQ ukv ev uU RvZvq (Legume) ntj fij nq| GtZ Mv`Qi tKktoi e`vKtUvi qv uU (ivBtRmeqvg e`v`±wivi Ktj vbx) mivv`th` evqsgU`j i g` bvtU`Rb gvUtZ hv` Ki tZ cvi |

#### meR mvi i Dckwi Zv

meR mvi gvUtZ `Re c`v`thvM Kti gvUtK DeP Kti I gvUti tF`S` Yvejxi DbwZ mivab Kti | gvUtZ uU mivv`th` bvtU`Rb thvM Kti | `aAv meR mvi vntmte c`Z tn`ti 20 Ub `Re c`v`Ges 60-70 tKvR bvtU`Rb thvM Kti | kb cvtUi tejvq `Re c`v`P cwi gvY nq 20 Ub Ges bvtU`Rb 40 tKvR | `Re c`v`thvMi gva`tg meR mvi gvUtZ Dckvi x e`v`±wivi msL`v, esk I KvhRjvc evx` Kti | Nb`vte MvQ RbVtbrv Rb` AvMvQv `gb nq Ges fvg`lq ti va nq|



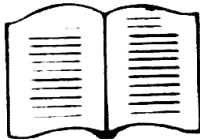
### e`enwiK

#### cw 5.4 Kt`uv÷ `Zwi



G cvV tk`l Avcub

- ◆ Kt`uv÷ -Gi ms`Av ej tZ cvi`teb|
- ◆ Kt`uv÷ `Zwi i bwiZgvj v I c`qvRbxq DcKi`Yi brg ej tZ cvi`teb|
- ◆ Kt`uv÷ `Zwi Ki`Z cvi`teb|



Kt`uv÷ (Compost) k`iU j`wUb fvivi Ges Gi A\_`KQyRi`b`mi msugkY| `Re Dr`mi wewfb`AveR`v I cwi Z`<sup>3</sup> e`tk me`kl c`uqvi gifa`tg cwPtq c`ZKZ.mvi`K Kt`uv÷ ev AveR`v cPr mri etj |

#### DcKiY

cwi Z`<sup>3</sup> LoK`b, Av`Li cvZv, Mv`Qi SivcvZv, dmtji Ges Zwi ZiKwi i cwi Z`<sup>3</sup> Ask, Mi`ævQ`ji i Lver`ti i Dir`Oó, tMvqj N`ti i AveR`v, Kv`Rv tMvej, KP`i cvbv, AvMv`Qv BZ`w` Kt`uv÷ mvi `Zwi i DcKiY| cwb t`tk m` DVv`bv KP`i cvbv`K 2/3 w`b tiv` i`wKtq cwnbi cwi gvY wKQyKv`tg tbqv Fij | Aci c`q Av`Li i`Kt`bv cvZv ev Mtgi i`Kt`bv Lo wKQyY wfv`Rtq w`bj cPb KvR Zj w`SZ nq|

#### bwiZgvj v

Kt`uv÷ `Zwi i wewfb`æc`wZ itq`Q| Gt`i gta` GWt`Kv, GKwUt`f`UW I ev`v`vjvi c`wZ D`tj L`thvM`| Gme c`wZi c`Z`KwUi gj-bwZ GKB| Zte Gt`i gta` , YMZ gvb ew`xi c`vm wntmte wKQyV Zvi Zg` j`qYxq| GWt`Kv c`wZtZ Kt`uv÷ c`ZKvix ev`t`wi qv ev Q`vK eaR` GWt`Kv cvDWi c`fveK wntmte thvM Kiv nq| Abj`c`fite GKwUt`f`UW c`wZtZ kn`ti b`@vi cwb, Kv`v Ges ev`v`vjvi c`wZtZ gvbj`i gjg`f` c`fveK wntmte e`eüz nq| evsj vt`k Aek` Kv`Rv tMvej I gvwUt`K c`fveK wntmte e`envi Kiv nq| Kt`uv÷ mvi `Zwi i t`q`T` Avi GKwU cv`R` cwi j`w`Z nq| tKvb tKvb GjvKvq Kt`uv÷ DcKiY`K gvwUi I c`ti `c ev Mv`v Kti cPr`bv nq Avevi tKvb tKvb `v`tb gvwUt`Z MZ`Kti cPr`bv nq| evsj vt`k tk`tlv`<sup>3</sup> c`wZtZ Kt`uv÷ `Zwi Kiv nq|

#### `vb wbePb

Lvgv`ti i D`RzI mgZj GKwU `vb tet`Q wbb thLv`tb eb`vi cwb D`v bv ev ew`pi cwb R`tg `v`tk bv| `vbwU Mv`Qi Qvqv Ges c`k`z ev tMvqj N`ti i Kv`Q ntj fij nq| Zv`Z Kt`uv÷ DcKiY tiv` i`wKtq hvte bv Ges c`k`zi i cwb A\_`ev tMvqj tarqv cwb w`tg Kt`uv÷ Mv`v`K wfv`Rtq i vLv hvte|

#### c`Z c`vj x

Kt`uv÷ `c KZ eo nte Zv wbf`P Kti DcKi`Yi cwi gv`Yi Dci | DcKiY tenk ntj `tci cvk w`K ti`L %N`e wotq w`b A\_`ev tenkmsL`K tQvU tQvU `c `Zwi Ki`ab| c`vY mivB`Ri GKwU `tci `N`c`I D`PZv nq h`v`m`tg 3 wgvvi x 1.5 wgvvi x 1 wgvvi |







### Pevš'gj`iqb

#### msw'jB I iPbv'j-K c'kæ

- 1/ `Re mvi ej tZ wK tevSvq?
- 2/ `Re mv'zi i GKwU Zwj Kv c'Z Ki ab|
- 3/ Kt'uv÷ `Zwi ntZ KZw`b mgq j v'fM Ges Gi , YMZ gvb Kx'fmi mgZj`?"
- 4/ `Re mvi Drcv`bKvi x Dw'f' i GKwU Zwj Kv c'Z Ki ab|
- 5/ AvwdKvb `aAvi `enkó'vej x eY'v Ki ab|
- 6/ A'v'f'vj vi e`envi weia eY'v Ki ab|
- 7/ RxevYynvi Kx Ges Kxfv'fe e`euZ nq wj L'j|
- 8/ wkg RvZxq Mv'Qi wKk'to thme , wU f`Lv hvq I , t'j v Kx Ges Kx KvR K'f'i?
- 9/ ei euU, tLmvi x ev gvmKj vB meR mvi dmj wnt'f'fe Pvl Kiv ntj gvwU'Z KZUKz`Re c`v\_@ bvB'tU'f'Rb thvM Ki tZ cv'f'i?
- 10/ b'j meR tkI j v Kxfv'fe Drcv`b Kiv nq wj L'j|



### DËi gvj v

#### cW 5.1

- 1/ N   2/ M   3/ M   4/ N   5/ L   6/ M

#### cW 5.2

- 1/ M   2/ M   3/ M   4/ N   5/ L

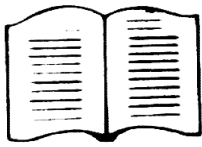


**cw 6.1 RiqTZ mvi c0qM t mti i gvIv, c0qM mgq I c0qM cxwZ**



G cvI tkfI AvciB

- ◆ Dm` i AvciB nvh`Lv` `vcr`vb m`utK`avi Yv w`TZ cvi`teb|
- ◆ mvi Kx Zv ej`TZ cvi`teb|
- ◆ mti i cKvi `bt`R Ki`TZ cvi`teb|
- ◆ wefbaadm`j i mti i gvIv `bifcY Ki`TZ cvi`teb|
- ◆ mvi c0qM Mi mgqm Px wj LtZ I ej`TZ cvi`teb|
- ◆ mvi c0qM Mi cxwZ e`vL`v Ki`TZ cvi`teb|
- ◆ c`vb c`vb mti i KvR kbr<sup>3</sup> Ki`TZ cvi`teb|



weAvbxt` i gtZ 16wJ  
Dcr`vb Dm` i Rb`  
Acwi nvh`

Rxe gvIB tetP `vKvi Rb` A`f Zv`i epx, meKvk, esk epx I Ab`vb` KvhRjvc  
cwi Pj bvi Rb` c0z kw<sup>3</sup> i c0qvRb nq Ges tm kw<sup>3</sup> i Dm` n`jv cyo ev Lv` | thnZzdmj  
Rxe RMtZi Ašf` ZvB Zv`i I Lv` i c0qvRb nq| gvbyl I Lv` Zvwj Kvq thgb i`qtQ  
Avngl, kKp, t`a, LwYRc`v`c`vb I wUvngb, tZgub Dm` i tejvqI i`qtQ tek KtqKuU  
i vniqubK cyo tgšj ev cyo Dcr`vb| Dm` t`n mekdy Kti G chšI 30wJi gtZv tgšj  
Dcr`vbi mUvb cvlqv tMtQ| Gt`i gta` weAvbxt` i gtZ 16wJ Dcr`vb Dm` i Rb`  
Acwi nvh` Aek` tKv`bv tKv`bv `eAvb`Ki gtZ Acwi nvh`tgšj Dcr`vbi msL`v 20 ev Zvi I  
tewk|

Dm` i Acwi nvh`  
Lv` `vcr`vb ej`TZ tmme  
cyo tgšj tK ešvq hvi th  
tKv`bv GKwJi Abgw`wZ  
ev Afie Dm` i `rfweK  
KvhRjvc e`vZ Kti,  
GgbwK Dm` i gZzchšI  
NUvZ cti |

Dm` i Acwi nvh`Lv` `vcr`vb ej`TZ tmme cyo tgšj tK tevSvq hvi th tKv`bv GKwJi  
Abgw`wZ ev Afie Dm` i `rfweK KvhRjvc e`vZ Kti, GgbwK Dm` i gZzchšI NUvZ  
cvi | Gt`i th tKv`bv GKwJi Afie ev Abgw`wZ Ab` tKv`bwJi `f ev Avak gvIvq e`envi  
w`tq ci`Y Kiv m`e bq|

Gme cyo Dcr`vb th AvKv`ti MvQ MhY Kti tm AvKv`ti MvQ ev gmltZ c0qM Kiv m`e nq  
bv, tKv`bv bv tKv`bv thšwMK `e` (mvi) wntmte c0qM Ki`TZ nq| Gme `e` gwEKv`c`vb tZ  
`exfZ n`q K`vUvqb (+) I A`vbrqb (-) wntmte c`vbZ Dm` i g`-t`v`v`gi m`v`v`h` t`tn  
c0ek Kti MvQ i epx I meKvk NUvZ m`v`v`h` Kti | wKQyKQycyo Dcr`vb Dm` Zvi cvZv I  
Kv`Ui gva`tg Avqb i`fc MhY Ki`TZ cti | Gt`i gta` i`qtQ bvBtU`Rb, Avqib (tj šn),  
Kcvi (Zvq), wR¼ ( `v) c`f`vZ|

Dm` i Acwi nvh`cyo Dcr`vb, t`jvi bvg, Gt`i Dm` I cwi`tkvI Y`thvM` AvKvi mn `btPi  
Zvwj Kvq t`Lv`bv nj t

cyo Dcr`vb	Dm`	cwi`tkvI Y`thvM` AvKvi
bvBtU`Rb (N)	gml Ges evqy	NO <sub>2</sub> <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , NH <sub>4</sub> <sup>+</sup> , CO(NH <sub>2</sub> ) <sub>2</sub> `eY
dmdim (P)	gml	H <sub>2</sub> PO <sub>4</sub> <sup>-</sup> , HPO <sub>4</sub> <sup>=</sup> , PO <sub>4</sub> <sup>=</sup>
cUvniqvg (K)	gml	K <sup>+</sup>
KveB (C)	evqyGes c`vb	CO <sub>2</sub>
nvBtW`Rb (H)	evqyGes c`vb	H <sup>+</sup> , H <sub>2</sub> O

A# Rb (O)	evqyGes cmb	O <sup>-</sup> , OH <sup>-</sup> , CO <sub>2</sub> , SO <sub>4</sub> , CO <sub>3</sub> <sup>=</sup>
K'ij imqvg (Ca)	gvU	Ca <sup>++</sup>
g'vMtbmqvg (Mg)	gvU	Mg <sup>++</sup>
mij divi (MÜK) (S)	gvU	SO <sub>3</sub> <sup>=</sup> , SO <sub>4</sub> <sup>=</sup>
WR¼ ( ́i) (Zn)	gvU	Zn <sup>++</sup>
Kcvi (C)	gvU	Cu <sup>++</sup>
gvj eWbvig (Mo)	gvU	MoO <sub>4</sub> <sup>=</sup>
tevi Y (B)	gvU	H <sub>2</sub> BO <sub>3</sub> <sup>-</sup> , HBO <sub>3</sub> <sup>=</sup> , BO <sub>3</sub> <sup>=</sup> , B <sub>4</sub> O <sub>7</sub> <sup>=</sup>
Avqib (tj Šn) (Fe)	gvU	Fe <sup>++</sup> , Fe <sup>+++</sup>
g'v½vbR (Mn)	gvU	Mn <sup>++</sup>
tKvib (Cl)	gvU	Cl <sup>-</sup>

Kvativ Kvativ gtZ vbPi , tj vl Acvii nvhLvt ́vcr vb

tmvWqvg (Na)	gvU	Na <sup>+</sup>
tKievë (Co)	gvU	Co <sup>++</sup>
tfbvWqvg (V)	gvU	VO <sub>3</sub> <sup>-</sup>
vmij Kb (Si)	gvU	SiO <sub>3</sub> <sup>-</sup>

7KZ.16vU cji Dcr vb i gta ́ cÜg 9 vUtK (N, P, K, C, H, O, Ca, Mg, S) DvM ́ tevk cwi gvY cwi tkvY Kti etj Gt ́ i tK ejv nq gly ́ Dcr vb (Major element) | Avi evK 7 vUtK (Zn, Cu, Mo, B, Fe, Mn, Cl) ejv nq tMSY Dcr vb (Minor element), Kvi Y Gt ́ i tK DvM ́ Lg Ar cwi gvY tkvY Kti | tkvY cwi gvYMZ vK t tK gly ́ I tMSY vntmte MY ́ ntjl , iZji vK t tK Gt ́ i gta ́ tKvb Zvi Zg ́ tbB; me , tj vb mgvb , iZCvP

gly ́ cji Dcr vb , tj vi gta ́ N, P, Ges K DvM ́ i mePvBtZ tevk cwi gvY cÜqvRb nq Ges Gt ́ i tK cÜgvix ev cÜvgK cji Dcr vb vntmte MY ́ Kiv ntq vK |

gly ́ cji Dcr vb , tj vi gta ́ N, P, Ges K DvM ́ i mePvBtZ tevk cwi gvY cÜqvRb nq Ges Gt ́ i tK cÜgvix ev cÜvgK cji Dcr vb vntmte MY ́ Kiv ntq vK Ges RvgtZ cÜZvbqZ Gt ́ i Afve cwi jvZ ntq vK | Zvb Gt ́ i tK h vvtg BDvqv, vCj msvi dmtvU (vUGmnc) Ges vgdvU Ae clvk (Ggvc) mvi i gva ́tg cÜZ ́K tgšvgB dmj t ́vZ cÜqvM KiZ nq | c ́vŠti tMSY Dcr vb , tj v dmtji ́ vfwek Pvn vi Zvbq gvUvZ ht ́ o cwi gvY v ́gv vK etj Avakvsk t ́vŠ Gt ́ i Afve cwi jvZ nq bv | Afve t ́ Lv v ́ tj Aek ́B Gt ́ i tK mvi vntmte cÜqvM KiZ nq | thgb B ́ vbs evsv v ́k tmtPi mjev evx cvl qvZ avb Pvlevt ́ i Rb ́ ermvi i Avakvsk mgq gvU t ́Rv vKvq mij divi (MÜK) I WR¼ ( ́i) Gi Afve cwi jvZ nt ́Q Ges Gt ́ i tK h vvtg vRcmvg I WR¼ A- vBW ev WR¼ mij tvU bvgK mvi i gva ́tg RvgtZ cÜqvM Kiv nt ́Q |

**RvgtZ mvi cÜqvM**

thme ́ ́ DvM ́ i cji mieivn Kti Ges gvU DePZv msi ́Y ev evx Kti Zvt ́ i tK mvi etj | thgb- BDvqv, vUGmnc, Ggvc BZ ́v |

thme ́ ́ DvM ́ i cji mieivn Kti Ges gvU DePZv msi ́Y ev evx Kti Zvt ́ i tK mvi etj |

mvi gj-Z`ŷcKvi- A%Re mvi Ges`Re mvi | A%Re Drm t`tK cŰB ev cŰZKZ.mvi tK A%Re mvi etj, thgb- BDwi qv, uJGmuc, BZ`w` | Avi`Re Drm t`tK cŰB ev cŰZKZ. mvi tK`Re mvi etj, thgb- tMvei, Kt<sup>3</sup>uv<sup>3</sup>, nvt<sup>3</sup>oi<sup>3</sup> av, mvi lvi`Lj, BZ`w` | weirfbae Lv<sup>3</sup>vcv`vb mie i vnKvix mvt<sup>3</sup>i i GKiu Zvij Kv ubt<sup>3</sup>P t`qv nj |

<b>bvBtU<sup>3</sup>Rb mie i vnKvix mvi</b>	<b>N Gi kZKiv nvi</b>	
BDwi qv	CO (NH) <sub>2</sub>	46
Gtgmbqvg mvj tdu	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	20.5
Gtgmbqvg bvBtUU	(NH <sub>4</sub> )NO <sub>3</sub>	33
Gtgmbqvg tKvi vBW	(NH <sub>4</sub> )Cl	25
tmmvllqvg bvBtUU	NaNO <sub>3</sub>	16
K`ij umqvg bvBtUU	Ca (NO <sub>3</sub> ) <sub>2</sub>	15
WvB Gtgmbqvg dmtdu	(NH <sub>4</sub> ) <sub>2</sub> HPO <sub>3</sub>	18
GbnvBWm Gtgmbqv	NH <sub>3</sub>	83

<b>dmdim mie i vnKvix mvi</b>	<b>P<sub>2</sub>O<sub>5</sub> Gi kZKiv nvi</b>	
iK dmtdu	2Ca <sub>5</sub> (PO <sub>4</sub> ) <sub>2</sub> F	27-40
mzvi dmtdu	Ca(H <sub>2</sub> PO <sub>4</sub> ) <sub>2</sub>	16
uU <sup>3</sup> ej mzvi dmtdu	3Ca(H <sub>2</sub> PO <sub>4</sub> ) <sub>2</sub>	48
e`vnmK u`vM	(CaO) <sub>5</sub> P <sub>2</sub> O <sub>5</sub> SiO <sub>3</sub>	12-20
Gtgmbqvg dmtdu	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	48
WvB Gtgmbqvg dmtdu	(NH <sub>4</sub> ) <sub>2</sub> HPO <sub>4</sub>	54

<b>cUumqvg mie i vnKvix mvi</b>	<b>K<sub>2</sub>O Gi kZKiv nvi</b>	
uGD <sup>3</sup> i U Ae cUvk	KCl	60
mvj tdu Ae cUvk	K <sub>2</sub> SO <sub>4</sub>	50
cUumkqvg bvBtUU	KNO <sub>3</sub>	46

<b>mvj dvi mie i vnKvix mvi</b>	<b>S Gi kZKiv nvi</b>	
uRcmvg	CaSO <sub>4</sub>	18

<b>1/4 mie i nKvix mvi</b>		<b>Zn Gi kZKiv nvi</b>
1/4 A· vBW	ZnO	78
1/4 mvj tdu	ZnSO <sub>4</sub> , 7H <sub>2</sub> O	36

<b>Aqib mie i nKvix mvi</b>		<b>Fe Gi kZKiv nvi</b>
tdivm mvj tdu	FeSO <sub>4</sub> , 7H <sub>2</sub> O	20

<b>g'v/2mbR mie i nKvix mvi</b>		<b>Mn Gi kZKiv nvi</b>
g'v/2mbR mvj tdu	MnSO <sub>4</sub> , 4H <sub>2</sub> O	36

<b>Kcvi (Zvgv) mie i nKvix mvi</b>		<b>Cu Gi kZKiv nvi</b>
Kcvi mvj tdu	CuSO <sub>4</sub> , 5H <sub>2</sub> O	25-35

<b>tevib mie i nKvix mvi</b>		<b>B Gi kZKiv nvi</b>
tmmvllqvg tev i U	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> , 10H <sub>2</sub> O	34 - 44

<b>gvj e tWbug mie i nKvix mvi</b>		<b>Mo Gi kZKiv nvi</b>
tmmvllqvg gvj e tWU	Na <sub>2</sub> MoO <sub>4</sub>	37

**dm t j i Pw n ` v**

GKK Rigi (thgb- GKi ev tn±i) GKwU dmj newfbaeLv t ` vcr` vb Kx cwi gv tY I Absy tZ cwi t kv lY Kti, Dm t ` i t ` n we t k- IY Kti Zvi GKUv avi Yv cv l qv hv q | newfbae dm t j i Lv t ` vcr` v t bi Pw n ` v G t ` i a i b, Rv Z, Drcv ` b K j v t K S k j B Z ` w ` i Dci w b f P K ti | Pw n ` vi GKwU Ask Av t m gv m U t Z m w A Z Lv t ` vcr` vb t ` t K, Avi ew k Uv m v t i i gva ` t g R i g t Z m i e i v n K i t Z n q |

**m t i i g v l v**

gv m U i De P Z v, Aven l qv, Drcv ` b t g S m g, dm t j i a i b I Rv Z, dmj e ` vcr` v B Z ` w ` i Dci w b f P K ti m v t i i g v l v w b a t i Z n q | D t j L ` , th ` j l v w R u b t m i w b i f c Y Q v o v m v t i i g v l v w K K i v h v q b v Z v i G K w U n t j v d m t j i P w n ` v G e s w Z x q u U n t j v G K K R i g t Z w e ` g v b c w i t k v l Y t h w M ` A e ` v q M v t Q i Lv t ` vcr` v t bi c w i g v Y | h w G K K R i g t Z m w A Z Lv t ` vcr` v t bi c w i g v Y G K K R i g i R b ` c t q v R b x m s L ` K M v t Q i P w n ` v i m g v b e v t e n k n q Z v n t j t m R i g t Z m v i c t q v M K i v i t K v b c t q v R b n q b v | A v i h w ` K g \_ v t K Z t e t m R i g t Z A e k ` B m v i c t q v M K i t Z n t e | Z L b m v t i i c w i g v Y n t e M v t Q i P w n ` v G e s g v m U t Z m w A Z Lv t ` vcr` v t bi c w i g v Y i e ` e a v t b i m g v b | A \_ P M v t Q i P w n ` v h w ` n q 30 t K w R b v B t U t R t b i A v i R i g t Z \_ v t K 22 t K w R, Z v n t j m v i w n t m t e c t q v M K i t Z n t e 30-22 = 8 t K w R b v B t U t R b, h v

th ` j l v w R u b t m i w b i f c Y Q v o v m v t i i g v l v w K K i v h v q b v Z v i G K w U n t j v d m t j i P w n ` v G e s w Z x q u U n t j v G K K R i g t Z w e ` g v b c w i t k v l Y t h w M ` A e ` v q M v t Q i Lv t ` vcr` v t bi c w i g v Y

BDni qvi gva`tg c`qvm Kitj c`qvRb nte 17.391 tKvRi Ges Gtgmbqvg mij tdtUi gva`tg v`ij j vMte 39.024 tKvR/ Abjycfvtte Ab`vb` mti i gv`lv ubifcy Kiv hvte/thnZnevfbae GjvKvi gmi DePZv nevfbae Ktgi ntq \_vtK/ GgbwK GKB Rigi nevfbae Astk DePZv wfbz`i ntZ cvti | tmRb` th tKvb GjvKvi Rb` mti i wLz gv`lv msvwi k Kiv m`e nq bv/ Zey AtbK cix`lv-ubix`lv, GjvKvi km` neb`im, Avenlv qv I mvari Y AwfAZvi Dci wbfP Kti tKvb GjvKvi Rb` mti i gv`lv wba`i Z ntq \_vtK/ Gi c`vb D`ik` ntjv gmi DePZv eRvq ti`L Ges mti i AcPq bv NuUtg jvfRbK I mvdj`RbKfvtte dmtji dj b ewx Kiv/ wbtP evsj v`tki c`vb KtqKw dmtji mti i gv`lv D`j`L Kiv ntjv/ `vbxq Ae`vi cwi`c`j`Z Gi wKQyKgtewk (AwZ DeP gmi Rb` wKQy Kg Ges AbyP gmi Rb` wKQy tewk) ntZ cvti |

**nevfbae dmtji mti i gv`lv (tKvR/tn±i)**

<b>dmtji bvg</b>	<b>BDni qv</b>	<b>wJGmic</b>	<b>Ggic</b>	<b>wRcmig</b>	<b>wR¼ A· wBw</b>
AvDk avb (Ddkx)	135	90	70	60	10
ti vcv Avgb avb (Ddkx)	135	90	70	60	10
tevtiv avb (Ddkx)	180	130	70	60	10
avb (Dbz` t` kvRvZ)	90	75	60	60	10
Mg (tmP Qrov)	100-130	100-130	40-50	110	5
Mg (2/1 wU tmP)	140-170	100-130	40-50	110	5
Mg (3 ev tewk tmP)	180-200	120-140	60-80	125	10
F`Ev	220	110	50	125	10
Pxbv/KvDb	100	70	35		
cvU/tg`v	100	25	45	45	10
Zjv	200	150	100	100	
ZigvK	110	110	90	(cUwkwqvg mij tdtU)	
AvL	275-370	185-275	275-370	185	
tLmvi x	22	42			
gmj	60-70	90	50	-	10
tQvj v	66	82	35		
gvm/gM	45	60	35	30	3
gUi	20-30	50-75			
mwi l v	200-300	150-180	70-100	120-180	5
ev`vg	70-90	180-220	80-100	100-120	5
wZj	100-125	130-150	40-50	100-120	
wZim	75	120	50	100	5

mqvexb	50	120	65		
mh@yx	150-180	150-180	70-100	100-110	
MRB wZj	75	120	45		
Kyng dZ	50				
Avj	320	200	250		

mvi c0qvM Mi tejvq AfaR cwi gvY BDwi qv l emK me,tjv mvi c0\_wgK gvT v (Basal dose) wntmte exR ecb ev P riv tivctYi AvtM Rwg c0wzi tkl cte c0qvM Kti gmlJi mt1/2 fij fivte wgtktq w tZ nq/

mvi c0qvM Mi tejvq AfaR cwi gvY BDwi qv l emK me,tjv mvi c0\_wgK gvT v (Basal dose) wntmte exR ecb ev P riv tivctYi AvtM Rwg c0wzi tkl cte c0qvM Kti gmlJi mt1/2 fij fivte wgtktq w tZ nq/ BDwi qv mvtii emK AfaR dmj Abynti 30-35 w b ci GK wkw tZ A\_er 20-25 w b Ges 40-45 w b ci mgvb B wkw tZ Dcwi c0qvM (Top dressing) Kiv thtZ cvti | AvtLi tejvq BDwi qv mvi mgvb wZb wkw tZ- tivctYi mgq, 40-45 w b l 60-70 w b ci cvk;c0qvM i gva tg mieivn Kiv thtZ cvti | BDwi qv mvtii Dcwi c0qvM ev cvk;c0qvM i AvtM Rwg t\_tK AvMvOv cwi vi Kti wbtj mvtii Kg qI gZv ewx cvq/

**mvi c0qvM i mgq**

me dmtj mvi c0qvM i mgq GK i Kg bq/ ZvOvov me mvi l GKB mgq c0qvM Kiv wVK bq/ thgb- dmj Drcv tbi c0\_wgK chiq Ges dmj cvKvi mgq bvBtUtRb mvtii c0qvRb nq AfbK Kg/ wKŠ mePvBtZ tewk cwi gvY c0qvRb nq DwM t i mteP ewxi chiq/ ZvOvov Rwg tZ bvBtUtRb mvi c0qvM Kivi ci DwM c KZR. cwi tkw l Z tnvK ev bv tnvK Af w tbi gta B Zv wewfbv fivte bo ntq hvq/ thgb, ewi ci cwb tZ `exfZ ntq wbtPi w tK A\_er c0w nZ cwb i mt1/2 Ptj hvq A\_er c0ZKj cwi tetk D0vqx ntq bo ntq hvq/ ZvB bvBtUtRb RvZxq mvi meUkZGKevti c0qvM bv Kti mgvb ev Amgvb B ev wZb wkw tZ c0qvM Kij DwM tewk cwi gvY cwi tkv l Y Kti | dtj mvtii Kg qI gZv ewto, AcPq l Kg nq/ bvBtUtRb RvZxq mvi cwb tZ AwZ mntR `exfZ nq etj c0qvM Kivi ci gml tZ wgtktq bv w tJ l wKko chS l mntR Ptj thtZ cvti | c qI vS t i, dmdim mvtii `exfZ nevi qI gZv Kg Ges gml tZ th vtb c0qvM Kiv nq tmLv tB t\_tK hvq/ ZvB c0qvM i ci Aek B Zv fij Kti gml tZ wgtktq bv w tJ wKko 0v in cwi tkw l Z n tZ cvti bv | cUw mqv g RvZxq mvtii `eYxq Zv gvS m i ai tbi | Zey gml tZ wgtktq bv w tJ G t i Kg qI gZv AfbK v tK Ktg hvq/ ZvB dmdim l cUw mqv g mvtiK ecb / tivctYi cte Rwg c0wzi tkl P r t l i mgq c0qvM Kti gml tZ wgtktq t`qv fij | MUK l `v RvZxq mvtiK l ectbi cte c0qvM Kiv DEg | Gme mvtiK gml AfbK w b chS ai i v l tZ cvti |

AvqZbeuj tMvei, Kt=uv÷, QvB, BZ`w `Re mvi tK gml i mt1/2 fij fivte wgtktq bv w tJ G t i Kg qI gZv ev KvhRw i Zv euj vstK nwm cvq/

AvqZbeuj tMvei, Kt=uv÷, QvB, BZ`w `Re mvi tK gml i mt1/2 fij fivte wgtktq bv w tJ G t i Kg qI gZv ev KvhRw i Zv euj vstK nwm cvq/ ZvB Gme mvtiK c\_l g P r l l gB t`evi ci Rwg tZ c0qvM Kiv ntj cieZ P P v l l gB t`evi mgq G,tjv gml tZ wgtk hvevi mthvM cvq/ RxevYmvi c0qvM i mteP K o. mgq ntjv exR ectbi ce g y Z q RxevYmvi fij fivte ex t R i mt1/2 wgtktq 2/1 NsUvi gta B exR ecb Kiv bv ntj mvtii KvhRw i Zv nwm cvq/

**mvi c0qvM c x w Z**

Dch<sup>3</sup> mgq l m l w K c x w Z t Z mvi e`envi bv Kij c w Dcv v tbi AcPq N t U |

mvi c0qvM i c0qvM c x w Z etj | c0qvM c x w Z i Dci mvtii KvhRw i Zv euj vstK w b f P k j | Dch<sup>3</sup> mgq l m l w K c x w Z t Z mvi e`envi bv Kij c w Dcv v tbi AcPq N t U | thgb- AvqZbeuj tMvei, Kt=uv÷ mvi BZ`w Rwg P r t l i i i a t Z B c0qvM Kij gml tZ fij fivte wgtktZ cvti Ges c w Dcv v b,tjv mntR B DwM t i M0Y t h v M Ae`vq Ptj



Avtm| meUKzbnBtUtRb mvi GKevti c0qM Kijt DwMc MbY Kivi AvtMB Zv wewfbfite  
bo ntq hvq| wbtP mvi c0qM cxwZ m=utKAvtj vPbv Kiv ntj v |

**1| wUtq c0qM**

`vbr`vi Ges`iKbv mvi nvZ w`tq ev htšj mrvth` RigtZ mgfite wUtq t`qvK wUitbv  
c0qM cxwZ etj | Gtjt Aí Aí Kti GKeri Rigi GK c0st\_tK Aci c0schSI cti  
AvovAwofite wUtq w`tZ nq| exR ectbi cteqh cwi gvY mvi c0qM Kiv nq tm cwi gvYtK  
e`vmj tWR (Basal dose) ev c0wK gvT v ej v nq|

**2| Uc tWms (Top dressing) ev Dcwi c0qM cxwZ**

RigtZ `wvbn Ae`vq  
dmtj i Dci t\_tK wUtq  
mvi c0qM K Uc tWms ev  
Dcwi c0qM cxwZ ej v  
nq|

RigtZ `wvbn Ae`vq dmtj i Dci t\_tK wUtq mvi c0qM K Uc tWms ev Dcwi c0qM  
cxwZ ej v nq| mvari YZ bvtUtRbRvZxq mvi Gfite c0qM Kiv nq| c0qvRtb cUmkqv  
mvi I G cxwZtZ c0qM Kiv ntq \_vtK| Zte th me mvi mntR gwLi gta` Pj vPj Kitz  
cvti bv, thgb wUc j mzi dmtDU, tm, tj v G cxwZtZ c0qM Kiv nq bv |

**3| cvk c0qM cxwZ**

dmj MtQi tMvoq mvi i GK cvk ev Dfq cvk t\_tK wUtq mvi c0qM Kiv K cvk c0qM  
ej v nq, thgb- Avj yPibver`vg, dzKuc, etavKuci tej vq c0hr`|

**4| `vbxqfite ev AKztj c0qM cxwZ**

dmj MtQi wKtoi KvQvKwQ `vtb gwLi wbtP dwj tZ (Furrow) mvi c0qM K `vbxqfite  
ev AKztj c0qM cxwZ etj | mti i AcPq tiva KivB Gi gj- Dttk`| `vbxqfite c0qM  
cxwZ wewfbrai tbi ntZ cvti, thgb-

**• cD tmvj (Plough sole) ev jvzj dwj tZ c0qM**

G cxwZtZ exR ectbi Rb` e`euZ j vztj i mt` hz wfbwfbwavi K (Container) ntZ mvi  
I exR GKB mgtq wfbwfbwQt` gva`tg RigtZ cto| Gtjt exRi wK wbtPi tti mvi  
c0qM Kiv nq thgb- avb, cvU, BZ`w i tej vq c0hr`|

**• e`vU cxwZ**

dmtj i mvi i GKcvtk A`ev Dfq cvtk exR ecb Mfxi Zvi wKQvbtP mi` dwj tZ mvi  
c0qM K e`vU cxwZ etj | thgb- dzKuc, etavKuci tjt c0hr`|

**• wis ev ej q cxwZ**

AtcjtKZ. `ti `ti j vMvbn MtQi Pvi w`tK cwi wZ `tZj eEvKvi `f Mfxi dwj tZ mvi  
c0qM K wis ev ej q cxwZ ej v nq| thgb- bwitKj, tcqviv MtQi tej vq c0hr`|

**5| gv`vq c0qM cxwZ**

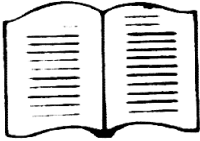
exR ev Pvi v j vMvbn Rb` Zwi gv`vq SzSti gwUtZ mvi wgtq t`qvK gv`vq c0qM cxwZ  
etj, thgb- jvD, Kgov, mxg, Avg, KvVj BZ`w i tej vq c0hr`|

**6| wAb cxwZ**

Zij mvi A`ev iKbv mvi tK cwtZ `exfZ Kti t`clev wAb htšj mrvth` mvi c0qM K  
wAb cxwZ etj | BDwi qv ev Ab`vb` tMSY mvi G cxwZtZ cvZvq c0qM Kiv nq|



**Ablyj b (Activity):** Avcbvi GjuKvq wefbedmtj mPivPi e'eüZ mtii c0qM gvT v I c0qM c×wZ mst99tc wj Lly|



**migg®**

thme `e" DwMf`i cy0 mieivn Kti Ges gwUi DePZv msi99Y ev ewx Kti Zvt`i tK mvi etj | weAvbx`i gtZ 16wU cy0Dcv`vb DwMf`i Rb" Acwivnh® Gt`i gta" 9wU gly" Dcv`vb Ges 7wU tMSY Dcv`vb | Gme cy0 Dcv`vb tK wefbedmtii gra"tg wefbedc×wZtZ Rwg tZ c0qM Kiv nq|dmtj i Pwv`v Ablyqx dmj t99tZ mwVK mgfq, mwVK gvT vq Ges mwVK c×wZtZ mvi c0qM Kiv ntj mtii AcPq Kg nq, Rwg DePZv ewx cvq Ges dmtj i dj b I 9 YMZ gv tbi DbwZ nq |



### ciřVři gj`iqb 6.1

mivK Dřti i ciřkřUK iPy (√) i` b|

1| Dřřř` i eřř, nekřk, eskeřř BZ`iř` Křřřj řřci Rb` th křři cřřqřb nq Zři Dřm řKřbřU?

- K) gřU
- L) cřb
- M) cřř ev Lř`
- N) Zřcgvřř

2| Dřřř` Křřmi AřKřři cřř ev Lřř`řcř`řb řKřřY Křři?

- K) mři
- L) cřb
- M) př
- N) Ařqb

3| Dřřř` i Ačři nřřLřř`řcř`řřbi msL`ř KřřU?

- K) 8řU
- L) 12 řU
- M) 16 řU
- N) 20 řU

4| Dřřř` i Ačři nřřLřř`řcř`řřbi gřř` gřř` Dčř`řřbi Zřřbřq řřřř Dčř`řřbi ři řřj řKřb?

- K) AZ`řřKř
- L) Kř
- M) GKB i Kř
- N) řeřk

5| BĐřř qř mři Dřřř` řKřřLřř`řcř`řřbi mi ei řn Křři?

- K) břBřřřřRb
- L) Ař řRb
- M) nřBřřřřRb
- N) dřdřřř

6| AřqZbeřj `Re mři řhgb řřřř, Křřřřřř BZ`iř` řKřř mgq RřřřZ cřřqřM Ki ř Dřřř?

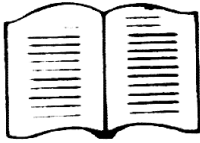
- K) Rřřř řřřř i cřř
- L) Rřřřř řřř ř` evi mgq
- M) Rřřřř 2/1 řU řřřř i ci
- N) eřř ečřřbi ci

### cw 6.2 Aš-eZrRvj xb cwiPh® Pviv cvZj vKiY, AvMvQv`gb, gvj vPs



G cvV tkł! Avciwb

- ◆ Aš eZrRvj xb cwiPh®, tj vi bvg ej tZ cvi teb|
- ◆ Pviv cvZj vKiYi KviY ej tZ Ki tZ cvi teb|
- ◆ AvMvQvi msÁv Ges`emkó`vej x ej tZ cvi teb|
- ◆ AvMvQv`gtbi bmvZgvj v l c xwZ eYb v Ki tZ cvi teb|
- ◆ gvj vPs Gi msÁv Ges Gi Dckvvi Zv eYb v Ki tZ cvi teb|



#### Aš eZrRvj xb cwiPh®

RiqtZ exR ecb ev tivctYi ci t\_ tK i iæ Kti dmj msMh Kiv chšl dmj tñtZ thme KivRKg®Ki tZ nq tm, tj vtK Aš eZrRvj xb cwiPh® (Intercultural operation) etj | thgb- gvj vPs, AvMvQv`gb, mvti i Dcwi cčqvM, tmP BZ`w` |

RiqtZ exR ecb ev tivctYi ci t\_ tK i iæ Kti dmj msMh Kiv chšl dmj tñtZ thme KivRKg®Ki tZ nq tm, tj vtK Aš eZrRvj xb cwiPh® (Intercultural operation) etj

#### Pviv cvZj vKiY (Thinning)

Riqt t\_ tK cčqvRtbi AvZwi<sup>3</sup> Pviv DvWtq tdj vtK Pviv cvZj vKiY ej v nq| cčZ`K RxeiB tetP \_vKvi Rb` wKQvPmn`v \_vtK| Pmn`v, tj v Avkvbyjcfvte ci-Y Kitj Zvi tFZti j kvvbr \_Yvej x (thgb ep x, weKvk l cYZv) mivKfite cKvk cvq| MvtQi tejvq Ggb GKwU Pmn`v nt`Q Zvi te to l vvi Rb` cwiwgZ RvqMv (Space)| cčqvRtbi Zjybvq RvqMv Kg ntj thgb mivK ep x l weKvk NtU bv, tZgvb AvZwi<sup>3</sup> RvqMvi e`e`v Kiv ntj RvqMvUj mgye`envi nq bv|

Riqt t\_ tK cčqvRtbi AvZwi<sup>3</sup> Pviv DvWtq tdj vtK Pviv cvZj vKiY ej v nq|

wefbaekvi tY exRvvi wKQvY tenk t`qv ntq \_vtK| KviY, Pvivi msL`v wKQvY tenk ntj mnR Zv DvWtq tdj v hvte| wKš` Kg cotj i b`vb ci-Y KivUv ZZ mnR nte bv| cčqvRtbi Zjybvq tKvb`vtbi Pvivi msL`v tenk ntj dj b Ges`YMZ gv tbi Dci wejfc cčZ`qvqv mgy Kti |

cvUj tejvq t`Lv hvq MvtQi NbZi tenk ntj cvUMv wj Kwj tK l nvj Kv nq, Avevi MvtQi NbZi Kg ntj MvQ t\_ tK Wj cvjv MRvevi cčwE ev to, ZvtZ dj b Kg nq| cčqvRtbi AvZwi<sup>3</sup> MvQ \_vKtj cyp MhY, cmbi Pmn`v ci-Y BZ`w` tZ NvUvZ t`Lv t`evi dtj BwAZ dj b cvl qv hvq bv| Ab`w` tK cčqvRtbi Zjybvq MvtQi msL`v Kg ntj cčZ MvtQi dj b wKQvY tenk ntj l KvwLZ MvtQi msL`v Kg \_vKvi Rb` dj tbi NvUvZ KvwUq DvV mæ nq bv| mivgMk dj b Kg nq|

#### AvMvQv`gb (Weed control)

tPvL tgj tj B nvrvtiv i Ktgi MvQ t`Lv hvq hv`i A t b K, tj v cčKwZKfiteB RbWq Avevi KZK, tj vtK RbWtZ nq| Gt`i gta` A t b K, tj vtK AvMvQv Ges A t b K, tj vtK dmj ej v nq|

tKvb`vtb AewAZfite RbWtbr MvQ tK AvMvQv etj |

msÁv : tKvb`vtb AewAZfite RbWtbr MvQ tK AvMvQv (Weed) etj |

cñvšfi thme MvQ tK htZie mvt\_ Pvlvev` Ki tZ nq Ges hviv gvby Ges Mpcwv Z ci` cvLxi Rxeb avitbi cčqvRbxq mivgMh mieivn Kti Zvt`i tK ej v nq dmj | AvMvQvi D`vniY-

k'vgn, `gP, Pvcov, e\_gv, `UKj m BZ`w` | Avi dmtj i D`vniY ntjv avb, cvU, AvL, mvi Iv BZ`w` |

AvMvQvi mekI `enkó" ntjv AvMvQv mvari YZ AmsL" exR Drcv`b Kti, extRi AvKvi tQvU, IRtb nvj Kv|

AvMvQvi mekI `enkó" ntjv AvMvQv mvari YZ AmsL" exR Drcv`b Kti, extRi AvKvi tQvU, IRtb nvj Kv| mvari YZ AvMvQv I Zv`i exR cAZKj Ae`vq `xNp b tetP \_vKtZ cvfi, AvMvQvi exR me,tjv GKmt½ cwi c° nq bv, GKmt½ me,tjv MRvq bv, Rxebkiv³ `xNp b ati ivLkZ cvfi |

AvMvQv cAvbZ `giti-bi-mvZ`Kvii AvMvQv ev vbtu AvMvQv tmme MvQ hv tKvb `vrb AevAZfvte Rbvk| vDZxqvU AvtcvfK hv Avmtj AvMvQv bq, dmj MvQ| tKvb dmj MvQ hv Ab` tKvb BvAZ dmtj i tftZ Rbvk ZLb ZvK AvtcvfK AvMvQv etj | thgb- avb tftZ cvU MvQ AvtcvfK AvMvQv tZgvb cvU tftZ avb MvQ AvtcvfK AvMvQv |

RxbKvtj i Dci vfiE Kti AvMvQvK vzb fvM fvM Kiv hvq t

**1| eIRxex AvMvQv (Annual weed)**

Gme AvMvQvi AvqyGK ermitii gfa` mvgvex, thgb- e\_gv, k'vgn| eIRxex AvMvQvK Avevi `B fvM fvM Kiv ntqtQ| h\_v:

**K) iue AvMvQv** - Gf`i RxebKij iue tgSmjg (At±vei-gvP) mvgvex thgb- e\_gv, `UKj m BZ`w` |

**L) Luic AvMvQv** - Gme AvMvQvi AvqyLwi c tgSmjg (Gvcj -tmtP±t) mvgvex thgb- k'vgn, MBPv BZ`w` |

**2| vDeIRxex AvMvQv (Biennial weed)**

thme AvMvQvi AvqyGK eQti i tevk vKs` `B eQti i gfa` mvgvex | Gf`i msL`v Lv Kg| eb MvRi, eb imy cfvZ. vDeIRxex AvMvQvi D`vni Y|

**3| eueIRxex AvMvQv (Perennial weed)**

Gme AvMvQvi RxebKij `B eQti i tevk t\_tK i iæKti eu eQi chSntZ cvfi | thgb- `gP, Dj yPwA BZ`w` |

AvMvQv dmj MvQvi mvt\_ cvmb, mfvjvK, RvqMv vbtq cAZthvMZv Kti, tcvKvgnKtoi Avkq`j vntmte Kvr Kti, dmtj i dj b I ,YMZ grb Kvgtq t`q, Drcv`b LiP evovq, Drcv`Z cY`i Ges Rvgi evRvi `i Kvgtq t`q| GK K\_vq AvMvQvK dmtj i kIjev v hvq| AvMvQvi vKQyfvj v KI itqtQ| thgb- MiæevQj AvMvQv tLq evtP, kvK, JIa, Nti i teor, QvDvb, figftq tiva I Rvj vb vntmte AvMvQv KvR Avtm|

AvMvQvK vzbvU bmvZgvj vi gva`tg vbqSj Kiv thtZ cvfi, h\_v t

**cAZtiva (Prevention)**

AvMvQvi ve`vi NUtZ evav cAvb cAvqvtK cAZtiva etj |

AvMvQvi ve`vi NUtZ evav cAvb cAvqvtK cAZtiva etj | thgb- dmj extRi mt½ AvMvQvi exR ecb bv Kiv, tMvei ev Kt±uv÷ fvj fvte bv cvPtg RvgtZ cAvqM bv Kiv, Kvi Y fvj fvte bv cvPtv tMveti Rxebkiv³ m±vbeAvMvQvi exR t\_tK hvq| GQvov cwi`vi KI v hScvZi e`enri, Lvj, tmPbvj v cwi`vi ivLv BZ`w` i gva`tg AvMvQv cAZtiva Kiv hvq|

**`gb (Control)**

AvMvQri c0`yfe Kgvfbvi  
c0`yfe Kgvfbvi  
c0`yfe Kgvfbvi  
c0`yfe Kgvfbvi  
c0`yfe Kgvfbvi  
c0`yfe Kgvfbvi  
c0`yfe Kgvfbvi  
c0`yfe Kgvfbvi  
c0`yfe Kgvfbvi  
c0`yfe Kgvfbvi

AvMvQri c0`yfe Kgvfbvi c0`yfe Kgvfbvi `gb etj | GKwU dmj t`fZ t`fK me,tjv AvMvQv bv Ztj I fij dmj ev djb cvlqv m`e| th cwi gviY AvMvQv b0 bv Ki t`j GKwU dmj mvdj `RbK fivte Drcv`b Kiv hvq bv tm cwi gviY t`K etj A\_`wZK `fWZKi chf`q (Economic injury level) | GuU ntjv `gtbi mWVK gvT`v |

**Df`Q` (Eradication)**

AvMvQv t`K gj-mn KvU, Wjv cijv, cvZv, d`z`dj, exR, gvU t`Z cov exR BZ`w` Ggb fivte b0 Kti t`qv nq hv t`Z G RvqMvq t`Kvbw`bB G Rv t`Zi AvMvQvU AvI Rb t`Z bv cvti |

AvMvQv `gtbi wZbvU c`xwZ it`q t`Q h\_v t`K) cwi Ph`c`xwZ, L) ivm`qv`bK c`xwZ, M) `RieK c`xwZ |

**K) cwi Ph`c`xwZ (Cultural method)**

dmj Drcv` t`bi Kgvfbvi`Ui gva`tg AvMvQv b0 Kiv t`K cwi Ph`c`xwZ etj, thgb nj, gb, wbovbx t`qv, Av`Pov t`qv BZ`w` |

**L) ivm`qv`bK c`xwZ (Chemical method)**

t`Kv ivm`qv`bK `e` w`tg AvMvQv t`K b0 Kivi c0`yfe Kgvfbvi ivm`qv`bK c`xwZ etj | thme ivm`qv`bK `e` AvMvQv b0 Ki t`Z m`f`lg Zv t`i t`K AvMvQv bv t`K ev nme`f`vBW/DBW/mvBW etj | thgb- avb t`f`f`Zi k`v`gv Nvm b0 Ki t`Z ovg Gd-34, t`c`c`mbj BZ`w` e`envi Kiv nq | G c`xwZ AZ`S`Kiv`R`i I Kg e`qeu`j |

wb`w` t`i v`Mi Rb` thgb wb`w` JIa Av t`Q t`Zgvb AvMvQv te jvq | wb`w` AvMvQv a`ysm Kivi Rb` wb`w` AvMvQv bv t`K it`q t`Q | Avgv t`i t`f`K AvMvQv bv t`K e`envi nq bv ej t`j B P t`j | AvRKvj i b0vi bvgK GKwU AvMvQv bv t`K evsj v` t`K e`envi i Rb` Ab t`jv`b t`c`f`q t`Q |

**M) `RieK c`xwZ (Biological method)**

hLb t`Kv Rie ev AY`R`ie  
w`tg AvMvQv b0 Kiv nq  
Zv t`K `RieK c`xwZ t`Z  
AvMvQv `gb etj |

hLb t`Kv Rie ev AY`R`ie w`tg AvMvQv b0 Kiv nq Zv t`K `RieK c`xwZ t`Z AvMvQv `gb etj | thgb- Av t`R`U`b g\_ tevivi bvgK t`cv`Kvi i`KKwU d`w`gbmv AvMvQv t`K t`L`q t`d`j | G t`i te jvq GKwU f`q v` t`K AvMvQv t`Kl n`q t`M`j Giv nq t`Zv dmj MvQ`K I t`L`q t`d`j t`Z i i`e`Kti w` t`Z cvti |

Avgv t`i t`f`K m`v`v`i YZ cwi Ph`c`xwZ t`Z B AvMvQv `gb Kiv n`q v` t`K | Rv`g c`xwZi mgq tek K t`q`Kevi nvj Ges gb w` t`Z nq, Zv t`Z A t`bK AvMvQv g`ti hvq | cieZ`x`v`v`j dmj t`f`f`Z AvMvQv ev`x`i c0`w`gK chf`q wbovbx w`tg AvMvQv Dv`w`q t`d`jv nq | i`Kbv Rv`g`Z AvMvQv Dc`e` te`w`k n`j Av`Pov w` t`q | AvMvQv `gb Kiv nq, G t`Z Av`Z`wi`<sup>3</sup> dm`j`i P`v`i`v`l cv`Z`j`v`n`q | m`v`v`i ex`f`ite j`v`M`v`b`v` dmj t`f`f`Z wbovbx Qvov I t`QvU t`Kv`v`j, n`v`U`f`v`n`v` (Hand hoe) BZ`w` e`envi Kiv nq | t`f`R`v` Ae`v`q m`v`v`i ex` avb t`f`f`Z R`v`c`i`b`x`R` i`v`Bm` DBW`v`i (Japanese rice weeder) bvgK h`S`i w`tg AvMvQv `gb Kiv hvq | AvMvQv eo n`q t`M`j K`v`P` w`tg t`K`U`v` w`b`Z`n`q | AvMvQv `gtbi mvdj` dmt`j`i ecb c`xwZi Dci A t`bK`U`v` w`b`f`P`k`j | t`i`v`c`v` t`f`f`Z ev m`v`v`i ex`f`ite j`v`M`v`b`v` t`f`f`Z Z`v`o`v`Z`i`m`o` I w`b`c`y`f`ite AvMvQv `gb Kiv hvq | w`Q`v`U`q tev`v` t`f`f`Z AvMvQv `gb tek K`o`m`v`a` I e`qeu`j |

av`f`bi t`f`f`Z i`K`bv w`K`sev t`f`R`v` th t`Kv Ae`v` t`Z B AvMvQv `gb Kiv th`Z cvti w`K`S` cvU t`f`f`Zi gvU m`v`v`Z`m`t`Z ev t`f`R`v` v`Kv Ae`v`q ev gvU t`Z cv`q`i Q`v`c` co`t`j t`f`f`Z w`b`o`m`b` t`qv w`K` b`q | gvU t`Z cv` t`W`te t`M`j w`K`o` w`Q`to hvq Ges `v`f`v`e`K ev`x` K`tg hvq |

tmP c0qvtMi gva`tg AfbK AvMvQv `gb mæ| thme AvMvQv cvmb mn` Ki tZ cvti bv (thgb-  
gyv, e\_gv, `ÜKj m, `g) tmme AvMvQvi t`ttZ 5/7 w`b cvmb a`ti ivLtz Gme AvMvQv g`ti  
hvq| Ab`w` tK KPm cvbv, cvbv, Kj ug kiv, gvj A BZ`w` thme AvMvQv cvmb c0` K`ti G`ti  
Rug t` tK cvmb w`vkb Kiv ntj G`ti `gb Kiv hvq|

AvMvQv extRi mivrt` ev A½R Dcv`q esk we`li K`ti | mivriYZ el R`rex AvMvQv extRi  
gva`tg Ges eüel R`rex AvMvQv exR Ges A½R Df`q c`xwZ`Z esk we`li K`ti `tK|

AvMvQv `g`bi D`g mgq  
ntjv G`ti e`x`i c0`ugK  
ch`q A`r d`j dj aivi  
AvM ch`S|

AvMvQv `g`bi D`g mgq ntjv G`ti e`x`i c0`ugK ch`q A`r d`j dj aivi AvM ch`S|  
Pj wZ erm`ti GKw AvMvQv b0 Kiv ntj Zv nte AvMvQv erm`ti niRviw AvMvQv `g`bi  
mgZ`| thme AvMvQv A½R Dcv`q esk we`li K`ti t` t`jv `gb Kivi mgq j` t` ivLtz nte  
thb KvÜ ev w`kKo t`nk U`kiv bv nq, KvY GtZ c0Z`K U`kiv ev KvÜ t` t`K GKw K`ti bZy  
AvMvQvi Rb`ntZ cvti | thgb-`g`

**gvj wPs (Mulching)**

Rugi Dcti i`ti big  
GKw Av`liY m`p0 Kiv`K  
gvj wPs etj | Gi c0vb  
D`i`k` ntjv ev fugim  
msi` tY|

Rugi Dcti i`ti big GKw Av`liY m`p0 Kiv`K gvj wPs etj | Gi c0vb D`i`k` ntjv ev  
fugim msi` tY| Avg`ti t` t`k i`Kbv tg`m`g (tm`P`f-Guc`g) g`w`i Av`Zv L`y Kg `v`K|  
ZLb gvj wPs L`y Dckvix l dj ch`y RugtZ exR ectbi ci e`p0cvZ ntj g`w`i Dcti i`li  
k`³ ntq hvq Ges dvUj a`ti Ges dvUj i` t`Zi w`tq cvmb AwZ` `Z ev`urfetbi gva`tg Dto  
hvq| Avevi P`IKZ.SzSzi Rug t` t`Kl cvmb mntR Dto Ptj hvq GtZ dmtj cvmbi Afie  
t`Lv t`q|

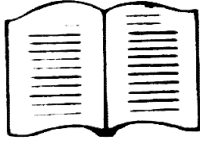
gvj wPs `g`Ktgi nq - `rfweK gvj wPs l Kw`g gvj wPs|

**`rfweK gvj wPs**

k`³ g`w`i Dcti tKv`vj, w`b0vb ev Av`p0vi mivrt` g`w`i big K`ti g`w`i w`tq nij Kv Avei`Yi  
m`p0 Kiv`K `rfweK gvj wPs etj | GtZ g`w`i `Kw`K biv`xi (Capillary pore) tLvjv g`y g`w`i  
P`icv cto eÜ ntq hvq, hvi dtj g`w`i cvmb ev`u`i AvKv`ti mivmvi Dto thtZ cvti bv,  
evavM0`ntq g`w`i tZB t` t`K hvq|

**Kw`g gvj wPs**

dmj ecb ev t`ivc`Yi ci Rugi Dci LoK`lv w`tq Avj Mv GKw Av`ti i` m`p0 Kiv`K Kw`g  
gvj wPs etj | Avj ygw`i P, ev`vg BZ`w` dmtj Kw`g gvj wPs L`yB Kiv`Ri | Kw`g gvj wPs g`w`i  
cvmb msi` tY Kiv Qvovl AvMvQv `g`b mivqZv K`ti | Avgv`ti t` t`k Kw`g gvj wPs G LoK`lv,  
Nvm, KPm cvbv, BZ`w` e`eüZ nq| G` t`jv c`P w`M`g g`w`i tZ `Re c`v``thwM K`ti | Dbz  
t` t`k LoK`lv cwi e`Z`Kw`MR, i`veri ev cvm0K kxU gvj wPs wntmte e`eüZ nq| tmme kxtU  
MrtQi Priv`tei ntq Avmvi Rb` Av`M t` t`KB w``K`ti t`qv `v`K|



**mvi gg®**

dmj Drcv`tb AšbZiRvj xb cwi Ph® Pvi v cvZj vKi Y, AvMvQv `gb, gvj vPs AvZ cŕqvRbix  
 Ges AvK dj tbi mnvqK/Piivi NbZ; teik nŕj chŕ Avtjv, eiZvm I Lv`vcr`vb Ges  
 RvqMvi (Space) Afite MvQ mŕZite teŕo DVtZ cvti bv| AvMvQv dmj MŕQi mŕ\_ cmb,  
 mhŕj vK, Lv`vcr`vb, RvqMv cŕvZ. vbtq cŕZthwMzv Kti, tcvKigvKtoi Avkŕ`j vntmŕe KivR  
 Kti, dmj i dj b I , bMz gvb Kigŕq t`q| AvMvQvK cŕvbZ cŕZti va, `gb I Dŕ`Q` - G  
 vZb cŕvZŕZ vbtqŕ Kiv nq| gvj vPs -Gi gvaŕg figim msi ŕY Kiv nq| gvj vPs `ŕcKvi -  
 ŕŕvmeK I Kvlg gvj vPs|





### civhEi gj`iqb 6.2

mivK DEti i civkqUK ivy (v) w b|

1| RvgtZ exR ecb ev Piv tivctbi ci t`tK iiaKti dmj msMh chSf thme KvRKg©  
Ki tZ nq ZvtK Kx civi PhP etj ?

K) c0`ugK civi PhP

L) AšbZxRij xb civi PhP

M) c0`uqvKi Y civi PhP

N) fvg msi qY civi PhP

2| tKiv `vrb AemAZfvte Rbvtbv MvQtK Kx ej v nq?

K) dmj

L) AvMvQv

M) ci MvQv

N) ci t`fvRx MvQ

3| GKvU AvMvQv Kgc t`q KZ ermti i tenk mgq RvveZ `vKtj ZvtK euel Rvve AvMvQv  
etj ?

K) 1 ermi

L) 2 ermi

M) 3 ermi

N) 5 ermi

4| AvMvQvi ve`li tiva Kivi c0`uqvK Kx etj ?

K) `gb

L) D t`Q`

M) c0`Z tiva

N) A`%vZK qvZKi chvq

5| AvMvQtK hLb tKiv Rxe ev AYRxe w tq b0 Kiv nq ZLb ZvtK tKiv cxvZ etj ?

K) civi PhP cxvZ

L) ivmivubK cxvZ

M) `RveK cxvZ

N) A`RveK cxvZ

6| gjj vPs Gi c0`vb D t`k` tKivvU?

K) AvMvQv `gb

L) gvUv qvq tiva

M) tcvKvqvKo `gb

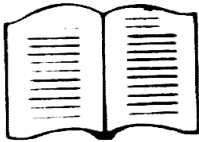
N) fvgi m msi qY

**cw 6.3 tmP I ub@vkb**



G cvV tkfI Avcib

- ◆ tmP I ub@vkb i az;eY@v Ki tZ cvi teb|
- ◆ evsj v`tk gvmI qvix epocvZi cvi gvY ej tZ cvi teb|
- ◆ wefba@vKvi tmP cxvZ eY@v Ki tZ cvi teb|
- ◆ tmfPi DcKvi Zv eY@v Ki tZ cvi teb|
- ◆ wefba@vM cxiZi mjev I Amjev ej tZ cvi teb|
- ◆ wefba@vKvi tmP hscvZ m@vK@ej tZ cvi teb|
- ◆ ub@vkb cxvZ eY@v Ki tZ cvi teb|
- ◆ ub@vkb cxvZi mjev I Amjev, tje ej tZ I vj LtZ cvi teb|



evsj v`k bmvZkxZv@vG@v Aew`Z Ges tgsmsx evqj cfrte GLv@v c@v epocvZ nq| GLv@vKvi gvU DeP etj eu dmtji Pvl nq| c@v epocvZ ( eml R 208.66 tm.ug.) mEj| GLv@v tmfPi c@vRbxqZv t`Lv t`evi KviY ntjv epocvZi cvi gvY thgb me RvqMvq GK iKg bq, tZgvb c@vK gvfmI mgcvi gvY bq| ivRkvx tRjvi jvj c@v epocvZi cvi gvY mePvBtZ Kg, eml R gvI 129.67 tm.ug., Ab`v tK vntj tUi jvj vLvj mePvBtZ tevk, eml R 573.43 tm.ug.| ermti i tg t`tK tmfP@v chSf5 gvfmI epocvZi cvi gvY `vovq kZKiv 82 fvfMi tevk, Avi emK 7 gvfm 18 fvfMi Kg| Avi hv` dmj tgsmsx vntmte t`Lv nq, Zvntj Lvi c tgsmsg (Gvcj -tmfP@v) kZKiv 88 fvm Ges iue FZtZ (At±vei-gvP) gvI 12 fvm epocvZ nq| ZvB iue tgsmsg tmfPi Ges Lvi c tgsmsg ub@vkb c@vRb t`Lv t`q| iue tgsmsg cvbi Afvte AtbK Rvq cvZZ `vK| Ab`v tK el@vKvj cvb ub@vkb Afvte dmtji AtbK vj nq| evsj v`tki gvmI qvix epocvZi GKvU Zvj Kv vbtP Dc`vcb Kiv ntjv|

c@v epocvZ ( eml R 208.66 tm.ug.) mEj| evsj v`tki tmfPi c@vRbxqZv t`Lv t`evi KviY ntjv epocvZi cvi gvY thgb me RvqMvq GK iKg bq, tZgvb c@vK gvfmI mgcvi gvY bq|

QK 1 t evsj v`tki gvmI qvix Mo epocvZ (tmvUvqUvi)

gvm	epocvZi cvi gvY	gvm	epocvZi cvi gvY
Rvbgvi	0.84	RjvB	40.54
tdegvvi	2.54	AvMó	38.23
gvP	4.55	tmfP@v	28.78
Gvcj	10.64	At±vei	14.05
tg	24.13	btf@v	2.62
Rly	40.21	vltm@v	0.53

dmj t@v dmtji c@vRtb Kulg Dcvq cvb mieivni c@vK tmP (Irrigation) etj |

**tmfPi msAv:** dmj t@v dmtji c@vRtb Kulg Dcvq cvb mieivni c@vK tmP (Irrigation) etj |

**tmfPi DcKvix c@v**

Dv`c gvU t`tK Lv t`vcr`vb cvbtZ `xvZ Ae`vq Avqb vntmte cvitkvI b Kfi| MvQv t`tn i`c`v` (Dry matter) Drcv`tb c@v cvbi c@vRb| c@vK cšvq gvU vbtPi

~fi i Lv`vcv`vb cwb`Z `exfZ n`q %KukK bijxi gva`tg gmlU l c`i i ~fi D`V Av`m|  
gmlU Zvcgv`Iv` wq`st`Yl cmbi c`fve i`q`q| cwb gmlU `Re c`v`cP`b mrvqZv K`i,  
Av`Mv`Qv` `g`b f`ugKv i`v`L| t`m`P`i cwb gmlU jeYv`Zv l `q`vi Zj` `i`K`i`Y mrv`h` K`i|  
exRZjv `Zwi`Z, P`iv DV`v`b`v`Z, gmlU K`v`v K`i`Z cmbi `i`az`j Acw`m`g| Zv`Qvov t`m`P`i  
cmbi mrv`h` R`ig `Zwi l ecb`/i`v`cY K`v`m`g`g`Z m`u`b`e`K`iv m`e`e| c`k`u`z`K w`b`q`tg Gme  
K`v`h`R`j`v`c` e`p`i cwb w``q` K`iv n`q| w`K`S`e`p`i Af`i`te t`m`P`B GK`g`v`I` w`e`K`i`|

**t`m`P`i cwb`i D`rm**

t`m`P`i cwb`i D`rm `t`j`v n`j`v b`x`b`j`v, L`v`j` w`e`j, c`k`z, K`c, b`j` K`c, M`f`xi b`j` K`c l A`M`f`xi  
b`j` K`c|

**t`m`P`i cwb`i `Y`e`j`x**

t`m`P`i cwb`Z G`g`b` t`K`v`  
w`R`ib`m`\_`v`K`v` D`i`P`Z` b`q` h`v`  
d`m`j`i` R`b` ev` R`ig`i` R`b`  
`q`u`z`K`i, t`h`g`b` `e`x`f`Z`  
j`e`Y` ev` L`ub`R` c`v`  
f`i`m`g`v`b` e`w`j` ev` c`u`j` g`m`U,  
A`v`M`v`Q`v`i` e`x`R, t`i`v`M`i`  
R`x`e`v`Y`B`Z` w`|

t`m`P`i cwb`i D`rm h`v`B` t`n`v`K` b`v` t`K`b, cwb`i `Y`v`Y` A`w`Z` `i`az`c`Y` t`m`P`i cwb`Z G`g`b` t`K`v`  
w`R`ib`m`\_`v`K`v` D`i`P`Z` b`q` h`v` d`m`j`i` R`b` ev` R`ig`i` R`b` `q`u`z`K`i, t`h`g`b` `e`x`f`Z` j`e`Y` ev` L`ub`R`  
c`v`  
f`i`m`g`v`b` e`w`j` ev` c`u`j` g`m`U, A`v`M`v`Q`v`i` e`x`R, t`i`v`M`i` R`x`e`v`Y`B`Z` w`| Zv` Qvov cwb`i  
Zvcgv`Iv` t`h`b` A`w`Z` D`o` ev` A`w`Z` k`i`z`j` b`v` n`q| cwb`i p`H` (w`c`G`B`P`) g`v`b` m`i`Z` A`\_`f`i` b`i`b`i`c`  
n`l` q`v` f`i`j`|

**t`m`P` c`x`w`Z` (Methods of irrigation)**

c`w`\_`e`x`f`Z` P`v`i` c`k`v`i`i` t`m`P` c`x`w`Z` P`i`j`y`A`v`t`Q`| t`h`g`b`- f`c`p`-` t`m`P, f`i`b`e`e` t`m`P, e`l`f` t`m`P` l  
t`d`w`v` t`m`P` c`x`w`Z`|

**f`c`p`-` t`m`P` c`x`w`Z` (Surface irrigation)**

D`rm` t`\_`t`K` cwb` gmlU l`c`i` w``q` c`e`v`n`Z` K`i` d`m`j` t`q`i`z` t`c`S`o`v`t`b`v`t`K` f`c`p`-` t`m`P` e`j`|  
t`h`g`b`- L`v`j` K`v`U`v`|

**f`i`b`e`e` t`m`P` c`x`w`Z` (Sub-surface irrigation)**

D`rm` t`\_`t`K` gmlU w`b`P` w``q` w`e`t`k`l` c`u`l`q`v`q` d`m`j` t`q`i`z` cwb` m`i`e`i`v`n` K`i`v`t`K` f`i`b`e`e` t`m`P` e`j`|

**e`l`f` t`m`P` c`x`w`Z` (Sprinkler or Overhead irrigation)**

w`e`t`k`l` c`u`l`q`v`q` e`x`b`t`j` c`v`t`u`i` mrv`h` P`v`c` c`u`q`v`t`M` e`p`i` g`Z` w`Q`u`t`q` cwb` m`i`e`i`v`n` K`i`v`t`K`  
e`l`f` t`m`P` e`j`| e`l`f` t`m`P` m`e`P`v`B`t`Z` f`i`j` c`x`w`Z`|

**t`d`w`v` t`m`P` c`x`w`Z` (Drip irrigation)**

cwb`i D`rm` t`\_`t`K` b`t`j`i` w`f`Z`i` w``q` d`m`j` M`v`t`Q` t`d`v`U`v`q` t`d`v`U`v`q` cwb` m`i`e`i`v`n`t`K` t`d`w`v` t`m`P`  
e`j`|

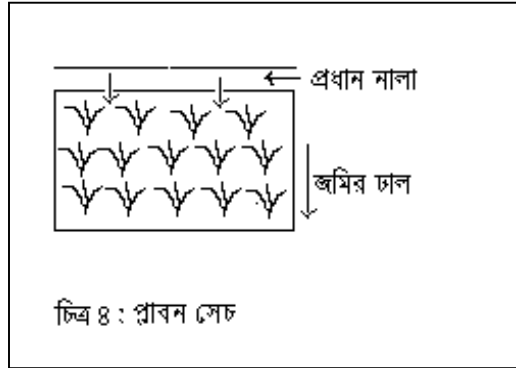
t`K`v`b` G`j`v`K`v`q` t`K`v`b` t`m`P` c`x`w`Z`i` e`e`n`v`i` A`w`a`K`Z`i` D`c`t`h`v`M`x` Zv` w`b`f`P` K`i` t`m`L`ub`K`v`i` cwb`i  
D`rm` l` c`w`i`g`v`Y, f`i`g`i` e`U`z`Z`v, g`m`U`i` c`k`u`z, d`m`j` D`r`c`v`b` c`x`w`Z, k`i`g`t`K`i` c`h`f`B`Z`v` B`Z` w`i`  
D`c`i`|

f`c`p`-` t`m`P` c`x`w`Z`i` w`e`f`b`a`c`K`v`i` f`v` A`v`t`Q, t`h`g`b` -

**c`w`e`b` t`m`P` (Flood irrigation)**

D`rm` t`\_`t`K` cwb` b`i`j`v`i` g`v`a`tg` A`t`c`q`v`K`Z` D`e`z`v`t`b` w`b`t`q` d`m`j` t`q`i`z` c`e`v`n`Z` K`i`v` n`q`| m`v`i`v`  
t`q`i`z` c`w`e`z` b`v` n`l` q`v` c`h`S`i`c`e`v`n` e`U` K`i`v` n`q` b`v`| G` t`q`i`t` R`ig` t`g`v`U`v`g`v`f`i`te` m`g`Z`j` n`t`z` n`q`|

Zte byj v tKtU ev AvBj teta cmb ubqšt̃Yi tKvb ẽv ṽt̃K bv| avb, Mg, mwi Iv BZ̃w̃ dmt̃j G c̃x̃w̃Z̃t̃Z̃ tmP t̃`qv nq|



**c̃eb tm̃Pi m̃yav**

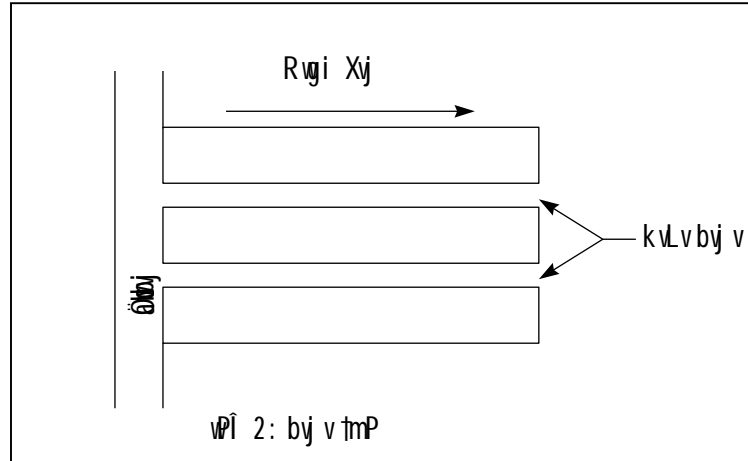
Ruqt̃Z AvBj teta ev byj v tKtU cmb ubqšt̃Yi Kivi c̃q̃vRb c̃to bv| Ruqt̃K mgZj Kiv Qvov t̃Zgb tKvb Lĩt̃Pi c̃q̃vRb nq bv| Ãi mg̃t̃q̃ tẽwk c̃wi gṽY Ruqt̃Z tmP t̃`qv hvq| k̃ig̃t̃Ki c̃q̃vRb L̃y Kg nq|

**Am̃yav**

AZ̃w̃aK c̃wi gṽY c̃mbi c̃q̃vRb nq| c̃mbi AcPq tẽwk nq| Ruq mgZj bv nt̃j Ãt̃c̃q̃vKZ. ubPz̃ṽtb R̃j̃vẽx̃Z̃v t̃`Lv t̃`q| c̃mb ubqšt̃Yi i vLv hvq bv| f̃ũg̃q̃t̃qi m̃tẽbv tẽwk|

**byj v tmP (Furrow irrigation)**

G̃t̃q̃t̃i Ruq̃i Ãt̃c̃q̃vKZ. D̃p̃z̃c̃ṽt̃ki AvBj ẽivei GK̃uU c̃ṽb byj v t̃`t̃K m̃wi c̃x̃w̃Z̃t̃Z̃ j̃ṽM̃ṽt̃bv d̃mt̃j i `̃B̃ m̃wi i gãẽZ̃P̃ d̃m̃j t̃Z̃ (kvLv byj vq) c̃mb mieivn Kiv nq| c̃mb ax̃t̃i ax̃t̃i m̃wi i GK̃ c̃s̃t̃ t̃`t̃K Aci c̃s̃t̃ ch̃s̃t̃ c̃ṽm̃Z̃ ñt̃q̃ w̃K̃Õyc̃wi gṽY R̃g̃vi ci c̃mbi c̃ṽn ẽŨ K̃t̃i w̃t̃Z̃ nq| G̃t̃q̃t̃i mẽ, t̃j̃v m̃wi t̃Z̃ GK̃eṽt̃i tmP t̃`qv nq bv| K̃t̃q̃K̃uU m̃wi t̃Z̃ GK̃t̃i tmP t̃`evi ci c̃mb c̃t̃i i K̃t̃q̃K̃uU m̃wi t̃Z̃ c̃ṽm̃Z̃ Kiv nq| GL̃ṽt̃b j̃`q̃ i vL̃t̃Z̃ ñt̃e c̃mb t̃hb d̃m̃j i Z̃j̃t̃`t̃k ṽt̃K, t̃Kvb Aẽṽt̃Z̃B Dc̃t̃P bv c̃to| Dc̃t̃P cot̃j̃ g̃m̃U ẽtm̃ w̃M̃t̃q̃ g̃m̃U i M̃Vb b̃o ñt̃q̃ hvq| d̃m̃j i Z̃j̃t̃`t̃k c̃mb t̃c̃s̃t̃j̃ tmL̃vb t̃`t̃K `K̃ũk̃K̃ b̃m̃j i g̃vãt̃g̃ c̃q̃vR̃bx̃q̃ c̃wi gṽY c̃mb d̃m̃j i k̃x̃l̃P̃ k̃ ch̃s̃t̃ t̃c̃s̃t̃Q̃ hvq| G̃t̃Z̃ g̃m̃U i M̃Ṽt̃bi t̃Kvb q̃w̃Z̃ nq bv eĩs̃ M̃ṽt̃Q̃i c̃q̃vR̃bx̃q̃ c̃mbi P̃m̃ñ`ṽ c̃ĩY ñt̃q̃ hvq| AvL, Avj̃yP̃x̃b̃eṽ`vg, d̃j̃K̃ũc, et̃aṽK̃ũc BZ̃̃w̃ d̃mt̃j̃ G̃ c̃x̃w̃Z̃ AZ̃̃s̃t̃ K̃ṽh̃R̃i| D̃t̃j̃L̃, byj v c̃x̃w̃Z̃i tmP t̃Kej̃ g̃ṽt̃ Z̃L̃b̃B c̃q̃vR̃` hL̃b d̃m̃j m̃wi t̃Z̃ ec̃b̃t̃i ṽc̃Y K̃t̃i t̃M̃ṽõṽq̃ g̃m̃U D̃w̃M̃t̃q̃ w̃K̃ũc eṽ t̃f̃ij̃ K̃t̃i t̃`qv nq|



**bj v tmP i mgeav**

cnbi ubqšY mnR, cnbi AcPq Kg I Aí cnbtZ tenk cwi gvY Rvg tmP t`qv mæe, Rvgi me AstkB cnb tcšOvq, Rj veXZvi mjo nq bv| gvLi ebtU ev MVtbi Dci tKvb Lvi vc cfrve cto bv|

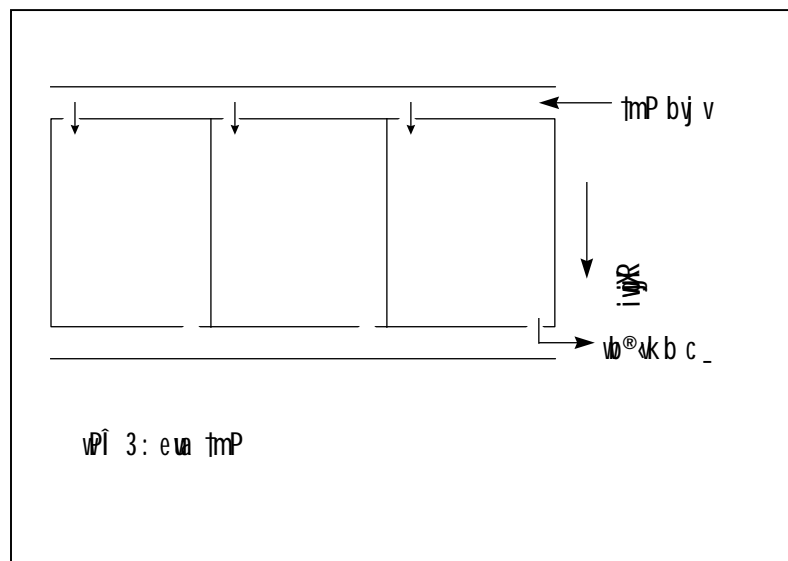
tKej gvI mmi exfite  
j vMrtbv Ges tMvoiq gvU  
DVrtbv dmj Qvor Ab`  
tKvb dmtj bj v tmP t`qv  
hvq bv|

**Amgeav**

tKej gvI mmi exfite j vMrtbv Ges tMvoiq gvU DVrtbv dmj Qvor Ab` tKvb dmtj bj v tmP t`qv hvq bv| cšZ`K bj vq mgcwi gvY cnb mi ei vn mæe nq bv| LiP mKQytenk cto|

**eva tmP (Border or Check irrigation)**

G cxwZwU cnb tmP cxwZi mKQy Dbz ms`i Y| GLvtb Rvgi D`PZv Abymti RvgtZ AvBj teta tQvU tQvU LtU fVM Kti tmP t`qv nq| cštg mtePP Rvg LtU cnb t`qv nq| Gi ci D`PZv Ablyqx ubtPi w`tKi fvg LtU cnbi mi ei vn Ae`vnZ ivLv nq| Gfite me.tj v LtU cšqvRbxq cwi gvY cnb Rgv ntj tmP eU Kti w`tZ nq|



**ev tmPi mjev**

cmbi ubqšY mnR, cmbi AcPq Kg, Priw tK AvBj vKvq c0qvRbxq cwi gvY cmb tmP t`qv mæ| fvgŋtqi mæbevr Kg| cmb B`Qvbyvqx AtbKw b chšl aŋi ivLv hvq| thme dmj i cmbi Pwin`v teuk Ges Rjve×Zv mn` KiŋZ cvi tmme tŋtŋ G c×wZ wætkl DcŋhvMx thgb- teŋiv I tivcr Avgb avb BZ`w |

**Amjev**

AvBj `ZwiŋZ LiP ew× cvq Ges dmj I Rwig AcPq nq| fwi eytUi gwU Qvov Ab`T tZgb DcŋhvMx bq| c0qvRtbi mgq Rwig i tKvŋZ AtbK mgq tbq|

**teimb ev \_vj v tmP c×wZ (Basin irrigation)**

eŋŋRvZxq MtQi tMvovi Priw tK AvBj teta cmb mieivn KivtK teimb ev \_vj v tmP etj | Gtŋtŋ ht\_ó `ŋi `ŋi jvMtvbv eüelRvex dj RvZxq etŋi `ŋvwi i ga`eZP `vŋb j`ŋj wæfite KvUv GKwU cåvb bvj v t`tK MtQi Priw K tewZ teimb chšl cikŋvj v tKtU cmb mieivn Kiv nq| c0qvRb Abyvŋi G teimb cmb w`tq cY`Kti t`qv nq| bwi tKj , Avg, wj Pztcqviv BZ`w` dj MtQ tmPi Rb` G c×wZ tek DcŋhvMx|

**teimb ev \_vj v tmPi mjev**

cmbi ubqšY mnR Ges cmbi AcPq Kg| c0qvRbxq cwi gvŋY Ges Mfxi Zvq tmP t`qv mæ| fvgŋtqi mæbevr \_vŋK bv|

**Amjev**

c0wK LiP wKQv teuk| AtbK cmbi c0qvRb nq| c0qvRtbi AwZwi<sup>3</sup> mgŋq Rjve×Zvi Rb` MvQ gŋi thŋZ cvi |

**fjbæ' tmP c×wZ**

G c×wZ tZgb cŋvj Z bq| gwU wbtP `wcz btj i gva`tg MtQi tMvovi KvQvKwQ RvqMvq cmb mieivn Kiv nq| `KukK wvj i gva`tg cmb lcti DŋV MtQi cmbi Pwin`v ci-Y nq| G c×wZŋZ gwU wbtP 10-25 tmwUvUvi e`vm wenkó cåvb bvj v `vcb Kiv nq| cåvb bvj vi mŋ½ mgŋKvŋY 5-10 tm.wg. e`vŋmi cŋž msL`K kvLv bj mgvšlvj fŋte gwU wbtP emvŋbv \_vŋK| kvLv btj i Mtq wKQv t`ci ci wQ`ev tPK fŋj ŋ`\_vŋK| tPK fŋj ŋ` cmbi Pŋtc tLvŋj Ges eÜ nq| Avi wQ`ŋ RvqMvq KvV Kqv v ev cv`ŋi i Uŋiv w`tq tXtK ivLv nq| Gi dtj btj i wQ`w`tq cmb RwigZ tewŋq AvmŋZ cvi | wKš` Rwig t`tK gwU btj i tFZŋi c0ek KiŋZ cvi bv|

cåvb I kvLvbj `vctbi `i-Z; I Mfxi Zv gwU eytU, dmj I Avenl qvi Dci wbfŋkxj , hv I Dfŋ tŋtŋ Mfxi Zv c0q GKB aiŋbi nŋq \_vŋK| nvj Kv eytUi gwUŋZ cåvb I kvLvbtj i `i-Z; I Mfxi Zv DfŋB teuk nq Ges fwi eytUi tejvq Kg nq| Mfxi Zv 50-75 tmwg I `i-Z; cåvb bvj vi tŋtŋ 50-100 wUvi I kvLvbj vi tejvq 10-15 wUvi chšl|

**fjbæ' tmPi mjev**

fvg ev cmbi AcPq nq bv| cmbi ubqšY mnRmva`| Aí cmb w`tq teuk RvqMvq tmP t`qv mæ| Lvŋvi hšcWZ Pj vPŋj ev Kul Ktg`e`vNvZ mŋp Kŋi bv| fvg ŋtqi mæbevr \_vŋK bv|

**Amzav**

c0\_ugK chiq LiP AZ`s' tenk | btj i u0`c't\_ ev msthM`-tj MvQI ukKo ev gnuU c0ek Kti weNami0 ntZ cvti | tgiugtZi LiP tenk |

**eI0/Dcui tmP c×uZ**

G c×uZtZ nij Kv avZe A\_ev cm0K btj ukQy`i-ci ci bRj (imAb hš) hš Kiv\_vtK | btj i e`vm 5-10 tmUugUvi I `N`8-20 ugvUvi nh | bj ,tjv GKuUi mt½ Ab`uU hš Kiv nq | btj i GK gv\_v GKuU cvt`uii mt½ hš vtK I Ab` gv\_v eU\_vtK | cv`u Pij yntj btj i tFZti Prc m00 nq Ges bRtj i gva`tg cmb mtrv`i epi gZ uQuUtg cto | bj ,tjv c'tqvRtb GK t`qZ t`\_tK Ab` t`qZ mntr Avbv tbqv Kiv hvq | bRj ,tjv Ny`qgvb\_vKvi dtj cmb Pvi w`\_tK mgf`ite Quotq cto | eI0 tm`Pi Rb` c0qvRbxq DcKiY `vqrvitel emt`bv nq |

**eI0 tm`Pi mizav**

mgZj I DpPzDf q cKv`ii Rigi Rb` Dc`thvMx | Zte cinwo DpPzRigtZ Ges tetj ait`bi RigtZ (hvi cmb aviY qgZv LgB Kg) AZ`s'Dc`thvMx | Ar cmb 0v`v tenk RvqMiq tmP t`qv hvq | cmbi AcPq nq bv ev Rjve`xZvi tKiv m`tebv\_vtK bv | meP mgf`ite tmP t`qv hvq | th tKiv dmtj i tejvq AwZ Dc`thvMx | tm`Pi cmbi mt½ mvi I KuUv`kK c0qvm Kiv m`te | bj ,tjv GK RvqMv t`\_tK Ab` RvqMiq mntrB `v`v`s'li Kiv hvq |

mgZj I DpPzDf q  
cKv`ii Rigi Rb` eI0  
tmP Dc`thvMx | Zte cinwo  
DpPzRigtZ Ges tetj  
ait`bi RigtZ (hvi cmb  
aviY qgZv LgB Kg)  
AZ`s'Dc`thvMx |

**Amzav**

c0\_ugK LiP tenk | c0j evqyc`evn tm`Pi e`vNvZ m00 Ki`Z cvti Ges ev`uxfet`bi gva`tg cmbi ukQyAcPq nq | cmb cvZvq cto etj cvZvq tiv`mi c0`v`e NUvi m`tebv\_vtK | hšc`vuz cweent`Y tek LiP cto |

**tdvUv tmP**

G c×uZtZ cij u\_b ev iv`v`i ubugZ c`vb bj , kvLvbj Ges evnM00b I cmb mieivn BDvbt`Ui Rb` tcl`vi f`vjt`fi c0qvRb nq | cmbi Dr`mi Ae`vb Atc`qvKZ. DpZ RvqMiq bv\_vKtj t`QvU GKuU cvt`uii `iKvi nq | c`vb I kvLvbj tK MvQI KvQ ubtg mieivn btj msthM` u`\_tjB cmb tcl`v`vq tcl`v`vq tei ntZ `i`æKti | Atc`qvKZ. `fi `fi Aew`Z MvQ Ges Priv Kjt`g tmP t`qvi Rb` G c×uZ AZ`s'Dc`thvMx | ZvQvov eo e`qvRvZxq dj MvQ G c×uZtZ tmP t`qv hvq |

**tdvUv tm`Pi mizav**

cmb ev Rigi AcPq nq bv | fig q`itqi m`tebv tbB, Ar cmbtZ tenk q`iy tmP t`qv hvq, cmbi ubqš`y mnR | tm`Pi cmbi mt½ mvi ugvkZ Kti c0qvm Kiv m`te |

**Amzav**

c0\_ugK LiP AZ`s' tenk, t`gtVv dmtj i tejvq Abg`thvMx | cmbtZ gqjv\_vKtj ev th tKiv Kvi`y evn`f`gb btj i gly eU ntq tm`Pi e`vNvZ Nu`Z cvti | nij Kv ebt`Uv gnuU Lv` `vcr`vb Pbt`q ukKtoi bvMv`tj i evBti P`tj th`Z cvti |



**Ablyj b (Activity):** Avcbvi GjvKvq mPivPi Dr`cb`enq Ggb dmj mg`jni big Ges c0Z`KvUi Rb` Dch`0 tmP c×uZi big Kvi bmn msvwi k Kiab |

**tmP hšcwZ**

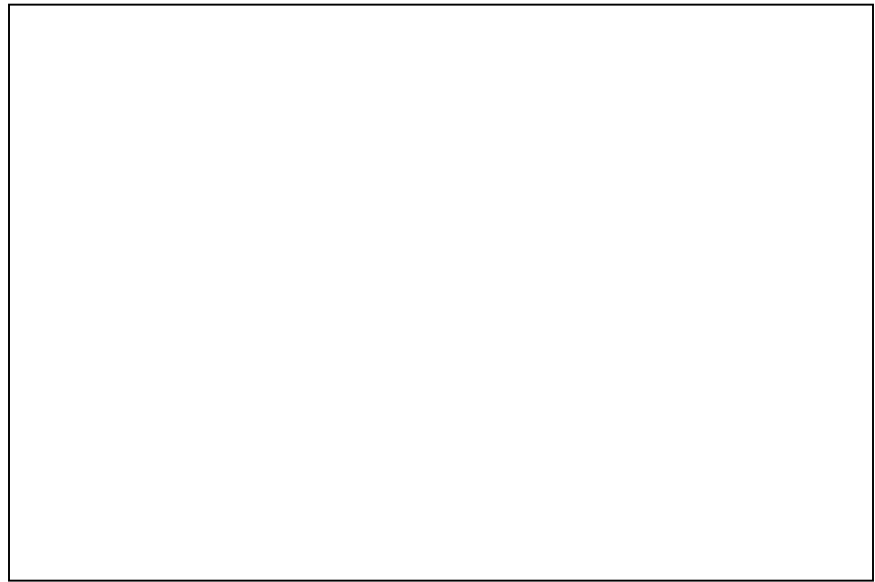
evsj vt̄ tk ١KQy ١b ce<sup>o</sup>chšI I cāvb tmP hšcwZi gta ١Qj t̄ vb, tmDwZ Ges `gKj (cyl qvi c<sup>u</sup>ú) | eZgvtb bj Kc, AMfxi bj Kc I Mfxi bj Ktci e`envi ١b ١b e١x cvt̄"Q| cvK-fviZ Dcgnvt̄ tk cPwj Z tmP hšcwZi gta ١Qj cwmqvb úBj (Persian wheel) BwRcwkqvb ٢ (Ezyption screw) tgvU (Mhote) ١ctKvUv BZ`w | Gt̄`i e`envi I ١b ١b Ktg Avm̄tQ| ١bt̄P mPi vPi e`eüZ tmP hšcwZ, t̄j vi eYb̄v t̄`qv nt̄j v:

**t̄ vb (Swing shovel)**

١Uv, KvV ev tj vvi cvZ ١t̄q ١bugZ G tbšKvKwZi hšjU j ١t̄q 2.5 - 5 ١gUvi, cvt̄k Ges Mfxi Zvq h\_v ١t̄q 25-30 Ges 20-25 tmUvUv | Gi GK gv\_v tLvj v I Ab` gv\_v eÜ I ١KQy evKv I miæ| AvovAmofvte `jt̄v evtki Ljdi I ci ١t̄q cvZv j ١t̄q Ab` GKU evtki GK gv\_vq t̄`vt̄bi evKv eÜ gv\_vU ١no ١t̄q mshy `vt̄K, Ab` gv\_vq GKU I Rb teťa t̄`I qv nq| GKRB tj vK cmbi I cti evtki GKU gvPvq `١no t̄q t̄`vbU Pij bv Kti b|

t̄`vb 1 NsUvq 2000-3000  
M'vj b cmb 1 ١gUvi chšI  
١bP t̄`t̄K DVt̄Z cvti |  
t̄`vt̄bi cmb avi Y ١gZv  
12-16 M'vj b|

t̄`vb 1 NsUvq 2000-3000 M'vj b cmb 1 ١gUvi chšI ١bP t̄`t̄K DVt̄Z cvti | t̄`vt̄bi cmb avi Y ١gZv 12-16 M'vj b| nvi i/wej Gj vKv Kg D`PZvq cmb tm̄Pi Rb` Gil AvZ Dc̄hvMx|



١P̄ 4: t̄`vt̄bi mrvt̄h` cmb tmP

tmDwZi cmb avi Y ١gZv  
1.5-2 M'vj b Ges c̄t̄q 1.5  
١gUvi ١bP t̄`t̄K 1 NsUvq  
1500-2500 M'vj b chšI  
cmb tmP t̄`qv hvq|

**tmDwZ (Swing basket)**

GvU evtki PvUVB ev ١Uvbi cvZ ev tet̄zi `Zvi ١f̄RvKwZi hšj| hšjU migt̄bi `jt̄KvY `jt̄v Ges ١cQ̄t̄bi t̄KvY `jt̄v j ١t̄q ١no etav `vt̄K| `j̄K t̄`t̄K `Rb tj vK c̄Z`t̄K `jt̄v `moi gv\_v at̄i hšjU t̄`t̄K t̄`vj bvi gZ `j̄t̄q cmb I Vvq| tmDwZi cmb avi Y ١gZv 1.5-2 M'vj b Ges c̄t̄q 1.5 ١gUvi ١bP t̄`t̄K 1 NsUvq 1500-2500 M'vj b chšI cmb tmP t̄`qv hvq| mrvavi bZ D̄Bz RvqMvq tmP t̄`evi Rb` tmDwZ e`eüZ nq|

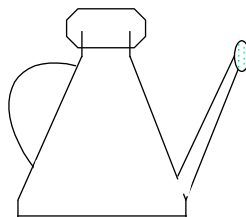




wpT 5: (K) GKwU tmDwZ; (L) tmDwZi mnvth" cwb tmP

**SvSvD**

GwU `f cwi mi evMvfb A\_er dZMvQi Ute tmP t`qvi Rb" AwZ cwi wPZ Ges eUj e"euZ GKwU hsj GwU eyj wZi gZ ev tQvU Wvfgi gZ, wUvbi cvZ w`tq `Zwi | hsjUi e"vm 30-35 tmwUngUvi Ges D"PZvq 40-45 tmwUngUvi | GtZ l cti i w`tK GKwU nvZj (enb Kivi Rb") Ges cvtki w`tK GKwU nvZj (cwb tmP t`evi Rb") \_vtK | tmP nvZtj i weci vZ w`tK SvSvD Mvfg wvP t`tK j w` GKwU mi eivn bj \_vtK, btj i gv\_vq AtbK, tj v wQ`hy SvSvD gva`tg cwb wvpi gZ Qwotq cto | btj i Dt"ev cvtk SvSvD l cti i w`tK cwb fuvZ Kivi Rb" GKUv tLij v gly \_vtK | Gi avi Y ¶lgZv 2-3 M'vj b |



wpT 6: SvSvD

**UDel tqtj ev PrcKj**

UDel tqtj i mrvth" gmlJi tek mbP t\_tK miæcivBtci gva'tg civtúú Prc cmlb Dtv Avtm/ GtZ Aí cwi gvb RvqMvq tmp t`qv mæe| AvRKvj GKB aitbi weirfbrebtgi Ges cmlb DtÉvj b 9lgZv wekó PrcKj D"weZ ntqtQ| G\_tjvi mrvth" nvtZi Prc, nvtZ tUtb A\_ev civtqi Prc cmlb DtÉvj b Kiv nq|

**cvi qvi civú ev `gKj**

Gml we`yr ev tKti wmb/wMtrj Pmj Z tQvULvU civú hvi cmlb tmtPi 9lgZv 0.5-1 wKDtmK\* chSnq|

**AMfxi/Mfxi bj Kc**

G`gUv tmp htšj KvtrI aib GKB iKtgi | Giv we`yr ev wMtrj Pmj Z tgvUtii mrvth" gmlJi tek mbP t\_tK fMF' cmlb fctó wbtq RvgtZ mieivn Kti | bvg t\_tK thgbwU tevSv hiv AMfxi bj Ktci tPtq Mfxi bj Kc tenk mbP t\_tK cmlb I vtz m9lg Ges tZgub Gt`i Kg9lgZvtZl Kg tenk AvtQ| AMfxi bj Kc I Mfxi bj Ktci cmlb DtÉvj b 9lgZv tgvUtii kw<sup>3</sup> i Dci wbfP Kti, Zte Gt`i cmlb DtÉvj b 9lgZv mvari YZ h\_vmtg 0.5-1 Ges 2.5-4 wKDtmK Ges Mfxi Zv h\_vmtg 20-70 wUvi Ges 40-150 wUvi ntq\_vtK|

GKwU AMfxi bj Kc w`tq 2-4 tn±i Ges Mfxi bj Kc w`tq 10-25 tn±i RvgtZ tmp t`qv hiv|

AMfxi bj Kc I Mfxi  
bj Ktci cmlb DtÉvj b  
9lgZv mvari YZ h\_vmtg  
0.5-1 Ges 2.5-4  
wKDtmK Ges Mfxi Zv  
h\_vmtg 20-70 wUvi  
Ges 40-150 wUvi ntq  
\_vtK|

**w@vkb (Drainage)**

msAv t dmj t9tZi g<sup>3</sup> ev AwZwi<sup>3</sup> cmlb (tMbfUKbvj I qvUvi) Acmvi tYi c@qvK w@vkb etj |

gmltZ th cmlb gmlKYvi m½ wgtk\_vtK ZvtK figiml ejv nq| figim wZb cKviti t

**K) tkwl Z cmlb (Hygroscopic water)**

gmlKYvi Pri civt 10,000 t\_tK 31 evqgUj xq Prc tj tM\_vKv AwZ civZjv t`ii cmlbK tkwl Z cmlb etj | G cmlb Dw<sup>m</sup> tkvl Y Ki tZ civti b|

**L) %kK cmlb (Capillary water)**

tkwl Z cmlb t`ii evBti 31 t\_tK  $\frac{1}{3}$  evqgUj xq Prc gmlKYvq tj tM\_vKv t`ii cmlbK

“KkK cmlb etj | Dw<sup>m</sup> G cmlb tkvl Y Ki tZ civti, Zte meUKzbq - cmlb th t`li  $\frac{1}{3}$  t\_tK 15 evqgUj xq Prci gta” itqtQ tKej gv tMUKzcm| Kvi Y Gi tPtq tenk tkvl Y 9lgZv MvtQi tB|

evqgUj xq Prc  $\frac{1}{3}$  Gi tenk ntj civZvi mtZR five Avt`Avt`lKtg civZv tbwZtq cotZ i iæ Kite| ZLbB tmtPi c@qvRb etj eStZ nte| G Ae`vq cmlb tmp w`tj civZv Avevi mtZR ntq DVte| cmlb tkvl tYi dtj “KkK cmlb t`li hZB civZjv nte civZv tbwZtq cov Ae`vi ZZB AebwZ NUte| G Ae`v Pj tZ Pj tZ cmlb t`li hLb 15 evqgUj xq Prc tcvte ZLb

\* 1 wKDtmK = c@Z tmtKtU 1 wKDweK dlt (62.4 civDU) cmlb c@v|

tmP w` t j l tbnZtq cov cvZv Avi cteP mfZR Ae`vq wd`ti Avmte bv- MvQ gti hvte| G chiq`K 0DBJ uIs tKwcdk`q:U0 (Wilting co-efficient) etj | Kv`RB tmP w` t Z ntj Aek`B G Ae`vq tcSovi Av`MB w` t Z nte, cti w` t j Zv tKvb Kv`RB Avmte bv| 0DBJ uIs tKwcdk`q:U0 Bj w`-K e`-i 0Bj w`-K tduU`Mi 0 (Elastic fatigue) m`1/2 Zjybrq|

**M) g`/AvZwi`3 cwb (Gravitational/Free/Excess water)**

`Kuk`K cwb `fii evBti  $\frac{1}{3}$  evqg`Uj xq P`v`ci wbtP Aew`Z th tKvb gv`ci cjae` `fii cwb`K g`/AvZwi`3 cwb etj | G cwb Dw`f` i Mh`Y`thvM` bq Ges th tKvb w` t K g` f`vte Pj vPj Ki`Z cvti | w`v`k`bi gva`tg G cwb Rng t`\_tK Acmmi Z nq|

wfboc`KwZi GKwU D`vniY t`\_tK figi`mi aiY m`u`K`GKUr `Q avi Yv cvl qv th`Z cvti | GKwU igvj`K cwb`Z wfmR`tg l`cti l`Vt`bv gv`B tek wKQyv cwb Sti covi cil tduvq tduvq wKQyv cwb cotZ `vKte hv GKmg`q t`\_tg hvte| G chiq` th cwi gvY cwb Sti cotjv Zv`K g`/AvZwi`3 cwb m`1/2 Zjybr Kiv th`Z cvti | tFRv igvj Ur ti v` Qwotq w` t j igvj t`\_tK cwb Dto wM`tg igvj Ur i`wK`tg hvte| Gevi th cwi gvY cwb Dto tMj Zv`K `Kuk`K cwb m`1/2 Zjybr Kiv th`Z cvti | i`Kt`bv igvj w` t K Gevi Bw`\_i Kiv ntj t`Lv hvte Ger`ti l` mgv` cwi gvY cwb ev`u`i AvKv`ti igvj t`\_tK tewi`tg tM`Q| th cwbU`Kzer`u` n`tg igvj t`\_tK tewi`tg tMj Zv`K tkw`l Z cwb m`1/2 Zjybr Kiv th`Z cvti |

AvZwi`3 cwb gwLi i`Uevq`K Acmmi Z Kti Av` tR`bi Afie m`p Kti, hvi dtj g` t j k`mKv`th`e`NvZ NtU, DcKvix gw`EKv RievYy Kvh`tg l` eske`x evaM` nq|

**AvZwi`3 cwb i` q`v`K`i c`f`ie**

AvZwi`3 cwb gwLi i`Uevq`K Acmmi Z Kti Av` tR`bi Afie m`p Kti, hvi dtj g` t j k`mKv`th`e`NvZ NtU, DcKvix gw`EKv RievYy Kvh`tg l` eske`x evaM` nq| AvZwi`3 cwb Rng`Z Rj v`x`Zv m`p Kti, hvi dtj Mv`Qi g` t j ev`x l` w`-li Ktg hvq, dmtj tMvov`Pv ti`M t`Lv t`q, g` t j ev`x bv nl`qv gwLi wbtPi `fii Lv`v`cv`vb MvQ wbtZ cvti bv| AvZwi`3 cwb `vKvi Rb` Rng`Z Aew`Z Lv`v`cv`vb A`bK mgq AMh`Y`thvM` AvKv`ti i`jcv`sh`i Z nq, thgb- NO3 (bvBtU) t`\_tK NO2 (bvBU`BU), SO4 (mij`tdU) t`\_tK SO2 (mij`dvBW) BZ`w` | A`bK t`q`f` Lv`v`cv`v`bi AfiveRwbZ j`q`YI t`Lv t`q| thgb- evsj v` t`ki tFRv A`ev m`v`Z`mtZ gwUtZ MUK (S) Ges `li (Zn) Afive| ZvQvovl AvZwi`3 cwb Rb` m`p Rj v`x`Zv gwLi Zvcg`v`v` Kvg`tg exR AsK`z`v` M`tg Ges Mv`Qi ev`x`Z Avm`eav m`p Kti, gwU 0tRv Ae`vq0 Avm`tZ t` i`x nq Ges ecb w`ej w`Z nq|

**w`v`k`b c`x`w`Z (Methods of drainage)**

cwb w`v`k`bi g`-Z `j`v c`x`w`Z i`t`q`0, thgb -

**D`g`y` b`j`v` c`x`w`Z (Open drainage)**

Rng t`\_tK g` ev AvZwi`3 cwb tLjv` b`j`vi gva`tg Acmv`Y Kiv`K Dbk` b`j`v` c`x`w`Z etj | Dbk` b`j`v` c`x`w`Z`Z gwUtZ tek wKQy`- cici A`c`q`v`KZ. Mfxi b`j`v` (c`avb b`j`v) Kti Gt` i`K b`x, w`ej ev eo c`k`zi msh`y` Kti w` t Z nq| c`avb b`j`vi `j`cvk t`\_tK w`v`0 `j`Z; tek KZK`\_tjv A`c`q`v`KZ. Kg Mfxi b`j`v` (kvLv b`j`v) c`avb b`j`vq h`y` Kiv nq| Rng t`\_tK ev`oi cwb ev fMf` AvZwi`3 cwb kvLv`b`j`v Ges c`avb b`j`vi gva`tg b`x, w`ej ev c`k`zi Acmmi Z nq| Gme b`j`vi `j`Z; l` Mfxi Zv tmLv`Kvi ev`ocv`Zi cwi gvY, gwLi e`j`U, Avev`KZ. dmj BZ`w` i` Dci w`f`P Kti | c`avb b`j`vi `i`-Z; l` Mfxi Zv h`v`p`tg 100-300 w`Uvi Ges 1.5-3 w`Uvi l` kvLv`b`j`vi `i`-Z; l` Mfxi Zv h`v`p`tg 50-150 Ges 1-2.5 w`Uvi n`tg `v`K| gwU nvj` Kv ai`bi (tetj) l` w`ocv`Z Kg ntj b`j`vi `i`-Z; tewk l` Mfxi Zv Kg

Kul. I cj. Dbq b - q

Ki tZ nq| Avevi fwi ebtUi gmltZ (Gtlj) I epoeuj AA t j bij vi `i-Zj Kg I Mfxi Zv teuk Ki tZ nq|

**ex bij v cxiZ (Closed drainage)**

Rug t tK gmlUi mbP w t q exbij vi gva t g gy ev AwZwi 3 cmb Acmvi YtK exbij v cxiZ etj |

exbij v cxiZ weifbei Ktgi ntZ cfti | thgb- UvBj cxiZ, ivej (bypcv\_i) cxiZ| mbtP euj cPij Z UvBj cxiZ m=utK Avtj vPbv Kiv ntj v|

**UvBj cxiZ (Tile or pipe drainage)**

G cxiZ tZi Dbtj bij v cxiZi gZ weifbe` i tZj cavn I kvLv bij v \_vtK| Zte Gt i Mfxi Zv GKUZKg teuk nq| Gme bij v `Zwi Kti bij vi gta` 20-50 tmmUvgUvi e v tmi Ges 50-80 tmmUvgUvi `i tZj gmlUi UvBj A \_ev cmok cvBc emv tZ nq| UvBj emv t bvi Av tM bij vi Zj t` tk gmlUi ev im t g tUi u ve emv t q ev gmlU Pmctq gRej w fZ Kti t b l qv nq hv tZ UvBtj v j vBb GKB mgZtj Ae v b Kti | Gevi UvBtj i msthvM t j PU, KvMR ev LoKlv w t q tXtK w t q gmlU t d t j me t j v bij v eU Kti w t Z nq| GtZ Rugi Dcmi fVM Avevi mgZj n t q hvq| wQy t bi gta` ` B UvBtj i msthvM t j i PU, KvMR ev LoKlv c t P hvq Ges ZZ w t b bij vi gmlU k 3 n t q e t m hvq| GtZ UvBtj i t fZti gmlU Xk t Z cvi te bv Ges msthvM t j i gmlU i tUi t fZi w t q AwZwi 3 cmb Pbtq Pbtq cU t g kvLv bij v I c t i cavn bij vi w fZi w t q w b w m k Z n t q hv t e | D t j L, cavn bij vi tkl c t s i 2-3 w gUvi ch s i Rv q Mv cvKv Kti w t Z nq Ges UvBj bij vi tkl c t s i Z v t i i Rv j w t q g y t q w t Z nq hv t Z UvBj bij v f v i ev UvBtj i t fZti B u j Rv Z i q t Qv U c v Y x k ev gmlU D w t q bij vi g y eU Kti t` qvi tKvb m=tebv bv \_vtK|

Dbtj bij v cxiZi gZ UvBj cxiZ tZi bij vi `i-Zj I Mfxi Zv epocvZ, gmlUi cKwZ I dmtj i Dci w b f P Kti Kg t euk Ki tZ nq| nij Kv ebtUi gmltZ Ges Kg epocv t Z i G j v K v q bij vi `i-Zj I Mfxi Zv teuk Ges epoeuj AA t j Ges fwi ebtUi gmltZ bij vi `i-Zj I Mfxi Zv Kg Ki tZ nq| G cxiZ tZ bij vi `i-Zj I Mfxi Zv h v m t g 50-250 w gUvi I 1.0-2.5 w gUvi n t q \_vtK|

**Dbtj bij v cxiZi mjav**

Awak cwi gvY I AwZ `j cmb w b w m k Z nq, cmb w b w k b q gZv teuk, epoeuj I Gtlj gmlUm g x AA t j i Rb` AZ` s i Dc t h v M x I Kvh R i | cmb c b v t ni weNaVUtj Zv mn t RB `i Kiv m=te| bij v cxiZ I i q Y v t e q t Y i LiP Atc q v KZ.Kg|

**Amjav**

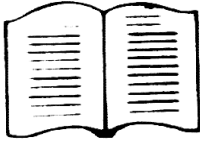
bij v `Zwi tZ cPz cwi gvY dmj x Rugi b o nq, wQy t ci ci bij v \_vKvi Rb` Kul h s c w Z P j v P t j Ges Kiv RK t g weNa m j o nq| AvMvOv R t b f I gmlU c t o bij v f i v U n t q hvevi m=tebv \_vtK| AvMvOv cwi w i I i q Y v t e q t Y i tek LiP nq| f i u g q t q i m=tebv teuk \_vtK|

**exbij v cxiZi mjav**

w b w k b bij v gmlUi mbtP \_vtK etj dmj x Rugi AcPq nq bv, Kul. h s c w Z P j v P t j ev Kul K t g weNa m j o nq bv| AvMvOv R t b f ev t f t 1/2 b o nevi m=tebv Kg| nij Kv ebtUi gmltZ Ges Kg epocv Z AA t j AZ` s i Dc t h v M x I Kvh R i | G Kevi c u Z w o Z n t q t M t j c t i i q Y v t e q t Y i LiP t b B e j t j B P t j |

**Am̄av**

cŃ\_igK ubgŲ LiP AZ`šl tenk | cmb ub`vkb ŲlgZv AtcŲvKZ.Kg | Gttlj gmltZ ev  
epŃeuj AĀtj i Rb` tZgb Dc̄thvMx bq | cmb ub`vktb weNæNUtj KivY ubiŲCY Kiv Kivb  
Ges tgi vgz Kiv e`qma` |



**migg®**

evsj vt`k eml R Mo epŃcvtZi cwi gvb ch̄ß nlqv m̄Ēj t`tki weifbæGjvKvq Ges  
erm̄ti weifbæmḡq G epŃcvtZi myg eŲb bv nl qvi evsj vt`tki Rb` tmP I ub`vkb  
AZ`šl iæzcyŲ tm̄Pi cmbi c̄vb Drm̄,tjv ntjv b`xbvjv, Lujvej, cKz, Mfxi I AMfxi  
bj Kz c̄f̄wZ | c̄vbZ Pvi cK̄vti tmP c×wZ it̄q̄Q, h\_v: f; c̄p̄; fub̄æ; eŲ I t̄dvUv  
tmP c×wZ | Gt`tk mPivPi e`eüz tmP h̄šj ḡta` it̄q̄Q t`vb, tmDwZ, SvSwo, PicKj,  
crl qvi c̄vú, Mfxi Ges AMfxi bj Kc c̄f̄wZ | ub`vktbi c̄vb `ŲUv c×wZ ntjv Dbh̄  
bijv c×wZ Ges ex b̄vjv c×wZ |



### cuVhEi gj'iqb 6.3

mWVK DEti i cuTkqUK nPy (v) n b |

1/ eisj vt`tk mePvBtZ teik eppcvZ nq tKvb&`vtb?

- K) j vj vLvj
- M) j vj gmbi nVU

- L) j ij cij
- N) j ij gvB cvnvo

2/ tKvb&gvfm metPtq teik eppcvZ nq?

- K) Rvbgvix
- M) RjvB

- L) GwCj
- N) A±vei

3/ cu extZ KZ i Ktgi tmP cxwZ Pij yAvtQ?

- K) 2 cKvi
- M) 6 cKvi

- L) 4 cKvi
- N) 8 cKvi

4/ t`vb KZ Mfxi Zv t`tk cwb DVvtZ cvti?

- K) 0.5 ugUvi
- M) 1.5 ugUvi

- L) 1.0 ugUvi
- N) 2.0 ugUvi

5/ Dv`c gvU t`tk tKvb&ai tbi cwb tkvIY Kti?

- K) `KwK cwb
- M) tkwL Z cwb

- L) gY cwb
- N) epi cwb

6/ GKwU Mfxi bj Kc KZ tn±i RvgtZ tmP n`tZ cvti?

- K) 5-15 tn±i
- M) 15-30 tn±i

- L) 10-25 tn±i
- N) 20-40 tn±i

7/ Db`y bij v cxwZ tKvb&AAtj i cwb wv`vktbi Rb` AZ`šI kvhRi?

- K) eppnxb AAj
- M) gasjy AAj

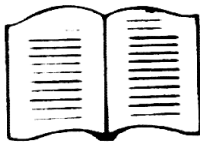
- L) eppéuj AAj
- N) eppéuj Gtlj gvUmgx AAj

### cw 6.4 dmj mSMh, mSMhni mgq, mSMh c`wZ, gvovB, SvovB, iKv`bv I ,`vgRvZKiY



G cvV tk`l AvcmB

- ◆ dmj i cwi c°Zv m`ut`K`ej tZ cvi`teb|
- ◆ wewfbacdmj i cwi c°Zvi j`fY ej tZ cvi`teb|
- ◆ dmj mSMhni mgq ej tZ cvi`teb|
- ◆ dmj mSMh c`wZ eY`v Ki tZ cvi`teb|
- ◆ dmj gvovB, SvovB, iKv`bv Ges ,`vgRvZKiY c`wZ eY`v Ki tZ cvi`teb|



me dmj i dj b ev Drcw`Z cY` thgb GKikg bq, tZgub Gf`i cwi c°Zvi aibl wfb` wewfb`e`enkó` Øviv Gf`i cwi c°Zvi ubi`f`cZ nq| Mv`Qi wewfb`e`Ask dj b wntmte MY` ntq ,`v`K thgb- exR, Avk, KvU, cvZv, ifc`v`š`i Z KvU, dj BZ`w`| fij dj b tctZ ntj mgqgZ dmj mSMh Kiv DvPZ| Zv bv Kiv ntj dmj i ,`YMZ gvb Ges dj b DfqB` f`wZM` nq|

dmj i cwi c°Zv` Øi Ktgi ntZ cvi`- t`nZw`EK cwi c°Zv I e`eniv`ic`thvMx cwi c°Zv| GKwU cvU Mv`Qi dj bv cvKv ch`S`i Zvi t`nZw`Z`K cwi c°Zv Gtm`Q etj MY` Kiv hvte bv| cvi`Ui Avk thLv`b gly` dj b tm`f`f`i Zvi e`eniv`ic`thvMx cwi c°Zv A`bK Av`MB - A`\_f` d`z aiv Ae`v`qB P`j Av`m| Ab` w`f`K Avj yev w`qvR Mv`Q cwi YZ eqm i`w`Ktq th`Z i`i`e` Ki`j aiv th`Z cvi` Gf`i t`nZw`EK cwi c°Zv Gtm` tM`Q| w`K`š`hZw` b ch`S`i Gme Mv`Q gti c`j`v`v` i`w`Ktq bv hvq ev gv`Ui Av` Zv f`x`l`Y`f`ite bv Kt`g Av`m ZZw` b Gf`i e`eniv`ic`thvMx cwi c°Zv Gtm`Q etj aiv w`K nte bv| Kv`Y Gf`i`K Av`MB mSMh Kiv ntj Gf`i msi`f`Y ,`Yvej x`A`bKv`st`k Kt`g hvq|

#### dmj mSMh (Harvesting)

e`eniv`ic`thvMx Ae`v`q dmj i dj b ev Drcw`Z cY` mSMh Kivi c`w`v`K dmj mSMh etj |

msAv` : e`eniv`ic`thvMx Ae`v`q dmj i dj b ev Drcw`Z cY` mSMh Kivi c`w`v`K dmj mSMh etj |

#### dmj mSMhni mgq

th Df`i`k`B dmj Drcv`b Kiv tnvK bv tKb Dch`Ø mg`qi Av`M ev c`i dmj mSMh Ki`j wewfb`ev`te dj b f`wZM` nq| AwZ gv`v`q cwi c°Zvi Rb` aiv ev M`gi kxl t`f`t`z cto A`\_ev exR S`i cto| tLmvi`x, gmy, tQvj`v, mwi lv, wZj, wZw, BZ`w` i tej vq dj (cw) tdtU hvq Ges exR S`i cto| ZvQvov AwZcwi c° dmj gv`v`v` tenk w`b`\_v`Kvi Rb` cvwL Ges tP`i`i Dc`el e`w`x` cvq| Ab`w`f`K Kg cwi c° ev Acwi c°Zvi Rb` dmj i dj b Ges ,`YMZ gvb Lvivc nq, dmj i exR c`y` nq bv, Mv`Qi cY`Zv`c`w`B N`tU bv| GQvov exR I R`b` nvj Kv nq, AsK`z`i`v`Mg` f`lgZv` nwm` cvq, tivM evj`v`B ev tcv`Kv`v`K`toi Av`m`g`f`Yi c`Z`i`va` f`lgZv` Kt`g Av`m, ,`vgRvZ` K`i` i`v`Lv` hvq bv| Wvj` RvZ`xq dmj i tej vq Av`m`g`f`i`i` cwi`gv`Y` Kg` nq, tZj` RvZ`xq dmj tZj` i cwi`gv`Y` Kt`g hvq|

k`m`i` Df`i`k`f`f`i` A`bK t`f`f`i` dmj mSMhni mg`qi Zvi Zg` cwi j`w`f`Z

k`m`i` Df`i`k`f`f`i` A`bK t`f`f`i` dmj mSMhni mg`qi Zvi Zg` cwi j`w`f`Z nq| thgb Av`MB evj`v` ntq`Q, Av`ki Rb` cvU Pvl Ki`j d`z` aiv mgq dmj mSMh Ki`j nq, Zv bv ntj Av`ki ,`YMZ gvb (pZv, J`3/4j`) Lvivc ntq hvq| GKB cvU h`w` ext`Ri Rb` Pvl Kiv nq Zvntj` cY`cwi c°Zv A`\_f` exR bv cvKv ch`S`i A`t`c`f`v` Ki`j nq| Zv`Z` Av`ki dj b w`KQ`v`v` exto w`K`š` Av`ki ,`YMZ gvb Lvivc nq|

AfbK mgq wfbwfbwciw wZi Kvi tY cwi c° Zvi mwK mgqci cteB dmj msMh Kiv nq, thgb- eb'vi cwbtZ Wze hvevi mtebv vKtj AvDk avb Ges Kij ekuLxi ukjvep t\_tK i qv tctZ teftiv avb wKQYv Acwi c° vKv Ae vq msMh KitZ nq| Avevi KLbl KLbl teuk vfg weipi Rb mwK mgqci AvM dmj msMh Kiv nq thgb- Avj yevavKic, ukg cfwZ|

AvfLi wgtj i A\_er AvL gvovB Ktj i cwiBi mthwM-mweavi Dci AvfLi dmj msMhni mgqci tek tni tdi ntZ cvfi | avb, cvU BZ w` dmjtj i tejvq me, tjv exfRi cwi c° Zv ctq GKB mgqci (f mgqci e'eaftb) Avtm etj Zvt i dmj msMhni mgq wbfctY tKvb mgm'v nq bv| wKŠ' mwi lv ev Wvj RvZxq dmjtj i tejvq me exfRi cwi c° Zv vNw tbi e'eaftb Avtm, A\_ w MvtQi wbtPi Astki exR tctK tMjt I Dcti ZLbl dj t Lv hvq| Gme tqt 70-75% exR cvKvi mgq dmj msMh KitZ nq| Avevi wKQYvKQYdmjtj i tqt dmj msMhni tKvb wv' 8 mgq bvtB- (thgb WvUv, gj-v, cvj skvK, jvj kvK, Avj ymeR mvi, tMv-Lv` dmj BZ w`) | G, tjv vNw mgq hver e'envti vcthwMx|

**dmj msMh c xwZ**

dmjtj i ckwZ. Abyvti wfbwfbw c xwZ tZ dmj msMh Kiv nq| thgb -

**K) MvtQi tMvov tKtU msMh**

cwi c° Zvi j qY t` Lv w` tj `v, KwP ev tKv` vj w` tq MvtQi tMvov tKtU msMh Kiv nq| avb, Mg, cvU, AvL BZ w` dmjtj i tejvq G c xwZ DcthwMx| avb, Mg BZ w` ZUjy dmjtj i tejvq tMvov gvUvi wKQYv cti KvUjt I qwZi mtebv vK bv| Zte cvU ev AvL dmjtj i tejvq A\_ w hvt i KvU dj b mrvqK tm me dmjtj i tqt KvU gvUvi Lg KvQvKvQ KvUv DvPZ| tKbbv gvUvZ t\_tK hv lqv tMvovi w` tKi KvUvi Ask t\_tK cvtUi Avka, cvUKvW A\_er AvfLi i m bv cvl qvq dj b nwm cvq|

**L) MvQ gtv vrcvUb Kti/Dcwo tq msMh**

Wvj RvZxq dmj thgb tLmvi x, gmj, tQvj v BZ w` Ges Zj exR dmj thgb- mwi lv, wZwm, wZj BZ w` i MvQ gtv vrcvUb Kti dmj msMh Kiv nq| GLvtb Dtv h` th, Wvj RvZxq MvtQi gtv bvBtUvtRb AvUKKvi x, wU vKvq tm, tjv Dcwo tq ev gtv vrcvUb bv Kti tMvov tKtU msMh Kiv DvPZ| Kvi Y ZvtZ bvBtUvtRb AvUKKvi x, wU gvUvZ t\_tK wMtg tmLv b bvBtUvtRb mi eivn Kti vK|

**M) gvU Lto dmj msMh**

Avj yvqv Avj yPxbver` vq BZ w` thme dmj gvUvi wbtP nq tm, tjv j v'j ev tKv` vj ev Ab` tKvb hS; w` tq gvU Lto msMh Kiv nq|

**N) Pqb Kti msMh**

thme dmj GKmt 1/2 cwi c° bv ntq wfbwfbwmgq cwi c° nq tmme tqt G c xwZ AZ` šl DcthwMx, Zte wKQYv e' qeuj | thgb- ZvgvtKi cvZv me, tjv GKmt 1/2 cwi c° bv n l qvq avtc avtc cZ` K MvQ t\_tK 5/6 wU Kti cvZv wbtPi w` K t\_tK msMh Kiv nq ( GtK cBvgs etj ) | ZvQvov Zjv, fEv, Pv cvZv, Aoni, gvUvi wU, gMKj vB BZ w` dmjtj i tejvq G c xwZ Abyvi Y KitZ nq|



**cwi c° Zvi j 9Y**

dmj mSMni t9t th melqW AZ`sl ,iazcY°tmU ntjv cwi c° Zvi j 9Y | cwi c° Zvi j 9Y mWKFvte Rvbr bv \_vKtj dmtji ,YMZgvb fxlyfite nwm cvq | ZvB wbtP KtqKuU dmtji cwi c° Zvi j 9Y eYv Kiv ntjv:

**ZUz RvZxq dmj**

avb, Mg, fÆv BZ`w` ZUz dmtj `vbw/exR cy I k³ nIqv Qvovl RvZi wR`^is aviY Ges exR cwi c° Zvi 18-25 kZvstK tbtg Gtj cwi c° ntqQ etj eStZ nte |

**cW**

f`kx cvtUi tejvq kZKiv 50 fM MfQ dz Avmtj Ges tZlv cvtU kZKiv 50 fM MfQ dj ai tj Avtki Rb` cwi c° etj avnq |

f`kx cvtUi tejvq kZKiv 50 fM MfQ dz Avmtj Ges tZlv cvtU kZKiv 50 fM MfQ dj ai tj Avtki Rb` cwi c° etj avnq | exRi tejvq dtji is Kvj ntq exRi wR`^is bv av chS`cwi c° Zv Avtm br |

**Wvj RvZxq dmj, mui lv, vZj, vZwm**

MfQ kZKiv 70-80 fM dtji exR cy I k³ nIqv Ges wR`^RvZi is aviY Kiv cwi c° Zvi j 9Y | Gi tew mgq RvgtZ \_vKtj dj tdtU exR Sti cto |

**Pxbrev`vg**

wKQyb ci ci MvQ DvWtq hr` f`Lv hvq th, Pxbrev`vg MfQi dtji (Pxbrev`vtgi) kZKiv 70-80 fvtMi gZ cy ntqQ Zte cwi c° ntqQ etj aitZ nte | ZvQvov Pxbrev`vg MfQ \_vKv Ae`vqB wKQymKQyPxbrev`vg t`tk Priv DVtZ f`Lv hvte | Pxbrev`vtgi exR cy nte, exRi tLmvi evBti w`tki wKiv-Dcwkiv `uó nte Ges tfZti w`tk jvj tP ev jvj tP-evvq is aite | Pxbrev`vg exRi AveiYxtZl RvZi wR`^ewktó`i is f`Lv wte | Pxbrev`vg exR vov tLmvi tfZti RvqMv VmrvVwm Kti cY°\_vKte Ges tKvb `uAx Kvj (Spongy tissue) \_vKte br | exR Pvc cWqM Kij tft½ wMfQ tZtj i Dcw`wZ tevSv hvte |

**AvL**

AvL cwi c° ntjv MfQi ewx Ktg wMfQ cvZvi meR is d`vKvK ntZ iia Kite | KvU k³ jvW w`tg AvVvZ Kij avZe ka nte | tgvPo w`tg KvU wMovi (c`teP) gta` mntR tft½ hvte | KvU wbtPi w`tki wMovi tPvL (Eye) tek eo ntq evBti w`tk tewotq Avmte Ges wMovi wbtP A`wbK gti ewx iia nte | AtbK mgq Prgovq dvUj atj i tmi wgoZi (Sweetness) tek evote | KvU me AstkB (wbtPi, gta`i Ges lctii) wgwó mgvb gtb nte | ZLb we` wi wWs (Brix reading) Gi gvB 18-22 Gi gta` nq | Brix ntjv cwi c° AvtLi ga`w`Z KwB c`v`\_ |

**ZvgvK**

Dtj L` th, ZvgvK me cvZv GKtI cwi c° nqbr |

cwi c° Ae`vq cvZv ntjv yv f eY°avi Y Kite | cvZvi AMfM wbtPi w`tk wKQyv Stj cote Ges cvZv wKQyv AvVtj v fve f`Lv wte | cvZv fUR Kij tft½ hvte | Dtj L` th, ZvgvK me cvZv GKtI cwi c° nqbr |

**Zjv**

MQ iKvZ iia Kite Ges cvZv Sti cotZ \_vKte | cWkuzKfiteB Zjvi ej (Boll) tdtU Zjv tewitq Avmte I w`tb w`tb AvKv i ewx cte | Zjv MQ I ej Kvj is aviY Kite |

**tMv-Lv ˘ dmj**

tMvLv ˘ dmj i cwi c°Zv i tKvb ubw ˘ mgq tB| Zte MtQ d˘z aiv ev dj aiv chS (fÆv, tRvqvi) th tKvb Ae˘vqB dmj mslMh Kiv hvq| tQvj v RvZxq dmj dj cvKv chS Ges cviv, tbcqv i Nvm 30-40 w b ci ci Kvlv hvq| tRvqtii Kiv MtQ (60 w tbi Kg eqtmi) Ww b bvgK GKvU MjKvmbW Drcbæng hv MiævQ˘ji i cvK˘j xZ wMtq gviVZK wlv<sup>3</sup> nvBtWmivqubK Gm˘W cwi YZ nq| dtj Mew˘ci gviV hvq| ˘gvtmi tenk eqtmi tRvqvi MtQ G wlv bó ntq hvq| ZvB tRvqtii cwi c°Zv 60 w tbi tenk eqtmi MY˘ Kiv DvPZ|

tRvqtii cwi c°Zv 60 w tbi tenk eqtmi MY˘ Kiv DvPZ|

**meB mvi dmj**

Gi tKvb ubw ˘ mslMh mgq bvB| th tKvb eqtm Gt i tK gwU˘Z wgvktq t˘qv tMj I d˘z dj aivi cteB cwi c°Zv aiv wK nte| Kvi Y eqm evovi m˘z m˘z MvQ k<sup>3</sup> ntq hvq Ges cPtb wej ˘NtU|

**gvovB (Threshing)**

dmj i dj b ev Drcw˘Z cY˘ dmj MvQ t˘tK c˘K Ki˘Yi c˘qvvtK gvovB etj | dmj mslMh Kivi ci hZ kvN˘mæe gvovB Kti dtj v DvPZ| Kvi Y m˘z m˘z gvovB bv Kij wvfbæ fite dj tbi ev cY˘i ˘wZ nq| dmj tft˘ ˘wZi cwi gvY Kgtenk ntq v˘K| Zte AtbK mgq t˘Lv hvq GKB dmj I cwi tekMZ Kvi tY ˘wZi cwi gvYi Zvi Zg˘ nq| thgb- AvDk aiv mslMhni mgq (RjvB-AvMó) cPz ewócvZ I Mig vKvi Rb˘ Ziv ˘wK fite gvovB bv Kij avbexR Ges Lo Dfqb cP hvq ev extRi Av˘zi v Mg i iæntq thZ cvti | Ab˘w tK tev˘iv aiv ev tivcv Avgb aiv mslMhni tejvq i Kbv Avenvl qv vKiv gvovB t˘ix Kti KivZi tZgb ˘wZi Kvi Y nq bv| Zte gvovB Kivi AvM Kvlv avbMvQ˘K cvj v Kti 2/4 w b ti tL w tQ A\_ev fij Kti i wKtq wbtj gvovB c˘qv mnRZi nq Ges Aí mgtq AwK cwi gvY aiv gvovbv hvq| Wj vRvZxq km˘ ev mvi lvi tejvq dmj mslMhni ci MvQ˘K tiv˘ fij Kti i wKtq bv wbtj gvovB Kvth˘Amvæv nq|

Wj vRvZxq km˘ ev mvi lvi tejvq dmj mslMhni ci MvQ˘K tiv˘ fij Kti i wKtq bv wbtj gvovB Kvth˘ Amvæv nq|

dmj gvovbri mgq ˘GKvU wltqi w tK Aek˘B j ˘i˘ ivL˘Z nte thb Drcw˘Z cY˘i ˘YMZ gv˘bi tKvb ˘wZ bv nq| vbv ev Wj Kj vB ev ˘Zj exR dmj i tejvq gvovBtqi mgq extR AvNvZRvBZ Kvi tY thb tKvb aiv tbi ˘tZi m˘ó bv nq ev dvUj bv atj | ˘Z ev dvUj i m˘ó ntj extRi wei xZv I Av˘zi v Mg ˘gZv fvlY fite ˘wZM˘ nq| gvovBtLvj v˘Z (Threshing floor) thb tKvb i Ktgi MZ˘ev dvUj bv v˘K| Kvi Y MZ˘ev dvUj Av˘v˘ dmj i exR ev AvMvQvi exR vKvi m˘tebv v˘K, hv gvovBKZ. extRi wei xZv gvb Kvgtq t˘q| gvovBtqi Rb˘ v˘vUv ntZ nte DvZ mgZj Ges m˘e ntj cvKv tqtS| gvovB j vU Qv h˘ ntj Av˘iv fij nq|

dmj i cKvi tft˘ gvovB c˘wZi wfbævfbævq| Zte ZUz RvZxq A\_ev exR RvZxq dmj i gvovB c˘wZ c˘q GKB i Ktgi | vbv RvZxq dmj gvovB t˘j Miæw˘tq gvovbri c˘wZ euj cwi wPZ ntj I AvRKij Wtq ev MtQi eo ˘wotZ AvQvotqI aiv ev Mg gvovB Kiv nt˘Q| Wj RvZxq dmj ev cvU ev ˘Zj RvZxq dmj i tejvq Miæ mvi vth˘ gvovbri cvkvvck k<sup>3</sup> tqtSi Dci MvQ Qvotq w tQ j wlv w tQ wcvU˘tq gvovbv nq| Aek˘ Aí cwi gvY dmj i tejvq tktlv<sup>3</sup> c˘wZB euj cPwZ| B˘vbx ZUz dmj i tejvq (thgb- avb, Mg) c˘PwZ tQvU hS˘i tctWj t˘m˘t˘i (Paddle thresher) e˘envi w b w b teto P˘tj tQ| fÆv gvovB Kivi Rb˘ KY˘tKj vi (Corn sheller) bvgK GKvU wtkl hS˘i e˘envi Kiv nq| Kvi Y nvZ w tQ, Miæ ev tctWj tdm˘t˘i mvi vth˘ wKsev AvQvotq - tKvber˘teB fÆv exR gvovB Kiv m˘e bq| ZvOvov AvL gvovB Kiv AvL gvovB Kij i c˘qvRb nq A\_ev wPv Kivi Rb˘ wgtj cwU˘tq w tZ

fÆv gvovB Kivi Rb˘ KY˘ tKj vi (Corn sheller) bvgK GKvU wtkl hS˘i e˘envi Kiv nq|

nq| cvtUi Avk Qovtovi KvRiU (Avmtj G KvRiU gvovB Gi chfjq Avmv DvPZ) Kiv nq  
mekl cduqvq cvU MvQtk RvK w`tq Avka cDvovbi ci | mWKFvte cvUMvQ cPvi ci Avlzy  
w`tq wPgU tKtU AvkatK MvQ t`tk Avj v`v Kti nvtZ Svk w`tq tUtB tUtB tei KitZ nq| G  
KvRiU cvbtZ `vwtq A\_ev Wvzvq etm Kivi ci cvtUi Avk ,tj vtK fij Kti abtq vbtZ  
nq|

**SvovB (Winnowing)**

dmj gvovBtqi ci dj b ev Drcv`Z cY`tk LoKlv, DcRvZ `e` Ges gaj v ev AveRv  
t`tk Avj v`v Kti Avbvi cduqvtk SvovB etj | SvovB vevfbvte ntq \_vtK| Atc`vKZ.eo  
aitbi LoKlvvtK nvZ w`tq cvv`vi Kti tbevi ci tOvULvU LoKlv gaj v ev AveRv Kzv  
w`tq tSto ev evZvfm Dvwtq cvv`vi KitZ nq| SvovB cduqvZ th bmvZgvj v KvR Kti Zv  
ntj v- e`i Avtcv`K ,iazj| Kzv w`tq tRvti evZvm c`vvnZ Kitj ev Pj gvb evZvfm avb ev  
exR Dvvtj Atc`vKZ.fvvi exRiU KvQ cotē Ges cvZj v LoKlv `fi mti hvte| GfvteB  
gaj v `hfvz nq| gvovB Kivi ci exR Ges LoKlv tenk wFRv \_vKtj Zv ti vt` Qvwtq wKQv  
i`vKtq vbtj SvovB KvRi `vZv evto Ges cvv`vi I tenk nq| AvMvQvi exR A\_ev atj vevj  
extR vgnkZ \_vKtj Pvj b w`tq Zv mntRB cvv`vi Kiv m`e|

**iKvov (Drying)**

exR cvv`vi Kti DVvov ev gvovBtLvjq (Threshing floor) ti vt` Qvwtq w`tq iKvov nq|  
Qovtovi ci exRtk evievi cv w`tq A\_ev cvl qvU (Kvvi %Zvi exR msvMvni hš;mekl)  
w`tq bvoivrov Kti w`tj ZvovZvov iKvov| cZ`n KtqK NvUv Kti exR ti vt` iKvov nq|  
extRi Rjxq evt`ui cvv`vi Ktg 10-12 kZvstK tbtg bv Avmv chš|iKvovi cduqv Pj tZ  
\_vtK| exR wKvGZ iKvov ntj v vK bv Rivri Rb` GK tKvR exR fij fvte tqtē vbtq  
GKcvtk Avj v`v cvtI ti vt` Qvwtq w`tq cOZ`K w`b gvc vbtZ nte| cUg w`tbi tktl IRb  
th cvv`vi Kg nte, vOZxq w`b t`tk IRb nvtmi cvv`vi vgvstq Ktg Avmte Ges tktl i  
w`tk IRb Avv Kgte bv| hLb IRb Avv Kgte bv ZLb eštZ nte iKvov tkl  
ntqtQ|KvLZ Av`Zvq i`vKtq exRtk msi`vY KitZ nq| exRtk fij Kti iKvovi Df`k`  
ntj v Av`Zv Kvgq Avbv hvZ extRi KvRj v c`vmeK \_vtK Ges ti vMRxevYextRi`vZ bv  
Kti |

extRi Rjxq evt`ui  
cgvY Ktg 10-12  
kZvstK tbtg bv Avmv chš  
iKvovi cduqv Pj tZ  
\_vtK|

cvtUi tejvq cvtUi AvkatK fij Kti ti vt` i`vKtq vbtZ nq| Zv bv ntj tFRv ev m`vctmZ  
\_vKtj cvU cPvov e`v`v`v qvi KihRj v c Pj tZB \_vKte Ges cvU ctp e`envti i Abghv` ntq  
cotē|

tKvb Ae`vZB cvUtk gvUvZ vevvwtq w`tq iKvov vK bq, GtZ cvtUi Mvq atj vevj  
AvUvKtq Ges LoKlv tj tm ,YMZ gvb Ktg hvte| ZvB cvUtk extki Avovq iKvov nq| fij  
Kti iKvovi ci MvBU tetā i vLv nq| Avj yvgnv Avj ynj y BZ`v` K` RvZxq dmj tk  
Qvqvq ti tL iKvov nq| Zjv vRvbs (Ginning) Kivi AvvM ejtk fij Kti ti vt` i`vKtq  
vbtj Avk Qovtovi mnR nq| vRvbs ntj v Zjvi ej t`tk Avka Qovtovi cduqv|

**`vRvZKiY (Storing)**

dmj i dj b ,`vRvZKiYi AvvM Aek`B vovvZ ntZ nte th dj b `e` ev cY` h\_vh\_fvte  
iKvov ntqtQ| dmj msi`vY Kiv A`v ,`vRvZKiYi`v v c`v kZ`ntj v vovvZ  
Zvcgvv Ges vovvZ Avtcv`K Av`Zv| Gt`i th tKvb GKvUtk vovvZ v AvvZ cvtj  
,`vRvZKZ.cY`i ,YMZ gvb vK i vLv hvte bv | ,`vRvZ cY`i ,YMZ gvb Avv`v vLv

,`vRvZ cY`i ,YMZ  
gvb Avv`v vLv  
Zvcgvv 3-10<sup>o</sup> tm Gi  
gta`\_vKv`iKv|

ntj Zvcgvi 3-10<sup>0</sup> tm Gi gta<sup>o</sup> vKv iKvi | exR iKtbr br ntj D<sup>o</sup>P Zvcgvi exRi A<sup>o</sup>zi v Mg i i ante A<sup>o</sup>er Q<sup>o</sup>IK 0v Av<sup>o</sup>sv<sup>o</sup>ntq c<sup>o</sup>P t<sup>o</sup>tZ c<sup>o</sup>ti |

v<sup>o</sup>g Riv c<sup>o</sup>Y<sup>o</sup>i gvb vK ivLvi Rb<sup>o</sup> GKv<sup>o</sup> v<sup>o</sup>vtj- (Thumb rule) ntj v - Zvcgvi (v<sup>o</sup>v<sup>o</sup> d<sup>o</sup>ti b<sup>o</sup>BU) Ges Av<sup>o</sup>ci<sup>o</sup>IK Av<sup>o</sup>zi th<sup>o</sup>Mdj 100 Gi tenk nte br |

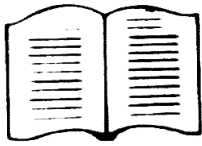
v<sup>o</sup>g Riv c<sup>o</sup>Y<sup>o</sup>i gvb vK ivLvi Rb<sup>o</sup> GKv<sup>o</sup> v<sup>o</sup>vtj- (Thumb rule) ntj v - Zvcgvi (v<sup>o</sup>v<sup>o</sup> d<sup>o</sup>ti b<sup>o</sup>BU) Ges Av<sup>o</sup>ci<sup>o</sup>IK Av<sup>o</sup>zi th<sup>o</sup>Mdj 100 Gi tenk nte br |

exR v<sup>o</sup>g Riv Kivi Av<sup>o</sup>M K<sup>o</sup>Uv<sup>o</sup>KK Ges ti<sup>o</sup>Mv<sup>o</sup>KK i<sup>o</sup>v<sup>o</sup>q<sup>o</sup>KK e<sup>o</sup> w<sup>o</sup> tq tkvab K<sup>o</sup>i tbqv f<sup>o</sup>v | exR g<sup>o</sup>tS gta<sup>o</sup> ti<sup>o</sup> v<sup>o</sup> tq i<sup>o</sup>IK<sup>o</sup>q Ave<sup>o</sup>i e<sup>o</sup> l<sup>o</sup>q f<sup>o</sup>ti v<sup>o</sup>tg ivL<sup>o</sup>tZ nte |

v<sup>o</sup>g Riv c<sup>o</sup>Y<sup>o</sup>i gvb vK ivLvi Rb<sup>o</sup> GKv<sup>o</sup> v<sup>o</sup>vtj (Thumb rule) ntj v - Zvcgvi (v<sup>o</sup>v<sup>o</sup> d<sup>o</sup>ti b<sup>o</sup>BU) Ges Av<sup>o</sup>ci<sup>o</sup>IK Av<sup>o</sup>zi th<sup>o</sup>Mdj 100 Gi tenk nte br | A<sup>o</sup>er Av<sup>o</sup>ci<sup>o</sup>IK Av<sup>o</sup>zi h<sup>o</sup> 60% nq Z<sup>o</sup>vtj Zvcgvi 40<sup>0</sup> dv. Gi tenk bq | A<sup>o</sup>er Gi D<sup>o</sup>ev<sup>o</sup>Uv<sup>o</sup> ntZ c<sup>o</sup>ti - Zvcgvi 60<sup>0</sup> dv. Av<sup>o</sup>i Av<sup>o</sup>ci<sup>o</sup>IK Av<sup>o</sup>zi 40% |



**Ablyj b (Activity):** Z<sup>o</sup>U<sup>o</sup>z<sup>o</sup>Rv<sup>o</sup>Z<sup>o</sup>q dmj (Cereal crops) msi v<sup>o</sup>Y<sup>o</sup> gvovB, SvovB I i K<sup>o</sup>it<sup>o</sup>br (Threshing, Winnowing and Drying) i e<sup>o</sup>Z<sup>o</sup>i Av<sup>o</sup>tj v<sup>o</sup>P<sup>o</sup>br Ki ab (Aby<sup>o</sup> c<sup>o</sup>v) |



**mvigg<sup>o</sup>**

Dch<sup>o</sup> mg<sup>o</sup>qi Av<sup>o</sup>M ev c<sup>o</sup>ti dmj msM<sup>o</sup>h Ki<sup>o</sup>tj d<sup>o</sup>mtj i dj b I v<sup>o</sup>BMZ gvb D<sup>o</sup>f<sup>o</sup>qB v<sup>o</sup>WZM<sup>o</sup> nq | v<sup>o</sup>Wf<sup>o</sup>b<sup>o</sup>ed<sup>o</sup>mtj i c<sup>o</sup>vi c<sup>o</sup> Z<sup>o</sup>vi mg<sup>o</sup> I j v<sup>o</sup>Y<sup>o</sup> v<sup>o</sup>f<sup>o</sup>b<sup>o</sup>v<sup>o</sup>f<sup>o</sup>b<sup>o</sup> Dch<sup>o</sup> c<sup>o</sup>vi c<sup>o</sup> dmj v<sup>o</sup>W<sup>o</sup> c<sup>o</sup>x<sup>o</sup>v<sup>o</sup>Z<sup>o</sup>tZ msM<sup>o</sup>h K<sup>o</sup>i v<sup>o</sup>bq<sup>o</sup>Z<sup>o</sup>ms<sup>o</sup>K<sup>o</sup>f<sup>o</sup>ite gvovB I SvovB Kiv nq | Gici d<sup>o</sup>mtj i aib Ably<sup>o</sup>q<sup>o</sup> DEgi<sup>o</sup>f<sup>o</sup>c ti<sup>o</sup> s<sup>o</sup> i K<sup>o</sup>it<sup>o</sup>Z nq | D<sup>o</sup>tj<sup>o</sup> th, exRi t<sup>o</sup>q<sup>o</sup>t<sup>o</sup> exRga<sup>o</sup> w<sup>o</sup> Z Rj<sup>o</sup>xq ev<sup>o</sup> u<sup>o</sup>i c<sup>o</sup>vi gvb 10-12 kZv<sup>o</sup>st<sup>o</sup>k t<sup>o</sup>btg br Av<sup>o</sup>mv ch<sup>o</sup> i K<sup>o</sup>it<sup>o</sup>Z nq | Gici v<sup>o</sup>bq<sup>o</sup> v<sup>o</sup> Av<sup>o</sup>zi I Zvcgvi v<sup>o</sup>Wk<sup>o</sup> c<sup>o</sup>vi t<sup>o</sup>et<sup>o</sup>k dmj msi v<sup>o</sup>Y<sup>o</sup> b Kiv nq | m<sup>o</sup>Wk mg<sup>o</sup>q I m<sup>o</sup>Wk D<sup>o</sup>cv<sup>o</sup>q dmj msM<sup>o</sup>h I c<sup>o</sup>U<sup>o</sup>qv<sup>o</sup>Rv<sup>o</sup>Z Ki<sup>o</sup>tj d<sup>o</sup>mtj i dj b ev<sup>o</sup> v<sup>o</sup>cvq, AcPq Kg nq, v<sup>o</sup>YMZ g<sup>o</sup>vtbi Db<sup>o</sup>z nq Ges D<sup>o</sup>rc<sup>o</sup>W<sup>o</sup> Z c<sup>o</sup>Y<sup>o</sup> v<sup>o</sup>W<sup>o</sup> b v<sup>o</sup>g Riv K<sup>o</sup>i ivL<sup>o</sup> m<sup>o</sup> nq |



**ci#V#i gj`iqb 6.4**

m#VK D#i i ci#k#UK #P# (v) w` b|

1| Dch# mg#q dmj msM# bv Kiv n#j Kx nq?

K) dj b f#j nq

L) dj b L#i#v# nq

M) #, Y#Z g#b f#j nq

N) dj b I #, Y#Z g#b D#q#B #j#ZM#`nq

2| Av#ki dj b I #, Y#Z g#b#i Rb` ci#Ui c#i c°Z# KLb Av#m?

K) d# ai#i Av#M

L) d#dj ai#i mgq

M) exR M#b#i mgq

N) exR c#K#i mgq

3| dmj msM#ni mgq #K#mi Dci #b#P# K#i?

K) dm#j i e#b mg#qi Dci

L) dm#j i D#i#k#i Dci

M) dm#j i R#Z#i Dci

N) exR#i `#i i Dci

4| m#i Iv ex W#j R#Z#q dm#j i #j#i# t#K#b#mgq dmj msM# K#i#Z nq?

K) 50% exR c#K#i mgq

L) 70-80% exR c#K#i mgq

M) 90% exR c#K#i mgq

N) 100% exR c#K#i mgq

5| AvL dmj Kx c#W#Z#Z msM# Kiv nq?

K) g#L# L#o

L) g#j #rc#U#b K#i

M) #M#ov #K#U

N) P#q# K#i

6| f#v# K#f#v#e g#ov#B Kiv nq?

K) M#ai c`Z#j

L) t#t#W#j #\_#v#i

M) j #W# t#U#v# K#i

N) K#Y#k#j #i

7| exR#K KZ kZ#sk Av`Z#v ch#S#i K#b#v nq?

K) 20-25%

L) 15-20%

M) 12-15%

N) 10-12%

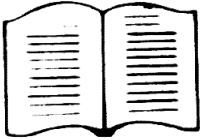
### e'enwiK



## cW 6.5 cvU t¶tZi Pvi v cZj v Ki Y I mvi c¶qm

G cvU tk¶l Avcub

- ◆ cvU t¶tZi Pvi v cZj v Ki t¶Yi Kvi Y e'vL'v Ki tZ cvi teb |
- ◆ mWVK c×vZtZ I mWVK mgq cvU i Pvi v cZj v Ki tZ cvi teb |
- ◆ mWVK c×vZtZ I mWVK mgq cvU t¶tZ mvi c¶qm Ki tZ cvi teb |



BwáZ dj tbi Rb GK  
 GK i RiqtZ 1,70,000  
 t\_tK 1,75,000 chS/cvU  
 MvO\_vKv evÄbrq |

c¶ZK dmtj i tejvqB GKvU Mt¶Qi mý' I 'fvweKfvtete t¶P\_vKvi Rb KZUKzRvqMvi c¶qvRb A\_er c¶Z GKK RiqtZ KZ\_tjv MvO\_vKv DvPZ Zv Rvbr bv\_vKtj dmtj i Avkibjfc dj b cvl qv hvq bv| c¶qvRtbi AvZwi³ MvO\_vKtj Mt¶Qi cvMhY, cmbi Pm n`v cyY BZ'w' tZ NvUwZ t\_Lv t'q | dtj cyonxbZvi Rb BwáZ dj jvf nq bv | Ab'w'tK c¶qvRtbi Zjybq Mt¶Qi mSL'v Kg ntj MvO c¶Z dj b WQYv evotj I tgvU dj b A¶bK Ktg hvq | wtkl Kti cvU dmtj i tejvq GKK RiqtZ Mt¶Qi mSL'v dj tbi Dci fixYfvte c¶ve we'ri Kti | BwáZ dj tbi Rb GK GK i RiqtZ 1,70,000 t\_tK 1,75,000 chS/cvU MvO\_vKv evÄbrq |

cvUexR vUvutq A\_er j vBtb ecb Kiv nq | mvavi YZ tn±i c¶Z KwLZ cwi gvY Mt¶Qi mSL'vi PivBtZ WQytenk mSL'K MvO cvevi Rb tenk exR ecb Kiv nq | RiqtZ cmbi 'fZv, AvMvvi c¶'vte, exRi vbagvtbi Avtzi`Mg ¶lgZv, AvZwi³ ZvcgvIv, Avrevó BZ'w` c¶ZKj cwi cvkR Ae'vi Rb c¶q mgqB t\_Lv hvq A¶bK exR MRvq bv A\_er A¶bK Pvi Avtzi`Mtgi ci tQvU Ae'vtZB gviv hvq | c¶qvRtbi Zjybq Pvi mSL'v tenk ntj Pvi cvZj vKiY hZ mnR Pvi mSL'v Kg ntj Zv bZb Kti Pvi tivct¶Yi gv'tg kb'vb ci-Y Kiv tZgb mnR bq, eis LqB Kiv | GRb'B ectbi mgq exRnvi WQYv evotq t'qv nq | cti c¶qvRtbi AvZwi³ Pvi v DvWtq KwLZ mSL'K Pvi t tL t'qv nq |

### cW t¶tZi Pvi v cZj v Ki Y (Thinning) c×vZ

cvU i AvZwi³ Pvi  
 me\_tj v GKvti bv DvWtq  
 avtc avtc DvWtZ nq |

cvU i AvZwi³ Pvi me\_tj v GKvti bv DvWtq avtc avtc DvWtZ nq | me\_tj v GKvti DvWtq vbtj dvkv Mt¶Q Wj cvj v MRvevi c¶YZv evx cvq | GtZ cvU i Avk Qovtvi mgq Avtki tek WQyAsk vQto vWtq cvUlvotZ AvUtk\_vtk Ges cvU i dj b A¶bKvstK Ktg hvq | ZvQvov melvQ GKvti cvZj v Kti t¶j vi ci cieZv¶Z MvO ti vM ev tcvKv vri v Avp'vš' ntj c¶qvRvq mSL'K MvO vUvKtq i vL v m'e nq bv etj dj b Kg nq |

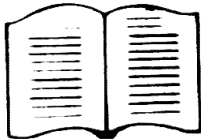
mvavi YZ cvU i Pvi v 2/3 evti cvZj v Kiv nq | Pvi eqm hLb 10-12 v`b Ges D'PZv 2-5 tmvUvUv nq ZLb c¶gevi cvZj v Ki ab | c¶g vbowb t'evi mgqB cvZj vKi t¶Yi KvRiU ntq hvq | vZxq evi Pvi eqm 30-35 v`b Ges D'PZv 50-60 tmvUvUv ntj AvwK NbZpewkó 'vtbi Pvi v cvZj v Ki ab | Gmgq DvWtbr MvO\_tj v kvK ev tMv-Lv`v vntmte e'eüZ ntZ cvti, Ab\_vq Mt¶Qi `y'vvi i ga'eZx'vtb tdtj i vL, Gi dtj G\_tjv ctP vWtq gvU tZ 'Re c`v`v'vM Kti | cvU i D'PZv hLb 1 vgvUv Qvotq hvq ZLb ZZxq evi cvZj v Ki ab | G cvUtk evQcvU ej v nq Ges cvPq Avk l cvl qv hvq | Zte Avk t`L tZ mý' i ntj I tZgb k³ nq bv | ZZxq evi cvZj vKi t¶Yi gv' D'v'k' ntj v GKB e'v'mi cvUMvQ ti tL vPKb MvO\_tj v Avj v`v Kti t¶j v thb RvM t'qvi mgq me\_tj v MvO GKB mgq I mgfvte ctP |

cŭgevi ũbombi mivn`th`  
Ges cieZiRv`j KŭP ũ`tq tKtU Priv AcmiY Kiab| eo Priv  
tUtB DVv`j ũkKtoi m`½ A`bK gŭU D`V Av`m I Avkcv`tki Ab`vb` Privi ũũZ nq|aib  
tũũZ tiv`ewo ev tFRv ũksev iKbv th tKiv Ae`vq ũbomib t`qv hiv ũkS` cvU tũũZ Zv  
A`bK mgq m`e nq bv| cvU tũũZ ũbomib t`qv ev cvZj vKi`Yi mgq Aek`B tLqj i vLj  
thb gŭU m`vZtmtZ ev tFRv bv v`tK| tFRv gŭUtZ cvtqi Qvc ev gŭUtZ cv tWte tMtj  
tũũZ cŕek Kiv ũK bq| GtZ cvtUi ũkKo ũQto ũMtq Mv`Qi ew` e`vnZ nq|

**mvi cŕqM**

dvêjx tZiv RvZ Qvor Ab`vb` Rv`Zi tejvq ectbi cte`tkl P`tl tn±i cŕZ 50 tKŭR  
BDŭi qv, 25 tKŭR ũJGmıc, 45 tKŭR ũgD`tiU Ae cUvk, 45 tKŭR ũRcmvıg I 11 tKŭR ũR¼  
mıj tdu mvi fıj fıte ũgŭkZ Kti RıgtZ ũQŭtq ũ`b| dvêjx tZiv cvtUi Rb` 100 tKŭR  
BDŭi qv, 50 tKŭR ũJGmıc, 90 tKŭR ũgD`tiU Ae cUvk, 45 tKŭR ũRcmvıg I 11 tKŭR ũR¼  
mıj tdu GKB fıte cŕqM Kiab| exR ectbi 45-50 ũ`b cti Ab`vb` Rv`Zi tejvq 50  
tKŭR BDŭi qv Ges dvêjx tZiv Rb` 100 tKŭR BDŭi qv iKbv emıj i m`½ ũgŭkZ ũetKtj i  
ũ`tK Dcvı cŕqM Kiab|

tMvei mvi ev Kt`úv÷ cvl qv tMtj dvêjx tZiv RıgtZ tn±i cŕZ 9 Ub Ges Ab`vb` Rv`Zi  
tejvq 4.5 Ub cŕg P`tl i ci mg fıte Qıotq ũ`b|



**mıgg®**

ũewfbæcŕZKj Zv KŭUtq DVvi j`ũũ` cŕgZ KŭLZ msL`K Privi tP`tq tewk Priv MRıtbıvı  
Rb` cvU exR ecb Kiv nq| cieZiRZ Priv tıjvi mŕzew`xi Rb` A`cũvKZ.tewk Nb`Zıj  
Priv tıjv`K ũewfbæew`x chıq Acmiıb Kiv nq| G Qvorı mvdj`RbK fıte cvU Drcv`tbi  
j`ũũ` RıgtZ ũbw`ŕ gv`vq mvi cŕqM Kiv nq| mgqZ cvU tũũZı Priv cvZj vKiY I mvi  
cŕqM Kiv nıj cvtUi dj b Ges bMZ gvb Dfqb ew`x cvq|



### Povšgjqb

#### msw]B I iPbvj-K ckae

1. Dv`i Acwi nvh`Lvt`vcr`vb ej tZ Kx tevSvq? Dv`i Acwi nvh`Lvt`vcr`v`bi GKwU Zvwj Kv c`Z Ki ab|
2. mvi KvK etj? mvi KZ cKvi I Kx Kx?
3. bvBtUtRb, dmdim I cUmkqvg mieivKvix c`Z`K RvtZi `tUv Kti mti i big wj Lj|
4. mti i gvT v Kxfvte wbjcY Kiv nq wj Lj|
5. Priv cvZj vKiY Kivi KviY Kx?
6. exRvni tewk e`envi Kiv nq tKb?
7. cvU MvO GKvxi tewk cvZj v Kti w`tj Kx nq?
8. AvMvQvi RxebKvj m`uKZ fM, tji vi bvg Ki ab| AvMvQv `gtbi bmvZgvj, tji v eYv Ki ab|
9. gvj wPs KvK etj Ges KZ cKvi eYv Ki ab|
10. evsj v`tk tmP I w`vktbi, iazjeYv Ki ab|
11. tmP i cwi Drm, tji vi bvg wj Lj|
12. t`kxq tmP hšcWZ, tji vi bvg wj Lj| wvfbocKvi tmP c`wZi eYv w`b|
13. fcp`tmP c`wZ, tji vi bvg D`j L Ki ab| cwb w`vktbi UvBj c`wZ eYv Ki ab|
14. w`vktbi exbvj v c`wZi m`ear, tji v eYv Ki ab|
15. dmtj i cwi c`Zv KZ ai`bi I Kx Kx evStq wj Lj|
16. dmj msMh ej tZ Kx tevSvq? tKvb tKvb cwi w`wZi Kvi tY dmj msMh m`wK mgtqi AvtM Ki tZ nq?
17. dmj msMni c`wZ, tji v wj Lj| Pxbver`vtgi cwi c`Zvi j`Y eYv Ki ab|
18. tRvqi tMvLv`w`nmvte 60 w`tbi AvtM e`envi Kiv nq bv tKb?





**DĒigjv**

**cW 6.1:**

1| M 2| N 3| M 4| M 5| K 6| M

**cW 6.2:**

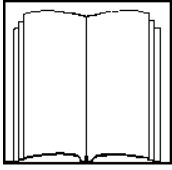
1| L 2| L 3| L 4| M 5| M 6| N

**cW 6.3:**

1| K 2| M 3| L 4| L 5| K 6| L 7| N

**cW 6.4:**

1| N 2| L 3| L 4| L 5| M 6| N 7| N



Z\_mf

Avj g, Gg. Gm; BKeyj , uJ. Gg. uJ; Awgb, Gg. Gm I Mvddvi , Gg. G, 1988| Kwl.ZmEK  
dm t j i Drcv` b I Dbq b| cKvkK - uJ Gg, RqvBi web BKeyj , mivRMÄ|

BKeyj , uJ. Gg. uJ; Mvddvi , Gg. G; Awj , Gg. GBP; Avj g, Gg. Gm. I Awgb, Gg. Gm,  
1992| Kwl.ZtEj tgšj K mel qvej x| cKvkK mÄq Avj g mvg; 392 DEi  
kvnRvrvbcj, XvKv|

Kšjy, Gg. G. I Zvj š`vi , Gg. Gb. AvB, 1981| gvVkm` Drcv` tbi mewfbækj vtKškj |  
evsj vt` k Kwl.Mtel Yv KvDwYj , dvq#MU, XvKv-1215|

Kšjy, Gg. G, 1985| evsj vt` tki Lv` km` I A\_Rix dmj | evsj v GKvtWgx, XvKv|

Kšjy, Gg. G. I Zvj š`vi , Gg. Gb. AvB, 1981 | Kwl.ZtEj tgšj b mZ | evsj v GKvtWgx,  
XvKv|

tNvl , Gm. we. tK, 1983| e`enwvi K Kwl. weAvb I tMv-cij b| fvi Zx ek ÷ j , 6, i gubv\_  
gRg` vi ÷ u, Kvj KvZv-700009|

evsj vt` k avb Mtel Yv Bbw÷ uJDU, 1991| AvaybK av tbi Pvl | cKvkK-gnvcw Pvj K, we.Avi.  
Avi .AvB, Rqt` ecj, MvRxcj|

fZv, Gg. Gm. BD, 1996| dmj Drcv` tbi tgšj b mZ | evsj vt` k Kwii Mi x uk ¶| vtewW, XvKv|

Johnson, C.B.; Mannering, J. V. and Moldenhaur, W.C. 1979. Influence of  
Surface Roughness and Clod Size and Stability on Soil and Water  
Losses. Journal of American Soil Science Society 43: 772-777.

Mabbayad, B.B. and Obordo, R.A. 1970. Land Preparation. In: Rice Production  
Manual. IRRI.

Phillips, S.H. and Young, H.M. 1973. No Tillage Farming. Reiman Associates,  
Milwaukee, Wisconsin. p. 224.

Thakur, C. 1980. Scientific Crop Production. Vol. I and II. Metropolitan Book  
Co. Pvt. Ltd. New Delhi-11002.

***Lıgvi e¨e ¯ı***

## Lvgvi e'e-v

gnv gbxix i jkx etj tQb, ÔmetPtq eo Ges meK tMŠi egUŪZ ũkí nŭj v Kwl. jŌ evsj vt`tki RbMŭYi cãvb RmeKv nŭj v Kwl. | Kwl. Dbqŭbi mvŭ\_ t`tki A\_ŠowZK I mvgvRK Ae-vi Dbqvb NŭU| ũkŭí i Kuvgvj Kwl. B thvMvb t`q|

Kwl. ej tZ i aygvWdmj Drcv`bŭKB eŠvq bv| ci` cij b, ci` ũPvKrmv, grm` Pvl, ebue`v cŭvZl Kwl. i Ašifŭ ũel h| Kwl. AvR GKŭU mŭysMŭVZ I mŭŭZŭŭZ MŭZkxj ũeÁvb|

evsj vt`tki AwaKusk KIK AvRI mbvZb avivq Kg SŭKcŭKwl. cŭnyŭ e`envi KiŭQb| GŭZ Avkvbjfc Drcv`b bv nŭq A\_ŠowZK Dbqvb nŭ"Q axi MŭZŭZ| dtj Kŭvi cwi kŭgi cŭi I KŭŭKi Av\_ŠovgRK Ae-v Lvi v iŭq tMŭQ| cwi emi K Lr` NvUwZ, cŭKwZK eb`v I Liv, Avi Kwl. DcKiŭYi Eaŭŭj` I `ŭcŭc`Zv KŭŭKi ũechŭŭK Zj ũšZ KiŭQ| G cŭŭqŭq ŭŭZ` KIK Avi I ŭŭZ`, Avi eMŭPvlx ŭŭgnxb, ŭŭgnxb nŭ"Q MŭgQvov Dŭv`|

Kwl. I KIKŭK i ŭŭv KiŭZ nŭj KmtŭKi Drcv`b Z\_v Avq evovŭZ nŭe| Gi Rb` KIKŭK ũeÁvŭŭŭŭEK cŭnyŭ ũkŭŭv ũŭq` ŭŭZv emotŭ Kwl. i AvaybKxKiY KiŭZ nŭe| Kwl. tZ `ecŭeK cwi eZŭ AvbŭZ nŭe| Avi ZvB cŭŭŭg Avgvŭ`i eŠŭZ nŭe evsj vt`tki KIK I Kwl. tK| mvariY `ŭŭZ bq, meŭŭŭK ũeÁvbmŭšZ mvgvRK `ŭŭŭKvY t\_ŭK, hvŭK ejv nq ŐLvgvi e'e-vŭ|

## BDibU 1 Lvgvi e'e-`vi aviYv

mm̄÷g ev e'e-`v ntjv GKwU wbr`θ m̄xvi (Boundary) gta` KZ,tjv Dcv`v̄tbi (Element) m̄m̄sj b (Assemblage) h̄t`i gta` ci-`úi M̄fxi Kḡm̄úK̄(Interrelationship) w̄`ḡvb| GB m̄úK̄GKwU e`w̄Zμgx AvPiY (Behaviour) ev w̄μqv̄i m̄p̄ K̄ti| t̄m̄U ntjv e'e-`vi tKvb Astk DĪxcbv (Impulse) w̄ tj Zv t̄M̄Uv Astk DĪxcbv Qovq| mnR K-`vq, e'e-`v ntjv hv Gi tKvb Astk evB̄ti i DĪxcbvq m̄gv̄M̄K̄f̄īte (As a whole) c̄l̄Zμqv̄ (Reacts) t`Lvq ev m̄vov t`q|

Dbq̄tbi D̄t̄i`k` eZḡvb c̄w̄ex `̄Z̄ c̄w̄i ēw̄Z̄ n̄t`Q| Gi m̄v̄\_ Zvj w̄ḡj v̄tZ w̄b̄tR̄t`i K̄w̄l̄tZ c̄w̄i eZ̄B̄ NUv̄tZ m̄q̄lg I Dc̄t̄h̄v̄M̄x K̄ti t̄bqv̄ c̄l̄qv̄Rb| mm̄÷g ev e'e-`vi `̄w̄t̄Z c̄w̄i eZ̄B̄ L̄ḡB̄ R̄w̄Uj c̄l̄μqv̄, hv e'e-`v m̄xvi (System boundary) w̄f̄Zi ev evB̄ti t\_`t̄K n̄tZ c̄v̄t̄i| c̄w̄i eZ̄B̄bi ḡj- P̄m̄eK̄w̄V n̄t`Q m̄gm̄v̄ I Ae-`vi mg`K̄ aviYv jv̄f̄ K̄iv| m̄gm̄v̄i Āt̄bK̄ Ask\_`v̄K̄t̄Z c̄v̄t̄i| w̄K̄S̄ Avjv̄v̄f̄īte w̄ēw̄f̄b̄e Astki m̄gv̄arb t̄M̄Uv̄ m̄gm̄v̄i m̄gv̄arb bq|K̄iv̄Y Ask,tjv ci-`úi w̄b̄f̄P̄k̄j|

GK\_v mZ` th, Av̄ḡv̄t`i K̄w̄l̄.Dbq̄b̄ Kīt̄Z n̄t̄e| Avi Z̄v̄B̄ c̄l̄t̄ḡ Kl̄t̄Ki Ae-`v, c̄w̄i t̄ek I m̄gm̄v̄t̄K̄ eS̄t̄Z n̄t̄e| t̄et̄P\_`v̄K̄vi Rb` K̄I.K̄ `̄Z̄ ēú D̄t`̄v̄M̄ I c̄h̄v̄P̄ evQv̄B̄ Ges M̄h̄Y K̄t̄i b| G K̄v̄t̄R̄ Z̄ūiv̄ m̄v̄avi Y Ab̄f̄w̄Zi (Common sense) θ̄v̄iv̄ c̄ix̄q̄v̄ P̄r̄j̄v̄b, S̄w̄K̄ t̄bb, D̄m̄w̄eb̄ K̄t̄i b Ges ēúḡl̄x̄Zv̄ Av̄t̄bb| w̄b̄R̄ c̄w̄i t̄ēt̄k̄ Kl̄t̄Ki G Ávb-`q̄Zv̄ c̄w̄i K̄í b̄w̄e`, M̄t̄ēl̄K̄ I Dbq̄b̄ K̄ḡx̄P̄ i θ̄v̄iv̄ D̄t̄c̄w̄q̄Z n̄t̄q̄t̄Q| Kl̄t̄Ki m̄gm̄v̄ K̄w̄l̄.Lvḡv̄t̄i i m̄ú, c̄w̄i t̄ek, w̄ec̄w̄Ē I Av̄K̄v̄-`q̄v̄i Av̄š̄t̄μqv̄i GK̄ R̄w̄Uj m̄s̄w̄ḡk̄Y| Gi t̄K̄vb̄ L̄w̄ÚZ̄ m̄gv̄arb̄ t̄b̄B̄| īt̄q̄t̄Q̄ m̄gv̄w̄M̄K̄ m̄gm̄v̄ m̄gv̄arb̄t̄bi c̄l̄qv̄R̄b̄x̄q̄Zv̄| ḠŪv̄B̄ Av̄R̄t̄Ki h̄t̄M̄ K̄w̄l̄i ev-`eZv̄|

w̄ēÁv̄b̄x̄iv̄ ēt̄m̄ t̄b̄B̄| q̄l̄z̄a q̄l̄z̄a K̄w̄l̄.Lvḡv̄t̄i i R̄w̄Uj m̄gm̄v̄ m̄gv̄arb̄t̄b̄ Z̄ūiv̄ w̄ēM̄Z̄ `̄B̄ `̄k̄K̄ āt̄i mm̄÷g ev e'e-`v w̄f̄w̄ĒK̄ KḡM̄t̄ēl̄Yv̄ (Action research) īīǣ K̄t̄i t̄Q̄b̄ K̄l̄t̄Ki Lvḡv̄t̄i| Z̄ūiv̄ Kl̄t̄Ki `̄K̄x̄q̄ Ávb̄ I `̄q̄Zv̄t̄K̄ K̄v̄t̄R̄ j̄v̄M̄t̄b̄v̄i Rb` K̄I.K̄t̄K̄ M̄t̄ēl̄Yv̄i Ask̄v̄i (Research partner) K̄t̄i t̄Q̄b̄| Avi Ḡm̄ē w̄K̄ŌB̄ n̄t̄q̄t̄Q̄ Lvḡv̄i e'e-`vi (Farming systems) I ci w̄f̄w̄Ē K̄t̄i|

G BDib̄t̄U Lvḡv̄i I Lvḡv̄i e'e-`vi m̄s̄Áv̄, Lvḡv̄i e'e-`vi aib, `̄ew̄k̄ó, A½ Ges A½m̄ḡt̄ni w̄ēw̄f̄b̄e Av̄š̄t̄μqv̄i I ci w̄e-`w̄i Z̄ Av̄t̄j̄v̄P̄b̄v̄ K̄iv̄ n̄t̄q̄t̄Q̄|

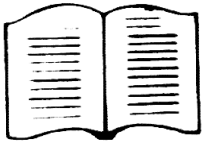


## ciW 1.1 Lvgiti i msAv I cKvi

G ciV tkfi Arcub-

- ◆ Lvgvi wK I tKb Zv ej tZ I wj LtZ cvi teb|
- ◆ Kul. I Lvgvi KvK ejt Zv eYBv Ki tZ cvi teb|
- ◆ Lvgvi KZ cKvi I wK wK e`vL`v Ki tZ cvi teb|

### Lvgvi wK I tKb



b`xgvZK. I Mgc`avb ersj vt`tki gvb`j i c`avb RweKv n`Q Kul. | Kul. i ubqš i n`Qb KIK | KIKi emZemo I Zui cwi evi, Zui t`fZ, cKz er tWvev, MiægumI, Qvmj-tfov, nuz-gym, Kezi cfwz GKt i n`Q Zui GKU Lvgvi | GKRb KIK Zui Lvgiti i cZuU m`u` er Dcv`vb GKU AwfbaDti tk` mjo er mslth Kti `vtKb | tmU ntjv KIK cwi evti i Lv`, e`i erm`vb, wk`qv, wPukrmv cfwz tgšuj K Pwin`v ci-Y Ges mvuMK Dbaq |

KIKi emZemo I Zui cwi evi, Zui t`fZ, cKz er tWvev, MiægumI, Qvmj-tfov, nuz-gym, Kezi cfwz GKt i n`Q Zui GKU Lvgvi |

KIKi Gme m`u` er Dcv`vb mjo er mslth tKej Dcv`vb ubwDZ Ki tZ cvi bv | GKUZ tft e t`Ljt B Avgiv eStZ cvi tev th, KIKi Pwin`v I `qvZvi cvkvcumk Lvgiti i cKuzK I Av`mvguRK cwi tek Ges weea m`thm mjev Zui Dcv`vb Kgfk cfwz er ubqšy Ki tQ | ZvQrov cZuU wfbadrcv`b c`uqv GKU Ab`uI I ci wbfPkj | thgbndmj Dcv`vb KvR Miæ er gumt i Qviv Rng Pvl Kiv Ges Dnt`i tMei gumtZ t`qv c`qvRb | Ab`v tK Miægumt i Lvev ifc dmtj i Lo, fit, Kez, `Lj cfwz c`qvRb | mntR ejv hvq th, GKU ubw`S cwi tek wK`Lvgiti dmj, dj-gj-, ci`cml, grm` I ebR m`u` Dcv`vb c`uqv KZK, tjv Avšt m`u`K`P Qviv msk` er mNex er msthrZ |

### Kul. I Lvgi

Lvgi ntjv KIK cwi evti i GKU mysMVZ Dcv`vb e`e`vcbv I tfrMi GKK thLvtb dmj, ci`cml, grm`, dj-gj-, MQvcjv cfwz cYi mguSZ A`wvZK Dcv`vb c`uqv Pjt, hv cKuzK I Av`mvguRK cwi tek Qviv cfwz er ubqšy nq |

Gevit Lv hvK weAvbwf`EK AvwbK Kul. I Lvgiti msAv, tjv Kx Kx | Kul. ntjv Ggb KgRvU hv dmj, ci`cml, grm` cfwzi A`wvZK Dcv`vb ubqšy Qlvirmgav GKU ubw`S GjvKvq mysMVZ e`e`vcbv gva`tg m`ubv Ki tQ | GLvtb ubw`S GjvKv n`Q KIKi emZemo, t`fZ, cKz-tWvev BZ`w | GLvtb cKuzK cwi tek ubqšy Ki tQ | Avi Lvb n`Q KIK cwi evi, hvi m`m`iv GKt emevm I Avvi Kti b | Ges hv GKU msMVZ e`e`vcbv GKK | GLvtb mvuRK cwi tek I m`thm mjev cfwz i vL`Q |

Lvgi ntjv KIK cwi evti i GKU mysMVZ Dcv`vb e`e`vcbv I tfrMi GKK thLvtb dmj, ci`cml, grm`, dj-gj-, MQvcjv cfwz cYi mguSZ A`wvZK Dcv`vb c`uqv Pjt, hv cKuzK I Av`mvguRK cwi tek Qviv cfwz er ubqšy nq |

### Lvgiti i cKvi

Kul. ci`exi c`PxbZg tckv | ZvB weeZ` c`uqv h`M h`M wefwba`epT`gq Kul. i mjo ntqtQ | tmB mtf` Lvgi I ntqtQ wefwba`cKvi | GLvtb Lw msu`vBfvte Lvgi-Gi cKvi t`v Avtjv Pbv Kiv ntqtQ |

**~vqzj vfiEtZ Lvgi vzb cKvi | thgbN**

- 1/ ~vqx Lvgi (Settled farming)
- 2/ ~vbsli x Lvgi (Shifting farming)
- 3/ hvhvei Lvgi (Pastoral nomadism)

**ctY`i msL`vi vfiEtZ Lvgi cab `B cKvi | h\_wN**

- 1/ GKK cY` Lvgi (Mono farming)
- 2/ ugk<sup>a</sup> Lvgi (Mixed farming)

**A\_`vuzK `votKv t\_`k Lvgi `B cKvi | h\_wN**

- 1/ fiY tcvlY Lvgi ev AvZ`cvlY Lvgi (Subsistence farming)
- 2/ emYvR`K Lvgi (Commercial farming)

GLb vewfbalvigi m`utK`msv`B Avtj vPbv Kiv nt`Q|

~vqx Lvgi: b`x vetaSZ mgfmg, gij fig I Ab`vb` mgZj GjvKvq AtbK ermi ati Mfo DVv Lvgi tK ~vqx Lvgi etj |

~vbsli x Lvgi: cvitoi Xvtj Atc`vKZ.Aby` ~vrb GK ev `B ermi dmj Drcv`tbi ci Ab` GjvKvq Pvl evm Kiv tK ~vbsli x Lvgi etj |

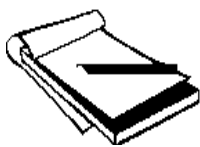
hvhvei Lvgi: cvivo-ceZ ev gij figi ZYvAtj vewfbacKvi ci`cvj b Lvgi AbeiZ ~vbsli Z nt`Q bZb Nv`mi mUvrb, G, tj vtK hvhvei Lvgi etj |

GKK cY` Lvgi: GKvU cY` m`v`j Z Lvgi tK GKK cY` Lvgi etj | avtbi Lvgi, Pvl evMvb, Mvfxi Lvgi, n`v`mi Lvgi, gv`Qi Lvgi BZ`v` |

ugk<sup>a</sup> Lvgi: `B ev ZtZvmaK cY` m`v`j Z Lvgi tK ugk<sup>a</sup> Lvgi etj | eisj v`tki Mtgi cUvU Lvgi GK GKvU ugk<sup>a</sup> Lvgi | v`tki fite cvi Kiv Z ugk<sup>a</sup> Lvgi tK mgvSZ Lvgi (Integrated farming) evv nq|

fiY-tcvlY ev AvZ`cvlY Lvgi: th Lvgti i Drcv`b ev Avq cvievti i i`aytgSvj K Pm`v ev fiY-tcvlY tgUvq ZvtK fiY-tcvlY Lvgi etj | eisj v`tki Mtgi cUq meB fiY-tcvlY Lvgi | th mg`- Lvgti i Drcv`b KIK cvievti i fiY-tcvlY tgUvZ cvti br tm mg`Lvgi I GB cKvi Lvgti i ASf` | G cKvi i Lvgti jvf tvKvrtbi v`tk tZgb `vot`qv nq br|

emYvR`K Lvgi: e`emvqK vfiEtZ jvFRbK Drcv`tb vbtqvRZ Lvgi tK emYvR`K Lvgi etj | thgbN Pvl evMvb, i`v`v evMvb, DcKj xq vPsvv Pvl, `B Drcv`b Lvgi BZ`v` | AvDk, Avgb Ges tev`iv avtbi Pvl eU, Y dmj Pvl i D`vni Y|



**Ablyj b (Activity):** Lvgi ej tZ Avcub Kx tevSb? ASZt 5vU Lvgti i bvg D`j lceR eisj v`tki v`gib Lvgti i tkYvmeb`vm Ki ab|



### cuVhEi gj'iqb 1.1

#### mWK DEti i cuK, UK Pý (V) w b |

- 1/ KIK Zvi Lvgvii cZuU m=ú` Kx DfI k" mup Ktib ?  
 K) wevFbe  
 L) AvvFbe  
 M) gnr  
 N) cOqvRb
  
- 2/ ~vqfZji wvEzZ Lvgvi KZ cKvi ?  
 K) Pvi  
 L) cuP  
 M) `B  
 N) wZb
  
- 3/ cY'i mL'v wvEzZ Lvgvi KZ cKvi ?  
 K) Pvi  
 L) cuP  
 M) `B  
 N) wZb
  
- 4/ Kwl.KgRvU GKwU wbu`G Gj vKvq m=ubanq, GLvfb wbu`G Gj vKv tKvbuU ?  
 K) emZemo  
 L) t9TZ  
 M) cKz-#Wver  
 N) me, wj GKfT
  
- 5/ Kwl.cwL exi Kx i Kg tckv ?  
 K) cuPxbZg  
 L) AvavbKZg  
 M) ga`hlyq  
 N) beZi
  
- 6/ wefkl fite cwi Kwí Z wqk<sup>a</sup>Lvgvi tK Kx etj ?  
 K) eúglyx Lvgvi  
 L) mgwšZ Lvgvi  
 M) eúcy" Lvgvi  
 N) RvUj Lvgvi



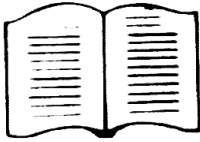


### cw 1.2 Lvgvi e`e`vi aib I `enkó`

G cvW tk`l Arcvb-

- ◆ Lvgvi e`e`vi aib e`vL`v Ki`Z cri`teb
- ◆ Lvgvi e`e`vi msÁv ej`Z I wj Lt`Z cri`teb
- ◆ Lvgvi e`e`vi `enkó` ,tjv eY`v Ki`Z cri`teb|

### Lvgvi e`e`vi aib



KI`Ki DbqbtK`xN`vqx Ki`Z ntj cL`tg ArcvbtK eS`Z nte Kxfvte Lvgvi ,tjv Drcv`b KvR Kti Ges Kxfvte m`ú` e`enití M`gY KIK cwi`evi I mgvR w`xvšl M`hY Kti |GKIU t`tki w`fbaeGjvKvq Kul. w`fbaeaitbi ntZ cri`t| Bnvi eo KviY ntjv KI`Ki c`B m`ú`i w`fbzv| t`fSZ m`ú` thgbN` fvgi cKvi, gnu I Gi DePZv, ep`cvZ, mh`jvK, tm`Pi cwb BZ`w`i w`fbzv t`Lv hvq| mgvb ,iazc`Ab` w`lqwr` thgbN` fvgi gwj Kvbn, t`fZi AvKvi, evRvi e`e`v, FY I DcKiY m`eav BZ`w`i t`Zi w`fbzv w`ivR Kti | GQvov mgvRi gj`teva, Ávb, `fZv, ch`p BZ`w`i I Lvgvi Drcv`tb c`fve tdtj | Gifc t`Lv- A`Lv, Rvbr-ARvbr A`bK w`KOb` hM` hM` a`i GKIU GjvKvi Kul. Drcv`b ev Lvgvi e`e`vK w`lqv w`lqv gva`tg GwM`q w`btq P`tj`Q| Kv`RB Lvgvi e`e`v e`uglx Drcv`tbi GKIU mgvS`Z mvgw`M` m`Ev|

### Lvgvi e`e`vi msÁv

Lvgvi e`e`v ntjv KI`Ki j`f, c`lav` I m`ú` Abym`ti Zvi t`fSZ, `Re I Av` mvgw`RK cwi`te`k Drcv`tbi Rb` w`fbae Lvgvi c`Y`i (thgbN` dmj, ci`-cwl, gvr`m, MvQcvjv) m`g`zng`š`q mvab I e`e`vcbv|

Lvgvi e`e`v ntjv KI`Ki j`f, c`lav` I m`ú` Abym`ti Zvi t`fSZ, `Re I Av` mvgw`RK cwi`te`k Drcv`tbi Rb` w`fbae Lvgvi c`Y`i (thgbN` dmj, ci`-cwl, gvr`m, MvQcvjv) m`g`zng`š`q mvab I e`e`vcbv|

Lvgvi e`e`vq Kx NtU Zv AvtjvPbv Kiv hvK| Lvgv`ti t`fSZ m`ú` mgr` (gnu, cwb, evq) ci`-ú`ti g`ta` Av`st`w`qv`i`i`v GK Abb` Ae`-vi (Zvcgv`v, evZvm, ep`cvZ) m`p` Kti | GB m`p` Ae`-v `Re m`ú` mg`t`i (dmj, ci`-cwl, tcvKv, AvMvQv, gvr`m, MvQcvjv, AYR`ie) Kv`h`ej`x c`f`veZ Kti | GB R`emgr` Dn`v`i R`ieb P`t`m`i c`l`qv`i (Rb`x, evob, esk ep`x, gZ`ž) `i`v ci`-ú`ti g`ta` A`bK Av`st`w`qv`i`i`v (c`Z`thw`M`Zv, w`l`K`\_vKv, m`v`e`-v`b, w`g`\_vR`w`eZv) m`ú`beK`ti | Lvgv`ti gvb`j`i`v (KIK cwi`evi/kigK) Zv`i Ávb, `fZv, AwfÁZv I kv`i`i`v `i`v GB t`fSZ I `Re m`ú` mgr` I Zv`i`i`v c`l`qv`i ,tjv w`ep`f`Y`Zvi m`t`\_w`bR c`l`qv`i Rb Abym`ti Kv`R j`vMv|

### Lvgvi e`e`vi `enkó`

Lvgvi e`e`vi `enkó` (Characteristics) ntjv c`l`w`| tm` ,tjvi bvgI msv`f`B eY`v w`b`P t`I qv ntjv|

1| **Lvbv (Household)** : Lvgvi e`e`vq Lvbv ntjv cwi`PvjK| hvi tbZtZ; w`xvšl M`hY I e`e`vcbv Kg`m`ú`b`nq| KIK cwi`evi ntjv GB Lvbv|

2| **fLÚ (Holding)** : GKIU w`b` fLÚ Lvgvi e`e`vi aviY`f`f`I, tmL`v`b Zv M`to D`t`V| KI`Ki emZemo, c`k`z`/w`v`v, t`f`Z c`f`w`Z w`g`tj fLÚ e`S`vq|

**3/ cY (Enterprise) :** cY Qvov Lvgvi eēvi Drcv`b m=ubæŋte bv| Lvgvŋi i dmj, cī-cvnl, gvrn, MvQcvj v, hšçvWZ, AKul.KvR BZ`vī meB GK GKul cY| cY Drcv`tbi mgšqB vevfbæLvgvi eēvī mīó Kŋi \_vŋK|

**4/ Avštµqv (Interaction) :** Avštµhv nŋjv Lvgvi eēvi cŲ`ŋfc| GūU vevfbæmgŋq, cŲµqv I cŲvŋi m=ubæŋq| vevfbæcŲi gŋa Avštµhv, vevfbæcvi evŋi Avštµqv, `vbxq ms`wZ. ev RvWZZŋj mŋ\_ Avštµhv, ŋŋZ I `Re cvŋteŋki mŋ\_ Avštµqv BZ`vī |

**5/ mvgwMŋZj (Holistic) :** Lvgvi eēvi gj-`enkó nŋjv Dcŋi mKj wKQyGKŋI mvgwMŋfŋte KvR Kŋi | GūvŋK Drcv`b eēvī (System) GRb`B ej v nq| ŋŋKvB GKul Qvov Ab` me`w APj nŋe| Zŋe `enkó` ŋjvi cvŋgvY ev `YMZ Kg-ŋenkī Rb` Drcv`b ev Avq Kg-ŋenk nŋZ cvŋi, ŋhū eēvi `enkó|



**cufVĒi gj`iqb 1.2**

**mivK DĒti i cufkšUK ipý (√) v b |**

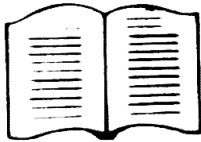
- 1/ t`tki weifbaGj vKvq weifbačKvi Kwl..Drcv`tbi eo Kvi Y tKvbuU ?  
 K) KI.tKi cŮB mæút`i wfbæzv  
 L) KI.tKi D.tI.tk`i weifbæzv  
 M) wfbævRvi e`e`v  
 N) Kwl..ci vgtkP wfbæzv |
  
- 2/ Lvgvti i tfšZ mæú`mgn ci`úti gta` Avštupqv i Øvivi wK mivó Kti ?  
 K) wepI Ae`vi  
 L) GK Abb` Ae`vi  
 M) eüglx Ae`vi  
 N) Avštupqv e`e`vi |
  
- 3/ tfšZ mæút`i Avštupqv mivó Ae`v tKvb mæút`i Kvhpj x cĪmeZ Kti ?  
 K) A%Re mæú`mgtni  
 L) cŮKwZK mæú`mgtni  
 M) `Re mæú`mgtni  
 N) i vnvqubK mæút`i |
  
- 4/ Lvgvi e`e`vi `emkó` KquU ?  
 K) `BvU  
 L) wZbvU  
 M) PiviU  
 N) cvPvU |
  
- 5/ Lvgvi e`e`v eüglx Drcv`tbi Kx i Kg mĒv ?  
 K) LŮ LŮ mĒv  
 L) mivgWŮK mĒv  
 M) `vkvŮK mĒv  
 N) AvavŮK mĒv |
  
- 6/ tKvbuU Lvgvi e`e`vi cŮY`tfc ?  
 K) Avštupqv  
 L) ein:upqv  
 M) cŮZupqv  
 N) `^upqv |



### cw 1.3 eisj v˘tki Lvgvi e˘e˘vi eZgub ifc

G cvV tk˘l Arcub-

- ◆ eisj v˘tki weifbaLvgvi e˘e˘vi avi Yv w ˘Z cvi˘eb|
- ◆ fiY-˘cviY Lvgv˘ti i weifbaifc D˘tj ˘ Ki˘Z cvi˘eb|
- ◆ eisj v˘tki weifbaewYmR˘K Lvgvi D˘vni Ymn D˘tj ˘ Ki˘Z cvi˘eb|
- ◆ eisj v˘tki weifbae˘tbi ewYmR˘K Lvgv˘ti i Zwj Kv ˘Zwi Ki˘Z cvi˘eb|
- ◆ wgk˘Lvgv˘ti i weifbaifc I Ae˘˘img˘ eY˘v Ki˘Z cvi˘eb|
- ◆ eisj v˘tki Lvgvi e˘e˘vi ifc m˘u˘tK˘Av˘tj vPbv Ki˘Z cvi˘eb|



### eisj v˘tki weifbaLvgvi e˘e˘v

eisj v˘tki eZgub Lvgvi e˘e˘v, t˘j v gj-Z: ˘B cKvi˘N (1) fiY-˘cviY ev AvZ˘cviY Lvgvi Ges (2) ewYmR˘K Lvgvi | Gi c˘ZiUB Avevi brbv fitM wef˘3 thwU wP˘I bs-1 G ˘˘L˘t˘bv nt˘j v| Zte ˘˘tki me˘P we˘Z th Lvgvi e˘e˘˘img˘ Gi me, t˘j vB GKwU ˘ewk˘˘ enb Ki˘tQ, Zv nt˘j v fiY-˘cviY Lvgvi | ˘˘tki weifbaGj vKvq tQvU tQvU ewYmR˘K Lvgvi, t˘j v Qwot˘q Av˘tQ|

eisj v˘tki eZgub Lvgvi e˘e˘v, t˘j v gj-Z: ˘B cKvi˘N (1) fiY-˘cviY ev AvZ˘cviY Lvgvi Ges (2) ewYmR˘K Lvgvi |

### fiY-˘cviY Lvgvi

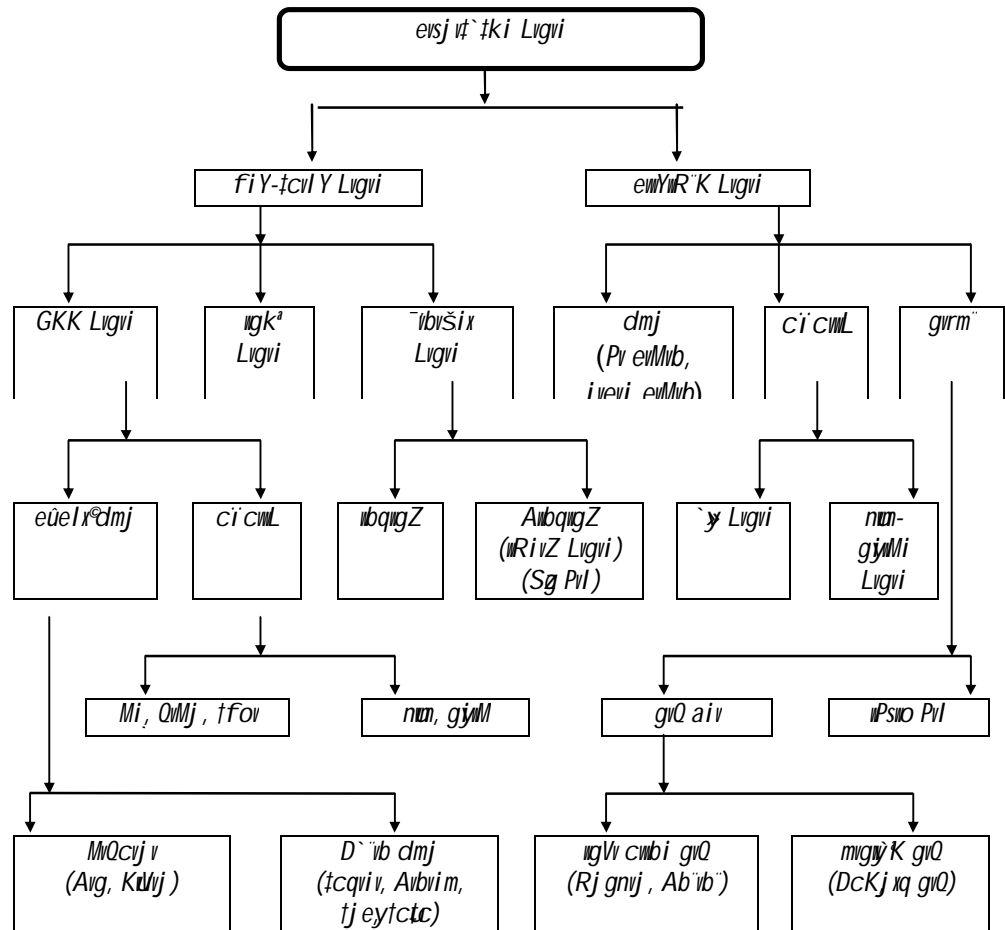
c˘vrbZ: K˘tqKwU Ae˘˘vq GB Lvgvi e˘e˘v ˘˘tk ˘˘L˘v hvq| thgb˘N

- 1| **GKK Lvgvi** : dmj , dj ev ci˘cwiLi Lvgvi
- 2| **wgk˘Lvgvi** : GK˘˘I A˘tK ai˘tbi Lvgvi
- 3| **ZY.figi hihvei Lvgvi** : m˘vavi YZ kKi cij b Ki v
- 4| **˘˘bv˘f˘x Lvgvi** : cinvo A˘A˘tj Sg Pvl , nvl o A˘A˘tj wRivZ Lvgvi |

### ewYmR˘K Lvgvi

eisj v˘tk thme ewYmR˘K Lvgvi i˘t˘tQ tm, wj nt˘˘Q w˘b˘e˘fc˘N

- 1| **dmj Lvgvi** : thgb˘N P˘EM˘t˘g I wnt˘j ˘Ui Pr evMvb, P˘EM˘t˘gi i˘vevi evMvb|
- 2| **c˘i˘cwiL Lvgvi** : thgb˘N gw˘bKM˘A, m˘rfvi, XvKv, wK˘tkviM˘A, gqgbw˘m˘stn ˘y Lvgvi ; M˘vR˘xc˘j, m˘rfvi, t˘bvqvL˘j x, wK˘tkviM˘A˘ g˘jwMi Lvgvi |
- 3| **gvr˘m** : K) gvr˘m˘ Pvl : thgb˘N DcKj xq A˘A˘t˘j ewM˘v wPswoi Pvl , fij ˘vq av˘tbi c˘ti gvQ Pvl , nvl o aib ˘˘t˘t˘Z Mj ˘v wPswoi Pvl |  
L) gvQ ai v : thgb˘N Rj gnr˘t˘j wgvv c˘mbi gvQ, e˘˘˘v˘cm˘M˘t˘i m˘gv˘K gvQ|



**ugk²Lvgi e`e`v**

evsj v`tki gml, ewocvZi aib I Av\_® mvgmRK Ae`v vgtj meP ugk²Lvgi e`e`v (Mixed farming systems) Mto DtvQ| tQvU tQvU fvgLtU AtbK, tjv Df`vM mgušZ Kti cwi emi K ktjK e`envi Kti K.I.K Drcv`b I Avq evovZ tPov KiQb|

evsj v`tki gml, ewocvZi aib I Av\_®mvgmRK Ae`v vgtj meP ugk²Lvgi e`e`v (Mixed farming systems) Mto DtvQ| tQvU tQvU fvgLtU AtbK, tjv Df`vM mgušZ Kti cwi emi K ktjK e`envi Kti K.I.K Drcv`b I Avq evovZ tPov KiQb| thgbNGfite Zviv cKvzi meifcZvq Svk tgvKvej v KiZ mtpo|

ugk²Lvgi e`e`vq evsj v`tk mevfbaDrcv`b e`e`vK Kxfite web`im Kiv nq Zv iPI-2 G f`Lj| GvU ev`te AmsL`fite ntZcvti | Zte eSvi mjeavi Rb` GKvU web`im Kiv ntqQ| GtZ f`Lv hvq th, emZemo mKj LvgitiB itqQ Acwivh`emko` wntmte| vbtP Lvgi e`e`vi Dc-e`e`v, tjv (Sub-systems) GtK GtK Avtj vPbv Kiv ntj v|

**emZemo e`e`v (Homestead systems)**

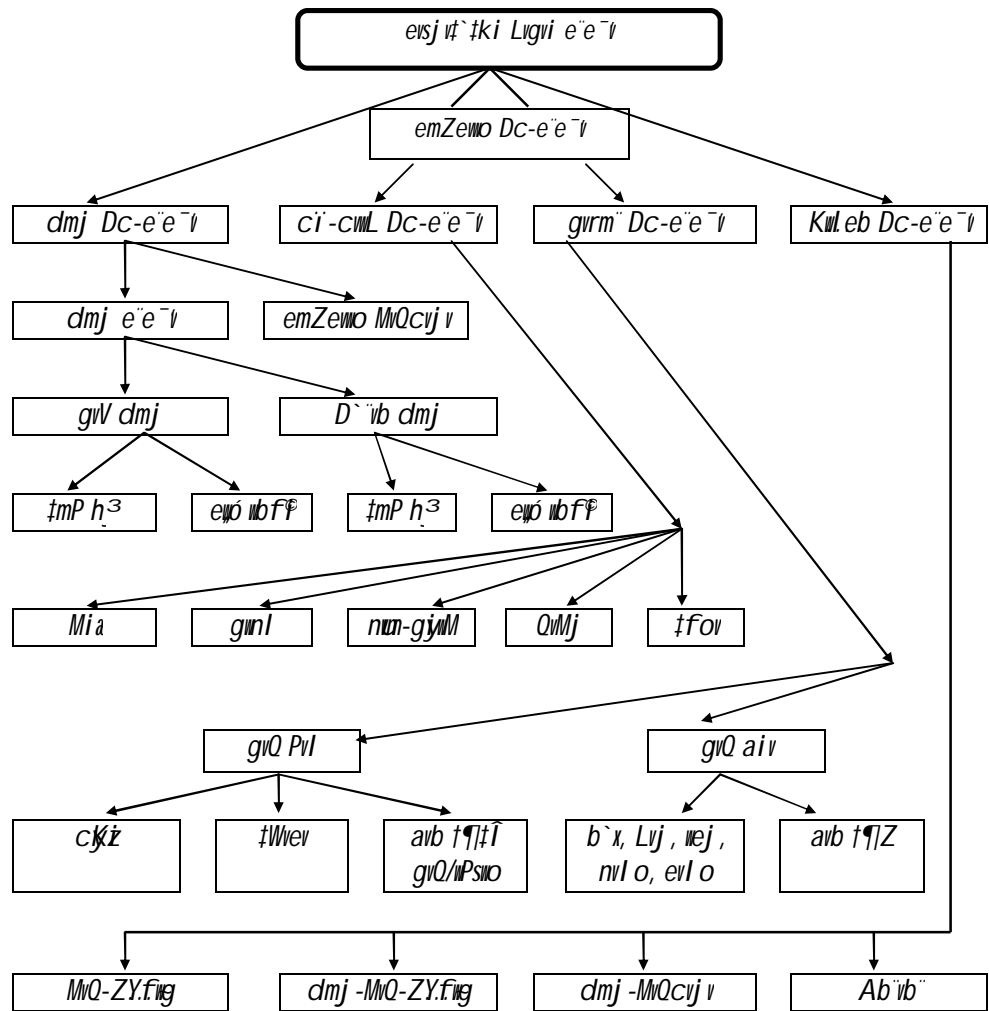
KiKti cwi evi, emovFv, DVvb, cij vbRvg I R½j vbtq emZemo e`e`v Mto Dtv| GLvtb mKj Lvgi KtgP Drcv`b I tfitMi v`všI MpxZ I ev`evqb c`fjc tbqv nq| GKvU Lvgiti i Av`fzi Rb` emZemo e`e`v Aek` c`qvRbxq|

**dmj e`e`v (Crop systems)**

dmj e`e`v gvV dmj I D`vb dmj GB `B fvtM nef<sup>3</sup> | Gi c`ZuUB Avevi tmPh<sup>3</sup> I ep`  
 wbf<sup>3</sup> GB `B fvtM nef<sup>3</sup> | emZemoi MvQcuj v I kvK-meRi Avi GKuU fVM wntmte t`Lv  
 hVq |

**ci-cwL e`e`v (Livestock system)**

ci-cwL e`e`v Mia gwnI, QwMj, tfov I nwn-gjwM GB c`B nefvtM nef<sup>3</sup> | nwn-gjwM Avevi  
 tgui M-gjwM, nwn I Kez`i GB wZb fvtM nef<sup>3</sup> |



wP` 2 : eivj vt`tki wK`Lvvi e`e`vi wewfbaDc-e`e`v I D`vbMmgra

**gvrM e`e`v (Fisheries system)**

gvrM e`e`v gj-Z: `B cKviN gvrM Pvl I gvQ aiv | gvrM Pvl cKz`, wQ`bi tWvev I avb-  
 gvQ ev avb-wPswO GB wZb fvtM nef<sup>3</sup> | gvQ aiv tQvU-eo RjvKq (b`x, Lij, wej, nvl o,  
 evl o) Ges avb t`q`Z gvQ aiv GB `B fvtM nef<sup>3</sup> |

**Kuleb e`e`v (Agroforestry system)**

Kuleb emZemo, t`qZ I cwiZZ Rwg GB uZb`v`tbB Mto D`v`v`Q | Gi mvt`\_ weifbaedmj I c`Yxi msthr`M Pvi c`Kvi Kuleb n`z`c`v`i |

**evsj v`k Lvgi e`e`vi i`c**

c`KZc`q t`tki M`g`v`A`j e`Z`v`tb Kx ai`bi Lvgi e`e`v Mto D`v`v`Q Zvi e`v`b`Zv Avtj v`Pbv Kiv hv`K | B`z`v`g`ta`B Avgiv t`R`tb`w`Q cwi`tek`MZ Ae`vb, KI`tki P`v`v`v` I c`v`av` Ges Z`v`i` `q`Zv, Avb I Awf`A`Zvi ubwi`L m`u` Abv`v`ti Lvgi e`e`v mg`v`S`Z nq | ZvB GKB M`v`gi GKB emoi weifba`K`I`K weifba`Lvgi e`e`v Mto Z`v`z`Z c`v`i`b | Avi w`f`ba`c`v`i`te`tki M`g` n`j G`v`ij Avi I w`f`ba`z`i n`te | `v`d` Kuleb cwi`tek` A`A`j`i` `v`d` M`v`gi m`Kj KI`tki g`ta` Kx Kx Lvgi e`e`v Mto D`v`v`Q t`m`v`j`v` mvi Yx-1 I 2-G t`L`y |

Ggubfvte t`tki weifba  
Kul.cwi`tek` A`A`j`  
weifba`Lvgi e`e`v Mto  
D`v`v`Q | c`v`Z` e`Qi Avevi  
Lvgi e`e`v mg`v`S`q` ev  
m`u`v`i` i`w`K` t`tki  
cwi`em`Z`Z` nq | ZvB ejv  
P`j` Lvgi e`e`v  
cwi`e`Z`v`k`x`j` ev M`v`Z`k`x`j` |

c`v`g` M`g`v`U gv`S`v`i` D`v`z`G`j`v`K`v`q` eb`v`g`v`v` A`A`j` Aew`Z` etj e`Q`i` u`Z`bevi dmj Drcv`b Kiv hv`q | G`v`j`vi g`ta` dmj, ci`c`v`L` I g`v`r`m` D`v`v`v`M` mg`v`S`q` Lvgi e`e`v c`v`g` mg`v`b | w`Z`v`q` M`g`v`U L`v`B ub`v`v`G`j`v`K`v`q, e`Q`i` 6 g`v`m` M`f`xi` eb`v`q` W`j`e`\_`v`tk` G`g`v` A`A`j` Aew`Z` etj e`Q`i` gv`I` G`K`evi` dmj Drcv`b Kiv hv`q | G`L`v`tb` Lvgi e`e`v`i` t`g`v`U` m`S`L`v` 16`v`U` (mvi Yx 2) | G`v`j`vi g`ta` ci`c`v`L` mg`v`S`q` Lvgi e`e`v` dmj mg`v`S`q`i` t`P`q` t`e`v`k |

Ggubfvte t`tki weifba`Kul.cwi`tek` A`A`j` weifba`Lvgi e`e`v Mto D`v`v`Q | c`v`Z` e`Qi Avevi Lvgi e`e`v mg`v`S`q` ev m`u`v`i` i`w`K` t`tki cwi`em`Z`Z` nq | ZvB ejv P`j` Lvgi e`e`v cwi`e`Z`v`k`x`j` ev M`v`Z`k`x`j` |

mvi Yx 1 :gvSwi DBz Gj vKv KwL. cwi tek AÄtj i GKwU Mätgi Lvgvi e˘e˘vmgr; KwRi nkj v, wı kvj , gqgbwmsn (tnvımb cöy, 1991)

µıg K bs	Lvgvi e˘e˘v	tgw Lubvi msL˘v					tgw tj vKmsL˘v				
		19 86	19 87	19 88	19 89	19 90	19 86	19 87	19 88	19 89	19 90
01.	dmj -Mi a - QvMj -nwn- gyM-gvQ	26	40	24	32	25	20 6	26 4	17 0	19 8	17 9
02.	dmj -Mi a - QvMj -nwn- gyM	11	7	8	9	9	80	39	45	65	7
03.	dmj -Mi a - nwn-gyM- gvQ	48	52	63	35	39	40 2	36 9	45 6	42 9	28 8
04.	dmj -Mi a - nwn-gyM	18	17	18	22	27	12 7	10 8	10 6	13 1	97
05.	dmj -Mi a - QvMj	3	2	N	N	1	17	18	N	N	6
06.	dmj -Mi a - gvQ	2	2	2	5	1	16	8	14	35	6
07.	dmj - QvMj -nwn- gyM-gvQ	3	5	4	3	5	25	31	23	20	27
08.	dmj - QvMj -nwn- gyM	1	2	N	2	2	7	13	N	14	12
09.	dmj - QvMj -gvQ	1	N	N	N	4	8	N	N	N	27
10.	dmj -nwn- gyM-gvQ	18	10	18	13	43	10 8	69	11 7	74	25 7
11.	dmj -ıfor- nwn-gyM- gvQ	1	N	N	N	N	4	N	N	N	N
12.	dmj -QvMj	1	N	N	N	N	5	N	N	N	N
13.	dmj -nwn- gyM	15	11	14	9	13	70	66	91	58	74
14.	dmj -gvQ	11	13	12	10	18	50	49	56	52	91
15.	dmj	7	5	6	2	16	27	16	30	10	72
16.	Mi a-QvMj - nwn-gyM- gvQ	1	3	1	1	N	4	8	4	5	N
17.	Mi a-QvMj - nwn-gyM	6	3	3	4	3	30	24	11	30	17
18.	Mi a-QvMj	2	N	N	N	N	15	N	N	N	N
19.	Mi a-nwn- gyM	3	2	2	7	N	20	7	9	35	N
20.	Mi a	1	N	N	1	1	5	N	N	5	5



21.	<i>QvMj -nun-gjwM-gvQ</i>	4	5	3	6	3	22	35	16	39	11
22.	<i>QvMj -nun-gjwM</i>	1	N	N	N	N	5	N	N	N	N
23.	<i>QvMj -gvQ</i>	2	N	N	N	N	10	N	N	N	N
24.	<i>QvMj</i>	2	2	3	5	N	6	14	12	26	N
25.	<i>nun-gjwM-gvQ</i>	3	4	3	7	1	15	23	10	40	3
26.	<i>nun-gjwM</i>	2	1	N	5	N	10	2	N	19	N
27.	<i>gvQ</i>	6	2	3	3	2	30	8	14	13	10
28.	<i>AKwL.KvR</i>	N	N	N	N	3	N	N	N	N	11
29.	<i>dmj -Mi a</i>	1	N	1	3	1	9	N	4	14	8
	<b>tgw</b>	<b>20</b>	<b>18</b>	<b>18</b>	<b>21</b>	<b>21</b>	<b>14</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>12</b>
		<b>0</b>	<b>8</b>	<b>8</b>	<b>4</b>	<b>7</b>	<b>98</b>	<b>71</b>	<b>88</b>	<b>82</b>	<b>58</b>

mvi Yx 2 : AwZ wPzGj vKv Kwl. cwi tek AAjt i GKw Mti gi Lvgi e'e'vmgr; tbrqvMu , KwigMA, wKtkvi MA (trvmb cgy, 1991)

μg K bs	Lvgi e'e'v	tgv Lvbvi msL'v					tgv tj vKmsL'v				
		19 86	19 87	19 88	19 89	19 90	19 86	19 87	19 88	19 89	19 90
01.	<i>dmj -Miæ gnl -nun- gyM- gvQai v</i>	4	4	2	3	3	46	34	22	27	38
02.	<i>dmj -Miæ QvMj -nun- gyM- gvQai v</i>	12	2	3	7	4	80	15	18	45	38
03.	<i>dmj -Miæ - nun-gyM- gvQai v</i>	93	96	95	60	53	60 8	55 4	54 9	38 1	40 6
04.	<i>dmj -Miæ - QvMj -nun- gyM- gvQai v</i>	4	1	1	3	7	22	5	7	21	42
05.	<i>dmj -Miy gvQai v</i>	13	12	10	8	3	83	68	60	54	15
06.	<i>dmj -nun- gyM- gvQai v</i>	56	48	45	56	87	30 2	22 9	21 3	32 1	52 5
07.	<i>dmj - gvQai v</i>	20	15	19	23	9	12 5	74	98	10 6	53
08.	<i>dmj - QvMj -nun- gyM- gvQai v</i>	1	Ñ	Ñ	5	Ñ	3	Ñ	Ñ	28	Ñ
09.	<i>dmj -nun- gyM- gvQai v</i>	12	1	2	4	3	68	7	8	27	19
10.	<i>dmj -nun- gyM- gvQai v</i>	2	1	1	4	6	9	4	4	20	26
11.	<i>MiægvQai v</i>	9	2	1	6	1	36	7	4	26	7
12.	<i>nun-gyM- gvQai v</i>	93	54	44	37	95	48 8	22 1	18 2	16 0	49 8
13.	<i>gvQai v</i>	13	16	12	81	39	66	79	35	43	20

		1	5	5			9	9	5	2	9
14.	<i>dmj-gwl- nwn-gjM- gvQai v</i>	$\tilde{N}$	$\tilde{N}$	$\tilde{N}$	$\tilde{N}$	1	$\tilde{N}$	$\tilde{N}$	$\tilde{N}$	$\tilde{N}$	6
	<b><i>tgW</i></b>	<b>45</b>	<b>40</b>	<b>34</b>	<b>33</b>	<b>31</b>	<b>23</b>	<b>20</b>	<b>15</b>	<b>16</b>	<b>18</b>
		<b>0</b>	<b>1</b>	<b>8</b>	<b>3</b>	<b>1</b>	<b>39</b>	<b>17</b>	<b>20</b>	<b>88</b>	<b>88</b>



### cuVĖi gj'iqb 1.3

#### mĖK DĖti i cuKĖUK PŸ (Ÿ) Ÿ b|

- 1/ ejsj vt`tki eZĖyb Lvgvi e`e`r, tjr gj-Z: KZ cKvi ?  
 K) Pvi  
 L) ŸZb  
 M) `B  
 N) cĖP
- 2/ t`tki meP me`Z Lvgvi e`e`r mgR GKŸU `enkó` enb Ki tQ, Zv tKvŸU ?  
 K) `wi`^Lvgvi  
 L) fiY-ťcvi Y Lvgvi  
 M) ŸZ^Lvgvi  
 N) DbZ Lvgvi
- 3/ Pv evMvb tKvb ai tbi Lvgvi ?  
 K) fiY-ťcvi Y Lvgvi  
 L) ci-cmLi Lvgvi  
 M) emYmR^K Lvgvi  
 N) dtj i Lvgvi
- 4/ ŪDcKj xq AĀtj evM`v mPsmoi Pvl Ū tKvb ai tbi Lvgvi ?  
 K) emYmR^K Lvgvi  
 L) gvtQi Lvgvi  
 M) fiY-ťcvi Y Lvgvi  
 N) Ÿgk^Lvgvi
- 5/ ejsj vt`tki gŸU, emócvťZi aib I Av\_ŸmvgmRK Ae`r Ÿgtj meP tKvb Lvgvi e`e`r Mto DťVťQ ?  
 K) GKK cY`gŸx Lvgvi e`e`r  
 L) eŸgŸx Lvgvi e`e`r  
 M) cŸKŸZ.K Lvgvi e`e`r  
 N) Ÿgk^Lvgvi e`e`r
- 6/ Ÿgk^Lvgvi e`e`r ejsj vt`tk KZfite web`im Ki v thťZ cvti ?  
 K) Pvi  
 L) cĖP  
 M) AmsL`  
 N) `k
- 7/ ejsj vt`tk Ÿgk^Lvgvi e`e`r q KqŸU Dc-e`e`r i tqtQ ?  
 K) cĖP  
 L) ŸZb  
 M) Pvi  
 N) Qq
- 8/ ejsj vt`tki gvSwii DBzGj vKvq eb`vhyĖ AĀtj i MŸtg KqŸU Lvgvi e`e`r Mto DťVťQ ?  
 K) cťbi ŸU  
 L) EbŸŸ kŸU  
 M) ŸŸ kŸU  
 N) tPŸŸ ŸU|

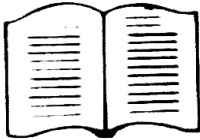
### ciw 1.4 Lvgvi e`e`vi A½mgn Ges cvi`uvi K m`uK©



G cvV tkfI Arcub-

- ◆ Lvgvi e`e`vi A½mgn Kx Kx Zv ej tZ I wj LtZ cvi`teb|
- ◆ Lvgvi e`e`vi A½mgn i weei Y w` tZ cvi`teb|
- ◆ A½mgn i cvi`uvi K m`uK©Ztj ai tZ cvi`teb|

### Lvgvi e`e`vi A½mgn (Components)



GKwU Lvgvi e`e`v H Lvgviti msNuUZ mKj ctYi cL`¶ KgrvU wbtq MmVZ| AfbK,tj v GKB aitbi cY`tK GKtI A½ etj | GB cL`¶ A½mgn c`vzbZ cL` cKvi | h\_vN

- 1| dmj A½ (Crop Component)
- 2| ci`cUL A½ (Livestock Component)
- 3| gvrM` A½ (Fisheries Component)
- 4| Kul`eb A½ (Agroforestry Component)
- 5| emZemo A½ (Homestead Component)

GKwU Lvgvi e`e`v H  
Lvgviti msNuUZ mKj  
ctYi cL`¶ KgrvU  
wbtq MmVZ| AfbK,tj v  
GKB aitbi cY`tK  
GKtI A½ etj |

AfbtK GB A½mgnK Dce`e`v (Subsystem) etj \_v`Kb| tKbbv c`ZuUi Aaxfb Avevi AfbK,tj v cY` (Enterprise) \_v`K th,tj v GKtI GKwU Drcv`b e`e`v Mto tZvtj | GQrov Avil KZ,wj A½ ctiv¶fite Dctii A½mgnK Drcv`tb mnvqZv Kti | thgbN Kul` hwsKxKIY A½ (Agricultural mechanization component), Kul`.A`mVZ A½ (Agricultural mconomics component), AKwL.A½ (Nonfarm component) I Lvgvi euvfZ A½ (Off-farm component)|

### A½mgn i weeiY

#### dmj A½

Lvgviti wevfb`cKvi I wevfb`mgtq Drcw`Z mKj dmj mgn GKtI dmj A½ MvB Kti | thgbN GKelx`w`elx` e`uelx`dmj | Avevi `vbr, Auk, meivR, dj, K`vj, `Zj exR, Wj dmj A`ev gvV dmj I D`vb dmj | GB meivKQb GKtI dmj A½| dmj A½i Rb` Rvg ev t¶tZi c`qvRb nq|

#### ci`cUL A½

Lvgviti A`mVZK DfI`k` jvj b-cj bKZ.mKj cKvi I mKj eqtmi ci` ev cULmgnK GKtI ci`cUL A½ etj | thgbN Mi` gwl, tNvor, QvMj, tfov, kKi, nzn, gvM, ivRnzn, Kezi BZ`w` | Gmtei Rb` Pvi Yfng, AvevM`j I cKz`/Wvev c`qvRb|

#### gvrM` A½

Lvgviti PvlKZ.ev Lvgviti gvby KZK` az mKj cKvi gvQ, wPsw, wSbjk, kvjk cifvZtK GKtI gvrM` A½ etj | gvQ, wPsw, wSbjk cifvZ Pvl i Rb` cKz, tWvev, t¶Z, Rj vfvng cifvZ c`qvRb| gvQ aivi Rb` Lvgviti KvQvKwQ b`x, Lvj, wej, Rj vqk, Rj gnvj, evlo, mgv`vKv`i Kvi |

**Kuleb A½**

emZewo, dmtji tñZ, cuZZ Riq, cñž cvo cñwZ Lvgvixb GjvKvq Drcbædj, Kiv, Ryjvbx I JIwa MwQcij vtK GKtI Kuleb A½ etj | Zte wetkl fite mþ eb GB At½i Avl Zvaxb bq|

emZewo, dmtji tñZ,  
cuZZ Riq, cñž cvo  
cñwZ Lvgvixb GjvKvq  
Drcbædj, Kiv, Ryjvbx I  
JIwa MwQcij vtK GKtI  
Kuleb A½ etj |

**emZewo A½**

Lvgviti b˘bZg A½ nþQ emZewo| Ab˘vb˘ A½ bv vKtj I G A½wU mKj Lvgvi e˘e˘vq we˘gvb| GuU Qrov Lvgvi e˘e˘v Mto DþV br| AvevmK Ni, DVwb, R½j, cñž, cvj vb cñwZ ugtj emZewo A½ Mto DþV|

**A½mgñi cvi ˘umi K m˘úK©**

KIK Zvi cñqvRb Abynti Lvgvi cwi tek I migt\_P wfwEtZ Lvgvi e˘e˘v Mto tZvtj b| GB Lvgvi e˘e˘vi wefbæA½mgñi cvi ˘umi K m˘úK©KIþKi DþIþk˘, cwi tekMZ Ae˘v I wv˘všI Øviv ubaŋi Z I cwi Pnj Z nq| mstñtc m˘úK©wj Pri cKvi | GLvþb G\_s,tjvi e˘vL˘v Kiv ntjv t

1| e˘e˘v ag©(System properties) : cñZwU A½ GKKfite wqvkvxj vK| thgbñ Dce˘e˘v| Avevi G\_s,tjv GKtI msNex AvPiY Kti vK| msNex GKK AvPiYþKB e˘e˘v ag©ejv nq| e˘e˘v atgp Avevi PriwU \_Y AvþQ| tm\_s,tjv ntjv Drcv`bkxj Zv, ˘wqZ; ˘wN© ˘wqZ;ev tUKmB Ges mvg˘Zv|

2| Lv˘ I cñ miein (Food and Nutrition) : mKj A½B gj- DþIþk˘ Lv˘ thwMvq| GþñþI GKwU AciwUj cwi cþK (Complementary)|

3| Sñk ubeviY (Risk management) : cñZKj cñwZK I mvgwRK Ae˘vq A½mgn Lv˘ ev Ab˘vb˘ mgn˘v mgnvþb mrvqK fvgKv ivtL| tKbbv Ggb Ae˘vq me A½ GKtI ñwZMŋI nq bv|

4| Avštm˘úK©(Interaction) : Lvgviti mweR Drcv`þb ev Avq mwó Ktg©A½mgn ci ˘uti i gþa˘ wefbæcKvi Avštm˘úK©Zwi Kti | mwK wv˘všI Øviv ubqvšZ bv ntj G Avštm˘úK© Lvgviti Rb˘ ñwZKi ntZ cvti | Zte Awakvsk tñþIþB G\_s,tjv Lvgvi Drcv`þb mrvqK fvgKv cvj b Kti |

Dcti Avtj wPZ Lvgvi e˘e˘vi wefbæA½i cvi ˘umi K m˘úK©3 bs wPþI t˘ Lvþbv ntjv|



1P1 3 : Lvgvi e`e`vi weifbæA½zi cvi`úni K m=úK©



**Ablyj b** (Activity): Lvgviti i weifbæA½mgþni bvg Dþj LceR Gþ i Avštm=úK©Zþj ai ab|



### cuVhEi gj'iqb 1.4

mWk DEti i cutk@UK wPy (v) w b|

- 1/ mWk e'e-ri cZ'q A½mgR KquU ?  
 K) cuPwU  
 L) mwZwU  
 M) PwiwU  
 N) wZbwU
- 2/ Lvgvi e'e-ri cfi vq A½mgR KquU ?  
 K) cuPwU  
 L) mwZwU  
 M) PwiwU  
 N) QquU
- 3/ AfbtK A½mgRtK Dce'e-ri etj b Kvi Y cZwUi Aaxb AfbK,tj v Kx\_wtK ?  
 K) e'  
 L) cY'  
 M) m'u'  
 N) e'e-ri
- 4/ dmjtj i A½i Rb' Kx c@qvRb ?  
 K) cKz  
 L) Rwg  
 M) b'x  
 N) ci'cwl
- 5/ wftkl fiqe m' eb tKvb A½i Avl Zvaxb bq ?  
 K) Kwl.eb  
 L) dmj  
 M) gvrw  
 N) ci'cwl
- 6/ tKvb A½wU mKj Lvgvi e'e-riq w'e'gvb ?  
 K) dmj  
 L) ci'cwl  
 M) emZemo  
 N) gvrw
- 7/ A½mgRni cvi\_uwi K m'uK\_s'tj v KZ cKvi ?  
 K) cuP  
 L) Pwi  
 M) Qq  
 N) mwZ
- 8/ A½mgR GKtT msNex AvPi Y Kti GB GKK AvPi YtK Kx etj ?  
 K) c@KwZK ag®  
 L) tfSZ ag®  
 M) i vmvqwbK  
 N) e'e-ri ag®



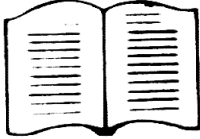


### cW 1.5 dmj -ci`cWL Avš`muqv

G cvV tk`l Avci`b-

- ◆ Avš`muqvi msik`o` nelq, t`j v Kx Kx Zv eY`v Ki`Z cvi`teb|
- ◆ dmj -ci`cWL AstMi Avš`muqv Kxfv`te nq Zv e`vL`v Ki`Z cvi`teb|

#### Avš`muqvi msik`o` nelq



Lvgri e`e`vi th tk`vb `B ev ZtZmaK AstMi Avš`muqv Avtj vPbvi c`te`msik`o` KZ, t`j v nel`tq avi Yv tbqv c`qRb| G, t`j v vbt`vAvtj vPbv Kiv ntj vN

1| Lvgv`ti mKj Aveim, fvg, kg, c`kz`/Wvev, ci`cWL, MvQcvjv, hš`cWZ, tgav, Avf`AZv BZ`v` meB m`u` (Resources)|

2| GKvL Lvgv`ti `v` c`vb KvR m`ub`nq| GKvL Drcv`b (Production) Ges AcivL t`fM (Consumption)|

3| Drcv``bi gva`tg c`B Drcv`Kmg`K Pvi`fM fM Kiv hvq| G, t`j v ntj vN `e` (Product or commodity), DcRvZ (By-product), Dv`Qb (Residue) Ges eR` (Waste)|

4| Avš`muqv vbi`f`Y c`v`gvY (Quantity), A` (Money), c`v` Dcv`vb (Nutrients) I kv` (Energy)N GB Pvi`L GKK e`envi Kiv hvq|

5| eZ`v`b c`y`K Avš`muqv tk`vb`v`te vbi`f`Z bv K`i mvari Yf`v`te e`enviZv (Utility) vbtq Avtj vPbv Kiv ntj v|

#### Avš`muqvi v`eiY

Lvgri e`e`vq dmj I ci`cWL AstMi v`v`b`m`st`h`v`Mi gva`tg Avš`muqv NtU| G, t`j v GLv`tb mst`q`tc Avtj vPbv Kiv ntj v| vP` 4-G dmj -ci`cWL Avš`m`u`K`e`v`v`v` ntj v|

GKvL Lvgv`ti `v` c`vb KvR m`ub`nq| GKvL Drcv`b (Production) Ges AcivL t`fM (Consumption)|

Avš`muqv vbi`f`Y c`v`gvY (Quantity), A` (Money), c`v` Dcv`vb (Nutrients) I kv` (Energy)N GB Pvi`L GKK e`envi Kiv hvq|



IPĀ 4 : dmj -ci cml Avšġuqv

**1| `Re-cwi tekMZ msthM (Ecological linkage)**

G tġġġġ GKġU cġj b (ubqg) Abġ GKġU KġRġK cġmeZ Kġi | cġZZ Rġg ev mġgġK cġZZ Rġg Ges dmj DVġbvi ci tġġZ ci ev cml Nvm, Lo, kmġ cġġZ Lġq | GB ci cmliv tmLġbB weġv ev gġ ZġM Kġi | Gfġte Rġg Z\_v gġUj DeġZv eġx cġq |

**2| weġgq msthM (Exchange linkage)**

`ġ Lġvġi ev ewoi gġaġ dmj ġġ I ci cmlġ `ġ ev eġenvi (KġR) weġgq ġvi v GġU NġU \_vġK | thgbġ ġġg ġKġb PġDj /avb tġqv, nvj -PġI Kġi avb tġqv BZġġ |

**3| cġZthM Zv msthM (Competition linkage)**

G tġġġġ GKB mġúġ (Fġg) dmj Drcġġ b Ges ci PġiġYi DcġhġMġ nġq \_vġK | thgbġ DEġev gġSġi DEġRġg | Gme tġġġġ AMġaKġi ġfġġZ fġg eġenvi ġK Kġv nq, hv Lġvġi weġkġġ ġfġbġZ cġġi |

**4| weġġqM msthM (Investment linkage)**

GKġU Lġvġi ci cml mġúġ \_vKġi cġkġcġkġ dmġġi tġġZ \_vKġġ GB msthM mġġ nq | G tġġġġ weġġqM, SġK eġeġcġv I dmj eġxġZ Drcġġni msthM \_vġK | Abġġcġfġte dmj ci cml cġj b I Drcġġġ weġġqM eġxġZ Drcġġ tġq |

**5| Lv` msthM (Food linkage)**

weib tqvM msthM tK mrvqZv Kti Lv` msthM| KIK cwi evi Lv` ktm`i m`u`i-K i f`c gvsm, `g, wlg BZ`w` ev G, t j vi Drcw`Z `e` tL tZ cvti |

**6| `Re mvi msthM (Manure linkage)**

ci`cwiLi we`ov, gF, Dw`Qo Lv` I eR` dmtji RvgtZ `Re mvi thvMv t`q| Awak RbmsL`vi P`tc wbeo Pvl ver` Gj vKvq GB msthv`Mi , i az; A t b K teuk |

ci`cwiLi we`ov, gF,  
Dw`Qo Lv` I eR`  
dmtji RvgtZ `Re mvi  
thvMv t`q| Awak  
RbmsL`vi P`tc wbeo  
Pvl ver` Gj vKvq GB  
msthv`Mi , i az; A t b K  
teuk |

**7| ci`kw<sup>3</sup> msthM (Draft linkage)**

KwL .Kv`R nij Pvl , gB I Av`ov t`qv Ges Nvb Uvrvq, B`zgvovB`q ev Mmo Uvrvq I w, ej ` , GgbwK A t b K t`q`I B Mv`xI fvi evnx ci`i f`c e`e`u`Z n t`Q |

**8| ci`Lv` msthM (Fodder linkage)**

dmtji Lo, Aewk`ovsk, DcRvZ (`Lj , fiv, Kzv) ev wef`bakm` BZ`w` ci` ev cwiLi wef`bae Lv` mie ivn Kti |

**9| Rvj vbx msthM (Fuel linkage)**

wbeo dmj Avev`Kvix Gj vKvq dmtji tMvov, Aewk`ovsk, tMvei, i`Kbv cvZv, i`Kbv Nvm cFwZ meB KIK cwi ev`i Rvj vbx i Drcw` Ab`\_vq G, t j v ci`cwiLi Lv` I Rvgti `Re mvi i f`c e`envi Kiv thZ |



### cuVvEi gj'iqb 1.5

#### mWk DEti i cuK, UK Pý (v) i b |

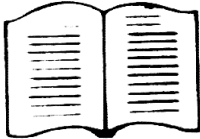
- 1/ Lvgvti Aveim, fig, kg, cKZ, ci'cviL, MvQcij v, hšcviZ, tgav, AvfÁZv BZ'w` meBÑ  
K) mæú`  
L) e`  
M) Df`'vM  
N) gj'evb
- 2/ Lvgvti cãvbZ` vj KvR mæúbæq | GKvU Drcv` b, Ab'vU Kx ?  
K) vevvU  
L) f'vM  
M) cwi eZB  
N) msi vY
- 3/ Lvgvti Drcv` tbi gva'ig cãB Drcv` KmgæK KZfvM f'vM Kiv hvq ?  
K) cuB  
L) vZb  
M) Qq  
N) Pvi
- 4/ Avštµqv vbi fctY KqvU GKK e'enri Kiv hvq ?  
K) Pvi vU  
L) QqvU  
M) cuB vU  
N) mvZ vU
- 5/ dmj -ci'cviL Avštµqv KqvU ?  
K) `kvU  
L) GMvi vU  
M) bq vU  
N) AvU vU |



### cw 1.6 dmj-gvrm` m`u` Avstijuvq

G cvW tkfI Avciub-

- ♦ dmj gvrm` m`u` Avstijuvq KquU I WK WK Zv DttL Ki tZ cvi teb|
- ♦ Kxfite dmj gvrm` m`u` Avstijuvq m`ubanq Zv e`vL`v Ki tZ cvi teb|



### Avstijuvqi c`kvi

dmj-gvrm` m`u` Avstijuvq c`avbZ QquU| G Avstijuvqvmgr` m`u` i ga`Kvi msthtMi dtj m`u` nq| vbt`aG, wj i msv`fjB weei Ymn big t` qv ntj v|

### Avstijuvqi weeiY

fugi dmj Drcv`tb e`envi cieZ`fZ gvQ PvfI mnvqK nq| tgs`m`g cmeZ aib t`fZ, wej, tWvev c`f`wZ `v`b dmtj i Aek`ovsk c`fP gvtQi Lv` nq Ges c`fI Gme `v`b gvQ Pvl Kiv nq|

#### 1| Re-cvitekMZ msthvM (Ecological linkage)

G t`f`f`f` fugi dmj Drcv`tb e`envi cieZ`fZ gvQ PvfI mnvqK nq| tgs`m`g cmeZ aib t`fZ, wej, tWvev c`f`wZ `v`b dmtj i Aek`ovsk c`fP gvtQi Lv` nq Ges c`fI Gme `v`b gvQ Pvl Kiv nq|

#### 2| weibgq msthvM (Exchange linkage)

GKRb Pvlx I GKRb tRtj A\_ev`f`b Pvlxi g`a` dmj I gvrm` `f`e`i Av`vb-c`v`b ntj GB weibgq msthvM nq|

#### 3| c`v`zhvMZv msthvM (Competition linkage)

GKB Rvq GKB mg`tq gvQ I dmj `f`v`b Drcv`tbi Dc`thvMx ntj c`v`zhvMZv msthvM nq| thgbN AMfxi wej, tWvev, eI`Kv`fj cmeZ v`bPzRvq BZ`w`|

#### 4| weibtqvm msthvM (Investment linkage)

GKvU Drcv`tb c`v`B A\_`Ab`v`v`fZ Lv`v`f`v`v` ntj weibtqvm msthvM NtU| thgbN Lv`v`f`i Drcv`Z gvtQi Avq ntj aib ev Ab` dmtj weibtqv`Mi m`v`av nq| Avevi Gi D`f`v`v`v`I ntZ cv`f`i|

dmtj i DcRvZ K`v, f`v` I `Lj gvtQi Lv` `i`f`c e`e`v`Z nq| Avevi gvtQi `v`v, gvtQi Dv`Q`o, gvtQi AvBk c`f`wZ tKv`b tKv`b t`f`f`f` Rvqi De`f`Zv evov`f`Z e`e`v`Z nq|

#### 5| Lv` msthvM (Food linkage)

KIK cvi ev`f`i i Lv` Zv`v` Kvq f`v`f`i c`f`iB gvtQi `v`b| G t`f`f`f` gvQ Lv` `m`u`-K f`v`gKv i vL`f`Q|

#### 6| gvQ Lv` msthvM (Feed linkage)

dmtj i DcRvZ K`v, f`v` I `Lj gvtQi Lv` `i`f`c e`e`v`Z nq| Avevi gvtQi `v`v, gvtQi Dv`Q`o, gvtQi AvBk c`f`wZ tKv`b tKv`b t`f`f`f` Rvqi De`f`Zv evov`f`Z e`e`v`Z nq|



1P1 5 : dmj -gvr m m u` Avstmuq



**Ablyj b** (Activity): 1P1 i mvr h dmj Ngvr m m u` Avstmuq c k ce R Gi i azj  
e v L v Ki ab |



**cuVhEi gj`iqb 1.6**

**mivK DEti i cutk, QUK iPy (v) i b |**

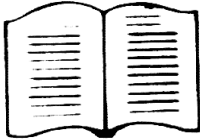
- 1/ dmj -gurm` m`u` Avštiμqv Kqiu ?
  - K) cuPiu
  - L) Qqiu
  - M) Pviu
  - N) miZiu
  
- 2/ `Rb Pvi xi gta` dmj I gurm` `te`i Av`vb-cūvbtK tKvb msthvM ej v nq ?
  - K) cūZthvMZv
  - L) vevbtqvM
  - M) vevbgq
  - N) Lv`
  
- 3/ GKiu Drcv`tb cūB A\_`Ab` Drcv`tb LvUvtrv nřj Kx msthvM NřU ?
  - K) vevbtqvM
  - L) vevbgq
  - M) Lv`
  - N) cūZthvMZv
  
- 4/ GKB Riq GKB mgřq gvQ I dmj `šlvB Drcv`tbi DcřhvMx nřj Kx msthvM nq ?
  - K) vevbgq
  - L) cūZthvMZv
  - M) vevbtqvM
  - N) Lv`



### cw 1.7 ci'cwl-gvrm"-Kuleb Avstiqv

G cvl tkfI Avcub-

- ◆ ci'cwl-gvrm"-Kuleb Avstiqv KqW Zv Dfj L Ki fZ cvi teb|
- ◆ ci'cwl-gvrm"-Kuleb Avstiqv Kxfite nq Zv eYv Ki fZ cvi teb|



#### Avstiqvi cKvi

ci'cwl, gvrm" I Kuleb GB wZbu A fzi Avstiqv G, tjvi weifbæmsthvMi dtj msMwZ nq| GB Avstiqv cævZ mvZ cKvi | h\_vN`Re-cwi tekMZ, cÖZthwMZv, weibgq, Lv`, cÖYx Lv`, Re mvi I weibiqvM msthvM|

#### Avstiqvi weiy

GKB fig mæut`i Dci weifbængtq ci'cwl  
 cij b Kitj gvQi Lv`  
 `Zwi nq| cti gvQ Pvl  
 Kitj Lv` Kg jvtM|  
 Avevi GB cwi tek k wKQy  
 Rj gMwQvj vl fij  
 Rtb#| Gijc chiqvugK  
 fite ci'cwl, gvQ I  
 Kulebi Drcv`b cæwZ  
 `Re-cwi tekMZ msthvM  
 ifc t`Lv hvq|

#### 1| `Re-cwi tekMZ msthvM (Ecological linkage)

GKB fig mæut`i Dci weifbængtq ci'cwl cij b Kitj gvQi Lv` `Zwi nq| cti gvQ Pvl Kitj Lv` Kg jvtM| Avevi GB cwi tek k wKQy Rj gMe MwQvj vl fij Rtb#| Gijc chiqvugK fite ci'cwl, gvQ I Kulebi Drcv`b cæwZ `Re-cwi tekMZ msthvM ifc t`Lv hvq|

#### 2| cÖZthwMZv msthvM (Competition linkage)

GKB fig tMv-Pri Y, gvQ Pvl I MwQvj v jvMv bvi Dc thwMx ntj cÖZthwMZv msthvM nq| tMv-Pri Y fig fZ GKB mgtq MwQvj v jvMv bvi tMj I gvQ Pvl Kiv hvte bv| ZvB AMwaKvi wFwE fZ Drcv`b te fQ wbtZ nte|

#### 3| weibgq msthvM (Exchange linkage)

`w KIK cwi evti i gta` ci'cwl, gvrm" I Kuleb GB mæu` , tjvi Drcw` Z `e`, DcRvZ ev th tKvb wKQy weibgq G, tjvi th tKvbw MhY cöwqvB weibgq msthvM|

#### 4| Lv` msthvM (Food linkage)

km`RvZ Lv` i ci KIK cwi evti gvsm, wlg, `g, gvQ, iUKx I weifbædj cÖZw Lv` i Aek` cöqvRbxq Ask| ZvB Gme gby` Lv` cwi ci-K figKv ivL fQ| GUvB Lv` msthvM|

#### 5| cÖYx Lv` msthvM (Feed and Fodder linkage)

tMvi, nwn-gjvMi wev gvQi Lv`, dtji Dw`Oó gvQi I ci'cwl Lv`, gvQi , cv ci'cwl Lv`, MvQi cvZv ci Lv` N Gfite GKw AcivUi cÖYx Lv` ifc msthvM mjo Kti |

#### 6| `Re mvi msthvM (Manure linkage)

ci'-cwl Lv`-g f I t`nve tkI Ges gvQi Avk I Dw`Oó G, tjvi meB `Re mvi ifc Kuleb A fzi e`eüZ nq| Avevi Kulebi cvZv, KWP Wwv, wKko, j Zv bvi MwQ BZ`w` c fP K fæv÷



ntj Zv cKz ev tWvev DePZv ewx Kti gvQ Drcv`tb mnvqK nq| GfiteB`Re mvi msthvM Mto Dtv|

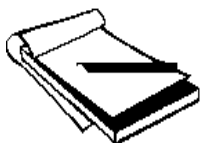
**7| weibtvM msthvM (Investment linkage)**

ci cvL, girm` I Kul eb A½i Drcv`Z`è, DcRvZ, cY` BZ`w` wep Kti Gt`i th tKvb A½i cjtweibtvM Kivi mtebv mjo Kti | Gfite A½i msL`v evovi mvt\_ mvt\_ weibtvM msthvMi mtebv tefo hvq| GtZ Svk e`e`vcbv mnR nq|

ci cvL-girm`-Kul eb Avštupqv wPĤ 6-G t`Lvfbv ntj v|



wPĤ 6 : ci cvL-girm`-Kul eb Avštupqv



**Ablyj b (Activity):** Avcvb wK gtb Ktib dmj I girm` mæú` Avštupqvi PvbZ ci cvL, girm` I Kul eb Avštupqv figi Kvq` e`envi wboDZ nq? Avcbvi DEt`i i`c`f` hvq` Dc`vcb Ktab|



**cwVhEi gj`iqb 1.7**

**mWk DEti i cwK, QUK wPy (v) w b |**

- 1/ ci cwl-gvrm`-Kwl eb Avst`u, qv KqvU ?
  - K) AvUwU
  - L) mvZwU
  - M) bqwuU
  - N) QquU
  
- 2/ GKB Fig tMvPvi Y, gvQ Pvi I MvQcvj v j vMv`bvi Dc`thvMx n`j Kx msthvM nq ?
  - K) wwbvgq
  - L) wwb`tqvM
  - M) c`Z`thvMzv
  - N) Lv`
  
- 3/ `y KIK cwi evti i g`a` ci cwl, gvrm` I Kwl.R eb G, `j v Drcw`Z `e`, DcRvZ ev Ab` wKQj Av` vb-c`vb`K Kx msthvM etj ?
  - K) wwbvgq
  - L) wwb`tqvM
  - M) c`Z`thvMzv
  - N) Lv`
  
- 4/ ci cwl, gvrm` I Kwl eb n`Z Drcw`Z `e` ev DcRvZ wv`u Kti G, `j v`Z c`y vq e`envi`K Kx msthvM etj ?
  - K) wwbvgq
  - L) wwb`tqvM
  - M) c`Z`thvMzv
  - N) Lv`|



**5/ Lv` msthM (Food linkage)**

gubtj i Lv` AtbK cKvi | ZvB GKB Lvgvti eü A½i mæsj tb GKU KIK cwiertii cåvb  
Lv` fvZmn gvQ, gism, wlg, ˘g, weifbædj Drcv Z nq| GLvtb GKU A½ Lv` i Øvi v Ab`  
A½, tj vi mæúit-K fngKv cyj b Ki†Q| GB eüglx Lv` KIK cwiertii Lv` ˘qsmæúYzv  
ARfb , iæZcYfngKv i v†L| G†Z Gme A½ weib†qM DrmvinZ nq|

**6/ ˘Re mvi msthM (Manure linkage)**

dmtj i Aewkóisk I wKko, ci cvLi gj -gÊ, gv†Qi Dv´Qóvsk Gme dmj , gvQ I MvQcij v  
Drcv †b ˘Re mvi i†c e`eüZ n†q ˘Re mvi msthM mæp K†i | G†Z Lvgvi Z\_v mvgwMk  
cwi†ek ˘LY n†Z i ¶v civq|

**7/ ci kw³ msthM (Draft linkage)**

dmj Drcv †bi PvI , gB I Av†ov † qvq, weifbæKwl. cY` Drcv †b Nvb Uvbvq, B¶zgvovB  
Kv†R, cY` cwi entb, M†tg Mno Uvbvq ci e`eüZ nh| Gfv†eB fvi evnx ci Ab`vb` A½i  
msthM NUvq| G†Z M†gxY Kwl. I A\_æwZK KvR mæúban†Q|

**8/ ci Lv` msthM (Feed and Fodder linkage)**

weifbædm†j i Lo, AvMvQv, DcRvZ I Dv´Qó, dtj i Pvgov ev Dv´Qó, gv†Qi , av, nv†oi , av,  
km` BZ`w` M†cvvj Z ci (Miæ gwI, QvMj , †foi) ev cvLi (nwn, gjwM, Kezi) Lv` i†c  
e`eüZ n†q ci Lv` msthM mæp K†i | G†Z Lvgvti Aew`Z weifbæA½i Drcv b LiP K†g  
hvq| Gfv†e weifbæA½i mgšq Lvgvi e`e`v†K j v†RbK ch†q w†q th†Z cv†i |

**9/ Ryj vbx msthM (Fuel linkage)**

wbæo dmj Drcv bKvix GjvKvq (NbemwZcYf) dmtj i Dv´Qó, Lo, Miai weöi, MvQcij v,  
RjR AvMvQv BZ`w` KIK cwiertii i vbi Ryj vxi†c e`eüZ nq| Gfv†eB Ryj vbx msthM  
n†q v†K| Ab`vq G, tj vi AtbK wKQb ˘Re mvi msthM e`eüZ n†Zv|

dmj -ci cvLi -gvrm` -Kwl. eb GB A½, tj vi Avš†vqv wP† 7-G † Lv†bv n†j v|



wPĪ 7 : dmj -ci`cml-gvrm“-Kwleb AvŠtġuqv



**Abġyj b** (Activity): `Re cwi`tekMZ mšthvM, `Re mvi mšthvM Ges Rġj vbx mšthvMi  
ga`Kvi AvŠtm=úK`eYDv Ki ab|



**cǎVǎĚi gj ǎq b 1.8**

**mǎK DĚti i cǎk ǎUK ǎPý (ǎ) ǎ b |**

- 1/ dmj -ci cǎL-gvrǎ -Kwl eb Avštǎqǎ Kqǎ ?  
 K) ǎkǎ  
 L) Avǎǎ  
 M) Gǎvi ǎǎ  
 N) bqǎ
- 2/ dmj , ci cǎL, gvrǎ | Kwl eb GB Pri ǎǎ Aǎ½i Dcǎ ǎZǎZ Mǎo DVǎ Lvgvi e ǎ ǎ  
 Kx ai ǎbi ?  
 K) j v f R b K  
 L) m ǎ t e b v g q  
 M) m g m ǎ v m ǎ j y  
 N) c ǎ R g q
- 3/ dmj , ci cǎL, gvrǎ | Kwl eb GB Pri ǎǎ Aǎ½i Dcǎ ǎZǎZ Mǎo DVǎ Lvgvi e ǎ ǎ  
 Drcǎ ǎ b ǎ K g b n q ?  
 K) ǎ ǎ Z k x j  
 L) A ǎ ǎ Z k x j  
 M) c ǎ ǎ Z k x j  
 N) m ǎ t e b v g q
- 4/ dmj , ci cǎL, gvrǎ | Kwl eb GB Pri ǎǎ Aǎ½i Dcǎ ǎZǎZ Mǎo DVǎ Lvgvi e ǎ ǎ  
 cǎi ǎ t ǎ k ǎ ǎ q Z ǎ n q ǎ K g b ?  
 K) ǎ f ǎ q x  
 L) m ǎ t e b v g q  
 M) ǎ x ǎ ǎ q x  
 N) A ǎ ǎ Z k x j
- 5/ dmj , ci cǎL, gvrǎ | Kwl eb GB Pri ǎǎ Aǎ½i m g š t q Mǎo DVǎ Lvgv ǎi cǎi e ǎ i K  
 e v g R j x k ǎ ǎ K f i ǎ e ǎ e n v i K i v h v q ?  
 K) ǎ ǎ Z v i m ǎ t \_  
 L) A ǎ ǎ Z v i m ǎ t \_  
 M) B ǎ Q v g Z  
 N) A c ǎ i K ǎ i Z f i ǎ e |



## Pesl'gij`iqb

miWK DEti i ctk`QUK iPy (v) i b |

- 1/ A\_`mZK `wotKivY t`tk Lvgvi KZ cKvi ?  
 K) `B  
 L) wZb  
 M) Pvi  
 N) Qq
- 2/ th Lvgviti i Drcv`b ev Avq i ayKul.cmi evti i tgšij K Pmiv`v igUvq ZvK Kx Lvgvi etj ?  
 K) igk²  
 L) fiY-tcviY  
 M) `wi`²  
 N) tgšij K
- 3/ wKtmi th tKvb Ask evBti i Di`xcvq miguMK fite cšZi`uqv t`Lvg ?  
 K) Dc-e`e`vi  
 L) mvgvex`uqv  
 M) e`e`vi  
 N) Di`xcKti
- 4/ tK Zui Avb, `qZv, AvfAZv I kv³i Øviv Lvgviti i tšZ I `Re m`u`mgr I Dnvt`i cš`uqv, tjv wePqYZvi mvt` KvR j vMvqN  
 K) weAvbx  
 L) KIK  
 M) cšvi YKgx®  
 N) mi Kvi
- 5/ Lvgvi e`e`vi `enkó` ,tjvi cwi givY ev ,YMZ Kg-tenk i Rb` Drcv`b ev Avq Kx nšZ cvti ?  
 K) Kg-tenk  
 L) kb`  
 M) tenk  
 N) Kg
- 6/ Rj -gnvtj Kx RvZxq giv ai v nq ?  
 K) mvgv`K  
 L) igVvcmbi  
 M) tj vbcmbi  
 N) wevfbae
- 7/ Sg Pvi Kx aišbi Lvgvi ?  
 K) ZY.fig  
 L) `vqx  
 M) `vbršlix  
 N) igk²

- 8/ Lvgvi e'e-v mgšq ev m=út` i w`K t\_tK cŹ eQi cwi ewZ nq/ ZvB GUvK Kx ej v Ptj ?  
K) A-vqx  
L) MwZKxj  
M) -vqx  
N) NYqgvb
- 9/ Lvgviti wK DfítK` j vj b-cvj bKZ.ci'cml.mgnK GKfT ci'cml A½ etj ?  
K) A\_ŠwZK  
L) cwi ewi K  
M) tLj vajv  
N) mvgmRK
- 10/ Lvgviti PwKZ.ev Rj vk tq aZ mKj gvO, wPsw, kvk, wSbK cfwZK GKfT Kx A½ etj ?  
K) cŹYxR  
L) gvrw  
M) Rj R  
N) ci'cml
- 11/ Lvgviti i mKj A½B Kx thwMvq ?  
K) dj -gj  
L) UvKv-cqmv  
M) Lv`  
N) ci'Lv`
- 12/ mwK wmxvšŹvi v wqšZ bv ntj tKvbw Lvgviti i Rb` wZKi ntZ cwti ?  
K) A½  
L) e'e-v  
M) cY`  
N) Avštm=úK®





**mswB i Pbvj-K cke**

- 1| wmt÷g ev e`v ej tZ Kx eSvq ?
- 2| evsj v`tki emYwR`K Lvgvi ,tj vi bvg I Ae`vb wj Lly|
- 3| evsj v`tki wkg<sup>3</sup>Lvgviti Dc-e`e`vi cY` ,tj v wj Lly|
- 4| Lvgvi e`e`vi emZemo A½ e`vL`v Kiab|
- 5| Avštupqv i msukó wclq ,tj v Avtj vPbv Kiab|
- 6| dmj -ci`cml-gvrm`-Kuletbi Ryj vbx msthvM e`vL`v Kiab|
- 7| Lvgvi KvK etj ?
- 8| Kul.ej tZ Kx eSvq ?
- 9| Kx DfI`tk` GKRb KIK Lvgviti i Dcv`vb msMh Kti b ?
- 10| Lvgvi e`e`v ej tZ Kx eSvq ?
- 11| Lvgvi e`e`vi `enkó` KquU I Kx Kx ?
- 12| evsj v`tki wvfbvLvgvi e`e`vi tkYweb`vm Kiab|
- 13| evsj v`tki wkg<sup>3</sup>Lvgvi e`e`vi Dc-e`e`v ,tj v wj Lly|
- 14| emZemo Dc-e`e`vi eYv wj Lly|
- 15| Lvgvi e`e`vi cZ`q I ctiv`q A½mgfni bvg wj Lly|
- 16| dmj A½i eYv wj Lly|
- 17| Avšt`m`úK`ej tZ Kx eSb wj Lly|
- 18| e`e`v ag`ej tZ Kx eSb wj Lly|
- 19| Lvgviti i Drcv`tbi gva`tg cB Drcv`KmgfK KZfvte fivM Kiv hvq? H, wj Kx Kx ?
- 20| Avštupqv wbi`fctYi GKK ,tj v Kx Kx ?
- 21| dmj -ci`cml Avštupqv i th tKvb PviU eYv Kiab|
- 22| dmj -gvrm` m`út` i `Re-cwi`tekMZ msthvM e`vL`v Kiab|
- 23| dmj -gvrm` m`út` i gvQ Lv` msthvM e`vL`v Kiab|
- 24| ci`cml-gvrm`-Kuleb Avštupqv i `Re mvi msthvM e`vL`v Kiab|
- 25| ci`cml-gvrm`-Kuleb Avštupqv i `Re-cwi`tekMZ msthvM eYv Kiab|
- 26| dmj -ci`cml-gvrm`-Kuletbi `Re-cwi`tekMZ mshvM eYv Kiab|
- 27| dmj -ci`cml-gvrm`-Kuletbi Lv` msthvM e`vL`v Kiab|
- 28| dmj -ci`cml-gvrm`-Kuletbi ci`Lv` msthvM eSvq wj Lly|



**DĚi gvj v**

**cW 1**

1| L    2| N    3| M    4| N    5| K    6| L

**cW 2**

1| K    2| L    3| M    4| N    5| L    6| K

**cW 3**

1| M    2| L    3| M    4| L    5| N    6| M    7| K    8| L

Kw.L.1 c j n Dbq b ě

**cW 4**

1| K    2| M    3| L    4| L    5| K    6| M    7| L    8| N

**cW 5**

1| K    2| L    3| N    4| K    5| M

**cW 6**

1| L    2| M    3| K    4| L

**cW 7**

1| L    2| M    3| K    4| L

**cW 8**

1| N    2| L    3| K    4| M    5| L

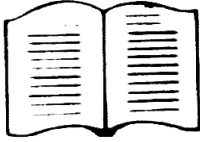
**Peršigj ětbi DĚi**

1| K    2| L    3| M    4| L    5| K    6| L    7| M    8| L

9| K    10| L    11| M    12| N



**Lvgvi emYiR`KxKiY iK I tKb**



Lvgvi emYiR`KxKiY  
A`Kwl. Lvgvi tK  
emYiR`Kfite jvFRbK  
Kiv|

Lvgvi emYiR`KxKiYi  
c`uqv t`tki tgaim`ube  
AwfA KI.KMYtK `qZv  
I weib`qVM ewx Kti  
j vMmB c`hyB e`envi  
Kti Drcv`b tK jvFRbK  
ch`q Dbaz Kiv eSvq|

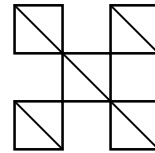
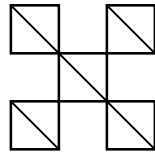


evsjv`tki GKK epEg tckv Kwl. | bvbv cwi`tek c`ZKj Zv I c`KwZK Kvity Gt`q`T  
Avkvbj/c Dbaq nqub| Kwl. tckvtK uWk`q ivL`z ntj M`gxy Kwl. Lvgvi ,tj vtZ Dbaq`bi  
tOqv j vM`z nte| Kwl. Lvgvi tK emYiR`KxKiY Ki`z nte| Lvgvi emYiR`KxKiY A`Kwl.  
Lvgvi tK emYiR`Kfite jvFRbK Kiv| t`tki Kwl. Lvgvi tK eZ`yb fiY-`cvlY ch`q t`tk  
emYiR`K ch`q Dbaz Ki`z nte| GuU GKwU KwVb c`uqv, Zte `ifn bq| Lvgvi e`e`icbvq  
`qZv ewx I Kwl. tZ j vMmB c`hyB MZ cwi eZ`B Gt`b Zv Kiv m`e|

Lvgvi emYiR`KxKiY I emYiR`K Lvgvi mgv`R gtb ntj I `yji c`uqv wfb`q emYiR`K Lvgvi  
th tKvb e`i`B, c`Z`vb ev ms`v, c`R, m`u` I c`hyB msM`b Kti Mto Z`z`Z cvti| Lvgvi  
emYiR`KxKiYi c`uqv t`tki tgaim`ube AwfA KI.KMYtK `qZv I weib`qVM ewx Kti  
j vMmB c`hyB e`envi Kti Drcv`b tK jvFRbK ch`q Dbaz Kiv eSvq (wP` 8)|

**e`i`B/Dt`v`v`v/c`Z`vb**

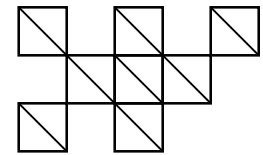
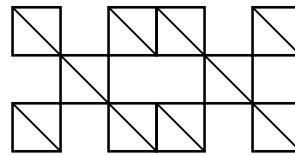
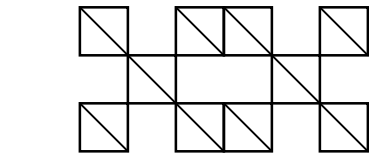
**KIK**



**c`hyB i mte`Eg e`envi  
I Drcv`b**

**c`hyB i `q e`envi  
I Drcv`b**

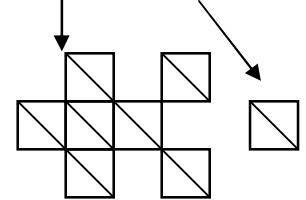
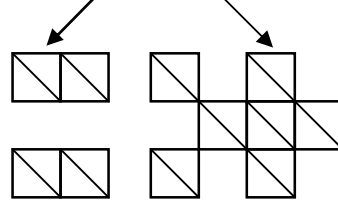
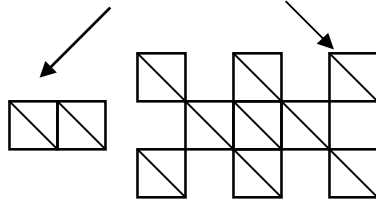
**c`hyB i Kg e`envi  
I Drcv`b**



**t`f`ll we`u**

**t`f`ll we`u**

**t`f`ll we`u**



**(K) emYiR`K Lvgvi**

**(L) Lvgvi emYiR`KiY**

**fiY-`cvlY Lvgvi**

wP` 8 : emYiR`K Lvgvi

**fiY-`cvlY I emYiR`K Lvgvi**

evsjv`tki M`tgi Kwl. Lvgvi tK mvari Yfite fiY-`cvlY Lvgvi ejv nq| Gi `enk`o` ntjv  
Lvgv`ti Drcv`Z `e`, cY` ev DcRvZ c`q meB cwi ev`ti i fiY-`cvlY`Y e`e`uZ nq| eQi

ttj` Kg-tenk D0E cY` ev`e` wepμ Kti KIK Ab`vb` Pnin`v tgUvq| G cKvi Lvgti ntZ AvZni<sup>3</sup> Avq Kti mvgvRK Dbz m`e nq br| A\_`bWZK`w0Z Gme Lvgti eQti th LiP nq Drcv`tbi Avw`R gj` Zvi mvgvb` tenk ev mgvb ev Kg nq| cKwZK`jhm ntj Drcv`b ktb`i tKvVq tbtg thZ cvti |

GKwU Kul.Lvgti eQti th kg, cμR, DcKiY cFwZ e`q nq, Drcw`Z mKj cY`, `e` ev DcRvZ BZ`w`i evRvi gj` GKtI Dnvi tPtq KgcTq kZKiv 80 fVM tenk ntj tmUvtK emYwR`K Lvgti ejv nq|

AcicTq, GKwU Kul.Lvgti eQti th kg, cμR, DcKiY cFwZ e`q nq, Drcw`Z mKj cY`, `e` ev DcRvZ BZ`w`i evRvi gj` GKtI Dnvi tPtq KgcTq kZKiv 80 fVM tenk ntj tmUvtK emYwR`K Lvgti ejv nq|

GLvtb fiY-`tciY I emYwR`K Lvgti i Zj`bvgj-K AvtjvPbv Kiv nt`Q| G t`tK`b cKvi Lvgti i cv`R` , tjv eSv hite (mvi Yx-3)|

**mvi Yx 3 : fiY-`tciY I emYwR`K Lvgti i cv`R`**

<b>welq</b>	<b>fiY-`tciY Lvgti</b>	<b>emYwR`K Lvgti</b>
1  webtqVM	wbR`^m`u`, kg, cμR	wbR`^I FY Kiv m`u`, cμR, kg
2  chny <sup>3</sup>	me aitbi Kul.chny <sup>3</sup>	emYwR`K fite jvFRbK chny <sup>3</sup>
3  Drcv`b	Kg ntZ gvSwi, mvgvb` tenk	AtbK tenk
4  cY`/`e` e`envi	cwi emi K tfVM tenk, wepμ Kg	wepμB tenk, tfVM Kg
5  evRvi/gj`	evRvi RvZ mgm`v bvB, gtj`i cFve Kg	evRvi RvZKiY Ri`ix, gtj`i cFve AtbK tenk
6  Ae`rb	t`tki mKj Mtg	evRvi-m`ear m`ubae`rb, kn`ii Avtkcvtk

**Lvgti emYwR`KxKi`Yi Ašivq**

evsj v`tki t`c`v`c`U Kul.Lvgti emYwR`KxKi`Yi AšivqmgR`w`e`jcN

- 1| m`u` I Avw`R m`gve`Zv
- 2| jvMmB chny<sup>3</sup> I`qZvi Afve
- 3| chny<sup>3</sup> Ablyqx DcKi`Yi Afve
- 4| cwi`tetki c`ZKj Zv
- 5| S`K Mh`Y m`gve`Zv
- 6| gj` I evRvi wel`q`f`avi Yv|

**Lvgti emYwR`KxKi`Yi Dciq**

Lvgti emYwR`KxKiY cμqv weifb`fite m`ubren`Z cvti | Zte Gt`q`I Dc`ti emY`Z Gi AšivqmgR``i`Kivi e`e`v`v`Kv Ri`ix| tmB m`t`K KIKi ZYgj-`ch`q m`st`h`M`v`cb Kti c`P`v`w`ntZ nte| th me Dcvtq Lvgti emYwR`KxKiY ntZ cvti tm`w`j` ntj vN

- 1| tKv`u`vbx (Company) m`w`o
- 2| U`v` ev dvD`f`U`kb (Trust or Foundation) MVB
- 3| temi Kvi`x c`Z`v`b ev Gb`RI (NGO) Kv`h`g
- 4| KIK msMVB (Farmers' association) c`Z`v`
- 5| KIK/e`w`/D`v`v` Db`q`b (Farmer/Individual/Entrepreneurship development)

GLvrb mst`qtc Lvgvi ewYwR`KxKiYi Dc`ti ewYz Dcvq, tji vi fvgKv Avtj vPbv Kiv ntjv :

tKv`ubx `xNp b Awak  
Drcv`tb m`qg Kul.c`hy  
KIKtK t`te Ges  
Drcw`Z cY` μq Kti  
evRviRvZ Kite| g`vdi  
civcivc KIK tmev  
ntZ nte tKv`ubxi  
D`i`k`|

1] **tKv`ubx m`p** : Kul. cY` ev DcKiY evRviRvZKiY GK ev GKwaK e`emvqK tKv`ubx ntZ cvti | tKv`ubx `xNp b Awak Drcv`tb m`qg Kul.c`hy KIKtK t`te Ges Drcw`Z cY` μq Kti evRviRvZ Kite| g`vdi civcivc KIK tmev ntZ nte tKv`ubxi D`i`k`|

2] **Uv`- ev dvD`Ukb MVb** : i`agv` Kul.c`hy D`m`eb, Kul.c`Y`i Drcv`b evovt`v I Hme `e` evRviRvZKiY KIKtK mnvqZv c`v`bi D`i`k` m`sk` w`tkl`A mg`stq Guv MVb Kiv nte| c`v`Rv`b GLvb ntZ KIKtK Drcv`b FY I c`v`R mieivn Kiv hite|

3] **GbvRI Kvh`q** : evsjv`tki c`Z`s`A`Aj `vii` w`tg`v`Pb, w`q`v, `v`v, Kul.c`f`v`Z Kvh`q`g A`b`K GbvRI Rvov AvtQ| Zv`i Kvh`q`g cvit`ek w`f`v`EK c`hy D`m`eb I tmUvi ewYwR`K e`envti mnvqZv c`v`b GKwU, j`az`c`v`Dbq b tK`Skj ntZ cvti |

4] **KIK m`MVb** : v`b`R`i`i` f`v`m` v`b`Riv Mo`Z m`ys`Mv`Z, m`k`Lj I m`sh`v`M` KIK m`MVb Mto tZjv ntjv Lvgvi ewYwR`KxKiYi D`Eg c`v`| G m`MVb RvZvq, Av`Awj`K I `v`bxq miKvix ev temiKvix Awd`m m`sh`v`M` Kti Dch`v` c`hy w`l`q` c`k`q`v`v` v`b`q` G Kv`R` mdj`Zv` j`v`f` Ki`Z` cvti | c`hy e`envti F`Yi` Rb` e`v`st`Ki` m`v`\_`thv`m`sh`v`M` Kiv mnR nte| `v`g`e` w`f`v`v` evRviRvZKvix m`MVb Gi`f`c` GKwU ms`v`|

v`b`R`i`i` f`v`m` v`b`Riv  
Mo`Z m`ys`Mv`Z, m`k`Lj  
I m`sh`v`M` KIK m`MVb  
Mto tZjv ntjv Lvgvi  
ewYwR`KxKiYi D`Eg  
c`v`| `v`g`e` w`f`v`v`  
evRviRvZKvix m`MVb  
Gi`f`c` GKwU ms`v`|

5] **KIK/e`v`/D`v`v` Dbq b** : met`P`q` mnR I `v`Z`i` e`e`v` ntjv Av`M`h`x` e`v`v`v`, Av`f`A` I `q` KIK ev th tKv`b teKvi h`g`K`N` G`i` c`hy c`k`q`v`v` w`q` Lvgvi ewYwR`KxKiYi Drcw`v`Z Kiv| G`z` c`Z`t`k` `v`v`v`c`v`g`z`v` Lvgvi m`p`i` m`sh`v`M` cvteb| v`b`R` `q`Zv I c`v`R` w`v`b`q`v`M`i` t`q`v`i` cvteb| G`i`q`v`i` m`sk`-`o` w`e`v`v`b` ev w`tkl`A`i` m`v`\_`m`sh`v`M` i`q`v` Kti Gv`l`q` th`Z` nte|



**Abj`j` b (Activity)**: evsjv`tki Lvgvi ewYwR`KxKiYi eZ`v`b Ae`v` Z`j` ai`b`| eZ`v`b Ae`vi Dbq`b` Kx`Kx` c`v`q`c` M`h`Y` Av`i` c`v`q`v`R`b` Zv` h`v`v`mn` Dc`v`c`b` Ki`b`|

**Lvgvi ewYwR`KxKiYi MtelYvi fvgKv**

evsjv`tki Kul. Dbq`b` ewYwR`K Lvgvi `v`c`b` Drcw`v`x, m`R`b`k`j` I Aa`emvq`x` e`v`v`v`M`Y`t`K` Kwi`Mwi` I Dch`v` c`hy mnvqZv c`v`b` c`v`q`v`R`b`| civcivc t`tki` j`q` j`q` fi`Y`-t`civ`Y` Lvgvi `tj`v`tki Lvgvi ewYwR`KxKiYi c`v`q`v`q` j`v`f`R`b`K` Kiv` c`v`q`v`R`b`| B`i`Z`v`c`e`Avtj`v`P`Z` mgm`v` `tj`vi` mgv`v`b`K`i` ZY`g`-`ch`q` MtelYv`i`Kvi`|

evsjv`tki 30wU Kul. cvit`ek A`A`j` w`f`v`v`| Gme A`A`j`i` me`P` mgm`v` I m`v`ebv` GK`i`Kg` bq`| Kul. MtelYv`i` c`v`Z`v`t`bi` c`hy me`P` mgv`b`f`ite` j`v`M`B` nq`bv`| Ziv` Av`ki` `k`t`K` G`i`t`k` i`i`æ`nq` Lvgvi` e`e`v` I` cvit`ek` MtelYv`i`| Gi`j`q`v` w`q` KIKtK` m`t`z` v`b`q` w`v`f`v`b`Kul. cvit`ek` `v`bxq` DcKiY` I` m`v`u`t`i` w`f`v`E`t`Z` KIKtK`i` tgav` I` `q`Zv` Kv`R` j`v`M`q` evRvi`-P`v`v`v` m`v`ub`e` j`v`M`B` c`hy D`m`eb` Kiv`| eZ`v`b` G` ai`t`bi` A`b`K` Kul.c`hy` i`t`q`v`|

cieZ`v`c`v` `tj`v`t`Z` evsjv`tki` t`c`v`q`v`t`Z` MtelYv`i` ä` dj`v`d`t`j`i` w`f`v`E`t`Z` Lvgvi` ewYwR`KxKiYi` D`v`v`v` Dbq`b` c`v`q`v` Avtj`v`Pbv` Kiv` nte`|



### cvVhEi gj`iqb 2.1

mivK DEti i cvk, UK Pý (v) i b |

- 1/ evsj v`tki epEg tckv Kx ?
  - K) gvQai v
  - L) Pvkzx
  - M) Kvl.
  - N) kvRvex
  
- 2/ t`tki Kvl.Lvgvi tK eZgvb fiY-tcvlY chq t\_tK tKvb chq Dbz Ki tZ nte ?
  - K) emYvR`K
  - L) AvavbK
  - M) vjk`a
  - N) mgvSZ
  
- 3/ Lvgvi emYvR`KxKiY I emYvR`K Lvgvi mgv\_R gtb ntj I `vdi vfbzv Kx ?
  - K) cvvZ
  - L) cvlvqv
  - M) D`tk`
  - N) Dbqb
  
- 4/ fiY-tcvlY I emYvR`K Lvgvti i Zjbvq KqvU vel q AvtQ ?
  - K) AvUvU
  - L) cvvU
  - M) QqvU
  - N) bqvU
  
- 5/ Lvgvi emYvR`KxKiY KqvU Dcvtq Kiv hıq ?
  - K) QqvU
  - L) cvvU
  - M) mvZvU
  - N) bqvU
  
- 6/ Lvgvi emYvR`KxKiY mgm`v mgvavbKt` tKvb chq Mtel Yv`i Kvi ?
  - K) D`PZi
  - L) ga`g
  - M) ZYgj-
  - N) vef`k
  
- 7/ evsj v`k KqvU Kvl.cvi tek AA`tj vef`3 ?
  - K) v`kvU
  - L) cvvkvU
  - M) Pij kvU
  - N) vevkvU

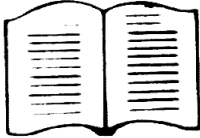


### cw 2.2 D`v<sup>3</sup>vi msAv I aib

G cvW tkfI Avcib-

- ◆ D`v<sup>3</sup>v wK ev KvK etj Zv ej tZ I wj LtZ cvi teb|
- ◆ D`v<sup>3</sup>vi `enkó" wK Zv D tJ L Ki tZ cvi teb|
- ◆ D`v<sup>3</sup>vi cKvi t f` Z t j ai tZ cvi teb|
- ◆ D`v<sup>3</sup>vi wK Zvi eYv Ki tZ cvi teb|

### D`v<sup>3</sup>v (Entrepreneur)



D`v<sup>3</sup>v kãUi gj- A\_@ntjv D`v<sup>3</sup>v ev cKÍ MhY| Bsti RxtZ GtK e`emvqx (Merchant), AwfhrTx (Adventurer) ev wbtqMKZP(Employer) BZ`w` ejv nq|

A\_@mZi m f` D`v<sup>3</sup>v n t`Q tmB e`w<sup>3</sup>, whub wT wea Z\_` A\_@ evRvi Ae`v, e`e`vcbr I wmxvšlMhY-Gi mgštq tKvb j vFRbK D`v<sup>3</sup>v MhY Kti b|

mgšcUv t i gtZ, D`v<sup>3</sup>v ntjv A\_@mZi AMhY Pwj KvKw<sup>3</sup>| hvi KvR n t`Q bZb wKQyD`m teb (Innovation) Kti A\_@wZK Dbq b mrvab|

wj teb t ÷ B t bi gtZ, D`v<sup>3</sup>v n t`Q e`wZm g ` q I mdj e`w<sup>3</sup>Z j| whub tKvb Dbq b KvR e`\_ n teb br| ev`bZv ntjv e`\_ZvB wbgq, mvdj `B e`wZm g|

A\_@mZi m f` D`v<sup>3</sup>v n t`Q tmB e`w<sup>3</sup>, whub wT wea Z\_` A\_@ evRvi Ae`v, e`e`vcbr I wmxvšlMhY-Gi mgštq tKvb j vFRbK D`v<sup>3</sup>v MhY Kti b|

### D`v<sup>3</sup>vi `enkó" (Characteristics of entrepreneur)

D`v<sup>3</sup>vi msAv, t j v n t`Z Gi `enkó" A t bK UvB e`v h v q| D`v<sup>3</sup>vi `enkó", t j v w b`e`f`cN

- 1| D`m`ebx qgZv m`úba (Innovativeness)
- 2| c`ej B`Qvkw<sup>3</sup> m`úba (Strong will power)
- 3| S`wK Mh t Y AvMhX (Risk-taking attitude)
- 4| m`wv` 0 j q`g`x (Purposeful goal)
- 5| m`x;Lj I wbgvbyZv (Disciplined and scheduled)

### D`v<sup>3</sup>vi cKvi (Types of entrepreneur)

gj-Z w`f`b`e`D`m`ebxi cKvi t f` i Rb`B D`v<sup>3</sup>vi w`f`b`Zv nq| D`v<sup>3</sup>vi m vavi YZ cU cKvi | G, t j v n t`j v) N

- 1| bZb t f`iM`cY` cPj b/cjvZb cY` Dbq b (beifcraqb)
- 2| Drcv` t bi Awf`be tKŠkj (c`h`y<sup>3</sup>) cPj b
- 3| bZb Gj vKvq bZb evRvi m`w Kiv
- 4| be Dr t mi K v g v j /Avavc`Z cY` mi e i v n
- 5| bZb w k i `vc b/ U t ÷ M v b/ G K K evRvi m R b

### D`v<sup>3</sup>vi wKiy (Entrepreneurship)

D`v<sup>3</sup>v KZ` th tKvb D`v<sup>3</sup>v Mh t Yi Ab`x t j Zvi gvbwK, Kwi Mvi I A\_@wZK g t b r f i e- m R t b (Motivation) Kg`KŠkj ev c`u`q v n t`Q D`v<sup>3</sup>vi wKiy | GB c`u`q v q D`v<sup>3</sup>vi g t b G K i U g n i b M š t e` (D`v<sup>3</sup>v) t c`u`v i `c`e l B`Qv t K R w M Z K i v n q | d t j m`w i A v b` I w e R t q i A v K v` q i v q Z v i A š t `k w<sup>3</sup> e v x t c t q j t`q` t k` x f z n q | B n v t K B D`v<sup>3</sup>vi wKiy e j v n q |



**Ab`x j b (Activity):** aiab, Avcbri eUzRbie ingvb GKwU tcm`e`Lvgvi Kivi D`v<sup>3</sup>v MhY Ki t Z AvMhX | G t`q` t`I mdj D`v<sup>3</sup>v Zvi Kx Kx, Yvej x`vKv ev`Abxq etj Avcib g t b Kti b, h y` m n K v t i D t j - L K i a b | R b i e i n g v b t K v b a i t b i D`v<sup>3</sup>v w n t`m t e w e t e w P Z n t e b?





## cuVhEi gj`iqb 2.2

miWK DEti i cuK, QUK Pý (√) i b|

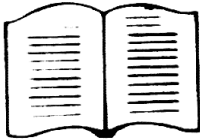
- 1/ Dž`ir<sup>3</sup>v kãuLi gj- A\_ QKx ?
  - K) Dž`iMx
  - L) Dž`iM MhY
  - M) cKí`Zix
  - N) cwi KíbvKvíx
  
- 2/ Dž`ir<sup>3</sup>vi`enkó` KquU ?
  - K) cuPiuU
  - L) PviuU
  - M) QquU
  - N) miZiuU
  
- 3/ Dž`ir<sup>3</sup>v KZ cKvi ?
  - K) Qq
  - L) cuP
  - M) Pvi
  - N) miZ
  
- 4/ Dž`ir<sup>3</sup>v wínea Zt\_`i mgštq jvFRbK Dž`iM MhY Kti b| Gi` wj nťjv evRvi Ae`r I e`e`rcbv, ZZxquU wK ?
  - K) cuR
  - L) Dž`iM
  - M) wmxvš- MhY
  - N) cwi eřk
  
- 5/ Dž`ir<sup>3</sup>v e`iwZμgx`ŋ I mdj e`ir<sup>3</sup>Zij wZwb tKvb KvřR wK nťe bv ?
  - K) mdj
  - L) e`\_`©
  - M) wCQcv
  - N) fixZz

**cw 2.3 Kwl tZ Df`v<sup>3</sup>v Dbq b, mgm`v I m<sup>a</sup>tebv**



G cvW tkfI Arcub-

- ◆ Kwl tZ Df`v<sup>3</sup>v Dbq b KtK etj Zv eY<sup>0</sup> Ki tZ cvi teb|
- ◆ Df`v<sup>3</sup>v Dbq b c<sup>0</sup>uqvU e`vL`v Ki tZ cvi teb|
- ◆ Df`v<sup>3</sup>v Dbq b mgm`vmgr-<sup>0</sup>PyZ Ki tZ cvi teb|
- ◆ Df`v<sup>3</sup>v Dbq b m<sup>a</sup>tebv m<sup>a</sup>utK<sup>0</sup>eY<sup>0</sup> Ki tZ cvi teb|



**Kwl.tZ Df`v<sup>3</sup> Dbq b (Agricultural entrepreneurship development)**

Kwl. Dbq b i gj- K\_v ntj v weAvbwf<sup>0</sup>EK j vMmB Kwl. ch<sup>0</sup>y<sup>0</sup> e`envi | Df`v<sup>3</sup>v Dbq b GKwU c<sup>0</sup>uqv hvi gra`tg Kwl. t<sup>0</sup>q<sup>0</sup>t<sup>0</sup> emY<sup>0</sup>uR`K m<sup>a</sup>tebv<sup>0</sup>gq c<sup>0</sup>Zk<sup>0</sup>z<sup>0</sup>k<sup>0</sup>j ch<sup>0</sup>y<sup>0</sup> i cY<sup>0</sup>c<sup>0</sup>uqvM I euj e`envi ubw<sup>0</sup>Z Ki tZ D`gx KIK ev Ab`tK ch<sup>0</sup>y<sup>0</sup> e`e`rcbvq `q<sup>0</sup> Kti Lvgvi m<sup>0</sup>otZ Dc<sup>0</sup>thvMx Kti Mto tZvj v hvq|

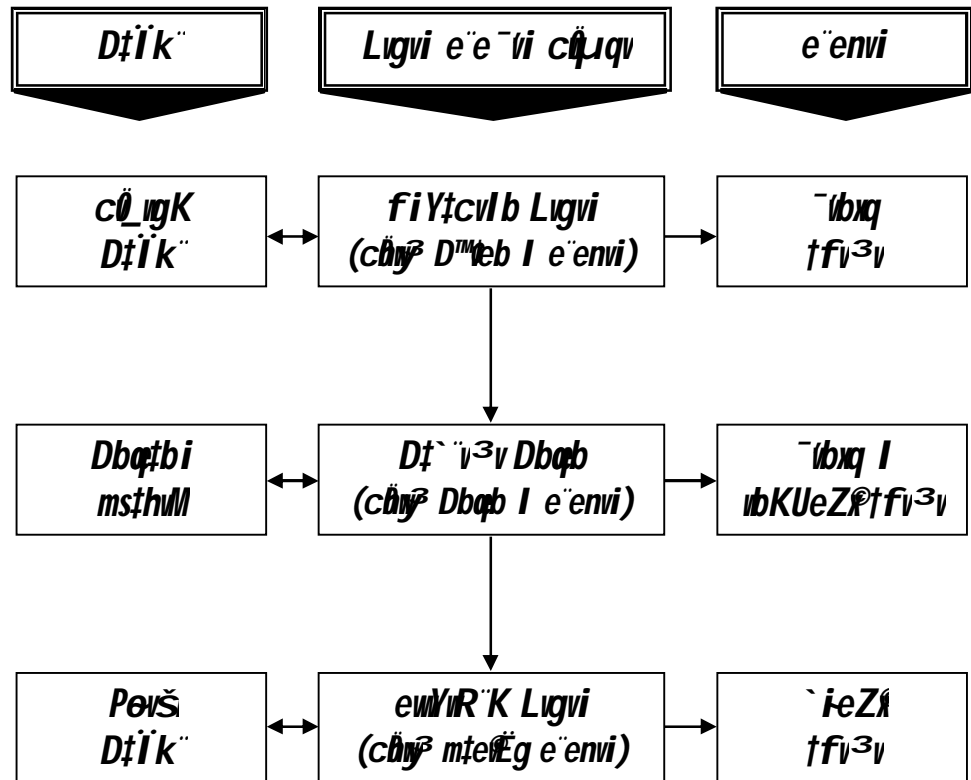
Df`v <sup>3</sup> v Dbq b GKwU
c <sup>0</sup> uqv hvi gra`tg Kwl.
t <sup>0</sup> q <sup>0</sup> t <sup>0</sup> emY <sup>0</sup> uR`K
m <sup>a</sup> tebv <sup>0</sup> gq c <sup>0</sup> Zk <sup>0</sup> z <sup>0</sup> k <sup>0</sup> j
ch <sup>0</sup> y <sup>0</sup> i cY <sup>0</sup> c <sup>0</sup> uqvM I
euj e`envi ubw <sup>0</sup> Z
Ki tZ D`gx KIK ev
Ab`tK ch <sup>0</sup> y <sup>0</sup>
e`e`rcbvq `q <sup>0</sup> Kti
Lvgvi m <sup>0</sup> otZ Dc <sup>0</sup> thvMx
Kti Mto tZvj v hvq

Lvgvi e`e`v I cvi tek MtelYv weAvbwf<sup>0</sup>Kwl. cvi tek j vMmB ch<sup>0</sup>y<sup>0</sup> D<sup>0</sup>teb Kti fiY-<sup>0</sup>tcvY Lvgv<sup>0</sup>i Drcv`b evot`Q| MtelYvi GUr c<sup>0</sup>uqK Df`k`| Avi Pevs<sup>0</sup>Df`k` n<sup>0</sup>Q fiY-<sup>0</sup>tcvY Lvgvi tK Dbz Kti j vRbK emY<sup>0</sup>uR`K Lvgv<sup>0</sup>i cvi YZ Kiv ev Lvgvi emY<sup>0</sup>uR`K iY| Df`v<sup>3</sup>v Dbq b n<sup>0</sup>Q c<sup>0</sup>uqK I Pevs<sup>0</sup>Df`k` i ga`eZ<sup>0</sup>ch<sup>0</sup>q ev msthvM| mst<sup>0</sup>q<sup>0</sup>tc e`vL`v Kij GUr n<sup>0</sup>te ubw<sup>0</sup>fcN

fiY-<sup>0</sup>tcvY Lvgvi → Df`v<sup>3</sup>v Dbq b → emY<sup>0</sup>uR`K Lvgvi |

**Dt`v<sup>3</sup>v Dbqj cūiqv (Process of entrepreneurship development)**

Dt`v<sup>3</sup>v GKUu Kul.cwi tek cūtg tQvU AvKvti Kul.Lvgvi Kti tmLvtb Kul.cūy<sup>3</sup> e`envi, e`e`vcbv I evRvi mjev hPvB cūvZtZ ev`e Avb jvf, AwfÁZv I `qjZv ARB KitZ \_vKb| GUvK Lvgvi emYvR`KvKiY cūkqjY ejv thZ cvti| Gfite cūy<sup>3</sup>MZ `qjZv ev Amjev vixqjY Kti cwieZB/cwieaB ōvin cūy<sup>3</sup>IK emYvR`Kfite DcthvMx Kiv hvq| cieZvZ Dt`v<sup>3</sup>vMY `qjZv I AvZvekjtm ejxqv nq vōtš/ vōtRivB Kul.Lvgvi mRtb GvMtg thZ cvtib| Drcv`b evovi dtj cY` ev`te`i MhK cwiwal μtg teto hvq| GB Dt`v<sup>3</sup>v Dbqj cūiqv uPĪ 9-G t`Lvtrv ntjv|



uPĪ 9 : fiY-tcvlY Lvgvi nZ emYvR`K Lvgvi mōi ga`eZvDt`v<sup>3</sup>v Dbqj cūiqv

t`tki Kul.cwi tek,  
Av\_šmgvRK Ae`v Ges  
mshvM-mjev vifbZvi  
Rb` Dt`v<sup>3</sup> Dbqj  
vibvea mgm`v ve`gvb|

**Dt`v<sup>3</sup>v Dbqj mgm`v**

t`tki Kul.cwi tek, Av\_šmgvRK Ae`v Ges mshvM-mjev vifbZvi Rb` Dt`v<sup>3</sup> Dbqj bibvea mgm`v ve`gvb| G, tjvK vZb vtm fvM Kiv hvq| thgbŃ (1) Kvii Mii mgm`v (Technical problems), (2) cwi tekMZ mgm`v (Environmental problems) Ges (3) A\_švZK mgm`v (Economic problems) | cūZvU mgm`vK msvqjB AvKvti e`vL`v Kiv ntjv|

1/ **Kwi Mwi mgm`v**

we`gvb Kwi Mwi mgm`v ub`e|cN`

- 1.1 c`ZuU Df`vMB mdj nq jvMmB Kwl. chny`i e`envtiN` G K\_vU m`u`K`  
Df`v`v`i AmfPZbZv|
- 1.2 Kwl. chny` e`envti ev`e AwfAZv I `qZv c`qvRbN` GUv MhY KiZ  
Df`v`v`i Abxrv|
- 1.3 jvMmB chny`i Drm Ges Df`v`v`i gfa` KvhRi msthvMi Afve
- 1.4 chny`i kZ`qgvZiteK KvR Kivi `q kigtKi Afve|
- 1.5 Lvgi cwi Ki bvq wekI Z chny` cwi Ki bvq wekI Af`i gZvgZ MhY bv Kiv|
- 1.6 mgvS Z Kwl. chny`i m`eav m`u`K`AmfPZbZv|

2/ **cwi tekMZ mgm`v**

i azcY`cwi tekMZ mgm`v ub`e|cN`

- 2.1 Kwl. Drcv`b `RueK chny`vq (Biological process) m`ub`enq, ZvB cwi tek  
ub`f` G K\_vi i az;bv t`qv|
- 2.2 tKvb cwi tek tKvb Lvgi jvFRbK, cwi tekMZ S`K AvfQ wKbvN` Df`v`v`i  
G weI tq wP`S`i bv Kiv|
- 2.3 Drcv`tbi iia` nZ tkl chS`Abk`j c`KwZK cwi tek bv\_vKtj Zvi mgvavt`b  
weK`i wP`S`i bv Kiv|
- 2.4 Drcv`tbi DcKiY c`KwZKfite KZUKzAvi m`m`h, Drcv`b ev mu`q Kti  
KZUKzLvgi cwi tek cvl qv hvteN` Zvi mgS`q bv Kiv|
- 2.5 mgv`RK ubivcEvi Afve, DEg thvMthvMi cwi tekMZ mgm`v|
- 2.6 cY` wecYtb evRvi cwi teiki cfve wP`S`i bv Kiv|
- 2.7 AbvKI`xq I AmsMwZ Kwl. evRvi cwi tek|

3/ **A\_`wZK mgm`v**

weivRgvb A\_`wZK mgm`v ub`e|cN`

- 3.1 Df`v`v`i Avw`R m`wZ m`wZ|
- 3.2 c`wZ`v`b FY e`e`v AcL`z Ges qZ`Df`v`v`i Abk`j bq|
- 3.3 c`K`i evRU cwi Ki bv I chny`i t`q`i ev`eZv m`ub`ebv n`q AvbgvmbK nI qv|
- 3.4 A\_`M`e`c`wZ`v`b KZ`R Kwi Mwi I cwi`k` m`thvMzV c`vb bv Kiv|
- 3.5 w`k`i Df`v`v`i b`vq Kwl. Df`v`v`i M`wZ `z` g`v`v` AR`bi g`v`v`m`K`Zv|
- 3.6 Kwl. w`k`i FY Ab`v`v` LvZ LvUv`v`|

<p>t`tki wefbaGj vKvq wev`B ev msNe`fite eU mdj Kwl. Lvgi Df`v`v`i we`gvb </p>
--

**Df`v`v` Dbaq b`e`v (Potentials of entrepreneurship development)**

Df`v`v` Dbaq`bi wefba`mgm`v Ges t`tki c`KwZK c`ZKj Zv (eb`v, Liv, Nw`So, w`k`j vev`v)  
tg`b ub`j I Kwl. Df`v`v` Dbaq`b c`P`z m`e`v`v` i`q`q`| t`tki wefba`Gj vKvq wev`B ev  
msNe`fite eU mdj Kwl. Lvgi Df`v`v`i we`gvb| GKwU msv`B Zv`j Kv ub`e`v` qv n`j v`N`

- 1| **dmj RvZ Lvgvi** : Pr, i veri, Avg, wj Pz Kwlj, Avbri m, tctc, tcqiv, tj eybimfx ev Pvi v, km` I kvKmeRxi exR, bwi tKj, Kj v, tRg, tRj x, kieZ|
- 2| **ci`cwlRvZ Lvgvi** : `y, Miæ tgvUvZvRvKi Y, nwn, gjMx, etj vi, nwn-gjMxi ev`Pr|
- 3| **gurm`RvZ Lvgvi** : wPsw Lvgvi, Rj gnvj, grm` n`vPvix, gvQ Pvl i cKz-`wN, wPsw c`uqvRvZKi Y, gvQ wngvqZKi Y|

G Qvovl f`iel` tZ mætebvqg Kul.Dt` v`Mi t`T, tj v n`QÑ

- 2| **dmj** : ^Zj exR, Wvj, B`z tcqR, imly, Av`v, gwi P, Avbri m c`uqvRvZKi Y, tctcu tcqiv, tj eywefbKv`Vi eb|
- 2| **ci`cwl** : QvMj, gwnl, tfo v, msKi RvZ Miæ Dbz RvZi nwn-gjMx, wN, gvLb, cwi |
- 3| **gurm`** : mKj cKzi wK`gvQ, avb t`T gvQ, avb t`T wPsw Pvl, eo AvKv`i i tcvri Pvl, cPr tWverq gv, i Pvl |
- 4| **mgvSZ Lvgvi** : dmj, ci`cwl I gurm` GB wZbui th tKv mgvSZ Dt``vM me`c` j vFRbK nq|

Dt` v`vi Dbq b t`tk Kul.RvZ cY` Avg`wb Kvgtg i Bvbx evovZ m`g| GtZ bZb Kgm`v`v m`o nte Ges`wi`a w`gvPtb mrvqZv Ki te|



**Ablyj b (Activity):** Avcub Rvbg tZ Dtj L`thvM` GKw Kul.Lvgvi Dt` v`vi bvg Dtj L` Kiab| Avcbvi Dvj wLZ Kul.Lvgv`i Kwi Mix, cui tekMZ I A\_`wZK mgm`vmg` Kx Kx Zv eY`v Kiab|



### cuVhEi gj˘iqb 2.3

#### mWk DEti i cuVhEi Py (v) i b |

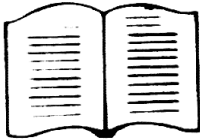
- 1/ j vMmB Kwl. chny e˘envti i c0\_wgK DfIk˘ Drcv`b evovfbv, Avi PevsI DfIk˘ Lvgvi emYnR˘KxKiY | Df˘v˘ Dbqtb n˘Q G ˘tjvi tKvb chiq ?  
 K) chiq  
 L) cieZx˘chiq  
 M) ga˘eZx˘chiq  
 N) tKvbUvB bq
- 2/ Df˘v˘ DbqtbK Kx c0kY ej v thZ cvti ?  
 K) Lvgvi emYnR˘KxKiY  
 L) Lvgvi Dbqb  
 M) Lvgvi ˘vcb  
 N) Lvgvi gj˘iqb
- 3/ Df˘v˘ Dbqtb i bvbvlea mgm˘vK KZ fvM fvM Kiv hvq ?  
 K) Pvi  
 L) wZb  
 M) ˘B  
 N) cvP
- 4/ t˘tki wvfbGj vKvi mdj Kwl. Lvgvi , tj v c0vbZ KZfvM fvM Kiv hvq ?  
 K) wZb  
 L) cvP  
 M) Pvi  
 N) Qq
- 5/ fvcl ˘Z m˘tebvq Kwl. Df˘v˘ Mi gta˘ mePcY j vFRbK n˘Z cvti tKvb Df˘v˘ ?  
 K) ci cvL  
 L) dmj  
 M) gvrn˘  
 N) wZbUv mgŒq

### cw 2.4 Dt`v<sup>3</sup>v Dbqtbi c\_ I wft`Rbv : GKK cY`glyx I eu cY`glyx Lvgvi



G cvW tkfI Arcub-

- ◆ Dt`v<sup>3</sup>v Dbqtbi thSw<sup>3</sup>KZv Kx Zv eY<sup>3</sup>vi Ki tZ cvi teb|
- ◆ Dt`v<sup>3</sup>v Dbqtbi c\_ I tKSkj m<sup>3</sup>utK<sup>3</sup>e`vL`v Ki tZ cvi teb|
- ◆ Dt`v<sup>3</sup>v Dbqtbi wft`Rbv w` tZ cvi teb|
- ◆ GKK cY`glyx Lvgvfi i wft`Rbv w` tZ cvi teb|
- ◆ eu cY`glyx Lvgvfi i wft`Rbv w` tZ cvi teb|



#### Dt`v<sup>3</sup>v Dbqtbi thSw<sup>3</sup>KZv (Rationale of entrepreneurship development)

KIKMti ga` n tZ Dt`v<sup>3</sup>v Dbqtbi thSw<sup>3</sup>KZv gj-Z MtelYv AwfAZv cNz| weMZ GK`kK ati Lvgvi e`e`v I cwitek MtelYmn Ab`vb` MtelYv cNzOvtb G ai tbi KI tKi Askx`wi tZj Zv` i cwitek KvR Pj tQ| Mtel Yv ex AwfAZv mst`jt c ub`e`fcN

- 1| KI tKi Lvgvfi i Drcv`b e`e`v wewfbaAvst`uqv i gva`tg mguSZ |
- 2| mKj KIK mKj Kul.cNyb<sup>3</sup> m<sup>3</sup>uY<sup>3</sup>ite MhY Ki tZ cvi tQ bv|
- 3| AtbK KIKB cNyb<sup>3</sup> e`envfi hZkxj, `q I Awak Drcv`tb m`tg| GtZ cNyb<sup>3</sup> i cY`Drcv`bkj Zv cKvk cvq|
- 4| AtbK KI tKi B D`m`ebv `tgZv, Mtel Yv cNzYv Ges`vbxq cNyb<sup>3</sup> Avb i tqtQ|
- 5| mguSZ Kul.cNyb<sup>3</sup> `vbxq m<sup>3</sup>u`, `Re eR`I cKuzi `q e`envfi i gva`tg LiP Kgvq, Drcv`b evovq|

AtbK KIKB cNyb<sup>3</sup> e`envfi hZkxj, `q I Awak Drcv`tb m`tg| GtZ cNyb<sup>3</sup> i cY`Drcv`bkj Zv cKvk cvq|

wk`v`qZ teKvi RbtMoxi ga` n tZ Dt`v<sup>3</sup>v Dbqtbi thSw<sup>3</sup>KZv gj-Z Gt`i `Kgnis`v tbi mshvM m<sup>3</sup>otZ ubvZ| G ai tbi AvMox I `q Rbkv<sup>3</sup> Drcv`b evv i gva`tg Kul`ik meKik I Avi I A`q kigK wbtqvM Ae`vb i vL tZ mnvqZv Ki te|

#### Dt`v<sup>3</sup>v Dbqtbi tKSkj MZ c\_ (Strategic ways of entrepreneurship development)

Dt`v<sup>3</sup>v Dbqtbi c\_ I tKSkj wbfP Kti Gi Dt`i k, mgm`v I m<sup>3</sup>ebv Ges Dt`v<sup>3</sup>vi m<sup>3</sup>u` I `vbxq cwitek i Dci| t`tki wewfba`v tB GB c\_ I tKSkj n tZ cvti wewfba<sup>3</sup> wKs` tKSkj MZ bmvZgv i (Strategic policies) wfwE tZ tKSkj MZ c\_ `Zwi n tZ cvti | mst`jt c GB bmvZ, t j v Avtj vPbv Kiv n t j v|

##### 1| AveiZ cNyb<sup>3</sup> D`m`eb I e`envi

t`tk mefkl Z`wfwEK Kul.cNyb<sup>3</sup> cwitek I m<sup>3</sup>u` wfwE tZ D`m`eb GKw Pj giv cNyb n te| Dt`v<sup>3</sup>v MY tm, t j v tR tB I wktL e`envi Ki teb|

##### 2| AveiZ cNyb<sup>3</sup> cK`qY I `qZv Dbq

mefkl D`m`eb cNyb<sup>3</sup> mdj cNyb<sup>3</sup> Mj Rb` Dt`v<sup>3</sup>v i cNyb<sup>3</sup> Ges Lvgvi e`e`v tcvbq `qZv evv tZ cK`qY GKw Pj giv cNyb n te|

mefkl D`m`eb cNyb<sup>3</sup> mdj cNyb<sup>3</sup> Mj Rb` Dt`v<sup>3</sup>v i cNyb<sup>3</sup> Ges Lvgvi e`e`v tcvbq `qZv evv tZ cK`qY GKw Pj giv cNyb n te|

3/ cY` necYb gubUis

`q Df`v3v Dbaqtb cY`i erRvi gj` I necYtb `xN@gqv`x Zf`i c@qvRb/ iBmbthvM` cY`i Z`I Rvbr c@qvRb/

4/ ciugk@ cwi`k@ mufn

Df`vM cwi Kí bv I er`evqb Ges cY` necYtb wekIÁ/weÁvbx`i ciugk`eva`Zvgj-KKiY/ Gf`qf`I A\_@Mre c@Zóvb/GbuRI, m=c@hvi Ywe` I wekIÁ/weÁvbx`i wíglyx msthvM m@óKiY/

5/ f`kR cY` Puv`vi claub` c@vb

f`tki Kul.DcKiY I Lv` cY` Drcv`b Df`vMfK claub` c@vbKiY/ Gf`vte Kul.RvZ cY` Avg`vbx nvm cvte/ wekI f`qf`I iBmb cY` Drcv`bKiY/

6/ ve`gub c@KuzK m=úf` i m@ze`envi

f`tki weifbaGj vKiq Kul.cwi tek Abyv`ti weifbaDrcv``bi c@KuzMZ msthvM i tqfQ/ Gme Gj vKvi m=úf` i m@ze`envi Kti Drcv`b evov`bv I cwi tek msi qY c@qvRb/

Df`v3v Dbaq`bi ubf`Rbv (Guidelines of entrepreneurship development)

Df`v3v Dbaq`bi c@g Kvr n`Q c@qvRbxq `eukó` m=úbaAvM@h e`w3 ube@PZ Kiv/ Gf`vte ube@PZ Df`v3v ub@j wLZ c`f`c M@Y Ki`eb/

Df`v3v Dbaq`bi c@g Kvr n`Q c@qvRbxq `eukó` m=úbaAvM@h e`w3 ube@PZ Kiv/

- 1/ c@kíi AvI Zvf@ chv@ (mga)-i Dci c@kqY M@Y/ chv@i S@k`\_vKtj Zv tRtb tbqv/
- 2/ c@kí`v`bi cwi tekMZ I Kwii Mii Dch@Zv wefPbv Kiv/ cwi tek`f`Yi m=tebv Kgv`bv/
- 3/ Df`v3vi ubR`m=ú` (Drcv`tb e`envi thvM)-Gi Zvj KvKiY/
- 4/ chv@ Abyv`ti c@qvRbxq hšcwiZ, DcKiY, cwi Pj bv I Ab`vb` e`tqi c@wK c@`j b`Zwi (AvBfUg I LvZ wfwEK)/
- 5/ `q I A`q kg e`enitii c@`j bKiY/ Gifc kg c@w ubw@ZKiY/
- 6/ DcKiY, hšcwiZ cfwZ c@w bi ubw`@`vb I c@Zóvbi Z`msM@/
- 7/ c@kí er`-evqtb mKj Kvr m=úv``bi mgq I`wqZi Abyv`ti QK`Zwi KiY/
- 8/ mKj Drcv``bi (cY`, `e`, DcRvZ, eR@) c@`j b`Zix/
- 9/ Dctii Kvr mg@ (1 n`Z 8 bs) m=úv``tb wekIÁ/weÁvbx msthvM Zv M@Y/
- 10/ FY M@f`Yi c@qvRtb A\_@Mre c@Zóvbi (e`vsK/GbuRI) thvM thvM`vcb/
- 11/ %@bw`b mKj LiP, Drcv`b I erRvi RvZKi`Yi ti KW@msi qY/ necYb m@óKiY/
- 12/ c@kí er`evqb Kv`j Am@av`\_tjv wj wce`xKiY I c@qvRtb wekIÁ/weÁvbx ciugk` M@Y/

ubf`Rbv : GKK cY`glyx Lvgi

GKK cY`glyx Lvgi Dcti evYZ ubf`Rbvi cti I ub@j wLZ c`f`c`\_tjv ubf`Z nte/

Drcw`Z eR`hv`f`Z Lvgi I`vbxq cwi tek`f`Y er`qZM@Kif`Z bv c`f`i Zvi e`e`v M@Y/

- 1/ cY` necYtb mgq I`vb ubaf`f`Y mZKZv Ae`j`b/
- 2/ Drcw`Z DcRvZ weq`bv n`j`tm`\_tjvi e`envi ubw@ZKiY/
- 3/ Drcw`Z eR`hv`f`Z Lvgi I`vbxq cwi tek`f`Y er`qZM@Kif`Z bv c`f`i Zvi e`e`v M@Y/



**ibš`Rbv : eû cY`glyx Lvgvi**

eû cY`glyx Lvgviti Dcš eWYŠ ibš`Rbvi cš i l w`mj mLZ c`šq c, šj v ibšZ nte|

1| Drcv`Z DcRvZ I eR®Ab` Drcv`šb e`enviti i cwi Kí bv Ki Y|

2| weifbæcY`/`è` Drcv`b cwi Kí bv ci `úš i i mř\_ migÄm`cY®Kti kš e`envi `šKi Y|

3| weifbæcY` wecYšbi mgq I `vb wbař šY cwi Kí bv Mš Y|

4| Drcv`Z eR®e`envi`bv nšj Zv hvšZ Lvgvi I `vbxq cwi šek `šY ev šwZMš`bv Kš i Zvi e`e`v Mš Y|



### cuVhEi gj`iqb 2.4

#### mWk DEti i cuKqUK vPy (v) v b |

- 1/ KIKMti ga` nZ Df`v<sup>3</sup>v Dbqtb thSw<sup>3</sup>KZv tKvb AwfAZv chZ ?  
 K) MtelYv  
 L) Amvdj`  
 M) e`isK  
 N) GbuRI
- 2/ ukvqZ teKvi RbtMvxi ga` nZ Df`v<sup>3</sup>v Dbqtb thSw<sup>3</sup>KZv tKvb mshvM mvoZ ubvruZ ?  
 K) PvKzx  
 L) we`k Mgb  
 M) `Kgfis`vb  
 N) ukq|KZv
- 3/ Df`v<sup>3</sup>v Dbqtb tKSkj MZ c\_ tKvb bmvZgvj vi wfiEtZ nZ cti ?  
 K) Drcv`b  
 L) emYR`  
 M) Kwi Mvi  
 N) tKSkj MZ
- 4/ Df`v<sup>3</sup>v Dbqtb KquU tKSkj MZ bmvZ Avtj vPbv Kiv nqtQ ?  
 K) cuPuU  
 L) QquU  
 M) mvZuU  
 N) PviuU
- 5/ Df`v<sup>3</sup>v Dbqtb cUg KivR cUqvRbxq `ewko` m`ubamKifc e`v<sup>3</sup> ubePb Kiv ?  
 K) AvMhx  
 L) mvg\_@vb  
 M) mdj  
 N) Pij vK
- 6/ Df`v<sup>3</sup>v Dbqtb KquU vbt`Rbv Avtj vPZ nqtQ ?  
 K) tPSi uU  
 L) wekuU  
 M) evi uU  
 N) `kuU
- 7/ GKK cY`glyx Lvgti KquU AvZwi<sup>3</sup> vbt`Rbv Avtj vPbv Kiv nqtQ ?  
 K) cuPuU  
 L) QquU  
 M) mvZuU  
 N) vZbuU|



### Peršigj`iqb

#### mWK DEti i ctk, UK Pý (v) ñ b |

- 1/ Kwl.tckvtK ñUñKtq ivLtZ ntj tKvb Kwl.Lvgvi , tj vtZ Dbqđbi tQraq j vMrtZ nte?
  - K) knñi i
  - L) MógxY
  - M) ewYñR`K
  - N) A`vqx
  
- 2/ Lvgvi ewYñR`KxKiY GKñU KñWb cñµqv, Zte Kx bq ?
  - K) mæe
  - L) msñ¶ß
  - M) `ijn
  - N) Avkvcô
  
- 3/ Lvgvi e`e`vcbrq `¶Zv ewx Ges Kwl.tZ ñK aiñbi cñy³MZ cwi eZB Gtb Lvgvi ewYñR`KxKiY mæe ?
  - K) j vMmB
  - L) mnR
  - M) msñ¶ß
  - N) mv`vgvUv
  
- 4/ GKñU Kwl.Lvgvti eQti me¶gvU th e`q nq, DrcñZ cY, `è` ev DcRvZ BZ`ñ` i gj` GKñI Kgct¶ kZKiv KZfvM tenk ntj ZvtK ewYñR`K Lvgvi ej v hq ?
  - K) 100
  - L) 80
  - M) 120
  - N) 90
  
- 5/ Dñ`v³v ntjv A\_ññzi AMñx Pñj Kvkñ³ | ñZñb Kx Kvr Kti A\_ññZK Dbqđb mñab Kñib?
  - K) cñy³ MñY
  - L) e`isK `vcb
  - M) bZñ ñKQyD`ñeb
  - N) cñk¶Y MñY
  
- 6/ ñbñai tKvbñU Dñ`v³vi GKñU `ewkó` ?
  - K) mrvnx
  - L) Sñk MññY AvMñx
  - M) ñeEevb
  - N) Ávbx
  
- 7/ j vMmB cñy³i Dm Ges Dñ`v³vt`i gñ` Kvhñi mññvtñMi Afveñ Guv tKvb aiñbi mgm`v ?
  - K) A\_ññZK
  - L) cwiñekMZ
  - M) Kñi Mñi
  - N) Ab`vb`

Kwl.1 c j n Dbq b t`z

8/ Df`v<sup>3v</sup> Dbq b t`k Kwl.RvZ cY` Avg`vb Kvgtq wK evovtZ mflg ?

- K) iBvb
- L) evRvi
- M) tfv<sup>3v</sup>
- N) cyp

9/ eU cY`gla Lvgvfi Kqul AwZwi<sup>3</sup> vb t`Rbv Avtj vPbv Kiv ntqtQ ?

- K) cuPvU
- L) Pvi vU
- M) wZbvU
- N) QqvU

10/ Lvgvi emYvR`KxKi tYi Rb` tKv<sup>3v</sup>vbxi Kiv ntj gbydvi cvkvcmk tKv<sup>3v</sup>vbxi Avi Kx Df`k`\_vKtZ nte ?

- K) ch<sup>3v</sup> MhY
- L) thvM<sup>3v</sup>thvM
- M) KI.K tmer
- N) FY`vb



**msuŋB i Pbuŋj-K cŋke**

- 1/ Lvgvi emYmR`KxKiY ej tZ Kx eŋSb iŋ Lŋj/
- 2/ Lvgvi emYmR`KxKi tYi Ašli vq KquU I Kx Kx ?
- 3/ emYmR`K Lvgvi Kv tK etj iŋ Lŋj/
- 4/ Dŋ`v`v`vi msAv iŋ Lŋj/
- 5/ Dŋ`v`v`vi `ewkó` , tŋv eYŋv Ki ab/
- 6/ D`m`tebxi cKvi t t` Dŋ`v`v`vi newfbzv nqN GUV eyStq iŋ Lŋj/
- 7/ Dŋ`v`v`v Dbqeb ej tZ Kx eŋSb ?
- 8/ Dŋ`v`v`v Dbqeb cŋuquU e`vL`v Ki ab/
- 9/ D`v`v`v Dbq tbi Kwii Mui mgm`v , tŋv Kx Kx ?
- 10/ D`v`v`v Dbq tbi QquU ub t` Rbv iŋ Lŋj/
- 11/ Dŋ`v`v`v Dbq tbi tKŠkj MZ bmxZ , tŋv iŋ Lŋj/
- 12/ Dŋ`v`v`v Dbq tbi thŠv`KZvq Mtel Yvj ä cŋuU AwfÁZv iŋ Lŋj/
- 13/ fiY-tcvlY I emYmR`K Lvgv t i cŋuU cv`R` iŋ Lŋj/
- 14/ Lvgvi emYmR`KxKi tY Gb. wR. I Kx Ki tZ cv t i ?
- 15/ Dŋ`v`v`v MxKiY ej tZ Kx eŠvq ?
- 16/ Dŋ`v`v`v Dbq tbi A`šowZK mgm`v , tŋv iŋ Lŋj/
- 17/ Dŋ`v`v`v Dbq t b wZbvU tKŠkj MZ bmxZ Av t j vPbv Ki ab/



**DĚi gŋv**

**cW 1**

- 1/ M    2/ K    3/ L    4/ M    5/ L    6/ M    7/ K

**cW 2**

- 1/ L    2/ K    3/ L    4/ M    5/ L

**cW 3**

- 1/ M    2/ K    3/ L    4/ K    5/ N

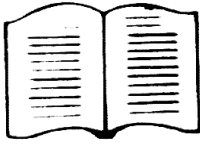
**cW 4**

- 1/ K    2/ M    3/ N    4/ L    5/ K    6/ M    7/ N

**Peršŋj`v`v`vbi DĚi**

- 1/ L    2/ M    3/ K    4/ L    5/ M    6/ L    7/ M    8/ K  
 9/ L    10/ M





mgšZ Lvgi e`v  
ntjv Lvgiti mgšZ  
cwi tek Dcthm  
tKšj /chj e`v hv  
Lvgiti wefbA½i  
(Dm I cly) cwi Kw Z  
mgštqi gva`g  
Drcv`b clyRbx  
DcKiY/ Dcr`vb/ Lv`  
mieivn ubwZ Kti |

### mgšZ Lvgi e`v

BtZigta`B Avgiv Lvgi Ges Lvgi e`v Kx tRtbwQ| Avi Guv tRtbwQ th, wekl fite  
cwi Kw Z mgšZ Lvgi tK mgšZ Lvgi etj | Geri mgšZ Lvgi e`v mšK`Avtj vPbv Kiv  
ntjv |

mgšZ Lvgi e`v ntjv Lvgiti mgšZ cwi tek Dcthm tKšj /chj e`v hv Lvgiti  
wefbA½i (Dm I cly) cwi Kw Z mgštqi gva`g Drcv`b clyRbx DcKiY/Dcr`vb/  
Lv` mieivn ubwZ Kti | e`vi ag`Abjviti Lvgiti A½mgn AvšmšK` nq Ges  
AvšmšK` Kti \_vK | Abjvite Lvgiti emZemo, cly, c`cml, Kwleb, cyjvb I  
Ab`vb` Rvg/tjZ vbtq Lvgi cwi tek mgv uba`vi Z nq |

GLv`b chj K\_vlv e`v Lv Kiv ntjv | chj (Technology) ntjv Dcr`b ev e`vcbv hv  
GKK ev th` fite dmj, c`cml, gvm` ev MvQciv Drcv`b cly mš`b I ubwZ  
KtZ m`g |

### mgšZ Lvgi e`vi cKvif`

BtZigta`B Avgiv Lvgi e`vi cly A½ mšK` tRtbwQ | emZemo A½ th`nZmKj  
Lvgiti B Dcr`Z, tm`nZ`v i A½ wefbmgšQ Nuvbv mš | A½ gva`g AmsL` mgšQ  
mš ntj I ev`te Gi mgšQ AZ`š Kw b cly | tKbv G`vjvi gta` AvšmšK`\_vKtZ  
nte I AvšmšK` Nuvv nte | Z`v cwi tek, mš` I KIK`i Pm`v Ges wefbmš`v Mi  
velq, tjv | Gt`jt` vetePbv KtZ nq |

ev`te t`Lv hvq th, KIK cly Zu mš`v RbK GKv A½ mš`Lj I Drcv`bkj Kti Mto  
tZv`b | Gici chj`v Ab`vb` A½ ev A½i D``v mš`v KtQb | GB cti A½ ev A½i  
D``v gj-Z: cly A½v cwi c`Kfite mRb Kiv nq | tKbv Lvgiti tgv Drcv`b ev  
Avtqi weiv Ask th`v t`q tm`b cly A½v | A` cly A½v n`Q Lvgiti vfiE, hvK  
tK`Kti cieZ`A½ ev D``v mš`v Mto D`v | cly ev c`vb A½i vfiE`Z mgšZ Lvgi  
e`v c`vbZ cly cKvi | h`v

- 1) dmj vfiE`K mgšZ Lvgi e`v (Crop based integrated farming systems)
- 2) tWqix ev`vj Mvfx vfiE`K mgšZ Lvgi e`v (Dairy based integrated farming systems)
- 3) tcvie` ev nungjvM vfiE`K mgšZ Lvgi e`v (Poultry based integrated farming systems)
- 4) gvm` vfiE`K mgšZ Lvgi e`v (Fisheries based integrated farming systems)
- 5) emZemo vfiE`K mgšZ Lvgi e`v (Homestead based integrated farming systems)

Dcti ev`Z wefbA½ vfiE`K mgšZ Lvgi e`v, tjvi cly Avri e`v cKvi ntZ cvti |  
thgb`v dmj vfiE`K mgšZ Lvgi e`v tK avb vfiE`K mgšZ Lvgi e`v, B`v vfiE`K  
mgšZ Lvgi e`v, Kjv vfiE`K mgšZ Lvgi e`v BZ`v` f`v mš`v Kiv hvq |

### cwi tek

cwi tek ai Yv LyB e`vK | Zte GLv`b Avgiv Zv ersj t`k t`v`v Avtj vPbv Kt`v |

gubly Ges Pri crtki RmeZ MvQcij v, cOYx I AYRxe Ges weifbæ cÖKwZK mæú` thgbN gnuU, cwb, evqy mhæj vK Ges Av\_@mvgwRK mjhm-mjeav Ges mg`l wKQj AvštmæúKB ntj v cwi tek | ešvi mjeavi Rb` ZvB cwi tek tK weifbæ fšMij K, mvgwRK ev Kul. mxgubvq eYDv Kti Avtj vPbv Kiv nq |

**cwi tekki A½**

cwi tekki tek wKQyA tzi AvštmæúK@Mto D tV | cwi tekki A½ cævbZ: wZbuU | G,tj v ntj vN

- 1/ Re A½ (Biotic components)
- 2/ A%Re A½ (Abiotic components)
- 3/ Av\_@mvgwRK A½ (Socio-economic components)

**1/ Re A½**

gublymn AwZ qz`AYRxe ntz` i iæKti epr nuz chšl cOYx, weifbæRj R cOYx, KxU-cZ½, Nvm, j Zv-cvZv, ešl cfwZ meB cwi tekki `Re A½ |

`Re A½ tK Pvi wU fvM fvM Kiv hq | thgbN

- 1.1 **gubly** : RbmsL`v, Gi , Yv, Y, cÖZvb/ chny², fvM, Drcv`b BZ`w` mæú` I cwi tek k cÖZvbqz cPÜ Pvc w` t`Q |
- 1.2 **Dw`Kj** : weifbæDw`c RvZ/ cRvuz, tgšmgy, `f`vqx, `xN`vqx cfwZ | G,tj vi msL`v I , YMZ cwi wa cKwZ I cwi tek tK cfwZ K tQ |
- 1.3 **cÖwKj** : weifbæcOYx ( `j R/Rj R), gvsmvKx, ZY tfvRx, KxUcZ½, Mpcwv Z, cfwZ gubly i fvM, Kul, e`emv BZ`w` tZ fvgKv i vL, fiY-tcv tY mrvqZv Kti |
- 1.4 **AYRxe** : gnuU, cwb I evZvM we` gvb AmsL` qz`AYRxe, gubly, cOYx ev Dw` t` i weifbamjeav ev Amjeav mjo Kti |

**2/ A%Re A½**

gnuU, cwb, evZvm, mhæj vK, kw³, epocvZ, ZvcgvTv, LubR cfwZ cÖKwZK mæú` wFÈi cwi gvY I , YMZ we` tZ i tqtQ |

**3/ Av\_@mvgwRK A½**

gubly i cWR, Ni-ewo, iv`vNvU, mjhm-mjeav, i wZbmZ, AvPri-AvPi Y, ivRbmZ, agx@ Ae`v cfwZi cwi gvY, , YMZ I Ava`wZK we` tZ i tqtQ |

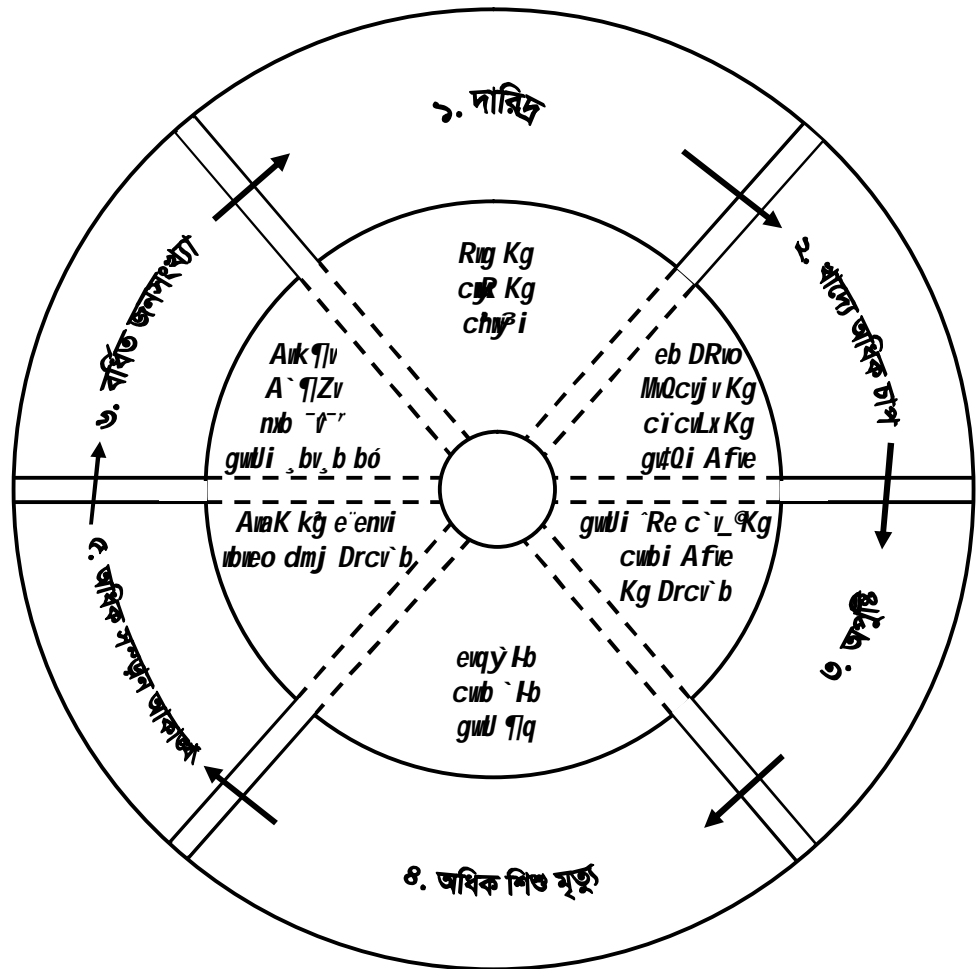
gubly i mō fšMij K Gj vKvq weifbamgtq Dctiv³ A½mg tni AvštmæúK@MlvbKvi cwi tek ešvq | cwi tekki weifbæA tzi `ewP` I gubly i AvštmæúK@mRb cPóv cwi tek tK cfwZ Kti \_vtK | Zte Rie-cwi tekki `wqZ; wbfP Kti cwi tekki `Re `ewP`Zii (Biodiversity) Dci |

**Kul. cwi tek**

cwi tek I Kul. KivR wbeofvte AvštmæúKZ | Kul. KivR Argiv thgbN cÖKwZK cwi tekki gnuU, cwb, mhæj vK, epocvZ I weifbæcOYx/Dw` t` i Dci wbfPkj nB, tZgub Avevi







10 : `wi t`i `ye m Pμ I Kwl.cwi tek



**cvšVĔi gj`iqb 3.1**

**mĭVK DĔti i cvšK, UK PŸ (Ÿ) ű b |**

- 1/ Kwl.tZ meR mece KLB i i antqij ?  
 K) cĀvtki `kĭK  
 L) IvŹUi `kĭK  
 M) Pij tkĭ `kĭK  
 N) mĔti i `kĭK
  
- 2/ mgwšZ Lvgvi e`e`v LvgiŹi i Drcv`bkxj Zv Kx KŹi ?  
 K) Kgvq  
 L) evovq  
 M) ĩKQŹ bv  
 N) ŹwZ KŹi
  
- 3/ mgwšZ Lvgvi e`e`v cwi Kwi Z mgšŹqi gva`tg Drcv`Źbi DcKiY/Dcv`vb/ Lv`miei in Kx KŹi ?  
 K) AwbŹZ  
 L) Am`úŸ©  
 M) m`úŸ©  
 N) űbŹZ
  
- 4/ cĥŸŹ ntjv e`e`v`vcbv/Dcvq hv űwfbŹAŹi Drcv`b űbŹZ KiŹZŹ  
 K) AŹg  
 L) mŹg  
 M) mnvqZvKvix  
 N) cŹqvMKvix
  
- 5/ mgwšZ Lvgvi e`e`v cĀvbZ KZ cĶvi ?  
 K) Oq  
 L) mvZ  
 M) cvŹ  
 N) Pvi
  
- 6/ cwi ŹekĭK űwfbŹŹŹMij K, mvgwRK ev Kwl. ĩKŹm eYŹv KŹi AvŹj vPbv Kiv nq ?  
 K) Gj vKvq  
 L) `vŹb  
 M) mvgvbrq  
 N) AĀŹj
  
- 7/ cwi Źekĭki A½ cĀvbZ KqűU ?  
 K) `ŹűU  
 L) Pvi űU  
 M) cvŹűU  
 N) ĩZbűU

Kwl. I c j n Dbq b ĩ ħ

8/ Rxe cwi ĩetki ĩwqZ;ubfP Kti cwi ĩetki wKĩmi Dci ?

K) ĩRe-%ewPĩZv

L) gvby ĩewPĩZv

M) c ĩewPĩZv

N) ĩrb ĩewPĩZv

9/ cwi ĩek I Kwl. KivR ubwewofvĩteNĩ

K) mũũKZ

L) AvŠmũũKZ

M) mgyũũKZ

N) AmũũKZ

10/ Kwl. cwi ĩetk Awak RbmsL ĩvi dtj mP mgm ĩwU th Pĩµi Øiv e ĩL ĩv Kiv hıq Zvi  
bigNĩ

K) ĩwi ĩµ Pµ

L) ĩwi ĩµi NYqgvb Pµ

M) ĩwi ĩµi ĩewPĩ Pµ

N) ĩwi ĩµi Awfkb Pµ



**1| AveiZ GKK dmj (avb) Pvl**

eisj v`tki AwaKusk Gj vKvq GKB RvgtZ eQti ž ev wZberi ci ci avb Pvl Kiv nt`Q| Gi dtj N

- RvgtZ `Re c`v\_ Q Ktg hv`Q
- gmltZ Dv`i cyp Dcv`v`bi Afve t`Lv w` t`Q
- cŁZ eQi dtj tcvKv I ti v`Mi cŁ ž n`Q
- gmlt MVb cwi ewZŽ n`Q, cmb avi Y ųgZv KgtQ
- `f Kvj xb tMv-Pvi Y Gj vKv Ktg hv`Q|

**2| tmPhy te`iv av`bi Avev` Rvq**

grSwii DpZgvSwii wbpZl wbpZGj vKvq tmPhy Dbz te`iv avb PrtI i Avev` cŁZ eQi evotQ| dj `wotqtQ w`e/cN

- i` tgsmtg i we dmj w`tkI Z: Wj I `Zj exR Avev` Gj vKv Ktg wMtqtQ
- MgxY gubt i Lv` t`Uub I t` RvZxq Dcv`vb Ktg hv`Q
- f-Mf` cmbi `li tbtg wMtq cıbxq Rj I tmtPi cmbi Afve n`Q
- gv`Qi cRbb I Pvi Y tųI Ktg wMtqtQ (wbpZrj vKq, wj Gj vKv)
- f-cp` cmbi Avavi i wKtg hv`Q
- i vmvqubK mvi I KxUvıK e`envi teto wMtqtQ
- A`bK `vbxq te`iv av`bi RvZ wj ž n`qtQ
- i` tgsmtg tųI Z `wv`bv cmb gkvi esk ewx I DrcvZ ewotqtQ|

**3| Wj I `Zj exR Avev` Ktg hvl qv**

Avgb avb KvUvi ci ci Rvq i wKtg hvl qv Ges cŁq mKj RvgtZ Mg ev te`iv avb Pvl ewx cvl qvtZ i we tgsmtg wvfbwWj I `Zj exR dmj Avev` Ktg wMtqtQ| Gi dtj N

- t`tki Wj I `Zj exR Drcv`b KtgQtQ, Avg`wmb tetoQtQ
- ci-cvL I gv`Qi Lv` Drcv`b KtgQtQ
- gmlt `Re c`v\_ QKtgQtQ I gmlt cmb avi Y ųgZv Ktg hv`Q
- gmlt DcKvıx AYR`ei mL`v nvm cv`Q
- gmlt tFZ, i vmvqubK I `Re atgP , YMZ cwi eZB NUQtQ|

**4| cvU Pvl Ktg hvl qv**

cv`Ui evRvi gj` Drcv`b Li`Pi tP`q A`bK Kg \_vKvq Ges wKı Kwl`g ZSı e`envi evovq wMZ `k`K cv`Ui Pvl Dtj - L`hM` n`ti KtgQtQ| GtZ hv n`Q Zv ntj vN

cv`Ui evRvi gj`  
Drcv`b Li`Pi tP`q  
A`bK Kg \_vKvq Ges  
wKı Kwl`g ZSı e`envi  
evovq wMZ `k`K cv`Ui  
Pvl Dtj - L`hM` n`ti  
KtgQtQ|

- `Re Rvj vbx I Mv`vj x Dcv`v`bi Zxe`Afve
- gmlt `Re c`v\_ Q DePZv Ktg hvl qv
- tMveı, Nvm, cvZv BZ`w` i Rvj vbxı f`c e`envi
- Mv`vj x Ni -evoxı KvtR evk e`envi ewx
- Kwl.RvgtZ AvMvıvı DrcvZ ewx cvl qv

**5| GKB RvgtZ μgMZ Kj vBųI`v**

eisj v`tki DpZl grSwii DpZGj vKvq tKv\_vl Kj v ev tKv\_vl BųI`j vFRbK dmj i f`c GKB RvgtZ `xN` b Pvl Kiv nt`Q| Gi dtj N

- gmlt `Re c`v\_ QKtg hv`Q

- gmlJi cjo Dcv`v`bi Afve NUtQ
- gmlJ nZ cmb tkvIY teik nt`Q
- mvi I KxUvktKi e`envi ep` tctqQ
- gmlJi , YMZ cwi eZB NtU cti Ab` dmj Aver` SdkcY`nt`Q (dj b Ktg hv`nt`Q)

**6/ Avak BDwi qv (bvBtUtRb) mvi e`envi**

AweiZ avb Pvl, tmPKZ.tertiv avb Pvl, Kjv I Bqjz Pvl, Dbz Avj yI Ab`vb` kivKmeWR Pvl Zzbvgj-Kfite AtbK teik BDwi qv mvi (bvBtUtRb c`vb) e`euZ nt`Q| Gi c`fiteN

- Rvg ntZ Avak bvBtUU (tej I tej t`uAvk gmlJtZ) vbPz`v`bi Rvg I cmbtZ RgtQ
- gvby I c`Yxi `r` Sdk evotQ
- gmlJi , YMZ cwi eZB NUtQ
- gmlJtZ Ab`vb` cjo Dcv`v`bi Afve NUtQ
- Gtgvbqv I vgt`b M`vm D`Mxi Y evotQ|

**7/ Avak imqvbK mvi (Ab`vb`) e`envi**

eZv`tb cPz` u.Gm.uc (Triple super phosphate), cUvk (Muriate of potash), uRcmig Ges tkv`vl `~v I tevib mvi RvgtZ e`envi Kiv nt`Q| uKs`Re mvi AtbKKg ev uKQ` t` qv nt`Q bv| Gi c`fiteN

- gmlJi `Re c`v`Ktg hv`nt`Q
- gmlJi cjo Dcv`v`bi Afve mtgB evotQ
- Ae`euZ mvi vbPz`v`bi Rvg I cmbtZ Rtg`IY evotQ
- Rj R cwi tek Dv`c I c`Yxi nec` mpo nt`Q
- gmlJtZ DcKvix Rxe I AYRxei msL`v nvm cvt`Q
- dmtj i dj b mtg KgtQ
- gvQ I Rj R c`Yxi msL`v nvm cvt`Q|

**8/ Avak KxUvktK e`envi**

AvbqgZmsKfite vevfbv`dmtj eu KxUvktK e`euZ nt`Q| vevfbv`km` I i`UKx msi qj`yI G, t`jv e`envi Kiv nt`Q| Gi dtj N

- gmlJ, cmb I evqy`IY nt`Q
- dmtj KxUvktKi Aevko`w`wZ (Residue) evotQ
- gvby I c`Yxi `r` Sdk evotQ
- gv`Qi RvZ vej`v` NUtQ, Rj R cwi tek`IY nt`Q
- gmlJi DcKvix Rxe I AYRxe KgtQ

AvbqgZmsKfite vevfbv`dmtj eu KxUvktK e`euZ nt`Q| vevfbv`km` I i`UKx msi qj`yI G, t`jv e`envi Kiv nt`Q| Gi dtj N

- gmlJ, cmb I evqy`IY nt`Q

**9/ Rjx Avgb avb Pvl nvm**

vevfbv`v`Gj vKvq thLv`tb c`e`Rj x Avgb avb Pvl Kiv ntZv Zv mtg KgtQ I teritiv avb Pvl evotQ| Gi c`fiteN

- Wj I `Zj exR dmj Aver` (H`v`tb) KgtQ
- M`gxY Lv`t` t`c`Uv`bi Afve nt`Q
- gv`Qi c`KuzK Lv`v` Avktq`vb Ktg gv`Qi Drcv`b KgtQ|

**10| dmj Pti AwK AwK Riv e'envi**

avb QrovI AtbK km, Wj, ˘Zj exR I kvK-meR Avef ˘ mgrstq AwK Riv/nvBieW e'euZ nt"Q| Gi dtj N

- KI#Ki evBti i DcKi tY (exR, Priv, Kj g) wbfPkj Zv evo tQ
- Drcv`b LiP (exR-mvi-KxUvbkK-tp) evo tQ
- m=tebigq ˘vbxq dmj I Riv wej ˘ nt"Q
- ci cmlLi Lv ˘ I Ryj vbx i Afve t ˘ Lv w t"Q
- gmlU ntZ AwK Lv ˘ Dcv`vb ˘ P t j hv t"Q
- gmlU DeP Zv Kg tQ
- Kwl.cwi tetk ˘ Re ˘ ewP T Zv Kg tQ|

**11| eb DRioKiY**

ebvAtj I MgrY eb-R ˘ j ntZ wbePti e ˘ wbatbi dtj t ˘ tki eb I ebR m=ú ˘ ˘ nwm tctqtQ| Gi dtj N

- fmg ˘ q tetotQ; b`x-bvj v, Lij -wej fi vU ntqtQ
- gmlU ˘ Re c ˘ v ˘ P Drm I cwb avi Y ˘ gZv Ktg tQ
- eb ˘ ci cml I MvQcij vi Rxe cwi tetk fvi mg ˘ Zv nwi tqtQ
- eb ˘ ci cml I MvQcij v nwm tctqtQ
- ˘ Re Ryj vbx i Drm I KvW Ktg tQ
- f-Mf ˘ cwb ˘ tY I j eYv ˘ Zv tetotQ
- evqykrab c ˘ uqv nwm tctqtQ|

**12| giagZv**

t ˘ tki DEivAtj MvQcij v wbab, ˘ xN ˘ b Liv Ges b`x ˘ t j vtZ cmbi ˘ f Zvq c ˘ g giakiy i i a nevi ct\_| G Ae ˘ v c f v meZ Ki tQ N

t ˘ tki DEivAtj  
MvQcij v wbab, ˘ xN ˘ b  
Liv Ges b`x ˘ t j vtZ  
cmbi ˘ f Zvq c ˘ g  
giakiy i i a nevi ct\_|

- Dci S'gmlU DeP ˘ li ˘ q
- gmlU ˘ Re c ˘ v ˘ Ktg DeP Zv webó
- f-Mf ˘ cmbi ˘ li AtbK wbtP tbtg hv l qv
- gmlU wbtPi ˘ ti j eYv ˘ Zv m ˘ o
- Rxe-cwi tetki ˘ ewP T Zv nwm|

**13| tcSi I wki eR**

t ˘ tki mKj tcSi G j vKvi mKj eR ˘ Ges wki Kvi Lvbi, BtiUi fi vUv, avtbi wj c f v Zi bvbnea eR ˘ memR ˘ bi tKvb e ˘ e ˘ v tbB| G ˘ t j v h T Z T t d j v nt"Q| ZvQrov wki Kvi Lvbi fatqv evZv m wgt tQ| Gmtei dtj N

- gmlU, cwb I evZim ˘ w t Z nt"Q
- ˘ tYg ˘ v tbi th tKvb Drcw ˘ Z Lv ˘ ˘ t ˘ i Rb ˘ ˘ wZKi
- Rj v kq, b`x, Lij I wej i gvtQi c Rbb I ew ˘ e ˘ v n Z nt"Q; gvtQi c R w Z wej ˘ nt"Q
- gvbY I ci cmlLi ˘ t ˘ u g m K m ˘ o nt"Q|



14| DcKj xq iPsiD Pvl ue`iZ

t`tki`wYvAtj  
DcKj eZi`vrb μgvištq  
emYvR`K em`v iPsioi  
Pvl evotQ| GiU t`tk  
`ef`nkK gYi j vfi  
civkvcmk Kul.cwi tekK  
wevNz Ki tQ|

t`tki`wYvAtj DcKj eZi`vrb μgvištq emYvR`K em`v iPsioi Pvl evotQ| GiU t`tk  
`ef`nkK gYi j vfi civkvcmk Kul.cwi tekK wevNz Ki tQ| thgbN

- RvgtZ μgviMZ tj vrb cwb Xkvvrbvi dtj gmltZ j eYv<sup>3</sup>Zv tefo avb Drcv`b nwm  
civ`Q
- DcKj xq RbMtYi Ab`T `vrbšli`i iæntqtQ
- DRvrb b`xi cwb cævn KgtQ, ZvB DcKj-xq j eYv<sup>3</sup>Zv μtg t`tki Af`šti  
cæek Ki tQ|

15| tmP I eb`vrbqšY eva

t`tk dmj Drcv`b evotZ wevfbætmP cKf GjvKvq Ges eb`vi nvZ ntZ Rvg i`vrbq eb`v  
cæY GjvKvq eva t`qv ntqtQ| ZQvov iv`vNvU vbgYI Dæætai b`vq KvVtgv Mto Dtv`Q|  
Kul.cwi tekK Gme evai mæ`v cæve cwi Kf vrb vrb cvl qvq G<sub>3</sub> tj vi dtj N

- evai vFZi GjvKvq `vqx Rj ve×Zv mwo ntqtQ, dmj Drcv`b nwm ev eU ntqtQ
- gY Rj vktqi gvQ cævb eU ntqtQ, gvQ Pvl I Kiv hv`Q bv, gvQ i cævMZ j š nt`Q
- gml vrbq ntq fivU nt`Q tmP Lvj , bvj v
- cwi tekK Rxe`evP`Zv nwm tctqtQ, fvi mvg`nrbZv mwo ntqtQ|

MögvAtj `Re Rj vmbi  
cævj Z Dm civKvM,  
wevfbævQciv v I etk|  
mvæcæZKkvj Gmtei  
Afite tMvei, j Zv-  
civZv, Nvm, `aAv,  
dmj i Dv`Qo, Lo  
cævZ Rj vmbi fæ  
e`eüZ nt`Q|

16| Acævj Z Rj vmb e`envi

MögvAtj `Re Rj vmbi cævj Z Dm civKvM, wevfbævQciv v I etk| mvæcæZKkvj Gmtei  
Afite tMvei, j Zv-civZv, Nvm, `aAv, dmj i Dv`Qo, Lo cævZ Rj vmbi fæ e`eüZ nt`Q| Gi  
dtj N

- RvgtZ `Re mvi ev `Re c`vt`P Dm I e`envi gvivZKfite KgtQ; Rvg Abv`  
nt`Q
- civmLi Lv`i Afve t`Lv v`qtQ
- gvQ Pvl DcKivYi Afve nt`Q
- meR mvi ifæ `aAvi cæqM KgtQ|

17| fvg vrbq

dmj i Rvg, emZemo, vrbv, Dæævvg, b`xKj , civno cævZ `vb ntZ wevfbækvitY fvg vrbq  
nt`Q| Gi dtj N

- gml i DePZv nwm I dmj DcævMvZv vebó nq
- gvby emZvrbv, dmj i t`vZ BZ`v i vevj vrbq ntj `vrbšli nq
- KvUcZ½ I civmLi Avev`j vebó nq
- b`x-bvj v, Lvj -vej , Rj vkb fivU ntq bvb Kul.mgm`v NUvq|



**Ablyj b (Activity):** evsj it`k Kul.cwi tek vrb vrb vrbq hveri cævb KvY<sub>3</sub> tj v vrbvZ  
Kvab| Gt`i cævb KvY<sub>3</sub> tj v eYv Kvab (Abav`200 kã)|



### cuŋVĚi gj'iqb 3.2

mĠK DĚti i cuŋK, UK Pý (√) ŋ b |

- 1/ cwi teŋki cĠKwZK , Yrej x bó nI qrtK Kx etj ?  
 K) ǎY  
 L) ŋgkY  
 M) ǎq  
 N) cxob
- 2/ cwi tek ǎY ntjv Avgvt`i Pri cvŋki cwi teŋk Kx aitbi cwi eZĠ NUrtbv ?  
 K) DbžZi  
 L) ǎwZKi  
 M) mĠgWĠK  
 N) AvsĠK
- 3/ cwi teŋki ŋewfbwA½ e`envti gvby tKvb&mĠgv j •Nb Ki tj cwi tek ǎZ nq ?  
 K) Athšw³K  
 L) Awbw ǎ  
 M) thšw³K  
 N) ubw ǎ
- 4/ Kwl. cwi teŋki ǎY, ǎq, ŋeifcZv I Abycv`bkxj Zv Kg-tenk tKvb At½ NtUŋQ ?  
 K) mKj  
 L) cĠcwl  
 M) dmj  
 N) gvr m
- 5/ ŋazcY³KZw Kwl. cĠuqv/cĠny³/Ae`vmgŋni Ōviv Kwl. cwi teŋk ǎwZKi cĠve Avtj wPZ ntqtQ ?  
 K) cŋbiw  
 L) tljw  
 M) mŋZiw  
 N) ŋekw
- 6/ GKB RĠgtZ ci ci ǎwZb evi arb Pvl KivZ gwli `Re c`vt\_ǎKifc cwi eZĠ nt"Q?  
 K) wKB AvŋQ  
 L) Kŋg hvŋ"Q  
 M) teŋo hvŋ"Q  
 N) wKQynt"Q bv
- 7/ tmP hŋ tertiv aitbi Aver` cĠZ eQi tKgb cwi eZĠ nt"Q ?  
 K) evotQ  
 L) GKB AvŋQ  
 M) KgŋQ  
 N) wKQynt"Q bv

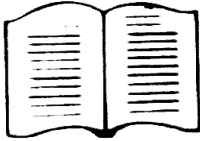


### cw 3.3 cwi tek Kul. I Lugvi e`e`vi Drcv` bKxj Zv msi qiy



G cvl tk tI Avci b-

- ◆ cwi tek Kul. m`u`tk`ej tZ I wj LtZ cwi teb |
- ◆ cwi tek Kul. i bmxZgvj v D t j L Ki tZ cwi teb |
- ◆ cwi tek Kul. i c`u`qvRbxqZv e`vL`v Ki tZ cwi teb |
- ◆ weifbac`kvi cwi tek Kul. m`u`tk`eY`v Ki tZ cwi teb |
- ◆ Lugvi e`e`vi Drcv` bKxj Zv msi qiy Gi fmgKv e`vL`v Ki tZ cwi teb |



Drcv` bKxj Zv I mivgvl`k  
 cwi tek tK i qiv K ti  
 Kul. Drcv` b tKSkj  
 MhY ntj v cwi tek Kul. |

#### cwi tek Kul. (Environmental agriculture)

Kul. KgRvU GKwU wbr`e cwi tek msNwUZ nq | cwi tek Kul. nt`Q Rxe cwi tek, t fS Z cwi tek, gvby I c`Yxi `r` Ges Drcv` bKxj Zv msi qiy K ti (ev Kg qiwZ K ti) Kul. Drcv` tbi c`h`y`/ tKSkj / c`u`qv MhY I Drcv` tbi DcKiY (Lv` Drcv` b, cwb, `Re c`v`\_` mSMhKiY | A`\_` Drcv` bKxj Zv I mivgvl`k cwi tek tK i qiv K ti Kul. Drcv` b tKSkj MhY ntj v cwi tek Kul. |

#### cwi tek Kul. i bmxZgvj v

cwi tek Kul. i t`q` t Drcv` b c`u`qvq KZ`\_` t j v bmxZgvj v MhY Ki v ntq`\_` v tK | G`\_` t j v nt`Q N`

- 1 | cwi tek `tY kb` ev Kg c`f`v`
- 2 | kb` ev L`y` Kg i v mivqubK `e` (mvi / KxUv`kK / JI a) e`envi
- 3 | Kg em: m`u` e`envi: mKj `vbxq m`u` (Dw`c, `j R I R j R c`Yxi) e`envi
- 4 | weifb`Re I meR mvi Ges eR`c`y: e`envi |

#### cwi tek Kul. i c`u`qvRbxqZv (Rationale of environmental agriculture)

eisj vt`tki Awakisk KIK ewp wbf`P Pvlver` K ti b hv Awbu`DZ | Rigi nvmgvb DePZv I Avenl qvi c`ZKj Zv Kul. Drcv` tbi S`k evovq | K t`Ki c`u`R I L`y` Kg | Kul. i dj b I Avkvbj`c nt`Q bv | KIK I Kul. i G cwi tek tK GK K`vq c`u`SK cwi tek (Marginal environment) ej v hvq | Z`gwi Awak i v mivqubK `e` (mvi / KxUv`kK) e`envi Kivi d t j Rvcvb I Avtqwi Kvi Lv` `te` KxUv`k tK i Aew`wZ (Residue) mvi Y NUbv ntq` `u`o` t`q` | G tZ gvby I c`Yxi `r` S`k evot`q | G t`tki Lv` Drcv` b I msi qiy i c`u`qvq i v mivqubK `e` Aew`wZ we`gvb |

`vii`^` n tZ gy` j v f,  
 Kul. i Drcv` bKxj Zv  
 Ges gvby I c`Yxi  
 `r` msi qiy i Rb`  
 cwi tek Kul. Aek`  
 c`u`qvRbxq |

c`u`SK cwi tek Nb emwZc`y` tK KIK `vii`^`i `w`m P t`u` Ave`x | `vii`^` n tZ gy` j v f,  
 Kul. i Drcv` bKxj Zv Ges gvby I c`Yxi `r` msi qiy i Rb` cwi tek Kul. Aek` c`u`qvRbxq |  
 Kvi Y GKgvI G tKSkj Mh`t`YB Avgi v Kul. cwi tek tK i msi qiy Ki tZ cwi tev |

#### weifbac`kvi cwi tek Kul.

Kul. cwi tek i Kg qiwZ K ti I Kul. i Drcv` bKxj Zv eRvq ti tL weMZ `y` k tK c`u`xi weifb`e t`tk A t`k M t`e l Y v c`P`o`v t`bq`v ntq` t`q` | Gi dj k`y` tZ bZb bZb Kul. tKSkj D`w`eZ ntq` t`q` | G`\_` t j v nt`Q N`

- `Re Kul. (Organic farming)
- Rxe cwi tek K Kul. (Ecological agriculture)

- `xN`vqx Kul. (Sustainable agriculture)
- cly:Drcv`bkxj Kul. (Regenerative agriculture)
- nekI Kul. (Alternative agriculture)

**1| `Re Kul.**

GK ai#bi Kul. Drcv`b c`xwZ thLvfb `v`c0 gwU I dmj msi`Y DrmwvZ Kiv nq| GRb` `Re c`v`P Lv` Dcv`vb clytPµvqb, dmj AveZB, mivK Pvlver` MhY Ges imvqubK mvi I KxUvbkK e`envi cwi nvi Kiv nq|

**2| Rxe-cwi`tekK Kul.**

Kul. Drcv`b e`e`v hv Kul. cwi`tekK Dbqb Kti ev` qmZM0I Kti bv| thLvfb imvqubK mvi, KxUvbkK e`envi LpB Kg nte, Zte eU nte bv|

**3| `xN`vqx Kul.**

`vbxq DcKi Y wfvEK Rxe-cwi`tekK Kul. thLvfb dj bkxj Zv msi`Y mePZK c0Pov vbtqvM Kiv nq|

**4| cly:Drcv`bkxj Kul.**

Kul. Drcv`b tKSkj hvZ `vbxq cly:Drcv`bkxj DcKi Y e`envi I cwi`tek msi`Y K` i azj t`qv nq|

**5| nekI Kul.**

gj-Z: `Re Kul i Abjfc| Zte OmefR wecæ Kul i 0 (Green revolution agriculture) cwi etZ`MpxZ etj B GuLi G biv nqtqQ|

Dcti Avtj vPZ wvfbecKvi cwi`tek Kul i gj- DtI k`mgn- tgvUvgv GKB i Kg| tm, tj v ntj vN

- Kul. cwi`teki tfsZ, `Re I Av`wvgnRK Ae`vi Dc`thvMx fvg e`envi ev Lvgi e`e`v D`v`eb|
- `vbxq c0B m`v`i m0ze`envi, emnti i DcKi Y vbfP`kxj Zv Kgv`bv (mvi, KxUvbkK, JIa)|
- Kul. tZ `xN`vqx Drcv`bkxj Zv i`YvKi Y|

**Lvgi Drcv`bkxj Zv msi`Y**

**Kul i `enk0**

mnR K\_vq Lvgi Drcv`bkxj Zv msi`Y A\_`n`Q Lvgiti `xN`b Drcv`bkxj Zv eRvq i vLv| BtZvgta`B G K\_vu cwi`tek Kul i Avtj vPbvq GKvU DtI k` i`fc GtmtQ| G c0t`½ weAvbMY etj b, 0Kul. Dbqb c`v`e `xN`vqx nte hv` Kul. tZ vbw`0 KtqKvU ev me, tj v `enk0` eZ0vb \_v`K|0 vbw`0 QqvU `enk0` n`Q vbw`0`cN

- Kg LiP (Inexpensive)
- weCYb thvM` (Marketable)
- `vqx (Permanent)
- MhY`thvM` (Acceptable)
- msi`Y c`v`e (Conservation effect)
- c0v` Dc`thvMx (Technology response)

weAvbMY etj b, 0Kul. Dbqb c`v`e `xN`vqx nte hv` Kul. tZ vbw`0 KtqKvU ev me, tj v `enk0` eZ0vb \_v`K|0

Dctii `enkó` tji BstiiR cōZ ktāi cōZiUi cōg Aŋi w`tq IMPACT kāuU cvl qv hviq| hvi A\_P `xN`vqx cFie|

**Kul. chny`i `enkó`**

Dchy` chny` MhY Qvov hMj Dc`thvMx Kul. Dbab m`e bq| ZvB `xN`vqx Kul. Dbq`b `xN`vqx chny` (Sustainable technology) MhY Aek` c`qRbxq| Kul. chny` tZ w`b`w`j wLZ QquU , Yvej x\_vKtj Zv `xN`vqx chny` nte| G tji v n`j vN`

- S`K mnbkxj (Buffered against risks)
- mg`qi t`c`ŋ`ŋ`Z `vqx (Stabilized against time)
- Rj evq`Z mgj q (Synchronized with climate)
- cwi t`ek `^Q` (Harmonized with environment)
- f`ug ŋ`vq`Zvq mste` bkxj (Sensitive to soil degradation)
- cwi eZ`b Dc`thvMx (Responsive to change)

GLb eSv hv`Q th, `xN`vqx Kul. chny` e`envi I Ab`vb` c`q`vqi gva`tg `xN`vqx Kul. Dbq`b A\_ŋ` Lvgvi Drcv` bkxj Zv eRvq i vLv m`e| Avi cwi t`ek Kul i D`i`k` Lvgvi Drcv` bkxj Zv eRvq i vLmn Lvgvi cwi t`eki mKj A`/Dcv` vb msi ŋ`Y|

**c`qRbxq e`e`icbv**

Gevi mst`ŋ`c Kx Kx e`e`v/c`q`vqi/chny` e`envi Kti Lvgvi Drcv` bkxj Zv Ges Lvgvi cwi t`ek msi ŋ`Y Kiv hvq Zv Av`j vPbv Kiv n`j v|

**1| gvu e`e`icbv**

Kul tZ gvb`j i ctiB gvui `vb| G gvui m`vK e`e`icbvi gva`tg gvui ŋ`q, `tY I Ab`ŋ` c`q`vqi eU Ki tZ nte| G D`i`k` w`b`w`j wLZ c`ŋ`c MhY Kiv th`Z cvti|

- gvui Dci Dchy` Nvm, MvQ, dmj ev e`ŋ`i Av`Qv` b i ŋ`Y|
- A`th`š`K gvui KIŋ, dmj Dv`Qó tcvot`bv, AZ`waK tMv`vY, eb DRv`KiY I Acwi Kur Z gvui KvUv cwi nvi KiY|
- Xij ygvut`Z ev cvn`to i Xv`j i AvovAvno e`ŋ, dmj, MvQ BZ`w` j vMv`bv|
- nvl o ev AvZ w`b`A`j emZem`oi f`ug ŋ`q ti va chny` MhY|
- dmj x Rvq n`Z gvui ŋ`q ti va Ki tY gvj w`Ps I `Re c`v` c`q`vM ev`KiY|

**2| cvb e`e`icbv**

cvb Qvov tKvb Dv`m`c ev c`Yxi tetP`\_vKv I ev` Am`e| ZvB c`KwZ n`Z c`B cvbi w`P`ŋ`Y e`envi I `tY ti v`ta e`e`v MhY Ki tZ nte| G Rb` w`b`w`j wLZ c`ŋ`c tbqv th`Z cvti|

- f-c`ōi cvbi Avat`i msL`v, AvqZb I MfxiZv ev` Kti c`ŋ` ev`oi cvb msi ŋ`Y| GRb` mvgm`RKf`v`te (M`g/Gj vKv w`f`w`EK) fivU c`q Rj vq, w`j, Lvj, tQvU b`x c`y:Lbb Kiv Dv`Z|
- f-Mf`v` cvbi `li w`b`P tb`tg i`c` tg`m`tg cvbi Zxe` Afive n`Q| G mg`q h`v`m`e Kg cvb j vM`te Gifc dmj Avev` KiY| ZvQvov gvut`Z cvb Av`K w`b` a`ti i vL`Z i w` km` ecb I Av`Qv` b dmj Rb`v`bv|

cvb Qvov tKvb Dv`m`c ev c`Yxi tetP`\_vKv I ev` Am`e| ZvB c`KwZ n`Z c`B cvbi w`P`ŋ`Y e`envi I `tY ti v`ta e`e`v MhY Ki tZ nte|

- KxUvbkK I i vmiqubK mvi e`envi i mWK c`uZ, gvIv, mgq BZ`w` Ktvi fite tgb Pjv| t`f`zi cmb AvUtK mvi ev KxUvbkK c`qM|
- cmbtZ gj -gf- I eR`memR` eUKiY|

**3| A`Re mvi e`icbv**

mvi e`envi gvIv myg I ths<sup>3</sup> ntZ nte thb Zv Ae`eüZ t`tK ev PBtq ev M`vm ntq cwi tek `tY Ki tZ bv c`i | GRb`N

- BDwi qv mvi GK mvt\_ tenk e`envi bv Kti KtqK evti gmlUj wbtP c`qM Ki tZ nte|
- tetj ev tetj t`v-Atk gmlUjZ ugDtiU Ae clvk (Gguc) mvi I BDwi qvi b`vq c`qM Ki tZ nte| dmtUmn Ab`vb` mvi Pti I mgq gmlUjZ wgnktq w`tZ nte|
- gmlUjZ mvi c`qMti AšZ mVZ w`b ci dmj /exR/Pvi v ecb/tivcY Ki tZ nte|
- mvi c`qMti ci t`f`zi cmb AšZ 10 w`b AvUtK ivLjZ nte|

**4| KxUvbkK e`icbv**

KxUvbkK e`envi h`vm`e mwgZ ivLjZ nte| Gi e`envi Ggbfite m`ubdKi tZ nte hvZ Gi dtj AcKvi Kvi x KxUcZ½ Qvov gubj, Lv`, gvQ, ci-cvL I DcKvi x KxUcZ½ BZ`w` i Dci t`wZKi c`fve bv dtj | GRb`N

- mgwšZ evj vB e`icbv (IPM) e`icKfite Pj Kiy|
- Dv`c RvZ t`kxq KxUvbkK e`envi RbwcqKiy|
- tKvb&tcvKvi tKvb&KxUvbkK Ges Zvi h`vh\_ gvIv I c`qM c`uZ mWKfite tRtb e`envi Kiy| gtb ivLjZ nte KxUvbkK gvi vZ`K mel|
- evZv`mi c`ZKtj, e`i mgq, Lwj Mvtq Ges cvbiZ ev Lv`ve`vq Gme e`envi b`Kiy|

KxUvbkK e`envi
h`vm`e mwgZ ivLjZ
nte  Gi e`envi
Ggbfite m`ubdKi tZ
nte hvZ Gi dtj
AcKvi Kvi x KxUcZ½
Qvov gubj, Lv`, gvQ,
ci-cvL I DcKvi x
KxUcZ½ BZ`w` i Dci
t`wZKi c`fve bv dtj

**5| dmj e`icbv**

t`tki Kul. KvRi epr AskB ntjv bvbmea dmj Drcv`b| ZvB dmj wbePb, Drcv`b I msi t`Y KvR mtpZb nI qv c`qvRb hvZ cwi tek I Drcv`bkxj Zv msi t`wZ nq| GRb`N

- i`ayavb Drcv`b tK clavb` bv w`tq Ab` c`qvRbxq dmj wbePb Kti dmj `evP`Zv AvbqbKiy| GRb` w`k`dmj, Avštdmj, w`tj dmj, m`x dmj Pvl c`f`Z tKškj MhY|
- gmlUj t`wZDePZv msi t`Yi Rb` el`dmj mtg avtbi cvkvcnk cvU, Wvj, `Zj exR, mxg dmj Ašf`Kiy|
- tev`iv avb Avev` AvZwi<sup>3</sup> `wv`bv cmb bv titL w`civQtc cmb ivLv DvPZ| GtZ cmb msi t`Y Kti gkK ev` nvm Kiv hvte|
- dmtj meR mvi Ges avb, Wvj I `Zj exR dmtj RievYmvi (Biofertilizer) e`envi ev`Kiy|
- i` tgsmtg RvgtZ Avak w`b cmb ati ivLvi tKškj (gvj wPs, Av`Qv`b dmj, mmi ex dmj, w`k`dmj, tev dmj) Aej`bKiy|
- Kg cmb w`tq dmj Pvl tKškj wbtZ nte|
- `f I `w`gqv`x dj Avev`i mvt\_ w`k`dmj I `a`Av Avev` Kti gmlUj cmb I DePZv msi t`Y|
- `vbxq RvtZi w`f`b`dmj Avev` ati ivLv|

6/ cŮxe e'icbv

cwi teki msi ųY I Drcv`bkj Zv epxi Rb` Dm`c I cŮxi (Mpcvuj Z) `ewPĪ`Zv i ųv Ki tZ nte| Kul. iaZm`ubæcŮxi jvj b-cvj b I msi ųY ubæj ųLZ e`e`v MŃY Kiv cŮqvRb|

cwi teki msi ųY I Drcv`bkj Zv epxi Rb` Dm`c I cŮxi (Mpcvuj Z) `ewPĪ`Zv i ųv Ki tZ nte| Kul. iaZm`ubæcŮxi jvj b-cvj b I msi ųY ubæj ųLZ e`e`v MŃY Kiv cŮqvRb|

- t`kix ci-cwLi Drcv`bkj Zv epxi Rb` Gt`i cŮKi Lv` , mųPwKrmv I gnvgvix (Epidemic) tiwM cŮZti va (Vaccination) e`e`v MŃY|
- t`kix DcKi Y mnthvM mtefEg Lv` ti kb cŮZ I Zv ci cwLi K Lvl qv`bv|
- aib tųtZ gvQ/wPsw Pvl (GKB m½ Ges chųµtų) Rbucų Kti gvQ Drcv`b evov`bv|
- cPv Avex Rj vktų t`kix ųks, gv, i, `K RvZix gvtQi Pvl Kiv| GtZ cwi tek Dbqb I gvQ Drcv`b epxi cųte|
- iaB, KvZj v, gųMj cųwZ Kiv`RvZix gvQ Dbz Dcvtų cųųzi Pvl Ki Y|
- wewfbæAcųw Z `j R I Rj R Nvm, j ZvcvZv, cvbv cųwZ evQvB Kti ci, nwn-gjwM I gvtQi Lv` iųc e`envi Kiv| cųqvRtB G, tų v cųy vq Drcv`b ųwųZKi Y|

7/ Re e'e'icbv

`Re eR`hĪZĪ tdųj cwi tek `IY Kiv nųQ| G, tų vi cwi KwĪ Z mslMŃ, msi ųY I cPb Kul. Drcv`tbi wewfbæ tųtĪ wecæ etų Avbte| GRb`N

`Re eR`hĪZĪ tdųj cwi tek `IY Kiv nųQ| G, tų vi cwi KwĪ Z mslMŃ, msi ųY I cPb Kul. Drcv`tbi wewfbæ tųtĪ wecæ etų Avbte| GRb`N

- mKj eR`wAvbm`Z ųbqų msi ųY Kti Kt`uv÷ Drcv`b I e`envi Ki Y| tMvei, QwMj I nwn-gjwMi wov msi ųY Kti `Re mvi iųc e`envi |
- AųbK eR`mivmwi ci cwL ev gvtQi Lv` iųc e`envi ųwųZKi Y|
- dmtų i Awkųvsk tųtZ ti tL tmLv`tB gwM tZ ųgkv`bv| Rųj wbi Rb` wewfbæ`Z eaųkų eų ev `aAv ev cvU Pvl Kiv DvPZ| dmtų i tųtZi Pvi cvtų ev gvtS gvtS G, tų v j vMv`bv nq|
- mgwšZ Kul. Drcv`b cųwų MŃY Kiti AųbK eR`mivmwi Drcv`tbi e`eüZ nq| thgbN nwn-gjwM I gvQ Pvl, nwn-gvQ-aiB Pvl BZ`w |
- wewfbæPvDj Ktų cųZ QvB cvl qv hųq| G, tų v wewfbæKpZ Av`v, nj ų, tcqvR, i mų, gwĪ P Avev` h\_vh\_ e`envi Drcv`b epxi cvq|
- tčšĪ Gj vKv I ųkĪ Gj vKvi KwB eR`tų v wetkl e`e`vq cųPų cųy vq dmtų i RųgųZ e`envi Ki Y c`ųųc MŃY|
- evųqM`vm cwU `icųtbi gva`ų Rųj wbi I `Re mvi `ųwB GKmv`\_ j vF Kiv mæ|



**Abųj b (Activity):** Avcųb ųK gųb Kti b th, Lvųųi i Drcv`bkj Zv msi ųY Avek`K? Zvntų Lvųųi i Drcv`bkj Zv epxi tZ Kx Kx c`ųųc MŃY Kiv DvPZ etų Avcųb gųb Kti b?





### civēi gj`iqb 3.3

#### mīK Dēti i civēi (✓) ū b |

- 1/ Drcv`bkxj Zv I mvgmīK civēi tek tK i qiv Kti Kul. Drcv`b tKškj MhY n t j vñ
  - K) Dbz Kul.
  - L) civēi tek Kul.
  - M) `Re Kul.
  - N) A%Re Kul.
  
- 2/ civēi tek Kul i Kqiu b mZgij v Avtj vPbv Ki v n t q t Q ?
  - K) ūZbū
  - L) civēi
  - M) Pivū
  - N) Qqū
  
- 3/ ersj vt`tki Awakisk KI.K Kx ūbfP Pvl ver` Kti b ?
  - K) tmP ūbfP
  - L) mvi ūbfP
  - M) KxUvbkK ūbfP
  - N) eijó ūbfP
  
- 4/ Rngi n mgyb DePZv, Avenl qvi cūZKj Zv I Kg cyR mekó Kul. I KI t Ki civēi tek tK G K\_vq ūK ej v nq?
  - K) cūšK civēi tek
  - L) weifc civēi tek
  - M) Amnbxq civēi tek
  - N) `wi`a civēi tek
  
- 5/ KZ cKvi civēi tek Kul. Avtj vPbv Ki v n t q t Q ?
  - K) Pvi
  - L) Qq
  - M) ūZb
  - N) civēi
  
- 6/ i m v q u b K m v i I K x U v b k K e`en v i c v i n v i K v i x K u l . i b i g ũ
  - K) A%Re Kul.
  - L) `xN`vqx Kul.
  - M) `Re Kul.
  - N) Rxe-civēi tek Kul.
  
- 7/ meR wecē Kul i civēi e t Z q m p x Z Kul i b v g K x ?
  - K) meKí Kul.
  - L) civēi ewZ Kul.
  - M) civēi tek Kul.
  - N) `Re Kul.

Kwl.1 c j Dbaqb ǎǎ

8/ ǎǎǎq DcKiY wfiĒK Rxe-cwi ǎekK Kwl. thLiǎb dj bkij Zv msi ǎǎY meǎǎK  
cǎPón tbqv nq ZvǎK wK etj ?

- K) cwi ǎek Kwl.
- L) ǎNǎǎq Kwl.
- M) Rxe-cwi ǎekK Kwl.
- N) AǎRe Kwl.

9/ wwfbaǎKvi cwi ǎek Kwl.i KqU gj- Dǎǎk ǎǎ Avǎj wǎZ ntǎǎQ ?

- K) PǎǎU
- L) cǎǎU
- M) ǎǎU
- N) wZbǎU

10/ Kwl.ǎZ KǎqKwU wǎǎǎ ǎǎ ǎekǎ ǎǎKǎj Dbaqb cǎǎve ǎNǎǎq nǎe| GB wǎǎǎ ǎǎ ǎekǎ  
KqU?

- K) QqU
- L) PǎǎU
- M) cǎǎU
- N) wZbǎU

11/ Kwl.cǎǎǎǎǎǎ KqU , Yǎej x ǎǎKǎj Zv ǎNǎǎq cǎǎǎǎ nǎe ?

- K) QqU
- L) PǎǎU
- M) cǎǎU
- N) wZbǎU|

**cw 3.4 mgušZ Lvgv̄i i kZ̄ej x I j ʈ**



G cv̄ tk̄t̄l Av̄c̄ub-

- ◆ mgušZ Lvgv̄i i kZ̄ej x D̄t̄j L̄ Kīt̄Z cv̄īteb|
- ◆ evsj v̄`tk̄i Kīt̄Kī w̄ef̄b̄ǣ Aē`v̄ eȲb̄v̄ Kīt̄Z cv̄īteb|
- ◆ mgušZ Lvgv̄i m̄w̄i j ʈ` ej̄t̄Z I w̄j L̄t̄Z cv̄īteb|
- ◆ D̄t̄`v̄³v̄t̄` i mgušZ Lvgv̄i c̄ōZ̄ōvi m̄ǣtebv̄ eȲb̄v̄ Kīt̄Z cv̄īteb|



**mgušZ Lvgv̄i i kZ̄ej x**

Kul.cwītek Ab̄j̄j \_v̄K̄t̄j I mgušZ Lvgv̄i M̄to Z̄j̄t̄Z n̄t̄j w̄ef̄b̄ǣm̄ǣú` I c̄h̄ȳ³ i c̄ōq̄v̄R̄b̄ n̄q| m̄ǣú` I c̄h̄ȳ³ i GB c̄ōq̄v̄R̄b̄x̄Z̄v̄t̄K mgušZ Lvgv̄i i kZ̄ej x ej̄v̄ n̄q| mgušZ Lvgv̄i i c̄v̄t̄v̄U kZ̄ej x w̄b̄ǣj̄c̄N̄

- fig (Land)
- c̄ȳR̄ (Capital)
- k̄īḡK (Labour)
- c̄h̄ȳ³/ē`ē`v̄c̄bv̄ (Technology/Management)
- Drcv̄`b̄ mgq (Production time)

G kZ̄ej x w̄ef̄b̄ǣc̄k̄vi mgušZ Lvgv̄i w̄f̄b̄z̄i n̄t̄q \_v̄t̄K| GB kZ̄ej xi c̄ōq̄v̄R̄b̄x̄ Aē`v̄ mst̄ʈ̄t̄c̄ m̄vi w̄Y 4-G t̄`L̄v̄t̄bv̄ n̄t̄j v̄| w̄ef̄b̄ǣm̄gušZ Lvgv̄i i c̄ōZ̄ōv̄ Z̄v̄ Av̄t̄j v̄P̄bv̄ Kiv̄ n̄t̄j v̄|

**t̄c̄w̄īw̄f̄v̄īĒK mgušZ Lvgv̄i**

GiU L̄ȳ Aí fig I L̄ȳ Kg c̄ȳR̄ w̄t̄q̄ īīǣ Kiv̄ hv̄q| Z̄te GL̄v̄t̄b̄ Āt̄b̄K k̄īḡK I w̄b̄ǣo c̄h̄ȳ³/ē`ē`v̄c̄bv̄ c̄ōq̄v̄R̄b̄ n̄q| Drcv̄`b̄ t̄c̄t̄Z̄ mgq Aí j̄v̄t̄M|

**t̄WB̄īw̄f̄v̄īĒK mgušZ Lvgv̄i**

GiU t̄en̄k̄ fig I AZ̄`w̄āK c̄ȳR̄ w̄b̄t̄q̄ īīǣ Kiv̄ c̄ōq̄v̄R̄b̄| k̄īḡK Z̄j̄b̄v̄j̄ḡ-Kf̄v̄tē Kg j̄v̄t̄M| c̄h̄ȳ³/ē`ē`v̄c̄bv̄ Av̄āw̄b̄ǣo n̄t̄j P̄t̄j | w̄K̄š`Drcv̄`b̄ t̄c̄t̄Z̄ Av̄āK mgq c̄ōq̄v̄R̄b̄|

**mvīw̄ 4 : mgušZ Lvgv̄i ē`ē`vī kZ̄ej x I G, t̄j̄vi c̄ōq̄v̄R̄b̄x̄ Aē`v̄**

mgušZ Lvgv̄i ē`ē`vī c̄k̄vi	fig	c̄ȳR̄	k̄īḡK	c̄h̄ȳ³/ē`ē`v̄c̄bv̄	Drcv̄`b̄ mgq
t̄c̄w̄īw̄f̄v̄īĒK	L̄ȳ Aí	L̄ȳ Kg	Āt̄b̄K	w̄b̄ǣo	Aí
t̄WB̄īw̄f̄v̄īĒK	t̄en̄k̄	AZ̄`w̄āK	Kg	Av̄āw̄b̄ǣo	Av̄āK
ḡv̄r̄m̄`w̄f̄v̄īĒK	Aí	Kg	L̄ȳ Kg	Kg w̄b̄ǣo	Av̄āK ev̄ Aí
d̄m̄j̄`w̄f̄v̄īĒK	L̄ȳ t̄en̄k̄	Av̄āK	Āt̄b̄K	Av̄āK w̄b̄ǣo	Aí ev̄ Av̄āK

**ḡv̄r̄m̄`w̄f̄v̄īĒK mgušZ Lvgv̄i**

GiU Aí R̄īḡ I Kg c̄ȳR̄ w̄t̄q̄ īīǣ Kiv̄ hv̄q| k̄īḡK I Kg j̄v̄t̄M| c̄h̄ȳ³/ē`ē`v̄c̄bv̄ t̄WB̄īxi t̄P̄t̄q̄ Kg w̄b̄ǣo| Z̄te Drcv̄`t̄bī mgq Av̄āK j̄v̄t̄M| w̄K̄š`av̄b̄ t̄ʈ̄t̄Z̄ ḡīQ̄ ev̄ w̄P̄s̄īw̄ P̄v̄l̄ Kīt̄j̄ mgq Kg j̄v̄t̄M, Ḡt̄Z̄ fig t̄en̄k̄ j̄v̄t̄M|

**dmj wfiEK mguSZ Lvgvi**

G Lvgvi dmtji cKviti Dci wfpkij | thgbN kvKmeiRwfiEK mguSZ Lvgvi Kg fig I Kg cyRtZ iiaKiv hvq | GK ev udei^dmj (dj) wfiEK mguSZ Lvgviti Avi I teik fig I teik cyRi cQvRb nq | Ab`ib` eueI^dmj (dj) I gvV dmj wfiEK mguSZ Lvgviti Lg teik fig I Awak cyRi cQvRb nq | mKj cKvi dmj wfiEK Lvgviti B AtbK kigK I Awak ubneo chv^/e`e`vcbr cQvRb | Drcv`tbi mgq kvKmeiR I gvV dmtj Kg Ges dj PrtI Awak jvM |

**evsj v`tki KI tKi Ae`v**

mi Kwi cwi msL`vb gtZ (1995) evsj v`tk GK tKwUi Dci KIK cwi evi itqtQb | Zt`i gta` fignxb nt`Qb cQq A`aR (kZKiv 49 Rb) | Gi ctib itqtQb q`za KIKMY, huiv kZKiv 32 Rb | t`tk gvSvix KIK kZKiv 15 Rb Ges eo KIK kZKiv 4 Rb | Aciv tK Kwl. figi gvij Kiv Gi weciz | thgbN fignxb I q`za KIKMY wgtj t`tki Kwl. figi kZKiv 29 fvMi gvij K | gvSvix KIKMY tgvU Kwl. figi kZKiv 45 fvM I eo KIKMY kZKiv 26 fvMi gvij K |

mi Kwi cwi msL`vb gtZ (1995) evsj v`tk GK tKwUi Dci KIK cwi evi itqtQb | Zt`i gta` fignxb nt`Qb cQq A`aR (kZKiv 49 Rb) | Gi ctib itqtQb q`za KIKMY, huiv kZKiv 32 Rb | t`tk gvSvix KIK kZKiv 15 Rb Ges eo KIK kZKiv 4 Rb | Aciv tK Kwl. figi gvij Kiv Gi weciz | thgbN fignxb I q`za KIKMY wgtj t`tki Kwl. figi kZKiv 29 fvMi gvij K | gvSvix KIKMY tgvU Kwl. figi kZKiv 45 fvM I eo KIKMY kZKiv 26 fvMi gvij K |

GLb Avgiv mvari Yfite evsj v`tk KIKM`Yi weivRgvb m`u`, Drcv`b I tfvM e`e`v Ges chv^ m`ear wbtq Avtj vPbv Ki uQ | G, tjv wP` 11-tZ t`Lv`bv ntjv |

**(K) m`u` wfiE`**

wefbecKvi KI tKi fig, cKz, Mpcwv Z ci I cvL, kigK Ges cyRi weivRgvb Ae`v eSvi Rb` wP` 11 (K) t`Lb |

wbR`^fig, cKz, Mpcwv Z ci I cyR fignxb`i metPtq Kg itqtQ | G, tjv cwi gvY q`za KIK ntZ mgu`stq ewx tctq eo KI tKi t`q`T metPtq teik itqtQ | wbR`^Mpcwv Z cvL (nwn-gjvM) I kigK mieivn fignxb`i teik | GKBFvte eM`tbqv fig I Mpcwv Z ci cvL fignxb`i metPtq teik Ges eo KIKM`Yi Zv tbB |

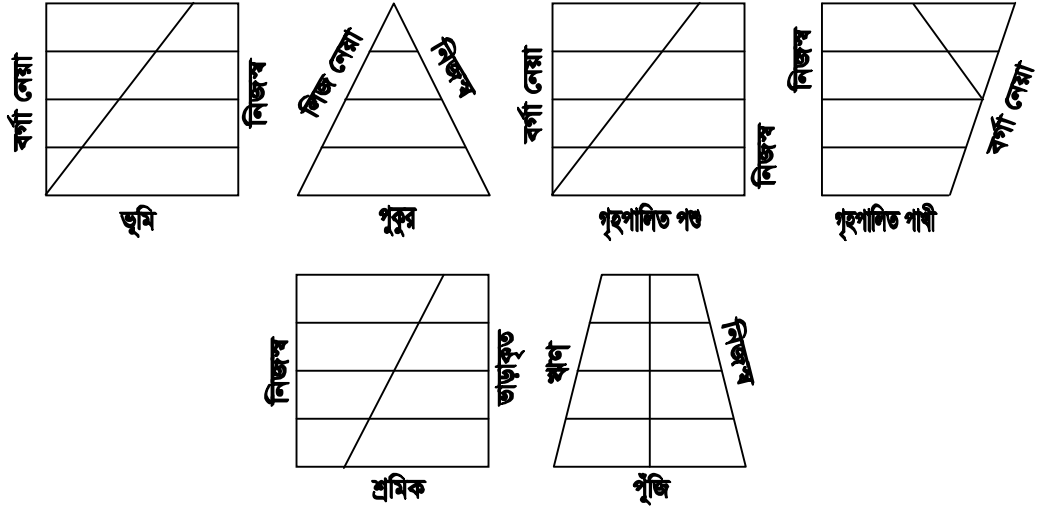
wj R tbqv cKz I FY Kiv cyR m`ear eo KIK t`i metPtq teik | G, tjv gvSvix KIK ntZ mgu`stq Ktg fignxb`i metPtq Kg AvtQ |

**(L) Drcv`b I tfvM e`e`v**

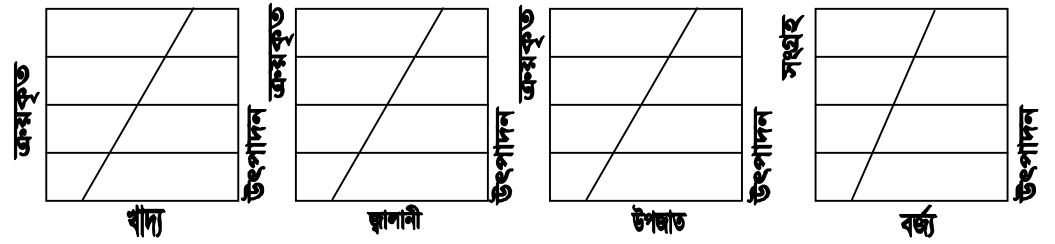
wefbelv`, Rvj wv I DcRvZ fignxbiv metPtq Kg Drcv`b KitZ cvtib | ZvB teik mq Kti tfvM Ktib | q`za KIK ntZ Drcv`b mtg evotQ, Avi mq KgtQ | eo KIK G, tjv teik Drcv`b I Kg mq Kti tfvM KitQb |



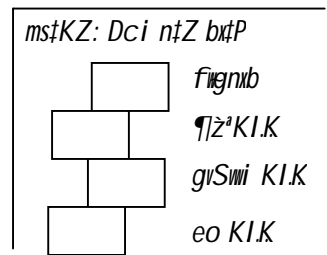
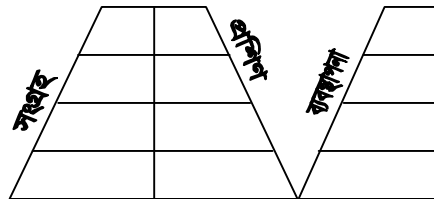
(K) mṣú` wfiE



(L) tfwM e'e`v



(M) chnyṣ myeav



ṣṭP 11 : KI.Ki mṣú` wfiE, tfwM e'e`v I chnyṣ myeav

eR©msMh tenk Ktib fignxbiv Avi Drcv`b tenk Ktib eo KIK [iP1 11 (L)]| Drcv`b I tFvM e`e`v t`tk GUv myúó n`Q th, µq ubFpkj Zv KgvZ fignxb I 9z`a KIKMti Yi wefbaL`v` , Rjj vbx I Ab`vb` Drcv`b Avi I evortbri c0qvRbxqZv we`gvb|

**(M) chny` mjev**

ubR`^D`weZ`vbxq chny`/e`e`vcbri cirkvcmk KIKMY AvaybK Kul.chny` I e`envi Kti` \_vtKb| chny` mSMh I e`e`vcbri mjev fignxbti i LyB Kg| G mjev µgvstq ewx tctq eo KIKti` i tejvq metPtq tenk itqtQ [iP1 11 (M)]| tKbbv, wefbaemi Kwri ev temi Kwri Avdftm hvZvqvZ mjev I c0vi gva`gMZ mjev eo I gvSvix KIKti` i tenk itqtQ| Gme mjev 9z`a KIKti` i Kg, fignxbti` i tbB ej tj B Ptj | c0k`9Y MhY mjev eo KIKti` tenk|

**mgvSZ Lvgi e`e`vi j 9j`**

Dctiv` AvtjvPbv I Ae`vi t09j`z` t`tk mgvSZ Lvgi e`e`v mjo` c0µqvq wKQymjov` 9 j 9j` \_vKv c0qvRb| G`\_tjv n`Q ub`e`fcN`

- fignxb I 9z`a KIKti` i Rb` cyR mieivn Kti` c0B ktjK Drcv`tb j vMtbvi e`e`vKiY|
- fignxb I 9z`a KIKti` i Rb` chny` mSMh I e`e`vcbri mjev evortbri I c0k`9Y e`e`v mjo`KiY c0qvRb|
- gvSvix I eo KIKti` itK mgvSZ Lvgi Mto tZvjvi DctivMx j vMmB chny`/e`e`vcbri c0k`9Y c0v`bi m`thvM mjo`KiY|
- KIK I Dti`v`v`vi nvtZi KvQ DcKiY, FY, chny` I c0k`9Y t0v`v`bri c0P0v MhY|

**Dti`v`v`vi m`tebv**

wkiv9Z teKvi h9K, 9z`a ev eo e`emvqx Ges th tKvb Dti`v`v`vi ubR` fig, cyR I kigK e`envti i mvg`\_© Abjv`ti Dch9` c0k`9Y MhY Kti` th tKvb aitbi mgvSZ Lvgi c0Z0v Kitz cvtib| Gt`9t` Dti`v`v`ti` i Dch9` Kul.cwi`tek Ges Drcv`Z` `te`i wecyb mjevaw` we`tePbvq ubtq GvMtg thZ nte|



**cuVhEi gj`iqb 3.4**

**miWK DEti i cutk`UK wpy (v) w b|**

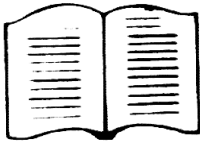
- 1/ mguSZ Lvgvi i kZ`ej x KquU ?  
 K) PiuU  
 L) QquU  
 M) miZuU  
 N) cuPuU
  
- 2/ Ly Aí fng I Ly Kg cyR w`tq`i iæKiv hvq tKvb ai#bi mguSZ Lvgvi ?  
 K) tWqi xwFvEK  
 L) tcwëitFvEK  
 M) gvrmi wFvEK  
 N) tKvbUvB bv
  
- 3/ tenk fng I AZ`maK cyR wbtq`i iæKiv hvq tKvb ai#bi mguSZ Lvgvi ?  
 K) tWqi xwFvEK  
 L) tcwëitFvEK  
 M) gvrmi wFvEK  
 N) tKvbUvB bv
  
- 4/ Aí fng I Aí cyR w`tq`i iæKiv hvq tKvb ai#bi mguSZ Lvgvi ?  
 K) tWqi xwFvEK  
 L) tcwëitFvEK  
 M) gvrmi wFvEK  
 N) tKvbUvB bv
  
- 5/ evsj v`k fngnxb KI`Ki msL`v kZKiv KZ fivM ?  
 K) 60  
 L) 49  
 M) 35  
 N) 45
  
- 6/ gvSwii KIKMY tgvU Kul`fngi kZKiv KZ fivMi gvij K ?  
 K) 60  
 L) 49  
 M) 35  
 N) 45
  
- 7/ KI`Ki eZ`vb Ae`vii Avtj`vK mguSZ Lvgvi e`e`v cu`quvi KquU miybw`e`j`q`  
 \_vKv`iKvi ?  
 K) 5uU  
 L) 4uU  
 M) 6uU  
 N) 7uU

### cw 3.5 tcwëñfiĒK mgušZ Lvgvi (gjm/nun, dmj, gvQ)



G cvV tkʃI Avcwb-

- ◆ tcwëñfiĒK mgušZ Lvgvʃi i mʰtebv, ʃjv eYʃv KiʃZ cviʃeb|
- ◆ tcwëñfiĒK mgušZ Lvgvʃi i KiYxq weIq, ʃjv ejʃZ I wj LtZ cviʃeb|
- ◆ tcwëñfiĒK mgušZ Lvgvʃi i mgšq avcmgn eYʃv KiʃZ cviʃeb|
- ◆ tcwëñfiĒK mgušZ Lvgvʃi i GKwD`vniY I Avq-e`q mʰúʃKʰavi Yv cviʃeb|



### tcwëñfiĒK mgušZ Lvgvi

#### 1| mʰtebv

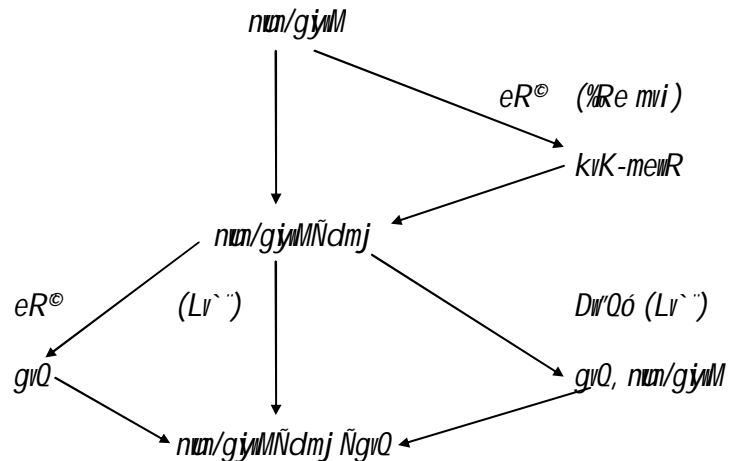
- LʰB Kg RiqʃZ I Kg cvRʃZ ʒ Drcv`b I Avq jvʃfi Rb` fignxb KIKMY G aiʃbi mgušZ Lvgvi Mto ZʃʃZ cviʃeb|
- nun-gjmMi eRʰev weõv cvPʃq Zv`Re mvi iʃc e`envi Kʃi ʃ RvqMvq weifbæ tgšmgn kvK-mewR Aver` KiʃZ cviʃeb|
- tʰUv cʃkʃ`vKʃj cʃkʃi Dcʃi nun-gjmM I gvQ Pvl GKʃĪ Kiv hvq|
- kvK-mewRi DvʰQó nun-gjmMʃK Lvl qvʃbv hvq, gvQʃKI Lvl qvʃbv hvq|

#### 2| KiYxq

- tcwëñfiĒK mgušZ Lvgvʃi wbeo cʃvʰ/e`e`vcbv cʃqvRb| ZvB cʃkʃY MʰY Kiv DvPZ|
- nun-gjmMi ʃi vM cʃZʃi vaK UxKv ev BbʃRKkb h\_vmgʃq wbgggwcdK ʃ`qv DvPZ|
- nun-gjmMi weõv bv cvPʃq RiqʃZ e`envi Kiv DvPZ bq|
- cʃkʃi Dcʃi nun-gjmM cvj b I cʃkʃi gvQ Pvl GKʃĪ Kiʃj cʃZ wZb eQi ci cʃkʃi cwb i`wKʃq gwU tkvab Kʃi bZb cwb wʃq Averv gvQ I nun-gjmM Pvl Kiv DvPZ|

#### 3| mgšq avcmgn

GKwU tcwëñfiĒK mgušZ Lvgvi, thLvʃb nun-gjmM, dmj I gvQ `vKʃe, tmwU Kxʃvʃe avʃc avʃc mgšq Kiv hvq Zv wʃP ʃ`Lvʃbv nʃj v|





#### 4/ D`niY

GKwU tcmw`f`EK mgwšZ Lvgv`i i msv`f`B weeiY I Avq-e`q GLv`b D`niY`f`c t`Lv`bv ntjv|

- Lvgvi e`e`v : nun/gj`M Ń dmj Ń gvQ
- m`u` mgr : cwi ev`i i tj vKmsL`v Ń cjad 2, gwnj v 3  
Rug Ń emZemo 0.04 tn.; t`f`Z 0.10 tn.  
c`ž 0.06 tn.; tgvU 0.20 tn±i |

Dbž Rv`Zi tgv`M 4uU, gj`M 20uU, nunv 1uU, nunx 5uU

- Kl`Ki cKvi : fignxb
- Lvgv`i nun-gj`M cvj t`bi Avq-e`q (evrmi K)

e`tqi weeiY	UvKv	Av`qi weeiY	UvKv
1/ μq gj`Ń gj`M (24uU x 90 UvKv) nun (6uU x 70 UvKv)	2160 420	1/ wWg Drcv`b gj`M (4186 x 2.50 UvKv) nun (980 x 2.50 UvKv)	10465 2450
2/ Lv`Ń gj`M nun	2133 1092	2/ Drcv`b tk`l gj`Mi gj` (24uU x 60 UvKv) n`mi gj` (6uU x 50 UvKv)	1440 300
3/ JI a/f`vKwmb	250	3/ nun-gj`Mi we`vi `Re mvi gj` (50 tKwR x 0.40 UvKv)	216
4/ klgK (cwi ewi K)	Ń		
5/ Ab`vb`	560		
<b>tgvU LiP</b>	<b>6615</b>	<b>tgvU Avq</b>	<b>14871</b>
		<b>bU g`v`v</b>	<b>8256</b>

- kvK-mewR P`f`i i Avq-e`q (evrmi K)

e`tqi weeiY	UvKv	Av`qi weeiY	UvKv
1/ Rug `Zwi	220	1/ kvK-mewR Drcv`b WvUv (318 tKwR x 3 UvKv) c`kvK (574 tKwR x 3 UvKv) tXam (280 tKwR x 5 UvKv) U`gtUv (434 tKwR x 5 UvKv) cvj skvK (380 tKwR x 3 UvKv) evavKwC (380uU x 3 UvKv)	954 1722 1400 2170 1140 1140
2/ tMve i μq	150		
3/ nun-gj`Mi we`v (wbR`)	Ń		
4/ A`Re mvi	380		
5/ exR/Pvi v	400		
6/ klgK (cwi ewi K)	Ń		
7/ Ab`vb` LiP	570		
<b>tgvU LiP</b>	<b>1720</b>	<b>tgvU Avq</b>	<b>8526</b>
		<b>bU g`v`v</b>	<b>6806</b>

Kv.L.1 cji Dbq b`z

- tgšmšx cšzi gvQ Pvl i Avq-e`q (evrmvi K)

e`tqi veeiY	UvKv	Avtqi veeiY	UvKv
1  cšz cwi`vi	150	1  gvQ Drcv`b	
2  Pz cšqM (8 tKvR x 5 evi x 5 UvKv)	200	ımj vri Kvc` (50 tKvR x 30 UvKv)	1500
3  nıı-gııMi veov`Re mvi i f`c cšqM (ııbR`)	Ñ	_vB mi cııı (35 tKvR x 50 UvKv)	1750
4  A%Re mvi cšqM (3 tKvRx 8 evi x 6 UvKv)	144	ıgi i Kvc` (45 tKvR x 40 UvKv)	1800
5  gvQı tcvıv`ıq (700ıı)	350	KvıııD	
6  gvQı Lv` cšqM (10 tKvR x 8 evi x 7 UvKv)	560	(40 tKvR x 40 UvKv)	1600
7  kııK	350		
<b>ıgv LiP</b>	<b>1754</b>	<b>ıgv Avq</b>	<b>6650</b>
		<b>bıı gıııı</b>	<b>4896</b>

- tcvııııEK mgııııZ Lıgvıı i Avq-e`q (evrmvi K)

meıııı LiP                    10089 UvKv  
meıııı Avq                    30047 UvKv  
meıııı bıı gıııı                19958 UvKv



**cuVhEi gj`iqb 3.5**

**mivK DEti i cutk, QUK wpy (v) w b |**

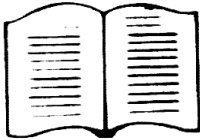
- 1/ Kg cURtZ I LqB Kg RigtZ `y Drcr`b I Avq jvtfi Rb` tKib ai tbi mguSZ Lvgvi Mto tZvj v hvq ?
  - K) dmj wfiEK
  - L) tcwvfrfiEK
  - M) givm`wfiEK
  - N) GKwJ bv
  
- 2/ tcwvfrfiEK mguSZ Lvgviti i KquU mtebv Avtj vPbv Kiv ntqtQ ?
  - K) PviwJ
  - L) cutPwJ
  - M) wZbwJ
  - N) QquU
  
- 3/ tcwvfrfiEK mguSZ Lvgviti i KquU Ki Yiq Avtj wPZ ntqtQ ?
  - K) QquU
  - L) cutPwJ
  - M) PviwJ
  - N) wZbwJ
  
- 4/ tcwvfrfiEK mguSZ Lvgviti i KquU avc t` Lvfbv ntqtQ ?
  - K) PviwJ
  - L) cutPwJ
  - M) QquU
  - N) wZbwJ
  
- 5/ tcwvfrfiEK mguSZ Lvgviti wKifc chwz`/ e`e`vcbv cquRb ?
  - K) wbioe
  - L) Avawbioe
  - M) Awak wbioe
  - N) Kg wbioe |

### cw 3.6 tWqixwfiEK mgušZ Lvgvi (Miægnl, dmj, gvQ, gjm-nu, QMj)



G cvl tkłl Arcub-

- ♦ tWqixwfiEK mgušZ Lvgvi i mæbebv, tjv Zžj aižZ cvižeb|
- ♦ tWqixwfiEK mgušZ Lvgvi i KiYxq mel qmgn-Džl KižZ cvižeb|
- ♦ tWqixwfiEK mgušZ Lvgvi i mgšq avc, tjv ubž`R KižZ cvižeb|
- ♦ tWqixwfiEK mgušZ Lvgvi i GKwD`vniY l Avq-e`q mæútkæYžv KižZ cvižeb|



#### 1/ mæbebv

tWqixwfiEK mgušZ Lvgvi cžZóvi mæbebv, tjv ubžæjčN

- tek fieg, AZ`mak cjr l Zžbjg-Kfižte Kg klgK e`eniži gvSwi ev eo KIKMY G aižbi mgušZ Lvgvi Mto ZžžZ cvižeb|
- Awak Rüg PriYfiž Ges Nvm ev ci`Lv` Drcv`žbi Rb` cžqvRb nq| PriYfiž eo ntj GKB`žb QMj cvj b Kiv mæ|
- žMvei l žMvPbv msiŋY Kži G, žjvi mž\_ ci`i Dv`Qó Lvevi wgnkžq Kžæúv÷`Zwi Kiv hvq| Kžæúv÷ kvK-mewR žŋžZ ev`žžgv`x dj evMžb (Kjv, tctc) DEg`Re mvi ižc e`envi Kiv hvq|
- cžž`vKžj cPr žMvei gvžQi Lv``Zwi i Rb` cžži cžqm Kži gvQ Prl Kiv mæ|
- cžži Dci nu-gjm cvj b Kiv ntj G, žjvi wövn gvžQi Lv``nq|
- kvK-mewR ev džj i Dv`Qó ci` ev gvžQi Lv``wvžte e`envi Kiv hvq|
- PriYfiži Pricvžk džj i MvQ jvMžj Hme MžžQi cvZv Miægnl-QvMžj i Lv``ižc ž`qv hvq|
- Gižc Lvgvi ntž Drcv`b tčžZ ntj Awak mgq jvžM|

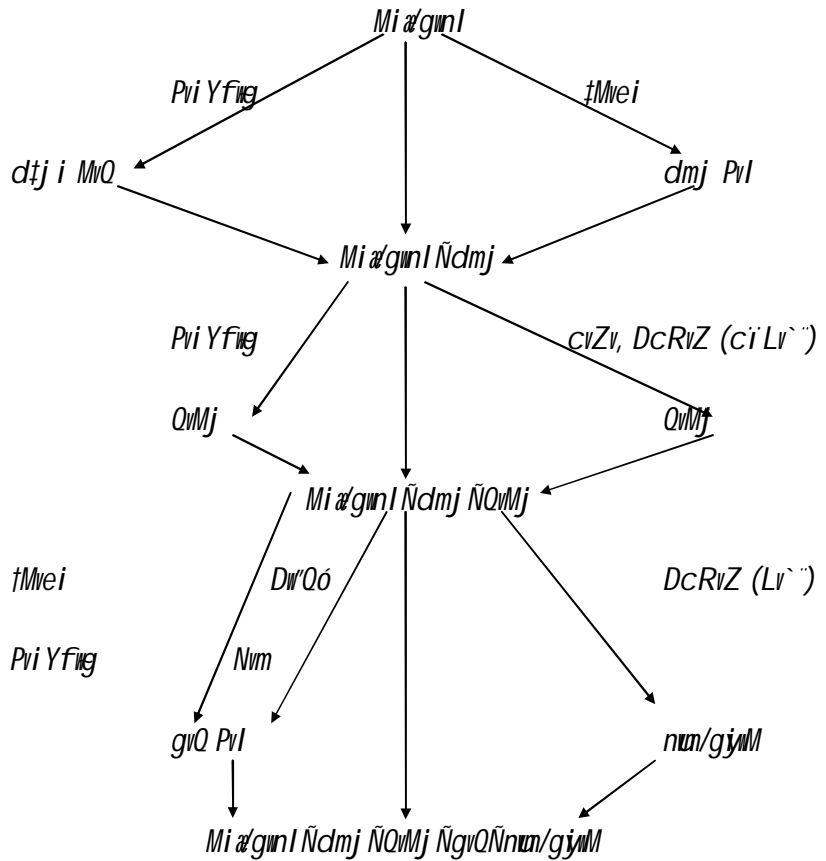
#### 2/ KiYxq

tWqixwfiEK mgušZ Lvgvi i KiYxq, tjv ubžæjčN

- tWqix Lvgvi Avambeo cžvž`e`e`žcbr cžqvRb etj cžkŋY MžY Rižix|
- ci-cvLi mgqžZv žvM cžžživaK UxKv ev BžžRkKb ž`qv Ges Kugvkk Lvl qvžbv DvPZ|
- Nvm ev ci`Lv` Drcv`b KvžR BDwiqv mvi cžqm Kži žmLubKvi Nvm/ci`Lv` Ašž 10 w`b ci`cižK Lvl qvžZ nte|
- ci-cvLi Avevm`j mvi v eQi i Kbv i vLv DvPZ|
- ci-cvLžK mežv bj Kžci cvb Lvl qvžbv DvPZ|

### 3| mgšq avcmgn

GKwU tWqiwfwiEK mgwšZ Lvgvi thLvtb Mi a'gwnI, QvMj, dmj, gvQ I gjwM-nun vKte, tmwU Kxfvte avtc avtc mgšq Kiv hvq Zv wbtP t`Lvtbr ntj vñ



### 4| D`niY

GKwU tWqiwfwiEK mgwšZ Lvgvii mswfjB weeiY I Avq-e`q D`niY`tfc GLvtb t`Lvtbr ntj v|

- Lvgvi e`e`v : Mi a'ñdmj ÑQvMj ÑgvQÑnun
- m`u`mgR : civ evti i tj vKmsL`v Ñ cjał 10, gwvj v 6  
Rig Ñ emZemo 0.50 tn.; t`fjZ 2.60 tn., cKž 0.24 tn.;  
Nvm Rig 0.20 tn.; kvK-menR 0.36 tn.; tgvU Rig 3.90 tn±i |

Mvfx (Dbž) 8wU, t`kx 2wU, Iw (Dbž) 2wU, ej` (t`kx) 2wU, evQy (Dbž) 12wU, QvMj (t`kx) 5wU, nun (Dbž) 100wU

- KIžKi cKvi : eo KIK

Kwl.1 cji Dbq b`z

- Mia l QvMfj i we`wi Z weeiY :

cKvi	RvZ	msL`v	μq gj` (UvKv)	eZgub gj` (UvKv)	gbydv (UvKv)
Mvfx	Rvnxμm	2	43,000	60,000	17,000
Mvfx	kvnxl qij	2	34,000	50,000	16,000
Mvfx	wdwRqvb μm	3	25,000	60,000	35,000
Mvfx	wmUx	1	10,000	20,000	10,000
Mvfx	t`kx	2	wbR`	20,000	20,000
Iw	Rvnxμm	2	9,000	18,000	9,000
ej`	t`kx	2	16,000	18,000	2,000
evQiy	μm	12	wbR`	48,000	48,000
eKix	t`kx	2	1,500	2,000	500
Lvmx	t`kx	3	wbR`	3,300	3,300
<b>tgw</b>	<b>Mia 26w, QvMj 5w</b>		<b>1,38,500</b>	<b>2,99,300</b>	<b>1,60,800</b>

- Dbz` yeZx Mvfx cij tbi Avq-e`q (eivmwi K)

e`tqi weeiY	UvKv	Avtqi weeiY	UvKv
1/ Lv`N Lo (19.5 Ub x 500 UvKv) meR Nvm (49 Ub x 50 UvKv) wPv_o (975 tKwR x 4 UvKv) Lj (2920 tKwR x 5 UvKv) Pvtj i Kgv (9700 tKwR x 2 UvKv) Mtgi fwt (4900 tKwR x 7 UvKv) jeY (245 tKwR x 7 UvKv)	9750 2450 3900 14600 19400 34300 1715	1/ `y Drcv`b (18250 wj : x 14 UvKv)	255500
2/ JIa/FvKwmb	3500	2/ tMvei Drcv`b (52 Ub x 500 UvKv)	26000
<b>tgw LiP</b>	<b>89615</b>	<b>tgw Avq</b>	<b>281500</b>
		<b>bw gbydv</b>	<b>191885</b>

- ej` cij b I Iw tgvUvZvRv Ki tYi Avq-e`q (eivmwi K)

e`tqi weeiY	UvKv	Avtqi weeiY	UvKv
1/ Lv`N Lo (10 Ub x 500 UvKv) meR Nvm (20 Ub x 50 UvKv) wPv_o (450 tKwR x 5 UvKv) Lj (1500 tKwR x 5 UvKv) Pvtj i Kgv (4000 tKwR x 2 UvKv) Mtgi fwt (2500 tKwR x 7 UvKv) jeY (150 tKwR x 7 UvKv)	5000 1000 2250 7500 8000 17500 1050	1/ Iw weiw (1w) 2/ nvj Pvl (400 w`b x 50 UvKv) 3/ tMvei Drcv`b (24 Ub x 500 UvKv)	28000 20000 12000
2/ JIa/FvKwmb	1500		
<b>tgw LiP</b>	<b>43800</b>	<b>tgw Avq</b>	<b>60000</b>
		<b>bw gbydv</b>	<b>16200</b>

- Aver`KZ.el`dmj mtgi meeiY :
  - 1/ tivcv AvDk (Dbz) N` tivcv Avgb (t`kx) N` mmi Iv (t`kx) 1,30 tn:
  - 2/ cWZZ N` tivcv Avgb (Dbz) N` tev`iv (Dbz) 0.45 tn:
  - 3/ tivcv AvDk (Dbz) N` tivcv Avgb (t`kx) N` Mg (Dbz) 0.45 tn:
  - 4/ tev`iv AvDk (t`kx) N` tivcv Avgb (Dbz) N` g`y`y (t`kx) 0.40 tn:
- Aver`KZ.dmtj i Avq-e`q (evrmmi K)

e`tqi meeiY	UvKv	Avtqi meeiY	UvKv
1/ Rng Pvl I`Zwi	3600	1/ dmj Drcv`b	
2/ tMiei c0vb (26 Ub, ubR`)	N`	AvDk aib	
3/ A%Re mvi c0qvM		(8.6 Ub x 5000 UvKv)	43000
BDwi qv (1140 tKwR x 6 UvKv)	6840	Avgb aib	
WUGmwc (830 tKwR x 7 UvKv)	5810	(12.5 Ub x 5500 UvKv)	68750
Ggwc (430 tKwR x 5 UvKv)	2150	tev`iv aib	
WRcmvg (740 tKwRx 3 UvKv)	2220	(2.7 Ub x 5500 UvKv)	14850
4/ exR/Pri v μq (ubR`^evt`)	4500	Mg (0.90 Ub x 12000 UvKv)	10800
5/ ecb/ tivcY	3500	mmi Iv	
6/ tmP I KxUvbkK c0vb	13838	(1.38 Ub x 15000 UvKv)	20700
7/ klgK (ubR`^evt`)	9500	g`y`y (380 tKwR x 30 UvKv)	11400
8/ Ab`vb` LiP	5580	2/ DcRvZ	
		Lo (28 Ub x 1000 UvKv)	28000
		Kzv/fi# (3 Ub x 4000 UvKv)	12000
<b>tgW LiP</b>	<b>57538</b>	<b>tgW Avq</b>	<b>209500</b>
		<b>bxW glycdv</b>	<b>151962</b>

- kiv-meiR I Nvm Drcv`tbi Avq-e`q (evrmmi K)

e`tqi meeiY	UvKv	Avtqi meeiY	UvKv
1/ Rng Pvl I`Zwi	2200	1/ Nvm Drcv`b	
2/ tMiei c0vb (5 Ub, ubR`)	N`	1g Wkwi`i (40 Ub x 50 UvKv)	2000
3/ A%Re mvi c0qvM		2q Wkwi`i (20 Ub x 50 UvKv)	1000
BDwi qv (177 tKwR x 6 UvKv)	1062	3q Wkwi`i (10 Ub x 50 UvKv)	500
WUGmwc (142 tKwR x 7 UvKv)	994	2/ kiv-meiR Drcv`b	
Ggwc (80 tKwR x 5 UvKv)	400	Kijv (gvSvi x AvKwZ)	
WRcmvg (70 tKwR x 3 UvKv)	210	(1856 tKwR x 5 UvKv)	9325
4/ exR/Pri v μq	4700	WpP%v (1656 tKwR x 5 UvKv)	8280
5/ tmP c0vb	3400	kmv (3380 tKwR x 4 UvKv)	13520
6/ KxUvbkK c0vb	900	evavKwc (3824 tKwRx3 UvKv)	11472
7/ klgK (ubR`^evt`)		UtgtUv (2170 tKwR x 5 UvKv)	10850
(235 Rb x 40 UvKv)	9400	Kijv (Df`Q)	
8/ Ab`vb` LiP	2800	(1275 tKwR x 5 UvKv)	6375
<b>tgW LiP</b>	<b>26066</b>	<b>tgW Avq</b>	<b>63322</b>
		<b>bxW glycdv</b>	<b>37256</b>

Kwl.1 cji Dbq b`z

- QvMj j vj b-cvj tbi Avq-e`q (evrmii K)

e`tqi weeiY	UvKv	Avtqi weeiY	UvKv
1/ ev`Pmn QvMj μq (2uU x 900 UvKv)	1800	1/ eQi tk`l c`Yxi gj` QvMj (2uU x 2000 UvKv)	4000
2/ Lvmx μq (3uU x 500 UvKv)	1500	ev`Pvi gj` (4uU x 500 UvKv)	2000
3/ Pto Lvl qv  (`nbK 5-6 NÈv, nbR Pvi YFng)	N	Lvmxi gj` (3uU x 1500 UvKv)	4500
4/ Lv`-gvmKj vB F# QvMj (72 tKwR x 10 UvKv)	720	2/ `g Drcv`b (32 vj Uvi x 12 UvKv)	384
Lvmx (75 tKwR x 10 UvKv)	750	3/ QvMj i weov (1260 tKwR x 0.50 UvKv)	630
5/ JIa/ F`vKwmb	150		
6/ kigK (cwi ewi K)	N		
7/ Ab`vb` LiP	250		
<b>tguU LiP</b>	<b>5170</b>	<b>tguU Avq</b>	<b>11514</b>
		<b>bvU glycv</b>	<b>6344</b>

- cki nwn I gvtQi Avambeco ngk`PrtI i Avq-e`q (evrmii K)

e`tqi weeiY	UvKv	Avtqi weeiY	UvKv
1/ nwm Ni `Zwi	2100	1/ wlg Drcv`b (22998uU x 2.5 UvKv)	57495
2/ nwn μqN 16 mBvn eqm (100uU x 70 UvKv)	7000	2/ Drcv`b tk`l nwm gj` (100uU x 50 UvKv)	5000
3/ nwm Lv` (2200 tKwR x 12 UvKv)	26400	3/ gvQ Drcv`b i`B (290 tKwR x 60 UvKv)	17400
4/ Pb c`qvM (180 tKwR x 5 UvKv)	900	KvZj v (700 tKwR x 60 UvKv)	42000
5/ tMei c`qvM (500 tKwR x 6 evi, nbR`)	N	g`Mj (270 tKwR x 60 UvKv)	16200
6/ A`Re mvi c`qvM (150 tKwR x 6 UvKv)	900	M`m Kvc` (190 tKwR x 50 UvKv)	9500
7/ nwm JIa/F`vKwmb	600	_vB mi c`v (120 tKwR x 50 UvKv)	6000
8/ gvtQi tcvv μq (2700uU)	1200	ngi i Kvc` (40 tKwR x 40 UvKv)	1600
9/ kigK (nbR`^evf`)	1600	Kvi wCD (52 tKwR x 40 UvKv)	2080
10/ Ab`vb` LiP	1200		
<b>tguU LiP</b>	<b>41900</b>	<b>tguU Avq</b>	<b>157275</b>
		<b>bvU glycv</b>	<b>115375</b>

- tWqiwFiEK mgvS`Z Ligt i i Avq-e`q (evrmii K)

me`guU LiP 402589 UvKv  
 me`guU Avq 1082411 UvKv  
 me`guU bvU glycv 679822 UvKv





**cuVhEi gj`iqb 3.6**

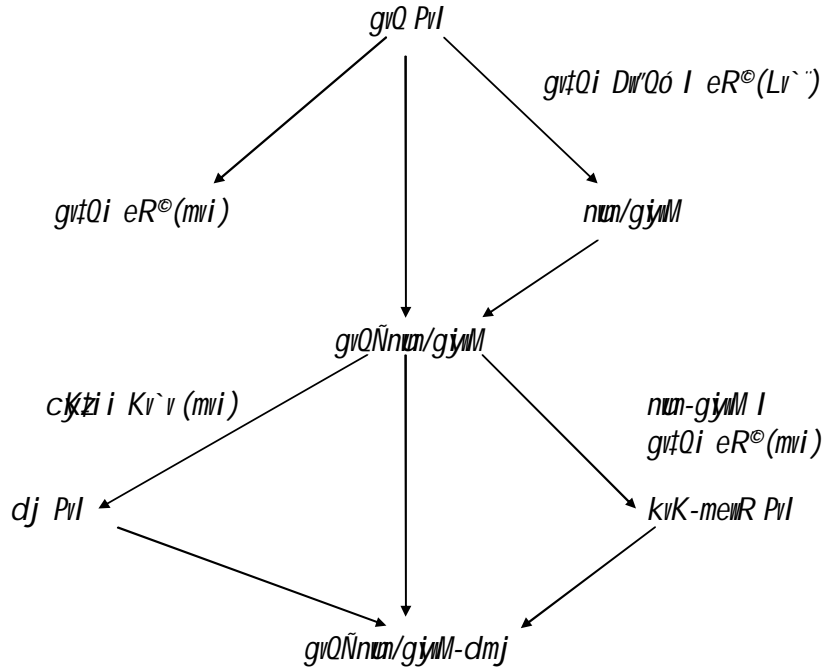
**mivK DEti i cutk, QUK iPy (v) i b |**

- 1/ tWqi xivfivEK mguSŠZ Lvgiti i KquU mtebr Avtj vPZ ntqtQ ?  
 K) AvUuU  
 L) cuPvU  
 M) QquU  
 N) mvZuU
  
- 2/ Pvi Yfing Ges Nvm Drcv`tbi Rb` tKvbuU Avak cwi gvtY cllqvRb nq ?  
 K) emZemo  
 L) dmtj i Rng  
 M) Rng  
 N) me, tj vB
  
- 3/ tWqi xivfivEK mguSŠZ Lvgiti i KquU mveavbZv Avtj vPZ ntqtQ ?  
 K) PviuU  
 L) cuPvU  
 M) QquU  
 N) uzbuU
  
- 4/ ci cvLi Aveim`j miv eQi iKifc ivLv DvPZ ?  
 K) tFRv  
 L) muZtmZ  
 M) iKbv  
 N) Mig
  
- 5/ ci cvLtk meQv iKtmi cvib LvI qvtrv DvPZ ?  
 K) ckZ  
 L) vej  
 M) b`x  
 N) bj Kc
  
- 6/ tWqi xivfivEK mguSŠZ Lvgi miv i KquU avc t`Lvtrv ntqtQ ?  
 K) uzbuU  
 L) PviuU  
 M) cuPvU  
 N) QquU |



### 3/ mgšq avcmgn

GKwU gvrn`wfiEK mgwšZ Lvgvi, thLvfb gvQ, nun-gjwM I dmj GKfT`\_vKte, tmuU Krfvte avtc avtc mgšq Ki v hvq Zv wbtP t`Lvfbv ntj vN



### 4/ D`niY

GKwU gvrn`wfiEK mgwšZ Lvgviti i msvfjB weeiY I Avq-e`q D`niY`fjc GLvfb t`Lvfbv ntj v|

- Lvgvi e`e`v : gvQÑnwnÑdmj
- m`u` mgR : cwi evti i tj vKmsLv`Ñ cjal 3, gwj v 3  
Rig Ñ emZewo 0.06 tn., 0.16 tn.; t`fjZ 0.08 tn., Kj v evMvb 0.10 tn.; tgvU Rig 0.40 tn±i |

Dbz RvZiÑ nwn 63wU, nwnv 7wU, gjwM 10wU, tgvM 2wU

- KI`Ki cKvi : f`z`KIK

- cKzi nwn I gvtQi Avambieo igk<sup>a</sup>Prtli Avq-e`q (evrmi K)

e`tqi weeiY	UvKv	Avtqi weeiY	UvKv	
1/ nwm Ni`Zwi	2100	1/ wWg Drcv`b	38325	
2/ nwn μqN 16 mβvn eqm (70wU x 70 UvKv)	4900	2/ Drcv`b tk+l nwm gj` (70wU x 50 UvKv)		3500
3/ nwm Lv` (1400 tKwR x 12 UvKv)	16800	3/ gvQ Drcv`b	11520 28800 12000 6250 4000 960 1400	
4/ Pz cθqvM (120 tKwR x 5 UvKv)	600	iaB (192 tKwR x 60 UvKv)		
5/ gjwMi weθv cθqvM (wbR`)	N	KvZj v (480 tKwR x 60 UvKv)		
6/ A%Re mvi cθqvM (100 tKwR x 6 UvKv)	600	g#Mj (200 tKwR x 60 UvKv)		
7/ gvtQi tcvv μq (1800wU)	600	Mθm Kvc <sup>q</sup> (125 tKwR x 50 UvKv)		
8/ nwm JIa/FvKwmb	380	_vB mi cW (80 tKwR x 50 UvKv)		
9/ ktgK (cwi ewi K Qvov)	950	wgi i Kvc <sup>q</sup> (24 tKwR x 40 UvKv)		
10/ Ab`vb` LiP	700	Kvi wCD (35 tKwR x 40 UvKv)		
<b>tgw LiP</b>	<b>26830</b>	<b>tgw Avq</b>		<b>106755</b>
		<b>bw glyv</b>		<b>79925</b>

- Dbz RvtZi gjwM cij tbi Avq-e`q (evrmi K)

e`tqi weeiY	UvKv	Avtqi weeiY	UvKv
1/ gjwM μqN 12 mβvn eqm (12wU x 90 UvKv)	1080	1/ wWg Drcv`b (2200wU x 2.50 UvKv)	5500
2/ Lv` tikb	1550	2/ Drcv`b tk+l gjwMi gj` (100wU x 50 UvKv)	5000
3/ nwm JIa/FvKwmb	120	3/ gjwMi weθvi `Re mvi gj` (216 tKwR x 0.40 UvKv)	86
4/ ktgK (cwi ewi K)	N		
5/ Ab`vb` LiP	350		
<b>tgw LiP</b>	<b>3100</b>	<b>tgw Avq</b>	<b>10586</b>
		<b>bw glyv</b>	<b>7486</b>

• AgZ mivMi Kjv I kvK-memRi AvštPrłI i Avq-e`q (evrmii K)

e`tqi meiy	UvKv	Avtqi meiy	UvKv
1  Rıg`Zıı	500	1  kvK-memR Drcv`b	
2  tMveı c`qıM (100 tKıR x 0.40 UvKv)	40	j vj kvK (200 tKıR x 3 UvKv)	600
3  gjvMi meov c`qıM (250 tKıR, ıbR`)	Ñ	Kıjv (180 tKıR x 5 UvKv)	900
4  `Lj c`qıM (50 tKıR x 5 UvKv)	250	gjv (300 tKıR x 2 UvKv)	600
5  mvi c`qıM BDıı qv (50 tKıR x 6 UvKv)	300	2  Kjv Drcv`b	
ıUGmıı (60 tKıR x 7 UvKv)	420	1g ıKıı	16100
Ggıı (40 tKıR x 5 UvKv)	200	2q ıKıı	4900
6  Kjvi Pııı μq (250ıU x 3 UvKv)	750	(700 tKıR x 7 UvKv)	
7  kvK-memR exR μq	200		
8  kıgK (25 Rb x 40 UvKv)	1000		
9  Ab`ıb` LiP (fmPmn)	1570		
<b>ıgıU LiP</b>	<b>5230</b>	<b>ıgıU Avq</b>	<b>23100</b>
		<b>bıU gıııı</b>	<b>17870</b>

• ııııeo kvK-memR PrłI i Avq-e`q (evrmii K)

e`tqi meiy	UvKv	Avtqi meiy	UvKv
1  Rıg`Zıı	180	1  kvK-memR Drcv`b	
2  tMveı μq (325 tKıR x 0.40 UvKv)	130	c`ı kvK (450 tKıR x 3 UvKv)	1350
3  gjvMi meov c`qıM (50 tKıR, ıbR`)	Ñ	tXam (190 tKıR x 5 UvKv)	950
4  A`Re mvi	350	ıııı (225 tKıR x 3 UvKv)	675
5  exR/Pııı	330	UıgıUı (335 tKıR x 5 UvKv)	1675
6  kıgK (cııı emı K)	Ñ	dıKııı (250ıU x 4 UvKv)	1000
7  Ab`ıb` LiP (fmPmn)	480		
<b>ıgıU LiP</b>	<b>1470</b>	<b>ıgıU Avq</b>	<b>5650</b>
		<b>bıU gıııı</b>	<b>4180</b>

• gııııııEK mgıııZ Lıgııı i Avq-e`q (evrmii K)

meıgıU LiP 36630 UvKv  
 meıgıU Avq 146091 UvKv  
 meıgıU bıU gıııı 109461 UvKv



**cuVhEi gj`iqb 3.7**

**mivK DEti i cutk, QUK vPy (v) i b |**

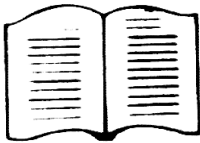
- 1/ grm` Pritli chny<sup>2</sup>/e'e`icbv Kg ubieo ntj l ti Yytcubri Pvl uKi jc e'e`icbv ubfP?
    - K) Kg ubieo
    - L) ubieo
    - M) Avavubieo
    - N) Avak ubieo
- 2/ ti Yytcubri Drcv` tbi tPtq gvQ Drcv` tbi mgq uKi jc j vM ?
    - K) Kg
    - L) mgvb
    - M) teik
    - N) tKivUvB bv
- 3/ avb tTtZ gvQ/vPsvio Pvl Kijtj cKzi i tPtq Rvg uKi jc j vM ?
    - K) mgvb
    - L) uKQyv teik
    - M) Kg
    - N) AtbK teik
- 4/ givrm`vfvEK mgvSZ Lvgv i KquU Ki Yxq Avtj vPbv Ki v ntqtQ ?
    - K) QquU
    - L) cutPvU
    - M) Pvi uU
    - N) mvZvU
- 5/ givrm`vfvEK mgvSZ Lvgvi mivtZ KquU avc t` Lvtbv ntqtQ ?
    - K) Pvi uU
    - L) vZbvU
    - M) `BvU
    - N) cutPvU |

### cw 3.8 dmj wfiEK mgišZ Lvgvi (dmj, Miægini, QMj, gjM-nm, gvQ, tgšgwQ)



G civ tkfi Avcib-

- ◆ dmj wfiEK mgišZ Lvgviti mtebv mgn e`vL`v Ki tZ cvi teb |
- ◆ dmj wfiEK mgišZ Lvgviti Ki Yxq KvRmgR eYbR Ki tZ cvi teb |
- ◆ dmj wfiEK mgišZ Lvgviti mgšq avgmgn ej tZ I wj LtZ cvi teb |
- ◆ dmj wfiEK mgišZ Lvgviti GKiu D`vni Y I Avq-e`q e`vL`v Ki tZ cvi teb |



#### 1/ mtebv

dmj wfiEK mgišZ Lvgvi mji mtebv, tj v ubae/cN

- Ly tek fig, AnaK cyR I A tBK kigK wbfP gvSmi ev eo KIK G aitbi Lvgvi Mto ZxtZ mfg | G, tj v Zjyvgj-Kfite Kg \_vKtj kvK-memR ev `ftgqv`x dj Prl wfiEK Lvgvi Mto tZj v hvq |
- dmj wfiEK Lvgviti AnaK wbeo chnp/e`e`rcbv cQvRb etj chnp ckkjY `i Kvi |
- kvK-memR I gvW dmj Aí mgtq Avi dj Prl gvSmi ntZ `xN`mgtq Drcv`b Ki tZ mfg |
- AnaK cyRm`ub`wbeo dmj Prtl ckkjYcib I A tBK kigK Luvtbvi mvg`evb D`v`vMY G aitbi Lvgvi Mto ZxtZ cvi b |
- wvfbacdmj i `e`, DcRvZ I Dw`Oó ci-cvL I gvQtK Lvl qvrbv hvq |
- dmtji Dw`Oó I eR`cip`q Kt`uv÷ `Zwi Kti dmtji RvgtZ chte`envi Kiv hvq |
- mwi Iv, Wj I Ab`vb` dmtji dz tdvUvi mgq grvV KvVi evf. tgšgwQ cij b Kti gayDrcv`b Kiv hvq |
- tWv-Rj vktq Rtb`Ggb wKQyRj R Dw`m gvQ I nm-gjMmi Lv`i`fc e`envi Kiv hvq |
- wvfbacchnp e`envi Kti RvgtZ meR mvi `Re I mvi Drcv`b Kti gwi DePZv evovrbv hvq |

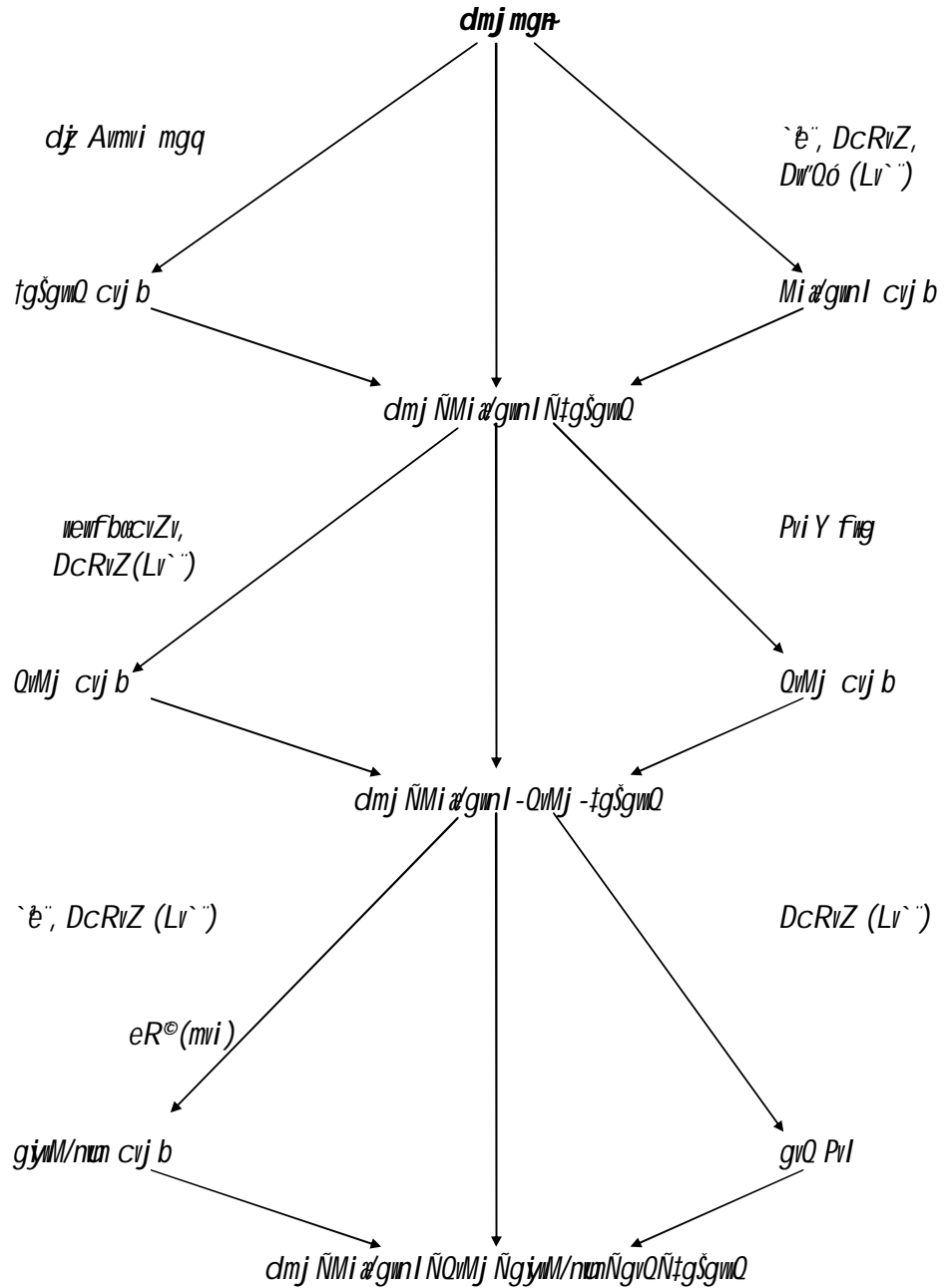
#### 2/ KiYxq

dmj wfiEK mgišZ Lvgviti Ki Yxq KvR, tj v ubae/cN

- G aitbi Lvgviti mvdj` wbfP Kti gwi Yv, Y, Dbz exR, tmP mjev I wvea mvi e`envi `jZvi Dci | ZvB Gme wltq ckkjY MhY Ri ax |
- AnaK gvvdv tctZ AvMvg kvK-memR ev dmj Prtl mfg ntZ nte |
- wvfbacdmj i `e`, DcRvZ, Dw`Oó I eR`e`envi `j bv ntj Drcv`b LiP tefo gvvdv Ktg thtZ cvi |
- `xN`b AnaK imvqubK mvi I KvUvkk e`envi Kiti Rvgt dmj Drcv`bkj Zv Ktg thtZ cvi |
- RvgtZ meR mvi, `Re mvi, RxeYynvi cFvZ chnp e`envi Kti gwi DePZv i jlv Kiv DwPZ | GtZ Drcv`b LiP Kg nq |

### 3/ mgšš avcmgn

GKwU dmj wfirĚK mgššZ Lvgi thLvtb dmj, Miægwl, QvMj, gjwM-nwn, gvQ l tgšgwQ  
GKĚĚ \_vKte, tmwU Kxfvte avtc avtc mgšš K i v hvq Zv wbtP t`Lvtr nj vŇ





#### 4| D`niY

GKwU dmj wfiEK mgvSZ Lvgvfi i msivfB weeiY I Avq-e`q D`niY`fC GLvfb t`Lvfbv ntjv|

- Lvgvi e`e`v : dmj NmI aNvMj NgjvMNgvQNTgSgwQ
- m`u`mgv : cwi evfi i tjvKmsL`v N`cjal 5, gvujv 3

Rwg N`emZemo 0.24 tn.; cKz 0.20 tn.; KjevMvb 0.12 tn.; tctc + nj`y evMvb 0.12 tn.; dm`j i t`fZ 1.94 tn.; tgvU Rwg 2.62 tn±i |

ci`m`u`N` Mvfx (Dbz` μm) 2uU, evQy 2uU; ej` (t`kx) 2uU, lω (Dbz` μm) 2uU; QvMj 5uU, ev`Pv 8uU, Lvmx 5uU|

cwLm`u`N` gjvM (Dbz`) 15uU, tgvim (5uU); nux (Dbz`) 35uU, nuxv 5uU; Kez`i (t`kx) 5 tRvor|

- Kl`Ki cKvi : gvSmi KIK
- emZevofZ gvPvq Dbz` Dcvfq mevR Pvl i Avq-e`q (evrmi K)

e`tqi weeiY	UvKv	Avtqi weeiY	UvKv
1  MZ`g gvPv`Zwi (70 gv`v, 8uU gvPv)	1000	1  mevR Drcv`b Pvj Kzov (210uU x 5 UvKv)	1050
2  tMvei I`Lj c`qvm (1 Ub tMvei, 4 tKwR`Lj, ubR`)	N	vPvP`v (150 tKwR x 5 UvKv)	750
3  A`Re mvi c`qvm (4 tKwR x 6 UvKv)	24	Kijv (30 tKwR x 6 UvKv)	180
4  exR/Pv v μq	400	vQv Kzov (250uU x 10 UvKv)	2500
5  tmP c`vb (cwi emi K kg)	N	mvg (170 tKwR x 3 UvKv)	510
6  kvgK (cwi emi K)	N	jvD (400uU x 6 UvKv)	2400
7  Ab`vb`LiP	250	KvK`ij (50 tKwR x 6 UvKv)	300
<b>tgvU LiP</b>	<b>1674</b>	kmv (180 tKwR x 5 UvKv)	900
		<b>tgvU Avq</b>	<b>8590</b>
		<b>buU gbydv</b>	<b>6916</b>

- Aver`KZ.mvfbael`dmj μg I Rwg

μvgK bs	eI`dmj μg	Rvgi cvigv (tn±i)
	t`kx cvU (Dbz`) N`ti vcb Avgb (Dbz`) N`Zi gR (Dbz`)	0.40
	tZiv cvU (Dbz`) N`ti vcv Avgb (Dbz`) N`Avj y(Dbz`)	0.32
	ti vcv AvDk (Dbz`) N`ti vcv Avgb (Dbz`) N`gjv (t`kx)	0.08
	cB kvK (t`kx) N`ti vcv Avgb (Dbz`) N`Utg`Uv (Dbz`)	0.16
	cB kvK (t`kx) N`ti vcv Avgb (Dbz`) N`evavKvc (Dbz`)	0.08
	WUv (t`kx) N`ti vcv Avgb (Dbz`) N`dZKvc (Dbz`)	0.04
	cB kvK (t`kx) N`ti vcv Avgb (t`kx) N`tcqvR (t`kx)	0.06
	WUv (t`kx) N`ti vcv Avgb (t`kx) N`imj (t`kx)	0.04
	cwZZ N`mvi Iv (t`kx) N`teftiv (Dbz`)	0.40
	cwZZ N`gvmKj vB (t`kx) N`teftiv	0.20
	gJx KPz(t`kx) N`te`b (t`kx)	0.20
	AgZ mvi Kjvi Pvl	0.12
	tctc I nj`i Avs:Pvl	0.12

Kwl.1 cji Dbaq b`z`

- avb, cvU, mvi Iv I gvmKj vB PrtI i Avq-e`q (evrmi K)

e`tqi veiy	UkV	Avqi veiy	UkV
1/ Rwg Prt I `Zwi	3500	1/ dmj Drcv`b	
2/ tMvei c`qvm (10 Ub, ubR`)	N	AvDk avb (0.32 Ub x 5000 UvKv)	1600
3/ A%Re mvi c`qvm		Avgb avb (5.90 Ub x 5500 UvKv)	32450
BDwi qv (266 tKwR x 6 UvKv)	1596	tevtiv avb (4.20 Ub x 5500 UvKv)	23100
uJGmuc (200 tKwR x 7 UvKv)	1400	cvU (1.45 Ub x 9000 UvKv)	13050
Gguc (124 tKwR x 5 UvKv)	620	mvi Iv (0.60 Ub x 15000 UvKv)	9000
uRcmvg (150 tKwR x 3 UvKv)	450	gvmKj vB (0.30 Ub x 20000 UvKv)	6000
4/ exR/Priv μq (ubR`^evf`)	3000		
5/ tmP/KvUvKc c`vb	9500	2/ DcRvZ	
6/ klgK (ubR`^evf`)	8000	Lo (15 Ub x 1000 UvKv)	15000
7/ Ab`vb` LiP	4800	Kzv (0.63 Ub x 3000 UvKv)	1890
		fwt (0.23 Ub x 5000 UvKv)	1150
<b>tgU LiP</b>	<b>32866</b>	<b>tgU Avq</b>	<b>103240</b>
		<b>buU gbydv</b>	<b>70374</b>

- kvK-meiR I Nvm Drcv`tbi Avq-e`q (evrmi K)

e`tqi veiy	UkV	Avqi veiy	UkV
1/ Rwg Prt I `Zwi	4000	1/ kvK-meiR Drcv`b	
2/ tMvei c`qvm (8 Ub, ubR`)	N	cDkvK (8.4 Ub x 3000 UvKv)	25200
3/ A%Re mvi c`qvm		WvUv (0.72 Ub x 2000 UvKv)	1440
BDwi qv (350 tKwR x 6 UvKv)	2100	gJv KPz (5.52 Ub x 4000 UvKv)	22080
uJGmuc (266 tKwR x 7 UvKv)	1862	te`b (4.70 Ub x 3000 UvKv)	14100
Gguc (200 tKwR x 5 UvKv)	1000	Zi gR (13.12 Ub x 3000 UvKv)	39360
uRcmvg (120 tKwR x 3 UvKv)	360	Avj y (8.13 Ub x 2500 UvKv)	20325
4/ exR/Priv	16700	gj-v (1.67 Ub x 2500 UvKv)	3340
5/ ecb/tivcY	7000	UtgtUv (7.73 Ub x 4000 UvKv)	30920
6/ tmP/KvUvKc c`vb	6000	evavKuc (1.76 Ub x 2000 UvKv)	3520
7/ klgK (ubR`^evf`)	10000	dZkvKuc (0.72 Ub x 3000 UvKv)	2160
8/ Ab`vb` LiP	5900	tccvR (0.72 Ub x 3500 UvKv)	2520
		imly (0.17 Ub x 7000 UvKv)	1190
		Kjv (3500 tKwR x 7 UvKv)	24500
		tctc (1.5 Ub x 3000 UvKv)	4500
		nj y (1.5 Ub x 3000 UvKv)	4500
<b>tgU LiP</b>	<b>54922</b>	<b>tgU Avq</b>	<b>199655</b>
		<b>buU gbydv</b>	<b>144733</b>

- dmtj i RıgıZ tgšgmQ evt. cij tbi Avq-e`q (evrmi K)

e`tqi meiy	UıKv	Avtqi meiy	UıKv
1/ tgšgmQi ev. μq (5ıU x 500 UıKv)	2500	1/ gayDrcv`bN (5 ev. x 12 tKıR x 150 UıKv)	9000
2/ kıgK (cwi ewi K)	N		
3/ Ab`vb`	800		
<b>tgU LiP</b>	<b>3300</b>	<b>tgU Avq</b>	<b>9000</b>
		<b>bıU gıydv</b>	<b>5700</b>

- ej` cij b l lıw tgUıZıRı Ki tYi Avq-e`q (evrmi K)

e`tqi meiy	UıKv	Avtqi meiy	UıKv
1/ Lv`N Lo (11.4 Ub, ıbR`)	N	1/ ci i eZıgb gj`N Mıfx (2ıU x 20000 UıKv)	40000
meR Nıv (28 Ub x 50 UıKv)	2800	lıw (2ıU x 7000 UıKv)	14000
ıPıv_o (550 tKıR x 4 UıKv)	2200	ej` (2ıU x 12000 UıKv)	24000
`Lj (1750 tKıR x 5 UıKv)	8750	evQıy (2ıU x 3000)	6000
Pıtj i Kıvı (5000 tKıR x 2 UıKv)	10000		
Mıgi fıı (1000 tKıR x 7 UıKv)	7000	2/ `g Drcv`b (3540 ıj Uıvı x 14 UıKv)	49560
j eY (140 tKıR x 7 UıKv)	980		
2/ Jıa/fıvKımb	2100	3/ nıj Pıı e`enıvı (400 ı`b x 50 UıKv)	20000
3/ kıgK (cwi ewi K evt`)	3500	4/ tMıvı Drcv`b (38 Ub x 500 UıKv)	19000
4/ Ab`vb` LiP	4300		
5/ ci i μggj`N Mıfx (Dbz` μm)	30000		
lıw (Dbz` μm)	8000		
ej` (t`kı)	17000		
<b>tgU LiP</b>	<b>96630</b>	<b>tgU Avq</b>	<b>172560</b>
		<b>bıU gıydv</b>	<b>75930</b>

- QvMj I Lvmx j vj b-cij žbi Avq-e“q (evrmi K)

e“qi neiY	UvKv	Avqi neiY	UvKv
1/ ev“Pmn QvMj μq (5uU x 800 UvKv)	4000	1/ eQi tkłi cŃYxi gj“ QvMj (5uU x 2000 UvKv)	10000
2/ Lvmx μq (5uU x 500 UvKv)	2500	ev“Pvi gj“ (8uU x 600 UvKv)	4800
3/ Pfo Lvl qv (“ubK 5-6 NÈv, ubR Pvi Yfing)	Ñ	Lvmxi gj“ (5uU x 1600 UvKv)	8000
4/ Lr“ -gvmKj vB fivf QvMj (180 tKwR x 10 UvKv)	1800	2/ “g Drcv“ b (70 vj Uvi x 12 UvKv)	840
Lvmx (125 tKwR, ubR“)	Ñ	3/ QvMj i veov (2.27 Ub x 500 UvKv)	1135
ev“Pv (80 tKwR, ubR“)	Ñ		
5/ JIa/ FvKumb	380		
6/ kłgK (cwi ewi K evf“)	500		
7/ Ab“vb“ LiP	400		
<b>tgU LiP</b>	<b>9580</b>	<b>tgU Avq</b>	<b>24775</b>
		<b>bU gbycv</b>	<b>15195</b>

- Kezi cij žbi Avq-e“q (evrmi K)

e“qi neiY	UvKv	Avqi neiY	UvKv
1/ Kezi μq (5 tRvov x 70 UvKv)	350	1/ eQi tkłi gj“ Kezi (5 tRvov x 50 UvKv)	250
2/ Lr“ cŃvb Ptj i Ly (36 tKwR, ubR“)	Ñ	ev“Pv (60 tRvov x 40 UvKv)	2400
mivi Iv (18 tKwR, ubR“)	Ñ	2/ veov (72 tKwR x 0.50 UvKv)	36
Kj vB (18 tKwR, ubR“)	Ñ		
3/ kłgK (cwi ewi K)	Ñ		
<b>tgU LiP</b>	<b>350</b>	<b>tgU Avq</b>	<b>2686</b>
		<b>bU gbycv</b>	<b>2336</b>

• **čkzi nuu-gjM I gvtQi Avambieo ngk<sup>a</sup>PrtI i Avq-e`q (evrmii K)**

<b>e`tqi ueeiY</b>	<b>UvKv</b>	<b>Avtqi ueeiY</b>	<b>UvKv</b>
1/ nuu-gjMi Ni `Zwi	1250	1/ mWg Drcv`b	
2/ nuu μqN 16 mβvn eqm (40uU x 70 UvKv)	2800	nuu (8700uU x 2.50 UvKv) gjM (4450uU x 2.50 UvKv)	21750 11125
3/ gjM μqN 14 mβvn eqm (20uU x 90 UvKv)	1800	2/ Drcv`b tk†I gj`	
4/ nctmi Lv` (ubR`Qvov) (800 tKwR x 12 UvKv) gjMi Lv` (ubR`Qvov) (320 tKwR x 12 UvKv)	9600 3840	nctmi gj` (40uU x 50 UvKv) gjMi gj` (20uU x 60 UvKv)	2000 1200
5/ Pβ cθqvM (150 tKwR x 5 UvKv)	750	3/ gvQ Drcv`b	
6/ A%Re mii cθqvM (125 tKwR x 6 UvKv)	750	iαB (245 tKwR x 60 UvKv) KvZj v (590 tKwR x 60 UvKv) gtMj (240 tKwR x 60 UvKv) Mm KvC (160 tKwR x 50 UvKv) _vB micj (110 tKwR x 50 UvKv)	14700 35400 14400 8000 5500
7/ gvtQi tcvv μq (2250uU)	900	ngi i KvC (35 tKwR x 40 UvKv) Kvi uCD (48 tKwR x 40 UvKv)	1400 93805
8/ JIa/FvKumb	350		
9/ ktgK (cwi ewi K evt`)	900		
10/ Ab`vb` LiP	650		
<b>tgvU LiP</b>	<b>23590</b>	<b>tgvU Avq</b>	<b>117395</b>
		<b>bW glyv</b>	<b>93805</b>

• **dmj vFvEK mgvšZ Lvgv i i Avq-e`q (evrmii K)**

<b>mešgv LiP</b>	<b>222912 UvKv</b>
<b>mešgv Avq</b>	<b>637901 UvKv</b>
<b>mešgv bW glyv</b>	<b>414989 UvKv</b>



### cvWĒi gj'iqb 3.8

mwK DĒti i cvk, UK Pý (N) ū b |

- 1/ dmj wfiĒK mgišZ Lvgvti i KquU m=tebv Avtj wPZ ntqtQ ?  
 K) mvZuU  
 L) AvUuU  
 M) bqiuU  
 N) `kuU
  
- 2/ Ly teik fig, Awak cyR I AþbK kigK wbfP gvSwi ev eo KIK tKvb wfiĒK mgišZ Lvgvi Mto ZžtZ cvti b ?  
 K) tcwĒa  
 L) tWqix  
 M) gvrmi  
 N) dmj
  
- 3/ evt- tgšgwiQ cij b I gayDrcv`b dmjtj i tKvb mgtq Kiv hvq ?  
 K) Piv Ae`vq  
 L) dž tduUv  
 M) dmj cvKv  
 N) evošAe`vq
  
- 4/ Awak gbydv tctZ tKvb mgtq kvK-mewR ev dmj Piv KižZ nte ?  
 K) AvMvg  
 L) t`ixžZ  
 M) cPij Z mgtq  
 N) th tKvb mgq
  
- 5/ `xNw b Awak ivmqubK mvi I KxUvkk e`envi Kitj Rigi dmj Drcv`bkxj Zv wK ntZ cvti ?  
 K) tefo thžZ  
 L) Ktg thžZ  
 M) wKQb bv  
 N) wK\_vKžZ
  
- 6/ dmj wfiĒK mgišZ Lvgvti KquU Ki Yxq Avtj vPbv Kiv ntqtQ ?  
 K) Piv uU  
 L) QquU  
 M) cvPvU  
 N) wZbvU
  
- 7/ dmj wfiĒK mgišZ Lvgvi mwpi KquU avc t`Lvfbv ntqtQ ?  
 K) Piv uU  
 L) cvPvU  
 M) QquU  
 N) mvZuU |

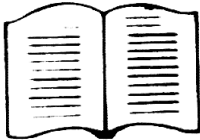
### cw 3.9 Kul.cwi tek msi ʒtY Kul.Rxtei figKv



G cvV tkfI Avciub-

- ◆ Kul.Rxe ej tZ Kx eSvq Zv ej tZ cvi teb|
- ◆ mstʒtc Kul.Rxtei , i azj eYbV Ki tZ cvi teb|
- ◆ Kul.cwi tek msi ʒtY dmj I DwM`i figKv e`vL`v Ki tZ cvi teb|
- ◆ Kul.cwi tek msi ʒtY ci-cvLi figKv eYbV Ki tZ cvi teb|
- ◆ Kul.cwi tek msi ʒtY gvQi , i azj m`utK`Avtj vPbv Ki tZ cvi teb|
- ◆ Kul.cwi tek msi ʒtY AYRxtei , i azj eYbV Ki tZ cvi teb|
- ◆ Kul.cwi tek msi ʒtY gvbtj i figKv eYbV Ki tZ cvi teb|

#### Kul.Rxe



nevfbaKul.Drcv`tb cZ`ʒ ev ctivʒfite RvOZ/e`eüZ DwM`, cÖYx AYRxemgn`K GK`I Kul.Rxe ej v nq| GtZ nefbactmj , DwM` , Mpcvuj Z ci cvLi , gvQ , AYRxie cfvZ meikQ`KKB eSvq|

#### Kul.Rxtei , i azj

Avgiv Rmb th, Kul.Rxe cwi tekki `Re Dcv`vb/At`i Ašf` | `vimeKfiteB ZvB Gt`i Kul.cwi tek msi ʒtY , i azj`v`figKv i tqtQ| thgbN

- dmj I gvQ Avev` bv ntj Lv`v`vive I cwi tekki DwM` `eip`Zv bó nte|
- DwM` I cÖYxi vej`ß NUtj `vbxq `Re-cwi tek meivZ` nq, evqgÜj DEB nq, gi agqZv `i`anq I cKuzi fvi mg`Zv webó nq|
- nefvbaAYRxtei msL`v nvm tctj eR`cPb I nefvba`Re-ivmivqubK cÖp`qv meivZ` nq Drcv`b Ktg|
- RbmsL`v evx` tctj gvbtj i Avk`v, Acyó, A`ʒZv I AbvPvi evto Ges gvby cKuzi ʒvZ Kti |

#### Kul.cwi tekK Kul.Rxtei figKv

Kul.cwi tek msi ʒtY nefvbaKul.Rxtei figKv m`utK`dmj , DwM` , ci-cvLi , gvQ , AYRxie I gvbtj`NG QquU mel`q Avj v`v`vite Avtj vPbv Ki v ntj v|

#### 1| dmj

dmj tgšmgx, GKelx`u0elx` eüelx`ntq `v`K| ZvQvov dmj km`, Atk, gj-, K`j, Wj , `Zj Rxe, mevR, dj BZ`w` RvZxq ntq `v`K| G meip` RvZi dmj nefvbaemgtq Rtb` cwi tekki Rxe-`eip` MVtb mivqZv Kti | cwi tek msi ʒtY dmj i figKv ub`v`cN

- Rxe-`eip` `i` gva`tg dmj Kul.cwi tekK Lv` Dcv`vb Pµvqb Ges AvMvQv, KxUcZ½ I tivM` gtb mivqZv Kti |
- dmj i DwQó, DcRvZ I eR`ci cvLi I gvQi Lv` `i`fc e`eüZ ntq Kul.cwi tekK cÖYxKž` uWk`q i v`L|
- AtbK dmj x MvQi KvÜ ev ukKo Rjy vbi`fc KIK cwi evti i kv`i Drm|
- dmj i evR, Pvi v, Kj g, gj- cfvZ AtbK mgq GK cwi tek t`K Ab` cwi tekK tivM` ev KxUcZ½i` vWg ev cZ½` enb Kti | ZvB Gme Drcv`b I cwi entb mZK`ntZ nte|

### 2| Dm`c

mi vmi dmj ifc e`euZ nq br Gifc tQvUeo `j R I Rj R Nvm, j ZivcZiv, MvQ, e`j c`fWZ cwi tek me`gvb| G, tj vi Ae`vbMZ Kvi tY cwi tek msi w`fjZ n`t`Q| ZvQvov G, tj vi weP`fjY e`envi I g`j RbK n`Z cvti | thgb`N

e`u Dm`c, Nvm I j ZivcZiv KivU, ukKo, d`z, dj I cvZv Dm`c Riv KxUvbkK `Zwi tZ e`envi Kti cwi tek i vmiqbK KxUvbkK `fY Kgv`bv hvq|

t`tki w`b`Aj, civov AAj I Xvj y`g`EKv AAj bvbwea Nvm, MvQ I e`j cwi Kw` Zfite Rb`tj f`g` f`q`iva Kti Kwl.cwi tek Dbq b m`e|

- e`u Dm`c, Nvm I j ZivcZiv KivU, ukKo, d`z, dj I cvZv Dm`c Riv KxUvbkK `Zwi tZ e`envi Kti cwi tek i vmiqbK KxUvbkK `fY Kgv`bv hvq|
- we`f`b`e`Dm`c (`j R I Rj R) ev j ZivcZiv me`R mvi ev Kt`u`v`÷ `Zwi tZ e`envi Kti cwi tek cwi `Qb`v`v`L` hvq|
- A`b`K Dm`c, Nvm I cvbv ci`c`m`L I gvt`Qi Lr`ifc e`envi Kiti Kwl.cwi tek msi `fjY I Drcv`b GK mvt`\_ Pj`te|
- we`tk`I RivZiq tQvU Dm`c G`R`ij`v I b`j`v`f` me`R k`v`t`j`v evZim n`Z b`v`B`U`f`R`b m`st`h`v`R`b I Zv`c`i` g`m`U`t`Z w`t`q` g`m`U`i De`f`Z`v` e`w`x` Kti |
- t`tki w`b`Aj, civov- AAj I Xvj y`g`EKv AAj bvbwea Nvm, MvQ I e`j cwi Kw` Zfite Rb`tj f`g` f`q`iva Kti Kwl.cwi tek Dbq b m`e|
- e`u Dm`c i ukKo, KivU, cvZv, d`z, dj BZ`w` ci`c`m`L I gvb`t`j`I JIa ifc cwi te`tki c`O`Y`K`j msi `fjY Ki`t`Q|
- me`R mvi ifc e`envi Dc`th`v`M`x c`l`q` 50 c`R`v`i`Zi Dm`c i`t`q`Q| G, tj v g`m`U`i De`f`Z`v` evov`f`Z m`f`g`|

### 3| ci`c`m`L

Kwl. cwi tek Mpcw`j`Z ci`c`m`L I eb` ci`c`m`Li `e`w`P`T`Z`v msi `fjY c`l`q`v`R`b| ZvB M`t`g` emZemotZ I Ab`v`b` eb Ges Dm`c `e`w`P`T`Z`v i`f`j`v`K`i`Y c`l`q`v`R`b| Kwl. i`a`Z`m`u`b`w`e`f`b`e`c`i` I c`m`L`i` w`b`e`f`b` ZvB cwi tek Dc`th`v`M`Z`v w`e`f`e`P`b`v`q` i`v`L`t`Z` n`te| GRb`N

t`tki `v`b`x`q` Lv` Dcr`v`b I cwi tek tUKmB Dbz` n`n`-g`j`v`M`i Riv w`b`e`f`b` Kti M`g`x`Y` K`I`K` L`v`g`v`i` j`v`j`b`-c`j`b` Kiv Dm`P`Z| t`K`v`b`g`t`Z`B` n`v`B`w`e`w` n`n`-g`j`v`M`i M`t`g`i` L`v`g`v`i` w`e`Z`i`Y` Kiv Dm`P`Z` b`q`| G`t`Z` b`Z`b` t`i`v`t`M`i` m`e`v`e`b`v` t`\_t`K` hvq|

- Dbz` ci`i` Riv`h`v` G`f`tki` M`g`x`Y` cwi tek c`l`B` Lv` `R`x`e`-a`v`i`t`Y` Dc`th`v`M`x` i`a`y`m`i`f`c` Riv`Z`B` w`b`e`f`b` Kti` j`v`j`b`-c`j`b` I` esk` e`w`x` Kiv`v`b`v` Dm`P`Z|
- Nvm Drcv`b` w`b`w`O`Z` b`v` Kti` Dbz` M`f`x`i` L`v`g`v`i` `v`c`b` t`tki` `v`b`x`q` Nvm m`e`u` `w`b`w`e`o` e`envi` w`e`j`f` n`Z` cvti | G`t`Z` `v`b`x`q` Riv`Z`i` M`i`q` Q`v`M`j`, t`f`o`v`i` t`M`P`ri`Y` `v`b`j`f` n`Z` cvti |
- t`tki` `v`b`x`q` Lv` `Dcr`v`b` I` cwi tek tUKmB Dbz` n`n`-g`j`v`M`i` Riv` w`b`e`f`b` Kti` M`g`x`Y` K`I`K` L`v`g`v`i` j`v`j`b`-c`j`b` Kiv` Dm`P`Z| t`K`v`b`g`t`Z`B` n`v`B`w`e`w` n`n`-g`j`v`M`i` M`t`g`i` L`v`g`v`i` w`e`Z`i`Y` Kiv` Dm`P`Z` b`q`| G`t`Z` b`Z`b` t`i`v`t`M`i` m`e`v`e`b`v` t`\_t`K` hvq|
- `v`b`x`q` Riv`Z`i` ci`c`m`L` msi `fjY` D`E`g` Lv` `w`P`w`K`r`m`v` I` U`x`K`i`v`b` w`b`w`O`Z` Kti` c`O`Y`x` `e`w`P`T`Z`v` i`f`j`v` Kiv` Dm`P`Z|

### 3| gvQ

Rxe-`e`w`P`T`Z`v msi `fjY` Rj`R` c`O`Y`x`i` g`t`a` gvQ` L`g`B` i`a`Z`c`Y` cwi te`tki` w`e`i`f`c`Z`v`q` m`e`f`P`t`q` t`e`w`k` f`j`q`M`O` i`n`t`q`Q` t`k`x`q` g`v`t`Q`i` c`R`v`i`Z`| GRb` w`b`aj` m`L`Z` w`e`l`q` w`e`f`e`P`b`v` Kiv` Dm`P`Z`N

- t`k`x`q` g`v`t`Q`i` AmsL` c`R`v`i`Z` i`a`y`Lv` `B` m`i`e`i`v`n` Kti` b`v`, G, tj`v` Rj`R` cwi te`k` `e`w`P`T`Z`v` i`f`j`v` Kti |
- a`v`b` t`f`j`t`Z` gvQ` ev` w`P`w`o` P`i`f`l`i` d`t`j` e`u` KxUc`Z` `g`b` n`q` Ges` a`v`b` Drcv`b` e`w`x` cvq|
- e`u` c`P`b`k`j` `e` t`L`t`q` gvQ` c`w`b`i` cwi te`k` cwi `Q`b`v`i`v`t`L`|
- b`v`B`t`j` w`UK`v` Ab` gvQ` e`w`x`t`Z` evav` t`q`, M`m` K`v`c`D`b`f` `v`t`b` t`M`t`j` a`v`b` I` Ab`v`b` Rj`R` Nvm` t`L`t`q` m`i`e`v`o` Kti, A`w`i`d`K`v`b`g`v` i` D`b`f` `v`t`b` t`M`t`j` m`K`j` Rj`R` c`O`Y`x` t`L`t`q` m`i`e`v`o` Kti | ZvB` G` gvQ, tj`v` m`x`v`e`x` Rj`v`k`t`q` P`v`l` Kiv` Dm`P`Z|



### 5/ AYRxe

gml, cml I evZvfm AtbK AYRxe itqtQ| G, t j v Kwl.cwi tek tK c fmeZ Kti | thgbN

- ArcKvix ti vM RxeYygvby, ci cml I DcKvix tcvKvqKo AvugY Kti gZz NUtj cwi tek wevNz nq|
- DcKvix gmlI AYRxe `Re eR©cPtb mnvqZv Kti gmlI DeFZv epx Kti | gmlI `Re c`v`epx Kti |
- AtbK AYRxe (thgb- ivBthveqig cRvWZ) RxeYynvi ifc dmj Drcv`b evovq|
- wevfbreAYRxe gmlUz t`tK `Re-ivmvqubK c`uqyq Dv`i Lv` Dcv`vb mieivn vbuDZ Kti I Kwl.cwi tek tK i`qv Kti |

AtbK AYRxe (thgb-  
ivBthveqig cRvWZ)  
RxeYynvi ifc dmj  
Drcv`b evovq|

### 6/ gubly

Kwl.cwi tek i mbqšI nt`Q KIK ev gubly| ZvB Kwl.cwi tek wevfbreRitei figKv m`utK© KIKMYtK AevnZ Ki tZ nte| ZvQvor Kwl.Drcv`tbi mv t\_ cwi tek msi`qvYi c`qvRbxqZv RvbtZ nte| GRb`N

- RbmsL`v mvgZ ivL tZ nte| Avak RbmsL`vi dtj Acv, Avk`qv I A`qvZv epx cvq|
- Kwl.cwi tek i dmj, Dv`c, ci cml I gv tQi euglyxZv Avbqb Kti `Re-`vP`Zv m`oKiY|
- Kwl.cwi tek tK Kg`vZM`iKti Ggb c`v` M`vY KIKMYtK DrmvinZKiY|
- Kwl.cwi tek msi`qvY I `vii`v we tgvP`tbi GK Aek` c`qvRbxq kZ,© Zv KIKMYtK eSv t v|



**Ablyj b (Activity):** tKvb `tbi Kwl.cwi tek Dbqtb ci cml I AYRxei figKv eYv Ki ab|



### cuVhEi gj`iqb 3.9

#### mWK DEti i cuKqUK vPy (v) i b|

- 1/ Kwl. Drcv`tb cZ`q| ev ctivq|firte RwoZ/e`euZ Dw`c, cOYx I AYRixemgraK GKtI Kx etj ?  
 K) Rxe-cwi tek  
 L) Rxe-%wP`  
 M) Kwl Rxe  
 N) Rixemgra
- 2/ Kwl Rxe cwi tekki tKvb Atzi Ašf? ?  
 K) A%Re  
 L) `Re  
 M) mKj  
 N) cOYx
- 3/ Kwl Rxei KquU , i azjms`q|tc Avtj vPZ ntqtQ ?  
 K) PivU  
 L) wZbvU  
 M) cuPvU  
 N) `BvU
- 4/ Kwl. cwi tek KquU Kwl Rxei Avtj vPbv Kiv ntqtQ ?  
 K) PivU  
 L) cuPvU  
 M) wZbvU  
 N) QquU
- 5/ Kwl. cwi tek msi q|tY dmtj i KquU fvgKv Avtj vPbv Kiv ntqtQ ?  
 K) cuPvU  
 L) QquU  
 M) PivU  
 N) wZbvU
- 6/ Kwl. cwi tek msi q|tY Dw`c` i KquU fvgKv Avtj vPZ ntqtQ ?  
 K) mvZvU  
 L) QquU  
 M) cuPvU  
 N) AvUvU
- 7/ Kwl. cwi tek msi q|tY gv`Qi KquU fvgKv Avtj vPbv Kiv ntqtQ ?  
 K) cuPvU  
 L) wZbvU  
 M) PivU  
 N) QquU|



Kwl.l cj#Dbq b`z

- 8/ aubwfiEK mgwšZ Lvgvi nt"Q tKvb wfiEK Lvgviti i Ašif? ?  
K) ci'cwl  
L) dmj  
M) gvQ  
N) emZewo
- 9/ `Re, A%Re I Av\_@mvgwRK Ažzi wKtmi gva'tg cwi tek Mto tZitj ?  
K) Avš'm=úK©  
L) mgy=úK©  
M) wewμqv  
N) cšZμqv
- 10/ gwU, cwb, evZim, mh#j vK BZ`w` cwi teški tKvb A½ ?  
K) `Re  
L) A%Re  
M) Av\_@mvgwRK  
N) tKvbUvB bv
- 11/ cwbžZ KxUvkK wgy wKtmi D`vni Y ?  
K) `TY  
L) cwi eZš  
M) wēqvRb  
N) msthvRb
- 12/ cwi tek `TY KgRvŰi AwakvskB Kti Kti ?  
K) ci'cwl  
L) AYRe  
M) gvby  
N) MŌcvj v
- 13/ avb Drcv`b evsj vž`ški Kwl.i wKifc cšμqv ?  
K) mvgvb`  
L) ,ižcY©  
M) me@pr  
N) tQvU
- 14/ eb, Rwg, cvnio I emZewo nžZ fig μgvMZ Kx nt"Q ?  
K) ¶lq  
L) wēf³  
M) Drcv`b  
N) msthvRb
- 15/ Acwi Kwí Z Dbq b Kwl.cwi tekžK Kx KižQ ?  
K) Dbž  
L) webó  
M) my`i  
N) wewPĪ

- 16/ dmj Pvl Awak AvaybK Riv e`envti i dtj Kl.tKi evBti i DcKi tY Kx evotQ ?  
K) wbfPkj Zv  
L) AvZwekjm  
M) cQ`  
N) Awekjm
- 17/ AcPvj Z Rvj vbx e`envti i dtj RvgtZ `Re mvti i Dm Kx ntqtQ ?  
K) tetotQ  
L) KtgatQ  
M) GKB AvtQ  
N) wVK AvtQ
- 18/ OGKgrI GB tKSkj Mh.tYB Avgiv Kul.cwi tek tKI msi qY Ki tZ cvi tevON GLvtb tKSkj ej tZ Kx eSvtbv ntqtQ ?  
K) `Re Kul.  
L) A%Re Kul.  
M) cvi tek Kul.  
N) Kul.c`hy<sup>3</sup>
- 19/ `xN<sup>o</sup>vqx Kul.Dbqb cFvti Rb` Qquw `enkto`i Bsti Rx cZktai cUg Aqi vbtq th Bsti Rx kawU nq Zv ntj vN  
K) INTACT  
L) IMPACT  
M) INCREASE  
N) CONTACT
- 20/ cvi tek Kul.i DfIk` Lvgvi Drcv`bkj Zv eRvq ivLumn Lvgvi cvi tek tKvb&A½ msi qY?  
K) dmj  
L) ci`cwl  
M) mKj  
N) Kul.eb
- 21/ Kul.cwi tek msi qY ci`cwl i Kquw figKv Avtj vPbv Kiv ntqtQ ?  
K) Pvi wU  
L) wZbwU  
M) cvPwU  
N) QquU
- 22/ Kul.cwi tek msi qY AYRvti Kquw figKv Avtj vPbv Kiv ntqtQ ?  
K) cvPwU  
L) Pvi wU  
M) wZbwU  
N) QquU/



**mswʿB i Pbvj-K cʿke**

- 1/ mgušZ Lvgvi e'e-ṽ Kx eʿStq wj Lj/
- 2/ cwi tek ej tZ Kx eʿSb wj Lj/
- 3/ Kwl. cwi tek KvK etj ?
- 4/ cwi tek ʿtY ej tZ Kx eʿSb wj Lj/
- 5/ Kwl. cwi teʿki ʿʿiqòzAe-ṽ mstʿʿtc Avtj vPbv Ki ab/
- 6/ tmPhyʿ teʿtiv avb Aver` eʿxi dtj Kwl. cwi teʿk Kx Kx ʿʿiqòzAe-ṽ t`Lv w`tqʿQ wj Lj/
- 7/ AnaK KxUbvK e`enṽti Kwl. cwi teʿk Kx Kx ʿʿiqòzAe-ṽ vi mʿwó ntqʿQ eYʿv w`b/
- 8/ cwi tek Kwl. KvK etj ?
- 9/ cwi tek Kwl. i bʿwZgvj v, tj v wj Lj/
- 10/ weʿfbacKvi cwi tek Kwl. i bvq, tj v wj Lj/
- 11/ `xN`iqx Kwl. cʿhʿi QquU, Yevj x wj Lj/
- 12/ mgušZ Lvgvʿi i kZʿej x KquU I Kx Kx ?
- 13/ evsj v`tk KI tKi m`u` Ae-ṽ vi mʿavi Y Avtj vPbv Ki ab/
- 14/ mgušZ Lvgvi cʿZòvq Dʿ`v-ṽ vi m`tebv wj Lj/
- 15/ tcwèwʿfʿEK mgušZ Lvgvʿi i m`tebv, tj v wj Lj/
- 16/ tcwèwʿfʿEK mgušZ Lvgvʿi i Ki Yxq wel qmgn- Kx Kx ?
- 17/ tcwèwʿfʿEK mgušZ Lvgvʿi i avc, tj v wj Lj/
- 18/ tWqixwʿfʿEK mgušZ Lvgvʿi i cʿwU m`tebv wj Lj/
- 19/ tWqixwʿfʿEK mgušZ Lvgvʿi i Pvi wU Ki Yxq wj Lj/
- 20/ tWqixwʿfʿEK mgušZ Lvgvi mʿwó i avc, tj vi weei Y w`b/
- 21/ gvm`wʿfʿEK mgušZ Lvgvʿi i cʿwU m`tebv wj Lj/
- 22/ gvm`wʿfʿEK mgušZ Lvgvʿi i Pvi wU Ki Yxq wj Lj/
- 23/ dmj wʿfʿEK mgušZ Lvgvi mʿwó i Ki Yxq, tj v wj Lj/
- 24/ dmj wʿfʿEK mgušZ Lvgvʿi i cʿwU m`tebv wj Lj/
- 25/ dmj wʿfʿEK mgušZ Lvgvi mʿwó i avc, tj v Dc-ṽcb Ki ab/
- 26/ Kwl. Rxe ej tZ Kx eʿsvq wj Lj/
- 27/ Kwl. cwi tek msi ʿʿtY Kwl. Rxei mswʿB Pvi wU fʿwgv wj Lj/
- 28/ Kwl. cwi tek msi ʿʿtY dmtj i fʿwgv mstʿʿtc wj Lj/
- 29/ Kwl. cwi tek msi ʿʿtY ci cʿwLi fʿwgv mstʿʿtc wj Lj/
- 30/ Kwl. cwi tek msi ʿʿtY gvʿQi fʿwgv mstʿʿtc wj Lj/
- 31/ Kwl. cwi tek msi ʿʿtY Dʿw` i fʿwgv mstʿʿtc wj Lj/
- 32/ `xN`iqx Kwl. Dbqʿbi wbr` ʿ QquU `enkó` wj Lj/
- 33/ weʿfbacw`i tek Kwl. i gj- Dʿt`k, tj v wj Lj/
- 34/ ʿtY Kx D`vni Ymn wj Lj/

- 35| Wıj I `Zj exR Aıev` Ktg hvı qıv Kwı.cwı teık Kx Kx ¶ııqòzAe`vi mıó nıqıQ  
ıj Lıj|
- 36| AıaK bıBıUııRb mvi (BDwi qı) e`enııı dtj Kwı.cwı teık Kx Kx ¶ııqòzAe`vi mıó  
nıqıQ ıj Lıj|
- 37| cãıv Aıııı wııÉıZ mgııŠZ Lıgvi e`e`ıv KZ cıKvi I Kx Kx ıj Lıj|
- 38| cwı teıki KqıU Aııı I Kx Kx ıj Lıj|
- 39| cwı teıki `Re Aıııı KqıU fıM I Kx Kx ıj Lıj|



### DĒıgvıv

#### cıW 3.1

1| L    2| L    3| N    4| L    5| M    6| M    7| N    8| K  
9| L    10| M

#### cıW 3.2

1| K    2| L    3| M    4| K    5| M    6| L    7| K    8| L  
9| N    10| M    11| K

#### cıW 3.3

1| L    2| M    3| N    4| K    5| N    6| M    7| K    8| L  
9| N    10| K    11| K

#### cıW 3.4

1| N    2| L    3| K    4| M    5| L    6| N    7| L

#### cıW 3.5

1| L    2| K    3| M    4| N    5| K

#### cıW 3.6

1| K    2| M    3| L    4| M    5| N    6| L

#### cıW 3.7

1| L    2| M    3| L    4| K    5| L

Kwl.1 c j Dba b ě

**cW 3.8**

1| M    2| N    3| L    4| K    5| L    6| M    7| K

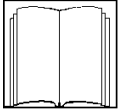
**cW 3.9**

1| M    2| L    3| K    4| N    5| M    6| K    7| M

**Perš-gj-ıqıbi DEİ**

1| M    2| K    3| L    4| K    5| M    6| L    7| K    8| L  
9| K    10| L    11| K    12| M    3| M    14| K    15| L    16| K  
17| L    18| M    19| L    20| M    21| K    22| L





## Z\_mf

- Alam, A.B.M.M., Mazid, M.A. and Khaleque, M.A. 1993. *Entrepreneurship, development through FSR and commercialisation of subsistent farming.* In: pp. *Farming Systems Research A Training Manual GTI and FSES*, Bangladesh Agricultural University, Mymensing, Bangladesh. 415-435.
- Bari, M.N., Alam, A.B.M.M. Hosaain, S.M.A. and Halim, A. 1993. *Household decision making and resource allocation among different farming sub-systems.* In: *Farming Systems Research A Training Manual GTI and FSES*, Bangladesh Agricultural University, Mymensingh, Bangladesh. pp. 378-394.
- Conway, G.R. 1985. *Agroecosystem Analysis.* (Agricultural Administration) 20: 31-35.
- Chowdhury, M.K., Razzaque, M.A., Alam, A.B.M.M., William, R.D. Gilber, E.H. and Mallick, R.N. 1993. *Methodological Guidelines for Farming Systems Research and Development in Bangladesh.* Bangladesh Agricultural Research Council, Dhaka, Bangladesh.
- Eswaran, H. and Virmani, S.M. 1990. *The soil component of sustainable agriculture.* In: *Sustainable Agriculture: Issues, perspectives and prospects in Semi Arid Tropics.* Vol. 2. Indian Society of Agronomy, New Delhi, India.
- Hossain, S.M.A., Ahmed, S., Halim, A., Dewan, S., Talukder, M.S.U., Islam, M.S. and Bhuiya, M.S.U. 1991. *Fact Searching and Intervention in Two FSRDP Sites activities 1989-90.* Farming Systems Research and Development Programme, BAU, Mymensingh, Bangladesh.
- Hossain, S.M.A. and Salam, M.U. 1993. *Systems, farming systems and farming systems research, definition, concept and characteristics.* In: *Farming Systems Research A Training Manual GTI and FSES*, Bangladesh Agricultural University, Mymensingh, Bangladesh. pp. 1-12.
- Hossain, S.M.A., Alam, A.B.M.M. and Salam, M.U. 1993. *Characterisation of agricultural systems and farming systems of Bangladesh.* In: *Farming Systems Research A Training Manual GTI and FSES*, Bangladesh Agricultural University, Mymensingh, Bangladesh. pp. 27-48.
- Hossain, M.A., Rahman, M.M., Alam, A.B.M.M. , Hossain, S.M., Sobhan, A., Islam, M.M. and Halim, A. 1996. *Environment Education Training Module in Bangladesh,* GTI (BAU), IPSA, DAE and FAO, Published in Bangladesh.
- Kuper, A. and Kuper, J, 1985. *The Social Science Encyclopedia.* Routledge and Kegan Paul Plc. London, U.K.

- Leibenstein, H. 1968. *Entrepreneurship and development*. American Economics Review. 58.
- Pandey, R.K. 1991. *A Primer on Organic-Bases Rice Farming*. International Rice Research Institute, Manila, Philippines.
- Reyntjies, C., Haverkort, B. and Waters-Bayer, A. 1992. *Farming for the Future*. The Macmillan Press Ltd., London, U.K.
- Rahman, M.M., Khan, M.H., Mallick, R.N. and Hudgens, R.E. 1989. *Guidelines for Farming Systems Research Methodology*. Bangladesh Agricultural Research Council, Dhaka, Bangladesh.
- Schumpeter, J.A. 1934. *The Theory of Economic Development* (Trans. R. Opie). Cambridge, Mass. USA.
- Shaner, W.W., Philip, P.F. and Schmehl, W.R. 1982. *Farming Systems Research and Development, Guidelines for Developing Countries*. Westview Press Inc., Colorado, U.S.A.
- Salam, M.U. Alam, A.B.M.M. and Hossain, S.M.A. 1993. *Evaluation of farming systems approach through farmers participatory method*. In: *Farming Systems Research A Training Manual*. GTI and FSES, Bangladesh Agricultural University, Mymensingh, Bangladesh. pp. 311-323.
- Soon, L.G. and Bottrell, D.G. 1994. *Neem Pesticides in Rice: Potential and Limitations*. International Rice Research Institute, Manila, Philippines.
- Spedding, C.R.W. 1988. *An Introduction to Agricultural Systems* (2<sup>nd</sup> Ed.). Elsevier Press. Colorado. USA.
- Ruthenberg, H. 1980. *Farming Systems in the Tropics*. Clarendon Press. Oxford, U.K.
- Virmani, S.M. and Eswaran, H. 1990. *Characterising natural resources for sustainable agriculture in the semi-arid tropics*. In: *Sustainable Agriculture: Issues, Perspectives and Prospects in Semi Arid Tropics*. Vol. 2, Indian Society of Agronomy, New Delhi, India.
- Waters-Bayer, A. 1989. *Participatory Technology Development in Ecologically Oriented Agriculture: Some Approaches and Tools*. Agricultural Administration Unit, Overseas Development Institute, London, U.K.
- Wilson, B. 1984. *Systems: Concepts, Methodologies and Applications* (2<sup>nd</sup> Ed.). John Wiley & Sons Ltd. USA.