

# eŠDk - Ps hfgsf/L / Golgs/Ofsf] nflu kŕ{tof/L lj lwx?

e"/ sDk b0{zAb ldn] agšf]; eQm zAb eŠDk eGgn]e"eGgn]kVjL / sDk eGgn]xlnNg' alen65 . t; y{kVjL xlnNghf0{g}eŠDk elg65 . eŠDknf0{eld jf hdlgsf] rfn jf e0F rNof]eGg]cy0f e0rnf]klg elg65 . of]Ps kŕs[ts kš0f xf]. eŠDk pTkGg xg]sf/Of jf/]j] flgsx?sf]lj leGg wf/Off cg'; f/ b0{aif{kIrr; s/f0 aif{kIxn]kVjLdf kf]ghof elgg] Ps dfq ljj tGgs kn0 jf ršfgsf]Pp6}l9Ssf dfq lyof]. kVjL ; hfp0}hf0f of] ršfgsf] l9Ssf klg 6lqn0}uof]/ xfn; Dd 7hf ; ft, ; fgf al; / c? ; - ; fgf ; lxt ; o hlt 6qmf? ePsf 5g\ / oxl ršfgx? Ps csf0f xlnGgn]eŠDk pTklt x65 . kŕlrgsfndf wldš wf/Offg'; f/ eŠDk lj leGg sf/Ofn] pTkGg x65 . s; h] kVjLnfo{s5]f, e0f jf z]fgfun] afššf]5 eGg]lj Zjf; ul/GYof]/ To:tf kŕofln]sfw kn0f{kVjLdf sDkg x65 eGg]lj Zjf; ul/GYof]. t/ cfhef]h a]flgs cg'; Gwfgaf6 w]eGbf w]eŠDk cfp0' ; DalGw tYo kn0f kfl/; sšf 5g\ hg o; kšf/ a0f0 ug{; lš65 .

## !\_ HjfnfdVl ultljw (Volcanic activity)

HjfnfdVlsf] ultljw / eŠDk alrsf] ; DaGw g<sup>a</sup> / df; šf]h:t}/xšf]x65 . HjfnfdVl lj:kn0g ePsf] ; dodf kVjLsf]leql efuaf6 tla|ultsf ; fy nef, lofF Pj+kfgLsf] afkmx? kVjLsf] ; tx aflx/ lg:sg]qmddf ršfgnf0{wSsf lb0f eŠDk hf65 . lj leGg cllbog cg'; f/ ; g\!(\*# df 008f0]zofsf]hfef tyf ; dfqfalrdf kg]qmfšf6]f l4kdf la:kn0g ePsf]HjfnfdVln]dxflj gf; sf/L eŠDk pTkGg u/šf]lyof]. To; 0/L ; g\!^( df l; ; nlsf] P6ydf, ; g\!\*!% df 008f0]; ofsf] tDaf]fdf, ; g\!\*(! df u|xdlbkdf, ; g\!()@ df klZrdl l4k; dXsf]dfp06 klnldf klG HjfnfdVl la:kn0gsgf qmddf EfŠDk uPsf]lyof].

## @\_ e† (Faulting)

kVjLsf]lj j tGgs ršfgsf]zI0m]hldgdf e† l; h0f x65 / o:tf e†x? l; h0f xbfkVjLsf] ; tx dlG /xšf]ršfgx? sg}efu cl3 hfg vf]5 eg]sg}efu l:y/ e]x65 . h; n]hldg d0l /xšf] ršfgx? Pscfk; df tGsg]/ vldrg]kš0f x65 . olx kš0f c0t0t obl ljkl/t lbzdf /xšf]sg}klg ršfgn]yk an k0f] ugfh]ršfgx? tn dfl; ; b5 . o; /L ršfgx? ; gfh]sDkg pTkGg u/L eŠDk cfp5 . o:tf]eŠDkn]kVjLdf lj leGg e"cfst ; d] l; h0f ub5 . cllbog cg'; Gwfg cg'; f/ Pl; ofsf]lxdfno, o'f]ksf]cfNk; , cd]sfsf]/Ssl kxf8 o:t}e†4f/f l; lh0 e"cfstx? xg\

## #\_ hnlo rfk -Pressure of accumulated water

kVjLsf]Ps ltxf0{efu kfgln]cf]u6šf]5 / olx kfgl dlG lj zfn ršfgx? /xšf]x65 . t; y{ hldgdf /xšf]kfgln]dlgsf]ršfgdf ctoflws rfksf]l; h0f k0f e]xšf]x65 / oxl rfksf] 36a9n]kfgl dlgsf] ršfgnf0{c; 0tInt agf0{lb65 h; n]ubf{kfgldf sDkg Nof0{eŠDk cfp5 .

**\$\_ e"; Gthgdf vnan xgfn]**

k\j]lsf] w/ftn k\oh; f] ; Gtlnt cj:yfdf /x\$] xG5 t/ slxn\$fxlFw/ftndf c; Gthg pTkGg e0{k\j]lsf] w/ftn dlG /x\$] Ps :yfgsf] kbfy{csf[:yfgdf ; bf{k\j]lsf] w/ftn xlnnG5 / e\$Dk hfG5 .

**%\_ cf0lj s e\$lsf]lj :kmGg -Explosion of Nuclear power plant\_**

zIQm ; #0 ug\$] lglDt jf a\$lnks phf\$] lglDt agfOPsf 7h-7hf cf0lj s e\$lx?df kflj lws sf/Ofn] u8a9L e0{To:tf e\$lx? lj :kmGg xgfn] ; f] e\$ldf ; Hrt lj zfn zIQmsf sf/Ofn] ubf{k\j]lsf] ; txd f sDkg pTkGg e0{e\$Dk Nofp5 .

; fdfGotof k\fs[ts k\$fk e\$Dknf0{e\$Dksf kl/df0f / e\$Dksf tlj tf u/L b0{leGgf leGg} tl/sfn] gfkG ; lsG5 .

s\_ e\$Dksf kl/df0fM e\$Dksf] kl/df0f l ; :df\kmm] dfg ul/G5 . o; sf]0sf0{eg\$] l/S6/ :s\h x] . l/S6/ :s\h eg\$] 0lk; 06/af6 !)) lsnf]d6/ b/lDf l ; :df\kmm] /\$8{u/\$] e\$Dklo t/· sf]dfqfnf0{cfwf/ !} agf0{lnOPsf] nf\l/ydsf] kl/df0f x] . cfwf/ !} sf] nf\l/yddf k\o\$ ! Psf0\$] e\$Dklo dfg uoffds ?kdf j l4 xB}hfG5 . pbfx/Ofsf] nflu % /\$6/ :s\heGbf ; ft /\$6/:s\hsf] wSsf em08}!) uoff zIQmzffnl xG5 / o; n] ()) uoff a9L zIQm lg; hg ub5 . ; fwf/Oftof \$ /\$6/ :s\h ; Ddsf] wSsf] sg} 7hf] xflg gf\$; fgl ubG . To; h]kl/of]hg / ; Argfx?sf] lgdff ubf{sg} lglZrt l/S6/ :s\hsf] e\$Dk ylg ; Sg] agfpg] eG] s/f Joj xfl/s xB} . of] t e\$Dksf] 0lk; 06/ / ; Argfsf] k\$[tdf lge{ /xG5 hg kl/j tGzln xG5 . Oltxf; sf kfgdf lj utdf 36\$ e\$Dksf 36gxf?df clxn] ; Dd s} ; aGbf zIQmzffnl 7hf] kl/df0f eg\$] (= % l/S6/ :s\hsf] e\$Dk hg ; g\ !(^) df lrnldf uPsf] lyof] / x/\$ l/S6/:s\h cg; f/ e\$Dksf] c; / klG km/s km/s xG5 . h:t}lM

- #-% l/S6/:s\h eGbf sd- cgEj ug{; lsbG t/ /\$8{/fVg ; lsG5 .
- #-% b]v % l/S6/:s\h - cgEj ug{; lsG5 t/ lflt sd}dfqfdf k\ofp5 . t/ % /\$6/ :s\h eGbf dflysf] e\$Dkn] wghgsf] lflt ub5 .
- ^=) l/S6/:s\h eGbf tn - /fd] l8hf0g u/\$f ejgx?df s]x lflt k\ofp5 . ; fg] lfgdf sdhf] ?kdf lgdff ul/Psf ejgx?df k0f{lflt k\ofpg ; S5 .
- ^=! b]v ^=( l/S6/:s\h - dfgja:tsf] sl/a !)) lsnf]d6/ j/k/ lflt k\ofpg ; S5 .
- &=) b]v &=( l/S6/:s\h -lj gfzsf/l e\$Dk\_ 7hf] lfgdf uDel/ lflt k\ofpg ; S5 .
- \*) l/S6/:s\h jf ; f] eGbf a9L -; of] lsnf]d6/ 6f9f; Ddsf] lfgdf uDel/ lflt k\ofpg ; S5 .

v\_ e\$Dksf tlj tfM e\$Dksf c; / / lfltsf jf:tljs dfg tlj tfn] ub5 . e\$Dksf] tlj tf 7fpFcg; f/ km/s kg]u5{. sg}klg e\$Dksf 0lk; 06/sf glhs tlj tf ; aGbf a9L xg]u5{.

**eŠDk; Ē ; DalGwt sxl křInt zAbfj nlx?**

- **cĜt sĉ|(hypocenter, xf0kf] Ŧ6/\_**  
cĜtM sĉ|egšf]kY]lsf]cĜtMyndf /xšf]; f]aLaGbÆ xf]hxřaf6 eŠDk z? xĜ5 . o; nf0 gflesĉb|; dř elĝĜ5 .
- **clwsĉb|(Epicenter, 0lk; Ŧ6/\_**  
kY]lsf]; txsf]Tof]laGb' clwsĉb|xf] hf]cĜtM sĉbšf]dfly /xĜ5 . křuwŠsf (Foreshock, knř]; s\_ eŠDksf] dVo wŠsfegbf klxn] qmđs tj/df cřpg; Sg] ck]ffsř ; fg eŠDkx? křuwŠsf xĝ . křuwŠsf xfdln]rřn ĝkfřpg]?kdf cřp5g . t; y{xfdln]rřn křPsf kyd wŠsf křuwŠsf xf]jf dVo wŠsf xf]egl eĝ třsn ; lsĝ .
- **cjłzi6 (Aftershock, cřkn6/ ; s\_**  
eŠDksf]dVo wŠsf uPkł5 qmđs tj/df cřpg]ck]ffsř ; fg eŠDkx? cjłzi6 wŠsf xĝ . o:tf cjłzi6 wŠsfx? xłtf]-dlxĝf]/ jřřřDd cř0/xĝ ; Š5g . ; fdfĝo tj/df, hłt 7řf eŠDk xĝ5 TolQ ĝ}7řf / plQĝ}a9ł ; Vofdf / a9ł ; do cjłw; Dd cjłzi6 wŠsfx? cřpg ; Š5g\
- **eŠDksf tlj řř (Intensity, 0Ĝ6Ŧ; ł6ł**  
sĝ)Pp6f lĝłZrt 7řpďf eŠDk4f/f ePsf]sĐkg tyf lřtsf]ĝfk ĝeŠDksf sĐkg tlj řř xf]. eŠDksf clwsĉbřaf6 -0lk; Ŧ6/\_ To; :yřĝsf b/ł, To; :yřĝdf ePsf ršřĝ jf dř6řšř l:yłt tyf eŠDksf]kl/dř0řsf] cřwf/df, ; fdfĝotof 0lk; Ŧ6/af6 hłQ 6ř9f uof] plQ sĐkg tlj řř sd xĝ}hřĝ]ub5 .
- **; ĝřdl**  
; fdfĝotof ; fdbłs ; tx dĝł jř ; dĝbšř]lkřdf přkĝĝ xĝ]eŠDkn]; fdlbš lřĝdf přkĝĝ ug]5řnnf0{; ĝřdl elĝĜ5 .  
eŠDksf]křřĝĝdfg ugšf]lĝłđt clxn]; Dd sĝ}dł; ĝsf]dłjřsf/ ePsf]5ĝ t/ lřleĝ ĝřĝ/x?sf]cřřřř]Aoj xf/ / lqřfšnfkn]eŠDk cřpg nřłof]x}elĝ sxl xb ; Dd křřĝĝdfg ug{; lsĝ5 . h:tř
- hĒnl ĝřĝ/x? cřřĝ]lřĝ 5řř] Ps}7řpďf eřř eP/ a:5g\
- hĒnlĝřĝ/x? ĝř]; řwf/0řtof dřĝ5šř]ĝłhs cřpg 8/řpgx? kłĝ ĝłhsdf cřp5gV slxnšřxl / ufřdf kłĝ k:5g\
- lř8łof3/ jř Pšol/oddf /xšř ĝřĝ/x? eřłĝ] křř; u5ĝ\ . la/fnf] sšř/ tyř 3/křnjř ĝřĝ/x?n]nSĝ] břřĝ] ařxl/ eřłĝ]jř cřřřř]lqřfšnfkx? břřřp5g\
- eŠDk cřpgĝĝbf cl3 sšř/ eSĝ] s/řpg] lřl9ĝ] otřptř břřĝ]/ dřlnssř]jł/kł/ nĝk6' ug]h:tf lqřfšnfk břřřp5g\

- 3/df kflnPsf hgfj/x? h:t}afv|, uf0{ e}L ešDk cfpq' ečbf cl3sf] ; dodf uf7df k:g dfčbčgV vNnf 7fčdf hfg vč5g\
- sfu tyf cčo r/fx? ?v, cfyf/df a;šf r/fx? cf^gf] uBaf6 aflx/ cfP/ s/fp5g\
- bhčdf a:g]d' f, ; k{sldnf, dfs/fx? aflx/ nfd nfu] lg:sg]ub5g\

ljlečg cllbog cg'f/ k|tlbg cf}ft #%) j6f ; -;fgf ešDk hfg] ub5g\t/ 7hf ešDkx?sf]; aVof thgflds ?kdf sd xč5 / ePk15 o:tf]ešDkn]hghljgdf g/fd/L lft kčofp5 . t/ o:tf]zlQmzfnl ešDk slxn]cfp5 ečg]s'f ečg g; lsg]xčfn]ešDkaf6 xg] lftaf6 aRg k'j{tof/L ug{c}ofjZos 5 em\gkfn h:t}clj sl; t bždf urdRr k/šf] 3gfa:tl, cAojl:yt a;fčf; u/L a:g] x/š gful/sn] ešDklo k'j{of/Lsf] af/čf 1fg ; sng ug{cfjZos 5 . ešDk Ps kfs[ts kšf]k xf]/ of]kšf]k]slxNo}9fšdf cfjfh lbP/ cfp5g t; y{x/š kn, lfof xfdl cfk}; tš e0{o; af/]cfjZos hfgsf/L ; sng u/L a:g'k5{.

### ešDklo lft Golqs/of sf k'j{tof/L lj lwx?

- ešDk hfgčbf klxn]slxn]/ sga}hf hfč5 ečg]s'f yxf gxb]xčf 3/ leqsf ; fdfgx?nf0{em}j f gn8g]u/L ; /lftsf ; fy Aoj :yfk gk5{.
- ešDk cfpq' ečbf klxn] g} klxrfg ul/Psf ; ačbf glhssf] ; /lft 7fp't/ ; s] Dd rčf]kčg]/ ; f]7fpčf 6fpsf]hfčfpg]u/L lgxl/P/ a:gk5{.
- ečf{tNnfdf xgč5 eg] ; s] Dd l56f] aflx/ lg:sgk5{/ ; 8ssf alr efuač6 lx8l/xšf]eP vNnf 7fpčkm{hfgk5{.
- 3/aflx/ xgč5 eg]clnf 3/x?, zlQmzfnl lahhsf]tf/, ?v / cfkčdfly v:g ; Sg] cčo sg}klg s'faf6 6f9f hfgk5{.
- ešDksf] ; dodf ; f3/f] ; 8s j f uNnl eP/ lx8g' xčg .
- ešDksf] ; dodf lj hhsf]Main Switch off ul/lbgk5{.
- ešDksf] ; dodf alnof]b]vg]9fšf, 6čh, vf6 dlčt/ hfgk5{.
- cfktsfnlg j:tX? h:t}vfB ; fdull, nufkčf, kfgl, kfylds pkrf/, 6rčf06 cflbsf]k'j{tof/L ugk5{.
- 3/ xlNn/xšf] ; dodf l; 8laf6 tn b]8g'xčg cyj f 3/af6 aflx/ hfgxbg .
- ešDksf] ; dodf uf8laf6 ofqf ul//xšf]5 eg]uf8lnf0{/fš] rčf]ečbf rčf]vNnf 7fpčf b]8gk5{.

### Reference

- sf^n] z]fsf't ( @)^\* ) lj kbV'j{tof/Lsf lj lwx?, sf7df08f}gkfn .
- u?^a, h4axfb/ - @)^\_ j ftj /oflo lzlffsf]cj wf/of, Pd=s} aš; lj t/s efčflx6l, sf7df08f}gkfn .

- kofj /of dfl; s k\$fk Aoj :yfk g lj zlf -@)^@\_, jftfj /of lzlf sfoqmd tyf jftfj /of tyf afn ; /f\$ / ; :yf gkfn .
- Kafle,shesh kanta. 2012. Disaster Preparedness Tips ( A guide book for personal safety in times of natural disasters with special reference to south and southeast asia). Godage International Publishers, Colombo, Sri lanka.
- <http://www.volcanolive.com/alerts.html>
- <http://www.earthquake.usgs.gov/>

- ; fef/ lj 1fg n y d f n f - g l n s d n s f h'

## s[ad jfg:klt s khgg s t l / s f x ?

### k[7eld

lj?jfsf] jfg:klt s C# (vegetative parts) -h:t# h/f, sf08 jf kft\_ jf6 s[ad t l / s f a f / f lj?j f ; f g { ; l s g ] t l / s f n f 0 { s [ a d j f g : k l t s k h g g (artificial vegetative propagation) elg65 . of]klj lw ; f w f / o f t o f s [ i f c g t u t t / s f / l t y f k m k m h v ] l s f ] n f l u ; f y } ; h f p g s f ] l g l d t k o f u l u l / g ] l j ? j f (ornamental plant) s f ] n f l u p k o f u l x 6 5 . o B l k s [ a d c y j f k f s [ t s t j / j f 6 v e g e t a t i v e l y p r o p a g a t e e P s f l j ? j f x ? d f d y l g s k h g g - s e x u a l r e p r o d u c t i o n j f 6 p t k f l b t j l p d f h : t f ] c r o s s i n g o v e r g x g ] e P s f h ] p t k f l b t l j ? j f x ? d f l j l j w t f - v a r i a t i o n k f 0 b g \

**s[ad c d y l g s j f g : k l t s k h g g** M o ; l j l w c g t u t s l 6 E (cutting), n p l / E (layering), u f l 6 E (grafting) / d f 0 s [ k k f u ] g (micropropagation) h : t f k l j l w x ? k b 5 g \

**!= s l 6 E (Cutting)** M o f ] ; f w f / o f / w } } k o f u d f c f p g ] l j l w x f ] . o ; l j l w c g t u t l j ? j f s f ] s f 0 8 c y j f h / f s f 6 ] p r o p a g a t e u l / 6 5 . o ; s f ] n f l u \* b l v # ) ; d l = n f d f ] s f 0 8 c y j f x f e f d f w } } n o d e / l a t e r a l b u d e P s f ] 6 b n f s f 6 l a g f 0 P s f ] e f u n f 0 { r o o t e x x d f 6 c y j f a u x i n h : t # I n d o l e a c e t i c a c i d ( I A A ) d f 8 j f P / 5 8 s ] k g [ u / l d l n n f ] c f l ] ; n f ] d f 6 f d f 3 ' ; f 6 ' k b 5 . k l 5 s f l 6 P s f ] e f u j f 6 h / f l g : s 6 5 e g ] l a t e r a l b u d j [ 4 e P / s f 0 8 c y j f x f e f s f ] ? k l n 0 { g o f f l j ? j f t o f / x 6 5 . o : t f ] t l / s f k m k m h t y f t / s f / l v ] l (horticulture) t y f ; f y s f ] n f l u p d f l / g ] l j ? j f (ornamental plant) h : t # w k l , u h f k m B o u g a i n v i l l e a , c a c t i , c f l b s f ] n f l u p k o f u l x 6 5 . o ; l j l w c g t u t s b } l j ? j f s f ] h / f s f 6 ] c f l ] ; n f ] d f 6 f d f 3 ' ; f / l d f l y j f 6 x N s f d f 6 f h ] 5 f l g k b 5 . k l 5 h / f j f 6 s f 0 8 s f ] l j s f ; e 0 { g o f f l j ? j f s f ] ? k l n 6 5 . s l t k o l j ? j f s f ] s f 0 8 c y j f x f e f d f 6 f s f ] ; D k s d f c f P k l 5 d V o l j f j f ; E ; E } / x \$ f ] c j : y d f - g s f l 6 P s f ] c j : y d f \_ d f 6 f s f ] ; D k s d f / x \$ f ] e f u = x f e f j f 6 l j : t f / } h / f l j s l ; t x 6 5 g \

**@= n p l / E (Layering):** n p l / E e g s f ] d f p l j ? j f (mother plant) j f 6 p r o p a g a t e u g \$ f ] n f l u x f e f c y j f s f 0 8 s f 6 g ' e 6 b f k l x n ] t o ; d f h / f l j s l ; t u g [ k l q m o f x f ] . o ; t l / s f d f d f 6 f s f ]

; Dksdf cfPsf] xffj f6 adventitious root sf]lj sl; t e0; skl5 sfl665 / df6f / fkl5  
o; n]gofFj ?j fsf] ?k ln65 . of]dVotof b0{tl/sfj f6 ug{; ls65 .

-S\_ Ground layering M o; tl/sfdf, sf08sf] tnsf xffx? emsfP/ xff /x\$] node  
-uf7f\_ df6f / 6kfs]efu df6]dfly kg[u/L cfl; nf]df6f ufl865 . emsf0Psf] xffnf0{  
fix ug{'Y' cfsf/sf]lsnf (peg) -kmfd cyjf sf7sf] df6f-hdlg df 7f\$g' kb5 . pSt  
cfl; nf]df6f rooting hormone supply ug\$] ; fy; fy}lr:ofg /flv/fvg kfgl 5s6' kb5 .  
sxl lbgkl5, df6fh] 9flsPsf] efusf] xffdf h/f (adventitious root) lj sl; t x65 / dVo  
lj ?j f6 pSt xff sf6L gofFj ?j f kfgsf] nflu kgM df6f / fkl65 . of] tl/sf stolon,  
creeper, trailer jf prostrate cgtuf kg] sxl lj ?j fx? h:t} Jasmine, Strawberry, *Ipomoea*,  
*Clematis* cflb jf6 gofFj ?j f jfgpsf] nflu pkoful x65 .

-V\_ Sndl -Air layering/Gootee\_ M of] tl/sf sfi7do lj ?j f (woody plants) h; sf xffx?  
s8f / hdlgdf emsfpg g; lsg] vfnsf jf]lj ?j fsf] nflu pkoful x65 . of] tl/sfnf0{  
:yfglo jfh]lrnlsf] eiffdf sndl e6g]rng 5 . sndl jgfbf ; jkyd jf]sf] xffdf ! )  
; dl= hlt efudf j l/kl/j f6 leqsf]sf7 cyjf xylem df c; / gkg[u/L jf]mf -j]mf cgtuf  
phloem, cambium kb5\_ tf5] jg0Psf] efudf rooting hormone sf]whf] ; E}cfl; nf] sf0{  
(moist moss) cyjf cfl; nf]skf; (moist cotton) cyjf sndldf kofu ul/g]df6f] (grafting  
clay) : df6f] uf6g / dl; gf]u/L sfl6Psf]k/fn cyjf ; \$]3f @ M ! M ! sf]cgkftdf  
ld; f0Psf]ld>of\_ j l/kl/ nuf0{cfl; nf]kg /flv /fvgsf] nflu /j / cyjf knfli6sn]j]l 8f]ln]  
jflg' kb5 . ttKZrft ! blv # dlxgf kl5 rf6 kfl/Psf] efu (injured part) df h/f  
(adventitious root) lj sl; t x65 .

#= ufl6E (Grafting) M ufl6E eg\$]o:tf]lj lw xf]hxfFPp6f lj ?j fsf] efu (cut branch or  
stem with bud) To; lj ?j f; E glhsdf /x\$] cyjf ldNg] khftl (same or closely related  
species) sf]sf6\$]efudf ; fl/65 cyjf transplant ul/65, h; n]ubf{ufl6E ul/Psf]lj ?j fdf  
csf]lj ?j fsf] u0fx? klg Pp6} jf]df kfg ; ls65 . b0]6f lj ?j fx? dWb] hg lj ?j fdf  
grafting ug\$]nflu h/f ; lxtsf] fixed plant ln065 To; nf0{stock elg65 eg]hg lj ?j fsf]  
efu stock lj ?j fdf graft/transplant ul/65, To; lj ?j fnf0{scion elg65 . o; /l jGg] gofF  
lj ?j fdf stock lj ?j fsf] root system x65 eg] scion Sf] shoot system cyf kth tyf km  
x65 . b0bnlo lj ?j f (dicot plant) tyf sf]fwf/L (gymnosperms) cgtuf kg]lj ?j fx? h:t  
cfK, cdj f, ; Gtnf, sfutl, /j/, wkl, cflbsf] nflu pkoful x65 . o:tf] kffnl lj z]ftM  
kmkmsf ?vx?df csf]ldNbf]hNbf] hftsf] kmkth kmfpg kofu ul/65 . crh t/sf/L  
v]l cgtuf lgdf6f\$hg6 /f]sf]; emdOf jf6 jrfpg /f] kl]t/f]w]ds lfdtf ePsf]rootstock  
kofu u/L uf]he\$]df klg ufl6E ul/Psf]k0Psf]5 . ufl6E ug]j hfd, h/f ePsf]lj ?j fsf]  
sf08 hdlg blv @)-#) ; dl= clnf]xg]u/L sfl665 h; n]ubf{sfl6Psf]b] }efu /fd] E  
ldnf] \. Scion nf0{stock df fit u/kl5 hf]8Psf]efudf ufl6E sf]nflu kofu ul/g]df6f]  
(grafting clay) n]j l/kl/j f6 %-& ; dl= jfsnf]xg]u/L nuf0; skl5 To; nf0{support ug{/j /,  
kl\$ cyjf 8f]ln]j flw65 . sxl xktf kl5 meristematic activities sf]sf/0fn] scion / stock

bj žf]vascular tissue (xylem & phloem) hf]80{bj žf]sf08 Ps csfđf fuse e0{j [4 x65gV Pp6} lj ?jfsf] ?k ln65 . pNn]vt uf^l6Ěsf tl/sfx?sf cltl/Qm bridge grafting, bark grafting, vandeer grafting klg křngdf 5g\

cnjf ; fwf/oftofMlgDg tl/sfj f6 grafting ug{; ls65 .

6Ě uf^l6Ě (Tongue or whip grafting): o:tf] kšf/sf] uf^l6Ě, stock / scion bj žf] Jof; (diameter) ldNbf]hNbf] ePsfđf pkoQm dflg65 . o; sf] nflu stock / scion bj žf] wfl/nf] kmfdfs]xltof/ -h:tm rSs\_ sf] ; xfotfn]58\$] (inclined) cyjf sloping ; Ě} tongue df notch kg]u/l bj }(stock / scion) Ps csf]; Ě lkřb xg]u/l sf6l hf]865 .

Jf8h uf^l6Ě (Wedge grafting) M o:tf] kšf/sf] uf^l6Ě klg stock / scion bj žf] Jof; ldNbf]hNbf] ePsfđf pkoQm dflg65 . o; sf] nflu stock df 'v' cfsf/sf] vf8n (notch) / scion df km] f]cfsf/sf]sf6l bj }Ps csf] Ě lkřb xg]u/l hf]865 .

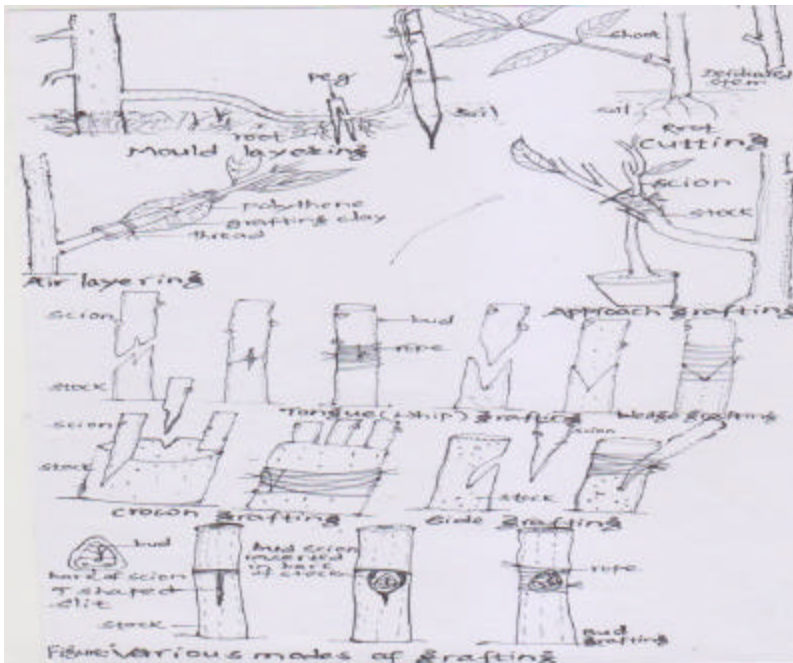
Sn]6 uf^l6Ě (Cleft or crown grafting): hj scion sf]Jof; , stock lj ?jfsf] thgdf w}}yf/) ePsf]v08df, stock lj ?j fdf 'v' cfsf/sf]vf8n cyjf notch jgf0{[olQs}; wofdf scion df km] f](wedge) cfsf/sf]sf6l, 'v' cfsf/sf] notch jgf0Psf]stock df bj }Ps csf]đf /fd] Ě lkřb xg]u/l hf]865 .

;f08 uf^l6Ě (Side grafting) M o:tf] kšf/sf] uf^l6Ě df, stock lj ?jfsf] 6kkf] (stump) b]v tn side df 'v' cfsf/sf]vf8n cyjf notch jgf0{Pp6f dfq scion df km] f] (wedge) cfsf/sf]sf6l, 'v' cfsf/sf] notch jgf0Psf]stock df bj }Ps csf]đf /fd] Ě lkřb xg]u/l hf]865 .

Pkřr uf^l6Ě (Approach grafting) M o; kšf/sf] uf^l6Ědf Ps csf] Ě ldNg]cyjf glhsdf /xšf]křftl (same or closely related species) sf b0j 6f lj ?jfx? Ps csf]; Ě glhs kg]u/l 5šf5š}pdf/l cyjf root system /fd]ePsf]lj ?j f df6đf / csf]udnfd] pdf/Psf]lj ?j f klg xg; S5, hxfFstock lj ?j fdf csf]lj ?jfsf]efu scion, transplant/grafting ul/65 . o; sf] nflu Ps csf]; Ě glhsdf pdf/Psf bj }stock / scion lj ?jfsf]xfĚsf]Pp6}prf0{(same level) df j flx/sf]j fđmf (bark) sf6l, rř kfl/Psf]bj }lj ?jfsf]xfĚ hf]8l j flx/j f6 grafting clay nuf0{/j/ cyjf 8f]ln]j flw65 cyfř bandage ul/65 . sxl dlxgk15 bj }lj ?jfsf] sf6Psf]xfĚ hf]8Pk15 grafting ul/Psf]efub]v scion sf] tnj f6 / stock sf] dfljy f6 sf6g'kb5 . o; /l Pp6f lj ?jfsf]shoot system, dhj t h/f (efficient root system) ePsf]csf] lj ?j fdf ; fg{; ls65 .

Jf8 uf^l6Ě (Bud grafting) M o; kšf/sf] uf^l6Ědf ; fB/f] nřDrf] slit or cut, stock lj ?jfsf] xylem df c; / gkg]u/l j fđmf sf6] jgf065 . ttkZrft 0R5f0Psf]křftl (same or closely related species) sf]bud rSsh]sf6], stock lj ?j fdf jgf0Psf]slit df transplant ul/65 / bud b]vg]u/l grafting clay nuf0{/j/ cyjf 8f]ln]j flw65 . sxl lbgk15 křf{?kdf pQm bud,

stock lj?j fdf hf\8PkI5, stock lj?j fdf bud /flvPsf] efu b\lv ! ) ; žd= dflvj f6 sf6g' kb5 .



**uf\16Esf krl0bfx? (Advantages of grafting)**

- lj?j fj f6 l56f] pTkfbg lngsf] nflu -lj p /fk\ e6bf rf8f] kmh kmhl kmn nflu] ePsf\h] grafting ul/65 .
- uf\16E gul/Psf] lj?j fj f6 e6bf w\}h; f] grafting ul/Psf] lj?j fj f6 /fdf] u0f: t/ (superior quality) sf]pTkfbg lng ; l65 .
- Pkfl- uf\16Eaf/f Pp6f lj?j fsf] shoot system, dhj't h/f (efficient root system) ePsf] csf\lj?j fdf ; fg\ ; l65 .
- d\ylgs khgg j f6 reproduce ug{g; Sg} lj?j fx?df cyf\ w\}j lp (seed) pTkfbg gxg\lj?j fx?df grafting sf] dfl\odj f6 w\} ; w6fdf lj?j f pTkfbg ug\ ; l65 .
- 5f6f] ; dod\ pkof\ul u0f ePsf] lj?j csf\lj?j fdf ; fg\ ; l65 .

**df0s\k\kfu] g (Micropropagation):** df0s\k\kfu] g eg\sf] t6t' khgg lj lw (*in-vitro* culture) af/f lj?j fsf] vegetative parts j f6 propagation ug\ tl/sf xf]h; nf0{cloning cyf\ clonal propagation klg elg65 . o; sf] nflu lj?j fsf] sf\ff jf t6t' jf sb}cE nf0{s[td vfgf (artificial nutrient medium i.e. MS medium/ basal medium) df ; ld lhj f0f' /lxt cj :yf (sterilized condition) tyf laboratory/controlled condition df k0f\ lj?j f (complete plant) kfpgsf] nflu pdf\l/65 cyf\ culture ul/65 . ; fwf/oftof t6t' khgg lj lwsf] nflu lj?j fsf] t6t' cyj f cEsf] ; fg\ 6qmf (i.e. explant) s[td vfgfdf culture ul/65 . o; j f6 g5l\sf] t6t'sf] 8Nnf\h: tf] b\lv] k08 (undifferentiated mass of tissue) j 6b5 h; nf0{callus elg65 . o; /l explant culture ubf\klxn] callus j gf0 callus sf] sub culture u/l lj?j f pTkfbg ug\



cyjf l; w}lj?jf (plantlet) k\kt ug[e\g]s/f nutrient medium df /flvPsf]plant growth hormones sf]dfqfdf e/ kb5 . 2,4 dichlorophenoxy acetic acid (2,4 D - auxin) / Kinetin /fv\df callus j\g]; Defjgf j 9l x\5 eg]Benzyl amino purine (cytokinin) / ? - Naphthalene acetic acid (auxin) /fv\df plantlet j\g]; Defjgf j 9l x\5 . o; /l j g\sf]callus nf0{w\}; \vofdf sf6\ ; fgf]; fgf]6qrf j gfpq ; ls65 / To:tf 6qrfnf0{s[qd vfgfdf, sterilized condition df culture u/k\5 To; jf6 shoot lg:s65 / tl lg]:sPsf shoot jf6 h/f lgsf\ngsf]nflu rooting hormone (auxin) /flvPsf]rooting medium df ; fl/65 . tt\Zrft culture sf]nflu k\p\ul/Psf]sfFsf]ef8f](glass vessels) leq h/f ; lxtsf]; fgf]lj?jf (juvenile plantlets) j\6b5 . Plantlet j g\sf]v08df pQm ; fgf]lj?jf (juvenile plantlets) sf]kgM explant lnP/ w\}; \vofdf lj?jfx? kfpqsf]nflu sub culture kl\g ug{; ls65 cyjf o; /l j g\sf]lj?jfnf0{lgsfn\ klxn\ jfn\jdf pdf\65, To; k5fl8 kž:t k\l\fl/s kbfy{ePsf]udnfd\ lu\g xfp; df ; fl/65 / kl5 s\l 7hf]ePk\5 v\j f/ldf /fl\k65 .

**s\td jfg:k\ts khgg (artificial vegetative propagation) sf kn0bfx?**

- To:tf lj?jfx? h; n]p\kfbg lbg ; Sg]j\px? (viable seeds) lbg ; Sb\gg\To:tf lj?jfx?af/f ; lhn\pdfg{; ls65 . h:t\ s\j, jlp gxg]vfnsf cu/x? (seedless grapes), uhf\m rd\l, pv', *Chrysanthemum*, cflb .
- Grafting ul/Psf]lj?j f jf6 /fd\]u0f:t/sf]k\th tyf kmn kfpq ; ls65 .
- lj?jfsf jfg:k\tsjf6 p\kflbt lj?jfx? lj hf/fl\0fj6 pdf\Psf]e6bf 5f\sf]; dpd\ kl/kSs x\5g\
- t\6t' khgg klj lwaf/f 5f\sf]; dod}w\}; \vofdf /f\ dQm lj?jfx? (disease free plants) p\kfbg ug{; ls65 .
- To:tf lj?jfx? h; n]w\}; \vofdf j\px? (seeds) lbg g; Sg]/ p\kflbt j\px? pd\g w\}; do nflu\] (long period of seed dormancy) ePsf lj?jfx? o; lj lwaf/f ; lhn\ p\kfbg ug{; ls65 .
- Vegetative propagation g}To:tf]pkoQm tl/sf xf]h; jf6 p\kflbt lj?jfx?df, dfp lj?j f (parent/ mother plant) df kf0g]; Dk0f{u0fx? kfpq ; ls65 cyf\ ltglx? exact carbon copies of the parent xg\

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# glds]dxTj / pkof]utf

glds]j] flgs gfd (*Azadirichta Indica*) xf]. of]d]hP;L kl/jf/ / ?v juđf kg]ls6gfzs u0fn]el/k0f{axrlrř jg:klt xf]. o; sf]pbud:ynsf]?kdf jdf{/ ef/tsf]d]f]gl lf0nf0{ dflgPsf]5 . lj ut @%-#) jifb]v o; sf]křf/-k]f/ pi0f / ; dlztf]0f lfđf kg]clktřf, cd]v/sf, ci6]nof / Plzof dxfbžsf ljleġ dhšx?df hfřtfřsf ; fy e0/xřf]atf0ġ5 . of]k]0M ; a}lsl; dsf]df6f]/ xjfkfgldf xšġ ; Sg]u0f ePsf]jg:klt xf]. ljleġ xjfkfgl / df6fřf]pj {f zlQmsf]cfwf/df o; sf]jlpf]p]křbg %) b]v !)) lsnf]u]d ; Dd kl]tjif{ kl]t ?vsf]b/n]xġ5 . Jofj ; flos b]i6sf]0fn]eġgkbf{o; sf]%) lsnf]u]d t]hf křmaf6 #) lsnf]u]d jlp jf bfgf křt ug{; lšġ5 . /, o; af6 ^ ln6/ t]h / @\$ lsnf]u]d klġf křt xġ5 . To; f] t o; sf] t]hnf0{ sl6gfzs ljiffbl / klġfnf0{klġ dnsf]?kdf křf]v ug{ ; lšġ5 .

glds]dxTj / pkof]utfaf/]s/f ubf{; j]kyd Nkmř/ / 3f]f gfd s b0]ġf j] flgsx?n] ; 0Qm?kdf ; ġ!( (! ( df ; řt cġfhdf glds]křf]v]sf]klxnf]j] flgs c]wog u/\$f lyP . To; a]řf b]v ġ]gldn]cg'; ġwfg lfđf lj z]ř dxTj křpg yfnřf]xf]. elġ5 glds]lj ifodf ef/tdf dfq}#^\* j6f cġġwfg]ds n]yx? křflzt e0; sřf 5ġ\ . ġ]křndf klġ gldnf0{ pġgt s]řf kl]lw lj sf; sf]křf]v]sf nflu eġljleġ c]wog cg'; ġwfg sfodf ; dfj ž ul/b}cfPsf]kř0ġ5 . gldnf0{sl/f Joj :yfkġ, 9; lhġo /ř]v lġoġ0f, kl/jf/ lġoff]ġ / dfġj :jf:Yosf]cġo lfđf ; d]ř o; sf]křf]v]sf]l/tf ; Daġwl ljleġ c]wog cg'; ġwfgx? e0/xřf]atf0Psf]5 .

glds]a] flgs dxTj af/]xfn; Dd ul/Psf cg'; ġwfgaf6 s]:ki6 xġ cfPsf]5 eġ]glds] ; Dk0f{?vdf ġ}křs]ts ?kdf s]xl ġ s]xl dfqdf sl6gfzs ljiffbl t]j lj Bdfġ /xřf]xġ5 . t/ klġ o; sf]jlp cyjf bġġfnf0{lj z]ř ?kdf sl6gfzs ljiffblsf] ; ř]řf ?kdf křf]v ul/ġ5 . ġlddf cfwf]l/t sl6gfzs ljiffbl tof/ křġř nflu ; fdfġotof o; sf]křmaf6 křt xġ]jlpnf0{ġ}křf]v ul/ġ5 . xfdl ; a]řf0{yřf ePs}s/f xf]ls ġld :jfbdf t]tf]xġ5 . /, oxl t]tf]ġġd;o; sf]sl6gfzs u0f lġlt /xřf]xġ5 . :d/0f /xf] \ġlds]t]tf]ġġf o; df lj Bdfġ /xřf]Ps lsl; dsf]of]us l6&/k]j f08 jf lndġ f08sf] sf/0fn]xġ5 . xfn; Dd glds]jlpaf6 bz křf/sf lndġ f08 kbřf? kQf nfuřf]atf0ġ5 . tl of]usx? d]w0df Ph]8/ř6ġ hř eġ]of]us ; aġġbf dxTj k0f{df]ġ5 / ljleġ cg'; ġwfg ; Daġwl sf0x?df ; d]ř o; sf]křf]v e0/xřf]5 . of]of]us glds]jlpaf6 clwstd !) lsnf]u]dsf]b/n]křt ug{; lšġ5 . of]Ph]8/ř6ġ hř of]us klġ ljleġ ; ft lsl; dsf ; xfos kbřf? ldn] aġřf]xġ5 . tl ; xfos kbřf? Ph]8/ř6ġ P, al, ; l, 8l, 0{ Pkm / hl xġ\ . ol ; xfos kbřf?df klġ Ph]8/ř6ġ P kbřf{; aġġbf a9l cġkřtdf cyřf\^\*# kl]tzt xġ5 eġ]bf]ř]df Ph]8/ř6ġ jL !^ kl]tzt ġġ{cfp5 . afšl c? ; xfos kbřf?sf]cġkřt eġ]lġs}sd cyřf\Ps bzdñj křf křtzt dfq xġ cfp5 . tyflk Ph]8/ř6ġ 0{ kbřf{kl/df0fsf] lx; fj n]sd xġ]eP klġ o; n]ls/fsf]a]4df lj z]ř c; / křġ[ePsf]h]Jofj ; flos b]i6sf]0fn] o; sf]pk]ylt dxTj k0f{df]ġPsf]5 .

o; /l s[if pTkfbg a[4 ug{ lj iffbL/lxt :j:y vfB kbfiy{pTkfbg ug{ dfgj :jf:Yo tyf kofj /Oflo ; Gthgsf] b[i6n]; d] gldsfl pkof\l ttf clt dxlj kOf{b]VPsf]h]o; sf] kof\l / kj wgd f hf\$ lbgkg{b]vG5 .

- /fhzdfg s; l=

## In8]d'; f df}d kl/j tGsf]; P's hgj /

lxdfnl b]z gkfndf kg{; Sg] hnj fo' kl/j tGsf] c; /af/] lj Zj ; dbfosf] Wbfg tfgg ; g\ @)! ) df gkfnsf] dGql kl/ifbsf] j }s ; u/dfyfsf] snfkTy/df a:of]. Toxl ; fn ; db] ; tx eGb f s]L ld6/ dfq dfly /x\$]b]z df]NbE; n]cf^gf] dlGqd08nsf] a}S ; db\$] ; tx dlG /fVof] . ol b0{ pbfX/Ofaf6 xfdl df}d kl/j tGdf lj leGg dhSx?sf ; /sf/x?sf] WbfgsfifQf /fd/l g}e0/x\$]a%g ; S5f]. df}d kl/j tGn]dfgj hlj g / b]zsf] ef\flns cj:yfdf dfq ge0{ pRr lxdfnl e\udf j ; f]f; ug[ ; fg] :tgwf/l hgj / In8]d'; fsf] hlj gdf klg k/\$]xG5 .

In8]d'; f (Pika) v/fof] k\hftldf kg[; fg] hlj xf]. of] hlj gkfn, rlg, ef/t, hfkfg, /l; of / cd\ /sdf kf0G5 . gkfndf af]hlfnsf] efiffdf In8]d'; fnf0{ :yfg cg' f/ ef\flPhg, ^ofpd'; f, v/d'; f, cfaf, xGb, sDr, kSk' vf]hlg cflb gdn] lrlgG5 . ; #/df #) k\hfltsf In8]d'; f ePsf] hfgsf/l kf0G5 . gkfndf o; k\flsf % k\hfltx? /x\$]cleny 5 . *Ochotona curzoniae*, *O. nubrice*, *O. thibetana*, *O. roylai*, *O. macrotis* j } flgs gfd lbOPsf In8]d'; f xfd] b]zdf ; fdfgo j GohGt'sf]x]; otdf ; lrs[ 5 .

In8]d'; fsf] t]n xfn; Dd kfOPsf k\hfltsf cg' f/ !@) b]v !%) u]d; Ddsf] kfOPsf] 5 . loglx?sf] z/l/sf] nDaf0{ !% b]v @) ; ]. dl. sf] xG5 . In8]d'; f Psn a:g dg k/fpg] hgj / xf]. logsf aRrfx? 9Efsf] sfksf] alrdf Ps cfk; df lhl:SP/ v]n/x\$] b]v g ; lsg5 . loglx?n] lxp]sf] hf8f]; dosf] lglDt b]gs ?kdf xl/of] 3F, cf^gf] bhfd] hDdf ug[u5G\ loglx?n] hDdf u/\$] 3F, sf] Gofgd] s]L lxdfnl r/fx? a:g] u5G\; fy}To; nf0{ cG0 hgj /x?n] klg cxf/f]sf] ?kdf kof\l ug[u/\$] clen\ 5 . o; }sf/Of In8]d'; fnf0{ pRr lxdfnl l]sf] jftfj /Oflo kfl/l:ylt / k4tl clbogsf] nflu dVo pkof\l hlj (Key Stone) k\hfltsf] ?kdf lrlgG5 .

hnj fo' kl/j tGsf] ulDe/ c; / h]s lj lwtdf kg[ cgdfg u/\$] 5 . IPCC, 2007 sf] klt]hg cg' f/ of] ztFb]sf] cGtodf lj Zj sf] tfkdfg ^.\$ l8ul ; ] ; ] n] a9G] 5 . of] k]faaf6 lxdfnl b]z gkfn c5'tf] xg ; Sb. ; fy}oxfj ; f]f; ug[ ; fg] / ; Gb/ hgj / In8]d'; f klg o; af6 dlQm xg ; Sb. In8]d'; f tfkdfg j [4 klt c]oGt}; Dj ]gzln hgj / dflgG5 . of] c]oGt}lr; f] l]df j ; f]f; ug[eP/ klg lxp]df nfd]cf/fd (Hibernation) df hf] . o; sf] z/l/df kftnf] 5fnf xG5 . o; sf] z/l/sf] tfkdfg sl/a !)\$.@ l8ul

km\Qxf06\kf0Psf]5 . hg o; lfd df j ; f]f; ug{cgo hgfj /sf]eGbf %-& l8ul km\Qxf06\n] a9L g}xf]. z/l/ Basal bxg klqmf (Metabolic Rate) a9L xg' / z/l/sf]tkf afix/ kj fx ug{g; Sgh] o; nf0{ tfkqmd kl't a9L ; Dj hgzln agfPsf] xf]. ln8}d'; fnf0{ bhf] afix/ tfkqmd @( l8ul ; ; ]\eGbf dfly /fvdf pRr tfkqmd (Hyperthermia) sf]sf/Of d[o' xG5 . To; h]lj Zj sf]pi0fls/Of ln8}d'; fsf]cl: tJj sf]lgldt ; w}vt/f xg ; S5 .

kfl't ePsf cjzifx?sf] clwogsf] tVo cg' f/ dufl]nofdf kf0G] ln8}d' f (O. pallasi) sf]; wof tlj | ?kdf 36b}u0/x\$]5 . ToxfFpIvvg ul/Psf cjzifx? dWb] \$))) aif{cl3sf cjzifx? o; ln8}d'; fsf]xf8sf]cæ @#. ^ kl'tzt lyof]. t/ of]kl'tzt !%))-@))) aif{k/fgf cjzifx?df &.# kl'tzt 5 eg]@)) aif{; Dd k/fgf cjzifx?df dfq ).\$ kl'tzt 5 . of]36gfn]pi0fls/Of a9b}uPsf]dufl]nofsf]blif0fl efudf ln8}d'; f 36b} uPsf]bl]vG5 . csf] clwog cg' f/ ToxfFk0G]nf6f\$] jf\$]lb; f ( Pellets) df ln8}d'; fsf] xf8x?sf]cæ #\* kl'tzt xGvof] xfn of]@! Kl'tzt eGbf sd kf0Psf]5 . clxn]ePsf] d?eDL 0/fg / 6sl\$] ; ldf lfd df Ps k\$ /sf]rlnsf] lj i7fdf ; g\@)^ df ln8}d'; fsf] xf8 e}f0Psf]lyof]. ?kml; ; \khltsf]ln8}d'; f 0ltxf; sf]sfnv08df 0/fg, 6sl{h:tf pi0f tfkqmd xg]b}zdf /x] clxn]nfk ePsf]36gfn]klg of]kfl0fl tfkqmd j [4 kl't a9L kl'tlqmflds /x\$]5 eG]a%g ; lsG5 .

cd\]sfsf] u} afl; g (Great Basin) lfd df xfn} u/\$] cg' Gwfgaf6 ToxfF kf0G] O. Princeps khfl't ToxfF]@% dWb]; ft jf; :yfgdf nfk ePsf 5g\ o; /L hnj fo' kl/j tGsf] sf/Ofn]nfk ePs} sf/Of cd\]sl sfgGdf o; nf0{ ; Aift hgfj /sf] ; rldf ; lrs[ u/\$] lyof].

gkfnf klg hnj fo' kl/j tGsf ljleG ; s}x? bl]vg yfn\$] 5g\ . jiffdf xg] u8a8L, kmhx? ; do eGbf cufl8 g}kmlg yflg, lxdfndf lxpF] ; tx 36g' ; fy}lxdkft xg]prf0{ a9b} hfg' cflb . nf^6fa /fli6e lgs'-hdf ; g\@!) bl]v @)!@ ; Ddsf] 5f\$] cj lwsf] clwogaf6 ln8}d'; fsf]b0]6f jf; :yfgdf cGo e0; s\$]bl]vPsf]5 . nf^6fa pkTosfaf6 s}l 306fsf]k}n b/lfd kg]dG8' uf] / l; Gbd uf]sf]alrdf Ps vfl; f alg]u5{. nf^6fa bf] f}f6 lxpFkln] cfPsf]kfgl alg]pQm vfl; df @)^\* r} dlxgdf 7hf]l xpFklx/f]cfof]. lxpFklx/fh]l; Dbd uf]df @ hgf dflg; , s}l e}f, Ps 3f\$]sf]d[o' eof]; fy}s}l 3/x? gi6 eP . To; vfl; f j /k/sf 9Efsf sfkx?df ln8}d'; fsf]j f; :yfg lyof]. hxfF; a}9Ef lxd klx/fh]NofPsf]whf] df6f]/ lxpF]k/\$]lyof]. ToxfFj ut @ j if{bl]v ln8}d'; f bl]vPsf] 5g . nf^6fa /fli6e lgs'-hsf] uf] f0s08sf] pQ/L lsgf/df k}z: t ln8}d'; fsf]j f; :yfg lyof]. ; g\(!&!, !(&@ df s}l hfkfgl j }flgs / ; g\!(((\$, !((&, @)!), @)!! Dff s}l gkfnlx?n]u/\$]cg'; Gwfgdf o; af/]pNn} u/\$] 5g\ t/ oxfF; g\@)!@ sf]dfr{dlxgf bl]v ln8}d'; f bl]vg 5f\$]5 . nf^6fa /fli6e lgs'-hsf] tfkdfg j [4sf]lj Zn]fOf ubf{lj ut @% aifdf oxfF]bl]gs Gogtd tfkqmd lgoldt ?kdf a9b}u0/x\$]5 . clwstd tfkqmddf yf}]dfq ptf/r9fj ePdf klg Gogtd tfkqmd To; cgkftdf cToflws a9L/x\$]5 . o; cS6f] /- gf}j / dlxgf afx\$ cGo dlxgdf aiff\$]dfqf 36b}uPsf]bl]vG5 . ; g\!(&@ df

@\*) dl6/ prf0 b]v z? xg] egl AofVof ul/Psf ln8]d' f ; g\ !(( & sf cg' wfgstf(?n#))) dl6/ e6bf tn b]v g\ . xfn o; /fli6 lgs'-hdf ln8]d' fsf] jf; :yfg #)^% dl6/ e6bf tn 5g . o; ksf/ ln8]d' fsf] af; :yfgsf] prf0{ a9b} hfgdf hn]fo' kl/j t6 klg Pp6f dxTj k0f{sf/0f xg ; Sb5 . s]ln8]d' f hn]fo' kl/j t6 s}sf/0f nfk ; d] x6 ; Snf < hn]fo' kl/j t6sf] k6f] n] pglx?sf] cglafgl, Aojxf/ / af; :yfgdf kl/j t6 ePsf 5g\ . of]klf/l:ylts k2tldf ln8]d' fdf c? hl]x? klg cfl>t 5g\ . To; h] xfd] h] s l] j w t f d f d f d kl/j t6sf] c; /sf]; 'rgf ln8]d' ; fn]lbg ; Sg]k an ; e]j gf 5 . s]x f d] b] z d f klg ln8]d' ; f d f d kl/j t6sf] ; 's h]j x f] h f <

- ; fef/ l j 1fg n y d f n f - gf/foof k] fb sf] h'

## pRr /Qmrfk (High Blood Pressure) M kl/ro / ; d; fdlos tYox?

l j Z j e l / x / \$ t l g J o l Q m d W b ] P s J o l Q m p R r / Q m r f k s f ] l z s f / e P s f ] c l l b o g d f k f O P s f ] 5 . k l x n ] o f ] : j f : Y o ; d : o f l j s l ; t k l Z r d f d h s x ? d f a : g ] d f l g ; x ? d f k f O P s f ] d f x f n c f P / g k f n h : t f l j s f ; f ] d v / f i 6 x ? d f p Q m / f u l x ? s f ] ; W o f l j s l ; t / f i 6 x ? s f ] t h g d f c f Z r o h g s ? k n ] b f ] a / b ] v P s f ] 5 . w h o s f ] c g ' ; f / G o g c f o ; f ] e P s f s x l c l k ] s l d h s x ? d f p R r / Q m r f k s f ] J o f k t t f e m g } a 9 l b ] v P s f ] k f O o f ] h x f F e m 0 8 } k r f ; k l t z t / f u l x ? o j f j u d f k b 5 g \ . g k f n d } k l g , s f 7 d f 0 8 f \$ f l j s 6 7 f p e f x f n ; f n } u l / P s f ] ; j [ f 0 f n ] @ % j i f { o t f p R r / Q m r f k s f ] J o f k t t f t l g u o f f a 9 f ] k f O P s f ] 5 e g ] l : y l t l g / G t / / x ] o f ] / f u s f ] J o f k t t f c : j e f l j s ? k n ] a 9 g ] ; s ] b ] v P s f ] 5 .

pRr /Qmrfk jf -xf0 An8k] /\_ e6gn]z/L/sf wdgLx?df /utsf]rfk a9L xg' xf]. wdgL eg\$]Ps ksf/sf]/Qmgnl xf] h; n]/ut d6af6 aflx/ c6o cux?df nUb5 . /Qmrfksf] dfkg hl]x]klg dfl]Nnf]/ tNnf]c\$df ul/G5 . h: t!@) ÷ \*), !#) ÷ ( ) . dfl]Nnf]hf0{ Systolic -l; :6f]ns\_ k] / elgG5, hg d6' vldr0 wdgLx?df /ut cuf]8 allbf kg[k] / xf] eg] tNnf]hf0{ diastolic -8fo:6f]ns\_ k] / elgG5, hg d6' k]6bf wdgLx?df kg[k] / xf]. l; :6f]ns, wdgLx?df kg[k]; a6Gbf a9L k] / xf] eg] 8fo:6f]ns ; a6Gbf sd k] / xf]. /Qmrfknf0{lgDg cg' f/ j ul\$ /of ul/Psf]5 .

/Qmrfksf]k\$ f/	l ; :6f]ns k] / (mm Hg)	8fo:6f]ns k] / (mm Hg)
; fdf6o /Qmrfk (Normal)	~ !@)	~ *)
pRr /Qmrfk cl3sf] cj :yf (Prehypertension)	!@) - !#(	*) - *(
:6h ! pRr /Qmrfk (Stage 1)	!\$) - !%(	() - ((
:6h @ pRr /Qmrfk (Stage @_	!%( e6bf a9L	(( e6bf a9L

l; :6f]ns / 8fo:6f]ns k] /df sg}Ps jf bj }a9df pRr /Qmrfk ePsf] elg65 . nfd] ; do; Dd pRr /Qmrfk ePdf d6sf] /f\, x6o3ft, d\]f]fsf] /f\, cf7fdf ; d:of cfp] dl:tisdf /ut allg]-kl/0ffd :j?k kl3ft xg] ; Defjgf a9] hf65 . To; h]pRr /Qmrfksf] ; dod}klxrfg u/L lgo6q0fdf /fVgkb6, h; n] ubf{ z/L/sf c6o cux?df xg; Sg] v/fa c; /nf0{klg /f\$g ; ls65 . pRr /Qmrfk b0{k\$ /sf]x65 .

- != kf0d/L (Essential hypertension)
- @= ; \$08/L (Secondary Hypertension)

**pRr /Qmrfk lsg x65 <**

pRr /Qmrfksf] jf:tlj s sf/of oxl xf] e6g] yxf xg ; s\$] 56 . t/ Pp6f k6v sf/of azfgut xf]. olb cfd-afnf0{pRr /Qmrfk 5 eg] 5f]f 5f]lx?nf0{klg xg]; Defjgf a9l x65 . ; fy}z/L/sf] t]h a9l xgn] hf8, /S; L r/f6sf]; jg a9l ugn] cldNbf] vfglkn] /tgfj u|t hljgn]klg of] /f\ xg]; Defjgf a9] hf65 .

**cfknhf0{pRr /Qmrfk 5 eg] s; /l yxf kfp] <**

k] / gfg] o6q -l:knlef6fg]d6/\_ n]k] / gfgksg k] / a9l jf sd ePsf] yxf kfp] ; lsb6 . pRr /Qmrfksf] v/fa c; / c? cux?df gk/] Dd of] /f\sf] sxl nlf0f blvb6 . /f\l cg; f/ To; sf nlf0fx? km/s xg ; \$5g\ sltn]cfknhf0{k] / a9\$] ahf 6psf] bVg] rSs/ nflg] jf6tf xg] u/\$] e65g\ pRr /Qmrfkdf nlf0f blvg' /fd] s/f xf] lsgg] nlf0f blvPk15 /f\ z?s}cj:yfdf kQf nfl5 . t; y{x/\$n] of] /f\unf0{; dod}kQf nufpg ahf ahfdf cfknhf] /Qmrfk dfkg ugk65{.

**o; sf]pkrf/sf]cj Zostf lsg 5 <**

nfd]; do; Dd pRr /Qmrfk ePdf d6; d\]f]f, dl:tis h:tf ; j]hgzn cux?df ug] v/fa c; /af6 argsf] nflu ; dod}o; sf]pkrf/ ugk65{. pRr /Qmrfksf]pkrf/ u/L lgo6q0fdf /fVg ; lPdf :6f\$ -dl:tis 3ft\_ xg] ; Defjgf #%- \$) k|tzt n] 365 eg] x6o3fts] ; Defjgf @)-@% k|tzt n] 365 / xf6{kn]oP/ -d6h] sfd gug]cj:yf\_ sf]; Defjgf %) k|tzt e6f a9l 365 .

**o; sf]pkrf/ s]xf] <**

cf]flw vfg' dfq o; sf]pkrf/ xf0g . cf]flw vfP/ dfq}of] /f\unf0{lgd] ug{; ls6g . of] /f\dfly lgo6q0f ug] sxl pkfox? o; k\$ / 5g\

- != hljg k4ltdf kl/j t6 (Life Style Modification)
- @= /Qmrfk 36fpg]cf]flwx?sf]; jg
- #= lrlsT; s; E lgoldt :jf:Yo k/Llf0f

**!= hljg k4ltdf kl/j t6**

o; c6tu\$ ljle6g s/fx? kb5g\h:t] z/L/sf] t]h ; fdf6oe6f a9l 5 eg] 36fpg] vfgdf g6 sd ug] vfgdf kmknh, ; fu ; Ahlsf] dfqf a9fpg] lrlNnf] kbfy\$] dfqf sd ug]

lgoldt Jofofd ug{ hfB, /S; L / r/f0 h:tf cdnsf]; Jg sd ug{cflb . olb z/L/sf]tfn  
; fdf0o eGb f a9L 5 eg]k[0\$ ! ) lsnf]tfn 36fp0f %-@) mmHg k] / sd xG5 . ; fdf0o  
tfn eGgn] a9L df; 0G8\$; (Body Mass Index) !\*-%-@\$( lsnf]ld6/ :Sjfo/ eGg]  
alen65 . cfkn]f] a9L df; 0G8\$; lgsfNg of] zq k0fu ug{x} \ tkf0\$] tfn  
-lsnfdf\_ ÷tkf0\$] prf0, ld6/df\_ of] lgsfNg] kfu]d w}] df] f0nx?df, 0G6/g0 j ]  
; f06x?df klq xG5 . h: t] <http://www.nhlbsupport.com/bmi/bminojs.htm>

vfgdf kmknh, ; fu ; Ahlsf]dfqf a9fpg] lRnfn]kbfy\$]dfqf G0g ug{:ofr/0\$ t] /  
sfh:6\$] dfqf sd ug{ugf]klg a9\$] /Qmrfk 36fpg / lgoG0fdf /fVg ; xofu ldN5 .  
vfgdf ggsf]k0fu ^ u]d eGb f a9L gug{ hfB /S; lsf]; Jg ; s]Dd G0g ug{ k]tlbg  
sDtldf #) ldg0 l56f]56f]x8g]ugf]klg k] / lgoG0fdf /fVg w}]; lhnf]xG5 .

dflysf ol pkfox? ckgfpgn]k] / a9g glbg] a9\$]k] / 36g] cf]fw vfg'gkg] vf0/x\$]f]  
cf]fwn]/fd]sfd ug{/ pRr /Qmrfkn]c? cux?df kg]v/fa c; /x? sd xg]xG5 . csf]  
dxTj k0f{s/f, of]/fu ePsf]JolQm]k0f{?kdf w0kfg 5f0df d0df kg]g/fdf]c; / cToGt  
sd xg hfG5 .

**@= /Qmrfk 36fpg]cf]fw?sf]; Jg**

/Qmrfk sd ug{ljleg cf]fw? ; he 5g\ . a9L dfqdf k0fu]df cfpG]cf]fw?nf0{lGdg  
; dx?df af8g ; lG5 .

- S= lk; fa nufpg]cf]fw (Diuretics)
- V= la6f Ans/ (Beta Blocker)
- u= Sofnl; od Rofgn Ans/ (Calcium Channel Blocker)
- 3= P; 0Gx]j 6/ (ACE Inhibitor) Cflb .

x/\$ cf]fwsf]h:t}logsf]klg ; f08 0kn\$6x? xG5g\ . ; f08 0kn\$6x? w]df blvg]vfnsf]  
; fdf0ob]v clt sddf blvg]h:tf hl6n klq xg ; S5g\ . t; y] cf]fw z? ug{eGb cl3  
lrlst; s; E ol ; a)s/fsf]af/df 5nkmm ug{h?/L blvG5 . ; fy}; fxl s/fx? / cfknh]  
vf0/x\$]cf]fwsf]af/df kq klqsf / 0G6/g0 dfkn] klq hfGg]k0f; u/]a9L knf0bf xG5 .

**#= lrlst; s; E lgoldt :jf:Yo k/lif0f / k/fdz{**

cf]fw z? u/] dfq of]/fu]sf]pkrf/ ; km x5g . c? ; fwf/of /fu]x? h:t}sxl lbgdfq  
cf]fw vfP/ dfq klq of]/fu]nf0{lgoG0fdf /fVg ; lsb0 . lsgeg]of]/fu]dwdx -lrgl/fu,  
Diabetes), bd (Asthma) h:t}hljg e/ /xg]/fu] xf] o:tf /fu]x?nf0{d]8sn efiffdf s]lgs  
l8lhh (Chronic Disease) elG5 . To; h]cf]fw z? u/]kl5 klq lgoldt ?kdf /Qmrfk hfF  
ug{ hljg k4ltdf ; sf/flds kl/jt0 Nofpg] /ut, lk; fa hfF ug{ -lsgsl /Qmrfksf]  
cf]fw ; Jg; E} /ut, lk; fadf lrgl, ; fl8od, k0fi; od, Sofln; od cflbsf]dfqdf 36a9 xg]  
xG5\_ , 0=; l=hl= ug{ -pRr /Qmrfkn]d6' ; lGg] d6sf]w8\$g clgoldt xg] d6h]/fd] E  
sfd gug{xG5\_ , sldtdf j if\$]Psk6s cf]f k/lif0f u/fpg'clt pQd xG5 .

**pRr /Qmrfk Msxl tYox?**

!= pRr /Qmrfksf]cf]flw z? u/lk15 5f8y IdNbg <  
lj zlf1x?sf]cg; f/ pRr /Qmrfksf cf]flwx?n]/f]unf0{g}lgdh kfg]xf0g, dfq /Qmrfknf0{  
; fdf6o l:y]tdf kmsf]pg]/ lgo6q0fdf /fv; ; xof]u k\ofp55 . of]/f]u nfd]; do; Dd /xg]  
(Chronic Disease) ePsf]h]o; sf]cf]flw hlj gel/ g}vfgkg]x65 . lgoldt :jf:Yo k/Llf0fdf  
/Qmrfkdf /fd]; wf/ ePdf lrlst; ssf]; Nnfx / lgu/fgl df cf]flwsf]dfqf 36fpg] a9fpg]  
jf a6b ug]ug{; ls65 .

**@= gg a9l vfPdf pRr /Qmrfk x65 <**

gg a9l vfPdf pRr /Qmrfk x65 e6g]hlt alnof]hgwf/0ff 5, c\Wbogx?df Tolt alnof]  
?kdf gg pRr /Qmrfksf]sf/s t]j xf]elg kdf]l0ft xg ; s\$]f] 5g . s; \$; df pRr  
/Qmrfksf]sf/0f vfg]gg -To; df xg]; fl]8od t]j\_ ePsf] b]vPsf] 5, loglx?nf0{æ; fN6  
; l]; l6eA (Salt Sensitive) elg65 . JolQmx?df vfg]gg a9l vfgfn]d]f]h]n]lk; fasf]?kdf  
sd dfq kfgl z/L/ aflx/ km]f]S5 / z/L/df kfglsf]dfqf a9] /Qmrfk a9g]x65 . csf]  
c\Wbogaf6 rflx/Qmrfk a9g]sf]sf/0f z/L/df ; fl]8ods]dfqf a9l eP/ ge0{; fl]8od /  
k]f]f]od alrsf]c; Gthg -; fl]8od a9l, k]f]f]od sd\_ eP/ xf]e6g] b]vPsf] 5 .  
lrlst; ssf]; Nnfx s]x65 eg]olb s; \$]f]/Qmrfk a9l e0{ s\$]f]5 eg]pm æ; fN6 ; l]; l6eA  
xg]; Defj gf w]}x65 . To; h]vfg]gg]sf]dfqf 36fpg' p; sf]pRr /Qmrfksf]lgo6q0fsf]  
nflu lgs}km]f]0]f]h]gs x65 . t/ k] / ; fdf6o ePsf]c]j:yfdf pRr /Qmrfk xg]8/n]gg sd]  
vfg'Tolt pkoQm gxb ; S5 . lsgeg]vfg]ggdf xg]; fl]8od z/L/sf]nflu c]ofj Zos t]j  
xf].

**#= Ittf]vfg\$]f h:t}s/hf cflb vfgfn]/Qmrfk sd x65 <**

xfdl d\Wb]w]}h]PNnff]oflys cf]flw e6bf 3/h' pkrf/, cfoj] os cf]flw dg k/fp5f} t/ tl  
cf]flwh6o tl/sfx? pkof]u ubf{/fd] E aem], hfgsf/L lnP/ dfq pkof]u ug{plrt x65 .  
n; g vfgfn]z/L/df sf]h]6]h]sf]dfqf 36g] xflgsf/s af] f](HDL) sf]dfqf 36g] /fd]af] f]  
(MDL) sf]dfqf a9g]/ pRr /Qmrfk lgo6q0fdf d2t kl]5 e6g]s/f c\Wbogx?df b]vPsf]  
5 . vfg]gg -; fl]8odoQm sd vfg]sf]; fy}k]f]f]od ePsf]vfg\$]fx? -h:t}s]f\_ a9l  
vfgfn]klg pRr /Qmrfk lgo6q0fdf ; xof]u kl]5 . Ittf]vfg\$]f h:t}s/hf cflbn]/Qmrfk  
36fp5 e6g]s/f of t c\Wbog e0{ s\$]f]5g of c\Wbogx?df kdf]l0ft ePsf]5g . olb 3/h'  
tyf cfoj] os pkrf/ ub]u/\$]f]v08df /f]uln]; f]; Da6wl hfgsf/L lrlst; snf0{u/fpg'  
cf]Zos b]v65 .

**\$= pd]; E}/Qmrfk a9b}hfg' ; fdf6o xf] <**

bzs cl3; Dd of]s/f ; xl dflg]Yof] t/ clxn]pd]; E}/Qmrfk a9b}hfg' pd] a9gfn]ge0  
vfg]sf]v/fal, jftfj/0flo c; /, hljg k4ltsf]kl/j t6 cflbn]xf]e6g] b]vPsf] 5 . To; h]  
cfh efl]n sd pd]d}pRr /Qmrfksf]; d:ofx? b]vg yfn\$]f]5g\ a9b]wdkfg, dBkfg,  
vfg]df :ofr/68 km]f]6 (Saturated Fat) sf]dfqf a9l xg' Jofofdsf]sdl, c]olws sfo{  
Jo:ttf, tg]ju]t hljgz]h] cflb sf/0fn]ubf{pRr /Qmrfksf]k\$]f]k a9b}uPsf]l:y]lt 5 .



t; yM x/\$ JolQm]cfkmf]:jf:Yosf]lhDd]f/ cfkmf0{dfg] :j:y hljgz]hldf Wofg lbg]xf] eg] pRr /Qmrfk h:tf /fux?af6 dlQm kfpg ; lsg\$ .

**; f{x?M**

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