

2.7 वन रक्षण

fogaxkoyksdu

Hkkjrh; okfudh vuq U/kku ,oa f'k{k ifj'kn-
 l b.Fkkukaesou ikni c'tkr; kadh ukf'kdhV ,oajkskaij
 vuq U/kku ifj; kstuk, apykbZ tk jgh gA ukf'kdhVka, oa
 jksxtudkadsfo#) ijikskh ikni c'frjksk ij fo'ksk tkj
 nwsdsi kfk cclU/k dh ,dhdh fof/k; kadh x.kuk dh xbA
 o{k c'tkr; ka ds tsek=k mRiknu ds ldkk dsfy,
 ykHkdjh l we thokadsmi; kx vks eq; ukf'kdhVka, oa
 jksxtudkadh cclU/k fd; k x; kA

ukf'kdhV

- jk'Vh; ou dhV l xg.k ds dEl; Wjhdj.k ds
 fy, dbZl kjf.k; k QkeZ vks c'ukadsl kfk ,e-
 ,l-& ,Dl l ea vkdMk vk/kkj fodfl r fd; k
 x; kA vkdMk vk/kkj ea l Hkh 18]000 c'tkr; ka
 dh] muds Hksrd l R; ki u ,oa Qks/ks ds l kfk
 vkdMk c'fof'V dh xbA us/ ij bl vkdMk
 vk/kkj ij Mkyusdsfy, bl ekbZ, l-D; w, y-
 i-h, p-i-h QkeZea# i kUrj r fd; k x; kA
- bl dhj fVMek dh ,d u, thul vks 13 u; h
 c'tkr; ka dks Hkkj r l snks u, vfhky[ka vks
 foKku dsfy, u, ds#i eaof. k r fd; k x; kA
- nks ifr'kr l kUrj ij VstHh ekbuWk ds
 , l hVksu] ehFksukW vks i s/kyh; e bEkj l kjaus
 'kh'ke vks i kWyj dsced'k ukf'kdhVka ds ykolZ
 dh 30&50% eR; k mRi l u dh gA
- c; kx'kkyk ea foLrkj l s ckl Nnd
 f'lykbvks; l Osl dhWyl dh tsoth dk
 vl/; ; u fd; k x; kA
- Dyksuka ds tsek jkl k; fud ,oa Hksrd c'dfr
 ds fo'yk.k ds }kjk Nky l Hkj d Nnd]
 blMjcsyk DokfMukv/kvk dsfo#) dSofj uk
 bfDo l hfVQksy; k dsp; fur Dyksuka ea l ki s k
 c'frjksk dh i gpku dh xbA
- xky dhV yHhVkd hch bllok l k ds fo#)
 c'frjksk@ l gu'khyrk vks l onu'khyrk ds

fy, rfeyukMh vkU/k cnsk vks djy dsrhu
 fofHku df'k tyok; oh; {ks-kaea; wdfyVI ds
 , d l kSDyksukadksJs khdh fd; k x; kA

- dy feyk dj 19 ifjntkd vks 11 dk'B Nnd
 c'tkr; kafo'kk[kki VVue clnjxkg dsfy, u,
 l w-ikr ik, x, vks buea l s ,ufyM
 gkbMkbMhl vkWj dny l W/MoSy 1/2 vks
 ekWld fl Qksy; k l h, Q- dj phus l l
 jho Hkkj r l sigyh ckj vfhkyf[kr fd, A
- fo'kk[kki VVue vks dkph clnjxkgkaea l eqh
 ij h.k.ka ea py jgs VhchVh, e-&, e-, e-
 -ifjj{kd ds l kfk mipkjr c'kEd l hck
 vks i kkl hfj, Ufkl QkYds/fj; k ds tkp
 i sryka us n'kZ k fd dkph clnjxkg ea dN
 i sryka ij 23 efgusea l QjkeVM dk'B Nndka
 }kjk vkOe.k fd; k x; kA
- iohZ rV ds l kfk&l kfk ifjntk.k l xg.kka l s
 igyh ckj ,d dk'B Nnd x&Vks kM] Fkb l
 CyuQkMhZehyfol 1/2 vfhkyf[kr fd; kA
- ruk Nn] cks/kd hjk #Qkecdnykvk tks
 eq; o{k rus dks cklkrk gS ds vkOe.k dks
 0-5% MkbDykgokl ds 10 fe-yh ty feJ.k
 dks bUt DV dj dsfu; r fd; k x; kA
- , l ukuk LDoekd k ds chtka ds i s/kyh; e
 bEkj l kj dks ; wDVkuk ebfjfy l vks
 ghCyh; k l; jk ds ykolZ ds fo#) 72-99 l s
 75-43% l Hkj d jskh dk; }kyi dk c'n'ku djrs
 gg vfhkyf[kr fd; k x; kA 0-5% ueh 0; ki fjd
 l w-hdj.k dk i. kZ fNMelko ; ok ykolZ ij
 90% l Hkj d jskh c'kko ds vykok 80% v. Ms
 nwsdsfu'ksk dsfy, vfhkyf[kr fd; kA
- l a kst u ea 300 xk- c'fr D; kjh 1/2 kdkj 12 eh- x
 1-25 eh-1/2 dh nj ij Qksy/ vFkok ehFky
 QksyMky vks fodYi r%250&300 c'fr D; kjh
 bZi h, u- t'fouky l ds l kfk enk mipkj tM+



I Hkj .k [kr Hkx }kjk i kSk eR; Zrk dksde djus eaçHkoh fl) gq/kA

- jktLFkku vks xqjkr ea r\$ kj fd, x, eksukØks/kØkst] 10-01%½dsl kFk mi pkrj vks miotZu ijh{k. kka ea N= dsrgr j [ks i kSk kka 48 l l rkg dh vof/k ds ckn yxHkx l Hkx i \$kehVjkaeal okSkke vks r of) çn'kz çnf'kr fd; kA
- i kp dhV x. kka; Fkk& ysi MksVhj k] dky/hvksVhj k] gselVhj k] vkFkVhj k] ghehksVhj k] ls l æfV/kr l rhl dhV çtkfr; ka vks 24 ifjokj k] Jskh vjkd fuMk dks i kSk'kkyvka ea 5 'khrkS.k vks/kh; i kni ka dsl kFk l æ) ik; k x; kA
- i kly/hxØl ykaxØksy; k igys pHM+ ikbu ou fn [krk gS vks igysdetkj o{k ij vkØe.k djrk gS bl dsckn vli; dhV ruk oskd o{k dks Hkst u] vkJ; vks v. Msnsdsfy, viuk y{; cukrsga vx dh ?kVuk, avks vR; f/kd jst u fu"d"zk Hkxd dsfy, o{kka dh l osnu'khyrk dks <krsga ikp ifr'kr dh nj ij uhe rsy fod"kd ds #i ea dk; Z djrk gS vks Hkxd vkØe.k jkd useaçHkoh ga
- ehVkjfgft; e vk/kfjr dod dhVuk'kd mRikn i kVLV ¼ kmMj vks no #ika eBz fodfl r fd; k x; k gS vks tkjh djus, oa{k= ea vk; kx dsfy, r\$ kj ga

jksx] jkstud vks ykHkd kjh thok. kq

- l ghu Eykfu mRi lu djus okys ¶; ut sj; e l ksykuh ds fo#) MSçftz k fl LI w ds çfrjkskh, oal osnh Dykaadh igpku dh xbA
- Mh, u,- vuØe ds vk/kj ij xdkMekZ dh nks çtkfr; k] th- jsl us h; e vks th- ohchfj, ue dks, d= fd; kA ckn okyh Hkjr dsfy, , d u; k vfHkyf [k ga bD; kou vkØVh, l- vuØe tScB] ¼ k'Vh; tB

çks kSxdh l pdk dthz; ; u, l -, dksçLrç fd; k vks , u-l hch-vkØz os. l kbV ij tkjhfd; kA

- Hk.Mkfjr vks/kh; ikni mRikn ea LiKlyst Qach dh of) vks vdgj.k jkdus ds fy, fl vksuhyk rsy] ygl q rsy] yeu ?kkl rsy vks vtokbu rsy ds ok'k'khy çHko dks l QyrkiØd LFkfr fd; kA
- enkj jksxZr iknika vks iÜkj Vguh, oa i kSk 'kh.kzk ds l kFk l Øier l jks. kka jkr iØZ jks l pd ; dlyVI ikni ueuka ls l hfylMØysM; e fDouDoh l hVe ds Mh, u,- fu"d"zk ds fy, çks/kSdKly/ka ds ekudhdj.k dsckn uskfud fdV fodfl r dh xb] tks jks Hko"; ok.kh djus ds fy, vks jks tud dh igpku eal gk; d gskA
- fgeky; u ?kkl LFkyh ds dod dkmh l l fl ufl l dsfofHku vkbl ksy/ka ds u; Dyh; j r DNA thu ds l unj] 185 r DNA thu vks vBBkØl Hkhrjh VRU ØkbLM Lid j {k= dks ifjof/kr] vuØfer djds, u l h ch vkØz dks çLrç fd; k vks , DI l u- vkØVr fd; kA
- , Lijfty l ¶yØl] dny sj; k çtkfr vks ¶; ut sj; e çtkfr dks 27-6 kg.m⁻³ ds ifjj {k.k /kj.k ij Hkx, uksth l , dhieukV ¼ ksu½ vks eixQjk bMdk ¼ kke½ ds l h l h, - mi pkrj çdk'B oØl Zdk mRi hMue djrsgg ik; k x; kA
- l ky vks chtkl ky Hk.Mkfjr dk'B ij {k; dkjh dod dspkj oak vks l kr çtkfr; ka dk igyh ckj vfHkyf [kr fd; k x; kA
- jkb tkØVksu; k cVfVdksy }kjk mRi lu pkjdksy ey foxyu jks vks uk'kdhV ¼ vdk; k tukVR½ dk vR; f/kd mRi hMue jktLFkku ea ikyh, oa l ksr ea egUnh ¼ vks ksu; k bufe l ½ ij vfHkyf [kr fd; kA
- ; dlyVI Dykska dh ruk dyeka ea l jks i r thokf.od l jks; cfl yl ehxV/hfj; e]



L; Mkekukl [yuvkghl bl] , tk/kcDVj
Øndkde vls , tkLifjye cfl ybl us
vkbzch,- mipkfr dyeka dh vi\$kk
40% T; knk eny&i fuk dksc<k; kA

- vfØ; ehM; k eamxk, x, dSolkfjuk dyeka
ij Yfd; k ds N% vbl ksyVI ds df=e
l jki.k us n'kkz k fd ul y CjCbe1 us
mPp xFUFk; ka 1/4@dye½ vls xFUFk Hkj
1/5 mg@xk1/2mRikfr fd; kA
- thok.kq, Lijfityl çtkfr vls VrbdkMekz
çtkfr; ka dksenk l akkukada l kfk ikni of)
c<kus dsfy, ik; k x; k D; kkd blgkous plnu
i kka dh 10&20% mükj tfrork vls 43%
Åpkbzdksc<k; kA

fo"K; oLrq ds rgr i fj; kst uk, a

i fj; kst uk	o"Kz ds nkj ku i jh dh xbz i fj; kst uk, a	t kjh i fj; kst uk, a	ok"Kz ds nkj ku 'kq# dh xbz ubz i fj; kst uk, a
lyku	17	25	11
ckgj l s l dk; rk çtkfr	10	10	04
; kx	27	35	15

2-7-2- ukf'kdhV] jkx vls mudk fu; æ.k

x<øky fgeky; ka eafrryh fofo/krk

x<øky ea6 LFkyal sck.k vkd ouka l s200 l s
vf/kd çtkfr; ka dk çtkfr le)rk] çpgrk] [kk|
ikni@l k k l æe] v.Ms nsus dh vof/k vls vU;
vk/kj j\$kk LVSM i\$ketVjkaij vkpM\$, d= fd, x, A
mükj k[k.M ds ij thoh dSYI MkbMk dh
tbf fofo/krk

Lvhj hvkst ekbØk dksi ds rgr ç; kx'kkyk ea
ij thoh dSYI MkbMk dks bl l eug ds 18 ifjokj ka ea
Nk/k x; kA ifjokj ; ykQm l cl s çpgr vls çtkfr
le) ifjokj Fk bl ds ckn VjkesyMk] bl dh jfVMk]
; dls jfVMk] ekbefjMk] ; ihyefMk] , fQyfulMk vls
VrbdksefVMk Fk dbz ubz çtkfr; ka dh igpku dh xbz
vls budsç; kjsij dk; Zçxfr ij gA

jk"Vh; ou dhV l æg.k dk vkpMk vk/kkj
, e-, l-&, DI l ea vls ekbz , l-D; w, - vls
ih, p-ih Qk&V/ eaHh vkpMk vk/kkj fodfl r fd; kA
okfudh egRo dh djhc 18]000 dhV çtkfr; ka ds
oxhdh oxhdj.k l æg.k vfhky\$kj ij i ksh l pouk vkfr
ij vkpM\$ l ekfo"V fd, A çtkfr; ka ds ckj sea igpku
nsus dsfy, dhV ka dh djhc 16]000 çtkfr; ka ds mPp
foHksu rLohj kadkshh l ekfo"V fd; k x; kA

dN egRo i w k z o{k çtkfr; ka ds ou dhV ka
dk vkpMk vk/kkj vls mudk çCU/k

l Ec) ukf'kdhV] çtkfr LFku] ij i ksh jæt]
{kfr dh çdfr] çtkfr dh vof/k vls çCU/k rdudka
ds fy, ukS okfudh o{k çtkfr; ka mnkgj.k&
'kkjh; k jk&V] MScftZ k fl LI j MScftZ k
y\$VQky; kj , d\$'k; k dS/pj , d\$'k; k
fuyk\$Vdk] , fYcft; k ycd] , yUFkl , DI Yl kj
ckl vls VDVkuk xFUMI dsfy, vkpM\$, d= fd, A
foHksu miHksrk vlrjki" B Qk&V dks vfhkdfYir djds
l Qyrki d l phc) fd; kA ; sQeZ l Ei w k miHksrk
ikj Lifjd fØ; k ç. kkyh ds vfhkdfYi u dsfy, , dhdr
gA orZku ea pkj çtkfr; ka ; Fk&l ky] 'kh'ke] ckl]
l kxk l sl æfU/kr l pouk ds vkpM\$ l kVos j eaçfo"V
fd; kA

oxhdj.k foKku

ifjokj Vsus/kL VsefVMk %gheuksVhjk %
dSYI MkbMh; k] l hfuihuØhVI bfUMdl fl g l s
l æfU/kr , d u; h çtkfr dks of.kz fd; kA ; g Hkj r l s
thul l hfuihuØhVI dk igyk vfhky\$ k gA

nw?kVh] mükj k[k.M l s ; jhc dhl VkeuVkl k
1/2y xk\$Mk½ dsv.M l engkadk ij thoh dj.k d jusokys
çky; jk\$ hj l fyVkj\$y l g; kr vls dkteh dks
vfhky\$ [kr fd; kA ; g Hh çtkfr dsfy, u; k vfhky\$ k
gA i dZ ea; g çtkfr dsy eknk l stkuh tkrh FkA
bl fy, bl dsuj dks sh of.kz fd; k x; kA

nw?kVh l s ghi k l MR Vkykdk okdj
1/2y fi MksVhjk % thvkefVMk½ ij dks/hf l ; k dkbZhyh]



1/2jys18891/2ghEukVhjk %cxlksuMk %ekbØksLVLuk1/2dk
i gyk i j i ksh vfhkyf[k vfhkyf[kr fd; kA

e/; Hkkjr l s cxlksuM ij th0; kHk
1/2ghEukVhjk 1/2 dh ofxZdh

cxlksuMka ds l xg.k ds fy, vdkyk] okf'ke] fgaksh] ijHk.k] o/kk] ;oreky] uknM] ykVij] chM] vkt.ekukckn] l syki g] tyxkø] ukf'kd] Fkk.ksvk] eqcbZ ftyka ds LFkkuka dks feykj egkj'V^a ds egRo iwZ okfudh ,oa l ehi oriz df'k okfudh {ks=ka dk l o{k.k fd; kA dhV çk.ktkr dsdy 176 ueusl QkbZfof/k }kjk ,d= fd,] ft l eal s876 cxlksuMkadsNk/dj ij jf{kr fd; kA fofHku ou o{k çtkr; ka l scxlksuMkadsfuxZu dsfy, i.kZ l gaxd] fu"i=d] xly l #i.k dhVka ,oa ukf'kdhV/kadsykok@l; iir ds213 ueus, d= fd, A dy cxlksuMka dh 8 çtkr; ka dh çkfr dh xbA l kxksu ddkyd ; *WØVksuk eBjfy l s , iØVhyhl , fUVi kMk] , - eBjfy l (l kxksu fu"i=d] ghCyh; k l; jk dsykoZ l s , - ghCyh; k (, ds'k; k fuykVdk ds fu"i=d l s Mkfydkt fufuMk çtkr vk] , - Vd j fM; k] fcmhfy; k jhV k ij , d vKkr l feyij l s , iØVhyhl çtkr] yxjLVkfe; k i foZ/ykj k ds fu"i=d , xks/hjk cfl ukv/kvk l s , iØVhyhl fVjkdsk vk] i kfi fy; ksMhksyh; l l s , - d fuvkbZ pkj çtkr; ka; Fkk&cxlksu tyxkvksuhf l çtkr uo] phyksu ok?khZ l l çtkr uo-]phyksu fgakshy, fU l çtkr uo- vk] MghDVhl bfUMdl çtkr uo- dksl QkbZfof/k l s, d= fd; k vk] foKku ds fy, u; hçtkr; kads#i eavfhkyf[kr fd; kA*

nhedkaij v/; ; u

VfeZVMk ifjokj l sl æfUkr nhed çtkr; kads ok; Yl dk v/; ; u fd; k x; kA dy VfeZVMk ifjokj l s l æfUkr 33 çtkr; ka dk v/; ; u fd; k x; kA bl ds vykok dsk/VfeZVMk 1/5 çtkr; k; fguk/VfeZVMk 1/4 çtkr 1/2 vk] LVkbyk/VfeZVMk 1/4 çtkr 1/2 ifjokj l s l æfUkr 7 çtkr; ka dk v/; ; u Hk fd; k x; kA l Hk 40 çtkr; kack l gh HkSkSyd çkfr LFku Hk fin, x, A

ekbØksyhfi MkdVhjk

ds/hjhEuk V; wj dykd k eifjd ds #i ea igpkusx, ,d cht Nnd dks igyh ckj fpyxstk ikbu dscht kaij mRihMæ dsfy, l fpor fd; k x; kA i k f'kjfol; kl vk] tuukæ dk v/; ; u djdsbl dh ofxZdh dksv | ru fd; k x; kA

ukf'kdhV l o{k.k] çHkko&{ks= vk] t fodh
ckd ukf'ktho

e/; Hkkjr eai k'kkykVæack kadsukf'kdhV kaij l o{k.k usdhVædh 4 fdLeæ; Fkk&i.kZjys l fVMM] , fQM vk] 'or Hædka dks mn:WVr fd; kA ØhVf l ; k dkhyl fyl] ikb; l vk cEcl okj k ds #i ea i.kZjys l ghjkyhQl csu; u] i kfi yhl hj l fi Dj l vk] LdhVhl hjh; k xkxj; k ds #i ea fVMM] vk] Hæc cEcl k ds #lk ea , fQM vk] gskV/bfd; k dku bxuh; k ds #i ea 'or Hæ dh igpu dh xbA bl h rjg jk .Wæack kadh fofHku çtkr; ka dks çkr igpkus okyh dhVædh 4 fdLeamngj.k i.kZjys l fVMMs, fQM] uky Nndkvk] [kjxst k dsvfhkyf[kr fd; kA ckd Nnd fkykVæc; l Øfl dkhyl dh t fodh

fkykVæc; l Øfl dkhyl ckd dh , d egRo iwZ uk'ktho gs vk] gjs [kMæ ckd ka dh N% fofHku çtkr; k; Fkk&cEcl k cEcl] cEcl k VMM] cEcl k o{xj l] tkbxbVky k , çksovsk l h; k] MVM]kSykel tkbxbVh; l vk] MVM]kSykel fLVØV l ij vkØe.k dsfy, çkfr fd; k x; kA cEcl k cEcl ea Nnd ds vkØe.k çHkko {ks= 7-18% l s 11-2% Fkk Hæd eb&tw dsefguseafudyk gsvk] ckd uky dh xkæ ea 40&45 v.Ms nrk gA mnkou vof/k 10&12 fnu vof/k vfhkyf[kr dh xbA eknk vk] uj o; Ldkæd thoudy Øe'k/20&25 vk] 17&20 fnu Fkk ykøZ xkæ ea çok djrk gsvk] ckd dh Hkrjh l rg ea Hkst u djrk gA fMEHkdh dh vof/k 9&10 efgusçkfr dh xbA ifji Do ykøZ i okh jkæafMEHkdh xSyjh dsfdukj i j , d v.Mkdj l; i y pçj cukrk gsvk] 2&11 dsl eg ea l dy rjhdæal; i v/ djrk gA l; i h; vof/k 15&20 fnu pyrhgA thou pØ , d l ky eaij k gk k gA



rfeYukMq vKj dJy ea rst of) djusokyh o{k çtkfr; k&, yUFkl , DI Yl k] ehfy; k Mfrc; k] esykbuK vkckj h; k] FkhLi hfl ; k i kll gyuh; k] ekj l , Yck] ckEcDI l hck vKj MS'cftz; k fl LI w ds ukf' kdhV

l o{k'kr {ks-ka 1/2 rfeYukMq ea N% i kSk' kkykvk; X; kjg jki .kavKj rhu çkdfrd ou LFkkukavKj dJy ea pkj i kSk' kkykvk l kr jki .kvarhu çkdfrd ou LFkkukavka bu çtkfr; kads i kSk'kacky o{k'kavKj ; øk ea {kr i gpkus okysdhv/kadh djhc 55 çtkfr; kads vfhfkyf [kr fd; kA blugamRi Uu {kr dh çdfr vKj vkØe.k dh budh rhork ij vk/kfjr çedk , oa xkSk ea Jskhd' fd; k x; kA vfhfkyf [kr dhv/kadh 55 çtkfr; kaeal s10 u, vfhfkyf k gA ed; uk'kthokads l kFk l Ec) rhu ykozy , oal; i y ij th; kkk; l kr ij hfk; k; kavKj nks thok.kq/kadls 'k'fey djds çkdfrd 'k=q dkk ydI dls Hh çyS [kr fd; kA vflure mi HkD rkvka ds Ykkh ds fy, , d uk'ktho dySMj rS kj fd; k x; kA

i f' peh ?kkVka ds p; fur n's kt o{kka ds Qyka, oachtka ds l kFk l Ec) dhV

çfr'krrk eaçkflr dk folrkj dkkv/hkSVjku ds l æUk ea 37-78] ySi MkSVjku 26-50 vKj fMIVjku 36-22 FkA Qyka vKj çtkka ds dhv/ka dh fofo/krk edh/k 1/4 p 0-808 1/2 dh rgyuk ea l çæ. ; k 1/4 p 1-8099 1/2 ea T; knk FkA

bfyekuh] dukVd ea ekbfj fLVdk MDVhykll M+ 1/2 j keki Fkj h 1/2 eR; zrk

l o{k'k.k uso{k'kads l kFk l Ec) fd l h Hh rjg dk xkSk vFkok çedk ukf' kdhV dk çHko ughan' kiz; kA vf/kd tlp dsfy, , e- MDVhykll M+ o{k'kads A ij h forku l s er 'kk [kkv kads dV fn; k x; k vKj dhv fuxæu dsfy, fi at jk voLFkk ea j [kk x; kA dkyhv kSVhj k 1/2 fjokj l hjæch l Mk 1/2 dh nksfcuk i gpkuk okyh çtkfr; kads er 'kk [kk ds vq' Mkal sfudyrsqg i k; k x; kA

i kbul thjkfMz; kuk 1/2 rpyxkst k 1/2 ds 'kadq , oachtka ds ukf' kdhV

'kadq/ka vKj çtkka ij ukf' kdhV mRi hMæ ds fy, folukj , oapEck ftyka ds vKB LFkyka; Fkk& i kach 2750 eh] ycjka 2915 eh] > kach 1/2 d i k 1/2 2742 eh] fdyck 1894 eh] vdik , Q-vkj-, p- 2503 eh] dkj kFkh 2753 eh] Hkjekj 2143 eh- vKj fjLk 2406 eh- dk l o{k'k.k fd; kA rpyxst k pM+ ds çkdfrd çkflr LFkku ds l Ei wZ jat ea 'kadq Nnd Mk; kj hfDV^a k , chVhyk }kj 'kadq xfl r ik, x,] fdUr qfdYck ea 69% 'kadq {kr xLr ik, x, A dS/hj hEuk V; w j dgyksvk eh] j d ds #i ea i gpkuk x; k , d çht Nnd i gyh çkj rpyxst k pM+ ds çtkka ij mRi hMæ ds fy, l fipr fd; k x; k gA çht Nnd vkØe.k ds y{k.k tyykz ekg ds nkj ku fn [kus' k# gkrs gsvKj vxLr rd yxHkx 50% çht {kr xLr ik, x, A {kr fnl Ecj rd tkjh jgh rc rd 94% çht {kr xLr ik, x, A

, fEcydk vkll Qfl usyl dh foHklu fdLeka ds buMj csyk DokfM'uks/vk uk' ktho

Ukf' kdhv/ka, oajkskads Lrj ds vuophk.k dsfy, l ksk?kVh 1/2 uq l vku , oa folrkj l fdzy çry 1/2 ea , fEcydk vkll Qfl usyl ds Dyksh; çht m|ku ea l o{k'k.k fd; k x; kA l kr foHklu fdLeka mnkj .k&d".kkj Ykfu l] , u-, &6] pd\$ kj dpuj , u-, &7 vKj , fEcydk vkll Qfl usyl dh LFkkuh; fdLe ea Nky Hk{k d bYyh buMj csyk DokfM'uks/vk dk folrkj vfhfkyf [kr fd; kA

fu; æ.k
j l k; u

p; fur okfudh çtkfr i kSk' kkykvka ea ukf' kdhV çCU/k

foHklu i kSk' kkykvka ea Mk; l kDI hye ekykcsj de] xfl l iu; k xffexkvk] ekbfj fLVdk ekykcsj dk] oS/hfj; k bñMdk] , st SMj DVk bñMdk] i kæfe; k fi UkVk] , fEcydk vkll Qfl usyl vKj l si UMI beftZijl ea jkska vKj ukf' kdhv/ka dk



v/ ; u fd; k x; kA l Hh p; fur ç tkr; kaeai .kz kh.kzk
vks i.kz fpurh jks dk çHko çs{kr fd; kA i kaxfe; k
fi UkVk i kskaeal dsy dhV ds l kfk djhc 35% xky
mRi hMe vks 100% fu"i=d mRi hMe çs{kr fd; kA
, feCydk vkQfl usyl i kskadsfy, l frydjh i ksk' kkyk
ea ehdkufydkdl fgl w/l }kjk i fUk; ka mRi hMe
¼100%½çs{kr fd; kA

l kxksu i ksk' kkyk ea [kr Hkaxdka ds fy,
vkbzi h-, e- ekMly

gksykr/bfd; k #flVdk] , p- E; fl Mk vks
fldtkuhdk #fQdkfyl ij vuoh{k.k} çs{k.k vks
ijh{k.k.kauso/kzku l kišk vknzk vks Hkaxd fuxzu ds
l æV/k dksm?kVr fd; kA vkdMsn'kzsgfd fuxzu
dh rkjh[k l s2&3 l lrg igys o"kkZ us l Ekor%fuEu
okroj.kh; l kišk vknzk ¼50%½dskj .k Hkax fuxzu
dksçsjr fd; kA l kišk vknzk eaof) dskn l k/kj .k
o"kkZ usHh Hkaxdksfuxzu dksçsjr fd; kA 15 fnukads
vUrjky ij nksckj eksukQs/kQst vFkok Mkbefks V
0-05% ds l kfk ftftQl tutrk vFkok ftftQl
ekf'kz kuk gkV&VSl ij fNMelko o; Ldka }kjk v.Ms
nssdksde djuseçHkoh fl) gqkA ç; kx'kkyk ijh{k.k
çHkoh fl) gqA vPNh fl pkbZ voLFk ea 250&300
tuhuky l ¼/kbzts, l ¼@D; kjh dh nj bzi h-, u-
, p- bMdk vks , l - dki kbZ l k dsdVl l Zds l kfk
l a kst u ea vFkok fodYir%300 xk@D; kjh ¼/kdkj
12 eh- x 1-25 eh½dhnj ij Qkjs@ehFky QksyMky ds
l kfk o; Ld fuxzu dskn , d l lrg ds Hhrj l kxksu
D; kfj; ka dk mipkj i ksk eR; Zk ds foLrkj dks?kVkus ea
çHkoh fl) gqkA eDr djusds, d ekg ckn vkbZts, l - Hh
çkr fd; k} tksDr enk eamudh mlkj thfork dksf l)
djrk gA çs{k.kadsvk/kj ij 'or Hkaxdksçcl/ku dsfy,
, d vkn'kzelxh'kzfl) kVr fodfl r fd; k x; kA

ckal Nnd Qykbvkc; l Øfl dkfyl dk
fu; æ . k

nd zu 0-04% l cl çHkoh i k; k x; k bl dskn
bUMkl YQku FkA tcfD l kbijehFku vks MSVkehFFku
U; ure çHkoh FkA nsgd dhVuk'kolka e} beMDykcM

0-04% çHkoh i k; k x; k} bl dskn eksukQs/kQst vks
Mkbefks V jgA

i kaxfe; k fi UkVk xkYl vks mudk çcl/k

i kaxfe; k fi UkVk ij foLr l o{k.kausrhu
xky çj dka dk mRi hMe n'kkZ k} ft l srhu xky çj dka
mnkj .k ¼½ i .kz xky çj d bfjvkQhbl phfj; kuh
eS h ¼bfjvkQmk %, dçjuk %, jdfuMk½¼i½vkj h xky
çj d&, LQksMhfy; k i kaxfe; k ekuh ¼ fl MkeHk %
fMIVjk %bUl DVk½vks ¼ii½ruk xky çj d&, xtekbft M
QykbZ¼ xtekbft M %fMIVjk %bUl DVk½ }kjk vkØe.k
gqkA bueal svkj h xky çj d l cl segroi wkgSD; kcd
, s100% cht {kr dh l hek rd cht mRi knu dks l h/s
çHkor djrk gA vkj h xky çj d dksfu; f=r djusea
vkj h xky xfl r 'kk[kvka dh dkV&NkV vks blga
tykuk@nckuk vkn'kz gA xkhj mRi hMe dsekeys ea
dyh l çpuk ds le; Dykji kbjQst vFkok
bfeMkDykcM dk fNMelko fd; k tk l drk gA

, yUFkl , DI Yl k} esykbuk vkckjh; k vks
MSVcftZ; k fl LI wdsuk' ktho

i ksk'kkykva ea vks ; ok jki .k ea uk'kthokh
, Vhok Qscfl yk vks bfyxek ukf l l ¼ yUFkl
, DI Yl k½ ekbykdjl fMI dkWj] , e- fofjMsul
¼MSVcftZ; k fl LI ½ vks ; Vhjks/h thfeukV
¼esykbuk vkckjh; k½dksfu; æ .k ea 0-025 l s0-075%
ij jkl k; fud i hMeluk'kh ; Fkk&ffkvksMdkc]
QyksM, feM] eksukQs/kQst vks Dykji kbjQst
çHkoh FkA

l kxksu vUr% dk"B Nnd , yDVhj kst hfLV; k
dnEch ej dk çcl/k

; syki çHkx ea Mksxuy vks fdjokrh ds
igpu fd, {ks-kaeak'ktho çHko vfhfryf[kr fd; kA
xfl r jki .kaeak'kthokadsvuoh{k.k dsfy, 3 ykbV
V5 ¼ d l syj i koj g%LFkfr fd; kA xfl r jki .k al s
ykbV V5 l axg.kka l s o; Ld xfrfof/k dk vuoh{k.k
fd; kA ykozy V5 }kjk ; k=d fu; æ .k vks enk VSl dk
ijh{k.k fd; k vks i {kh ij Hk{k; kadh Hkmedk dksçyf[kr



fd; kA Mkschuy jksi .kka ea l w dfe blt d'ku } jk
t s fu; a .k dk i j h { k .k fd; kA l w dfe; ka v k s / k e d k a d s
l k f k r u k m i p k j a c c u / k d s f y , i) f r ; k a d k , d i s t
f o d f l r f d ; k A

[k r h d s v l r x r p l n u d h u k f ' k d h v
l e l ; k v k s m u d k c c u / k

Uk f ' k d h v k a , o a j k s k a d s f y , c h o s u k u g Y y h j
e p h l u k g Y y h j g k s v v i g i k j ; y o k y k 1 / 2 i j 1 / 2 v k s t j d c l n k
e a f l f k r p l n u d s i k p o u l o / k z u & v k s k f u d h e k m y k a d k
y x k r k j l o k . k f d ; k x ; k A b u e k m y k a e a i k , x ,
l k e l u ; u k f ' k d h v k a e a ; s j l p i k d 1 / 2 v k s t l h j f d l
V j b m l] l d h v h ; k g f e l Q h f j d k j i k j l d h f v ; k
u k b x e j l h j k s y k f l v l , f d v f u Q h f e l] , v k s u m h y k
v k s j , u v f y l v k s i k j k v d j f m u k f l Y o h l v m a
p l n u i j v f h f y f [k r f u ' i = d f k s o k s / k s k a l c t k f r]
M s h f d j k e h u m k d k v k s , d s ' k ; k v k m j d r y Q h f e l
d s l k f k m x s ; o k p l n u j k s i . k k a i j l o k . k k a u s , d x h k j
r u k N n d] i i i j l h u l l a u k s y h u v l 1 / 2 h j e c f l M k %
d k y h v k s v h j k 1 / 2 d s c h k o d k s m n ? k f j r f d ; k A p l n u i j
b l l h j e c f l M H k x d h i g y h f j i k s / z g a y x h k x l H k
e k m y k a e a N k y H k { k d b Y y h 1 / 2 u m j c s y k D o k f m u k s / k v r h / 2
c s { k r f d ; k A p l n u e k m y k a e a l s , d e a j b l d k m d h N n d
1 / 2 ; u t h j k d k m d h / 2 d k s c s k d f d ; k A ' l h . k z k y { k . k c g r
d e f k a

d s o k f j u k b f d o l h f v o k f y ; k j k s i . k k a e a
b u m j c s y k D o k f m u k s / k v k c c u / k

r f e y u k m q d s f o f h u d f ' k t y o k ; o h ; { k s - k a e a
m x k , x , d s o k f j u k b f d o l h f v o k f y ; k j k s i . k k a e a
N k y H k { k d b Y y h c h k o d k e w ; k a d u f d ; k x ; k v k s v c
r d d y 1 8 j k s i . k k a d k v / ; ; u f d ; k x ; k A d s o k f j u k
o { k a d h o f) N k y H k { k d b Y y ; k a d s m R i h m a d s c h k o d h
t k p c x f r i j g s v k s v k o r i z o f) v k d m k a d k l a z g . k
v k s H k { k . M k a d k i k s k . k f d ; k t k j g k g a N k y H k { k d b Y y h
l s d n d h v j k s t u d , d = f d , A b u u e m k a l s
u k ' k h t h o i j b u d h { k e r k d k v / ; ; u d j u s d s f y ,
f o ' k o l o / k z f o d f l r f d , A

c p k u f u ; k y a t u d s u k f ' k d h v

l k r j l k ; u k a m n k g j . k & M k b D y k s o k d 0 - 5 %]
e k s u k o k s / k o k s t 0 - 0 7 %] b u m k d Y O k u 0 - 0 5 %] M k b e h f k s V
0 - 0 5 %] i s / s y] d j k d h u v k s M k b d k s k c u t h u \$
d s j k d h u & 1 0 f e - y h c r ; d e a l s M k b D y k s o k d 0 - 5 %]
1 / 4 0 f e - e h 1 / 2 d s t y f e J . k u s c p / k d h j k # O k e d h y k v k
d h ' k r c f r ' k r e r ; q d k s n ' k z k A p k j j l k ; u k a m n k g j . k
e k s u k o k s / h o k s t 0 - 0 5 %] b u m k d Y O k u 0 - 0 5 %] c f o l v u
0 - 0 % v k s , Y O k , u , - , - 1 / 4 0 i h - i h , e - 1 / 2 e a l s
b u m k d Y O k u 0 - 0 5 % \$ c f o l v u 0 - 2 % \$, Y O k , u , - , -
4 0 i h - i h , e - d s l a k s t u d k i . k z . f n M e l k o c p k u f u ; k
y a t u d s Q y m R i k n u d h v f / k d r e l a ; k v k s H k j d s
f y , l o k k e f l) g r / k A e k s u k o k s / k o k s t 0 - 0 5 %]
b u m k d Y O k u 0 - 0 5 %] l k b i j e h f k u 0 - 0 3 %] Q s i o s y h j v
0 - 0 3 %] M s v k e h f k u 0 - 0 0 2 %] , Y O k e h f k u 0 - 0 0 3 %]
f c c k s l i j & c h c f l ; k u k 7 f e - y h @ y h v j] u e j k t
l c h e & u h e r s y 0 - 5 % d k i . k z . f n M e l k o
7 2 ? k . V s d s H k r j y k o z d k s e k j u s e a f u ; a . k d h v i { k k
e g R o i w k z # i l s m R d ' v i k ; k x ; k A

p h m + i k b u o u k a e a d h v N n d d k m l y d l
d k c c u / k

p h m + i k b u r u s i j d h v k a d h 1 2 c t k f r ; k a } k j k
v k o e . k l i p r f d ; k x ; k A v k c k n h v k s { k f r d h c d f r
d s v k k j i j 4 c t k f r ; k s i k n y h x o l y k a x o k f y ; k j
l y s j h i l c k b Q h f e l] o h l v k j g h d l l Q h l b l
v k s l o b u k s v h j k , v h f v e k d k s x h k j d s # i e a
J s k h d r f d ; k A i k n y h x o l y k a x o k f y ; k d k s l c l s
f o u k ' k d d h v N k y N n d d s # i e a c s { k r f d ; k A
1 0 0 0 o x z e h v k d k j d s r h u H k { k . M M h & 1 1 3] l j h ? k k v
o u 1 / 2 k s y u o u c h k k x 1 / 2 v k s l y s v o u 1 / 2 g f e j i j o u c h k k x 1 / 2
e a f p g f u r f d ; k v k s p h m + i k b u d s d h v c k f . k t k r v k s
b u d s c k d f r d ' k = o / k a d k s c r j r h c p ; f u r o { k a l s
v f h f y f [k r f d ; k A i k n y h x o l y k a x o k f y ; k r f k
v l u ; H k a d k a d s f y , o { k v s d h c h k o d k f j r k d s e w ; k a d u
d s f y , n k s v k d k j k a 1 / 8 0 l s e h y E c s x 7 0 l s e h o { k e p r k
? k j k v k s 1 0 0 l s e h y E c s x 9 0 l s e h o { k e p r k 1 / 2 d s y v B k a
d k s 5 c k ; k s x d l f k y k a e a j [k s x , v k s d h v l f o ; r k v k s
i h y k a x o k f y ; k j o h l v k j g h d l # f o l b l , o a



LQbukVhjk , Vhfjek dh vkcknh cpjrk dksyVBkadh ueh ek=k dsl kfk vfhkfyf [kr fd; kA 90 l seh- l s180 l s eh- ds?kjk jat dso{kadks; pk 100 l seh- l suhpz vls ifjoDo 1480 l seh- l s Åij½ LVSMka dh rnyuk ea mRihMue dsçfr vR; f/kd l onh ik; k x; kA vlx dh ?KVuk, avls vR; f/kd jky fu"d'kz k Hkx foLrkj dsçfr o{kadh l onu' khyrk dks<krk gA



Nky dh ijr ij Qqfyxh xSyjh l jpuK



i h- ylxQkfy; k jkjk pM+kbu dk 'kqdu



i h/hxQl ylxQkfy; k jkjk fu"d'kz r dhVey

i h/hxQl ylxQkfy; k dk o;Ld



Nky ds uhsfNnz l jpuK



Nky eafNnz l jpuK

tbfu; æ.k

ou jksi .kka vls i kSk' kkykvka ea dhV çCU/k ds fy, ehVkjfgft; e vk/kkfjr dod dhVuk' kd

egRo iwZou o{k çtkfr; ka ij çedk uk'kthoka dsfo#) fo'kDrrk vls tbfu; æ.k {kerk dk vl; ; u djus ds fy, ç; ksk'kkyk ea i Pphl ehVkjfgft; e vkbl ksy/kadks i kSk'kr fd; kA l kxkfu"i=d] ghCyh; k l; jk] i fyxk eSkjfy l vls , yUFkl , DI Yl k ds uk' kdH/kadks l Hkh , df=r ehVkjfgft; e vkbl ksy/kadks çfr l onh ik; k x; k fdUrqvbl ksy/kæajks tudrk vyx&vyx FkA df=e vlgkj dk mi; ksk djds ikys x; segkxksih Nnd ghfl i hyk jkHk Vh dsl kfk tbf fo'ySk.k usn'kz k fd 7 vkbl ksy/ budçfr jkst ud FkA foHku ek=kvk@l e; dsl kfk iz ksk'kkyk eao{k; nhedk vk/kkVks/feZ iztkfr; ka ds fo#) foHku vkbl ksy/ka dh jkst tudrk dh tkp dh xbZ vls , y-Mh- 50 , oa, y-Vh- 50 dk ifjdyu fd; kA , yUFkl uk'kthokadsfo#) p; fur vkbl ksy/kadks {ks= eV; kadu us 30&34% eR; zk dks n'kz kA vuktka Bkl ehM; k vls df'k vif'k'Vkae adod dk cgek=k l o/kk ijhf {kr fd; kA ikmMj vls nò nks #ika ea i kV/ uked , d dod dhV uk'kd mRi kn tkjh djus vls {ks= eami; ksk gsrq\$ kj gA

yfi MkdVj klu uk'kthokadsfo#) tbfu; æ.k , tbfvka ds #i eakbØk i kMz k

dy 94 'kYd iâ[k; ka dk ijh{k.k fd; k vls 29 çtkfr; ka l s ekbØk i kMz u ij tfo; ka dks i Fkd



fd; kA ghCyh; k l; jk] dS/kfll fy; k ikfi fyvks
 Mheksy; l] ikfi fyvka iklyhVhl yokl ij] buls
 l æfUkr ij iks'k; ka l s iFkDdr chtk.ky/ka dh foHkUu
 l kUnrkvkaok l jksi .k djdsto fo'y sk.k v/; ; u fd; k
 x; kA ekbOk. i kSMZ; k dh 29 çtkfr; kadh vkdkjfevr dk
 v/; ; u fd; kA iæqk tkp iztkfr; ka ea ghCyh; k l; jk
 ea vkdkfjd] jkstudrk] xqku dh nj vls
 ekbOk. i kSMZ; u chtk.ky/kadsthou pØ ij v/; ; u ij
 fd; k x; kA p; fur çtkfr; kadsfy, VhbZ, e- v/; ; ; u
 fd, x, A l Øe.k{kerk dh tkp djusdsfy, vl; ou
 uk'kthoka ea ghCyh; k l; jk chtk.ky/ka dk mi; ksx
 djds l æj&fu"çHko v/; ; u fd; k x; kA

e/; çns'k ea l kxksu fu"i = dka ds çkdfrd
 'k=q

l kxksu ds çedk ukf'kdhVka ghCyh; k l; jk vls
 ; wDVksuk eBjfy] ds çkdfrd 'k=q/ka ¼ j tH; kHkq
 ij Hk{k; ka, oajkstudkz dsl æg.k dsfy, e/; çns'k ds
 l kxksu oukaevkorkz l oçk.k fd; k x; kA ghCyh; k l; jk
 ds yokl ij ij tH; kHka dh ikp çtkfr; k
 ; Fkk&bDFkhekdz ukVysfj; k] VRQkdEi k bUMfic; k]
 çdhefj; k dh ,d vKkr çtkfr vls LVfiez, k dh
 rhu vKkr çtkfr; k] dhV ij Hk{k; ka dh rhu çtkfr; ka
 ; Fkk&dsyhMk LiyhFUMMyk] dSfkhQksuk
 Qh hzykVv vls Øhl ksjyk dkubz k] i {kh ij Hk{k} dh
 ,d çtkfr ; Fkk&dkubh eDghhok vls vKkr
 edMh vls dodh jkstud dh ,d çtkfr
 ; Fkk&, Lijfyt] qlyc] }kjk vkØe.k ns[kk x; kA
 ; wDVksuk eBjfy] ds yokl ij ij tH; kHka dh vkB
 çtkfr; ka }kjk vkØe.k ns[kk x; k ; Fkk& , iBVhyhl
 eBjfy] , iBVhyhl] çdhefj; k vls LVfiez, k
 dh ,d vKkr çtkfr] ØheLVI ghi fy; k]
 VRQkdEi k bUMfic; k ,oa tBFkfiEiyk l hjk vls
 l wdfed dh ,d vKkr çtkfr] dhV ij Hk{k; ka dh nks
 çtkfr ; Fkk&dBFkhdksuk Qh hzykVv vls Øhl ksjyk
 dkubz k vls vKkr edMh vls dodh jkstud
 dh rhu çtkfr; ka ; Fkk&, Lijfyt] ukbxj]
 C; whfj; k cfl ; kuk vls q; utfj; e vkDI hLijs eA

, - qlyol] , - ukbxj vls cfl ; kuk dk ç; ksx'kryk
 l w/kz fd; k vls y{; uk'kn thoka ds fo#)
 jkstudrk ij Hk{k.k fd, A ,d l {ke cgHk{k} dhV
 ij Hk{k} l h- Qh hzykVv vls bl dsoBfyid ij iks'k; ka
 dh ikyu rduhd fodfl r dh xBA

dhV jkstud l wdfed dk mi ; ksx djds
 nhedkavls 'or Hkx çcl/ku

oDI ekHk] xsyhfj; k ehykshyk dsç; ksx'kryk
 l w/kz dkso'kz Hk] iks'kr fd; kA bl h ds ifjiDo yokl
 dks l w/kz ea l sle; ≤ ij iFkd fd; k vls
 dkVifud ij ikskh ds#i eaç; Ør fd; kA dhV jkstud
 l wdfed ds2 fonskt vls 4 nskt vkckfn; kadsl w/kz
 dks dkVifud ij ikskh ; Fkk&ç; ksx'kryk ea oDI ekHk
 yokl ij o'kz Hk] iks'kr fd; kA e/; Hkjr; jkT; ka l s
 nskt vkckfn; ka vkb] ksy/ka dsfdQk; rh vls l Qy
 çgk=&xqku dsfy, mlur ijskehVjka l æf/kr ç; ksx
 rS kj fd, x, A nhd vls 'or Hkx uk'kthoka ds
 fo#) bZih, u- nskt vkckfn; ka vkb] ksy/ka dh tB
 fo'y sk.k {kerk dsfy, ç; ksx fd, x, A e/; Hkjr l s
 vf/kd vkckfn; ka dks iFkd djusdsfy, e/; çns'k ea
 l oçk.k fd; k vls dthne ifj; kstuk dsl kxksu jksi .k {ks=
 e/; çns'k ou fodkl fuxe] tcyig ¼ LyEukkn] ftjh
 vls /khej [kHk½ vls fMUMkjh ou çHkx] fMUMkjh
 ¼ djft; k] txrig vls vejda/d½ dks feykj nks
 LFkyka l s 40 ueus fy, x, A l eku; #lk l s ç; Ørk
 dhVuk'kd@tB iHMeduk'kh ds fy, bZih, u- dh
 dhVuk'kh; l gu'khyrk@l ærrk ij vuq U'ku 'k#
 fd; k x; kA

fgekpy çns'k ea Hkjr; thll h ekHk
 ¼ yhefUV^a; k vkcQh dkV½ dk çcl/k

ikfjvuqhy tBodh; fu; æ.k mik; k] mngj.k & uj
 'kyHk dksidMusvls ekjusdsfy, eknk fyax
 Ohjkeku dk mi; ksx djds vls thokf.od
 dhVuk'k; ka ds#i ea çdhykokbj l ¼ y-vls, u-i-h-½
 dk mi; ksx djds nks igyqka dks bl ifj; kstuk ea
 viuk; k x; kA çr; d tkp ea 75 yokl ij çdhykokbj l



vkpMsf'ys'kr fd, A xqjkr eajrhikj ou fjtoZl s , d's'k; k fuykVdk dser vls 'kqd o{kka l s iFKDdr ikni ijthoh l#dfe ctkr dh gkykyel bflMdl] , Qhyhcl , ohuk vls ghfydkM/hyhcl ctkr ds#i ea igpku dh xbA jrhikj vls Hkt 1/2xqjkr1/2ea, d's'k; k fuykVdk ds'kqd vls jksxZr o{kka l s, df=r enk uewka l sbu l#dfe; kadksi FKDdr fd; kA l Hk rhu ctkr; kaçdfr eaçkã&v/kz/Ur-%vls vUr%ijthoh ikbzxb] tksed; r%ckã Årdka ij Hkj.k djrsgã i kskæaHkt 1/2xqjkr1/2eatM+dk u rlsÅrd {k; vFkok uk gh#) fodkl çs{kr fd; k x; kA

ckWfudYI

, yUFkl , DI YI k] esykbu vkckj h; k vls MSYcftZ; k fl LI wdsuk' khtho

y{; dr uk'khthoka ij eR; Zk] l Hkj.k] fujkska vls l Hkj.k]ksth çHkoka ds fy, , yUFkl , DI YI k] ySVkuk delkj] , xy ekehZykd vls i kæse; k] tVRQk dk dPpk l kj vls uhe ry dh tko dh xbA dffkr ikni dk dksZ Hk dPpk l kj ijH{kr fdl h Hk uk'khtho&, Vhok Qfcfl yk vls bfyXek dkfl l l 1/4 yUFkl , DI YI k] ekbykdj l fMLdkWj] , e-fofjMsl MSYcftZ; k fl LI wdsuk' khtho vls ; W/hj ksh thfeukVl esykbu vkckj h; k] ds fy, çHkoh ugha FkA rFkfi i ksk'krykvæavls ; çk jk] .k ea, yUFkl vls esykbu fu"i=dka dsfu; æ.k ea2&3% ij i kæse; k vls uhe] tVRQk dsrsy kdsçHkoh ik; k x; kA

, xy ekehZykd cht ry ds tso ihMduk' kh; xqk

, xy ekehZykd dsQy] yqnh vls chtka l s fu"dkf'kz 13 ea l s rhu ; ksdka us tso ihMduk' kh; çHko fn[kk, vls ; s70% ykoZy eR; Zk dsl kFk l kxksu fu"i=d ghCyh; k l; jk ds fo#) çHkoh ik, x, A fuykEçj vls dgykFkür k dgy eajkt; ou i ksk'krykvæa eal kxksu dhv/kadsfo#) , dy ; ksdka, oadPpsl kjkads {k= Lrj tso ihMduk' kh; eW; kadu us n'kz, k fd ; s dgykFkür k dh ryuk ea fuykEçj l kxksu i ksk'kryk ea ghCyh; k l; jk dsfo#) çgñ çHkoh ik, x, gsvls bl s of) çkksj ds#i eal h n] k x; kA



fuykEçj dgy eal kxksu ij ghCyh; k l; jk; k dsfo:) , - ekehZykd cht ry i wZ l#dj.k dk mi ; kx

l kxksu fu"i=dka ds fo#) , Uuksuk LDoekd k l stso ihMduk' kh

ikp foyk; d l kj ea l s vls 0-5% , Uuksuk LDoekd k ds, d ty l kj dsl kxksu dadyd ykoll ds fo#) l Hkj.k]ksth fØ; kdyki dsfy, eW; kadfr fd; kA vU; l kja dh ryuk ea i s/kyh; e bEj l kj us 72-99% l Hkj.dj ksth fØ; kdyki 1/4 h < 0-005 1/2 n'kz, kA bl dsckn bEkkby , l hv/ 1/4 h < 0-05 1/2 } kj k 69-99 jgkA bl dsvykot] vuqnyre ek=kvædsfu/kj .k dsfy, çR; d vk'ktud l kj ds25 ih-h, e- l s3000 ih-h, e- rd dh l klnrk@ek=k jat dsl kFk l a ksd tso fo'ysk.k us dPpsbFkby , l hv/ l kj 1/4 h < 0-001 1/2 ds800 ih-h, e- l s Åij 70% l s vf/kd l Hkj.dj ksth dks n'kz, kA bu nsl kjkausfu; æ.k 1/4 h < 0-001 df=24, F=14.00, SE(d) ± = 10.85, LSD (P.<0.05) = 22.40 1/2 dh višk 75-43 vls 78-84 çfr'kr l Hkj.dj ksth/krk dsl kFk l kxksu fu"i=d ykoll ea l Hkj.k ea vojksk Hk fd; kA bEkkby , l hv/ ds fy, 50% l Hkj.dj ksth çHko çgñ çHkoh l klnrk Åijh , oauhpyh fo'okl tu; l hek ds l kFk 524-80 ih-h, e- ifjdfyr dh xb] tks Øe'k% 769-80 vls 435-78 gA i s/kyh; e l kj ds fy, EC50 Åij vls uhsdsl kFk 220-80 Fh] fo'okl tu; l hek 357-78 vls 114-52 gA dkWye Økæ/vkskQh



usi V/h; e bEj I kj I srhu çedk çHktk tS k Vh, y-
 I h }kjk I e; & I e; ij I fu'pr fd; k x; k g\$ dkm
 6a, 6b v\$ 6c dk bEkbby , I hv/ I kj I s pkj
 Økæ/skrfQd çHktk dkm 3a, 3b1, 3b2 v\$ 3b
 dk iFkdj.k fd; k g\$ ft I us I Hkj djksh v\$ of)
 fu; æ-d çHko dksçn'khr fd; kA ifj.kkæausn'kz k fd
 0-08 dh mPp I khrk ij 3b1 çHkt 74-49% I svf/kd
 i Ûk I j{k dsl kFk I kxk dækyd] ; WDVkuk eSjfy I
 ds fo#) vU; mipkja dh vi\$kk egRoiwz #i I s
 mRd"V P<0.001, df = 30, F= 8.34, SE(d)± = 10.64,
 LSD(P<0.05) = 21.95½ I Hkj djksh fØ; kdyik ds
 I kFk çHkoh gA fQj Hk 400 ih-ih, e- dh I khrk
 47-83% i Ûk I j{k (P<0.038, df = 29, F = 2.94,
 SE(d) ± = 17-92, LSD(P<0.05) = 37.38) ds I kFk
 I k[; dh; #i I s800 ih-ih, e- dsl erq; FkA çHkt
 3b2 dh fuEure I khrk fcuk fd I h egRoiwz
 I Hkj djksh fØ; kdyki (P>0.05) ds I kFk fu; æ.k
 ds I eku FkA bEkbby , I hv/ ds çHkt 3b 0-05%
 ½00 ih-ih, e-½ I khrk ½9-79% i Ûk I j{kæav\$ bl I s
 Åij egRoiwz #i I smRd"V I Hkj djksh fØ; kdyki
 (P < 0.001, df = 30, F= 174.01, SE (d) ± = 3.97,
 LSD(P<0.05)= 8.10) dsl kFk I cl svk'ktud fl)
 ggA I kj dh I khrk cækusdsçk dk; ðyki eaf)
 n[kh xBA iWZ; i;h; gksusdsçk iwzcln ykozy Hkj
 mipkjr i fUk; kaij yxkrkj Hkj.k djrk gsv\$ fu; æ.k
 (P<0.05) dh ryuk ea I; i;h; Hkj ykozy v\$
 iWZ; i;h; voLFkvkaeæR; zk dsl kFk egRoiwz #i I s
 çHkfor FkA tcd çkjFkd ykozy Hkjkaeal k[; dh;
 #i I sx\$egRoiwz (P>0.05) vlrj FkA 400 ih-ih, e-
 I sÅij I khrk, avflre ykozy HkjkaçHkfor djusea
 egRoiwz #i I smRd"V (P<0.033) FkA bl hçdkj iWZ
 I; i;h; Hkj Hk çHkfor ggA 100 ih-ih, e- I sÅij mipkja
 eal; i;h; dk dkbZfodkl ughaFkA 400 ih-ih, e- ij v\$
 bl I sÅij I kxk dækyd] ; WDVkuk eSjfy I ds

fo#) bEkbby , I hv/ I kj dsl kFk bl h rjg dsifj.kk
 çkr fd, x, A bl ekeyseai jhf{kr fuEure I khrk ij
 Hk dkbZ; i;h; fodkl ughaFkA

ghvksVz; k foVhl kMBMhl ds fo#) dN
 i kni I kj dsdhVuk'kh; xqk

, d fo'o fo[; kr vxkj ry mRiknd
 o{k , Doky\$; k esy\$ hfU I ykEd dk , d
 çedk uk'ktho ghvksVz; k foVhl kMBMhl ej
 ½y\$ % ikbjsyMk½ ds fo#) dN kni I kj ds
 dhVuk'kh; xqkædk eW; kælu fd; k x; kA , Doky\$; k
 esy\$ hfU I dh i ksk'kkykval kFk gh I kFk ; pk jki .kæa
 , d çedk fu"i=d ghvksVz; k foVhl kMBMhl dsçclv
 dsfy, LFkuh; #i I smiyC/k çWfudYI dh tð
 {kerk dk v/; ; u fd; k x; kA çWfudYI
 mnkj .kkFk&, st\$Mj DVk bf. Mdk] ehfy; k
 , st\$hfMjkd] , dkj I d\$yel] v/kkVka/k okfI dk
 v\$ Dyjka/BN/ku foLkd e ½-5%] 5-0% v\$ 10-0%
 I khrk ij ijhf{kr½ dsl kFk tð fo'y\$.k ijhf{k.k ds
 ifj.kkæaus , d\$'k; k bf. Mdk dsekeysea vfkdre
 95-0% I Hkj djksh dk; ðyki dks n'kz kj bl ds çk
 , d\$'k; k d\$yel dsekeysea 90-0% jgkA

'kh'ke v\$ i kW yj ds çedk uk'ktho ds
 fo#) VkthVhl ekbuWk I kj

; g çs{kr fd; k x; k fd fofkku jkl k; fud I kja
 tsth-ihbz ¼ V/h; e bEj ea txyh xnk½ tsth, -
 ¼ I hv/ku ea txyh xnk½ v\$ tsth, e- ½ehFksukly ea
 txyh xnk½ dh 1% I khrk ij 'kh'ke v\$ i kW yj ds
 çedk uk'kthokædsvukor djusds72 ?k. Vçkn çHkoh
 ik, x, A tcd tsth-MCY; w ¼ kuh ea txyh xnk½
 çHkoh ugha ik; k x; kA çHkoh jkl k; fud I kja ½atsth
 , e-] tsth, - v\$ tsth-ihbz½ dk tð fo'y\$.k fd; k
 x; k v\$; g çs{kr fd; k fd 2% I khrk ij yokz dh
 eR; zk 33-33&53 çfr'kr FkA

i p x 0; v\$ n l x 0;

d\$okfjuk dseq; k ukf'kdh/kæd\$fo#) ijhf{kr
 vkkæud I Ekd i p x 0; v\$ n'kx 0; us n'kz k fd
 vkkæud I w hdj.kæausu døy ulf'kdh/kæd\$fu; æ=r



fd; k cfyd i ksk'kkyk voLFkkvka ds rgr of) dks Hkh c<k; KA 15 fnuka ds vUrjky ij 13% ij ipx0; vksj n'lx0; ds 12 jkm.M mi; kx us d'okfjuk ij pwnkz eRdqk ds mRi hMtu dks fu; f=r fd; k vksj fu; a.k dh rnyuk ea 20% of) dks c<k; KA bl h cdkj 5% dh l khnrk us; wdsy lVI ij 40% rd xky l jpu dks ?kV; k vksj 14% ikni of) dks c<k; k] tcf d 3% l khnrk us l kxkS fu"i=d cHko ea 30% deh vksj ikni of) ea 12% c<k; jh dk c'n'ku fd; KA

ceq[k ou ukf'kdhVka ds fo#) enk , fDVukekbl hVht dh VKNDI u

e/; cnsk egkjkr^V vksj NUkhl x<+ds ouka l s , df=r 340 enk uenka ea l s ofed rundj .k rduhd vksj i kV ly/ fof/k viukdj i kS/s/ksMDI Vkt , xkj lyt/ka ij 9 , fDVukekbl hVht@cDVhfj; k i Fkd fd , x,A i FkDdr 3 , fDVukekbl hVht ea l s thok.kq cksj kSxdh l kFku] p.Mhx<+ea LVhVkekb l ht ctkfr dh igpu djds i fV dh xbA VKNDI ukadsmRi knu] , fUVck; kSVDI ds fu"d'kzk ds fy, cks/kcdkV vksj i FkDdr , fDVukekbl hVht] LVhVkekb l ht ctkfr ds VKNDI uka ds jkl k; fud y{k.ko.ku gsrqbl ds i Hktka ds fy, enk , fDVukekbl hVht dh l o/kz rduhd fodf l r dh xbA l kxkS] fl j l vksj egkuhe ds ceq[k ukf'kdhVka ds fo#) bl ds l o/kz fQYVjS] i FkDdr , fUVck; kSVDI vksj fofHku cHktka ds fo'kDrrk ij h{k.k fd , x,A enk , fDVukekbl hVht ds 0; ki kfjd #i l s miyC/k xkSk mRi kna bojesDVu vksj fLiukd km^{1/2} dks l kxkS] fl j l] cl vksj egkuhe ds ceq[k ukf'kdhVka ds fo#) eV; kdr fd; k vksj cksV fo'y sk.k }kj k budh l ki sk {kerk vksj fo'kDrrk 1/2 c₅₀ 1/2 dh x.kuk dh xbA mi; Dr ctkfr; ka dh ceq[k ukf'kdhV ds cjk fEhd vure bulVkj yokz ds fo#) bojesDVu vksj fLiukd kbM ds {s= , oa iz kx'kkyk ij h{k.k fd , x,A bojesDVu vksj fLiukd kbM dh fo'kDrrk dh tkp ds fy, bl l kFku ds dhVky; ea i ksk'kkyk voLFkk ea {s= ij h{k.k fd , x,A ifj.kkeka us n'kz k fd xkSk mRi kna bojesDVu vksj fLiukd km^{1/2} ds i.kz; mi; kx }kj k bu uk'kthoka cCU/kv gkl y fd; k tk l drk gA

vksk/kh; i kni kadsukf'kdhV

'kd' vksj v/kz&'kd' {ks=ka ea mxs egROI w kZ vksk/kh; i kni kads l {ke ukf'kdhVka dk cCU/k ukf'kdhVka dh ikp ctkfr; kavls jkskadh rhu ctkfr; ka dh tkp l ph rS kj dh xbA l ktr jkM 1/4 kyh^{1/2} ea egnh 1/4 kV kfu; k bujfel 1/2 mxs {ks=ka ea vdb; k tukV k 1/4 kmVb Mk^{1/2} , d l feyij dk vR; fkd mRi hMtu n[kk x; KA eq; uk'ktho ; Fk&vdb; k tukV vksj , fQM xkV hi h dh tS ikj fLFkr dh dk v/; ; u fd; k x; KA enk mipkj 1/10g VRbdkMez \$ 5&0 fd-xk ofeZ EI kV \$ 15g QkS 1/2 vksj i.kz; fNMelko 1/10-02% cfr jkS k^{1/2} egnh fu"i=d 1/4 vdb; k tukV 1/2 vksj , fQM 1/4 fQM xkV hi h 1/2 vkOe.k ds fo#) l okke ik; k x; KA #i; s 150 cfr oxZehVj lVkw dh dy ctkfr vksj vksj r 'kqd Hkj 2-00 fd-xk ds l kFk vuq pkjr fu; a.k dh rnyuk eami pkjr HkV k.M dk vksj r 'kqd Hkj #i; s 185 cfr oxZehVj dh dy ctkfr ds l kFk 2-47 fd-xk vfhkyf [kr fd; k x; KA bl cksy ea nhedka vksj engksey vkf l rk ds fo#) C; wsf; k cfl ; kuk &1 \$ QkS/ d k .kdvka ds l kFk 10 xk- cfr fd-xk cht \$ enk mipkj dh nj ij VRbdkMez gkftZ ue dk mi; kx djds cht mipkj l okke ik; k x; KA Oe'k% 3670-80@& vksj ~ 2679-60@& cfr HkV k.M dh dy ctkfr ds l kFk vuq pkjr 76-56 fd-xk LVkoj@lykV dh rnyuk ea mipkj HkV k.M 1/5 eh x 5 eh 1/2 104-88 fd-xk LVkoj@lykV dk mRi knu fd; ka

fgekpy cns'k ea egROI w kZ vksk/kh; i kni kadsukf'kdhVka dk fu; a.k

ikp dhV x.kka mnkgj.k& ysi MkSvhjk dkhvksVhjk gselVhjk vkfVksVhjk gfeuksVhjk vksj 24 ifjokk Jskh vjkdfuMk l sl efUkr dy 37 dhV ctkfr; ka dks i ksk'kkyk ea mxs p; fur 5 vksk/kh; ikni kals, d= fd , x,A fi Okj kb tk dj k k jkVyh , DI cBk] , OfV; e ylik fy] ghjSDy; e dSMDbl oky , DI Mh-l h , Ut hfydk Xywdk bT; w l kS jh; k dkVVI OKYd vksj ofyfj; kuk tVked h tkS l dks mRi hMtu djus okys l kS jh; k



dkwVI ij lyfil ; k vkfj dyl h; k Qs dh tsoch ij v/; ; u usn'kz, k fd dhV vcsy dsnt jsl l rkg l stw ds vflre l rkg rd dkQh l f0; FkA ekpZ l s tw rd pkj vkjybi x l urfr; ka dk v/; ; u fd; kA 5&6 fMkdh buLVkj] 16-25 ± 2-6 fnu dkskk volFk vkj ; ks'kkyk ea 35 fnuka ea ijk thoup0 ijk gvkA ; ks'kkyk ea uk'ktho dh rhu ihf<+ka dk v/; ; u fd; k x; kA uk'ktho ekpZ ds nkjku {ks= eafn [kuk 'kaf glrk gsvks bl dh vfkdre l f0; rk ebzvks tw ea vfhkyf [kr dh xBA ; ks'kkyk ea Hkjh fMkdh 1/4 hl js vks pksksbuLVkj 1/2 er; rk vfhkyf [kr dh xBA eknk dh tuu'kDr 113 l s 228 v. Ms Fks vks dy thou p0 fofHku efguka ds nkjku 27 l s 38 fnuka ea ijk gvkA fMkdh ij th0; Hka dks nks ctfr; ka ; Fk&, i BVsyhl Xykehj/ l vks , i BVsyhl #fQ0l vkfym/ l fip dh xbvks bu ctfr; ka }kjk ij thohdj. k dh l hek vcsy ebzvks tw ea 0e'k/13-3] 21-2 vks 25-0 cfr'kr FkA dhV jkstud ftl ds QyLo#i {ks= ea l kfk gh l kfk ; ks'kkyk ea fMkdh vks l; iy vkcknh dh cM/s i kus ij er; rk gh dh igpu cfl yl l hjh; l fdLe ekbdMhl 1/4 ym h/ fLEFkj xkMz vks DykdZ ds #i eadh xBA v/; ; u usn'kz, k fd ; stsoch; fu; a. k , t/ uk'ktho ds ikjvuohy u cu/k ea, d egROI wZ Hkedk vnk dj l drk gA fofHku dhVuk'kdka, oa t0 i hMeluk'k; ka; Fk&5-0% dh nj ij xksue] 0-03% dh nj ij eksuk0k/Qkst] 1% dh nj ij buMkl YOku] 30 xk- cfr oxZ dh nj ij 1; jMku 3 th] 0-02% dh nj ij nq Zku] 0-05% dh nj ij jkskj] 500 xk- cfr oxZ dh nj ij uhe ds vks syhfj; kuk tVked h ea 5-0% dh nj ij lej sy dk i ksk'kkyk ea eW; kadu fd; k x; k vks ; g ik; k x; k fd 0-1% dh nj ij buMkl YOku vks 0-2% dh nj ij Dykiki kbjQkst i ksk'kkyk ea uk'ktho dksfu; a=r djusea cHkoh FkA ; w, p- o , Q- uksh] vkbZ, p-ch-Vh- i ykeig vks vkbZvkbZ, e- tEw l smipkjr iknika dk dhVuk'kh; vof'kV fo'y sk. k dj; k x; k tgk; ifj. kkeka usn'kz, k fd 0-1% dh nj ij buMkl YOku] 0-03% dh nj ij eksuk0k/Qkst] dkcl; jku 0-02% dh nj ij Dykiki kbjQkst dk ikni ds ; Dr Hkx ea vof'kV

chko gvkA vr%; sdhVuk'kd i ksk'kkyk ea uk'ktho ds fu; a. k dsfy, , d vPNk fodYi ughagA

dhV cfrjkskh tuun0;

xky uk'ktho ds fy, ; wdfyVI ctfr; ka ea cfrjksk dh tkp

mPp mRiknu dsfy, igpusx, ; wdfyVI dsdjhc 210 Dyksukadks9 fofHku l xBuka l s, d= fd; k vks ou vkuo'kdh , oao{k ctuu l hFku] dks EcVij dh i ksk'kkyk , oa okuLifrd xqku m | kuka ea l afgr fd; kA l R; oMw 1/4 k/ k/ z cns k/ 2 ea, d gMw Li kMw {ks= eabu Dyksukadh tkp dsfy, , d ijh{k. k LFkfr fd; k vks ijh{k. k ea djhc 179 Dyksuka dks jksi r fd; k x; kA l R; oMw 1/4 k/ k/ z cns k/ 2 ea vks i ukei Yyh 1/2 jy 1/2 , oa HkrhEkkj fo'fo | ky; 1/2 feyukMh ea okuLifrd xqku m | kuka ea xky dhV] yhlVkd kbch blokl k ds v0e. k dsfy, bu mPp mRiknu Dyksukadh tkp cxfj ij gA

rfeyukMh djy vks vku/kz cnsk ds rhu fofHku LFkka ea Dyksukh; ijh{k. kka ea mxk, x, dy 100 ; wdfyVI Dyksuka dks uk'kthoka , oa jks l eL; kvka ds fy, egROI wZ #i l s xky dhV] yhlVkd kbch blokl k dsfy, eW; kadu fd; kA nks l kyka dh vof/k ea, df=r {ks= vkdMka usn'kz, k fd djhc 25 Dyksuk xky dhV ds v0e. k ds cfr vr; f/kd l onh FkA 71 Dyksuka ea v0e. k dk fuEu l s l k/kj. k Lrj nq k x; kA djhc 4 Dyksuka us dy v. Mjki. k {kfr dks l rr-#i l s 0; Dr fd; k vks dks ZHh xky fodkl ugha nq k x; kA xky dhV] yhlVkd kbch blokl k ds thou p0 ij v/; ; uk ea 82&95 fnukadschp FkA

xalkhj Nky l alkjd uk'ktho] buMjcsyk DokfMuk/ kVv ds fo#) dStokfjuk bfDol hfVQkfy; k

cfrjksk nsus okys Dyksuka ds QhukMl] Vsuu] eDr olh; , fl Mka vks Qhukfyd , fl Mka tS s t0 jkl k; fud , oa Hksrd ; ksdka ds l mHk ea xalkhj Nky l alkjd uk'ktho buMjcsyk DokfMuk/ kVv ds fo#) dStokfjuk bfDol hfVQkfy; k ds 10 p; fur Dyksuka l ki sk cfrjksk dh igpu dh xBA fofHku



vk; kfr r dk"Bka dk ckdfrd {k; cfrjks/k
ckdfrd {k; cfrjksk dsfy, ijhf{kr vk; kfr
dk"Bkae ratkfu; k vlsj vLVsy; k l sl kxksu dk"B l Hk
tkp {k; dod dsfo#) vR; f/kd cfrjksk ik, x,]
tcf d YkU l , oacsyt; e l sl eqzrV dk"B vlsj YkU l
l s, Sk dk"B cfrjksk ugha FkA

Qy vlsj cht dsl kFk l Ec) dod
fofHku Qy@cht uewka l s iFkd d r dy
150 dod dh igpku dh xbA bueal s40 l {ke ikni
jksxtud Fks ftlga dbZ vl; ij iks'k; ka ea buds jks
foKkuh; cHkokadsfy, l fpr fd; k x; k gA vkbl ksy/s/ka
ea Hk.Mkj.k dod 'kfe y gS tS & , Lijftyl
ukbxj] , - [ypl] jkbtki l LVksyfuQj]
jkbtkE; wdj ofj, fcy l] E; wdj E; i hVks
VRbdk/lekzfofjMh] Vh- dksuach] Vh- L; hVks
Vh- gkftz ue A ; dod cht foxyu] fl dVue] cnjx
vlsj vofkr , oadetj veltj .k tS sht LokLF; l el; kvla
dks mRilu djus ea , d ceqk Hkedk vnk djrs gA
i k l yksh; jkU bl bUMde cht ij cVfu; k gkEcok
u, ij iksk vfhky[k ds #i ea l fpr fd; k x; kA
Mh- ekykcfjde Qyka , oa chka ea 75&90%
[; ut sj; e oVZl ykU Mh l De.k ik; kx; kA ; | fi l h
l YQj ve vlsj , p-ik k cht keadodh l De.k FkQ fQj Hk
veltj .k {kerk cHkor ugha FkA , l - ekykcfjde vlsj
, e- ykxQkfy; k eadodh l De.k de FkA

nl dodh ctkr; ka ; Fk&, YVjufj; k
, YVjukVl] , Lijftyl ukbxj] l hQsyk i ksj; e
ctkr] ds/kfe; e Xyksk el] DyMk i ksj; e
ctkr] [; ut sj; e bDol hVh] [; ut sj; e
vkl hLi kje] i fufl fy; e fl fvue] jkbtki l
LVksyfuQj vlsj VRbdkEkhf l ; e jksth; e dh
igpku dh xbZ vlsj ikbul thjkfMZ kuk dscht ka dks
Hk.Mkj r fd; kA i fufl fy; e fl fvue Hk.Mkj.k ea
fpyxst k cht dks cHkor djusokyk l cl sc/kku dod
FkA ; g cfskr fd; k x; k fd 40% cht foxyu 25 fm-l s
ij ik; k x; k vlsj i fufl fy; e fl fvue ds dkj .k
0 fm-l s ij 8% cht foxyu cfskr fd; k x; kA

dod eavkf. od i fjon'u' khyrk
fnYyh ¼ u-l hvkj-½ gfj; k. k] iatkc] mUkj
cnsk vlsj mUkj k [k.M l s, df=r x&k/lekzyfi Me dh

63 Qyu dk; k eavkd kfjd; l o/kud fofHkurk dk
v/; ; u fd; k x; kA th yfi Me ds fofHku
vkbl ksy/s/ka ds chp okuLifrd l xrrk ij h{k.k fd,
x, A ij iksk ctkr; kadsv/kkj ij vksi h, -3 ctkbejkaus
th yfi Me ds vkbl ksy/s/ka dks fofHkndir fd; kA
Mh, u, - vupe.k ds vk/kkj ij x&k/lekz dh nks
ctkr; ka th jfi ud h; e vlsj th ohchfj, ue dk
l xg.k l siFkd fd; k x; kA th ohchfj, ue Hkjr ds
fy, , d u; k vfhky[k gA bd; kou vkbZVh, l - vupe
thu chl ¼ kVh; tS cks ksdh l pouk dshz; w, l -, -
dks cLrq fd; k vlsj , u-l hchvkBz os l kbV ij tkjh
fd; k x; kA vupeka dks vl; thu chl ka }kjk l efoV
, oa tkjh fd; k x; k] mnkgj .kFk&; jkSi ; u ekVhdw j
ck; ksyk h yskj/s h U; DyhvksVM l hDol MKVks]
; wds (<http://www.ebi.ac.uk/embl/>) vlsj Mh, u, -
MKV chl vkQ tki ku (<http://www.ddbj.nig.ac.jp/>) A

ctbej vksi h-bz&2] vksi h-bz&3] vksi h-bz&5 }kjk
vkj-, -ihMh&ih l hvkj- ds ckn l hfYUMRdySM; e
fDolDoh l hV/e ds 82 vkbl ksy/s/ka ds , d l a Dr
M&Mkske l ftr fd; k x; kA U; Dyh; j r DNA dsvkB
Hkrjh cfrfyfi l i j {k- vupe vlsj dod
l hfYUMRdySM; e fDolDoh l hV/e ds fofHku
vkbl ksy/s/kadsN%chV k V; wfyu thu vupeka dks thu
chl , u-l hchvkBz (<http://www.ncbi.nlm.nih.gov>) dks
cLrq fd; k , D l s u uej vkcVr fd, A enk jksxLr
iknika vlsj l hfYUMRdySM; e fDolDoh l hV/e
iUk] Vguh vlsj iksk 'kh.krk ds l kFk l o fer
i'p&l jki .k io&jks l pd ; wdsyVI ikni uewka l s
bl jksxtud ds Mh, u, - fu"d'kz k dsfy, cks/kcdkly/ka
dsekudh j .k dsckn uskfud fdV fodfl r dh xbA
; g l hfYUMRdySM; e fDolDoh l hV/e dh igpku
eal gk; d gsvlsj jks Hko"; ok.kh dsfy, c; Dr dh tk
l drhgA

vkj-, -ihMh ½ s jrhc ifjofkr cge#ih Mh, u, ½
dsfy, 60 ctkbejkaus tkp dh xbZ ft l eal s32 ctkbejka
usl xr cge#fi rk dksn'kz kA 32 ctkbejkaeal scge#fi rk
dsfy, 18 ctkbejkaus fo'y sk.k fd; k x; kA ; w h-th, e-,
fof/k dk mi ; k djds l Hk vkbl ksy/s/kadsfy, , d l a Dr



MhMkske fufeZ fd; kA 15 vkbl ksy/s/ka dk ih- h-vkj-& vkj-, Q-, y-ih- fd; kA fgely; u ?kkl LFkykads dod dkmhZ \$I I kbusul I ds fofHku vkbl ksy/s/ka ds U; Dyh; j rDNA thu dsilng 185 rDNA thu vLj vVBkbl Hkrjh cfrfyi Lid j {k= dks ifjof/kZ} vuøfer djds , u-l h-ch-vkbZ dks çLrnf fd; k rFkk , DI d u uEçj vkçVr fd, A

i kM/yjka ea i .kz 'kh. kZk jksx mRiUu djus okys MhDI yhj çtkr ea dkyksh y{k.k} jãdrkj of) ehfm; k ¼ h-Mh-, -] I h-Mh-, -] , e-bZ, - vLj , l-ih-, -½ ij fd; k x; kA fofHku I ø/kZud , oavkdKjdh; i jketVjka ; Fkk&dnyksh fdLe] dnyksh jak jãdrkj of) nj] chtk.kfdLe vLj vkdkj , oavdg .k ds }kjk i kM/yj ea i .kz; jksx mRiUu djus okys OkbySLVDVt@Okk çtkr dsvkbl ksy/s/kadh fofo/krk dk vl/ ; ; u fd; kA

dkMhZ \$I I kbusul I ea tç I fØ; rRo ou vud U/kku I h.Fku] nsjknw }kjk fodflr çks/kcdkly ds vud kj f>akjk ea dkmhZ \$I I kbusul I ds fofHku vkbl ksy/s/ka dks mxk; k x; kA iPphl vkbl ksy/s/ka dks 6 ekg dh of) ds mijkUr no ukbVkt u eapir. kZ fd; k vLj dkmhZ hfi ul , MhuksI u , oabxkVhjkly ek=kvkadh mi fLFkr dsfy, , p-ih-Vh-, y-lh- }kjk buds tð I fØ; rRoka dsfy, fo'yf'kr fd; kA bu tð I fØ; rRoka dh mi fLFkr vkbl ksy/s/kadsvks/kh; ekukadln' kZ h gA

Hk. Mkfjr m" .kdfVca/kh; çdk"B dk"B {k; egjk"Vª ds 12 dk"B fMiks vLj mMh k ds 25 dk"B fMiks l s34 ijiksh uewka ds dk"B yVBka ij dk"B {k; dkjh dod ds l kr I kS i fkyhl uews , d= fd, A dk"B {k; dkjh dod ds chl oak , oa44 çtkr; ka dh igpku dh xbA bu ea l s l ky vLj chtl ky ij mMh k , oa egjk"Vª l s 4 oak ; Fkk&gsy kfi yl] I hfj i ksj vkfll I] fLdtkQkj k vLj i kSLV; Rj vLj 7 çtkr; ka ; Fkk&gsy kfi yl fuMnybl] I hfj i ksj vkfll I eh#fyul] VbhVI vkØ h; kj i kSLV; k lys BVkj fLdtkQkj i j kMkDI kj ihDuki kj I dMhDI uh; I vLj

ihDuki kj I fl esfjul dks igyh ckj vfhkyf[kr fd; k x; kA vf/kd vl/ ; ; u dsfy, i Pphl I ø/kZadskh i kS'kr fd; kA fkyokk/kku fyoI ds {k; çfrjksk ds fo#) ; jh; k , oafat I QOv dh fofHku I kUr k ij fo"kkDrrk ¼ k=½ dh tkp dsfy, , d ç; kx fd; k x; kA i kj Ei fjd dk"Bh; f'kyi ea I eph dk"Bokl h dod

fo'kk[ki VVue ftyseaeNyh i dMedsdxkpa ; Fkk&ihMkykjhi s/k vLj feenuiVue l s , uksth I , dfeukVt dscusdVkejsu I sdodh l s xLr idk"B , d= fd, A , df=r uewka ea dod dks l øf/kZ fd; k vLj 13 vkbl ksy/s/ka dks i Fkd fd; kA vo'kSk.k dh fofHku ek=kvkæadkMj Okk vki kud dk"B ifjj {kd ds I kfk , uksth I , dfeukVt vLj efxQjk bMdk ds çdk"B oSIL dks mipkjr fd; k vLj , dy dodh vkbl ksy/s/kadsfy, mudh mRi hMue I fØ; rk grqvukoR fd; kA vudka dodka ea , Lijthyl fyoI dnyksh; k çtkr vLj f; vt sj ; e çtkr; ka; gkard fd 27-6 kg m⁻³ ds ifjj {kd /kj.k ij Hh oSIL dk mRi hMue djrsgq ikbZxbA

fu; æ . k cndkufu; k yat u ds jkska dk jkl k; fud fu; æ . k N%ami pkjka; Fkk& fMFksu 0-1%] 0-2%] çfofLVu 0-1%] 0-2%] jhMksey 0-1%] 0-2%] ea l s jhMksey 0-2% bl ds ckn jhMksey 0-1% dk i .kz; fNMelko i kS'kr kyk voLFkk ea f; vt sj ; e vkbl hLi kje }kjk mRiUu Eykfu jkskadso#) vR; f/kd çHkoh fl) gqkA t fadh; fu; æ . k vLj okuLi frd dodfo" k

VtkdkMekZfi yfyQhje vLj Vh- fofjMh ds [kbl l h-dj.k us mipkjr , Lijxl jã hkd I i kni ka ea tM+ tðek=k ea egROI wZ of) dh vLj tM+ jkskadksfu; f=r fd; kA

e/; çnsk vLj NÙkhl x<+ds fofHku LFkkua l s enk uewka l s , d , fDVukekbl hVh vLj 15 çfrjkskh



cDVhfj; k] ,d dod dk iFKDdk.k ,d= fd, x,A foFkkfu; k l kSEUQjkl jkoksYQ; k l iBVkbuk vlsj DykjkQkbVe cksjfofy, ue dsiknikaij igpku ,oa jkstudrk ijh{k.k fd, x,A tS ihMeluk'kh 1/2ks e= \$,stSMjDVk bMMDk ifYk; ka \$,yUFkl ,DIYI k ifYk; ka \$ dSyks/RMI l iks hjk ifYk; kS ds l kFk vlsj fofHku iksk'kkykva dh enkva l s iFKDdr ifrjkskh l we thoka ds l kFk pkj dodh jkstudka ds fo:) tS&fo'ySk.k ijh{k.k l fuf'pr fd, x,A pkj ifrjkskh cDVhfj; k@, fDVukekol hvht usik=sjks tud dh of) dks fu; f=r djus ea viuh iHkkodkfjrk dks n'kz ka

tkSki g 1/2ktLFkku 1/2 ds l ehi l s cysukbVhl , thxvVdk 1/2tM- ifYk; ka vlsj Nky1/2 VhYkSl ; k i iijh; k 1/2 ifYk; ka tM- cht 1/2 fl Vky l dksykd hfUFkl 1/2 ifYk; kS ,d= dh xbZ vlsj bFksuky ,oa ty l kj dks rS kj djus ds fy, 'kM eal q'kk; k x; ka vfl/kd vl/ ; u ds fy, 50 fe-xk@fe-yh@foyk; d dh nj ij l kjkadk mi ; lsc fd; k x; ka ou jks foFku iHkkx] ou vuq akku l bFkk] nsjknw l s dodh jkstudka ; Fkk& jkbtkDVksu; k l ksykuhl vlsj- cVkfVdksykl 9; utSj; e l ksykuh vlsj vYVjusj; k vYVjukVh ds fo'kd l o?kz ikr vlsj iks'kr fd,A pkj tko dod ds fo:) bFksuklyd l kjkadk ijh{k.k fd; ka 9; utSj; e l ksykuh dh of) dks jks use afl Vny l dksykd hfUFkl 1/2 ifYk; kS ds bFksuklyd l kj iHkkoh ik, x,A

vYVjusj; k iztkfr] 9; utSj; e vkDI hLi kje ,oadkVhVksRbde Xytkvks i kSj vkbVhl 1/2c₅₀ 2.0% 1/2 dks NkMlj l Hkh tko Qach ds fo:) l Hkh l kUnrkvka ij l s tMI endkjd h 1/2; kjgnsh/dsehFksukly l kj usrc₅₀ dks inf'kr fd; ka X; kjgnsh ds C; wkukly l kj us vYVjusj; k iztkfr vlsj ,Q- vkDI hLi kje dks NkMlj l Hkh tko dod ds fo:) l Hkh l kUnrkvka c₅₀ dks inf'kr fd; ka

Hk.Mkfjr vksVkh; ikni mRikn eaLi kVyst Qach dh of) vlsj vadg.k jksus ds fy, fl Vksuhyk ryl ygl q ryl yeu ?kl ryl vlsj vtokbu ryl ds ok'ik'khy iHko dks l Qyrki wZ LFkfr fd; ka vksVkh;

ikni mRikn ds Hk.Mkj.k ds nksku Li kVyst Qach ds fo:) rylka ds l a kst u ds ok'i'khy iHko dks Hkh ijhf{kr fd; ka foFkkfu; k l kSEUQjkl Hk.Mkfjr tMkds fy, l Hkh Li kVyst Qach ds fo:) rylkads l Hkh l a kst u iHkoh ik, x,A LVhf; k jscfM; kuk Hk.Mkfjr ifYk; ka ea dodh mRihMta dks jksus ea yeu ?kl ,oa ; wdsyVI ryl vlsj fl Vksuhyk ,oa; wdsyVI rylka ds l a kst u iHkoh ughaFka

2-7-3- ekbdkj kbtkl jkbt kfc; k vlsj vl; mi ; ksxh thok.kq

okg; ekbdkj kbt k 1/2bZl h-, e-1/2 dod

ik=s voLFkk ds rgr nks bZl h-,e- Qach ,y- Yvukz vlsj ih-, Ycl ds fofHku vkol ksy/kads cgek= mRiknu ds fy, mi ; q r l o/kz ehM; e] vkn'kz ih-,p- vlsj rkieku voLFkkvka dks ekudhr fd; ka iksk'kkyk ea y; dr o'k iztkfr; ka ds of) l dks ds fy, l jksi dh mi ; q r fdLe dh igpku ij vfl/kd vl/ ; uka us n'kz k fd , - vlfjdfryQkMz l dSokfjuk bDol hfVQkfy; k vlsj l h- >akgfu; kuk ds fy, ih-, Ycl 3 dsokulifrd ekbl hf; y l jksi vlsj , - eht; e ds fy, ih-, Ycl vkol ksy/ 2 vlsj 4 mi ; q r ik, x,A tcd ih-, Ycl vkol ksy/ 3 ds csl fMvks i kS l jksi ; wdsyVI deYMyuf l l ,oa ; wdsyVI vjsVdMuz ds fy, mi ; q r ik, x,A dSokfjuk ea ih-, Ycl 1/2vkol ksy/ 3 1/2 dsokulifrd ekbl hf; y l jksi bl ds ckn ih-, Ycl 1/2vkol ksy/ 1 vlsj 2 1/2 ds bl h rjg ds l jksi ds l kFk l jksi r fol qer ik= ehM; e eamxs i kSkxaea xLFk vkcknh mPp i kbZxbA tcd vks dnykjy bZl h-,e- l jksi dh fdLeka us bZl h-,e- mifuoskhr tMk 1/2 dod 'k'kz dh vPNh l q; k n'kz ih-, Ycl 1/2vkol ksy/ 3 1/2 ds csl fMvks i kS l jksi us l Hkh o'k iztkfr; kaeacg mPp dod 'k'kz dks egROI wZ : i l s inf'kr fd; ka

vl e ea fMIVhjkadki kZ vlsj 'kSj h; k iztkfr ds l kFk ekbdkj kbt ty l a kka dh fof/krkA fMIVhjkadki l jhV l l 'kSj h; k jkbt k Vh vlsj



, l- vl kfedk dh ekbdkjkbty tMka ds l kfk okg; ekbdkjkbty dod vls ewy ifjosk enk , d= dh xbzvls idfr eaNk; kfp= fy, A jx : i] vkdkj] xak vls ifr l vVhetVj ftYl dh l q; k tS sQy dk; k ds vkdkfjdh; y{k. kka dks {ks= ea vfhkryf[kr fd; kA ikp fofHku okg; ekbdkjkbty dod vfhkryf[kr fd, vls ftl ea lsrhu dh igpu : l myk] yDVsj; l vls vekfuV iztkr ds: i each xBA : l myk izkku iztkr Fkh, oabl sl Hh p; fur iztkr; kadsl kfk l Ec) ik; k x; kA vkclLdnyj ekbdkjkbty dod

ewy ifjosk enkva dk fo'ySk.k fd; k vls p; fur ikni iztkr; kadsl kfk var%ekbdkjkbty l cak eaXykel/ iztkr l cl sizkku ikbzxbA rFkfi] Xykel/ iztkr; ka dk ifr'kr l De.k cgr de FkA Hkoh v/; ; u vls l mHkZdsfy, l Hh iztkr; kadsvknZvls 'kqd ds: i ea j {k x; kA i kS/s/ks MDI Vkt , xkj ij l af/kr dod ds fo'kq) l o/kka dks mxk; k x; k vls iz kx'kkyk eai kS'kr fd; k tk jgk gA

ewy ifjosk enk ueus , d= djus ds fy, ukx [kye vkjf{kr ou] ukx i ksj] esky; %mErkl kj vls ukx i ksj 1/2 ea l oZk.k fd; kA fofHku ikni iztkr; ka l s dy 80 ewy ifjosk enk ueus , d= fd, vls vUr% ekbdkjkbty xqkkRed , oae=kRed fo'ySk.k dsfy, tkp dh xBA nsc/kku , oal {ke vUr% ekbdkjkbty ul ya %Xykel ctkr , oa tkbx&ikjk ctkr 1/2 tks bu ou enkva ea cpfy Fkh] dks i Fkd fd; k vls c; kx'kkyk ea l jki mRiknu , oacgpk= l o/kku ij h{k.k dsfy, vlxscfD; k ds vUr xZ gA

rfeyukMqvls djy ds fofHku Hkxka ea nskt o{k ctkr tS & , yUFkl , DI Yl kj , yUFkl VtbDhl kj uhvksyekfdZ k dnEck] esykbuk vkckjh; kj ehfy; k Mfic; k vls MS'cftZ k yfVQky; k ds tM+{ks= l s , df=r tMka vls ewy ifjosk enk ueuka dks cDfer fd; k vls vkclLdnyj ekbdkjkbty dod dh enk chtk.k vkcknh rFk cfr'kr tM+mifuosku vkdfyr fd; kA fofHku nskt o{k ctkr; ka ds ewy ifjosk l s rhu oak ; Fk&, D; myk&ikjk] tkbx&ikjk vls Xykel l s

l af/kr l Ukkbl fofHku vkclLdnyj ekbdkjkbty dod vfhkryf[kr fd, A bu ea l sthul Xykel c/kku ik; k x; kA bl dsckn , Dosykt i kj jgkA

, df'k; k vktj dnyOkMeZ] VDVkuk xBMMI] dsOkfjuk bfDol hfVQky; k vls ; wsfyVI deYMrfyfll iknika ds fy, vkclLdnyj ekbdkjkbty 1/4, e-1/2 dod ds l cak dksn [kusdsfy, l oZk.k fd, x, A ifj. kka us l Hh p; fur ctkr; kaa , -, e- dod ds l kfk dod l gikS'krk ds mPp Lrj dks n'kZ, kA dy feykdj ikp oak l s l af/kr dod dh 10 ctkr; kadsvfhkryf[kr fd; kA f'keksk {ks= ea c/kku ctkr; ka tkbx&ikjk Xykel vls Ldyhkd hfLVI Fkh vls l koschylsksy vls Mka/kcYki jk {ks= dod tkbx&ikjk vls Xykel ctkr; ka c/kku FkA i kS'kkyk ij h{k. kka ea , -, e- l jki ds l kfk mipjka dh {kerk us n'kZ, k fd ; fn l jki i kS volFk eami yC/ k djkrsgSris i kni kadh of) dks vR; f/kd c<k; k tk l drk gA dy feykdj , -, e- dod ds l kfk tM+{ks= ds l m<hdj . k us i kS kadh of) tsek=k , oamUkj th fork vls i kS xqkoUkk rkfydk ea l dkkj fd; kA mipkj cgr fdOk; rh vls i k j vu dny gA

egnh oak ds ikp , -, e- Qach ; Fk&Xykel] tkbx&ikjk] Ldw/hykt i kj kj] Ldyhkd hfLVI vls , Dosykt i kj vls Xykel dh ctkr; ka ea ; Fk& th Qfl dnyse] th , xbx&e] th ekt h; kj] th eDkakiZ] th ekbDkakiZ] th bUMRjMMI ht] th jfVdnyse] th dfULVDVe] th efYVdnyh] th thvktikje vls th dllokyonyl dks vfhkryf[kr fd; kA Xykel efYVdnyh ds i qdj vls vte j l sigyh kj egnh ij l ipr fd; k x; kA Ldyhkd hfLVI bf. Mdk dksukx vls i qdj 1/4 vte j 1/2 l s De'k% egnh vls v'oxakk ij vfhkryf[kr fd; kA fofHku , -, e- ctkr; ka ; Fk& th , xbx&e 1/35% 1/2 th ekt h; k 1/45% 1/2 th Qfl dnyse 1/20% 1/2 th eDkakiZ 1/40% 1/2 Xyke ctkr 1/45% 1/2 Ldw/hykt i kj k 1/3% 1/2 vls , D; myk&ikjk 1/2% 1/2 dh ctkr dks v'oxakk ea vfhkryf[kr fd; k x; kA tcfD egnh ea , -, e- dod dh ctkr dks th Qfl dnyse dh c/kkurk ds l kfk th Qfl dnyse 1/55% 1/2



th , xhx/e 120%½ th eØkdkie 142%½
 Xykel çtkr 18%½ , D; nyktikjk 15%½
 LdWnyktikjk 18%½ vks Ldyhjk hfLVI 12%½ ds
 #i eavfhkyf[kr fd; kA vf/kdre tM+I Øe.k I kstr
 ¼ kyh½ l s 185%½ vks i qdj] vtej l s U; ure 146%½
 vfhkyf[kr fd; kA tcd v'oxakk ea vf/kdre tM+
 mifuošku 178%½ gfjek dfrk QkeZ ¼ kxk½ l s vks
 vtej l s U; ure 184%½ vfhkyf[kr fd; kA tM+
 I Øe.k 54 çfr'kr vfhkyf[kr fd; k] tcd , , e-
 thok.kq 210@100 xk- enk ikbz xBA nkska çtkr; ka
 ; Fk&egnh vks v'oxakk çdfr ea vR; f/kd
 ekbdkjkbty ikbz xBA tM+ I Øe.k tMka ea
 vlr%kks'kdh;] vlrjkdks'kdh; dodrañ dksk vks

vkclldnyj l jpuvka ds #i ea ikbz xBA oh, -, e-
 l jki .k ç; kx eh th Qfl dny/e dsfo'kq l m/kz ds
 l kfk l jksir ikskkaevf/kdre çjks yEckbz 153-6l seh-½
 vfhkyf[kr dh xBA rFkfi] l Hh mipkj l Hh
 i jkehVjk; Fk&ijks Åpkbz <ku½ vk/kfjr ruk 0; kl]
 chtk.kqdh l q; k çfr 10 xk- enk vks egnh eal Øe.k
 dh çfr'krkj ea çHkoh ik, x, A tcd v'oxakk ds
 ekeys eh th , xhx/e dh ç/krurk ds l kfk
 du l ksvZ e l jki ds l kfk l jksir ikskka ea vf/kdre
 çjks Åpkbz vk/kfjr ruk 0; kl Øe'k 70-5 l seh- vks
 10-5 fe-eh FkA chtk.kqka dh l q; k çfr 10 xk- enk
 vks l Øe.k dh çfr'krkj Hh vU; mipkjadh rgyuk ea
 mPp vfhkyf[kr dh xBA

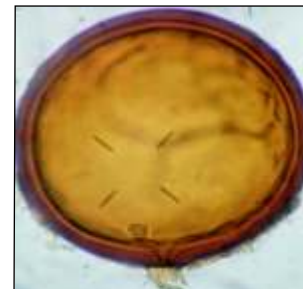
egnh vks v'oxakk l s , df=r , , e chtk.kq



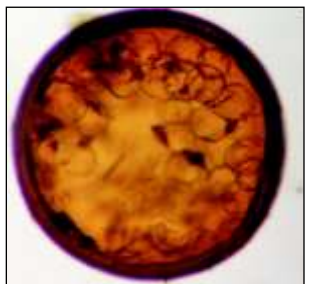
Xykel thvktikje



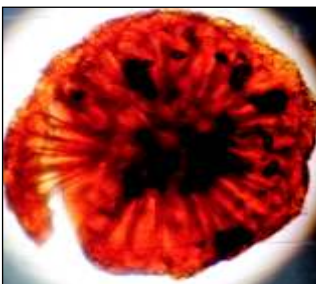
Xykel Qfl dny/e



Xykel iztkr



Xykel ekt h; k



Ldyhjk hfLVI dh chtk.kqfyck



, D; nyktikjk iztkr



, D; nyktikjk iztkr



LdWnyktikjk ck; kxkVZ



LdWnyktikjk iztkr



I (e thoh l j kd;

i ksk'kkyk voLFkkvka ds rgr 30 ; wdsyIVI Dykska dh enykrifuk ij ikni of) çkrl kgd jkbtksDVhfj; k] ; Fkk&cfi yl exkVhfj; e] L; Mkekukl 'lykjhil bl] , tkvksDVj Øndkde vls , tkLifjye cftyl h dh tkp dh xba ikni of) çkrl kgd jkbtksDVhfj; k ¼ h-thih-vkj-½ us vkbzch,- mipkjr dyekadscjkj ; wdsyIVI dyeka dh enykrifuk , oa of) dks c<k; kA tc vkbzch,- ¼000 ih-h, e-½ mipkjr dyekadh rnyuk ea5 fe-yh@ dye dh nj ij L; Mkekukl 'lykjhil bl vFkok , tkvksDVj Øndkde ds l kfk dyeka dks l jksir fd; k x; k rksDYks l h&14 vls l h&111 usenykrifuk ds fy, cgrj vuifØ; k dh gA

nskt o{k çtkfr; ka; Fkk&, yUFkl , DI Yl k ¼69 vbl ksy½ , - ekykcfjde ¼2 vbl ksy½ , UFKk hQsyl dnEck ¼3 vbl ksy½ esykbu vkckjh; k ¼45 vbl ksy½ ehfy; k Mfic; k ¼28 vbl ksy½ vls MSYcftz k yfVQkfy; k ¼27 vbl ksy½ l s, df=r enk uewka l s ikni of) çkrl kgd jkbtksDVhfj; u vbl ksy/ka dks iFKDdr fd; k x; k vls vf/kd tbjk k; fud tkp ds fy, ç; ks'kkyk eai k'kr fd; kA

p; fur nskt o{k çtkfr; ka ds fofHku enk uewka l s iFKDdr ikni of) çkrl kgd jkbtksDVhfj; k ds vkcnh ?kuro dk Hh vkdyu fd; k x; kA buea l s , u- dnEck ds rgr , df=r uewka ea vl; o{k çtkfr; kadh višk vf/kdre dknyksu; kaFkA

, yUFkl , DI Yl k] , - VRbQh k vls uhvksyekfdz k dnEck ds uewka l s iFKDdr oak ; Fkk& , tkvksDVj] , tkLifjye] cfi yl vls L; Mkekukl dh çtkfr Lrj ij igpu dh xba

esykbuk vkckjh; k] ehfy; k Mfic; k vls MSYcftz k yfVQkfy; k dsuewka l s iFKDdr ikni of) çkrl kgd jkbtksDVhfj; k dh igpu dh çxfr gA

Yfd; k ukbVrst u LFkk; hdj , fdVukebl hVh vls fo'kskdj dSokfjuk çtkfr ds l kfk l Ec) gA dSokfjuk bfDol hfVQkfy; k vls dSokfjuk >@kgfu; kuk dh xLFk; ka l s Yfd; k dh N% ul yka (Cj Cbel, Cjkl, CjN1, Ce Py1, Ce Py2, CeSe1) dks iFKd fd; k x; k vls df=e ehFM; e ea l o/k'kr fd; kA ul y Cj Cbe1 us dSokfjuk çtkfr; ka ds i kka vls dyekad l kfk cgrj fu"iknu dk çn'ku fd; k D; kAd bl us mPp xfu; l ç; k ¼@dye½ vls xLFk Hkj ¼5 fe-xk@xLFk½ dk mri knu fd; kA l keU; r%vfØ; ehFM; k eamxk, x, dSokfjuk dh dyekau st M+xLFk; ka ughafn [kkA rFkfi orëku vl; ; u ep vfØ; ehFM; k ea Yfd; k dsdf=e l jks . k } jk dSokfjuk çtkfr; kadh dyekaeaxLFkdj . k gfl y fd; k x; kA

e/; çnsk ds 11 fofHku LFkkuka l s of) çkrl kgu thokadstuun0; , d= fd, A tM+Vsjka ea esykbu vkckjh; k] MSYcftz k fl l l wls tVRQk djdl ij ijh'k. k fd, x, vls bu çtkfr; kadsfy, of) çkrl kgu thokadk p; u fd; k x; kA eny ifjkskh enk l s iFKDdr chl fofHku dodka dh ikni of) çkrl kgu xqka¼ wlg . k % vls Åpkb½ dsfy, tkp dh xba buea l s , Lijfyt çtkfr vls pkj VRbdkMekz çtkfr; ka dks of) çkrl kgu dsfy, ik; k x; k vls i ksk'kkyk eami; ks dsfy, p; fur fd; kA ikni of) çkrl kgu thok. k¼ -, e- Qakh , Lijfyt çtkfr vls , tkLifjye½ vls enk l akksuka¼ eku vuqkr eaY; wdsuk l kxksu iUk vls Okez, kvz [kn dk feJ . k] oh@oh½ ds mi; ks usplhu i kskach 10&20% mlkj thfork dks c<k; kA tc {ks= eackg jksir fd; k rks bl us 43% rd ikni Åpkb½ dks h c<k; kA