



தொடர்புக்கு:

இந்திய வாசனைப்பயிர்கள் ஆராய்ச்சி நிறுவனம்  
(இந்திய வேளாண்மை ஆராய்ச்சிக் கழகம்)  
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# மிளகு



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கோழிக்கோடு - 673 012, கேரளா



# kpSF - rhFgo EI g' fs;

## bj hFgghshfs;

K. mHF gHKj phr;nrhi y

, uh. rptu" rdp

rp. rhuj hkgsh;

K. ghyh\$, uh\$Fkhh;

J. gpurhj ;

t! \_dpthrd;

br.nk. brej py;Fkhh;

## btspLgth;

renj h#; n\$. <ggd;

, affdh;

, ej pa thri dggahfs;MuharrpeWtdk;

nfhHpfnfhL/ nfush

brgl kgh;2020

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## mlj I toti kgg[

v. Rj hfud;

## kpsF

thri dg;gaphfspd;murdi;vdggLk;kpsF (i\_gggh;i\_efuk/ FLkgk; i\_gggnu! p)/  
nkwFj p bj hl hrrp ki yfi sj ;j hafkhf bfhz l gyyhz L thGk;VW broahFk; , j d;  
gH' fs;(bgghp) thri dj ;j putpakhtk/ kUej hftk; gadgLfpwJ. 2019-20 Mk; Mz oy;  
66306 ldfs; kpsi f VwWkj p braJ/ Cyfstpy; kpsF cwgj j p Efht[ kwWk;  
VwWkj papy; , ej pah Kdndhoahfj ;j pfHfpwJ. kpsF bgUkstpy;fhehl fh/ nfush kwWk;  
j kphL khepy' fspYk; Fwggpl l stpy; kQhuh#l ouh/ tlfHFF khepy' fs; kwWk;  
mej khd;epfnfhghh;j Pt fspYk;gaphl ggLfpwJ.

## j l gbtggepi y

kj btgg kz l yg; gapuhd kpsFFF <uggj k; bfhz l nkwF bj hl hrrp ki yi ar;  
rhhej gFj pfs/ kpaF rhFgofF kpfTk; cfej J. , J 20<sup>0</sup> tlfF kwWk; bj wF  
mlrnuiffF , i lgg; gFj pfspy; / fl y; kljjj pypUeJ 1500 kllh; ti uapyhd  
ki yggFj pfspy;edF tshfpwJ. kpsF 10 ofhp brdofpnuL Kj y;40 ofhp brdofpnuL  
ti ubtggj i j j h' fptsUK;j di kbfhz l J. kpsF tsht;j wF rhj fkhd btggepi y  
26 – 28 brz ofpnuL kwWk;Vwg[ l a btggepi y 28 brz ofpnuL hftk; c ssJ. Kpsfpd;  
nthpd; tshrrpF cfej kz z pd;btggepi y 26 - 28 brz ofpnuL hf c ssJ. fhwwpd;  
<uggj k; 75 – 80 rj tj k; gutyhd Mz L ruhrh ki Hast[1250 – 2000 kpyypl l UK;  
kpsfpwF cfej j hff;fUj ggLfpwJ.

## , uf' fs;

bgUkghyhd gaphl ggLk; , uf' fspY; Mz ; kwWk; bgz ; kyhfs; xnu bhj j py;  
mi keJssd. , ej pahpy/ 75-wFk; nkwgl l , uf' fs; (ehl L , uf' fi s c s s l f f p)  
rhFgo braaggl L tUfpdwd/ fhpkz lh vdw , ufk; nfusj j py; gpygykhf  
c ssJ. , j ugw , uf' fs;bfhl l ehl d;(bj wF nfush)/ ehuhaz fbfho (kj j pa nfush)/  
\$kgthpad;(taehL)/ eyKz o (, Lffp)/ Fj putyyp (nfhHpfnfhL/ , Lffp)/ ghydnfhl l h/  
fsS tyyp (tlfF nfush)/ kyypnfrhuh kwWk;c j j fnu (fhehl fh) nghdwi t gyntW  
gFj pfspy; gaphl ggl L tUfpdwd/ Fj putyyp kwWk; ghydbfhl l h , uf' fs; , uz L  
tUljj wF xUKi wTLj y;kfNy;j uf;ToaJ.

j kphfj j pd; ki yggFj pfs fF IISR - nj tk/ IISR kyghh; vfb! y/ IISR  
fhpkz lh/ gddpah;l (PRS, Panniyur, KAU kwWk; IISR rfj p nghdw neha;  
vj phgg[rfj pafss c ah; tpi srpy; , uf' fs; kpfTk; cfej i t. , J j tpu \_fuh/ Rgfuh/

g" rkp/ bgshz kp (IISR Calicut), gddpāh;- 3/ gddpāh;- 5/ gddpāh;- (PSR, Panniyur, KAU)  
nghdw c ah; tpi srpy; , uf' fS k; bfhl l ehl d; (mj pfggoahd xypnahurld; - 17.8 % )  
kwWk; makghpad; (xypnahurld; - 15 % ) nghdw ehl L , uf' fS k/ j kphfj j pwF eyy  
tpi srpi yf;bfhLfff;Toai t (ml l ti z - 1)

**gahgbgUffk;**

kpsFf; bfho \dWtj khd j i unky; j z Lfi s c wggj p brafpwJ.  
mi tfshtd:

1. elz l , i lbtspāss fq ffi sf; bfhz L CdW ku' fi sg; gpj J tsUK;  
Kj di kahd j z L.
2. bfhoapd; mojj sj j pypUeJ nj hdWk/ elz l , i lbtspāss fq ffi sf;  
bfhz L/xtbthU fq tYk;nti u c wggj j pahfFk;xU j z L.
3. gH' fi sj ; j h' Fk; gffthl Lf; fpi sfs; Frrpfs; Kffpakhf xUj z oypUeJ  
vLffggLfpdwd. bj hlo kpsF tshggj wF / cz l hfFtj wF Frrpfs/  
gH' fi sj ; j h' fp epwFk; gffthl Lf; fpi sfs;pypUeJ vLffggLfpdwd.  
tpi j apypUeJ c UthFk;ehwWfs;eyy Ki yggj j pwDI d; , Uej hYk;mtwwpd;  
kugDffs;rLhf , yyhj fhuz j j hy;tshggj wFg;gaddLj j ggLtj pyi y.

**nth;gpffk;Ki wfs;**

**gH' fhy Ki w /bj hdW bj hl L tUk;Ki w**

mj pf fhaggj j pwd;kwWk; Mnuhffpakhd bfhofspd;XLj z Lfi s edF RUI o/  
'V' totKss kufFrrpfspd; c j tpa[ d; bfhoapd; mojj sj j py; gj pff ntz Lk;  
gguthp-khhr; khj ' fspy; XL j z Lfs; bfhoapypUeJ  
gphj bj LffggLfpdwd. , j j z Lfspy; , i yfi s eLffj 2 - 3 fq ffs;bfhz l Frrpfs/  
ehww' fhy;ghj j papnyh myyJ tskhd kz / kz y/ kffpa bj hGc uk;(2:1:1) tpfj j j py;  
epuggpa befphg; i gfsnyh elggLfpdwd/ , i tfS fFg; nghJ khd mst[ epHYk/  
j z z lUk;bfhLff ntz Lk; , t;thW c wggj pbraaggl l Frrpfs/nk - \$^d;khj ' fspy;  
taypy;el j j ahufpdwd.

**mj pntf , dgbgUff Ki w**

\_y' fhtpy; nj hwWtpffggll , ej gaDss Elgk/ xU rpy  
 khww' fSld; , ej pahtpy; gpdgwwggLfwJ. , ej Ki wapy; 60 br.kP. MHK/ 30 br.kP.  
 mfyk;kwWk;nj i tahd eSkss FHpVwgLjjpmi j 1:1:1 tpfj j j py;tskhd nky;kz /  
 kz y; kwWk; kffpa bj hGc uk; bfhz L epugg ntz Lk; FWFfj; j Lgg[ (Septn)  
 bfhz l , uz L ghj pahfg; ghpffggll ; \ ' fpy; myyJ 1.25 – 1.5 kP. eSkk/ 8 – 10 br.kP.  
 eLtlkk; cila , UgFj pshfg; gsfggll gptprp i gggfi s/ 30  
 br.kP. , i lbtspary; FWFGj ; j Lgg[bfhLj J/ 45<sup>0</sup> ofhp nfhz j j py/ gykhd j h' fpi af;  
 bfhz L bghUjj ntz Lk; nth;gpjj Frrpfi sf;FHpfspy/ xU gpst[\ ' fpYfF xU  
 Frrptjk;el ntz Lk; gpst[\ ' fpypd;moggFj pahdJ/nth;gpoffj ;nj i tahd fyi t  
 (c j thej nj ' fha;ehpd;bghe kwk;kffpa bj hGc ug;bghe 1:1 tpfj k;) bfhz L epugg  
 ntz Lk; gl UK; bfhoapd; fq ffs/ , ej f; fyi tapy; gj pakgo/ gpst[\ ' fpYld;  
 nrhj Jf;fl l ntz Lk; , ej FrrpF xG' fhfj ;j z z h; , l ntz Lk; Frrpfs;tsu/  
 tsu/ fipst[\ ' fpypy; nth; gpoffj ; nj i tahd fyi ti a epuggp xtbthU fq tk;  
 kz z py;gj pakgo fl l ntz Lk; mj pntf tshrrpF/ a(hpah (1 fpyh)/ Nggh;gh! ngl ;  
 (0.75 fpyh) ka(ful ; Mg; bghl h#; (0.5 fpyh) kwWk; kfdppak; ryngl ; (0.25 fpyh)  
 Mfpatwi w 250 ypl h; ehpy; fi uj J/ mej f; fi uri y xU bfhofF 0.25 ypl h;  
 tjk; , uz L thu , i lbtspary;bfhLffyhk;

bfhoahdJ crrpi a mi la[k; bghGJ (Frrpfi s el) 3 – 4 khj' fS fFg;  
 gpwF) , i lggll j z Lfi sj; J}z l ntz o/ Edp bkhl L Jz offggll/  
 mojj sj j ppyUe;J Vwj j hH3 fq ffs;py;bfhoapi d eRff ntz Lk; gj J ehlf;fHj J  
 bfhoi a eRffggll gFj pary; btlo/ kz z ppyUe;J vLff ntz Lk; , tthW btlo  
 vLffggll bfhoapd; xtbthU fq tk; , i lapy; Jz offggll/ xtbthU Frrpi aa[k;  
 bfhj j hd nthfSld ; g[ fnghl l kz ; rlof; fyi t epuggpa ghyj j l d i gfs;py; el  
 ntz Lk; c apherRfbhyypahd l i unfhbl hkh 1 fphk; tjk; kwWk; ntk; (VAM)/ xU  
 fpyh kz q fF 100 rrp tjk; kz rlof; fyi tapy; nrhff ntz Lk;  
 eLkbghGJ/ , i yfFUj J kz q fF nky; tUkhW/ ftdkhf el ntz Lk; , ej g;  
 ghyj j l d; i gfi s/ epHy; kwWk; <uggj Kss , l j j py; i tff ntz Lk; , yi ybadpy;  
 <uggj j i j epi yepWj j 200 fh\$;bfhz l ghyj j l d; #ll odhy; \ l ntz Lk/ el l \ dW  
 thu' fspy; bkhl L tuj bj hl ' FknghJ ghyj j l d; i gfi s mej , l j j ppyUe;J mfwwp/  
 epHy; i tff ntz Lk; , ej Ki wapy; braaggLk; , dgbgUffj j pd; gadfshtd :-

- mj pntf , dgbgUffk;(1 : 40)
- edF cz lhFk;nth;mi kgg[

- mj pfggoahd tay:gpggg[kwWk;tihpa tshrrp

**FHpKi w**

, J xU fq c ss xU j z oypUeJ , dgbgUffk;braaggLk;xU vsja/ kypthd kwWk;gaDss ElgKi w. , ej Ki wapy;Fspuhd kwWk;epHy;gFj papy;2.0 kP x 1.0 kP x 0.5 kPmst§s FHpc z Jhffntz Lk; ghyj j ld;i gfspd;(25 br. kP. x 15 br.kP. 200 fh\$) fHggghj pi a kz y/ kz / nj' fha; ehbgho kwWk; kffpa bj hGcuk; bghoi a rktfij j j py;fyeJ epuggntz Lk;, ej i gfsy/ tayfsy;edF tshej bfhoapd;xU j z oypUeJ vLffggll 8 -10 br.kP. eSkss/ , i yfSld; Toa xU fq i t/ , i yfFUj J kz q fF nky; , UffkhW el ntz Lk; xU fq bfhz l el l , ej ghyj j ld;i gfi sf;FHpapy;rluhf i tj J/ xU ghyj j ld;#ll ;bfhz L FHpi a \o/ #ll od; ehdF \i yfspYk; fdKss bghUifi s/ #ll ; efuhj thW i tff ntz Lk; , t;thW i tjj Frrpfi s xU ehi sFFf;Fi wej gl rk/ l eJ Ki w g(thsp bfhz L ei dj J c l nd/ ghyj j ld;#ll ;bfhz L \o i tff ntz Lk;Frrpfi s 2 - 3 Ki w fhggh;- Mf! pFnshi uL (1 ypl l h;2 fphk;tj k) bfhz L ei dggJ eyyJ.

el l xU khj j j pwFg; gpwF/ g[ pa j z Lfs; , i yapd; , i l ggl l gFj papyUeJ nj hdWfpwJ. , j j Uz j j py/ xU ehi sFF xU kz p neuk; FHpi ah; j pweJ i tggj d; \ykhff; Frrpfs; foz khf pdwd. nkYk; el l 2 khj ' fS fFg; gpwF nth; gpoj j Frrpfi sf; FHpapyUeJ btsna vLj J epHwgh' fhd gFj papy; i tj J/ xU ehi sFF , uz L Ki w ei dff ntz Lk; , j j i fa Frrpfs; , uz l i u khj ' fS fFg; gpwF taypy;el j j ahuf pdwd. , ej Ki w apd \ykhf 80 - 85 rj tj k; btwwpfukhd nthgpgggg;bgw Koak; rj J ffi uri y , i yfspdkU bj spggj d; \ykhff;Frrpfspd; tshrrpi a C fFt pff yhk;

**bespt[Ki w**

, J kpsfpy;nth;gpoj j Frrpfi s kypthf c z Jhffk; , dgbgUff ElgkhFk; #ll ;myyJ epHy;ti yi a Ti uahff;bfhz J/ehww' fhy;Foi rapy/2 fpyh kz ;rlof; fyi t bfhz L epuggpa ghyj j ld; i gfsy; nthgpoj j Frrpfi s el ntz Lk; , ej Frrpfs;j har;brofahfr;braygLfpdwd. brofs;tsheJ/g[ pa fq ffi s c UthFFk; bghGJ/ kz rlof; fyi tahy; epuggggll rpwpa ghyj j ld; i gfi s (20 x 10 br.kP) xtbthU fq tpwF moapy; i tff ntz Lk; xtbthU fq t[k; kz i z j ;bj hLkgo <ffkhW bfhz L gj pai tff ntz Lk; mt;thW bratj d; \yk; xtbthU fq tpd; rej pggpyUeJ k;nth;c z Jhfp Frrpfs;nkYk;tsheJ bfhz nl nghFk; , ej Ki w apd;

thapyhf \ dW khj j j py;10 Kj y;12 fq ffs;(j har;broapypUe;J) btFthf nth;gpoj J/  
mWti l fFj ; j ahuhFk; XtbthU fq t[k; ghyj j l d; i ga[ d/ nth; gpoj j fq t p w F F;  
fHh btl l ggl L/ btl l ggl l Edp/ kz rl of;fyi tapy/ mj pf nthfi sj ;J}z Ltj wfhf  
g[ j f fggLfpwJ. ghyj j l d; i gfs py; Vwfdnt btgg\ l l ggl L/ c aph; fl Lgggl L  
braypa[ d; brhpt( l l ggl l 2 ghfk; tskhd nky; kz / xU ghfk; MwW kz y/ xU ghfk;  
bj hG fyej c uffyi ti a epuggntz Lk; , j j i fa nth; gpoj j fq ffs; xU thuj j py;  
g[ pa j sphfi s c z l hffp/ 2 Kj y; 3 khj fhyj j py; tay; el t f Fj ; j ahuhfpwJ. j pdKk;  
g(thspbfhz L eh; bj spff ntz Lk; , ej Ki wapy/ ruhrhahf xU j har; broapypUe; J  
xU tUl j j pwF 60 Fr r p f s; btl obaL f fggL f p dwd. (1 : 60)

### **FHj j l L Ki w**

, ej Ki wapy; gFj pahf kl fpa nfhnfh gll ; kwWk; kz gE c uk; (75 : 25) bfhz L  
VwgLj j ggl l gLfi fapy; (1.5 kP mfyk/ 10 br. kP. c auk; kwWk; nj i tahd mst[ePsk/  
kps f p d; xU j z L gl utpl ggLfpwJ. j z L tsUknghJ xtpbthU fq t p Yk; nth;  
c UthfpwJ. mLj j 40 – 60 ehl fS fFg; gpwF/ Edp apypUe; J 5 fq ffi s t pl Lt pl L  
kPj Kss 15 – 20 ti uapyhd nthpl ggl l xwi wf; fq ffi s btlo vLj J/ mi j  
FHj j l oy; (7.5 x 7.5 x 100 br.kP.) Vwfdnt epuggpi t f fgg l l tsh; Cl fj j py; (nfhnfh gll ;  
-t[ d; brwpt( l l ggl l J) el ntz Lk; eyy nth; gpoggpwF , i l ggl l \ Lgd papYk/ fhwwpd;  
<uggj k; (27 ± 2<sup>0</sup> bryrpa! ) , UfFkhWk; gRi kf; Tl j j py; i tj J tshf fggLfpwJ.  
FHj j l oy; el l Jz Lfs; 45 – 60 ehl f s; (4 – 5 , i yfs; Ki sj j t[ d) f p H j J  
fhwnwhl l Kss epHy; ti s c s s , l j j pwF khwwp fodggLj J tj wF (45 – 60) ehl f s;  
ti u i t f f ntz Lk; FHj j l oy; el l Jz Lfs; 120 – 150 ehl f s py; edwhf nth; t pl L  
eL tj wFj ; j ahuhf p t p Lk;

, ej Ki wapu; xU gpsh! of; c i wapl ggl l fkgp ti yapdhy; 2 kP c auKk/ 0.3 kP  
t pl l Kk; c i l a J}i z mi kj J mj d; c l gFj papy; nfhnfhgll ; kwWk; kz gE c uk; (3 : 1)/  
oi unfhbl hkht p dhy; brhpt( l l ggL epuggggLfpwJ. , ej ti fapy; c wj j p braaggLk;  
kps F bfhoahdJ \ dW ti fahd el t[ j z Lfi s c wj j p brafpdwd. mj ht J/ 1.  
Xwi wf; fq t[ l a j z Lfs/ 2. gffthl Lj ; j z L l d; Toa nkyj z L (nkyj z Lfi s  
taypy; eLkbgHJ/ kps Ff; bfhj J fs; bfhoapd; moggFj p apypUe; J Kddj hfnt  
fhaffj ; J t' Ffpdwd).

etld ghyj j l d; Tl kh d J (btggepi y 25 – 28<sup>0</sup> bryrpa! / fhwwpd; <uggj k; 75 – 80  
rj t f j k; kwWk; , i l ggl l \ Lgd p nkwF wpggl l Ki wapy; el t[ j z Lfi s c wj j p

bratj wF ghpe;Ji wffggLgpmJ. vl L Kj y;gj J ti uahd el t[Frrpfs; fkgpti yt];  
J}i z r;Rwwpel L mi t fkgpti yapdnky;tshe;J gl utpl ggLfpdwd. taUk;bfhoapd;  
xtbthU fq t[;tsh;Cl fj i j j ;bj hl Lf;bfhz pUfFkhW ghj J fbfhss ntz Lk;  
bfhofs;tshe;J fkgpti yj J}z pd;c rrpfi a bj hL tj wF 4 – 5 khj ' fs;Mfpdwd. , ej  
epi yahy;xtbthU bfhoa[;20 fq ffS l d;xU rpy gffthl L , i yfs k;(12 – 15 tJ  
fq tpy) tshe;J pUfFk; nkny c ss 5 – 7 fq ffS l d;gffthl L fpi si aa[;nrhj J  
c ss neh;j z Lfi s neuoahf taypy;eL tj wF gadgLj j yhk; , ej Ki wapy;4 – 5  
khj ' fspy; 150 xwi wf; fq t[ l a Frrpfs; 10 – 15 gffthl L fpi sfs; kwWk; 10  
nkyj z Lfs; c wgj j p braayhk; , UE}W fkgpti yj ; J}z fi s 320 kP guggst s  
ghy j j d; Tl j j wFs; mi kffyhk; , ej Ki wapy; tUl j j wF \ dW Ki w mWti l  
btaayhk; , j py;c UthFk;Frrpfi s btlo vLj J FHj j l L Ki wapy;nthpl i tj J  
taypy;el t[braayhk;

**ehww' fhy;nehafs;**

**@i gnl hgnj huh j hfFj y;**

, ej g(" rhz nehaj ;j hfFj y;ehww' fhy;py;c ss Frrpfs; , i yfs/j z L kwWk;  
nthggFj pfs;py; bj dgLk; , i yfs;pd; kU RU' fpa tpskg[ d;Toa fUj j gss;fs;  
nj hdwp nt fkhf gut/ , Wj papy; , i yfs;c j phe;J tPLk; nth;KGtJk;mGfptPLk; xU  
rj nghhnl h fyi t bj spgg hYk; 0.2 fj fhggh; Mf! pFnshi uL kUej j xU  
khj , i l bts;py; ei da[go CwWtj hYk/ , ej nehi aj ;j Lffyhk; khWj yhf/  
bkl j yhrpy; - nkdnfbrg; (0.125 rj k) myyJ 0.3 rj k; bghl j hrpak; gh! nghndl ;  
gadgLj j yhk; kz rlof; fyi ti a Nhpabtgg\lo nehaf; flUk;fi s  
mHpf;fyhk; , j j i fa fyi tapy/ nehaj j Lgg[ c ahp d' fshd VAM xU fpyh  
fyi tff 100 rrp t j k; kwWk; oi unfhbl hkh – xU fpyh kz q ff xU fpuhk;  
(vz z pfi f – 10<sup>10</sup> cfulg) vdw mstpy;fye;J ghy j j d;i gfs;py; , l ntz Lk; , j j i fa  
c ahp fs; nth; mi kgi g ntj pg; bghUl fs; bfhz L ghJ fhff ntz Lk; nghhnl h  
fyi ti a bj spfFknghJ mi t kz z py;rj whky;ghj J fbfhss ntz Lk; khwwhf  
oi unfhbl hkht wF , z fkhf c ss bkl j yhrpy; + bkdnfbrg; (0.125 rj k)  
c gnahfggLj j yhk;

**Mej pfndh! ;(gwi t f;fz ;neha)**



, ej nehahdJ bfhypl nl hoi ufk; fispnah! nghhpahao! ; vdw  
g" rhz k/ , i yi aj ; j hffp/ k" rs; fyej gGgg[myyJ ml hj j pahd gGgg[epwkbfbhz l  
xG' fww gßspsfi s tpi stpffpwJ. El tFF jahh; epi yapy; css 2 myyJ 3  
fq t[ la Frrpfi s 0.1 rj fhbgz orpk; + bkdnfhbrg; fyi tapy; 30 epkpl k;  
Cwi tj J gpd; elntz Lk; xU rj nghhnl h fyi t kwWk; 0.1 rj fhbgz orpk; kUei j  
mLj j Lj J bj spj J , enehi af; fl LggLj j yhk;

**, i y mGfy;kwWk;fUfy;neha;**

, ej nehahdJ i un! hfnl hdpah nrhyhdv vdw nehaffpUkpahy; cz l hfpwJ.  
kjj btgg NHeji yapy; Vguy; - nk khj ' fspy; ehww' fhypy; mj pfkhd ghj pggfi s  
VwgLj J fpwJ. , ej g" rhz k; , i y kwWk; j z Lfi s j hFF fpwJ. Rhkgy; epwf; FHpej  
gßsps; kwwk; dkrtpa , i Hfs; , i yfspd; kU bj dgLfpwJ. , j j i fa , i yfs; xdW  
kwbwhdWl d; i krtpa , i Hfshy; , i z eJ fhz yhk; , enehapd; j hFFj y; ml hej  
gGgg[epw bgUk; gßsps; hfj ; j z od; nkYk; fFGk; gwtpf; fhz ggLfpwJ. , j j i fa  
fhj pffgg l ; , l j i j j ; bj hl L tsUk; g[pa Jsphfs; bkJ thf t[GeJ cyheJ t[ Lk;  
bfhypl nuhoi ufk; vDk; g" rhz j j hy; tpi stpffggLk; , i yggßspsfi s i eeJ gž ;  
nghdw gFj pi ar; Rwwpaßs k" rs; epw ti sajj pd; thapyhff; fz l wpayhk; xU rj  
nghhnl h fyi t kUei j Kdbdrrhpf i fahfj ; bj spggj d; \yk; , ej , uz L  
nehafi sa[; j Lff , aYk;

**mogghf thl y;neha;**

, ej nehahdJ Kffpakhf ehww' fhypy; \$^d ; brgl kgh; khj ' fspy;  
bj dgLfpwJ. , ej nehahdJ ! fypnuhrpak; uhfgrp vdw nehaf; fpUkpahy; cz l hfpwJ.  
rhkgy; epwg; bgUk; gßsps; j z L kwWk; , i yfspy; nj hdWfpdwd. neha; Kj thej  
rkaj j py; , i yfspy; btsi s i krtpa' fi sf; fhz yhk; , ej i krtpa , i HfshdJ/  
gpwF j z Lfi sj ; j hffp , i yfi sj ; bj h' fr; brafpwJ. Neha; Kj thej fl l j j py; nth;  
gpj j Frrpfs; fhaeJ nghfpdwd. rmpa btsi s btz i z epwk; nghdw ! fispnuhrpah  
mi kggf s; Kj thej bgUkgßsps; kU fhz ggLfpdwd. Kddj hfnt fz l wpej hy/  
Rfhj hu Ki wfi sg; gpd; gwwp , ej nehi af; fl LggLj j yhk; ghj pffgg l ; , i yfs/  
cj thej Frrpfs; Mfpatwi w c l nd mfwwp mHppf ntz Lk; gpwF vyyhf;  
Frrpfs fFk; 0.2 rj fhgd l rpk; myyJ 1.0 rj nghhnl h fyi t kUei j bfhz L bj spff  
ntz Lk;

**i tu! ;neha; j hFFj y;**

bkhi rf;(rhj huz g;gri r epwKk/ k" rs;fyej gri r epwKk;khwp khwp mi ke;J  
nj ki yg; nghdW fhl rpa;pfk). eukg[ fhq j y/ k" fs; epw toti kgg[ kwWk;  
rmpa , i yfs; , ej nehi a ehww' fhyy; fz }wpa c j t k; mwpFwps;  
l tu! ;, awi fahf CLWt;g;gha[k; j di ka[ l aj hy;Kj di kahf el t [braa[k;Frrps;  
\yk; gut f w J (mj ht J kpsFr; bro c Wgg f i sf; bfhz L , dgbgUffk;  
braaggL t j hy/ neha; j hfFz } broap;Ue;J vLffggLk; el t [Frrps; \yk; neha;  
gut f w J). Mi fahy; neha; j hffgg l hj Mnuhffpakhd j har; brofi sj ;  
nj ht [ brat J , dwpai kf h j j hFk; mRtpdp kwWk; Ni ugg(rrp nghdw  
g(rpfS k; , eneha; gut [t j wfhd , uz } ht J fhuz khf c ssJ. ehww' fhyy/ rluhfg;  
g(rpf i sf; fz fhz pggJk/ 0.05 rj i l bkbj hnal ; g(rpfbfhyyp kUei j j ; bj spggJk;  
mtrpak; , J j t p rluhff; fz fhz g j ;J neha; j hfFz } brofi s mfwntz Lk;

### **E)wgG j hfFj y;**

Ehww' fhyy; nth; KorRg; gG kwWk; gwpfFk; / CLWt k; E)wgG nth; gpj j  
Frrpfi sj ; j hfFk; , U Kffpa E)wgGffshFk; , i tfs; nthfi sj ; j hffpf; nL  
t pi stpfpdwd. , i tfs; j hfFt j hy; brofs; tshrrp Fdwpak/ , i yfs; k" rs;  
epwki l e;Jk; fhz ggLk; Rpy rka' fs;py; , i yfspd; eukgFF , i l ggl l gFj p gRi k  
epwk; , He;Jk; fhz ggLk; , ' fz k; E)wgGtpdhy; j hfFz } Frrpfi s el t [ taypy;  
eL t j hy; tshrrp Fdwp;gdg[eypt [nehi aj ;nj hwWt;pfFk;

ehww' fhy; fyi tapd; nehaf; fpUkphi s mHpf f Nhpa btggj j hy; kz i z r;  
NI hffyhk; , ej NI hffgg l ehww' fhy; fyi ta[ d; c apffl Lgghl Lf; fhuz p fshd  
myyJ g(" rhx c apffshd bghrrhd;ah f;shk;nl h! ; nghh;ah myyJ oi ufnfhbl hkh  
Qhhrpahdk; (xU fpyh kz q ff 2 fuhk; t j k) , l yhk; Kd;Tlona E)wgGf;  
bfhyypfi s , Lt J E)wgGffspd; j hfFj i yj ; j Lff k pft k; , dwpai kahj J. , j wfhf  
0.1 rj fhhnghryghi d 50 kpy; xtbthU tapYk; Cwwntz Lk; kz z pd; <uj j di k  
elbfFk; ti fapy; g(thspbfhz L elhgghrdk; bfhlffft k;

### **nj hl l k; epWt j y;**

, l k; nj heb; j Lj j y;

kpsi fr; rhtpy; tshfFk; bghGJ/ bj wfF j pi ri a nehffpapUfFk; rhi tj;  
j tpf ntz Lk; el t[ braa tiff kwWk; tlfHfFr; rhtpd; j hHtG; gFj pi aj;  
nj heb Lff ntz Lk; mggor; bratj dhy; nfhi l fhyj j py; bj wfF Nhpady;  
bfhofS fF VwgLk; ghj gi gj ; j tpf fyhk;

**epj i j j ; j ahh; braj y; kwWk; CdW ku' fs; eLj y;**

nk - \$%d; khj ' fspy; Kj y; ki Hbgaj t[ d/ fyahz KU' i f/ ki yrrtFf/ gyh/  
kl o ngdw CdW ku' fspd; Kj di kj ; j z L Frrpfi sj ; nj heb Lj J (3.0 kP x 3.0  
kP, i lbtspay; rhz vU kwWk; nky; kz ; eggpa 50 fd br. kP (50 br/kP eSk/ 50 br.kP.  
mfyk/ 50 br.kP. c auk) FHpay; el ntz Lk; xU bQfni UfF 1100 CdW ku' fi s  
el yhk; fyahz KU' i fi a vgbghGJ CdW kukhfg; gadgLj j pdhYk/ E)wgG/ j z L  
kwWk; nth; Ji sgghi df; fl LggLj J tj wfhf 10 fuhk; fhngryghd; xU Mz LfF , U  
Ki w (nk / \$%d; kwWk; brgl kgh; / mfni hgh) , l ntz Lk; Fwggf/ CdW ku' fi s  
(fyahz KU' i f) eLtj wF xU khj k; Kdghf/ mj d; Kj di kahd Frrpfi s btlo  
vLj J mLffpi tff ntz Lk; mt; thW mLffpi tj j Frrpfs; xU khj j j py; Ki sffj ;  
bj hl ' Fk; , j j i fa Frrpfs; CdW ku' fshff; FHpad; tpskgy; (kpsFf; bfhoi a  
eLtj wF Vwg) el ggLfpdwd.

**el t[**

el t[ FHpadJ CdW kuj j pyUe; J 30 br.kP j ssp tiff/ fHfF myyJ  
tlfHfF j pi rapy; , Uff ntz Lk/ l e; fnyh bj hGt[k; kwWk; uhf; gh! ngl ; (150  
fuhk) nky; kz q l d; fye; FHpay; epgg ntz Lk; xU fnyh ntggk; gZ z hfFl d; 50  
fuhk; oi ufnfhl hkh Qhrpahdk; fye; FHpay; , l ntz Lk; nk - \$%d; khj ' fspy;  
gUtki H Mukgjj t[ d; ehww' fhsy; , Ue; eLtj wF j ahuf c ss Frrpfi s vLj J  
el ntz Lk;

el j Frrpfi s 1.5 kP c auk; ti u tsutpl L/ gpdg[bfhoi a CdW kuj j pyUe; J  
ftdkhf ghj J vLj J mi j kz z py; g[ j a[hW bra; J bfhoapd; nky; FUj J kl Lk;  
nky; nehffp , UfFkhW braa ntz Lk; , t; thW bratj d; \yk; nky; nehffp tsUk;  
broapd; j z Lfs; CdW kyk; KGJk; t; phggj J/ moapyUenj gffpi sfs; nj hdw  
tHptFf pdwJ.

**guhkhgg[Ki wfs;**

kpsFf; Frppfs; tsUKnghJ/ nji tggLkbgHGJ jz Lfi s CdW ku' fSId; nrhj Jf; fl) ntz Lk; nfhi l fhyjj py; , s' bfhofS fF brawi f epHy; bfhLj J/ fLi kahd Nhpa btggj j pypUe;J ghJ fhff ntz Lk; CdW ku' fspd; , i yfi sa[; rPW fpi sfi sa[; fthj J braJ nji tahd mst[ btsprrk; kpsFf; bfhofS fFf; fpi l fFkhW braa ntz Lk; , j dhy; CdW ku' fS k; neuhf tshf pdwd. mj pfkhf epHy/ g(fFk; kwWk; bfhj J gpofFk; rkaj j py; g(rppfs pd; j hffJ Yff tHp tFFfK; CdW ku' fspy; fthj J ehdfhk; Mz oypUeE braa ntz Lk; nghJkhd mst[ gRej hi s (tl fphFF gUt ki Hapd; , Uj papy) el t[ FHpapd; nkwguggpy; , l ntz Lk; bfhoapd; mojj sji ja[/ nti ua[; vej tjj khd , i la(Wkpdwpp; fhff ntz Lk; bfhoapd; , uz l htJ tUljj pd; nghJk/ , nj guhkhgg[Ki wfi sf; i faha ntz Lk; el) ehdfhk; Mz oypUe;J , uz LKi wbfhoi ar; Rwwpp; fi s vLj J/ bfhj j p tpl Lkz ; mi dggj hy; kz z pd; <uggj k; mj pf ehl fS fFf; fhffggLfpwJ.

\ L gapuhf fygnfhdpak; \ nfhdha! ; kwWk; i knkhrh , dtprh brofi s gappl t j d; \ yk; ki Hffhyj j pdngHJ VwgLk; kz ; mhgi gj ; j Lffyhk; , J nfhi l apy; cyheJ kz z pWF m' ff tsj j j f; bfhLffpwJ.

### **cukj y;**

cukplj y; (bj hGc uk; kwWk; , urhad cuk) kpsFf; bfhoapd; eyy tshrrpff kptf[; , dwpai kahj J. \ dW kwWk; mj wF nkwgl) taJss bfhofF ji Hrrj J/ kz prrj J/ kwWk; rhkgy; rj J/ xU bfhofF tUl k; 50 : 50 : 150 fpuhk; vdg; bghJ thfg; ghpe; Ji uffggLfpwJ. Mdhy; , j d; mst[kz z pd; rj J; j di k kwWk; tsUK; , l j j g; bghWj J khWgLk; , ej mstpy; \ dwp; xU g' F Kj yhk; Mz Lk; \ dwp; , uz L g' F , uz l hk; Mz Lk; , l ntz Lk; \ dwhk; Mz oypUe;J KG mst[; bfhLffgg l ntz Lk; cujj pi d , U rk g' fhf gphj J xU g' i f nk - \$%d; khj j pYk/ , uz l htJ g' i f Mf! ) ; - brgl kgh; khj j j pYk; , l ntz Lk; cu' fi sf; bfhoi ar; Rwwp 30 br.kp. J)uj j pYk; , l Lkz ; bfhz L \ l ntz Lk; cukplk; bghGJ/ cu' fs; neuhf kpsf pd; nti uj ; bj hl hj thW ftdkhf ghj J fbfhs; tnj hl yyhky/ kz z py; nghJkhd <uggj k; cssj hf mUff ntz Lk; mspffk; cukhdJ/ bj hGc uk; myyJ fhkngH! ) ) hf xU bfhofFg; gj J fpyh tjj k; nk khj j j py; bfhLffggLfpwJ. ntggk; gZ z hfF bfhofF xU fpyh mst[bfhLffyhk; Mkpyj j di k css eyj j py/ , uz l hz oaF xU Ki w/ Vguy; - nk khj j j py; Rz z hkg[; rj j j xU bfhofF 500 fpuhk; mst[ , l / ghpe; Ji uffggLfpwJ. caph; cukhd mnrh! i ghpyk; bfhofF 50 fpuhk; mspffggLkngHJ ghpe; Ji u braaggl) ji Hrrj j pd; msi t ghj pahff;

Fi wj Jfbfhssykh; , Jnghy/ Jj j ehfk; myyJ kfdlrpak; Fi wthf c ss  
epyj j wF/ tUI j j wF , UKi w nk - \$%d;kwWk;brgl kgh; - mfnl hgh;khj ' fs;0.25 rj  
Jj j ehf ryngl ;fi uri y bj spffftk; xU bfhofF 250 fphk;tj k;kfdlrpak;ryngl ;, l  
ntz Lk;

### **g] h;kpsF**

xU taJi la 2-3 fq ffS i la ffthl L , i sfs;el tff njht[braJ mi t  
nt+dwa gpwF kz bjhl papy; c ss fyi tapu; xU FHpfF 3 - 5 edF nt+dwa  
Jz Lfi sel ntz Lk; elj \dW tUI k;fhj j xU fnyh kpsF (gri rahf) tUI k;  
KGtJk;bfhLj j f;bfhz pUffk;

### **Ez q aph;TILf;fyi t**

l.l.v! ;Mh; gnahkpf! ; vdgJ jhtu tshrrpi a Cfftpffk; ghfohpahfffi s  
[i kfnuhfhhf! ; Y]!! ; (BRB 3)] + [vdbl nuhghf] h; Mnuhb\$d! ; (BRB 13) ] +  
[i kfnuhfhhf! ; rwwpd' fs;(BRB 23) ] / Rz z hkg[bghoa[ d;nrhj j j ahhpffggLk;xU  
Ez q aph; TILf; fyi tahFk; , J kpsF bfhoapd; tshrrpi aa[/ kfNi ya[;  
mj pfhpffpwJ. 20 fphk; l.l.v! Mh; gnahkpf! xU ypl h; ehpy; fyeJ xU kpsFf;  
bfhofF 250 kpypl h/ ehww' fhyp; 100 kpyr bj spff ntz Lk; khwwhf/ xU fnyh  
l.l.v! Mh; gnahkpf! 100 fnyh kl fpa bj hGcuj jId; fyeJ xU fnyh tj k;  
bfhoapd;mogghfj j j Rwwp tUI j j wF , UKi w bfhlff ntz Lk;

### **nfhi l ehgghrdk;**

nfhi l apy; khhr; 15 Kj y; nk 15 ti u/ 15 ehlfS ff xU Ki w ehgghrdk;  
bratj hy/ nfhi l apy; khdhthp bfhoi a tpl 90 – 100 rj kfNi y mj pfhpffpwJ. 15  
taJ ff nkwgl j bfhofF 50 ypl h;eUk/ 11 – 15 taJi la bfhofF 40 ypl h;eUk/ 5 – 10  
taJi la bfhofF 30 ypl h; eUk; bfhoapd; mogghg j j r; Rwwp FHha; ehgghrdkhf  
bfhlff ntz Lk; nfhi l ehgghrdk; 90 rj rluhd g' bfhj j ffi s \$^i y khj j j py;  
cUthffk; khdhthpapy; 60 rj rluhd g' bfhj j ffi s cUthff \$^i yapyUeJ  
brgl kgh;ti u j hkj khFk; nfhi l g; ghrdj j pdhy;g' bfhj j pd;e\$sk;mj pfhpffpdwJ.

### **ga;hg;ghJ fhgg[**

## nehafs;

mojjzL mGfy; nehahdJ (mjntf thly; neha) i gnlhgnj huh nfgi r! p  
vdggLk; g(" rhz jjpdhy; Vwgl f;Toa bfhoa nehahFk; , ej neha; gUt ki Hf;  
fhy' fspy; mjpfkhff; fhz ggLk; bfhoapd; vyyhfg; ghf' fSk; , ej nehahy;  
ghj pffggLfpdwd.

## nrj k;kwWk;mwFwps;

- , i yfspd;kU xdW myyJ gy fUk;gSpsfs;nj hdWfpdwd. bkyypa , i Hfs;  
nghdW btspggW mi kggfs; bfhz l , i t , i yfspd; tpskgy; ntfkhfg;  
bghj hfg;gpdg[ , i yfs;tGeJ tLfpdwd;
- neha;jhfFk;bghGJ/ , sk; , i yfs;kwWk;kz z pd;kU gj pghf cz l hFk; XLk;  
jz oq i la bkdi kahd jz L Edpfs; fWgghf khWfpdwd. , ej nehahdJ  
nehaž l XL jz L kwWk; , i yfs; \ykhf bfho KGtJk; gutFwJ.  
ki Hffhyjj py;ki Heh;kz z py;gl Lj ;bj wpggj hYk;gutFwJ.
- jiu kljjjYss Kjdi kahd jz L ghj pffggllhy; bfho KGtJk;  
tho , i yfs;kwWk;ru' fs;bfhl otPLk; fpi sfs;fq ffspy;ci leJ/ bfho  
xU khjjj wFs;fhaeJ tPLk;
- cwp" R kwWk;c z t[bfhsSk;nthfs;kl Lk;ghj pffggllhy/ ki H epwFk;ti u  
nehapd;mwFwps;btspggLtJ j hkj khFk;

, jj Uz jj py;bfhoahdJ k" rs;epwk/ thly/ , i yfs;c j thj y;kwWk;bfhoapd;  
gFjp fhaeJ nghFjy; nehapd; eypt[ mwFwpsfi sf; fhz gpfj; bj hl ' Fk;  
(mfnl hgh; - etkgh; khj ' fspy). , jji fa bfhofs;ki HFFg;gpdg[kll fggL/  
nthpd; ghj pgg[ jiu klj ghfjijj; jhffpf; bfho , wFk; ti u , uz L  
gUt' fS fF nky;gpi Hj J epwfyhk;

## nehag;guhkhgg[

, ej nehi af; fH,tUk; xU' fpi z ej ghJfhgg[ Ki wfi sf; i fahz L  
fl LggLjj yhk;

## gaph;Rfhj huk;

- nj hl | j j py; , wej brofi s ntUl d;mfwwp mHj j y(, j dhy;neha; tpi stpfFk; g(" rhz j j pd;vz z pfi f Fi wa[.]
- el t[ braat[ss Frpfi s (gj padfs) neha; j hffggLhj Mnuhffpakhd nj hl | ' fspylUe;J nrfhpff ntz Lk;
- g[ f nghl | myyJ Nhpabtggj j py; \ | k; braaggl | kz ;bfhz L ehww' fhy; j ahh;braa ntz Lk;

**guhkhgg[Ki wfs;**

- j z z lh;nj ' fpepwhj thW nghJ khd tofhy;mi kgg[c z | hff ntz Lk;
- kz i z f;bfhj J j y;nghdw guhkhgg[Ki wfshy;nti uf;fhaggLj j f;Tl hJ.
- g[ nj ha;nj hdWk;XL j z Lfi sj ;j i uapy;gl utpl hky;C dW ku' fS l d;nrhj J f; fl | ntz Lk;myyJ fthj J braa ntz Lk;
- gUtki Hffhyk; bj hl ' fpat[ d/ C dW ku' fspd; fpi sfi sf; fthj J braJ/ <uggj k; Tltj i dj; j thj J Nhpabtsprk; edwhf CLUt[hW braa ntz Lk; , j dhy/ , i yneha\WtJ Fi wa[;

**, urhad Ki w**

fHfz | fl Lgghl L Ki wfs py;Vj htJ xdi wg;gpdgwwyhk;

- xU rpy gUtki Hfs; fpi l j j gpwF/ 0.2 rj fhggh; Mfrrp Fnshi uL kUei j f; bfhz L (xU brofF 5 Kj y;10 ypl | hfs; t[ j k) vyyhf;bfhofi sa[;45 – 50 br. kP Rwwstpy;edF ei da[;go Cww ntz Lk; nkYk/ xU rj nghhnl hfyi ti af; bfhoapd;nky;bj spfft[; , J nghdW , uz L khj ' fs;fHj J klz Lk;xU Ki w ei dj J k/ bj spj J k;bfhLfft[; gUtki H e[ z | hy; \ dwhtj Ki w ei dj J f; bfhLffyhk;

**(myyJ)**

- xU rpy gUtki Hfs; fpi l j j gpwF 0.3 rj bghl | hrpak;gh! nghndl ;kUei j xU bfhofF 5 – 10 ypl | hfs; t[ j k; vyyhf; bfhofS k; ei da[go Cww ntz Lk; nkYk;0.3 rj bghl | hrpak;gh! nghndl bfhz L bj spfft[; , J nghdW , uz L khj ' fs; fHj J (Mf! | ; - brgl kgh) klz Lk; xU Ki w ei dj J k/ bj spj J k; bfhLfft[; gUt fhy ki H e[ z | hy/ \ dwhtJ Ki w ei dj J f;bfhLffyhk;

**(myyJ)**

- xU rpy gUtki Hfs; fpi l ffg; bgww gpwF 0.125 rj bkl j yhf! pd; bkdnfhbrg; kUej j 5 Kj y; 10 ypl l hfs; tñ k; vyyhf; bfhofS fFk; edF ei da[go Cww ntz Lk; nkYk; 0.125 rj bkl j yhf! pd; bkdnfhbrg; bfhz L bj spffftk; kłz Lk; xUKi wMf! j; - brgl kgh; khj ' fs; py; ei dj j k; bj sñ j k; bfhlffftk;

**(myyJ)**

- gUtki H bj hl ' fpat[ d; (nk - \$^d)/ oi unfhbl hkh Qhhrpahdk; vdw g" rhz c ałpi a xU bfhoff 50 fphk; mst[(oi unfhbl hkh Qhhrpahdk; 10<sup>10</sup> fhyz pfs; cz l hFk; myF) bfhoapd; mofghfj j j r; Rwwp , l ntz Lk; 0.3 rj bghl l hrpak; gh! nghndl; myyJ xU rj nghhnl h fyi t bfhz L bj spffftk; , uz L khj ' fs; fHj j (Mf! j; - brgl kgh) oi unfhbl hkh , l l/ xU rj nghl nl h fyi t myyJ 0.3 rj bghl l hrpak; gh! nghndl ; bj spffftk;

**bghyY neha; (gwi tf; fz ; neha)**

, ej nehadJ g" rhz j j hy; (bfhypl nl hoi ufk; fps; nah! nghhpaha! ) tpi stpffggLfwJ. , ej nehapi d tz odhy; tpi stpffggLk; bghyY (btwwpl bghhp)- tpyUe; j/ neha; j hffgg l kpsF kdps; py; , UfFk; tphpt[bfhz L gphj j wpayhk; gUt ki Hapd; , Wj papy; , wneha; nj hdWfwJ. Mukgj j py; j hffgg l kz pfs; gGgg[ epw FHpfgg l gi li af; fhz gpfFk; nkYk; mi tfS i la tshrrp FdWfwJ. gpwgl l fhyj j py/ khWgl l tz z j j py; rluhf mj pphj j kz pfs; FWFFthl oy; tphpt[ fhz ggLk; , Wj papy; kz pfs; fWgghg khwp cyhe; j t pLk; nkYk/ , ej g; g" rhz k; , i yapy; btS j j tps; kg[ d; Toa nfhz k; Kj y; xG' fww gGgg[ epw ti sa' fi s tpi stpfffwJ. xU rj nghhnl h fyi t myyJ 0.1 rj fhbgd l rpk; + bkdnfhbrg; fyi ti s bj sñ j , ej nehi af; fl LggLj j yhk;

**ruk; bfhl Lj y;**

ruk; bfhl Lj y/ FIF kwWk; , Lffp nghdw cahej ki yggFj pfs; py/ Fwpgghf gddpa(h; - 1 nghdw , u' fi sj; j hffk; nehahFk; , J g(ffs; kwWk; ruk; i tffk; fhyfl j ' fs; py; KdgUt fhyki H j hkj pffk; bghGJ bfhypl nl hoi ufk; vdw g" rhz j j hy; VwgLfwJ. , j j i fa ru' fs; xU ghy; kyUffg; gj pyhf bgz ghy; kyi uj ; nj hwWt pfffwJ. Kfuej r; nrhfi f Fi wthy; mj pfggoahd ru' fs; bfhl Lj y; el fFk; Kd; Tlona xU rj nghhnl h fyi t myyJ 0.1 rj fhbgz l rpk; + bkdnfhbrg; kUej j j ;



bj s; j Jk/ khhr; 3 - tJ thuj j p; pUe; J bfhofF eh; gharrpaK/ ruk; bfhl Lj i yf;  
Fi wffyhk;

### **tshrrpFdW neha;**

i tu! ; vdw nehaffpUkpahy; VwgLk; , ej nehahdJ nfushtpy; fz q )h/  
fhrhpfhL/ nfhHpfnfhL/ taehL kwWk; , Lffp khtl j j pYss ghf' fs; kwWk;  
fhehl fhtpYss FIF/ Qrd; kwWk; cjjh; fddl h khtl j ' fspYk;  
fz l w; aggl LssJ. , ej neha; j hffgg l } bfhofsp; d; , i lgg l } fq ffs; rpwj hfj ;  
bj dgLfwJ. , i yfs; rpwj hftk; totkwWf; FWfyhftk; fhz yhk;  
nkYk; , i yfs; , wF nghdWk/ RU' fpaK; nj hdWk; gRi k epwk; , Hej gSspfs; kwWk;  
nfhLfS k; , i yfsp; d; kU nj hdWk; ghj pffgg l } bfhofsp; d; kfNYk; rUhf; Fi wfwJ.

btsshj nj ky; i tu! ; kwWk; ghl dh i tu! ; , ej nehi a tpi stpffpdwd.  
mj pfkhf , ej i tu! ; neha; j hffgg l } Frrpfs; \ ykhfg; gut f; pdwJ. , ej nehi af; fH;  
T wpaS s ghpe; j i ufi sg; gpdgwwpf; fl LggLj j yhk;

- rhFgofF neha; j hffhj kwWk; Mnuhffpakhd el t [Frrpfs; c gnahfj j y;
- xG' fhff; fz fhz p j j y; kwWk; neha; j hffgg l } brofi s mggfwggLj j p xHj j y;
- 0.05 rj i l bkbj hnal; g(rpp; bfhyyp; aj ; bj s; j J i tu! ; neha; guggk;  
g(rpp, d' fi s mHj j y;

### **gri rgg(neha;(gpynyho neha)**

i gnl hgpah! khtpdhy; tpi stpffggLk; , ej nehahdJ nfushtpy; taehL kwWk;  
nfhHpfnfhL khtl j } fsp; d; ghf' fsp; y; fz l w; aggl LssJ. , ej nehap; d; j hfFj YfF  
c l gLj j ggl L ru' fs; khWgl } nj hwwj i j f; fhz gpfFk; xU rpy g{ bkhl Lffs;  
FWfpa , i yfs; nghdw mi kggfshf cUkhWk; , jji fa khWgl } ru' fs/  
g{ bkhl LffS fFg; gj pyhf , i y mi kggfi sf; fhz g; j J gpynyho nehap; d;  
mwpFwpi s btsggLj j f; pwJ. Kj p; hej epi yapy; , i yfs; rpwj hftk/ gRi k epwk;  
gpsp; he; Jk/ , i lgg l } fq ffs; Fi weJk; fhz ggLk; ghj pffgg l } gh' fs; fhafFk;  
gffthl Lf; Frrpfs; Edpbfhj j neha; nghy; j ; (Witches Broom) nj hwwj i j f; bfhLffk;  
fodkhfg; ghj pffgg l } brof; sp; d; ruk; KGtJk/ rpwpa fpi sfshf khwwggL/ bfhof; s;  
gRi k epwk; gpsp; he; Jk; fhz ggLk; , jji fa neha; j hffgg l } bfho/ 2 Kj y; 3 tUl' fsp; y;  
gadwwj hf; k; , J nghdW nehaf; w bfhofi s/ nkYk; neha; guthky; , Uff/ c l nd  
mHpf; fntz Lk;

## bkJ eypt [(thly;neha)

bkJ thly; myyJ eypt[ kpsfpy; xU Kffpakhd nehahFk; , i yfs;  
k" rshFjy/ c j phj y; kwWk; nkynehffp fhaj y; Mfpai t broapd; nkwguggpy;  
fhz ggLk;nehapd;mwpFwpsfhFk; ghj pffggll bfhofa/ j htµ xl LZ z p E)wgGffspsd;  
j hfFj yhy; ntWgl } nthrrpi j i t btsppfLj j fµwJ. neha[ d; bfhofspd; , i yfs;  
k" rshFk; , J kz z pd; <uggj f; Fi wt[ d; xj j , UfFk; nk - \$^d; khj ' fspy;  
bj dnkwFg; gUtki H bj hl ' fpat[ d/ xU rpy ghj pffggll bfhofS; klz Lk; g[ pa  
j sphfi s / , i yfi s bfhlFfFk; , UggpDk; nehapd; mwpFwps; gUtki H epdwgwF  
klz Lk; mLjj gUt' fspy; njhdWk; nkYk/ nehaž } bfhofS; ehsl tpy;  
mi tfS i la thpaj j di k kwWk; c wgg j gj j µwi d , Hffpdwd. ghj pffggll bfhofS/  
cz t[ c wp" Rk; nti u , HeJ broapd; nkwGFj pfspy; c ss nehapd; mwpFwpsi s  
btspggll j fµdwd. nehaž } bfhoapd; nth; mi kgg[ i eeJ gž ; nghyf; fhlrpmspffk;  
kwWk; nthpy; j htµ xl LZ z p E)wgGffs; j hffp cz } hfFk; KorRfs; fhz ggLk; , J  
tpi utpy; nth; mGfyhf khwptLk; E)wgGffs; kwWk; g(" rhz k; (i gl nl hg; nj huh  
nfki rrp) nrhenj h myyJ j dij nj h cz t[ c wp" Rk; nti ug; ghj pffµwJ. Mi fahy;  
g(" rhz f; bfhyyp kwWk; E)wgGfbfhyyp nrhj j fHfz } thW , ej nehi af;  
fl LggLj j j y; kpf t k; , dwpai kahj J.

- fLi kahf ghj pffggll bfhofi s mfwwp mHj j y;
- el t[braatšs FHpfspy; 0.1 rj fhngghryghd; Cwwpel ntz Lk;
- g[ fapl } myyJ Nhpa btggk; bfhz L \ } k; braj ehww' fhy; fyi t bfhz L  
cz } hffpa E)wgG j hffggll hj nth; tpl } Frrpfi s taypy; el t[ F c gnahpff  
ntz Lk;
- gUtfhy ki H bj hl ' fpat[ d; bfho xdWfF 0.2 rj fhggh; Mf! pFnshi uL  
myyJ 0.2 rj bghl } hrpak; gh! nghndl; myyJ 0.125 rj bkl } yhfry; -  
bkdnfhbrg; kUei j broapd; mogghfk; ei da kgo , l ntz Lk;
- E)wgG btFthf ghj j j , l ' fspy/ neha; vj phgg[ j µwDi la "bgshz kp"  
nghdw , uf' fi sf; bfhz L el yhk; bghnrhdpah fpsHLnl hanghhpah myyJ  
oi unfhbl hkh Qhrpahdk; caphi a xU brofF 50 fµhk; t j k/  
tUl j j µwF , UKi w (Vguy; - nk kwWk; brgl kgh; - mfnl hgh) , l ntz Lk;  
Rz z hkgg; bghoa[ d; nrheJ j ahppffggll ngrpyy! ; khbrud! ; vDk; ghfOhpay;  
Ez q api u bfhoapd; mogghfj j py; 10 fµhk; el t[ braak; nghJ myyJ  
gUtki HfF Kdg[ , l ntz Lk; Rz z hkgg; bghoa[ d; nrheJ j ahppffggll

ngripy! ;khbrud! ;vDk;ghf0hpay;Ez q api u bfhoapd;mogghgj j py;10 fpuhk;  
el t[braak;ngH myyJ gUtKi HfF Kdg[, I ntz Lk;

E)wgGf; bfhyypi a , Lk; bghGJ/ bfhoapd; nthmi kgg[ ghj pffggI hj ti fapy/  
kz j z bkJ thf fpswp E)wgGf; bfhyypi a rluhf , lL. kz ;bfhz L \I ntz Lk;  
kz z py;ngH khd mst[<uggj k; c ssj h vd c Wj p braJ bfhs ntz Lk; nehapd;  
Mukg epi yapyna nehag;guhkhpgg[Ki wfi s nkwbfhss ntz Lk;

**g(rppfs;**

**bghyY tz L**

bghyY tz L kpsfpy;mj pfggoahd ghj rgi g VwgLj ;Jk;g(rppahFk; , J rkbtsp  
kwWk;300 kPl UfFj ;j hH;thd ki yggFj papy;mj pfk;nrj j i j VwgLj ;J fpwJ. Kj thej /  
tshrrp mi lej g(ffs; Vwj j hH 2.5 kpkP x 1.5 kpkP mstss xU rpwpa fUgg[ epw  
tz L. , j d; j i y kwWk; bjhz i lggFj p k" rs; fyej gGgg[ epwKi laj hftk/  
Kd; , wFfs; fWgg[epwKi laj hftk; , UfFk; edF tshej gGffs;5 kpkP eSKss  
ghy;epw btsi s epwj j py; , UfFk; tshrrp mi lej tz Lfs/ , sk; , i yfs;kwWk;  
ru' fi s cz L nrj k;VwgLj ;Jk; Bgz ; tz Lfs; , sk; ru' fs; kwWk; kz pfs; kPl  
Kl i l fi s , Lfpdwd. , sk; tz Lfs/ ru' fs; kwWk; kz pfi sj; Ji sj ;J  
csnsaßs j pRffi s c lbfhsfpdwd. , j dhy; j hffggI l ru' fs; kwWk; kz pfs;  
fWgghf khwp rpi j ti l fpdwd. , ej g(rppapd; j hfFj y/ epHy; gFj pfs py; brgl kgh; -  
mfnl hgh; khj ' fspy; mj pfkhfj ; bj dgLk; nj hl l j j py; epHi y rhgLj ;J ypd; \yk;  
taypy;g(rppfs pd;vz z pfi fi af;Fi wffyhk; 0.05 rj Fi dygh! ;\$^d;- \$^i y kwWk;  
brgl kgh;- mfnl hgh;khj j j pYk;myyJ 0.05 rj Fapdhygh! ;\$^i y khj j j pYk;kwWk;0.5  
rj eknfhyL (ntkg[ j Gtpa g(rppbfhyyp) Mf! lL. brgl kgh/ mfnl hgh;  
khj ' fspy; , i yfspd;moggFj p kwWk;ru' fspy;edwhfggLkgo moff ntz Lk;

**FUj ;J i sgghd;**

, ej g(rppfs; , sk; kpsFj ; nj hl l ' fspy; c ss brofi s fLi kahfj ;  
j hfFfpdwd. j ha; meJg; g(rpp 10 - 15 br.kPl mfy , wfi fi af; bfhz lJ.  
Kd; , wfi ffs;k" rs;epwk;kwWk;gpd; , wfi ffs;rhkgy;epwKi lad. gGffs; , sk;  
Edgj ; j z Lfi sj ; Ji sj ;J mj d; csns c ss j pRffi s cz q k; , j dhy;  
ghj pffggI l j z Lfs;fWgghf khwp rpi j ti l fpdwd. KGtJk; edF tshej gGffs;12  
- 15 kpkP eSKss rhkgy; fyej gri r epwk; bfhz l d. g[pa j z Lfs; mLj j Lj ;Jj ;

j hf fggLkbghGJ/ bfhoapd; tshrrp ghj pffggLfwJ. ri j ggwWss j z Lfs; mj pfk;  
c s s bghGJ/ , ej g; grrpapd; j hfFj y; mj pfk hf , UFFk; , ej g; grrpapd; j hfFj y;  
\$^i y Kj y; mfnl hgh; ti u mj pfk hff; fhz ggLk; , ej grrpapd; j hfFj i yf;  
fl LggLj j 0.05 rj Fi dygh! ; xU khj , i l bts papy; (\$^i y Kj y; mfnl hgh;  
ti u) , sk; Edj j z Lfspd; kU bj spff ntz Lk;

**, i yRUI Lg;ngd;**

, i ygn gdfspd; j hfFj y; cahej ki yfs py; Fwggghf , sk; bfhofspYk/ rk  
bts p ehww' fhypYk; k pft k; fLi kahf , UFFk; tshrrpai lej grrpfs; fWggghft k; 2.5  
– 3.0 kp k p e s Ki l aj hf , UFFk; gGffs; kwWk; Tl Lg; gGffs; ghypd; btsi s epwk;  
bfhz } i t. , i yg; ngdfs; , i yfi s cz gj hy/ , i y t p s k g f s; fHnehffpa k;  
c snehffpa k; RUz L , i y Ez papy; KorRfi s tpi st pffpwJ. gpdg[ j hfFj y;  
mi lej , i yfs; nrj ki lej c UkhWfpdwd. fLi kahd j hfFj ypd; nghJ/ , sk;  
bfhofspd; tshrrpa k/ ehww' fhypYss Frrpfs k; ghj pffggLk; taypy; el l , sk;  
brofs; kwWk; ehww' fhypy; Frrpfs p y Ue; J/ g[ pa , sej sph; nj hdWknghJ 0.05 rj  
i l bknj hnal ; kUej j bj spff ntz Lk;

**brj py;grrpfs;**

, i t (Mussel scale & Coconut scale) c aukhd ki yggFj papy; c s s k p s Ff;  
bfhofFk; ehww' fhypy; c s s gi Ha Frrpfs fFk; mj pfkhd n fL tpi st pffpdwd. 1  
kp k p e s Kk; t p l Kk; bfhz l , ej grrpfs; ml hej gGgg[ kwWk; k" rs; fyej  
gGgg[epwj j pYk; fhz ggLk; brj py;grrpfs; efuhJ. j z L/ , i y kwWk; kz p ghf' f s py;  
xnu , l j j py; j p l nghdW fhz ggLk; mi t broapd; rhwi w c wp" r p bts pwp k" rs;  
epwj i j j ; nj hwWtj j r; broi a thli t f f p w J. fLi kahd j hfFj Yff c l g l h y;  
bfhoapd; ghj pffgg l l ghf' fs; fhae; J t p Lk; , ej g; grrpfs pd; j hfFj y; gUt ki HfFg;  
gpdDk; nfhi l f; fhy' f s p Yk; mj pfk hf , UFFk;

j hfFj Yff l g l l fpi s fi s btl o mHj j t p l ntz Lk; ghj pffgg l l bfhofspy;  
0.1 rj i l bknj hnal ; kUej j 21 ehl fs; , i l l bts papy; bj spggj d; \ yk; KGi kahff;  
fl LggLj j yhk; grrpapd; j hfFj ypd; Mukg epi yamyna fl Lggghl L Ki s fi s  
Mukgpff ntz Lk; ehww' fhypy; 0.5 rj ntgbgz bz a; myyJ 0.3 % el knfhyL myyJ  
3 rj k l d; v z b z a; nuhrpd; bj spj j f; fl LggLj j yhk;

**, j u g(r r p f s;**

, i y c z q k; f k g s p g g(r r p f s; , s' b f h o f s p d; , i y k w W k; r u' f i s j ; j h f f p g;  
g h j p f f p d w d. , j i d f; f l L g g L j j 0.05 r j F i d y g h! ; k U e i j b j s p f f t k;  
e h w w' f h y p y; N i u g g(r r p f f h h k p l \$; k w W k; m R t p d p g; g(r r p f s; , s e j z L f i s j ; j h f f p n f L  
t p i s t p f f p d w d. , t w i w 0.05 r j i l b k n j h n a l; k U e i j j ; b j s p j J f; f l L g g L j j y h k;  
n t h p y; N i u g g(r r p a p d; j h f F j i y f; f l L g g L j j / 0.075 r j F n s h h; i g h p g h! ; k U e i j e d F  
n t h; e i d a k; g o (5 y p l l h; t l j k) C w w n t z L k; , J i g n k h g n j h u h k w W k; E} w g G  
j h f F j i y a k; f l L g g L j j c j t f p w J.

**, a w i f n t s h z i k**

, a w i f t p t r h a j j p d; n f h l g h L f s; k w W k; b r a K i w f i s g; g p d g w w p k p s F r h F g o  
b r a t j w f h d t H p K i w f s; j a h h p f f g g l L s s d. , e j t H p K i w f i s t p t r h a p f s;  
f i l g p j j h y; e t l d t p t r h a j j p y; (, u r h a d c u k; k w W k; g(r r p k U e J c g n a h f j J  
f p i l f f f; T o a m n j t p i s r r y; t p t r h a k; b j h l' f p r p y t U l' f S f F s; f p i l f F k; , J  
k z ; t s j i j m j p f h p g g J l d; R w W g g l v N H y; r k e p i y a k; g h J f h f f p w J.

**khWk;j p l l k;**

r h d w s p g g[ , a w i f t H p k p s F c w g j j p f f h f / g a p u h d J F i w e j J 18  
k h j' f s; , a w i f t p t r h a K i s a p y; g u h k h p f f g g l o U f f n t z L k; m j h t J g l p a  
n j h l l j j p y p U e J t U K; K j y; k p s F g a p i u / , a w i f K i w a p y; c w g j j p a h f f p a j h f  
t p w g i d b r a a y h k; (k f N y; 3- t J t U l j j p y p U e J b j h l' F t J j w n g h J s s  
n j h l l j j j , a w i f t p t r h a k h f k h w W t j w F / k h W k; f h y j i j 36 k h j' f s h f g y y h z L  
g a p h f S f F e p h z a j j J s s d h; j w b g h G J s s n j h l l j j j f l e j r p y  
t U l' f s h f , u r h a d c u k; k w W k; g(r r p f; b f h s y p k U e J b j s p f f h k y; t p t r h a k; b r a J  
t e j h y / , e j k h W k; f h y j i j j s h j j , a Y k; , j w f h d r h p a h d g; g j p n t L f i s g; g u h k h j j  
r h d w s p g g[ e p W t d j j p w F r k h g g p f f n t z L k;

k p s i f j d p a h d g a p u h f r h F g o b r a j h y / k p s F r h F g o b r a a k; v y y h  
g F j p f i s a k; , a w i f t p t r h a k h f k h w w , a Y k; M d h y; k p s i f f y g g[ g a p h; K i w a p y;  
r h F g o b r a a k n g h J n j h l l j j p Y s s v y y h g a p h f i s a k; , a w i f t p t r h a K i w a p y n a  
g u h k h p f f n t z L k; t p t r h a p f s; j k J n j h l l j j p d; x U g F j p i a , a w i f t p t r h a j j p w F  
k h w w j ; j i l a p y i y b a d w h Y k; T I / n j h l l j j p d; v y y h g; g F j p f i s a k; , a w i f  
t p t r h a j j p w F k h w W t J e y y J. K p s i f f y g g[ g a p u h f b j d i d / g h f F / f h g g p / u g g h;  
n g h d w n j h l l' f s p y; r h F g o b r a a k n g h J g z i z f; f H p t f s; k w W k; g a p h f f H p t f i s

gadgLjjp fhkng! |; cz lhfFtjd; \yk; kWRHwrp braayhk; kz; tsjijg;  
bgUffTj wfhf/ kpsi f CLgapuhf gRej hH; cuk; kwWk; mtif; FLkg gaphfSld;  
rhFgo braayhk; , awi f tptrha Ki wapy; gukhpf fggLk; njhljjjr; Rwwp  
ghpeJi uffggll mfyjjpy; gaph; tpyF gFjp VwgLjj ntz Lk; , jdhy; gffjJ  
njhljjjpyUeJ khR gLtij jthffyhk; rpw tptrhpfspd; kpsF njhljjjpd;  
btsppgw gFjp KGtjYk; tpyF ntyp mi kff ntz Lk; , jji fa gaph; tpyF  
gFj papyUeJ fpi lffk; tpi sbghUifs; , awi f tptrha Ki wahy; cwgj j p braj J  
myy. rhpthd gFj pfs; gffjJ njhljjjpyUeJ eh; toahkYk/ kUeJ bj spfFkngJ  
fhwwpy; moj J guthkYk; , Uff Kd; vrrhpfj fel tofi ffs; nkwpbfhss ntz Lk;

**guhkhgg]braKi wfs;**

epyjjpd; j di k kwWk; rhj h# z epi yi abghUj J eyy kfNy; j uf; Toa kwWk;  
g(rppfs/ nehafs; kwWk; E)wgGffS fF vj phgg] j pvd; myyJ j h' fp tsUk; j pvd;  
bfhz | , uf' fi s nj hebj Lff ntz Lk; , jji fa , uf' fs; ghukghpakhf gaphl L  
tUk; kwWk; , awi f Ki wapy; cwgj j p braj j hf , UggJ edW. gaphffHpt ffs; kwWk;  
gz i z f; fHpt ffs; sg; (gRwj hH; / gaph; fHpt ffs/ gwfs/ khL Lrrhz ffi ury/ nfHhp;  
fHpt ffs; Kj ypad) gadgLjjp fhkng! |/ kz gG cuk; cz lhfFtjd; \ykhf  
kWRHwrp braJ kz z pd; tsjij mj pfstpy; epi yeWjj , aYk; brawi f Ki wapy;  
cwgj j p braj , urhad cu' fs/ g(rppf; bfhyypfs; kwWk; g" rhz f; bfhyypfi s  
cgnahpffff; TlhJ. bfho xdWFF 5 – 10 fnyh bj hG c uj J l d/ 5 – 10 fnyh kz gG  
cuk; / , i y fhkng! | j l bfhoapd; tai j g; bghWj J , l ntz Lk; kz ;  
ghprhj i dapd; moggi l apy; Rz z hkg[ / nl hyi kl / uhf; gh! ngl ; / vYkg[ cuk; kwWk;  
kurrhkgy y , l l / kz z pWF nj i tahd kz prrj J kwWk; rhkgy; rj j pi d < L braayhk;  
rpwj st[ nj i tggLk; \y' fs; Fi wagh l hy; kfNy; Fi wak; vdwhy/ rhdwj H;  
epWtdj j pd; ghpeJi uggo j dpk' fs; / , urhad rpwj J ffs; kz z py; , l yhk; myyJ  
bj spffyhk; nkYk; bfho xdWFF xU fnyh ntggk; gZ z hff kwWk; 2.5 fnyh tj k;  
bj di d eh; fHpt[ fhkng! |; kwWk; Ez q aph; cu' fshd mnrh! i ghpyyk; kwWk;  
gh! ngl ; brhYgpi yrp' ; ghfOhpah nghdwi t , Ltj hYk; kz z pd; tsk; bgUfp kfNy;  
TLk;

c ahpdg; g(rppf; bfhyypfs/ c ahpdf; fl LggHl L fhuz pfs; kwWk; gaph; Rfhj huk;  
nghdwi tfi s gpdgwWj y; , awi f ntshz i kapy; g(rpp kwWk; neha; eht; hfj j pd;  
Kffpa j pl l' fshFk; bghyY tz L kwWk; , i yrRUI L g(rppfi sf; fl LggLj j 0.6 rj  
elk; nfhyL kUei j 21 ehl fs; , i l bts papy; \$^i y Kj y; mfnl hgh; ti u bj sj j epHy;

rhghL braa ntz Lk; brj py;g(rppfi sf;fl LggLjj fLi kahf ghj pffggll fpi sfi s  
mfwww0.6 rj elk;nfhyL myyJ kld;vz bz a;nuhrpd;bj spff ghpe;Ji uffggLfwwJ.

kpsfpy; mojjz L mGfy; nehi af; fl LggLjj/ oi unfhbl hkh myyJ  
Nnl hnkhd! ;nghdw c ahpdf;fl LggghL fhuz pfi s , l yhk; g(" rhz bghy;Y neha;  
kwWk; , ju , i yfs;py; nj hdWk; nehafi sf; fl LggLjj/ rhdwvj H; eph;thfjj pd;  
ghpe;Ji uggo xU rj nghhnlh fyi ti s nji tggll hy; bj spff yhk; (mj htJ xU  
tUljj wF xU bQfnl UfF 8 fpyh ti u j hkpuk; mDkj pffggLfwwJ). j ukhd  
ntggkgz z hfi f bghrnrhdpah fipshknlh! nghhpah vdw c ahpdf; fl LggghL  
fhuz pa[ d; nrhj ; , l L E)wgGffs; kwWk; mJbfhz L tUk; bkJ thl y; nehi aa[;  
fl LggLjj yhk;

### **rhdwsagg[**

rhdwvjH; kwWk; nygpy' ; brayfi s , U ntWgl l m' fffhpf fggll epWtd' fs;  
brafpdwd. rW kwWk; FWe;py tptrhapfS fF c j t[; ti fapy; , ej pa murh' fk;  
APEDA kwWk;! i g! ; ngghL m' fffhuk;bgww rhdwsagg[epWtd' fi s epWtp , awi f  
ntshz i k bghUI fspd; c wjj j pff rhdwvj Hfs; bfhlffpdwd.  
rhdwHgg[epWtd' fshy; epakpffggll fz fhz pggshfs/ guhkhgg[gj pntLfs; kwWk;  
xG' fhd neuo fz fhz pgg[ \yk; gz i z apd; nti ygghLfi s fz fhz pffpdwdh;  
Taypd; ti ugi k/ taypd; tuyhW/ bray;gj pntL/ , Lgj pntL/ btspall gj pntL/ kfNy;  
gj pntL/ nrkpgg[gj pntL/ g(rppffl LggghL gj pntL/ bghUI fs; vLj ;rbry;Yk; gj pntL/  
fUtpfs; Rjj k; braj gj pntL nghdw tptu' fi s tptrhapfs; gj pt[braa ntz Lk;  
rhj huz Ki w kwWk; , awi f tptrha Ki wapy;gaphfi s rhFgo braa[;nghJ rhdwvj H;  
bgWtj wfhd nj hl l j j py; epfGk; vyyh brayfi sa[; gj pt[braa ntz Lk; g(nfhs  
mi kggpy; xnunghy; c wjj j p braa[; c wjj j pahshfs; kwWk; gj ggLj ;JnthhfS i l a  
epWtggll FGtpwF FG rhdwsagg[ ;j pl l ' fS k;c ssd.

### **mWti l kwWk;mWti lggpdrhh;guhkhggfS;**

j kpHehl oy; kpsF nk - \$^d; khj ' fs;py;g(fFk; kpsF/ g( gj j j py;Ue;J 6 Kj y;8  
khj ' fs;py;mWti l fFj ;j ahuhfpdwJ. bghJ thd mWti l f;fhyk;etkgh;Kj y;\$dthp  
(rkbtsp)/ \$dthp Kj y;khhr;(ki ygpgFj p). Ruj j py;Xhpuz L fz pfs;gufhrkhd Mu" R  
epwj gj wF khWk; bghKJ ruk;KGtJk;i f bfhz L gwppffggLfwwJ. ru' fi s mj pffkhf  
gGfftpl l hy;kz pfs;j i uapy;c j phe;J kfNi yf;Fi wj ;JtpLk;

kpsfipyUe;J gyj uggl l bghUI fs;c Uthff mi t btntW Kj phrrpepi yfsy;  
mWti l braaggLfpdwd.

<b>t. vz ;</b>	<b>bghUI fs;</b>	<b>mWti l ffhd Kj phrrpepi y</b>
1.	gj dggLj j ggl l kpsF	4 – 5 khj ' fs;
2.	c yhj j ggl l gri r kpsF	Kj phrrpfF 10 – 15 ehl fs;K dg[
3.	xypnahburpd;kwWk;vz bz a;	Kj phrrpfF 15 – 20 ehl fs;K dg[
4.	kpsF	ruj j py;XhpU kz pfs;Mu' fsipyUe;J rptgghf khWk;epi yapy;
5.	kpsF bgho	KGtJk;Kj phrrpai l ej epi yapy;
6.	btsi s kpsF	KGtJk gGj j epi yapy;

### **mWti l gpdrrh;brayKi wfs;**

kpsfipy; mWti l gpdrrh; brayKi wapy; gpd;Uk; brayfi sf;  
bfhz LssJ. , jji fa brayKi wapdnghJ kpsfipd; juk; Fi wahj thW  
ghhj ;Jfbfhss ntz Lk;

### **rukoj j y;**

kpsF ruj j ipyUe;J kz pfi sg;ghhj bj LFFk; , aej puk;kz pfF 50 Kj y;250 fpyh  
ti u ghhj bj LFFk;j pd;c ssJ.

### **epwk;khwr;braj y;**

kpsfipd;j uj j c ahj j mWti l braj kpsi f Ji sapl l ghj j ruj j py; , l L  
mtwi wbfhj pffk;elhy;xU epkl k;\ Hfi tj ;J gpdg[c yhj j ntz Lk; , j d;  
gaphfshtd

- kpsFfs;rluhd fWgg[epwj i j mi l fipdwd.
- , J Ez q aphi a mHpf'fipwJ.
- kpsF 3 – 4 ehl fsy;c yhe;J tpLfipdwJ.

### **cyui tj j y;**

mWti l braa[k;ngj 65 Kj y;70 rj k; , Uffk;kpsF c yhj ;k;ngj 8 Kj y;10  
rj k; , UffpwJ. ruj j ipyUe;J ghhj bj Lffgg l kz pfs; rpbkz l ;j i uapy;3 – 5 ehl fs;



c y h j j p m j d; < u g g j k; 10 r j k h f f n t z L k; k p s f p d; < u g g j k; 12 r j j j p w F m j p f k h f , U e j h y; m i t g ( " r h z j h f F j S f F c s s h f p c g n a h f k w w j h f p t p L k; e y y j u k h d k p s i f g; b g w m i t f i s r p k z l ; j i u / \ ' f p y; g h a; / P V C r l o y; , l L 4 K j y; 6 e h l f s; t i u c y h j j n t z L k; , t; t h W b r a t j h y; m j d; c y h j p w d; 33 K j y; 37 r j k; t i u f p i l f f p w J.

j w n g h J s s v e j p u c y h j j p f s; k p d r h u j j h Y k / t p t r h a f; f H p t g b g h U l f i s v h g g j h Y k; , a ' F f p d w d. , t; t h W c y h j j k n g h J c y h j j p a p d; b t g g e p i y 55<sup>0</sup> b r y r p a r h f , U f f n t z L k;

**Rj j g g L j j y; k w W k; j u k g h j j y;**

r u k o j j g p d; c y u i t f f g g l l k p s f p y; J) R / f w f s / r u f f h k g [ k w W k; k z ; J f s f i s e p f F t j w F f h w w h o a [ d; b g h U j j g g l l k p s f p w f h f t o t i k j j R j j g g L j j k; , a e j p u j j p y; , l L R j j k h d k p s i f g; b g w y h k; , t; t h W R j j g g L j j p a k p s i f b t t n t W m s t p s h d r y y i l f s; b g h U j j g g l l j u k g h p f F k; , a e j p u j j p y; , l L b t t n t W m s t p s h d k p s i f g; b g w y h k; n f h H p f n f h l o y; c s s , e j p a t h r i d g; g a p h; M u h a r r p e p i y a K k; k w W k; j k p H e h L n t s h z i k g; g y f i y f f H f K k; k p s f p w f h f j u k g h p f F k; , a e j p u j j j t o t i k j j s s J.

**k p s f p d; j u ' f s; f h H b f h L f f g g l L s s d**

- j y r n r h p f h h g b y l ; ! b g r y; v f ! l u h n g h y L ( T G S E B ) ( 4.8 k p k p )
- j y r n r h p f h h g b y l ; v f ! l u h n g h y L ( T G E B ) ( 4.2 k p k p )
- j y r n r h p f h h g b y l ; ( T G ) ( 4.0 k p k p )
- k y g h h; f h h g b y l ; ( M G f p n u L 1 k w W k; 2 )
- k y g h h; m d f h h g b y l ; ( M U G f p n u L 1 k w W k; 2 )

**b t s i s k p s F**

b t s i s k p s F j a h h p g g j w F e d F K j p h e j r u ' f s; m W t i l b r a a g g l L / m t w i w r h f F g i g a p y; i t j j s h t h f f l o e h p y; 7 - 8 e h l f s; C w i t f f n t z L k; e f i u m o f f o k h w w n t z L k; 8 e h l f s; f H j j m j d; b t s i j n j h i y c h j j g p d; e h p y; R j j k; b r a j / m i j r p k z l ; j i u a p y; , l L N h p a x s p a y; c y h j j p m j d; < u g g j j i j 12 r j j j p w F b f h z L t e j g p d; r h f F g i g a p y; m i l f f n t z L k;

**bghj papLj y;**

, awi f Ki wapy; gaphl ggl l kpsi f j dphf mi lahs mli l apl L bghj papl  
ntz Lk; j uk; thhpahf ghpffggll kpsi f btntW i gfsly; bghj papl ntz Lk;  
bghj papLtj wF gadgLk; bghUl fs; RwWgglvj i j khRgLjjhj ti fapy; rhfFg; i g /  
fhfij g; i gapy; mi l fff ntz Lk; kwWk; ghyij j l d; c gnahfj i j Fi wff ntz Lk;

**nrkj j y;**

kpsfhdJ fhwwpd; <uggj j i j c wp" rtyyJ. ki Hffhyj j l d; nghJ mj pf fhwwpd;  
<uggj j j pdhy; , J g(" rhz k; kwWk; g(r rpfspdh; ghj pffggLfpwJ. nrkpgg d; Kd; kpsi f  
10 rj <uggj j j wFs; i tjj pUff ntz Lk; j uk; ghpffggll kpsi f gy mLfF bfhz l  
fhfij gi g myyJ ghyij l d; i g (cz t[j ujj pYss] myyJ rhfFgi g bfhz L  
bghj papl ntz Lk; gpdg[ kugbgl oapd; moapy; ghyij j l d; rli l thij J bghj papl l  
i gfi s xdwdgpd; xdwhfi tff ntz Lk;

, ej pa thri dg; gaphfs; Muharrp epi yak; thri dggaphfspd; mWti l gpdrhh;  
bj hHpy; Elg Tik; mi kj J mj py; Muharrp braJk/ tptrhaphs; kwWk; bj hHpy;  
epWtd' fS fF gaphrrpa[; msij J tUfpwJ.