

# avbPv†I tmP I cmb e"e~vcbv

## Water management for rice production



evsj v†`k avb M†eI Yv BbW÷WUDU (we<sup>9</sup>)  
MvRxcij|

# arvPv†I tmP I cmb e'e vcbv

## Water management for rice production



i Pbv, Mšbv I mšuv`bvq

W. tgv: Rvni aj Bmj vg, W. tgv: Bmj vg Dvii b tgvj u, W. tgv: dRj jv Bmj vg I tgv: kvrv`vZ trv†mb

Kvvi Mi x mrvqZvq  
veAvi †Kve I qvviKš Mšc

Avii R mrvqZvq  
veAvi †Kve-ve<sup>a</sup>GbGvUvc-veGAvi vm Dc-cKí

cvi Kí bv, M†el Yv I mveR ZÉjeav†b  
W. tgv: Bmj vg Dvii b tgvj u

vWRvB†b  
tgv: Avājy gvbb



evsj v†`k avb M†el Yv Bvii ÷ vUDU (ve<sup>a</sup>), MvRxcjv|

# avbPv†I †mP I cmb e"e"vcbv

## mPcĪ

μigK bs	uelq	cōv bs
1.	avb Mv†Q cmbi cĪqvRbxqZv	1
2.	avb Pv†I i ,iæZj	1
3.	avb Pv†I †m†Pi ,iæZj	1
4.	†mP I †m†Pi Drm	2
5.	avb Pv†I i weifbæcwi †ek ev tgšmg	2
6.	avb Pv†I cmbi Pvm`v I cwi gvY	3
7.	avb Pv†I eŋoi cĪve	3
8.	†ivcv Avgb av†b mæúí-K †mP	3
9.	mæúí-K †m†Pi cmbi DrmmgR	4
10.	†m†Pi cmbi AcPq	4
11.	bvjv `i-gRKiY	5
12.	cvKv bvjv	5
13.	cvBc †mP weZiY e"e"v	5
14.	avb Drcv`†b †m†Pi cmb mvk†x c†ny <sup>3</sup>	6
15.	†m†Pi cmb e"e"vcbv	6
16.	ch†qμ†g †mP	7
17.	†m†Pi c†e <sup>Q</sup> Ki Y†q	7
18.	avb Mv†Qi R†eb ch†q I `li Ab†yv†i cmbi cĪqvRbxqZv	8
19.	j eYv <sup>3</sup> Gj vK†q avbPv†I	9
20.	weifbædm†j i cmbi cĪqvRbxqZv	9

## avb Pvl I tmP I cmb e'e-vcbv

### 1. avb MvQ cmbi c@qvRbxqZv

cmbi Aci bvg Rieb| avb MvQi t@tGI G evK'uU mgfite c@h'R" Ges G'uU GK'uU vetKI c@qvRbxq Dcv`vb| MvQ vewfbvite cmb e'eüZ ntq\_vtK| thgb-

- K. cmb t`ntKvli i AZ`vek`K Dcv`vb|
- L. G'uU avb MvQi kixi MVb I Aege i v Kti |
- M. cmb MvQi Lv` Dcv`vb ,tj vtK MhYthvM" Ae`vq DcvbZ Kti |
- N. cmb vkKtoi gva`tg Lv` Avni Y Kti MvQi vewfbvA½ tcvQ t`q|
- O. cmb i vnvqvbK vewvqv i GK'uU c@qvRbxq Dcv`vb |
- P. cmb `Re, A%Re c`v\_9 M'vm Dv`i i vewfbvA½-cZ½ tcvQ t`q|
- Q. G'uU üxZim (Turgidity) %Zwi Kti MvQi hwsK kw<sup>3</sup> (Mechanical strength) c@vb Kti \_vtK|
- R. cmb AvMvQv vbcšY I `gtb mrvqZv Kti |
- S. ti vMerj vB I tcvKvqvKo `gtb mrvh` Kti |



Mfxi bj Kz

### 2. avb Pvl i , iæZj

evsj vt`tk c@q 14.2 vgvj qb tn±i Rvg AvtQ| avb evsj vt`tki c@vb A\_Rix dmj Ges Lv`| vZb tgsmtgB avb Pvl ver` ntq\_vtK Ges tgvU Avev` Rvgi c@q 77% A\_ 10.9 vgvj qb tn±i RvgtZ avtbi Pvl nq| eZ@vrb tgvU Drcv` Z Lv` ktm`i c@q 92% avb| µgea@vb RbmsL`vi Pvtc Lv``i Pvn`v w` b w` b teoB Pjt`Q| Aci w`K, Acvi Kw` Z Mpvqb, bMivqb, vk`i Kvi Lvbv I iv`NvU `Zvi i Rb` gj`evb KwL. Rvg w` b w` b ntm cvt`Q| GgZve`vq, Aevkó Aí Rvg t`tK Ges Aí cmb e`envti i gva`tg AvMvgx w` tbi Lv` Pvn`v vgvUvrbvi Kj vtKškj MhY Ki tZ nte| Avi tm Rb` c@qvRb gj`evb cmbi m`ut`i AcPq tiva Kti mivK e'e-vcbv i c@Z , iæZjivc Kiv|

### 3. avb Pvl tmPi , iæZj

avb Pvl tmPi , iæZj Acvi mxg| eZ@vrb Avev` Rvgi kZKiv 46 fivM tmPi Avl Zvf<sup>3</sup> | Avevi tgvU tmPi 80% avb Pvl e'eüZ nq| tgvU avb tmPi kZKiv c@q 80 fivM e`envi Kiv nq i` tevtiv tgsmtg avb Drcv`tb| Ab` th tKiv dmtj i tPtq avb Pvl Avak cmbi c@qvRb nq| Avevi Ddkx RvtZi cmbi c@qvRbxqZv t`kx Riv t`tK tevk| cmbi gva`tg MvQ Zvi Lv` `eYvKvti g'uU t`tK vkKtoi mrvh` MhY Kti \_vtK| MvQ th cmb Avni Y Kti, Zvi gvI kZKiv 5 fivM kixi MVb I üxZim (Turgidity) vntmte e'eüZ nq| evk 95 fivM evZvm i`tl tbq| ev`úxFeb, ZK w` tq vbtmi Y Ges g'uU Pvtq Rvg I MvQ t`tK th cvv gvY cmb AcPq nq, tm Afve ci-Y Kivi Rb` tmPi c@qvRb nq| g'uUtZ i tmi Afve ntj Ges tmPi gva`tg tmB Afve ci-Y Kiv bv tMtj MvQi evo-evovZ Z\_v kixi MVb e`vnZ ntq dj b Ktg hvq GgbvK MvQ i`vkq gti I thZ cvti | ZivB Kw`yZ dj tbi Rb` tmPi gva`tg c@qvRbxq cmb mieivn vovDZ Ki tZ nte|



AMfxi bj Kz

#### 4. tmP I tmP i Derm

tmP ej tZ mvari YZ Kwĭ gfvte dmtj i Rb" cĭqvRbxq cmb mieivn KivtK tevSvq| mgqgZ I cwiĭgZ cwiĭgvY cmb mieivni Dci tmP i KvĥRvii Zv AĥbKvstK ũbfP Kĭi | mvari YZ avĥbi tmP i Derm`ĭ | GKĭU f-Dci` Ges Ab"ĭU fMf" cmb | f-Dci` cmb e"envi Kĭi ga"vKIŸ kv<sup>3</sup> i gva"tg (Gravity flow) cvl qvi cv<sup>u</sup> I mbvZb c<sup>x</sup>ĭZtZ tmP t`qv nq | Aciv`ĥK fMf" cmb e"envi Kĭi Mfxi I AMfxi bj Kc w`ĥq tmP cĭvb Kiv ntq \_vĥK | evsj vĥki th tmPe`e`v, Zv f-cĭkvZi mĥ½ tgvĥUI msMvZcP bq | GUV



b`x t`ĥK tmP

Lvj -vej, b`x-bvj vi t`k ĭK` GB cmb m<sup>u</sup>` Kwĭ tZ e"envi Kiv nq LvB Kg | ĩeGvMvmi Z` gĥZ f-Dci` cmb e"envi Kiv nq tmP i Avĭ Zvaxb Rvĭgi gvG 21 kZvsk Avĭ fMf" cmb e"envi Kiv nq evĭK 79 kZvsk RvĭgtZ | Gi gĥa` Mfxi bj Ke w`ĥq 15 kZvsk RvĭgtZ tmP t`qv nq Ges cĭq 64 kZvsk RvĭgtZ tmP t`qv nq AMfxi bj Ke w`ĥq |

#### 5. avb Pĥt i ĩefb<sup>u</sup>acwi ĥek ev tgšmg

Pvĭver` Gj vKvi Rjevqĥ cmb e"envi msĭvšĭelĥqi Dci ĩfĭĭE Kĭi avb Pĥt i cwi ĥekĥK 4ĭU fvĭM fvM Kiv ntq \_vĥK, thgb - **K.** tmP ũbfP tevĭv tgšmg, **L.** evĭ ũbfP AvDk tgšmg, **M.** evĭ + m<sup>u</sup>i-K tmP ũbfP ti vcv Avgb tgšmg | **N.** eb`v cĕY tevbr Avgb tgšmg |

**K. tevĭv tgšmg** G tgšmg avb Pĥt i cĭg t`ĥK tkl chŠĭĭQcĭUĥc I `ĭvĥbv cmb e"envi Kiv ntq \_vĥK | Livi cĭve Govĥbvi Rb" cĭjv tgšmgi kZKiv 80 fvM mgĥq `ĭvĥbv cmb ivLvi e`e`v Kiv ntq \_vĥK | ũvĭĖZ cmb I mvi mn Ab"vb` Dcv`vb e"envi i dtj Ges AvĭK mĥĥP Avĥj v cvq ĩeavq tevĭvĥZ Ab"vb` tgšmg t`ĥK dj bĥek nq |

**L. AvDk tgšmg** AvDk avĥbi RvĭgtZ kZKiv 80 fvM ev Zvi teĭk mgq `vavĥbv cmb \_vĥK bv | AvDk tgšmg m<sup>u</sup>Yevĭi Dci ũbfPkvj | G tgšmgi teĭki fvM mgq evĭi Afĭte Rvĭg i ĭKĥq hvq Ges cĭqB Liviĭvšĭng ĩeavq dj b Kg nq |

**M. ti vcv Avgb tgšmg** G tgšmg ermĭi i evĭcvZ teĭk ntq \_vĥK Ges avb Pvĭ mvari YZ evĭ ũbfP | Zĥe gvĥS gvĥS evĭi Afĭte Liv t`Lv w`ĥj m<sup>u</sup>i-K tmP i e`e`v Kiv ntq \_vĥK | ZvB avb Pĥt i cĭjv mgq gvĭU ĩfRv ĩfRv \_vĥK etj dj b AvDĭki tPĥq teĭk |

**N. tevbr Avgb tgšmg** G tgšmg cĭg w`ĥK evĭi Afĭte Liv cwi j ĩĭZ nq | ci evZPZ AvZvĭ<sup>3</sup> evĭ Ges cvĭvĭX Xĥj cĭqB eb`vq cĭveZ nq | GgZve`vq avĥbi Rvĭg 25-30 tmĭUvĭvĭ eb`vi cmbĥZ GKvavĭi 10-15 w`b Zvĭj ĥq \_vĥK | ZvQvov, tKvb tKvb Gj vKvq tevbr Avgb avĥbi tĭZ 1-6 ĩgUvi Mfxi cmbĥZ `xN" b (2-3 gvM) Zvĭj ĥq \_vĥK Ges avb MvQ cmbi Dci fvmgvb Ae`vq \_vĥK etj G avĥĥK Mfxi cmbi ev fvmgvb avb ej v nq | G tgšmgi tKvb Ddkx RvZ bvB ĩeavq Ab" tgšmg t`ĥK dj b AĥbK Kg |

Lv` kĥm"i gĥa` GKgvĭ avbB ĩfbaĭfbaĭcwi ĩvZ Ges cwi ĥek A`P gvĭU i Kĥbv Ae`v t`ĥK 6 ĩgUvi cmbi D"PVĭq mĭvĭte Rxeb avi Y KiĥZ cvĭi | ZvB G %evĭĭgq Rxeb avi tY mĭĭg avb MvQĥK tKd tKd AaRj R (Semi aquatic) Dv"mĭ ĩntĭte MY" Kĭi \_vĥK | Lv` kĥm"i gĥa` GKgvĭ avb MvQb G , Yv, Yve`gvb \_vKvq miv ermi B avb Pvĭ Kiv hvq | dj kvZtZ evsj vĥki Aĭ RvĭgtZ AvĭK dmj cvl qvi gva"tg Lv` ĩvĭcĕv Mĥo Zjv m<sup>e</sup> ntqĥQ |



tm̄Pi cwi gvY I jvft Livi Dci wbfP Kti c̄qvRb Abyv̄ti 2 t\_†K 3wU tm̄Pi gvātg 160-230 ugug cwb c̄qvM Kti ew̄ wbfP Pvlver` t\_†K 40-50% tewk dj b cvl qv hvq| GgbI t`Lv tM̄Q Livi ZxeZv Abyv̄ti i agv̄ GKwU tm̄Pi gvātg kZKiv 40-50 f̄M dj b evov̄br m̄e|

### 9. m̄ú-i-K tm̄Pi cwi Drmmga

Mfxi I AMfxi bj Kct Mfxi I AMfxi bj Kc w`tg mvavi YZ tev̄iv tgšm̄tg Pvlver` Kiv n̄tg\_v†K| Avgb tgšm̄tg Livi mgq cv̄ú, tjv w̄tkl Kti Mfxi bj Kc gv†VB\_v†K Ges tm̄, tjv e`envi Kti tm̄Pi gvātg AwZ mnt̄R Liv tgvKv̄tej v Kiv hvq|

†Wvev, biv v I Lij w̄tj i cwb e`envi Avgb tgšm̄tg Liv tgvKv̄tej vq w̄bKU`†Wvev, biv v I Lij w̄tj i R̄tg\_vKv cwb tm̄P w̄tm̄te e`envi Kiv th̄Z cv̄ti | Kvi YZLb cwi tKiv Afve\_v†K bv|

c̄k̄zi i cwb e`envi K̄ti t c̄qvR̄b Gj vKvi c̄k̄zi el̄ cwb msi ¶Y Kti Liv tgvKv̄tej v Kiv hvq| ZvQvov c̄k̄zi gvQ Pvl Kti Av̄tiv j vferb nI qv hvq|

gv†V ew̄i cwb msMh K̄ti t mgZj R̄igi GK tKv̄b tQv̄E GKwU MZ̄Zwi Kti ew̄i cwb āti ti†L c̄qvR̄b Zv tm̄P w̄tm̄te e`envi Kiv hvq| MZ̄Q 2 ugUvi Mfxi Ges R̄igi 5% mg cwi gvY n̄Z cv̄ti | D<sup>3</sup> MZ̄¶\_†K Abvq̄tm 60 ugug GKwU tm̄P R̄igt̄Z t`qv th̄Z cv̄ti |

R̄igi AvBj e`e`vcbv AvBj e`e`vcbv gvātg ew̄i cwb āti ti†L Liv c̄Z̄t̄iva Kiv hvq| AvB̄tj i m̄gy

tgivgZ I D`PZv ew̄ot̄q ew̄i cwb e`env̄ti Kvh̄w̄vi Zv evov̄br hvq| Avḡbi R̄igi AvBj 15 tm̄UugUvi D̄P̄yK̄ti c̄Z̄wbqZ AvBj cwi Ph̄I gvātg Rgv̄bv ew̄i cwi Kvh̄w̄vi Zv 90% ch̄š̄ evov̄br m̄e| G cwb e`envi Kti m̄iguqK Liv c̄Z̄t̄iva Kiv mn 20-25% ch̄š̄ dj b evov̄br hvq| Z̄te w̄bq̄gZ f̄ite AvB̄tj i cwi Ph̄I t̄ḡivḡZi c̄qvR̄b nq| Gme e`vc̄ti mZK̄\_vK̄tj ew̄i cwb e`env̄ti gvātg avb Pvl j vFR̄bK ch̄t̄q Av̄br m̄e|



AvBj e`e`vcbv

### 10. tm̄Pi cwi AcPq

c̄q mKj tm̄P c̄K̄t̄i B tm̄Pi Drm t\_†K th cwi gvY cwb mi ei vn Kiv nq dmt̄j i gvV ch̄š̄tm cwi gvY cwb t̄c̄t̄Q bv| tm̄Pi Drm t\_†K gvV ch̄š̄t̄c̄t̄Z th cwi gvY cwb AcPq nq Zv†K tm̄Pi cwi cwi enb AcPq e†j | ZvQvov gv†V t̄c̄t̄vi c̄ti I w̄KQycwb AcPq nq, thgb AvB̄tj i Dci w`tg Ab` R̄igt̄Z P̄tj hvI qv w̄Ksev gv̄Uj ga`w`tg P̄t̄q w̄bP̄t̄j hvI qv| Avevi w̄KQycwb ti v̄t` i Zv†c ev̄ú n̄tg evZv̄tm w̄ḡtk hvq| G meB tm̄Pi cwi AcPq| evsj v̄t̄ki Aw̄Kvsk K.I.K h\_vh\_f̄ite tm̄P c̄x̄wZ tḡtb P̄tj bv Ges tm̄P tgšm̄tg gvV biv v w̄Kgz ms`vi I cwi`vi bv K̄ti B tm̄Pi cwb R̄igt̄Z mi ei vn Kti\_v†K| dj k̄Z̄t̄Z tm̄Pi cwi Aw̄K AcPq n̄tg\_v†K| Ḡt̄Z kZKiv 25-50 f̄M tm̄Pi cwi AcPq nq| AZGe, gvV biv v ms`vi Kti Db̄Z tm̄P w̄Zi Y e`e`vi gvātg tm̄Pi cwi AcPq t̄iva Kiv GKv̄š̄ev̄Ābxq| m̄w̄Kf̄ite gvV biv v cwi Ph̄I gvātg tm̄Pi cwi AcPq t̄iva Kiv hvq|

tm̄Pi cwi cwi enb AcPq ti v̄tai t̄K̄skj t m̄gytm̄P w̄Zi Y e`e`vi gvātg AcPq t̄iva m̄vk̄q̄KZ.cwb w`tg AwZwi <sup>3</sup> R̄ig P̄t̄i i gvātg m̄w̄eR̄ Dr̄cv` b ew̄x Kiv m̄e| w̄Zi Y c̄x̄wZmḡni ḡta`SȲc̄x̄wZ, f-Mf̄°cvBc c̄x̄wZ, Db̄Z K̄t̄v biv v, cvKv biv v I c̄w̄÷K cvBc c̄x̄wZi gvātg tm̄Pi cwi cwi enb AcPq ĀtbKv̄st̄k Kgv̄bv hvq|

### 11. *bjj v` igRKiY*

*mvavi YZ Kiv bjv v` igRKiYi gva`tg Dbz Kiv hvq hv tmPci cmbi AcPq nfm Kti I bjv vi` vqxZ;ubwDZ Kti | G t`qj` cL`tg bjv wU mvavi Yfite` Zwi Kiv nq| AZci` igR Kti bjv wU`k k<sup>3</sup> I cwi cwiU Kti` vqxi`c w` tZ nq| cPij Z c`wZtZ` Zwi gwiU tmP bjv vi Zjybvq` igR Kiv bjv vi gva`tg tmP w` tj cLq 25 fM cmbi AcPq tiva Kiv hvq Ges D<sup>3</sup> cwb Øviv kZKiv 10 fM AwZwi<sup>3</sup> Rwg tmPci Avl Ziq Avbv mæ|*

### 12. *cvKv bjv v*

*tetj gwiU Gj vKvi Rb` cvKv bjv v w`tkl fite Dc`thvMx Ges` xN`vqx| cvKv bjv v cLq 10-15 ermi e`envi Kiv hvq Zte w`bqwgZ tgi`vZ Ki`Z nq| cvKv bjv vi gva`tg cLq kZKiv 60 fM cmbi AcPq Kgv`bv hvq| Zte LiP tenk ni qvq G ai`Yi bjv vi e`envi AZ`šIKg|*



*cvKv bjv v*

### 13. *cvBc tmP weZiYe`e`v*

*tmPci cmbi Drm t`\_`k cvBtci gva`tg cwb mi vmi Rwg`Z ev w`bKueZx`vj vq mi eivn Kiv hvq| G c`wZ me ai`bi gwiU Rb` Dc`thvMx Ges G`Z gv`v bjv v bv Kivi Kiv`Y kZKiv 2-4 fM Rwi AcPq tiva Kiv mæ`nq| Bnv mn`RB D`ywbPyRwg`Z cwb weZi`Yi Rb` e`envi Kiv hvq| Gi gva`tg Kiv`v bjv v w` t`q tmP weZiY AcP`qi cLq kZKiv 94-98 fM miv`k Kiv hvq Ges 50% mgq e`P| G ai`bi weZiYe`e`v`vcb Kti mvavi Y Kiv`v bjv vi Zjybvq kZKiv cLq 30-35 fM tmP Gj vKv evov`bv hvq| cvBc tmP weZiYe`e`v`v` c`wZ Av`Q, thgb-*

*K. fMF` (emi W) cvBc c`wZt cv`u t`\_`k mi vmi cwb cwi ent`bi Rb` gwiU w`bP w`cwfim ev Avl vmi cwb`vcb Kiv nq| cvBtci t`c`v`ti gva`tg cwb c`v`wZ Kiv nq| G c`wZtZ cwb cwi ent`bi AcPq L`B Kg| Gw mgZj ev miv`v` D`ywbPyth t`Kv Rwg`Z tmP t`\_`l qvi Rb` Dc`thvMx Ges c`qvRbxq`v`b`zZvi miv`\_`cwb t`c`Q hvq| G c`wZ`vcb I cwi Pij bvi Rb```q Kivi Mwi Avb`\_`vK`Z nq| ZvQvov B`Qv`w`dK cvBtci Ae`v`b cwi eZ` Kiv hvq bv|*

*L. fe`v`cvBc c`wZt cv`u t`\_`k cwb cwi ent`bi Rb` gwiU Dc`ti cvBc`vcb Kiv nq| w`cwfim, cwi`K ev cij`\_`b cvBc w` t`q G tmP e`e`v` Zwi Kiv nq| c`qvR`b gv`vi w`v`b`v` t`k cvBc`v`v`šli Kti tmPci cwb cwi ent`bi Kiv hvq| dtj Ai` cvBc w` t`q Zjybvqj`Kfite Aw`K Gj vKvq tmP t`\_`l qv mæ`nq| G c`wZtZ cvBc j`v`b`vcb Kiv L`B mnR Ges tg`mg`tk`l cvBc`\_`w`tg ivLv hvq| ZvQvov, Av`v`v`KQy`wZ Av`v`i`Yi gva`tg tmPci cmbi AcPq tiva Kiv mæ`| thgb-*

- K. mi vmi ev`úxfet`bi gva`tg cmbi AcPq tiva Kiv mæ`bq| Zte cwb cwi ent`bi iv`v` ev bjv v hwi` c`v`bv Kti msKivZ Kti w`bg`Y Kiv nq Zte ev`úxfet`bi cwi gvY Kgv`bv hvq|*
- L. Nv`mi Z`K w` t`q w`b`v`YRw`Z cmbi AcPq tiva Kiv mæ` hwi` bjv vi Nvm memgq cwi`v`i ivLv hvq|*
- M. bjv vi cv`toi KivQvKw`Q MZ`Kti gwiU w` t`q cvo evav Dv`PZ bq| Kiv Y G`Z Pgv`bvi gva`tg cmbi AcPq tenk nte|*
- N. c`Z`K Rwi cv`k c`l bjv v`Zwi Kiv Dv`PZ|*
- O. c`Z`K Rwg`Z c`qvRbgw`dK AvBj`\_`vKv Dv`PZ|*
- P. Rwg`Z c`qvR`bi tenk cwb t`b`vi Af`vm cwi Z`v`M Ki`Z nte|*
- Q. bjv v Dc`v`tg Ges P`v`tg th cwi gvY cmbi AcPq nq Zv`msMh Kti c`Yi vq e`envi Kiv Dv`PZ|*
- R. avb t`q`Z memgq cwb AvUw`Ktg ivLv ev`v`v`bv cwb ivLvi Af`vm cwi Z`v`M Ki`Z nte|*



tm̄Pi c̄mbi P̄v̄n`v̄ w̄ b w̄ b ēy× c̄v̄`Q Ges tm̄B m̄t̄½ tm̄Pi LiPi tēto P̄t̄j t̄Q| Z̄v̄Q̄v̄ov̄ ī K̄t̄bv̄ tḡšm̄tḡ c̄mbi Af̄v̄te Af̄t̄K R̄ng c̄w̄ZZ `v̄t̄K| K̄v̄t̄RB Db̄z̄ tm̄P̄ w̄ēZi Y c̄×w̄Zi ḡv̄`tḡ m̄x̄nḡZ c̄mbi Ø̄vi v̄ Av̄aK Gj v̄K̄v̄q tm̄P̄ w̄`t̄q d̄mj Drc̄v̄`b ēy×B Gi D̄t̄i k̄`| tm̄Rb` tm̄Pi c̄mbi AcP̄q K̄gv̄t̄bvi D̄T̄w̄ēZ c̄h̄ȳ³ m̄gn̄i c̄Ø̄qv̄M ev̄ōt̄Z n̄te|

**14. avb Drc̄v̄`t̄b tm̄Pi c̄mbi m̄v̄k̄Ø̄x̄ c̄h̄ȳ³ (AWD)**

M̄t̄el Ȳv̄q t̄`Lv̄ tm̄Q̄ av̄t̄bi R̄nḡt̄Z me m̄gq `w̄v̄t̄bv̄ c̄mbi īv̄L̄vi c̄Ø̄qv̄Rb t̄bB| P̄v̄iv̄ t̄iv̄c̄t̄Yi ci 10-15 w̄`b ch̄š̄l̄R̄nḡt̄Z w̄Q̄c̄w̄t̄c̄ c̄mbi īv̄L̄t̄Z n̄te| Z̄vi c̄t̄i ch̄ŋ̄µ̄tḡ w̄f̄R̄v̄t̄bv̄-ī K̄v̄t̄bv̄, Alternate Wetting and Drying (AWD) c̄×w̄Z̄t̄Z tm̄P̄ w̄`t̄Z n̄te|



GW̄w̄ēD̄w̄w̄ c̄×w̄Z̄

GW̄w̄ēD̄w̄w̄ c̄×w̄Z̄ n̄t̄j v̄ R̄nḡt̄Z ch̄ŋ̄µ̄tḡ w̄f̄R̄v̄t̄bv̄ I ī K̄v̄t̄bvi ḡv̄`tḡ av̄b t̄ŋ̄t̄Z c̄Ø̄qv̄Rb ḡm̄d̄K̄ w̄b̄q̄w̄š̄z̄ I c̄w̄i K̄w̄i Z̄ tm̄P̄ c̄Ø̄v̄b K̄iv̄| av̄b t̄ŋ̄t̄Z GK̄w̄U w̄Q̄`h̄ȳ³ c̄w̄i÷K ev̄ er̄t̄ki c̄v̄Bc̄ er̄m̄t̄q̄ ḡm̄Ūi c̄mbi `l̄i ch̄ŋ̄ŋ̄Ȳ K̄t̄i c̄Ø̄qv̄Rb ḡZ tm̄P̄ t̄`q̄v̄B n̄t̄j v̄ G c̄×w̄Z̄i c̄h̄v̄b `ew̄k̄ó`|

G c̄×w̄Z̄t̄Z 25 tm̄nḡ j̄`ȳ Ges 7-10 tm̄nḡ ē`v̄t̄mi GK̄w̄U w̄Q̄`h̄ȳ³ c̄w̄i÷K ev̄ er̄t̄ki c̄v̄Bc̄ av̄t̄bi R̄nḡt̄Z M̄Z̄K̄t̄i Lv̄ov̄f̄v̄te `v̄cb̄ K̄īt̄Z n̄q| c̄v̄B̄t̄ci D̄c̄t̄i ī 10 tm̄nḡ w̄Q̄`h̄en̄xb Ges w̄b̄t̄Pi 15 tm̄nḡ w̄Q̄`h̄ȳ³| c̄v̄B̄c̄w̄Ūt̄Z w̄w̄ŋ̄ w̄`t̄q 5 tm̄nḡ ci ci 3 m̄ȳZ̄ ē`v̄t̄mi w̄Q̄`K̄īt̄Z n̄te| c̄v̄B̄c̄w̄Ū Ḡgb̄f̄v̄te av̄b t̄ŋ̄t̄Z em̄v̄t̄Z n̄te t̄hb̄ c̄v̄B̄c̄w̄Ū D̄c̄t̄i ī w̄Q̄`h̄en̄xb 10 tm̄nḡ ḡm̄Ūi D̄c̄t̄i `v̄t̄K, h̄v̄t̄Z tm̄Pi c̄mbi m̄v̄t̄\_ LoK̄t̄v̄ ev̄ AveR̄Ø̄v̄ c̄v̄B̄t̄ci ḡt̄a` c̄Ø̄ek̄ K̄īt̄Z b̄v̄ c̄v̄t̄i | w̄b̄t̄Pi w̄Q̄`h̄ȳ³ 15 tm̄nḡ Ask̄ ḡm̄Ūi w̄b̄t̄P̄ `v̄K̄t̄e, h̄v̄t̄Z ḡm̄Ūi w̄f̄Z̄t̄i ī c̄mbi w̄Q̄`h̄i`t̄q m̄n̄t̄R̄ c̄v̄B̄t̄c̄ c̄Ø̄ek̄ K̄īt̄Z c̄v̄t̄i ev̄ t̄ew̄ōt̄q t̄h̄t̄Z c̄v̄t̄i | GK̄ GK̄i c̄w̄i ḡv̄Ȳ m̄ḡZ̄j av̄b t̄ŋ̄t̄Z 2-3w̄Ū c̄v̄B̄c̄ `v̄K̄v̄ ev̄Ǟb̄x̄q|

P̄v̄iv̄ t̄iv̄c̄t̄Yi 10-15 w̄`b ci t̄`t̄KB GW̄w̄ēD̄w̄w̄ c̄×w̄Z̄t̄Z tm̄P̄ c̄Ø̄v̄b ī īǣ K̄īt̄Z n̄te| c̄Ø̄Z̄ tm̄P̄ 5-7 tm̄nḡ M̄f̄xi Z̄v̄q tm̄P̄ w̄`t̄Z n̄te| AZ̄ci c̄mbi `l̄i K̄ḡt̄Z K̄ḡt̄Z c̄mbi M̄f̄xi Z̄v̄ h̄L̄b c̄v̄B̄t̄ci w̄f̄Z̄i 15 tm̄nḡ w̄b̄t̄P̄ t̄b̄tḡ h̄v̄te A\_ŋ̄ c̄v̄B̄t̄c̄ Z̄j vi ḡm̄Ū t̄`Lv̄ h̄v̄te Z̄L̄b Avēvi tm̄P̄ w̄`t̄Z n̄te| G Aē`v̄q Av̄m̄t̄Z ḡm̄Ūi c̄K̄vi t̄f̄t̄` 5-8 w̄`b m̄gq j̄ v̄t̄M| G f̄v̄te t̄`vo Aē`v̄ Av̄m̄v̄ ch̄š̄l̄tm̄P̄ w̄`t̄q t̄h̄t̄Z n̄te| t̄`vo Aē`vi ci t̄`t̄K `ŋ̄ Aē`v̄ ch̄š̄l̄ R̄nḡt̄Z 2-4 tm̄nḡ ev̄ w̄Q̄c̄w̄t̄c̄ c̄mbi īv̄L̄t̄Z n̄te| av̄t̄bi G `t̄i t̄K̄v̄b Aē`v̄t̄ZB̄ c̄mbi N̄v̄Ūw̄Z̄ n̄t̄Z t̄`q̄v̄ h̄v̄te b̄v̄| Z̄vi ci c̄ŋ̄i v̄q GW̄w̄ēD̄w̄w̄ c̄×w̄Z̄t̄Z tm̄P̄ c̄Ø̄v̄b K̄īt̄Z n̄te| Z̄te av̄b K̄v̄Ūvi `ŋ̄ m̄B̄v̄n̄ cēŋ̄m̄P̄ ēŪ K̄t̄i w̄`t̄Z n̄te| Z̄v̄ b̄v̄ n̄t̄j av̄b c̄v̄K̄t̄Z w̄ej̄ w̄ŋ̄z̄ n̄te| G c̄×w̄Z̄t̄Z tm̄P̄ w̄`t̄j k̄Z̄K̄iv̄ c̄Ø̄q̄ 20-25 f̄v̄M̄ c̄mbi K̄ḡ j̄ v̄t̄M, h̄vi d̄t̄j tm̄Pi LiP̄ GK̄i c̄Ø̄Z̄ c̄Ø̄q̄ GK̄ n̄v̄R̄vi Ūv̄K̄v̄ K̄t̄ḡ h̄v̄q| G tm̄P̄ c̄×w̄Z̄t̄Z av̄t̄bi d̄j̄ t̄bi t̄K̄v̄b Z̄vi Z̄ḡ`n̄q b̄v̄| D̄t̄c̄vi š̄l̄c̄mbi I R̄j̄j v̄b̄x̄ m̄v̄k̄Ø̄ n̄q A\_ŋ̄ K̄ḡ Līt̄P̄ t̄ew̄k̄ j̄ v̄f̄| m̄t̄ēŋ̄w̄i Ḡw̄U GK̄w̄Ū c̄w̄i t̄ek̄ ev̄Ūē c̄h̄ȳ³ I m̄n̄t̄R̄ `Z̄wi K̄iv̄ h̄v̄q Ges ē`env̄i t̄h̄v̄M̄`|

**15. tm̄Pi c̄mbi ē`v̄cb̄v̄**

d̄m̄t̄j ī R̄nḡ ch̄š̄l̄c̄w̄i K̄w̄i Z̄ I m̄ȳb̄q̄w̄š̄z̄ f̄v̄te tm̄Pi c̄mbi t̄c̄š̄w̄t̄q t̄`q̄v̄t̄K̄ c̄mbi ē`v̄cb̄v̄ ēt̄j | tm̄Pi c̄mbi m̄ŋ̄ȳē`env̄t̄i ī w̄b̄iḡĒ w̄ew̄f̄b̄ach̄ŋ̄q̄i K̄j v̄t̄K̄š̄k̄j w̄b̄t̄ḡD̄t̄j L̄ K̄iv̄nj̄ -

**mīeīv̄n̄K̄Z̄.c̄mbi c̄w̄i ḡv̄Ȳ w̄b̄āŋ̄ Ȳ**

c̄w̄i ḡv̄ȲḡZ̄ c̄mbi mīeīv̄t̄ni ḡv̄`tḡ tm̄Pi AcP̄q̄ t̄iva K̄iv̄ m̄ǣē| c̄Ø̄Z̄w̄Ū tm̄P̄ c̄K̄t̄i ḡm̄Ūi c̄K̄vi t̄f̄t̄` I d̄m̄t̄j ī P̄v̄n̄`vi D̄ci w̄b̄f̄P̄ K̄t̄i t̄h̄ c̄w̄i ḡv̄Ȳ c̄mbi c̄Ø̄qv̄Rb Z̄iv̄n̄v̄ c̄w̄i ḡv̄c̄ K̄t̄i mīeīv̄n̄ K̄iv̄ D̄w̄P̄Z̄| Z̄v̄ b̄v̄ n̄t̄j c̄mbi AcP̄t̄qi c̄w̄i ḡv̄Ȳ tēto h̄v̄te Ges c̄K̄i Gj v̄K̄vi m̄ḡ`l̄R̄nḡt̄Z d̄m̄t̄j ī P̄v̄n̄`v̄b̄ŋ̄v̄q̄x̄ c̄mbi mīeīv̄n̄ K̄iv̄ h̄v̄te b̄v̄| c̄mbi c̄w̄i ḡv̄Ȳ w̄b̄āŋ̄ Ȳ K̄ivi c̄t̄ēAv̄t̄iv̄ t̄h̄w̄el̄q̄\_ t̄j v̄R̄v̄v̄ c̄Ø̄qv̄Rb Z̄iv̄n̄t̄`Q̄-

**K.** mīeīv̄n̄K̄Z̄.d̄m̄t̄j c̄mbi P̄v̄n̄`v̄ K̄Z̄ŪK̄Z̄Ges

**L.** c̄mbi D̄rm̄ t̄`t̄K̄ d̄m̄t̄j ī R̄nḡ ch̄š̄l̄c̄mbi w̄b̄t̄Z̄ w̄K̄ c̄w̄i ḡv̄Ȳ AcP̄q̄ n̄te|

cKtí ev RigtZ KZUKZmPi cmbi `i Kvi Zvibtgè dgjvi gva`tg ubafl Y Kiv hvq, thgb-  
 cKtí tmPi cQvRb (Farm Irrigation Requirement) igug = {ev`úxfeb (Evapotranspiration) +  
 wbt`^b (Seepage & Percolation)} - {KivRi eúcvZ (Effective rainfall) + tmPi cmbi AcPq  
 (Irrigation water losses)} |

**Dchj byj v`Zwi i gva`tg e`e`vcbr**

mgycmb e`e`vcbrvi Rb` byj vi h\_vh\_ bKkv cVqb I `Zwi i `i Kvi | byj v bKkv `Zwi Kivi cfeúbtgDj mLZ  
 weI q, tj v m`#Ü mZK`vKtZ nte |

- K. byj vi gta` cmbi tmZ Ggb nI qv DmPZ thb byj vi `B cvk tft½ br hvq Ges byj vi wbtP Zj vnb br cto |
- L. bKkvbvqv hZUKZcmb enb Kivi K\_v ZZUKB thb enb Kitz cvti |
- M. nvBtWwj K tMWj vBtbi h\_vhZ mgZv eRvq i vLv |
- N. `vqx cvk,`Xij yGes
- O. cvi`K Kg Li P Ges i YvteY |

**16. chqµtg tmP**

avtbi t`jtZ th tmP t` qv nq, mavi YZ H cmb Pjq, ev`úxfeb Ges cvZvi gva`tg wbtmji b BZ`w` i gva`tg tkI  
 ntq hvq | G wntmte RigtZ gwU I FZyft` cZw` b 8-15 igug cmbi cQvRb nq | ZvB RigtZ GKevi 5-7  
 tmug cmb w` tj 5-6 w` b Avi tmPi `i Kvi nq br | chqµtg tmP cVb Kiv ntj cmbi AcPq ti va Kti  
 tmPi Gj vKv epx Kiv m`e | D³ c`wZtZ tmP w` tj dj tbi tKvb qvZ nq br Dtcvi sG c`wZtZ tmPi dtj  
 kZKiv 20-30 fV M GgbwK AtbK t`jt kZKiv 50 fV M chS`cmbi AcPq ti va Kiv m`e |

**17. tmPi cfeKi Yxq**

tmP Avi`cKivi cfeQmP Zvj Kv (wvWDj) `Zwi Kiv DmPZ | wekI Kti tmP cKtí tKvb w` b, tKvb mgq,  
 tKvb RigtZ tmP w` tZ nte Zvi Dj L Aek`B`vKtZ nte | cmb weZi Y Ges gv byj vi ms`vi I i YvteY  
 KI tKi vR`vqZ; Kiv DmPZ | mgevq miguZi gva`tg Kitz cvi tj KvR, tj v mnRZi nq | Ggbvte w`všI  
 wbtZ nte thb cZwU Rigt wv`i` mgtaq cmb cvq | fvj exR I mti i cvkvcbk cwi gvYgZ tmP br w` tj Kw`yZ  
 dj b Avkv Kiv hvq br | ZvB etj avtbi RigtZ memgq 5-7 tmug cmb ati i vLv tKvb cQvRb tbB | RigtZ  
 me`v` wv`v cmb i vL tj Kw`i msL`v Ktg hvq | ZvQov MÜK I ``ri Afve t`Lv w` tZ cvti Ges ti vMej vB I  
 tcvkvvKtoi msL`v epx cvq |

memgq `wv`v cmb vti tL, GKevi tmP t` qvi ci chqµtg 3 w` b i Ktvi tL cqvq tmP w` tj cQ 30 fV M  
 tmPi cmb mvkQ nq Ges ZvtZ dj tbi Dci tKvb cVie cto br | ZvQov, Priv tivctYi 10-15 w` b chS`  
 wQcQtc cmb ti tL cti AWD c`wZ Abvri Y Kti t\_vo Avmv chS`tmP w` tZ nte | Zvi ci t\_vo Ae`v t`K`g  
 Avmv chS`wQcQtc cmb ti tL cti Avevi AWD c`wZtZ tmP w` tZ nte | Zte avb cvKvi 15 w` b cfeQmP eÜ  
 Kti w` tZ nte | Zv br ntj avb cvKtZ tevk mgq j vMte | Gfite tev`v avtbi cQ 30 fV M tmPi cmb mvkQ Kiv  
 hvq Ges ZvtZ dj tbi tKvb Zvi Zg` nq br |

mvi cQvMi AvtM Rigt t`K cmb Kigtq Dcwi cQvM Kitz nte Ges 2-3 w` b ci Avevi cmb w` tj mti i  
 KivRvvi Zv epx cvq | MÜK I ``ri mti i Afve t`Lv w` tj Rigt t`K cmb mti tq tdj tZ nte | Zte `vbr`vi  
 KxUvkvK cQvMKZ RigtZ cmb ati i vL tj `vbr`vi KxUvkvK KivRvvi Zv epx cvq |





*mvi Yxt 1 avbmn vewf bœdm̄tj i cmbi cŕqvr̄bxqZv*

<i>μwgK bs</i>	<i>dm̄tj i bvg</i>	<i>cmbi cŕqvr̄bxqZv</i>	
		<i>wgwj wj Uvi</i>	<i>wj Uvi /TKwR</i>
1.	<i>avb</i>	750-1,500	2,500-4,000
	- <i>AvDk</i>	750-870	
	- <i>Avgb</i>	870-1,000	
	- <i>ter̄tiv</i>	1,000-1,250	
2.	<i>Mg</i>	300-450	1,000-1,500
3.	<i>fj̄</i>	500-620	750-900
4.	<i>Avj y</i>	370-450	450-500
5.	<i>tcqr̄</i>	370-500	450-500
6.	<i>Wj</i>	300-350	
7.	<i>mwi Iv</i>	150-300	