

2.2 वन उत्पादकता

विहंगावलोकन

fo'o vks r l sryuk djustij Hkjr; ou dh mRi knrkd dkQh de gā bl rFk l Ec) fo'k; kadsfy, eq; dkjd jki .k tks l keld; r%y{; ka}kjk fy, tkrs gā dh LFki uk dsnk ku p; fur jki .k LVKd dh xqkoUk dsÅij çR; {k #i l svfrøe.k djrsgā jki .k y{; kads gkfl y djustdsfy, jki .k LVKd dh xqkoUk l sbl rF; dksudkj dj fujlur l e>kk dj fy; k tkrk gs fd fd l h Hk jki .k dk; Øe ds ihNs dh l Qyrk i ksk' kkyk LVKd dh xqkoUk gā gkykfd] jki .k gsrqLVKd dsp; u dsfy, egRo i wko{ k çtkfr; kadsekeyseadn vdkfjdh; i jkehVj fu/kfzjr gā fdurqy{; kads gkfl y djust dsfy, okāNr i kskā dh l ā; k çkr djust gsrq budk ikyu ugha gkrk gā oklro ea nsk ea ou i ksk' kkyk vkaeaNā/kbzdh i) fr fcjysgh vi ukbz tkrh gā tks vū; Fk of/kz mRi knrkd dsfy, jki .k dh cgrj LFki uk vks mPp mūkj tlfork çfr'kr çkr djust dsfy, l cl segRo i wko{ k v d gā cht; | fi jki .k LFki uk vks budsççU/k dh dcy ykx dk dcy xkSk vuqr yrs gā fQj Hk budh vi; klr vki firZdks jki .k LVKd ds mRi knu eafokū l dkj djustdsfy, , d çedk vMpu ds#i ean[k tkrk gā okfudh chtkads l æg.k] çøe.k vks Hk.Mkj.k ij vuq U/kku] vYiKkr o{k] l dVLFk çtkfr ,oa tō&bāku çtkfr; ka lgr egRo i wko{ 0; ki kfjd okfudh dh i ksk' kkyk rdudkads ekudhdj .k vks 0; ki kfjd egRo dh mRd'v fonskt ,oa nskt çtkfr; ka ds jki .k vks mudk ççU/k mRi knrkd c<k l drsgā

fo'ksk oukads nh?kZdkyhu l j {k.k vks mRi knu vko'; drk vka dks gkfl y djust dsfy, Hke vks ou l ā k/ka fo'kskdj igkfl+ka eā dk mi; Dr oSkfud ççU/k dkQh egRo i wko{ gā Hkjr l jdkj usgfjr i ru ij vf/lFlx ?k'kr fd; k gs vks çfrçU/k dk ; g fo'k; gešk Nk/v eku fy; k tkrk gStcd ou l ā k/ka ds oSkfud ççU/k ds ç'u ij eq; r% ihNs oSkfud vkpMkads vHko dsdkj .k pkj arjQ ppkz dh tkrh gā

l eL; k, ac<kus okys vuska i jkehVj kads vykok i kni h ?kVd kads eW; kadu ij vkpMkads vHko gešk fplrk ds fo'k; jsgā bu l cl sÅij bu l Hk dkj dkd ou dh mRi knrkd ij dñ çHko gkrk gā

c<Fh vkcnh dh vko'; drk vka dks ijk djust dsfy, vkcnh eaof) vks ou l ā k/ka dks vfrnksu ou vks bl dh mRi knrkd ds fuEhdj .k ds fy, mūjnk; h çedk dkjd gā bāku dk'B] pks vkfn dh ekz dksorēku l ā k/ka l sijik ughaf; k tk l drk gā rnuq kj dfr'k okudh dh çø; k dks bl dh oklrfod l e>nkh ea ykdf; ; cukus dh vko'; drk gā of/kz vk; l tu dsfy, vks/kh; ikni vk/kfzjr dfr'k okfudh ç.kyh dk fodkl vks ckd vk/kfzjr dfr'k okfudh ç.kyh; ka dk i ksk.kh; fodkl fd; k tk jgk gā bl ea dks l l usg ugha gsd Hkjr ea bl çdkj dh dñ i) fr; ka jkru dky l sKkr gā vks mlgæd; rk nh xbz gsrFk nsk Hk eafokū rjhd l s i k j Eifjd #i l s viukbz tk jgh gā fdurq bl ds ikjflLFkr dh; tō&Hksrd vks l kkt d&vkfkd igy/ka ds l unHk eabl sl e>usvks çys [kr djust dh vko'; drk gā

mRi knrkd c<kus dsfy, 0; ki kfjd mRi knu gsrq fuE ykx ofedEi k v dk fodkl] l {ke cht l k'ka vks @Dy k adk p; u vks eW; kadu] nskt rst of) djust okys cgmnas kh; o{kka ,oa çtkfr; ka ds eW; kadu dsfy, , dhdr j.kulfr vks fuEhdh ou enkvads l dkj ij Hk rRdky /; ku nsd h vko'; drk gā

vr% Hkjr; okfudh vuq U/kku ,oa f'k{k i fj'kn-dñ vuq U/kku i fj; kst ukvka}kjk uu fn'k vkaea l ex ç; kl dj jgh gs rkd i .k/kfj; ka dks fo'ksk j.kulfr dk l çko fn; k tk l dā

fi Fks kx<ftys' mūkj k [k.M½ fo'kskdj usky l hek {k'ka ea fMlyk'hek C; w/hj d h; k /p m j k½ dh vkcnh dks yxHkx LFkfud dj fn; k x; k gā fMlyk'hek C; w/hj d h; k ds cht Hk.Mkj.k dk ç/kku mnas; cht dk thoudky] vadj .k {kerk vks vst dk



ew; kadu djuk vls ijEifjd Hk.Mkj.k fof/k }kjk cht
 thoudky dks<kuk FkA cht dsvkdkfjdh; fo'kskdk
 ; Fk&yEckb] pksMkb] eks/kb] jak vkn ij çsk.k
 vfHkyf[kr fd, A Hk.Mkj.k v/; ; u dsfy, chtka dks
 rhu ueh Lrjka ; Fk 20%] 15% vls 10% ea 'ks'kr
 fd;k x;k vls 'ks'kr chtka dks pkj rkieku
 ; Fk&ijjosh d{k rkieku 15 fM-I s 10 fM-I s vls
 5 fM-I s ij Hk.Mkfjr fd;k x;k; ka Hk.Mkfjr chtkadk gj
 l lrg vdg.k ijh{k.k fd;k x;k; k vls vdg.k çfr'kr]
 vdg.k{kkerk ,oa vkst ij çsk.k vfHkyf[kr fd, A
 Hk.Mkfjr chtka l smxk, ikska ds of) iJkeVjka ij
 ekfI d çsk.k vfHkyf[kr fd, A fofHku ik=ka; Fk&tM+
 V&jk i kVhcx vls iksk'kkyk D; kfj; kaeamxk, ikskads
 fy, iksk vkst rkydk ¼ l -oh-vkbZ] iksk xqokuk
 rkydk ¼ l -D; vkbZ] vls iUk {s=Qy dh eki yh
 xbA fMlykshk C; Wjsh; k dschtadsfy, U; ure
 l j{k ueh ek=k ¼ y-, l -, e-l h-½20 çfr'kr Fk vls ; s
 çdfr eam".kdfVcl/kh; vfM+ y ga

ckfgu; k dh rhu çtkfr; ka ; Fk&ckfgu; k
 ofjxkVl] ckfgu; k i iijh; k vls ckfgu; k jhVh k
 dk vPNk pkjk eku ga ckfgu; k dh bu rhu çtkfr; ka
 dh vkcknh dk irk ykusdsfy, nu ?kVh] Vka ?kVh]
 mUkd'kh ftyk vls ushrky , oafi Fk&kx<+ou çHkxka
 eal o{k.k fd;k x;k; ka ekMkyk] fodkl uxj] dVklRFkj]
 dsh/kk] HkVokMh] Jhuxj] ou vuq U/kku l a.Fkku]
 nsjknw] el jh vls fVgjh l s ifjiDork ij Qfy; ka
 , d= dh xbA cht vkdkfjdh; iJkeVjka mnkgj.kFk&
 dy ueh Hkj] cht yEckb] cht pksMkb] cht eks/kb]
 cht jak] 100 cht Hkj] fo'k] rk çfr'kr] ueh ek=k]
 , dy Qy eachtkadh l ; k] 100 xk- cht eachtkadh
 l ; k eafofHkurk vfHkyf[kr dh xbA l Hk l kska l s
 rkschtkae85 l s95 çfr'kr rd vdg.kh; rk FkA nks
 l kskaç; d l sl Hk rhu çtkfr; kadschtkadks15 fM-I s
 ij Hk.Mkfjr fd;k x;k; k vls cht vdg.k{kkerk ea
 voufr dksn[kusdsfy, gj rhu efguseavdg.k vls
 ueh ek=k fu/kk] .k fd;k x;k; ka Hk.Mkj.k eavkb ekg ckn
 ckfgu; k ofjxkVl chtkaus92%] ckfgu; k i iijh; k
 us78% vls ckfgu; k jhVh k us68% vdg.kh; rk
 cuk, j [kA

cDI l okfyf; kuk dk"B mrdh.ku dsfy,
 cgr egroi wlcçtkfr ga pdjkrk ou çHkx vls e.My
 ou ¼mUkj[k.M½ ea cDI l okfyf; kuk dsfy,
 vkcknh l o{k.k fd;k x;k; ka fodkl @ifjiDork dh
 fofHku voLFkVkaeQykadks, d= fd;k x;k; k vls Qyka



tMh xk] pdjkrk ou ea cDI l okfyf; kuk dh vkcknh

, oachtkadsvdkfjdh; iJkeVjkadk çsk.k fy; k x;k; ka
 QYkadsfodkl , oafji Dou dh voLFkVkadk v/; ; u
 fd;k x;k; ka Qykadksfl rEj eapdjkrk ou çHkx l s
 vls uoEj eae.My ou l s, d= fd;k x;k; ka chtkadk
 fu"d"zk fd;k vls yxHkx 55&60%] cht [kkyh ik,
 x, A rkschtkaus15&20%] vdg.k fn; k vls og Hk



Miedk d{k ea cDI l okfyf; kuk dh dyea

cgr fuEu FkA pnd cht çl tr Fksbl fy, blga24 vls
 48 ?k.Vsdsfy, 0-05%] vls 1%] th, -3 eavls 24 ,oa
 48 ?k.Vsdsfy, 0-02%] ds, u-oks, eachtkadksfHkxkuk
 vls Lrj.k djuk tS s fofHku iMk pkj fn, x, A
 48 ?k.Vsdsfy, 0-05%] th, -3 mipkj dsQyLo#i
 mPp vls tYn vdg.k@chtkaeaykdj dh of) gqA
 cDI l okfyf; kuk dsdkf; d ço/ku dsfy, pdjkrk
 l s bl ds dBkj dk"B vls iUknkj dyeka dks, d=
 fd;k x;k; ka vls , u-, -, - \$vkbZch, - ds1000 ihih, e-



çR; dI dsl a kst u dsl kfk vlsj vkbZch, - ds2000 ,oa 6000 ih-ih, e- dsl kfk mipkjr fd; k x; kA

jKT; ou fohkx }kjk çkFfedhðr egRoIwL okfudh çtkfr; kA; Fkk&VfeZsy; k vtZuk] çkEcDI l hck] ikæse; k fiUukVK] VæsjUMI bñMdk] , stñMjDVk bñMdk] vkVkdkiZ ghVkj kQkbyl] l hftft; e dñefu] fiFkhl hykfc; e MYI } ghVhjksYXek , MhukQkbye] MSçftZ k fl LI j VDVkuk xñUMI] , fYçft; k çkd jk] QkbdI XykehjVv k vlsj , dñ'k; k vñij dñyQkñeZ dh iKk'kkyk yxkbZxbA {k= eacfrjki .k dsfy, rst of) djusokysvlsj /khe of) djusokysçtkfr; kadsikKkadh mi; ðr vk; qdk eW; kadu fd; k x; kA l ey] 'kh'ke] beyh] dVgy vlsj fl fj l tS h çtkfr; kausjki .kkaea 1 o'Zi gkusi kKkadsfy, vPNk çn'kZu fd; kA ; wdfyVI] taxy tyst] dVI kxk] djat vlsj vLVsy; u ccw tS h vU; çtkfr; kausijh{k.kkaea, d l kfk gh l kfk nks o'Zi gkusi kKkadsfy, vPNk çn'kZu fd; kA bl çdkj ; g fu"d'Z fudkyk tk l drk gS fd ckn okyh ikp mfYyf[kr çtkfr; kadsnksl ky dh gksusij Hh jkSi r dh tk l drh gSfdurqigysokyh ikp çtkfr; kadsçgrj of) çn'kZu vlsj mükj tlfork dsfy, , d l ky ds iKkka dsl kfk jkSi r djuk pkfg, A

mükj k[k.M cht l ks'ka l s fglikQh l kfyfl Qkfy; k dscht ,d= fd, x, vlsj fohkku çdk'ka ,oa rkieku voLFkkvka ds rgr {k= vlsj ç; ks'kkyk ea budk vdtj.k v/; ; u fd; k x; kA pdjkrk eamPp ÅpkbZi kK'kkyk eaikni mxk, x, vlsj of) fu; ædka dk mi; ksx djds okuLifrd ço/kZu v/; ; u fd, x, A



fglikQh l kfyfl Qkfy; k eaQyu

pkj QkbdI çtkfr; k ; Fkk&QkbdI jlfyftvkd k ¼hiy½ QkbdI ydkjk ¼kdm½ QkbdI çakysul l ¼jxn½ vlsj QkbdI XykehjVv ¼knyj½ ds ifjiDo , oavifjiDo Qyka dk fohkku çakbl inZ mipkj ; Fkk&tñ mipkj ,oa jkl k; fud mipkj djusdscn] mudsvdtj.k ijh{k.k dsfy, v/; ; u fd; k x; kA p; fur QkbdI çtkfr; k dscht vdtj.k ij fohkku jkl k; fud , oatñ mipkja dsçHko dh rgyuk dh xbA çjxn dsekeyseaijh rjg l sifjiDo chtkadh vi\$kk vñ'kd #i l sifjiDo chtkadh vdtj.k çgrj FkkA QkbdI jlfyftvkd k ¼hiy½ ds ekeys ea ifjiDo cht vPNs vdtjir gq vlsj tñmojd mipkjausvU; mipkja dh rgyuk eacgrj çn'kZu fd; kA QkbdI XykehjVv ¼knyj½ ea ifjiDo cht vPNsvdtjir gq rFkk xje ikuh dsl kfk mipkja usl okñke çn'kZu fd; kA

xk; ds xksj ds ?kxy ea LVñDukst uDI okfedk vlsj LVñDukst iKk'k/kye dscht kadks fHkxkuk ðe'k%88% vlsj 54% vdtj.k nss ds fy, l okñke fl) gq/kA vyx&vyx vFkok l a kst u ea ukbVst u vlsj QkñQkj l usi kKkadh of) dksegRoIwL #i l sc<k; kA VfeZsy; k phcnyk dscht kadk 7 fnu dsfy, ikuh eafHkxkuk vlsj fQj nksfnu l vñkkuk 82% vdtj.k nssdsfy, l okñke fl) gq/kA

tykbleacqkbl l sigys24 ?k.Vsdsfy, 'khr ty dsl kfk mipkjr VjkdkiZ ek'kñi; e ds/ku o{kka l s, df=r chtkausmPp vdtj.k fn; kA 80% tñ [kkn] 20% enk dks feyk dj ik= feJ.k vlsj 250 l-h-l-h vkdj dstM-vñj LoLFk iKkka dk mRi knu djrs gq ik, x, A Qjojñ&ekpZea, df=r ifjiDo o{k l s'kk[kk dye vlsj 24 ?k.Vsdsfy, 500] 1000] 1500 vlsj 2000 ih-ih, e- ds l kfk mipkj ds QyLo#i /ñedk d{k ea 14 fnu ckn dsy çjksj l jpkuk gñA 24 ?k.Vs ds fy, 400 ih-ih, e- vkbZch, - ds l kfk mipkjr tM&çjksj dyekaus 96% LoLFk iknikadk mRi knu fd; k ¼at sch-i-h-¼A



i kSk'kkyk D; kfj; kaeal kckU; chtkadh cypkbZds
ctk; cfrjki .k fof/k }kjk car chtkadk vadg .k T; knk
ik; k x; k %o'kZA xqjkr ds fofHku cht l krla l s
, df=r , df'k; k fuyksVdk vls , df'k; k ds/pw
ds chtka ij cht vadg .k v/; ; u Hh fd, x,
¼ -, Q-vkj-vkbZA , uksthl l yfVQksy; k ds chtka
ds l xg .k dsfy, ekpZ dk nll jk i [kokMk vuophyre
l e; ik; k x; kA fofHku cypkbZ i wZ mi pkjka ds l kfk
mi pkfjr tuijl i klyhdki kZ dschtkausi kSk'kkyk
volFkkvkdSrgr mRd'V vadg .k vfHkyf[kr fd; kA

vf/knsk ckr ctkfr; ka dh i kSk'kkyk, a rS kj
djusl sl æfU/kr l puk , d= djusdsmns; ds l kfkj
jkt; ou fofHkx] fgekpy cnsk }kjk i kSk'kr dh xbz
nonkj vls cak vksd i kSk'kkyk vka dk l oZk .k fd; k
x; kA nonkj vls cak vksd ds i kSk'kkyk LVKk ds
fofHku vkdkfjd; i }kehV/jkai j fopkj djrsgqA buds
{k= cñ'kZ dk eW; kadu djusdsfy, ijh{k.k LFkfr
fd, x, A nonkj ea Åph jki .k rduhdkadsekudhdj .k
dsfy, i kSk'kkyk , oa{k= ijh{k.k rS kj fd, vls i kSk'kr
fd; kA

>kj [k.M vls l ehi orh jkt; ka dh p; fur
ctkfr; kads l {ke cht l krlavls @Dyksukadh i kSk'kkyk
ea eW; kad r fd; k x; kA dsokfjuk > klyfu; kuk ds
fy, l {kerk ou l w/kZ i)fr; ka i kSk'kkyk cCU/k vls
jki .k cCU/k nksukadsfy, fodfl r dh xBA

ckdfrd i qrtZu vl Qyrk if'peh fgeky; ka
eamPp Lrjh; 'kadp{k ouka¼, fct fi UMks vls fi l h; k
fLefk; kulhZdsy{k. kaeal s, d gA mluhl oha'krknh l s
; g l eL; k oukaeavR; f/kd [kjirokj dh mi fLFkr l s
l Ec) gA pfid , syhyki shk vuska ekeyka ea i qrtZu
vl Qyrk ea ced{k Hkdedk vnk djrh gS c; kx'kkyk ea
ctkfr; kadscht vadg .k ij oZka, oav/kk&forku iknika
ds [kjirokj] g; el vls i .kZ eng ds , syhyki shk
çHkoka ij vuq U/kku fd; k x; kA ; g ik; k x; k fd
g; el dsfu{kkyrdka usey/kadg of) dks ijh rjg l s
?kvk; k vls gfl r fd; k fdUrqmPp l klnrk ij vadg .k

dksc<k; k] rFkfi [kjirokj fu{kkyrd dk l fu'pr
çHko ugra FkA l kdkZkdK l kfyXuk] focjue
uokZ e vls QuZ ¼w/kk&forku ikni½ ds i .kZ eng
fu{kkyrdka dk Hh vadg .k vls eny/kadg of) ij
fujkskd çHko Fk fdUrqmPp l klnrk ij , d ctkfr
}kjk vadg .k ea cçj .k fd; k x; kA bl vuq U/kku dk
l kjkak gSfd fo'kSk iknika ds g; el vls i .kZ eng bu
'kadp{kka ea i qrtZu vl Qyrk dsfy, mükjnk; h gS u
fd [kjirokj tS kfd vkt rd ekuk tkrk FkA

OkeZ Hkie [krh ds rgr ctkfr ds fo'kky
vachdj .k graqi)fr; kadk ctkfr fo'kSk i sst fodfl r
djusdsfy, l {e , oacgr çof/kZ iknika i kskd cCU/k
tS vls vtS df'k fof/k; ka , oa ty cCU/k ij
cgqFkkfud cka ijh{k.k fd, x, A

Oka fof/krk i kSk'kkyk rduhdka jki .k
rduhdka uk'ktho , oa jsk l eL; kvka ds cCU/k] cka
vk/kfjr m | kskavls cka mi ; ksrk ifjof/kZ mRi knka
ij jkt; cixckuh fofHkx ds 145 vf/kdkfj; ka dsfy,
cf'k{k.k vk; kSt r fd; k x; kA

rfeyukMq ds N% df'k tyok; oh; {k=ka
; Fk&mükj&if'pe {k= mükj&i wZ {k=} dkojh MYV
{k=} if'peh {k= nf{k.kh {k= rFk mPp Åpkbz, oai gkMk
{k= tks dksdoj djdsfofHku LFkkaeal kr ctkfr; ka
dk mi ; kx djdscka ekMj jki .k LFkfr fd, x, A
cEcH k cEckd] cEcH k U; wUI] cEcH k VVMK]
cEcH k cYxfj l] cEcH k cYdqv k] MBMkdsykel
fLVdVI vls MBMkdsykel LVketh ds i kSk'k cgr
ço/kZ , oa Ård l w/kZ dk mi ; kx jki .kkaeafd; k x; k
vls LFkku dsHkrj vls LFkkuadsvkj&ikj ctkfr; kads
cñ'kZ dk v/; ; u fd; k x; kA cka [krh vls cCU/k ds
fy, i)fr; kadk i sst fodfl r fd; k x; kA

cka tuunD; dh LFkku uk dsfy, ou fofHkx]
vle vls jkt; ou vuq U/kku l kFkku] bV/kuxj]
v# .kpy cnsk] djy ou vuq U/kku l kFkku] i hph vls
mükj[k.M cka vls jSk fodkl cM/Zdh ykMij ul jh
nsjknw l s31 cka ctkfr; kads90 vuqf) ; kads, d=
fd; k x; kA cka xqku m | ku dh LFkku uk dsfy, o'kZ



ou vuq U/kku l bFku] tlgkv l sckl dh 4 çtkfr; ka dsdSUMMS/ /ku x{ekadh 65 vuof) ; kaçkr dh xbA

xš ou {ks-ka ea fofHku ckl çtkfr; ka dh mi ; Þrrk dk Hkh v/ ; ; u fd; k x; kA ; g çf(kr fd; k fd cEcl k cYxfj/ dh ihyh feVVh ½xukbV½ ea vf/kdre Åpkbz Fkh tcf d cEcl k cEcl k cEcl k ykfxLi Fkl] cEcl k VVMK] cEcl k U; WUI vls; MVMKdSykel fLVdVI usdkyh ½cd kfVvd enkl½ ea vf/kdre of) dksn'kz ka

išk'kkyk i) fr; kaij çf'k(k.k vls çn'ku }kjk [kk] ckl çtkfr; kadsfy, cgnçpjkshkou rduld ea OkeZij vfhkuo ifjorū , oalo; al gk; rk l eg l nL; ka dk {kerk fuekz k djds buds 0; kifjd jki .k dks çkrl kgr fd; k x; kA išk'kkyk {ks- eaoukadscgj ckl [krh dksçkrl kgr djusdsfy, mi ; Þr df'k okfudh ekMiyakad fodkl djds išk'kkyk Hkjr eajkst xkj l tu vls l kelftd&vkfkd fodkl dsfy, xqkoukk ckl l d k/kukadk išk.kh; fodkl fd; k x; kA

nško; ki h ijh{k.kkadsfy, tšçkš kšxdh fohkx] Hkjr l jdkj dks 30 çf'r'kr l svf/kd rsy ek=k okys tVrQk ddzk vuof) ; ka ds 48-5 fd-xk- chtka vls 1]08]000 dyekadksfeykdj Dyksuh; inkfz dh vki firz dh xbA o'kz dsnšku Dyksuh; ijh{k.k] l Urfr ijh{k.k] Dyksuh; cht m | ku vls cht išk m | ku dh LFkki uk dh xbA cht rsy ek=k dk cht vdg .k ds l kfk dksz [kk l gl ævk ugha ik; k x; kA cht rsy ek=k ea fofHkurk išk'kkyk okrkoj .k ea fofHku vuof) ; kadsvdfj r iškka dh vlrjLFk vuofyu'knyrk ea fofHkurk dh višk vuof) ; ka dh vdg .k çf'r'krRi ea fofHkurk ds dkj .k FkhA

fcuk l qkjh xbZ l k/h; enkvkaea tVrQk ddzk dk çn'ku vl Ursktud ik; k x; kA l k-srhu l ky dh vk; q ij ikni us detlg mlkj tlfork vls of) dk çn'ku fd; kA dksz Hkh vuof) , d vPNsLFky eabl çtkfr dsjki .k dsryuh; of) nj vfhkyf [kr ughadj l dhA 10 çf'r'kr l sde iknika us Qyka dk mRi knu fd; k] cht mRi knu ux. ; FkA tVrQk dh vuof) ; ka mnkgj .k& , Q-vkj-vkbZМ wch&ckadw& 0306&l h&31]

, Q-vkj-vkbZМ w ch&ckadw&0306&l h&32 vls , Q-vkj-vkbZМ wch&fenuk&0306&l h&33 ea fuEu foy{k.k xqk ik, x,] mlk; fyach Qyka dh mi fLFkr] [kijnh Nky] ikyk {kr ds çf çf rjšk vls okbjy vkØe.k ds çf çf rjškA ; g n'kz k gsf d tVrQk ddzk ds Dyksuh; jki .k fcuk l qkjh xbZ l k/h; enkvka dsfy, mi ; Þr ugha

ngjknw ?kvh eank l ky dsjki .k ea 2 eh x 2 eh vlrjky us çf gDVsj vf/kd cht mRi knu fn; kA rFkfi] vlrjky dks vuofyu re cukus dsfy, ijh{k.k dk nh?kzkyhu vuof{k.k dh vko' ; drk gA

rfeyukMqds fofHku df'k tyok; oh; {ks-kaea 50 gDVsj ekMiy jki .k yxkusdsfy, 15]000 uhe vls i qe xqkoukk jki .k LVkkl yxk; A

pkj LFkks ; Fk& iMkks/vkbZ fr#usyos/h] fl okxak vls dks EcVij ea {ks- ijh{k.k LFkfi r djds l bFku }kjk fodfl r 30 ; dfy/VI Dyksuh ea 'kjhjd; , oa išk.kd išk'kkyk dk v/ ; ; u fd; k x; kA p; fur Dyksuh adsty mi ; kx {kerk dk fu/kk .k djusdsfy, dksz vkb l k/ki fo'yšk.k grq30 Dyksuh l sdr'B uews, d= fd, x, A

išk'kkyk ds nškt rst of) djus okyh cgmnašk; o{kadsew; ka lu grq>kj [k.M vls if'pe cakky eadnæ vls l ey dh çkdfrd vkcknh rFk jki .kaij l puk , d= dh xbA 30 dSUMMS/ /ku o{kadh igpku dh xbA

fd l kuka dsfy, vktfodk ds l vol j c<kus grq l kykuk Ql yka ds l kfk&l kfk o{k ?kvdka mnkE&dSokfjuk bDol hfVQksy; k] dSokfjuk >@kgrfu; kuj ehfy; k M; fic; k] VDVksuk xSUMI] ; dfy/VI çtkfr vls , yUFkl , DI Yl k vls clxckuh ?kvdkamnkE&vke] ve: n] l išk'k , oafuEcwds l kfk ikp df'k tyok; oh; {ks-ka/8 gDVsj çf {ks-½ea df'k okfudh çn'ku Hk]k.M LFkfi r fd, x, A

rfeyukMq ea pkj LFkka ; Fk& djkb dMq l hnjkbZ th; kedkMe , oadjkbody eacht dh Ql y ds #i ea vls/kh; iknika ; Fk& Mhdsyfi l gfeYVksuh , oa , Lijxl jš hekl l vls



dSokfjuk bfDol hfVQkfy; k ,oa dSokfjuk
>@kqfu; kuk rFk ; wdfyVI deYMrfyufI I ds
I kFk df" k okfudh ç. kfy; kaHh LFkfi r dh xBÅ

xlp g" k fcykj k ftyk& tkski j eadl kukads
[ks= eai ks"kr fd, x, df" k okfudh ekMly usmn?kfv
fd; k fd fttQI ek' khz kuk dk çn' k u cxcxkuh
çtkfr ds#i eal okke Fkh vls ou I @/k u çtkfr ds
#i ea dksykQk i e e ekMly h I okke FkA fu; æ. k
1/2QI y fcuk 1/2 dh rgyuk eadf" k okfudh Hkuf k. Mkaeai kni
of) mPp FkA o" k ds nksku xsgw QI y mRiknu
13-67 fdolVy çfr gDVs j vfhkyf [kr fd; k x; kA

, fEcydk vkMOfI ufyl vls ekfjak
vkMlyQjk dschp VekVj vls vkyh , xy ekehzyk
vls ekfjak vkMlyQjk ds rgr vks/kh; ikni
, UMksfQI ifudnykVkl , Lijxl jf hekl I
jkokfYQ; k I i BVkuk] vkj- VSRQkbyk vls
foFkfu; k I kEufQjk mxkdj , d df" k okfudh ekMly
fodfl r fd; k x; kA

vks/kh; ikni vkMfjr df" k okfudh ç. kkyh
fodfl r djus dsfy, fd, x, ç; kx ds vk/kj ij
I kxk&gYnh ç. kkyh egROI wZ#i I sl okke fl) gPÅ

MYcftz k fl LI w th eadf" k okfudh ç. kkyh
ea edbz dh mRi kndrk dk v/; ; u fd; k x; k ft I I s
fu" d" k fudyk fd QI y ykbu vlrjky ds fy,
60 I seh o{k dsl kFk 5 x 5 eh dh of) njih edbzQI y
dsvf/kdre mRi knu dsfy, I okke fl) gPÅ

{ks= I o k k dsckn fgeky çn sk ea i #okyk
, oadks/ vls tEeur Fk dk' ehj ea uMk , oadl Urjcsyk ea
fuEu igkMh {ks= ea 5-0 gDVs j dspkj LFkyadh i gpku
dh xBz vls esykuk vkcljh; k dsç; ksd ij h k. k
LFkfi r fd, x, A

egROI wZ df" k okfudh çtkfr; ka}kjk [kj i rokj
mRi knu usn' k z, k fd xbf; k vkfVok] ekj I , Yck/
I hfYVI vkLVfyI] ckqfu; k ofjxkVkl] ruk
fl fy, Vk vls , fycft; k pkbufl I fofHku
[kj i rokj çHktka }kjk I kykuk dkQh ek=k ea
[kj i rokj&iru eal g; kx djrh gÅ

o" k zou vuq Wku I hFku] tkgkV ea i w k k j
dsenk uewka dh , d ykbcjh LFkfi r dh tk jgh gÅ
I kr i w k k j jkT; ka l s29 ou mi & l eg fdLeka l senk
uews, d= dj fo' y s"kr fd, A

vle ea df" k QI yka ds I kFk jkbtks; e
I jkfi r Qyinkj o{kka dh chp dh QI y ds }kjk > e
Hke dk I qkj fd; k x; kA

jktLFkku dh ou enkvkadk y{k. k o. k u djus
ds fy, 89 ou jatk ds 170 ou Cykka ea
Jhxakuxj] gukux< } > u h fl dj] fcdkuj] ukxk]
ckMej] fl jkgh] tkyk vls ts yej ftyka dks doj
djds210 LFkkae aenk çkQkbykadh tkp dh xBz vls
uewsfy, A

, d ykbl heSVd v/; ; u ea , d s' k; k
fuykVdk vls VefjDI , Qkbyk us ; wdfyVI
deYMrfyufI I dh rgyuk ea yo. krk ds çfr mPp
I gu' khyrk dks n' k z, kA rFkfi] mFkyh xgjkz ea
tykQkr volFkvvka ds rgr ; wdfyVI
deYMrfyufI I us , d s' k; k fuykVdk vls
VefjDI , Qkbyk I svl k/kj. k çn' k u fd; kA

, d s' k; k fcohkd k mPp yo. krk] rki ncko
vls I w k volFkvvka dh vR; f/kd #k volFkvvka ea
tfor jgdj vls of) ds 30 efgus ckn vR; f/kd
yo. kh; dkyh enk ea i ; klr of) gkl y djds I cl s
dBk ikni fl) gPÅ

Okk okMh ftys ea fuEuhdr igkMh ea fofHku
o" k zty I p; u rduhdka dUVij [kko; ka xBksh] ckDI
[kkozvls oh&fMp½vls ikni of) viokg {kfr , oaenk
ueh Lrj ij igkMh <ykukadsçHko dk v/; ; u fd; k
x; kA dUVij [kkoZ Hkuf k. Mka ea ; wdfyVI
vkfQfI ufyl] , I - dhiefu] , d s' k; k dS/pirvls
ftftQI ek' khz kuk dk çn' k u csgrj FkA
, stMjDVk bMdk vls ckd us oh&fMp Hkuf k. Mka ea
csgrj çn' k u fd; kA dUVij [kko; ka uscmh I hek rd
viokg {kfr; kadksde fd; kA

Hkt ea LFkku uk ds 38 ekg ckn 'kqd cybz
fuEuhdr ou enk ea dkmz k ?kjQ vls I hDI
fl fy, fj I I a kstu I okke ou I @/k u pjxkgh FkA



o{k çtkfr;ka dh t&viogu {kerk ds eW;kaðu usn'kz; k fd of) t&ek=k] ok'i&I tzu nj v&S l exz t&viogu {kerk} tgka Hw ty Lrj 54 efgus dh vof/k ds Hkrj 145 l seh- ihNsgV&] ds l æU/k ea; w&syIVl #fMI usl ok&ke çn'kzu fd; ka

Nk&v ukxi& iBkj] >kj[k.M dh fuEuhdr ou enkv&dsfy, çtkfr mi; Þrrk v&S l &kkj j.kulfr fodfl r dh xbA fuEuhdj.k dh çdfr ,o&ek=k rF&k enkv&dsVl; l hfer dkj&kal sl æfU/kr dk; ka&ksl &kkj mik; 'k# djusl sigysdoj fd; k x; ka

fuEu ikni&ka&ksf&H&ku oukoj.k ea vk&e.k djrs gq ik; k x; k%

- nonkj ¼ hM 1 nonkj ½ tks ¼ khr&S. k½ % l k&k&ka&ka l kfy&uk tM&adh Li) k&ds&kj.k nonkj i&ka&ks&ej n&rk g&
- ç&at ¼D&dz k Y; w&ks&v&bd&Q&j ½ tks ¼mi & m". k&fV&U/wh; ¼%; i& s&ksj; e vk&M&ks&e/ vk&V&h&efl ; k ç&xfj l A
- l ky ¼ k&gj h; k j&M&h V&R&½ tks ¼m". k&fV&U/wh; ½% y&S V&ku&k dek&jk v&S , th&js&ve dk&W&h&t&M&M&h l A
- l ky dk ty H&f[k.M % ; i& s&ksj; e , M&huk&Q&ks&ue] foc&jue b#&ohl ul] , M&k&F&k&M& ok&f l dk , o&ys V&ku&k dek&j&ka
- ç&at dk ty H&f[k.M % f&ç&ul hfi ; k ; i&v&fy l] ç&ç&fj l y&kbl h; e] foc&jue LV&hy&ys&ve] #&cl bfy&fIV&dl] dk&s&ks&hLV&j V&S&R&Li&ek& ek&g&ks&u; k uhi sy&f&ul l , o&aj&ks&t&k ek&W& pk&j&ka

H&kr l j&dkj usf&geky; eav&LI h ds&ç&kj&E&H& ea 1000 eh- l s&A&ij g&fjr ikru ij ç&frc&U/k y&x&k fn; k g&A 'ka&ç&kk&j&h ou&ka&eg&fjr ikru ij ç&frc&U/k ds&ç&H&ko ds&ç&S&k.k ds&fy, d&ika&ea&pk&sh l LF&ky&ka&dk p; u fd; k x; k] t&ks ikru ds&fy, fof&gr F&ks&f&dl&rq&i&kru u&gh&af&d; k x; k v&S



nonkj ,o&ds&y ds&x&S&i&k&fir d&is m&Y&k&ç&k'&h ou i&H&ks



Li v&S Qj ou ds&il&frr d&is p&ki&ky] f'key&k

tg&k&ok&L&ro ean&on&kj] ds&y] Qj v&S L&ç&h ou&ka&ea&i&kru fd; k x; ka d&ika&dk p; u m&lk&j&k[k.M ds&cn&h&uk&F&k] m&lk&j&k'&h v&S p&dj&kr&k ou ç&H&ks&ka&v&S f&ge&py ç&ns&k ds&d&W&y&f'key&k v&S p&e&ç& ou ç&H&ks&ka&ea&fd; k x; ka ikni&fofo/kr&k] o{k&ka&dh of)] i&ç&t&zu Lrj y&ks&ka&dh l&kek&f&t&d&v&f&F&ç&dl f&L&F&fr v&S ik&frr v&S x&S ik&frr d&ika&al sg; w&l ,o&enk&ij v&ç&dl&M&s, d= fd, A v&ç&dl&M&ka dk fo'y&sk.k fd; k tk j&g&k g&

fo"k; oL&rq ds& rgr i&fj; k&st&uk, a

i fj; k&st&uk	o"kl ds n&ks&ku i&j&h dh xb&Z i fj; k&st&uk, a	T&kk&j&h i fj; k&st&uk, a	o"kl ds n&ks&ku i&j&h dh xb&Z ub&Z i fj; k&st&uk, a
; k&st&uk	13	25	03
ç&g&j l s l g&k; r&k ç&kl&r	13	15	04
; k&sx	26	40	07



2-2-2 ou I o/kū

dSokfjuk >@kngfu; kuk mi çtkfr fVekj fUI I dsfy, ou I o/kūud i) fr; ka fodfl r djuk

ifj;kstuk ea fofHku df"k ikjflFkfrdh; volFkfvka ds rgr dSokfjuk >@kngfu; kuk jki .kka dh LFkki uk dsfy, ou I o/kūud rduhdka dk fodkl djusij fopkj fd;k x;k gā bl ifj;kstuk ds rgr i kSk'kkyk ,oa {ks= volFkfvka ds vUr xz' ijh{k.k fd, x,A dSokfjuk >@kngfu; kuk ds xqkoUkk i kSk mRi knu ij fofHku ik= efm; k l w-hdj .k 1/30 1/2 vS ik= fdLeka ,oa vkdjka ds çHko dk v/; ; u djus ds fy, i kSk'kkyk ijh{k.k fd, x,A ewy k i fUk I Qyrk ij dye Åpkbz ds çHko I kFk gh I kFk i kSkka ij tsmoj dka ds çHko dk v/; ; u djus ds fy, Hh ijh{k.k fd, x,A vUr%LFkyh; rFk rVortznksuka volFkfvka ea rfeyukMq ds fofHku df"k tyok; oh; {ks=kaea QS/s8 LFkkuka ea {ks= ijh{k.k r\$ kj fd, x, rkd dSokfjuk ,oa of) çn'kū dk v/; ; u fd;k tk I dā ifj .kkaadk fo'y sk.k fd;k tk jgk gā

ckā vofLFkfr ij h{k.k 1/4, u-, e-ch-, -1/2

jk"Vh; ckl vuç; ks fe'ku 1/4 u-, e-ch-, -1/2 çkS kSxdh I pukj Hko"; ok.kh ,oa ew; ka du ifj"kn] foKku ,oa çkS kSxdh fofHkx] Hkjr I jdkj }kjk fu/kf; r ifj;kstuk th-ch i ar df"k ,oa çkS kSxdh fo' ofo |ky;] i ar uxj] mUkj k[k.M }kjk I eflor fd, tk jgs ,d us/odZ ifj;kstuk dk Hkx FkA Lohdr rduhdh dk; De ds vuç kj ou vkuoā'kdh ,oa o{k çtuu I hFku {ks= LVs'ku] HkFkz kj fo' ofo |ky; ifj I j] dks EcVij] ea cgh Fkud çtkfr ijh{k.k] I e ,oa cgn çof/kz ij ijh{k.k] ty ççk ij ijh{k.k dks 'kfe y djds i k {ks= ijh{k.k r\$ kj fd, x,A ijh{k.k ka ds rgr LFkfr ckl x'ekadh mUkj thfork ,oa of) ij rhu ekg ds vUrjky ij fu; rdkfyd vqdMsfy, x,A vqdMka dk fo'y sk.k fd;k tk jgk gā

jk"Vh; ckl fe'ku ds rgr ckl ij {ks= vf/kdkfj; ka dks ç' k{k.k 1/4 h-, -, u-, p-vksVh-, -&1/2

rfeyukMq ea jk"Vh; ckl fe'ku ds rgr fopkj fd, x, fofHku dk; dyika dks djus ds fy, ukMy , t h & rfeyukMq cixckuh fodkl , t h 1/4 h-, -, u-, p-vksVh-, -1/2 pSubZ us rfeyukMq I jdkj ds cixckuh , oad f'k fofHkx ka ds 150 vf/kdkfj; ka dks ç' k{k.k ns ds ds fy, ç' k{k.k I hFku ds # i ea ou vkuoā'kdh , oa o{k çtuu I hFku] dks EcVij dh igpku dh gā rnuç kj] I hFku us ckl ds fofHku igyq/ka ij mi funs'kd] cixckuh vf/kdkjh ds Lrj rd 145 vf/kdkfj; ka dks ç' k{k.k fn; k gā ç' k{k.k ds rgr doj fd, x, fo'k; ka ea 'kfe y gā ckl fofo/krk] i kSk'kkyk rduhdh jki .k rduhd] uk'ktho ,oa jks l eL; kj ckl vk/kfjr m |ks vS mi; kSxrk ifjof/kz mRi knA ç' k{k.k dk; De ea i kSk'kkyk rduhdka çn'kū vS ckl {ks= ijh{k.k k ckl okVdk] ckl m |ks ka ea {ks= Hk.e.k djuk 'kfe y gā

xq koUkk jki .k LVkkl dk mi; ks djds rfeyukMq ds fofHku df"k tyok; oh; {ks=ka ea ckl ekMy jki .kka dh LFkki uk 1/4 h-ch-Vh-1/2

cEcl k cEckl] cEcl k U; wUI] cEcl k VVMk] cEcl k oYxfj I] cEcl k cYd q/k] MVMk ds yel fLVdVI vS MVMk ds yel LVkklh ds i kSk'k cgn ço/kū vS Ård I o/kū ds }kjk mxk, x, xqkoUkk jki .k LVkkl dk mi; ks djds 2006&2007 ds nSku 20 gDVsj {ks=Qy eā 2007&2008 ea 40 gDVsj vS 2008&2009 ea 30 gDVsj rFk 2009&2010 ea 10 gDVsj ea ckl ekMy jki .k l fr fd; ka rfeyukMq ds N% df"k tyok; oh; {ks=ka ; Fk&mUkj & if'pe {ks=] mUkj & i whz {ks=] dkojh MvVk {ks=] if'peh {ks=] nf{k.kh {ks= rFk mPp Åpkbz, oai gkMh {ks= tka dks doj djds fofHku LFkkuka ea jki .k mxk, x,A dy 100 gDVsj jki .k yxk; k x; ka LFku ds Hkrj vS LFkkuka ds vkj & ikj ckl çtkfr; ka ds of) çn'kū dks l e; & l e; ij ew; kidr fd;k o'kkz



rki ekuj vknzrk ij vkkM\$, d= fd, vks I Hkh LFkkukads fy, cgn ,oap; fur I we ikskdkankuka dsfy, enk fo'y sk.k ijik fd; k x; kA fpduh enk de ty /kkj.k {kerk okyh enk vks tykØkur {ks=ka dks NkM/edj I Hkh



mYkj&if'pe {ks= ea ckd



if'peh {ks= ea ckd

mYkj ihz {ks= ea ckd

{ks=ka ea cEcl k oYxfj I] cEcl k VVMk] cEcl k U; WUI vks cEcl k ckYdvyk vPNk c<k cEcl k VVMk] cEcl k ckYdvyk vks cEcl k U; WUI I s rgyuk djus ij cEcl k oYxfj I us T; knk ukyka d k mRi knu fd; kA cEcl k cEckd vks M\$M\$ksykel fl VDVl el; e uky mRi knu ds I kFk I Hkh LFkkukaee/; e #i I svPNk c<kA M\$M\$ksykel LVkM\$ h dk c'n'ku I Hkh LFkkukaee detkj FkA



dkojh M\$V k {ks= ea ckd

nf{k.kh {ks= ea ckd



dyk vks ckd

rfeyukMq dks QkeZ Hkfe; ka ea ckd [ksh dh mRi kndrk dks I q'kkj uk ¼, u-ch-, e-&1½

jk'vh; ckd fe'ku }kjk fu/kf; r ifj; kst uk ea ,d ckd tuun0; cbl vks ckd xqku m|ku dh LFkkiuk djus ds vykok rfeyukMq ds rhu df'k tyok; oh; {ks=ka ea cR; d rhu LFkkuka ea ou I d/kZ ijh{k.k LFkfi r djus ij fopkj fd; k x; kA {ks= ijh{k.k ka dh jki .k LVkM\$ vko'; drk dks ijik djus ds fy, LFkkuh; #i I s ikskkads smxkus ds vykok iM\$Bkj Hkjr I sikp ctkfr; ka I sl afU/kr djhc 11]500 ckd iknika dks cklr fd; k x; kA 3 df'k tyok; oh; {ks=ka ea Qs ys I kr LFkkuka ea ou I d/kZud ijh{k.k r\$ kj fd, x, A ckd tuun0; dh LFkki uk dsfy, ou fohkx] vl e vks jkT; ou vuq akku I h.Fkku] bZ/kuxj] v#. kkpY cns kj djy ou vuq U/kku I h.Fkku] i hph vks mUkj k[k.M ckd ,oaj\$kk fodkl ckM\$Z dh ykMi g ul jh I snsjknw I s 31 ckd ctkfr; ka dh 90 vuqf); ka dks, d= fd; kA ckd xqku m|ku LFkki uk dsfy, o"KZ ou vuq U/kku I h.Fkku] tkjgkv I sckd dh 4 ctkfr; kads dSUMM\$ /ku xq'ekadh 65 vuqf); k; cklr dh xbA

mRd"V jki .k i nkFkZ , oa ekM\$y jki .k dk fodkl ¼uksoK\$M½

rfeyukMq ds 5 df'k tyok; oh; {ks=ka tks blga yxkus dsfy, mi ; q' r g\$ ea Qs ys cR; d 25&25 gDV\$ j dy 50 gDV\$ j ea uhe vks i qe dsekM\$y jki .k kads yxkus ij ifj; kst uk ea fopkj fd; k x; k gA djhc



15 g tkj uhe vls i qe xqkollk jki .k LVhDukst r\$ kj fd,
x, vls 2010 ekul u eks e dsnl\$ku ekMly jki .k kads
yxkusdsfy, blgai k\$kr fd; k tk jgk gA

'kjhfdh; vls i k\$kf.kd i \$kehVjka dsfy,
; vlsyIVI Dyksuka dk y{k.k o. kzu

'kjhfdh; ,oa iksf.kd i \$kehVjka ds fy,
; vlsyIVI Dyksuka dsy{k.k o. kzu gr qpkj LFKkuka; Fkk&
i MnkS/VkbZ fr#usyosy] fl okxack vls dks EcVij ea{k-
ijh{k.k LFKfir fd, x,A Nk/s x, 30 ; vlsyIVI
Dyksuka dsfy, DyksukQhy ,ch- vls dy DyksukQhy]
dy iUkh {s-Qy tS s i \$kehVjka dh x.kuk dh xbA
rhl Dyksukadh ty mi ; lsk {kerk dseW; kadu dsfy,
dk'B ueus ,d= fd, vls ikmMj cukdj df'k ,oa
foKku fo'ofok|ky;] cakys dks dkcu vkbl k\$ki
fo'ySk.k gr qhsk x; kA tM+y{k.k o. kzu ,oat\$ek=k ds
fy, mi ; q r p; fur Dyksuka gr q i k\$'kkyk v/; ; u ijs
fd, x,A pkj LFKkuka dsrgr 'kjhfdh; i \$kehVjka i j
c{k.k ijsfd, A v/; ; u tkjh gA

LVhDukst uDI &okfedk vls LVhDukst
i k\$V/kje dh i k\$'k'kkyk rduhd dk
ekudhdj .k

fofHku Hk\$rd vls gkekzy mipkj dsrgr
LVhDukst uDI &okfedk vls LVhDukst i k\$V/kje
dk cht vadj .k v/; ; u fd; k x; kA i k\$kadh of) c<kus
ds fy, mojd ijh{k.k djus gr q i kly/Hkhu c\$ka ea
LVhDukst uDI &okfedk vls LVhDukst i k\$V/kje
dscht cks x,A fofHku c; kskadsrgr nksukaç tkfr; ka
ds vadj .k mukj thfork ,oaof) ij vkdMs vfhkyf [kr
fd, x,A rhu l ky dsc\$ k.kadsvk/kj ij ; g vu\$kfur
fd; k tk l drk g\$ fd xk; ds xk\$ ds ?kly ea
LVhDukst uDI &okfedk vls LVhDukst i k\$V/kje
ds chtka dks 72 ?k. Vs fHxkus l s Qe'k% 88 çfr'kr
54 çfr'kr vadj .k g\$ kA ukbVrstu vls QkMkQk l us
vyx&vyx vFkok l a kst u ea i k\$ k \$pkbZ tM+yEckbZ
vls dklyj 0; kl dh of) dks egRo i wkZ # i l sc<k; kA
i k\$kadsofHku ?vDkadsfy, mPpre eku 100 ih-h, e-

ukbVrstu çkr djus okys mipjka ds rgr
n\$ l sx, A

VfeLufy; k phcyk jhVDI - 1/2 g M 1/2 ds fy,
i k\$'k' kkyk rduhd kadk fodkl

plniz j vegkj k'v\$ fHkykbz <+ 1/2 Ukh x < 1/2
rke; k ve/; çns k 1/2 vls l Ecyij 1/2 m M 1/2 l s, df=r
chtka l s fofHku Hk\$rd ,oagkekzy mipkj dsrgr
VfeLufy; k phcyk dscht vadj .k ij v/; ; u fd; k
x; kA l Ecyij 1/2 m M 1/2 l s, df=r chtka dks 7 fnu
fHxkus vls 2 fnu l q kkus ds vlrxZ vf/kdre
82 çfr'kr vadj .k n\$ k x; kA l Ecyij 1/2 m M 1/2 l s
, df=r chtka dks vkbZch, e- 500 ih-h, e- + 7 fnu
fHxkuk vls 2 fnu l q kkus dsrgr vf/kdre 86 çfr'kr
vadj .k n\$ k x; kA

m". kdfVcl/kh; ou çtkfr; ka dh] mudh
i fji Dork ,oa Hk. Mkj .k ds fo' k\$'k l UnHkz ea
cht n\$gdh

vadj .k {kerk vls ueh ek=kvka dseW; kadu ds
fy, Ldyhdhk Vrb tkk] gkMfod; k fcukVKj
l si UMI yk\$ Qkfy; k] jkoksYO; k l i BVkbuk]
ek\$jack vkfyQj k] feen k\$ l bzyhach]
gkyk\$Vhyh; k buVfxQkfy; k vls , fEcydk
vkfQl usyl] VfeLufy; k phcyk ij bl l ky cht
Hk. Mkj .k ijh{k.k tkjh gA chtka dh vadj .k {kerk ij
rki eku ,oaueh ek=k dsçHko l sij . kkeausn'kz; k fd
Ldyhdhk Vrb tkk] gkMfod; k fcukVKj
l si UMI yk\$ Qkfy; k] jkoksYO; k l i BVkbuk]
ek\$jack vkfyQj k] , fEcydk vkfQl usyl]
gkyk\$Vhyh; k buVfxQkfy; k vls VfeLufy; k
phcyk dscht ijEi jkxr fdLe ds g\$D; kad budschp
udkj kRed l aUk FkA feen k\$ l byhach chtka ij
Hk. Mkj .k ijh{k.k ka us bl dh e/; orhZ çdfr dks fl)
fd; kA ,d fo'k\$ Hk. Mkj .k voLFk ea chtka dh
Hk. Mkj .k; rk dh Hkfo"; ok.kh dsfy, ijEi jkxr chtka
gr q vadj .k {kerk l Fkj kad dks vkdfyr fd; kA chtkadh
rhu fdLe ka dks fofHku voLFkva dh çk\$hu ,oa
dkck\$kbM\$ ek=kvkadk vkdyu fd; k vls vkM\$ kadk
fo'ySk.k fd; kA



Vjksdki Z ek'kfi ; e dh i kS'k' kkyk
çkSj kfxdh dk ekudhdj . k

xksUM; k ½egjk'V½ {ks= l s LoLF; o{kka l s
Vjksdki Z ek'kfi ; e ½ictkl ky½ dscht , d= fd,
vksj i kS'k' kkyk ea i kS'ka ds vødj . k vksj of) ij fofHku
cht mi pkj kadsçHko dk v/ ; ; u djusdsfy, i kS'k' kkyk
eaç; ks fd, x, A 24 ?k. Vsdsfy, 'khr ty ds l kFk
mi pkfjr chtka us xje ty eamipkfjr dh ryuk ea
cgrj vødj . k fn [kk; kA Nks/svkdkj dscht kadh ryuk ea
cMç- vdkj ds chtka us mPp vødj . k çfr'krk vksj
vødj . k eku fn; kA tçykbZ ea mPp vødj . k çfr'krk
nç[kh xbz vksj tuojh ea vødj . k dh U; ure çfr'krk
vfHkyf [kr dh xBA 80 çfr'kr tð dEikV +
20 çfr'kr enk ds vuq kr eai k= feJ . k l okSke l a kst u
ik; k x; k tçfd 250 l h l h vdkj dStM+Vçj ustM+
vksj çjksj tðek= k mRiknu ds l æU/k eacgrj ij . kke
fn; kA ; ijh; kj Mkb&veksu; e QMOS/ vksj Øe'k
2] 4 , oa6 xte dh nj ij E; hij, V vkD i kS'k' çfr'kr i kni
ç; Ør fd; k x; k fdUrçkjEHk ea i kS'ka dh of) , oa
fodkl ij vtð mojd kadh dkbZçHko ughans [kk x; kA
Qjojh vksj ekspZ ds efgus ea Vjksdki Z ek'kfi ; e
½ictkl ky½ ds ifji Do o{k l s 'kk [kk dye , d= dh xbz
vksj 24 ?k. Vsdsfy, vkbZçt, - 500] 1000] 1500 vksj
2000 ih-i-h, e- dh fofHku l khrk vkads l kFk dyekadh
mi pkj djds /kiedk d{k eaç; ks rS kj fd; k x; kA
çjksj l çpuk 14 fnu ckn vfHkyf [kr dh xbz fdUrçtM+
l çpuk ughans [kh xBA 24 ?k. Vsdsfy, dsfy, vkbZçt, -
100] 200] 300 , oa400 ih-i-h, e- dh fofHku l khrk ds
l kFk mi pkfj ih- ek'kfi ; e dh tM+çjksj dyeka us
62 % , 76% , 84% , , oa96% LoLFk i kni kadh mRiknu
fd; kA ih- ek'kfi ; e ds jki . k LVkDka dk eW; kadu
djusdsfy, ; knfPNdhr çykd vlHkdYi ea 5x5 ehVj
dsvlrjky ij rhu çfrdfr; kads l kFk okfudh vuq çku
, oaekuo l a kku fodkl dñz ifj l j ea fofHku fdLe
ds i kS'ka ½ klyhcSka tM+Vçjka vksj tM+çjksj dyeka ea
mxk, x, i kS'ka ds {ks= ijh{k . k LFkfi r fd, x, A

o'kz ou vuq U/kku l hFku] tçjgkV ea
i kS'k' kkyk D; kfj; kads l keld; chtka dh çtk, i klyhcSka
ea çr ds i wZ vødj r chtka dh çykbZ çfr'kr . k fof/k
}kj fd, x, i kS'k' kkyk ijh{k . k ea vBBkuoa çfr'kr
l Qyrk gk l y dh xBA

mUr o{k jki . k rduhdka vksj ou l æU/k
pkjxkgh v/ ; ; u }kj k dPN ea yo . kh;
çat jHkfe; ka dh mRi kndrk c<kuk ½çqt jkr
j kT; ou fofHkx çk; k ftr i fj ; kst uk½
ou l æU/k pkjxkgh v/ ; ; u

Hkt ea 2007 ea ou l æU/k pkjxkgh ijh{k . k
rS kj fd; k x; kA nkska çHkxka ea 38 ekg dh vk; q
ij 90 çfr'kr l svf/kd ikni çtkfr dh mUkj tHfork
nj FkA çtkfrokj vf/kdre mUkj tHfork Fk dksMz k
?kj kQ ½9-5%½ bl ds ckn ft thQI ekf'kz kuk
½2-5%½ vksj ih- fl ufsj; k ½1-2%½ vfHkyf [kr
l exzvkortZ çfr'kr mUkj tHfork dh ryuk ea l hØI
l svthj l ea 95-64 vksj l hØI fl fy, fj l ea 93-8%
FkA 24 ekg ij mUkj tHfork dh ryuk ea l hØI
l svthj l ds l kFk 1-9% vksj l hØI fl fy, fj l ds
l kFk 2-3% gYdh deh FkA rFkfi l hØI fl fy, fj l
½u; æ . k ea 92-0% l s 98-1%½ dh ryuk ea l hØI
fl fy, fj l ½u; æ . k ea 97-5% l s 90-1%½ dsekeysea
?k l ds l kFk mUkj tHfork mPp FkA 38 ekg eavf/kdre
vksj r o{k ÅpkbZ fl ØI fl fy, fj l ½62-4 l seh-½
bl ds ckn l hØI l svthj l ½42-8 l seh-½ ds l kFk
vfHkyf [kr dh xBA l hØI l svthj l dsekeysea
?k l dh ryuk eafu; æ . k o{k kadsfy, vksj r o{k ÅpkbZ
l kFkZ #i l smPp FkA rFkfi l hØI fl fy, fj l ds
l kFk o{k 38.5% yeCs mxk çtkfrokj ft thQI
ekf'kz kuk ea vf/kdre vksj r ÅpkbZ ½203-5 l seh-½
vfHkyf [kr dh xbz bl ds ckn l h- ?kj kQ ½42-3 l seh-½
vksj ih- fl ufsj; k ½2-1 l seh-½ jgA ft thQI
ekf'kz kuk dks NkMedj vl; çtkfr; ka us N= of)
vfHkyf [kr ughadhA ft thQI ekf'kz kuk usfu; æ . k ds
fy, vksj 38 ekg dh vk; qij ?k l mi pkj ds l kFk
31-3% vksj 14-2% of) vfHkyf [kr dh gA

?kVdokj vksj r ÅpkbZ vksj N= 0; kl ds
vk/kj ij ?k l mi pkj ds l kFk vksj fu; æ . k ea



ft thQI ekf'kz kuk rFkk dksMZ k ?kjkQ dsfy, Hkh; wjfd tsek=k vkdyu fd;k x; kA l h0I l sVthjI ds l kFk mPp cht nj ij cwbZ dh xbA ?kkl dksMZ k ?kjkQ 1/4-8 fd-xk-1/2 vksj th- ekf'kz kuk 1/4-6 fd-xk- o{k/2 ds l kFk mx o{kadh rgyuk eafu; æ.k o{kka ds fy, tsek=k mRiknu dksMZ k ?kjkQ 1/7-5 fd-xk-@o{k/2 vksj ft thQI ekf'kz kuk 1/4-0 fd-xk-@o{k/2 ds l kFk 2&3 xuk T; knk FkA tcf d l hfl fy, fjl dsekeysea 1/2 uEu cht nj ij fNVij cks x, 1/2 0e'k% ?kkl , oa fu; æ.k mipjkA ds l kFk tsek=k mRiknu ft thQI ekf'kz kuk dsfy, 4-5 l s 5-3 fd-xk-@o{k vksj dksMZ k ?kjkQ dsfy, 8-0 l s 8-6 fd-xk-@o{k FkA ifj. lke l q-ko nrsqf d fuEu cht nj ij ?kkl dh cwbZ o{k of) dksckl kgr djrh gA

o"kl 2009 ds nksj kul dy o"kl 419 fe-eh- Fkh vksj ft l eal svf/kdkak 1/202 fe-eh-1/2 yxHkx 30 fnuadksn?l vof/k dsckn rhu fnuaka 1/29&3&2009 1/2 vxLr eagpA l h- fl fy, fjl dsfy, vksj r mRiknu 1-01 Kgm⁻² vksj l h0I l sVthjI dsfy, 0-76 Kgm⁻² FkA ; g xro"kl dh rgyuk ea 57-5% vksj 61-7% T; knk FkA o{k of) us ?kkl mRiknu dksckl for ugha fd;k vksj gjh ?kkl dk mRiknu 0e'k% l h- fl fy, fjl ds fy, l h- ?kjkQ 1/4-11 Kgm⁻² 1/2 vksj l h- l sVthjI dsfy, th-ekf'kz kuk 1/4-83 Kgm⁻² 1/2 ds l kFk vf/kdRe Fk tks fu; æ.k ds rgyuh; FkA ç; ksd {k= l s 0-35 Kgm⁻² dk gfjr vir.k eq; r%vLokfn"V ?kkl çklr fd;k x; kA

mUur o{k kjsi .k rduhda

mi ; 0r jki .k i) fr ds l kFk mi ; 0r fonskt , oanskt pkjk ikni çtkfr; ka dk irk yxkus dsfy, tgykbZ 2007 ea MCY; w, -, l- dh l hek ea iVukj xqjkr ea dkskkZ l keh jat ea dkyh xknHkj fpduh feVvh 1/2; e1/2 enk xgjkBZ 40&75 l seh- ea, -, fElyl sl] , - fcohukd k 1/2 fonskt 1/2 vksj , l- ifl Bk 1/2 nskt 1/2 ds l kFk vuq U'ku ijHk.k rS kj fd, x, A , l- ifl Bk mPp yo.krk dh vr; f/kd #k volFkkvkarki ncko vksj l vkk volFkkvkae tlf for jgdj l cl sdBkj ikni fl) gvk vksj bl eaU; wire upl ku gvk rFkk jki .k ds 30 ekg eabl usmukj tlfork dh mPp nj 1/2-8% 1/2 dks cuk, j [kk bl dsckn 30 ekg ea 77-3% mukj tlfork ds l kFk , - fcohukd kjghA

p; fur çtkfr; ka ea , - , fElyl sl dks ebZ 2009 eaj .k dh vksj l syo.kh; xje gokvkdskj .k l Hkor% bl ds l hek {k= ea vksj vf/kdre ÅpkbZ ds dkj .k Hkh vf/kdre {kfr gpa çkjFEHkd vadj .k vf/kdkak iknika ea nskk x; kA rFkfi vksj r mukj tlfork ea 41% deh Fkh 1/4 tks 30 efgusea 44-1% vksj 12 eghusea 74-6% FkhA

l Hkh rhu ikni çtkfr; kaus> kMankj çdfr dk çn'ku fd; kj ft l usof) ds nks l ky ckn ÅpkbZ dh višk T; knk N= 0; kl dks çkkl kgr fd; kA , l- ifl Bk ea 24 ekg ea 154-2 vksj r N= 0; kl dh rgyuk ea vksj r ÅpkbZ 120-8 l seh- FkA viškdr , - fcohukd k us 24 ekg ea l Hkh ikni çtkfr; ka ea vf/kdre N= of) gkl y dhA vksj r ÅpkbZ 112-6 l seh- vksj r N= 0; kl 1/208-5 l seh- 1/2 l s dkQh de FkA nks dkjd , ukok fo'yšk.k usn'kz k fd mipjk ausof) dks çHkfor fd;k vksj Qkez kMZ [kkn vksj xgyHkh h nkska mipjk ausvU; mipjkadh rgyuk eal kFkd mPp of) 1/2 ÅpkbZ vksj N= 0; kl 1/2 dks çkkl kgr fd; kA fofHku mipjkaea, dy ikni ea 4&19 'kk [kka FkA çkjFEHk ea 18 efgusrd , - , fElyl sl uscgq mPp of) gkl y dh vksj , d l ky ea if'ir gkdj vadj {ke cht dk mRiknu fd; kj fdUr rki vk?kr ds ckn ÅpkbZ ds l unHkZ ea of) usgkl dk #>ku n'kz kA , l- ifl Bk ds yxHkx 90% iknika ea tuojh 2010 ea Qny vk, A rFkfi ekpZ 2010 ea 6% iknika ea Qy LFkku gvkA viwZeku l w o"kl ea, -, fElyl sl vksj , - fcohukd k eai ti .k ughanskk x; kA

tuojh 2010 ea , - fcohukd k dsfy, ikni xM<s ds Hkrj 0-25 vksj 25-50% enk ijr ea çfr'kr enk ueh 8-1 l s 12-6% Fkh 1/4 fnl Ecj 2009 dks 8 fe-eh- o"kl gpbZ tks ikni xM<s ds Hkrj Åijh enk ijr ea 2-4 l s 4-79% rd ?kv x; hA enk dk; l ds QyLo#i ueh {kfr gkl drh gSD; kkd Åijh enk ijr eavUr%i 0r vUrjky ea ueh ek= T; knk 1/8-02 l s 5-01% 1/2 FkA xjeh 2009 ea, -, fElyl sl l senk ih- , p- vksj fofues /kuk; u dk fo'yšk.k fd;k x; kA enk ih- , p- eku l keU; jat ea FkA rFkfi fofues /kuk; u eku 0&25



mÜkj tlfork vkpMædksfujUrj vfhkfyf[kr fd; k x; kA 2009 ds nkjku ckg; fo'kskKka }kjk ifj; kst uk dk; Zdyki kadk eW; kadu Hkh fd; k x; kA



nønkj LVKk, oacu vkad jki .k dk fujh(k.k

yEcs i kni ka }kjk nønkj ¼ hM⁹ nønkj k½ jki .kka dks yxkus ds fy, rdudhka dk fodkl

{ks= l oZk.k fd; k rFk nønkj çdr uoknfHknA yEcs i kni ka dk mi ; kx djds {ks= dh LFkki uk dsfy, f'keyk ft yseaf'kyk# dsl ehi ç; kSxd {ks= dk p; u fd; k x; kA f'kyk# vSj dM=kyh ea igpku fd, x, LFkykaevxLr 2008] Qjoh 2009 vSj vxLr 2009 ds nkjku nønkj idr uoknfHknls ds ik; kSxd jki .k

LFkfi r fd, x, A idr uoknfHknkadk jki .k ÅpkbzvSj tM+dKvj 0; kl Jskh dsvk/kkj ij fd; k x; kA l h/ks {ks= ea l kFk gh l kFk i kSk' kkyk eackSj; ka ea TKM+vukoj .k ds l e; } tM+'kqduj l g {kk dkjd inkFkKvSj jki .k idr uoknfHknka dsvk/kkj ij Hkh iz; kx fd, x, A i kSk' kkyk D; kfj; ka ea yEcs i kni ka dh mi yC/krk ds vuq kj ekpZ 2009 ds nkjku i kSk' kkyk v/; ; u 'kq fd, x, A



nønkj tæyh i kSk' kadk ik; kSxd jki .k

i kSk' kkyk ea nønkj ds yEcs i kni ka dls mxk; k

vf/kdUrj ifr jki .k ds l e; tM+vukoj .k l e; , oa tM+'kqdu l g {kk dkjd inkFkKij Hkh ml h izdkj iz; kx fd, tk jgsgatS k l h/ks jki .k dsekeyseaf d; k tk jgk gA ik; kSxd jki .kka dks {ks= ea 0; kid : i l s i kS'kr fd; k tk jgk gA {ks= mÜkj tlfork l sl æb/kr vkpMæ fu; fer : i l svfhkyS[kr fd, x, A idr uoknfHknkads ek/; e l s jki .k dsl Qyrk vHh Hkh , d vge fo'k; gS vSj bl ifj; kst uk dsrgr bl dh tkp py jgh gA rFkfi] nønkj idr uoknfHknka ds {ks= mÜkj tlfork ifj .kka vHh rd mRl kg tud ughagA

tñuijl i kñyhdkil l h- dkp vSj ÝfDI ul tSfkkDI hykñkMhI ea cht l æg.k] cht l pkyu Hk. Mkj .k vSj cht idl ãlr Hkæ djus ds fy, dk; Z i) fr dk ekudhdj .k

fofHku cu/kbz i wZ mipkja ds l Fk mipkjr tñuijl i kñyhdkil cht kæacht idl ãlr l s i k i kus dsfy, vadj .k v/; ; ukæa i kSk' kkyk voLFkKvadsrgr mRd"V vadj .k ¼ 70% ½ vfhkfyf[kr fd; k x; kA cht ka }kjk mxk, i kSk' kadk i kSk' kkyk ea yxkrkj vuoh(k.k fd; k tk jgk gA nksuka iztkfr; kæacht l æg.k ds vuohy re l e; dk irk yxkusgrqrS kj nkjkk, x, ijh(k.k kadks i kS'kr fd; k tk jgk gA



fofHku fdLe ds Hk.Mkj.k ik=ka@Hk.Mkj.k okrkoj.k dk mi;ksx djds *Yfdl ul tBfkkDI hykWMhl vls tuijl iknyhdkil* ea cht Hk.Mkj.k ijHk.k dk ikSk.k fd;k vls le; & le; ij chtka ds vadg.k {kerk ijHk.k fd, x, A fofHku fdLe ds Hk.Mkj.k ik=ka@okrkoj.k ea Hk.Mkfjr *Yfdl ul tBfkkDI hykWMhl* chtka us cht vadg.k {kerk ea gkl eku #>ku dks n'kz, k vls jsYtjvj 1/5-0 c/2 ea j[ksok; #) iknyhl sl ik= ea Hk.Mkfjr chtka us Hk.Mkj.k ds 24 ekg ckn > 70% vadg.k {kerk cuk, j[kh tcfv vl; Hk.Mkj.k ik=ka@Hk.Mkj.k okrkoj.k us cht vadg.k {kerk ea gkl eku #>ku n'kz, ka bl hcdkj *tuijl iknyhdkil* chtka usHk cht vadg.k {kerk ea gkl eku #>ku dks n'kz, k vls jsYtjvj 1/5-0 c/2 ea j[ksok; #) iknyhl sl ik= ea Hk.Mkfjr chtka us Hk.Mkj.k ds 24 ekg ds ckn > 50% vadg.k {kerk dks cuk, j[kh tcfv vl; Hk.Mkj.k ik=ka@Hk.Mkj.k okrkoj.k us cht vadg.k {kerk ea gkl eku #>ku dks n'kz, k rkscht, d= fd, x, vls nksj, x, ijHk.k r\$ kj fd, x, A



ikSk'kryk voLFkkaea tuijl iknyhdkil ds ikSk

mUkj[k.M vls fgekpy çns'k ds nonkj] dsy] Qj vls Lçw ouka ea gfjr ikru ij çfrcl/k ds çHkko ij v/; ; u 1/2ou vuq U/kku l fFku] ngjknw ds l kFk, d l g; kxh ij; kstuk1/2

l æfU/kr çHkxh; vf/kd/fj; ka ds dk; k; ; ka l s v/; ; u LFkyka sl æfU/kr vk/kjHkr l puk, d= dh xbZ vls foLr v/; ; uka dsfy, pEck] f'keyk vls dWYw

ftyka ea ouka dh igpku dh xbA l æfU/kr jatka ea dEiKVZV bfrgkl Qkbyka l s ouka dh vk/kjHkr l puk@; k; s, d= fd, x, A vk/kjHkr C; k; sçkr djus ds ckn l æfU/kr çHkxh; ou vf/kd/fj; ka ds l kFk mul s l æfU/kr çHkxka ea çkjFEkd fopkj&foe'kz fd; k x; k vls l kFk gh l fFkkaeaHh bl fo'k; ij fopkj&foe'kz fd; k x; ka vkrfjd #i l sbl ckr dks vflre #i fn; k x; ka fd fgekpy çns'k jkT; ka ea rhu ftyka ; Fk&pEck] dWYw vls f'keyk ea vkusokys LFkyka dk çLrko l fFku djka rnuq kj dWYwou çHkx ds uxj jat] pEck ou çHkx eavij pEck jat vls pki ky ou çHkx ds pki ky jat eav/; ; u djus ds fy, LFkyka dk p; u fd; k x; ka bl fo'k; eavf/kd Li"Vhdj.k vls fopkj&foe'kz djus ds fy, ih vkbZ vls ou l w/kz çHkx ds çed[k ds l kFk cBd Hh dh xbA igpku fd, x, ftyka ts k Åij mfYyf[kr fd; k x; k gS fd mi; ; ou çHkx ds fofHku jatka@cykkaea ih vkbZ ds l kFk LFkyka dk Hk.k fd; k vls rnuq kj ou vuq U/kku l fFku] ngjknw dh Vhe }kj vflre #i ns ds ds fy, igpku dh xbA bl ds ckn {ks=ka ds vk/kjHkr C; k; ka dks vHkyf[kr fd; k vls l kfgR; dk voyksdu fd; ka pki ky ou çHkx eavkusokys f; ; u, oafj; kuk LFkykaea Qj vls Lçw ouka ea iknih l o\$ k.k fd; k x; ka fgekpy; u ou vuq U/kku l fFku vc ctV ds iFkd vkbZ u ds dkj.k viusvki gh {ks= dk; ; byki djskj yfdu ngjknw ea ih vkbZ ds l kFk l e; & l e; ij C; k; ka ij pkiZdjka

**0; ki kfjd mRi knu ds fy, l e) ofeB E i k t V dh fuEu ykx dk fodkl ^ ij; kstuk ds vlrxZ l e) ofeB E i k t V dk mRi knu , oa ofeB E i k t V uewka dk fo'ySk.k rFk ç'k(k.k vls çn'ku fd, x, A

**>kj[k.M rFk l ehi ortZ jkT; ka l s p; fur çtkfr; ka ds l {ke cht l k r kavls @Dyksuks dk p; u , oa eW; kadu^ ij; kstuk ds rgr chtka@Dyksuks dk l æg.k vls ikSk'kryk dh LFkka uk dh xbA



2-2-3 I kekftd okfudh] dfk okfudh@
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i wdz mUkj çns'k ds fy, dfk okfudh
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Hk[k.Mka dh LFkkiuk dh xbA LFkfir dfk okfudh
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ç.kky; ka ds vlrxr chp dh Ql y ykus ds
dk; Zyki fd, x, vls mRi knu dk eW; kadu fd; k
x; ka l kykuk Ql yka ds l kFk LFkfir dfk okfudh
ç.kky; ka ds rgr tsek=k ds uenw Hk fy, x,
vls bl dh rgyuk , dy Ql ykads l kFk dh xbA dikl
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rfeyukMq ds foYyijje ea epQyh ds l kFk
vke vk/kfjr dfk clxckuh izkkyh



rfeyukMq ds dMkyj ea xlus ds l kFk
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~ 31]250 çfr gDV\$ j dh dty mPp vk; ntZdh bl ds ckn nf{k.k {ks= ea l j t e f k h ds l k f k fu E c w ¼ 18]750@gDV\$ j ½ if'peh {ks= ea dkyk puk vK\$ yk\$; k ds l k f k l k x k s i ¼ 14]650@gDV\$ j vK\$ ~ 12]500@gDV\$ j ½ vK\$ mYk i n h z {ks= e a d k y k p u k v K \$ y k \$; k d s l k f k , y u f k l ¼ 12]840@gDV\$ j v K \$ ~ 10]230@gDV\$ j ½ j g A



rfeyukMqdsfr: usyosyh ftysea yc&yc ds l k f k u h e w v k / k f j r d f ' k & c k x c k u h v k / k f j r i z k y h

dSokfjuk vK\$; n d f y i v i dh v k s j k f x d o { k ç t k r ; k a ds r g r v k f F k d # i l s e g r o i w k z v k s k / k h ; i k n i k a ds l k f k d f ' k o k f u d h ç . k k f y ; k a d k f o d k l f d ; k x ; k

rfeyukMq ea pkj LFkkuka ; Fkk& d j k b z m h j l h u n j k b z t h ; k e d k s m e v k \$ d j k b z y e a d S o k f j u k b f D o l h f V O k f y ; k j d S o k f j u k > @ k g f u ; k u k j v K \$; n d f y i v i d e Y M r y u f l l t s h o { k ç t k r ; k a ds j k i . k i j s f d , x , A o { k ç t k r ; k a d s l k f k c h p d h Q l y ds # i e a v k s k / k h ; i k n i k a m n k g j . k & M h d s y h f i l g f e Y V k a u h v K \$, L i j x l j d h e l d l d k j k i . k i j k f d ; k A i k s k d L r j d k s l e > u s d s f y , j k i . k ' k a # d j u s l s i g y s l H h j k i . k L F k k u a l s e n k u e w s , d = f d , x , A f o f H k U u ç c U / k l k j f . k ; k a ds r g r x q M a q k v a x f L V O k f y ; k d e B ds o f) ç n ' k u d k e w ; k a d u d j u s i j v / ; ; u ¼ , u - , e - c h - , - ½

nks LFkyka ; Fkk& eS j ds l e h i ; y o k y k v K \$ c a y k \$ ds l e h i x k s v v i j k ¼ g k w d k s / ½ e a 2005 e a l k r m i p k j k a d k s f e y k d j v l r j k y ½ e h - x 5 e h - v K \$ 5 e h - x 9 e h - ½ v K \$ m o j d i j h { k . k a d s l k f k { k s = i j h { k . k

LFkkir fd , x , A v / k & ' k a d v o L F k k v k a ds r g r x q M a q k v a x f L V O k f y ; k dh v u i ; @ r r k d k s n ' k k z s g q r h l j s l k y d s v l r r d g k w d k s / e a < 50% v K \$ e S j e a < 10% m u k j t h f o Y k k n j F k A

djy vK\$ dukVd ea xq M a q k v a x f L V O k f y ; k d e B v K \$ M s M k s d s y k e l , L i j c a d j d h [k s h ¼ , u - , e - c h - , - ½

o f) ç n ' k u d k v / ; ; u d j u s d s f y , n k s v l r j k y k a i j d j y e a 2 L F k y k a / y o k , o a i y D d m ½ v K \$ f F k F k e F k h j d u k j d u k V d e a m " . k d f V c a k h ; v k n z v o L F k k v k a e a Q k e z ç n ' k u i j h { k . k L F k k i r f d , x , A b u 3 L F k y k a e a t k ; Q y l p l n u v K \$ l h - l S i u d s l k f k ' k l ; k & i k n u f d ; k x ; k A 2008 e a 3 L F k y k a d s f y , , d f = r o f) ç n ' k u v k d M h a u s d u k z e a l o k k e ç n ' k u n ' k k z k b l d s c k n v y o k v K \$ r c i y D d m - j g k A

ckd LFkku fu/kkz . k i j h { k . k ¼ , u - , e - c h - , - ½

t y k b & f l r e c j 2005 d s n k s k u 5 e h - x 5 e h - v l r j k y d k m i ; k s e d j d s v k B c k d ç t k r ; k a ; F k k & c E c i l k c f e c k l] c E c i l k c k Y d a q k l c E c i l k U ; W U l] c E c i l k V W M k j M s M k s d s y k e l , L i j j M h - g f e Y V k a u k b z M h - t k b x b v i v K \$ M h - L V k k e t h ¼ c a y k \$ e a v K \$ M h - L V k k e t h ds LFkku i j x q M a q k v a x f L V O k f y ; k ¼ Q - v k j - l h j g n j k c k n e a i j h { k . k L F k k i r f d , v K \$ u Y y k y c a y k \$ r F k M y k i Y y h j g n j k c k n e a i k s ' k r f d ; k A c E c i l k c k y d a q k e a v f / k d r e m u k j t h f o r k n j ¼ 400% ½ v K \$ M h - , L i j e a U ; u r e ¼ 50% ½ F k A v k B ç t k r ; k a e a l s M h - g f e Y V k a u k b z c a y k \$ e a l k f k g h l k f k g n j k c k n e a u k y d h A p k b z ¼ 5 - 89 e h - ½ v K \$ 0 ; k l ¼ 31 - 8 f e - e h - ½ d s l U n H z e a l o k k e f l) g b A b l d s c k n M h - L V k k e t h j c h - c k Y d a q k v K \$ c h - U ; W U l j g A M h - , L i j u s U ; u r e A p k b z ¼ 4 - 6 e h - ½ d k ç n ' k u f d ; k A

ekUM; k ftyk] dukVd ea , d i k j E i f j d Q k b d l v k / k f j r d f ' k o k f u d h ç . k k y h d k i k f j L F k f r d h ; j v k f F k d v K \$ l k e f t d & l k a l d f r d e w ; k a d u

ekUM; k ftyk ea 6 rkyoka dks doj djds yxHx 140 fdI kuka dk l o { k . k v K \$ 11 xlp Lrj



I o{.k.k ij k fd; k x; kA fdl kuka ds [k rka ea [kji rok j
V\$ LFkfr fd, A [kji rok j ekfl d #i l s, d= fd; k
tk jgk gsvk\$ fofHku iksk dka dsfy, fo'yf'kr fd; k
x; kA [kji rok j vi?kVu v/; ; ukadsfy, [kji rok j
c\$ ekfl d #i l s klr fd, A vi?kVu i s/uzdseW; kadu
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jgk gA

vkU/kz çns'k ea vksk/kh; i kni ka ds fy,
cgr rjh; 'kL; kRi knu ekW/yka dk fodkl
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I kxk\$ + plnu] 'kh'ke + plnu] ; wsfyVl
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i kni ka dh of) dsfy, 'kh'ke + plnu l a kst u cgr
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n'kz kA 'k\$ k ifj.kkeka dk foLrkj djus ds fy, nks
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ckYd\$vk] cEcl k U; wUl] M\$M\$sdSykel
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vaxfLVQkfy; k dk cgr.Fk kfud l w=i kr , oa
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2009&2010 ds n\$ku l Hh pkj LFkyk
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fd; k x; kA çtkfr; kadscgr ço/kz dsfy, fuEu
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tcyij ftysdsfdl kuka dsfy, {ks= in'kz



MScftz k fl LI & th- est df"k okfudh
ç.kkyh eadbdzh mRi kndrk dk ew; kadu
m".kdfVcU/kh; ou vuq U/kku l hFku ifj l j ea
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3 fofHku vlrjky 10 eh- x 10 eh- vkdkj ds 21 Hkjk.Mka
dsl kfk nksl ky dsMScftz k fl LI wjksi .k eal adj edbz
dsl kfk vks, l -vkj- ijh{k.k r\$ kj fd, x, vks] jksi .k
{k= dsckgj 3 Hkjk.Mkadks [kkyh j [kk x; kA l adj edbz



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chtka dks ; knfPNdhr cykka vfhkdYi viukdj
60 l seh- vks] 120 l seh- ds QI y ykbu vlrjky l so{k
dsl kfk 60 l seh- x 20 l seh- ds ml h vlrjky ij cks k
x; kA edbdzh QI y dkVh xbZvks] mRi knu vkdMkadks
vfhkfyf [kr] l kj.kdhr vks] l ka; dh; #i l sfo'ys"kr
fd; kA edbz QI y ds vf/kdre mRi knu ds fy,
60 l seh- o{k l sQI y ykbu vlrjky dsl kfk 5 eh- x 5 eh-
dh o{k njih l okke fl) gba edbz QI y ds jksi .k vks]
dVku dsl e; MScftz k fl LI wknidsof) i\$kehVj
; Fkk dkWj 0; kl , oaApkz dks vfhkfyf [kr fd; k x; kA
5 eh- x 5 eh- dso{k vlrjky dsl kfk cykka eaApkz vks]
dkWj 0; kl ea vf/kdre of) çs{kr dh xbA edbz
QI y ds jksi .k vks] QI y dVku dsl e; , df=r enk
uewka dks ih-, p-bZl h- vkxud dkcu] miyC/k



fl LI & edbz izkkyh ds rgr dkVh xbZ
chp dh QI y edbz ds uews

ukbVrst u] QkLQkj l] i kVSI ; e rFkk ca⁺⁺, mg⁺⁺ ds fy,
fo'ys"kr fd; kA

e/; Hkkjr ea of/kzr vk; l `tu ds fy, u; h
ckal df"k okfudh rduhdka dk i kS'k.kh;
fodkl

m".kdfVcU/kh; ou vuq U/kku l hFku] tcyig
ea df"k okfudh Hkjk.M ea vkku LV\$ku vuq U/kku
ijh{k.k ds #i ea LFkfir ckl & xgw df"k okfudh ç.kkyh
l sxgw dh QI y vçsy 2009 ds fgu sea dkVh xbZ vks]
nkpus rFkk l kQ djus ds ckn xgw mRi knu dk
vkdyu fd; k x; kA

ckal dh nks çtkfr; ka ; Fkk & M/MkadSyke l
FLVDVI vks] cEcH k U; WUI eaer i kS'ka dh txg
nh jsyxk, x, A xgw dh QI y dkVus dckn ckl & xgw
df"k okfudh ç.kkyh l senk uews, d= fd, vks] fofHku
Hkfrd jkl k; fud xqka, oa?Vdkdsfy, fo'ys"kr fd; kA

jkou jat cuBki jk ifj; kst uk çHkx] Nùkhl
x<+ ea çxfr'kny fd l kuka dh igpku djus ds fy,
, d l ghkxh xkeh.k ew; fu/kk] .k çfØ; k dh xbA
fd l kuka dks 14 vks] 15 ebZ 2009 dks ckl vk/kfjr
df"k okfudh ç.kkyh vi ukus ds ykHka ij çf'k{k.k
fn; k x; kA bl ds ckn fd l kuka }kjk 0; Dr dh
xbZvko'; drkvkds vuq kj i klyhi kv i kS'ksmudsd
f"k [kr l hekvai j jksi .k ds fy, miyC/k dj, x, A
ckal l BVj] Xokfy; j] e/; çnsk ea çxfr'kny
fd l kuka dh igpku djus ds fy, bl h çdkj dh
çfØ; k dh xbA bu fd l kuka dks 25&26 ebZ 2009
dks ckl vk/kfjr df"k okfudh ç.kkyh vi ukus ds
ykHka ij çf'k{k.k fn; k x; kA bl ds ckn fd l kuka
}kjk 0; Dr dh xbZvko'; drkvka ds vuq kj i klyhi
kv i kS'ksmudsd f"k [kr l hekvai j jksi .k ds fy,
miyC/k dj, x, A



Qal vk/kfjr df"k okfudh izkkyh; ka
dks vi ukus ds ykHka ij if'k{k.k



ckd & xsgndf'k okfudh ç.kkyh LFkfir djrs
le; lfr ckd jkî.k eamMm chtkæ dks ckldj , d
vktu&LVsku vuq U'kku ds#i ea, d ckd & mMm %yfd
xke½df'k okfudh ç.kkyh LFkfir dh xBÅ mMm chtkæ
dh çq/kbz djus l s igys vktu&LVsku vuq U'kku ea
mifLFkr Mh- fLVdVI vksj ch- U; wUI dsçR; d ckd
ikni ds of) vktu&LVsku; Fkk& dkyj 0; kl , oa Åpkbz dks
vfhkyf[kr fd; kA mMm chtkæ dh çq/kbz djus l s igys
çk; ksd Hk[k.M l s enk uews , d= fd, x, vksj
ç; kx'kkyk ea fofHku Hksrd&jkl k; fud xqka vksj
?kVdksfy, fo'y sk.k fd; k x; kA

MhMrdSykel fLVdVI vksj cEc# k
U; wUI dh vxz.kh uky ds of) i jkehVjka; Fkk& dkyj
0; kl , oa Åpkbz dks vfhkyf[kr , oa l kj.kh r fd; A
mMm dh Ql y dVusdskn enk uewsfy, vksj buds
jkl k; fud ?kVdka , oa Hksrd xqka ds fy, fo'y sk.k
fd; k tk jgk gÅ

f}rh; pØ eavktu&LVsku vuq U'kku ds#i ea
ckd & xsgndf'k okfudh ç.kkyh LFkfir djusdsfy, xsgn
ckusgrq, d çk; ksd Hk[k.M r s kj fd; k x; kA xsgnckus
l s igys enk uews , d= fd, ftudk fofHku
Hksrd&jkl k; fud vksj Hksrd xqka , oa l ÅkVdka ds
fy, fo'y sk.k fd; k x; kA xsgndh çq/kbz djus l s igys
ckd dh nks çtkfr; ka; Fkk&MhMrdSykel fLVdVI
vksj cEc# k U; wUI ds vxz.kh uky dh of) i jkehVjka
; Fkk& dkyj 0; kl vksj Åpkbz dks vfhkyf[kr fd; k
x; kA

vku LVsku vuq U'kku ijh{k.k ds#i eadBz
pØ eackd & xsgndf'k okfudh ç.kkyh dh LFkfi uk djus
dsfy, jkî r nks ckd çtkfr; ka; Fkk&MhMrdSykel
fLVdVI vksj cEc# k U; wUI dschp , d cht fm'yyj
dk mi ; kx djdsxsgnck k x; kA xsgndk vadg.k n[kk
x; k vksj bl çdkj LFkfir d ffr df'k okfudh ç.kkyh
dksvkt rd i k'kr fd; k tk jgk gÅ

vksk/kh; o{kka 'kkolka ds l kFk df'k okfudh
ekwly

egRo i wZ vksk/kh; iknika vksj o{kka ds xqkoUkk
cht igpku fd, x, l kkal s, d= fd, x, A fd l kuka
ea forj.k grq i ksk'kkyk ea , xy ekehZykd]
, UMRxçQl i fudnykVkl , Lijxl j s hekd l]
ekjxk vksyQjk] jkoksYO; k l i BVkbuK]
jkoksYO; k VVRQkbyk vksj foFkfu; k l kSEuQjk ds
djhc 30j000 i kka dk jkî .k fd; k x; kA VekVj vksj
vkyw t s sfo|eku l kykuk Ql y ds l kFk , fEcYdk
vkrQl usyl vksj ekjxk vksyQjk vkrkjr df'k
okfudh jkî .k LFkfir fd, x, A vksk/kh; ikni kadh of)
ij Nk; k dsçHko dk vl; ; u djusdsfy, [kyseal kFk
gh l kFk , xy ekehZykd] ekjxk vksyQjk dh Nk; k
ds rgr , UMRxçQl i fudnykVkl , Lijxl
j s hekd l] jkoksYO; k l i BVkbuK] jkoksYO; k
VVRQkbyk] foFkfu; k l kSEuQjk ds vksk/kh; ikni
Hk[k.M LFkfir fd, x, A ifj; kst uk ds vlrxZ QkeZ
; kmZ [kkn , oa tsmoj] d enk rFk ckyw [kjnh xbz vksj
12 fd l kuka ea forj.k fd; k x; kA vksk/kh; ikni kadh
vktu LVkjh vksj vU; df'k Ql ykankakal svrfjDr ykHk
çkr djusdsfy, vksk/kh; ikni kadh [kch vksj egRo ds
ckjseaykskadschp tkx#drk dk l tu djusdsfy,
ifj; kst uk ds rgr 100 ykskadsçf'k{k.k fn; k x; kA

o'kZ ou vuq U'kku l kFku] tkjgkV ea cgn
çpgkHkou rduhd] ckd df'k okfudh çcuK] eNyh
ikyul e/keD[kh ikyul ckd , oa carka dh i ksk'kkyk
rduhd] xEgkj dh fuEu ykxr vksj vyi vof/k
i ksk'kkyk rduhd t s sfofHku fo'k; kae 65 ifjokjal s
dy 77 xkeh.kæ dks çf'kf[kr fd; k x; kA l hch-Vh-l h-
xqkgVh ea f'kyi @f'kyi dkfjrk ea ikp xkeh.kæ dks
çf'kf[kr fd; k x; kA o'kZ ou vuq U'kku l kFku }kjk
fodfl r df'k okfudh ek.My dks b"vRe , oa l rr-
mRi kndrk dsfy, xkeh.kæ }kjk viuk; k x; k gÅ nks
ck; kx s lykUV Hk xkp ea LFkfir fd, x, vksj bl dk



यहक व/कद्रे ifjokjka dksfeyk गा व/ ; ; u usmn/kfjr
 fd; k gSfd vU; mRi kn d dk; ka ea Lo; adksyxkusgrq
 viuk le; cplus vls baku dk'B dsfu"d"lk k dksHh
 U; ure djusvls bl cdkj i; kbj.kh; cni.k dks?kVkus
 ds vykok ikfjokjd mnas; ka ds fy, Atlz dh
 miyC/krk eal dkj gqk ga xteh.ka dks eNyh ikyu ds
 fofHku igyqka; Fk& enk ijh{k.k} rkyk dk vkdkj , oa
 #i] <ky dk vuqkr] ih-, p- Lrj dsj [kj [kko] fofHku
 eNyh ctkr dsp; u vls Hkj.k iSuzvkn ij xteh.ka
 dkscf'kf{kr fd; k x; ka jksh dkVyk] xtl dki? fejdj
 fl Yoj dkiZvls dks u dkiZtS h fofHku ctkr; ka ds
 vkrfyd dks ikyu dsfy, LFkkuh; vkoLFk dsfy,
 mi; Dr fofgr fd; k x; ka fofok ctkr; ka ds
 1200 fQaj fyAl dk l#ikr fd; k vls igys l ky
 ~ 10]500-00 dk 'kq यहक dek; ka ckn dsl kykaevk;
 U; ure #i l sc<ch vls xteh.k l rr-vk/kj ij T; knk
 यहक ckr djak ipkl xteh.ka dks e/kpD [kh ikyu ea
 cf'kf{kr fd; k x; ka cf'k{k.k ds nlsku] e/kpD [kh ds
 p; u] dksykuh l Okb] fu"d"lk k pscj dh 0; oLFk] Qy/ka
 dh vuqyC/krk ea [kk] inkfzdh vko'; drkj >bl okyh
 e/kpD [k; ka dks i dMuk] 'kgn fudkyusdh fof/k] NUsdk
 fu/kj.k vls fQvax] folFki u dsl e; rFk vU; cclU/k
 igyqka tS se/kpD [kh ikyu ds fofok fo"ka; ka dks doj
 fd; k x; ka cR; d यहकFhz us, d e/kpD [kh ckl ea
 'kgn dk fu"d"lk k fd; k vls l ky ea6 l s7 fdyk'kgn
 ckr djds 1]200 l s 1]400 dek, A ckl vls xEgk ds
 l kfk chp dh Ql y l s dkh xbZ Ql y vls vls kfudh
 ,oa ek eh; ouLifr fo'kstdj Hkkj tksykd; k
 1/2 fpyh/2 dsl #i kr usHh Oeokj fd l kuadksvfrfDr
 vk; miyC/k djkbA

OkeZij ifj; kstuk dsrgr] [kk] cjsk mRi knu
 dsfy, ckl jki.k cclU/ku vls cgn cpjknHkou rduhd
 dk mi; ksc djds iSk'kyk if)fr; ka ij cf'k{k.k vls
 c'n'ku }kjk cgn cpjknHkou rduhd ea uohudj.k
 vls [kk] ckl ds 0; klfjd jki.k dsfy, ckl l kgu , oa

Lo; al gk; rk l eij l nL; ka d {kerk fuekz k fd; k x; ka
 vfrfjDr vk; dsfy, LFkkuh; #i l silun dh tkus
 okyh Ql yka ds 'kL; kRi knu }kjk vUr% vUrjkyka dk
 mi; ksc djus grq xteh.ka dks cjsr Hh fd; k x; ka
 LFkkuh; m|fe; ka dsl kfk l Ei dZcBd l sHh tkjgkV ea
 fLFkr 1/2 Fky l s 60 fd-eh/2 cjsk cOe.k m|kska l s
 l gkuqU/k fodfl r djds [kk] cjskadsfoi .ku eamUga
 l gk; rk feyhA ifj.kke cgr mRi kgtud ik, x, vls
 bl ekMy dsl ehi orhZxkpkaeankj;k; k x; ka

iokkij Hkkj ea>e [ksh ij vk/kjHkr l puk
 dscy [ki ksk.k ifj; kstuk dsrgr l Ei wZ iokkij jkT; ea
 X; kjg cfrfuf/k LFkyka dk p; u fd; k x; ka >e [ksh
 i)fr; ka ij l puk@vkdM/s ds l azg.k dsfy, {ks=
 l oZk.k fd; k x; ka l e; Jajkyk vkpMkausi iokkij jkT;
 ea>e [ksh dsrgr {ks= eavoufr #>ku dksn'kz, ka
 iokkij jkT; ka ea>e [ksh dh pkj LFkku foku n [ks
 x; A >e [ksh {ks=kaevfHkyf [kr #i kUrj.k eal sced [k
 ijr h >e Hke; ka dks vls kfudh , oa okfudh jki .ka ea
 #i kUrj.k ga jkbtks; e ds iFkdj.k l jki.k
 rduhd] enk dshkrd jkl k; fud fo'ySk.k] Ql yka ds
 mRi knu fo'ySk.k dsfy, bl v/ ; ; u eaviukbzxbZ
 dk; Zi)fr; k ifj; kstuk dsfu/kkzr mnas; ka dks ijk
 djusdsfy, mi; Dr vls cHkoh ga

iokkij {ks= eaouka l scgj ckl [ksh dks
 ckl kfgr djus ds fy, mi; Dr df"k
 okfudh ekMyka dk fodkl

ifj; kstuk ds rgr df"k okfudh jki .ka dks
 LFkfir fd; k x; ka vls kfud , oa df"k ijh{k.ka ij
 vUr% 'kL; kRi knu] tSodh; tM+vojkska ds cHko ij
 ijh{k.k vls forku ifjpyu tkjh ga ifj; kstuk ds
 rgr cLrkfor rduhdh dk; Oe vls dk; Zi)fr; k
 tS k Aj mfyf [kr gS mnas; ka dks gkl y djusds
 fy, mi; Dr ik, x, ga



'kq'd {ks= ds fy, vkfFkd #i l s 0; ogk; l vksj , dhdr df'k okfudh ekMlyka dk fodkl

Xkq g'kz fcykjkj ftyk&tkski g eafdl kuka ds [krkaedf'k okfudh ekMly LFkfi r vksj i ks'kr fd, x, A gjh [kkn ds fy, [kr ea o'kz ds nksku l d cfu; k , D; w/h, Vk 1/4 1/2 mxk; k x; kA ftttQl ekf'kz kuk 1/4 1/2 vksj c j 1/2 ctkr dk cn'kz vksj kfud ctkr ds#i eal okke ik; k x; k] tcd dksykQkzie ekMlyh ou l o/kz ctkr ds#i eal okke FkA

OksykQkzie ekMlyh us 181 l seh- dh vkf/kdre Apkz 1/4 vksj r 1/2 gkfy dh bl ds ckn ckd kfcl fl ufj; k 1/4 73 l seh-1/2 dksMz k feDI k 1/4 69 l seh-1/2 , yUFI , DI YI k 1/4 65 l seh-1/2 vksj ftttQl ekf'kz kuk 1/4 36 l seh-1/2 jgA , yUFI , DI YI k eadklyj 0; kl vfi/kdre 1/5-96 l seh-1/2 Fk] bl ds ckn dksMz k feDI k 1/5-83 l seh-1/2 l h ekMlyh 1/4-52 l seh-1/2 vksj i h fl ufj; k 1/4-19 l seh-1/2 jgA fu; k 1/2 Ql y dsfcukz dh ryuk eadf'k okfudh Hk] k. Mkaei kni of) mPp FkA o'kz ds nksku xsw Ql y mRiknu 13-67 fDolVy cfr gDVs j vfhkfyf [kr fd; k x; kA

fgekpy cns'k vksj tEew o d'ehj dh fupyh i gkM; ka ea df'k okfudh ds fy, esykbuk vkckjh; k dk l w-i kr , oa cn'kz i jh{k.k

ou mRikndrk l hFkku jkph dsek/; e l s ikp LFkka l s chtka dh cklfr@l xzj.k fd; k x; kA fuEu i gkM {ks= dk cfruf/kRo djus oksy tksj kM 1/4 kM Vk l kfgc 1/2 vksj fcj i ykl h 1/4 kyx < 1/2 eafLFkr l hFkku dh i ksk' kkykvkadk mi ; ksx jki . k LVkM dsmRi knu dsfy, fd; k x; kA {ks= l o'kz k dsckn fgekpy cns'k eai #okyk vksj dks/ eavksj tEew d'ehj eawik , oal Urjcsyk ea fuEu i gkM {ks= ea pkj LFkyka eki 5-0 gDVs j dh igpku dh xbZ vksj rhu cfrdr; kads l kfk ; knfPNdhdr cykM vfhkdyi viukdj ck; ksd i jh{k.k LFkfi r fd; kA ; |fi Hko"; ok.kh djuk tYnh glosk fQj Hh ckjfehkd of) vkpMha us n'kz k fd

esykbuk vkckjh; k vl/ ; ; u LFkykaevPNk cn'kz dj jgh gsvks LFkki uk dsnsl ky dshkrj djhc 2 ehVj dh vksj r Apkzcklr dj yha rFkfi] ckjfehkd ifj . kkeads of) vkpMha n'kz s gsf d esykbuk vkckjh; k] bl ds vyi pØ vof/k dls/ ; ku eaj [krsgq] fuEu i gkM; kads fy, , d Hkoh jki . k ctkr gksl drh gA

gehji g ftys ds fo'k'sk l UnHkz ds l kfk fgekpy cns'k ea egROI w k z ns'kt df'k okfudh o'kz ctkr; ka l senk mojr k Lrj , oai k'skd cklr dk ew; kadu

l gl wUka, oal hrf; kadsfodf l r djus ds fy, df'k ou l o/kzud c. kkyh dsek=kred i jkehVjka dksvfhkfyf [kr fd; k x; kA ifj . kke n'kz s gsf d orzku vl/ ; ; u djus ds fy, p; fur N%egROI w k z df'k okfudh ctkr; ka 1/2 ckj Eckjrk > 56% 1/2 {ks= ea ckdfrd #i l s i kbZ t kusokyh df'k ou l o/kzud df'k okfudh c. kky; ka dsvfhkku Hkx Hk gA , df=r enk uewkadsfo' yf'kr fd; k x; k vksj vl/ ; ; u dsvlrxz Ajh enk l h rjkaea ukbVksu mPp ns[kh x; h] ft l usvf/kdkak df'k okfudh ctkr; kaeenk dsfupysl h rjka dksvksj gkl dh cfoUk dksfn [kk; kA enk fo' ysk. k dsckjfehkd ifj . kke enk ds mojr k Lrj dksuc, j [kuseadf'k okfudh ctkr; kadh , d l dkj kRed Hkiedk dksn'kz h gA

ceqk df'k okfudh ctkr; ka 1/4 k 1/2 ds [kji rok] ea i ksd ek=kvka dks ew; kadr fd; k x; k tcd N%egROI w k z df'k okfudh ctkr; ka; Fk& xhfo; k vkfVok] ekj l , Yckj l hfYVI vkLVfy l] ckgfu; k ofj xkVj] ruk fl fy, Vj] , fYcft; k pkbu l l] ij i jh{k.k fd, x, A ck; ksd {ks= l s, df=r [kji rok] uewkads i ksk. k vksj vkxsjkl k; fud fo' ysk. k dsfy, vf/kd i FkDdr fd; k x; kA Aj mfyf [kr egROI w k z df'k okfudh ctkr; ka }jk [kji rok] mRiknu ds ckjfehkd ifj . kkeaus n'kz k x; k fd dgy feykj ; s ctkr; kafohkku [kji rok] kacHktkads }jk l kykuk #i l s d k Qh ek=k ea [kji rok] i kru ea l g; ksx djrh gA df'k okfudh ctkr; kads [kji rok] ea i ksd ek=kvka i j ckjfehkd #i l sn'kz k fd bu N%egROI w k z



ç tfr; ka dh i fuk; ka ea v/; ; u fd, x, ikp ikskcka
%ukbVktu] QkLQk] QkVf'k; e] dsvl; e vks
e%uf'k; e%eal s, d dh l khrnk mpp Fkj tksv/; ; u ds
vUr eafofHku l gl e%kka ifj. kkeka dks ikuseal gk; d
gksl drk gA

>kj [k.M vks if'pe cakye eadna vks l ey
dh çkdfrd vkckfn; ka vks jki .ka ij l puk , d= dh
xbzvks 30 dSUMMS/ /ku o{kadh igpku dh xba *jki .k
okfudh dsfy, i%hzhkjr dsnskt rst of) djusokys
cgmnash; o{kadsew; ka tu dsfy, , dhdj .kuftr^
ifj; kstuk ds rgr Dyksuh; ço/ku çfØ; k, a fodfl r
djus ds fy, vfHkdfyir 'kkjhfjd; i%kehVjka , oa
ç; ka ka ij dSUMMS/ /ku o{kka dk l ki %k fo'ysk.k ijk
fd; k x; ka

2-2-4- ou enk , oaHkfe l qkkj

fxjh tyxg.k] fgekpy çns'k ea enkva , oa
vksud&l h Hk. Mkj dk Lrj

fgekpy çns'k dsfxjh tyxg.k eav/; ; u fd,
x, A Hk sedh; #i l s v/; ; u {ks= ea i%&rri; d
pVVkus 'kfev gA 'kfydh; #i l spVVku l j puk, a
ykbeLVksu] Mksykekv] Lyv+] 'k] l] Dokbt kbv+]]
l SMLVksu] fl LV] Okbykbv+] dkkye jv+]] ckvMI Z
vkn dsfeykdj cuh gA fxjh tyxg.k eaou {ks= ea
8]165] 593-15 Vu %8-16 fevy; u Vu% enk vksud
dkcZu Hk. Mkj gA dfr'k Hkfe mi ; ksx dsrgr enk vksud
dkcZu Hk. Mkj 3]167]521-58 Vu %8-16 fevy; u Vu% gA
eU/kyh l j puk ea {kkjh; enk vfHkØ; k] buYk Øksy
l j puk ea mnkl hu ikbz xbz tcf d Økcd l j puk
vEyh; enk vfHkØ; k nq]h xba l ?ku ouka ea enk
ih, p- pHM+%42% nsjkn %5-91% vks Lçl %5-00% ds
gkl eku Øe eacf{kr dh xba mi yC/k QkLQk] l Cysuh
vks Øksy l j puk eadettkj] eU/kyh , oaØksy l j pukvka
eae/; e vks FkLV vks QkYV LFkkukaemPp ik; k x; ka
mi yC/k iks/k'k FkLV vks Øksy l j pukvkaemPp vks
eU/kyh , oaCysuh l j pukvkaeae/; e FkA

u%hrky ds fuEuhdr ouka ds fy, Hkfe
mi ; ksx ekWly dh l rfr

u%hrky vks l ehi ortz {ks=ka u%hrky ou çHkx
eav/; ; u fd; k x; ka {ks= eafofHku Hkfe mi ; ksxadh
igpku djdsv/; ; u fd; k x; k%

phM+ou

l ?ku %enk, avfHkØ; k eavEyh;] pkydrk eafuEu gA
vks cybzneV l j puk gA bu enkva eavkxud inkfz
1-63 l s3-85% rd gA

foor %enk, avfHkØ; k eavEyh; l s {kkjh;] pkydrk ea
fuEu gAvks cybzneV l j puk dh gAvkxud inkfz
3-35 l s3-70% rd gA

l ky ou %

l ?ku %enk, a l kekl; r%neV l sxkn neV gA bl ea
fuEu l se/; e o% pkydrk gA vksud inkfz ea
fuEu l se/; e %4-66&3-79% %A

foor % enk, a vfHkØ; k ea vEyh; %5&15&5&68%
pkydrk eafuEu gAvks cybzneV l j puk okyh gA bu
enkva dk vksud inkfz1-66 l s3-10% rd gA

fofo/k ou %

l ?ku %enk, avfHkØ; k eavEyh; %5-31&5-95 ih, p-1/2
pkydrk eafuEu l se/; e gsvks cybzneV l j puk
dh gA bu enkva eavkxud inkfz 1-62 l s5-41%
rd gA

foor % enk, a vfHkØ; k ea vEyh; l s {kkjh;
%5-40&7-85 ih, p-1/2 pkydrk eafuEu l se/; e gsvks
cybzneV l j puk okyh gA bu enkva eavkxud
in kfz1-66 l s4-38% rd gA

vkcd ou %

l ?ku %enk, avfHkØ; k eavEyh; pkydrk eafuEu l s
e/; e gsvks cybzneV l j puk dh gA bu enkva eavkxud
in kfz3-7 l s6-1% rd gA

foor %enk, avfHkØ; k eavEyh;] pkydrk eafuEu l s
e/; e gsvks neV l scybzneV l j puk dh gA bu
enkva eavkxud in kfz3-7 l s5-40% rd gA



fuEuhdr LFkykadsfy, jki.k rduhd nh xbz
rFk fofHku fuEuhdr Hkie; ka ij ouhdj.k grqmi ; Dr
çtkfr; kadk l çko fn; k x; kA

mUkj[k.M dh enk l jupuk ij HkkSedh]
ouLifr , oatyok; qdk l ki şk çHkko

mUkj@if'peh fgely; dsmUkj[k.M ou l Hk
pVVku l jupukvka ds l æe gñ ftl ds ifj.kelo#i
fofHku tyok; oh; {ks=kaeafofHku enk, avkş ouLifr
ç#i gA okfudh vuq U'ku ea HkSedh dk egRo enk
mojr k Lrj dseV; kadu ea vkş vR; f/kd mRiknu grq
enk dsçU/k eavR; f/kd egRo dk gA {ks= dk l o'k.k
fd; k x; k vkş iWZ fu/kZjr xgjk; ka l s fofHku
çkdfrd ouka dsrgr mUkj[k.M dsngjknw] pekyh
fiFKşkx<ç vYek/k vkş çkşoj ftyka l s enk uews
, d= fd, x, A çR; d LFku eaçrfuf/k LFkykadk p; u
fd; k x; k] tks HkSedh ouLifr vkş tyok; q ea
fofHkurk ij fuHj gA çR; d uewafcln/kaearhu enk
çkQkby Hk [ksh xbvş fofHku vkuq'kd l arjka l s
uews, d= fd, A vc rd , df=r enk uewkadk muds
HkSrd&jkl k; fud xqkadsfy, fo'yş.k fd; k tk jgk
gA , d l eku vFkok vvx&vyx ouLifr , oahkSedh;
l jupukvkaokysfofHku uewafcln/kal spVVku dsu,
uewsfy, A 10 eh x 10 eh dsmi ; Dr l ç; k eaDokMŞ/
çR; d uewafcln/kaearş kj fd, x, vkş DokMŞ/ ds
Hkrj o'k'kadh o'k'prk O; k l Åpkbvş N= {ks=Qy ds
fy, x.kuk dh tk, xhA enk l s iFkDdr ckyw vkş
fpduh feVVh dsçHkktka dks [kfuftdh; tkp dsfy,
rş kj fd; k tk jgk gA

mUkj[k.M dh enk vkxřud dkcZu l qh

okrkoy.kh; co₂ dh l khrk dks; k rismRI tZ
?kVkdj vFkok okrkoy.k l s co₂ dks çkjg fudkydj
vkş LFkyh; l eqh vFkok tyh; i kjræ=kaeaHk.M kjr
djdsde fd; k tk l drk gA enk fo'kşkdj ou enk
iFoh ij dkcZu dseç; gkŞ ea l s, d gA D; kad bu
enkvkaea l keld; r%ouLifr dh rgyuk eampP dkcZu

glrk gA {ks= vkş ç; ks'kkyk dk; Zdsfy, , d l eku
dk; Z) fr viukdj mUkj[k.M eaoukaea l kFk gh l kFk
vU; Hkie mi ; kskaeaenk vkxřud dkcZu dk vkdyu
djusdsfy, l q; ofLFkr ifj; kstuk@v/; ; u dk dk; Z
ughafd; k x; k gA ; g ifj; kstuk mUkj[k.M ds l Hk
ftyaeeafofHku Hkie mi ; kskaeaLFky l R; rk }kj enk
vkxřud dkcZu ds çkjs ea ekud vkbzih l h l h
dk; Z) fr viukdj O; kid vkş fo'oluh; l jupuk
l ftr djsçhA 2009&2010 dsnkşku] mUkj[k.M ds l Hk
ftyaeeQs202 fofHku LFkkukal senk vkxřud dkcZu
vkdyu dsfy, fofHku Hkie mi ; kskaea l sçy 1108 enk
uews, d= fd, A bl l ky mUkj[k.M dsfofHku ftyka
ea fofHku oukoj.kka l s 846 uews fofHku jki.kal s
135 uews fofHku vkş kfud Hkie mi ; ks l s 94 vkş
df'k okfudh ekMlyka l s 34 uews, d= fd, x, A mi ; Dr
uewka dsvykok mi ; Dr 202 LFkkukal sLFky ?kuRo , oa
dkl Z[k.M vkdyu dsfy, Hk 404 enk uews, d= fd,
x, A enk vkxřud dkcZu] LFky ?kuRo , oadkl Z[k.M ds
fy, l Hk uewkadk fo'yş.k fd; k x; kA

e/; Hkkjr ds l ky ouka ea [kji rokj
vi?kVu vkş enk ds i kşkd Lrj ij bl dk
çHkko

e/; çnşk NÜkhl x<+vkş mMH k dsl ky ou l s
v/; ; u LFkyka dk p; u fd; k x; kA [kji rokj ds
vi?kVu ea 'kfeY l e ouLifr vkş çkf.ktkr ds
v/; ; u dsfy, fofHku ijrka l s [kji rokj uews, d=
fd, A ç; ks'kkyk eadod ds 45 vkb l kşv/4 dks i kşkr
fd; k x; kA 3 fofHku LFkyka l s dkcZu çokg dks
vHkyf [kr fd; k x; kA p; fur vi?kVudkj dh dh
igpku vkş çyçki kş.k çxfr ij gA orZku v/; ; u
[kji rokj vi?kVu vkş i kşkd ea bl ds #i klrj.k dks
mtkxj djsçk ftl sl ky }kj viuh of) vkş tşek=k
mRiknu dsfy, i qpfDr vkş ç; Dr fd; k tk, xkA



e/; çns'k dsfofHkUu xş ou {ks=ka ds fy, ckd çtkfr dh mi ; ØYkk

ckd ukyka ds of) çn'kz ¼k/ r Åpkbz vlg dkyj 0; kl ½ij çşk.k djusdsfy, e/; çns'k dsxş ou {ks=ka ; Fkk& fl Unjyh Hkkjh ¼kgMkSy½ ektxlp ¼djuh½



?lokjh tcyig eaxş&ou fuEuhdr {ks= ea ckd jki.k

?lokjh ¼t cyig½ I ukbMkxjh ¼y [kuMkU½ jkt x<+½ hok½ çsyhikj ,oa <kdyh ¼ juh@çsy½ nhyk [kMh ,oa I kskfi ijh ¼NmokM½ ea9 fofHkUu ckd jki.k LFkyadk p; u fd; k x; kA ¼d½enk dsnsfofHkUu tud inkFkZea fofHkUu ckd çtkfr; kadh mi ; Ørrk vlg ¼k½enk ds rhu fofHkUu tud inkFkZea M&Mks FLVDVI dsçn'kz



iokkj dsenk uewaksfy, ykbcjh

dk v/; ; u djusdsfy, m".kdfVcalkh; ou vuq U/kku I hFkku iokk' kkyk ea nks ik= I d/kz ç; kx rş kj fd, x, A nksfofHkUu ik= I d/kz ç; kx eamxk, x, ckd iokkka ds of) vkdMs=ekf d #i lsvfhkyf [kr fd, tk jgs

gA rhu ekg dsckd iokkadh of) c<krjh usn'kz k fd cEck k oqxfj/ dh ihyh enk ¼ksukbV½ ea vf/kdre ÅpkbzFkh tcf d 'ksh vU; ckd çtkfr; k; ; Fkk&cEck k cEck] cEck k ykxLi FkI] M&Mks dSykeI FLVDVI] cEck k VVMk] cEck k U; WUI dh dkyh ¼d kfyVd½enk eavf/kdre of) c<krjh FkA iokkij jkt; I s, df=r 29 ou mi&l ey fdLeka l s90 enk uewka dk fo'yşk.k fd; k x; kA o'kz ou vuq akku I hFkku] tkjgkV ea iokkij dsenk uewaksfy, , d ykbcjh LFkfr dh tk jgh gA

jktLFkku dh ou enkvka dk y{k.k o.kz , oaxhdj .k

jktLFkku dh ou enkvka dk y{k.k o.kz vlg oxhdj djusdsmns; ds l kfk ; w, l -Mh, - oxhdj .k ç.kyh viukdj 89 jatk ea 170 ou CykMka ea Jh xakuxj] gukux<+>u fl dj] fcdkuj] ukxş] ckMej] fl jksh] tkyş vlg ts yej ftyka dks doj djds 210 LFkka ea enk çkQkbyka dk v/; ; u fd; k x; kA {ks= ea l kfk gh l kfk ç; kx'kkyk ea enkvka ds



çg mFkyh enk jkrki kuh Mçj ig eamYkj 'kcd fefJr i .kzkjh ou ¼ch@l h½ ih , p%6-32&6-45(b½ h 0-06&0-09 dsm⁻¹ , I vls l %0-27&1-26(dkcU LVkM%22-1 Mgha⁻¹



Jh xakuxj eaxgj okrs+fu{ki ij jşLrkuh fVcck >kMh ¼61, l 1½ ih , p%8-67(b½ h %0-16 dsm⁻¹ , I vls l %0-11&0-13(dkcU LVkM%31-9 Mgha⁻¹



H&ty {k.k o.ku fd, x, A 751 uew&ds fy, enk l jpuj l xfr] jx] ih, p-] o s r pkydrkj vlx&ud dkc& NO₃ v& NH₄ ukbV&stu v& Q&O&Q&I dk vkdyu fd; k x; kA &R; d enk &O&Q&by xM<= ds utnd 0-1 g&V& j ds {k=Qy ea ikjfl&frdh; v/; ; u i&sf&, x, A Jhx&kuxj ftysea enk, a j&xl&rkuh fV&cl& v&urj&V&oh; esku v& ij&kus dNkj&h esku&ads#i ea&e& ; r%, v&sy; u fu{ki g&tg& l& rj dk d&bz H&h vuy&C fodkl ugha g&v& g& t&s b&f&VI ksy dh &df&r d&sn' k&rk g& enk d&cu LV&V&L v&y&v&y& LFky&ka ea v&R; f/kd f&H&U f&K& t&s x&M&j] &rk i x<+1&41 mg &f&r g&V& j 1/2 eamPp g&ks&ds&sr&senk dh % v&x&ud d&cu , oaxg&j&bz ij fuH&j F&K& c&g&r m&F&y&h enk xg&j&bz v& fu&E&u enk v&x&ud d&cu ds l k; &O&'k%; &Q&f&c& k >k&M&h v& , ukst&h l i &M&g&k >k&M&h ea ip d&v&M&k 1/2-6 mg ha⁻¹ 1/2 v& dkyk H&dj 1/3-5mg ha⁻¹ 1/2 &v&M&ka ds fy, d&cu dk c&g&r fu&E&u LV&V&L vkdfyr fd; k x; kA

d&N p; fur o{k &t&f&r; ka dh t&v& viogu {kerk l s l &f&U&/kr v&f&H&y&k{k&f&. kd x&q& k&a ij v/; ; u

ugj {k= 1/2 b&f&lj&k x&k&/k&h ugj ij; kst&uk& 1/2 tyk&O&kur {k= ea d&v&h&f&Ec; k v&h&l h&y&f&I] ; &f&sy&I&V&I de&Y&M&f&y&f&U&I] ; &f&sy&I&V&I Q&k&f&L&V&x&k&V&I v& ; &f&sy&I&V&I #f&M&I ds&cn'ku v& H&&ty {k&h.k&r&k v& enk i&ks&d&ka ij buds &H&ko dk v/; ; u fd; k x; kA of) t&v&ek=k ok'i&R&l t&v& nj v& l ex&t&v& viogu {kerk ds l &v&U&k ea&o{k &t&f&r; ka ea l s



b&f&lj&k x&k&h ugj ij; kst&uk& 1/2 k&bz th , u i&h&ea tyk&O&kur voLF&K ds&r&g&r fof&H&U o{k iz&t&f&r; ka dh of)

; &f&sy&I&V&I #f&M&I us l o&k&ke &cn'ku fd; kA ; &f&sy&I&V&I #f&M&I H&K&f&.M ea H&&ty Lrj 145 l seh- 120 l seh- ds&f&L&F&j ty l s 125 l seh- dh xg&j&bz rd&1/2 rd ?&v& x; kA l h- v&h&l h&y&f&I] ; &f&sy&I&V&I de&Y&M&f&y&f&U&I l v& ; &f&sy&I&V&I Q&k&f&L&V&x&k&V&I ea ty Lrj &O&'k%90 l seh- 70 l seh- v& 60 l seh- rd ?&v&K&A enk o s r pkydrkj , l-v&s, e-] NH₄ v& NO₃-N v& PO₄-P v&y&x&v&y&x &t&f&r; ka ea dk&Q&h f&H&U f&K& PO₄-P d&s N&M&ej ; s l H&h i&g&h&v&j ; &f&sy&I&V&I #f&M&I ea mPp v& ; &f&sy&I&V&I Q&k&f&L&V&x&k&V&I ea fu&E&u f&K& bu &t&f&r; ka ea enk ih, p- ea d&bz [k&l fof&H&U&r&k ugha&f&h x&B&

enk dk; Z&V&V&j t&rk&bz ds QyLo#i b&f&lj&k x&k&/k&h ugj ij; kst&uk& ea tyk&O&kur {k= ea ; &f&sy&I&V&I de&Y&M&f&y&f&U&I l ds&H&k&j&h &cd&f&rd i&qt&v&u ij H&h j&kp&d &f&K&.k f&K& ft l &f&K& ; k&sd& j&ki . k y&x&ks&l si g&ys&f&d; k x; k f&K&A i&qt&v&ur i&ni &f&K& ; k&sd& LFky ds&f&du&j&sea&f&L&f&r e&r o{k&ad&so{k rus l s 6 l s 10 eh ds&chp v&f&/k&dr&j ds&h&r f&K& i&K&ka&dh l &f& ; k 13 v& 36 &f&r ox&Z&eh- {k= ds&chp f&K& H&&ty Lrj l k<si&kp l ky dh vof&/k ea 25 l seh- l s 201 l seh- rd xg&j& ?&v& x; kA j&ki r &t&f&r; ka ds&vy&kok &cd&f&rd vu&O&.k ds#i ea H&&ty Lrj ds viliz&k ds l f&K& {k= ea &f&K& k&f&il t&f&y&f&g&f&I V&f&f&DI M&k; k&dk v& l &f&g&e ea&t& k H&h g&ks&y&x&r f&K& H&&ty Lrj d&sv&/k&d ?&v&kus&v& m&R&i&nd&r&k c<k&use&a eg&Ro&i&w&I g; k&x& f&n; kA

fu; &f&.k voLF&K ; y&k&bl he&v&j ds i&f&j&r x&f& H&K&j fd&le ea fu; &f&.k mip&k&j &M&CY; 1/2 ds l f&K& 50 l seh- &M&CY; 1/2 v& 100 l seh- &M&CY; 1/2 enk xg&j&bz ij tyk&O&kur v& , l₁ % d&bz yo.k&r&k ugh& , l₂ % 7@12 dsm⁻¹ v& , l₃ % 12@24 dsm⁻¹ ds v&ur&x&r fof&H&U ty v&f&/k& k&l u , o&yo.k&r&k ds fy, , ds'k; k fuy&k&f&V&dk] ; &f&sy&I&V&I de&Y&M&f&y&f&U&I l v& V&h- , Q&k&by&k dh ok'i&R&l t&v&h; vu&O& ; k dk v/; ; u fd; k x; kA , ds'k; k fuy&k&f&V&dk eamPp ok'i&R&l t&v& nj v&f&H&f&y&f&f&kr dh x&bz bl ds c&kn ; &f&sy&I&V&I de&Y&M&f&y&f&U&I l v& V&h- , Q&k&by&k ea j&gh&A &t&f&f&ro&j &P&k&bz v& d&v&j ?&g&k ; &f&sy&I&V&I de&Y&M&f&y&f&U&I l ea dk&Q&h mPp f&K& t&f&d , ds'k; k fuy&k&f&V&dk ea N= of) mPp f&K&A yo.k&r&k ea of) ds l f&K& ; &f&sy&I&V&I



deYmryfUI I] Vh , Qkbyk vls , ds'k; k fuykVdk usfu; a.k dh rnyuk eaDe'k%of) ea33%, 20% vls 20% deh dksntzfd; kA tykOKur eac<krjh ds l kfk ; dsyIVI deYmryfUI I ea mPPk of) vfhkyf[kr dh xb] rFkfi , ds'k; k fuykVdk vls Vh , Qkbyk ea of) i] ketVjka ea ?kVko vfhkyf[kr fd; k x; kA

çfr o{k çfrnu ty mi; kx tykOKur dh xgjkzvls yo.krk Lrj }kjk dkQh çHkfor FkA l keku; i kuh dsl kfk 50 l seh- enk xgjkzeatykOKur dsrgr ; dsyIVI deYmryfUI I] Vh , Qkbyk vls , ds'k; k fuykVdk usçfrnu De'k%64] 55-6] vls 30-3 yhVj ikuh dk mi; kx fd; kA ; dsyIVI deYmryfUI I vls Vh , Qkbyk ea xj yo.kh; volFkk eatykOKur eaof) dsl kfk ikuh mi; kx eaof) n[kh xbA rFkfi , ds'k; k fuykVdk ea ty mi; kx MCY; ; rd c<k vls MCY; ; mi pkj eavR; f/kd ?kVka xj yo.kh; volFkk dsrgr MCY; ; mi pkj ea , ds'k; k fuykVdk ea çfr nu 73-6 yhVj dk mPre ty mi; kx vfhkyf[kr fd; k x; kA yo.krk Lrj c<kus ds l kfk nsud ty mi; kx ea deh n[kh xb] tks ; dsyIVI deYmryfUI I ea vR; f/kd %66½ Fk] tçfd Vh , Qkbyk vls , ds'k; k fuykVdk us ty mi; kx ea De'k% 57% vls 51% deh vfhkyf[kr dh xbA MCY; ; , l₃ mi pkj ea ; dsyIVI deYmryfUI I ikni nsl ky dh vk; qeaLFk; h # i l s e] >kus'k# gksx, ¼ tykOKur vls yo.krk mi pkj 'k# djus ds 22 ek g ckn¼ nskt çtkfr; kaus; dsyIVI deYmryfUI I dh rnyuk ea yo.krk dh vls mPp l gu'knyrk dks n'kz kA rFkfi mFkyh xgjkz ea tykOKur volFkk ds rgr] ; dsyIVI deYmryfUI I us , ds'k; k fuykVdk vls Vh , Qkbyk l scgrj çn'ku fd; kA

Nk/kukxig i Bk] >kj [k.M dh fuEhdR ou enkvadsfy, çtkfr mi; ; rrrk vls l dkj j.kulfr us n'kz k fd >kj [k.M ds Nk/kukxig i Bk] {k=ka dh fuEhdR enk volFkk dsçtkfr mi; ; rrrk vls b'Vre

i l sbu enkvads l dkj dh çfØ; k dh j.kulfr r\$ kj dh xbA l dkj mik; 'k# djus l sigysfuEhdj.k dh çdfr vls ek=k l sl æfU/kr dk; k vls enkvads vl; l ffer dkj dka dks /; ku ea j [k x; k gA LFkyka ds o{k of) dsfy, l ffer dkj dka dks eW; kadr fd; k x; kA ykyxw ok eanckoxLr , oacat j LFkykai j i ksk'kkyk , oa {k= i jh{k.k Hk[k.Mkads fodfl r fd; k x; kA fuEhdR enkvadh l dkj j.kulfr , oac tkfr mi; ; rrrk ij ik= vls {k= i jh{k.k dsfy, 60 o{k çtkfr; kads i kskads mxkdj mi; kx fd; kA of) vls tsek=k vkkMka l s Nk/kukxig i Bk] {k= dh fuEhdR enkvads rgr çtkfr mi; ; rrrk dk eW; kadu fd; k x; kA jksir çtkfr; kadsueh l j{k.k vls of) çn'ku dsfunkd ds #k eal dkj kadsçHko dksuew kadsfo'y sk.k vls vfre vkdMk l æg.k dsckn eW; kadr fd; k tk, xkA l Hk fu"i knuh; vkdMsfuEhdR enkvadh bu fdLeagrç i) fr; kads i sst kads fodkl dsl jy cuk, æA

2-2-5- tyl dkj çak

vjkoyh jstka ea vi okg {kfr; kads fu; a.k vls tsek=k mRi kndrk c<kusea o"kkz ty l p; u mi k; kadh {kerk , oa vFkD; oLFkk

ckl okMk ftyseafuEhdR igMh ij fofHku o"kkz ty l p; u rduhdka/dUVij [kkb; k] xMks.h] ckd l [kkz , oa oh&fMp½ vls ikni of) ij igMh <yku] viokg {kfr dsçHko vls enk ueh Lrj dk vl; ; u fd; k x; kA <10% <yku {k= eai kni yEcs vls ekv/sFs vls <ky id.krk eaof) dsl kfk ?kVusyxA , fEcydk vMOfI usyl] , st sMj DVk bMdk vls ft thQI ekf'kz kuk us<10% <ky eacgrj çn'ku fd; k] ckl vls , ds'k; k dS/pw us >20% <ky ea vls , p- bUVhf xDky; k us 10&20% <ky ea cgrj çn'ku fd; kA mi pkjka ea ; dsyIVI vMOfI usyl] , l- dñefu , - dS/pw vls , p- bUVhf xDky; k us dUVij [kkb; Hk[k.Mka eacgrj çn'ku fd; k] esykbuk vkçjh; k vls ft thQI



ekf' kZ kuk usckI [kkbZ HkFk. Mkaeacsgrj çn'kZ fd; k vks , -, fMdk , oackd usoh&fMp HkFk. Mkaeacsgrj çn'kZ fd; ka 2009 ea viokg {kfr <10% <yku ea 12-71% vks 10&20% <ky ea 17-61% Fkh} ; g fu; æ. k eamPpre ¼7-59% ½vks dUVij [kkbZ HkFk. MkaeafuEure Fkh PO₄-P dh {kfr >20% <ky l s mPpre Fkh fdUr q NH₄-N vks NO₃-N dh {kfr; ka 10&20% ea mPpre Fkh

tW 2009 dh enk ty ek=k <ky vks o'kZ ty l p; u nksukami pkjædsdkj. k fHku ¼>0-05½ ughagpA rFkfi] enk ty ek=k <10% Nky eamPpre vks

>20% <ky eafuEure Fkh mi pkjæp Åijh 0&40 l seh enk ijr ea ckI [kkbZ {k= eamPpre vks xMks. h HkFk. M eafuEure Fkh <40 l seh enk ijr eaenk ty ek=k <10% <ky eamPpre ¼<0-05½ Fkh vks 10&20% <ky eafuEure Fkh tçfd xMks. h eamPpre vks oh&fMp HkFk. M eafuEure Fkh enk vks ty l j {k. k ds QYkLo#i 2005 l s 2009 rd 0&40 l seh enk ijr ea enk dkcZ LVktd l kFkd #i l sc<kA >20% <ky ea dkcZ LVktd eamPpre of) Fkh ; | fi egROIwZ#i l s fHku ughagpZ dkcZ LVktd eamPpre of) vU; o'kZ ty l p; u l j pukvædh vi\$kk oh&fMp HkFk. M eafkh