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Editorial

Mizoram hi Horticulture thlaiin a ngeih kan ti a, a dik pawh a dik viau a ni. Amaherawhchu, Mizo te hi kan ngaih a samin thil kan uluk lo hle thin a. Kan thlai chin te hi rilru tak taka ngaihtuah chiang hmasa lovin hma kan la leh mai thin a, thlai tan hun tlem te pein hlawk taka thar kan tum thin. Thlai te hi nunna nei rilram thei leh tuihal thei an ni a, enkawl dan pawh uluk an ngai em a ni.

Huan kan siam dawn reng rengin, ram kan vah hmam kan chin tur kan hriat chian a ngai a, kan chin theih zat tur te, tui leh chaw tha an mamawh zat tur te chhut chian vek a ngai a ni. Hetiang zawng zawng kan chhut chian hnuah kan mamawh leh enkawl theih tur zat ngaihtuah chungin a hmam siam thin ila, tichuan tul lovah ram kan vat vak vak lo ang a, thlai chi/hiak te pawh kan phun thlawn vak vak lo vang. In kan sak dawna kan pawisa neih theih zat tur kan chhut vek hnu a, kan sak zawh theih tawk awm kan rel thin ang hian, thlai kan chin dawna pawh ngaihtuah chiang hmasa ila, uluk tak leh a nih dan tur taka kan enkawl theih tawk tur thlai ching ila, plan fel tak kan siam hnuah chauh thlai ching turin hma la ila, kan hlawhtlinpui ngei ang. Tun atang chuan hetiang taka chhut uluk hmasain hma hma la ila, hlawhtlin ngeina turin hma kan chhawp a ni tih i hre thar leh theuh teh ang u.

FEED BACK OF CANOPY MANAGEMENT

Vanneihthlak tak maiin Canopy Management Under HMNEH 2010-2011 hmalaknaah CHO N.Vanlaiphai chuan min lo telh ve hlauh mai a. Tunah hian Serthlum kung rah òan mek leh la rah ve lo deuh kung 300 vel ka nei a, Canopy Management hi a hun lai tak a ni bawk a, he hmalaknaa ka tel hi a lungawi thlak duh hle a ni. Ni khat training min pe a; a tak ngeiin Serthlum kung kan cut nghal bawk a, ser kung cut-na tur hmanrua min pek bakah lei òha (Fertilizer) min pe bawk a, khati taka min duhsakna avang khan Serthlum enkawl na lamah chuan hmasawn leh tui sawt chauh kan hmabak a ni ber a, keimahni aòangin kan tute zel pawhin aò chhawr theih tur a nih avangin a lawmawm duh hle a ni.

Thil harsa ve deuh mai pakhat chu, a rah hun nghahhleh tawh nak alaia ser kung han Cut hmiah hmiah mai hi a ni. Mi dang Cut-tir chu ka phal si lo va, maimichhing deuh chungin ka cut fo òhin. Pi Sangtei (CHO) N.Vanlaiphaiin a tak ngeia a cut ka hmuh angin theih tawkin kan ti ve a, a chang chuan kan nupain kan cut bawk. Heng Ser kung ka Cut te hi kum 2012-ah chuan a lo chauw òha òan ta viau mai a, mi ser tluk lo mah se a inchhirawm yak lo, kan hlawhfa rawih ten 'A VA BUK òHA VE' an ti zeuh zeuh a, a hrehawm lem lo òhin, theih tawka enkawl zui min tichak sawt òhin.

Serthlum kung hi enkawl a lo ngai hle òih hi ka lo hre tawk lo hle mai a, Pruning hun te, tui pek hun te, rannung laka ven dan te, Bordeaux Mixture/Paste chungchang leh thil hrang hrang kan zir leh min pekte han hman vel ringawt pawh hian phurna min pe nasa em em a, ka serthlum huan hian mite ta tluk rih lo mah se ka huan kal tur hian phur loh lai ka nei ngai lo a ni.

Tichuan ken fertilizer kan dawn pawh a hun tak March 2012-ah kan han phul a, hun eng emaw hnuah chuan an òhatpuina a lo lang a, ser kung mai ni lo a bul vela hnim pawhin an lo ngeih òlang vek bawk a, bordeaux Past pawh a òangkai hle mai.

Serthlum huan hi enkawl zel ka tum a, mahse min tiphurtu leh hma min lakpuitu CHO N.Vanlaiphai leh a thawhpuiten min theihngihl lo hram se ka duh khawp mai,

Thanks

SIK LEH SA INTHLAK ANG ZELA HIM LEH RENCHEM

ZAWKA THLAI RAL THAHNA HLO HMAN DAN

(Safe and judicious use of pesticides under changing climatic scenario)

Thlai ral thahna hlo kan han hmang a, a tangkai hle tih kan hriatin, kan uar leh lutuk thin a, kan chhehvel ram thing leh mau leh rannung tangkai dangte pawhin a lo tawrh phah hial thin. Rannung thahna hlo jawih ral thei lo (non-biodegradable) te hi lei lung leh boruaka a cham rei hian a lo kual a lo kual a, a pung tulh tulh thei thinin mihring hriselna atan a lo hlauhawm thei thin a ni. A hman dana fimkhur a ngaih avang hian Insecticides Act, 1968 chuan thei leh thlaia kah tur chi chu uluk takin a hman dan tur a kawmah a chuang tur a ni tih a tarlang a ni. Lo neitute hnenah rannung thahna hlo quality tha pek ringawt hi a tawk lo va, a hman dan him leh tha leh renchem dan inzirtir hi thil tul tak a ni.

Thlai ral thahna hlote hi a kah tur (target) chu rannung a ni emaw, natna thlentu a ni emaw hnim/hlo a ni emaw ina thosi leh chukchu ilo a ni emaw tur hlauhawm tak a ni a. A nih dan tur dik taka hman chuan kan thei leh thlaite min venhimsak thei a ni. Amaherawhchu, a ziak ang leh mi thiamte zirtir anga hman loh erawh chuan thlai min venpuitu ni lovin; mihring hmelma lian takah a chang thei a ni. Chuvang chuan damdawi i lei dawn reng rengin eng a tana hman tur nge, eng rannung leh natna thahna nge tih leh a hman dan tur leh i mamawhna nen a inmil em tih uluk takin en hmasa thin ang che.

A chung a sawi bakah hian damdawi kan hmana hriat tur pawimawh tak chu kan damdawi hman quality hi a ni. A kawma inziak ang aia dal emaw, a thawh dan tur ang thawk pha lo emawte a nih chuan kan mamawh a phuhru pha dawn lo a ni. A tira sawi awm tak, thlai ral thahna hlo hi enge a nih i han sawi leh lawk teh ang.

Thlai ral thahna hlo tih hian thil eng pawh (leilunga awmsa emaw, siam chawp

emaw, organic emaw pawh nise) kan thlai ei chhetu leh khawih buaitu control a, venghim a, tiboral emaw titem (supress) emaw lo hnawt bo thei hi a ni. Thlai ral thahna hlo (Pesticide) tih hian a huam thui hle a, thlai ral azirin saptaungin hmang hrang hrang a nei a. Sazu thahna chu -rodenticide, hmuar lam thahna/enkawlna chu - fungicide, chutiang zelin miticides, molluscicides te pawh a awm a ni.

Thlai ral thahna hlo (pesticide) hman kher a tul em?

Pesticide kan hman dawn hian hman kher a tul em? tih kha ngaihtuah hmasak phawt tur a ni. A hnuaia mi hi pesticide kan hman hmam daktawrin mihring damdawi a chawh hmaa a uluk ang a hnuaia mi ang hian kan mamawhna chin kha kan zir chiang phawt tur a ni.

- Kha rannung emaw natna emaw pesticide hmanga kan kah tur kian kan thlaiah harsatna a thlen tak tak em?
- Pesticide hmang lovin a enkawlina dang a awm em tih ngaihtuah hmasak tur a ni.

- Kan rannung thah tum kha kan thlai harsatna thlentú tak tak a ni em tih chian ngei ngei tur a ni. Kan harsatna kha tui tlakchham vang te, tui paih that loh vangte, chaw tha tlakchham vangte emaw hliam a tuarte pawh a lo ni zawk thei a ni.
- Tin, pangang rannung ei zo thei chi a lo awm pheí chuan kan thah tum loh zawk hi kan tiboral vek thei a ni. Kan thei rah tha tura pawimawh em em khuaite pawh a lo tihlum tel thei a ni.
- Hriat reng tura pawimawh em em chu pesticide kan hman hian kan thlai ral zawng zawng hi a thiin a natnate a dam nghal vek dawn lo tih hi hriat reng tur a ni.
- Kan thlai ei chhetu rannungte dam chen (life cycle): a tui hun, a keu hun, a puitlin hunte hriat hmasak hian a control a tiawlsam deuh a ni.

A chungá mi thliir chung hian a hun takah pesticide hi hman tur a ni. Pesticide hman ngei a ngai tih kan hriat theihna tur chu a hnuaia mi ang hi a ni.

- Hmuh theih khawpa thlai ral a lo pun tawhin
- Thlai hnah leh a kungte a beih a, a chhiat tanin
- Thlai chhiat dan azir ni lovin a ral tam dan azir zelin pesticide hi hman chauh tur a ni.
- Thlangdar pahnih khat lek avangin kan thlai zawng zawng kah kher loh tur a ni.
- Vutbuakte pawh a lo awm tan tirha kap

ngal thawr lovin, vutbuak lo awmtirtu chu a bul vel a lo da lutuk emaw hnimin a khuh nasa lutuk emaw a ni thei a. A khuhtu hnim leh ni sa hliahtu kha vai kian hmasak phawt tur a ni.

Pesticide hmang kher lo hian kawng dang a awm em? A hnuaia mi ang hian kawng dap phawt tur a ni :

Cultural control : A tang tan (pruning) dan dik tan hmanga enkawl te, lei tha pek dan tur dik leh a mamawh tak pek te, tui tlachham lova siam te, natna do chak chi (pest resistant) chin te.

Physical control : Thlai/thei bul khuh hnawn (mulch) te, ieia natna hrik awm ni zung hmanga tihboral te (solarization).

Mechanical control : Hnim sam/thlawh fai te, tui hmanga na taka thlai hnah khawh fai te, thang/len kama/zar te.

Biological control : Rannung dang thlai ei chhetu lo suat vetute hmanga lo ven.

Replant : Thlai natna a nasat viau va, pesticide hman reng a ngaih dawn ai chuan thlai dang chi that - natna do thei zawka thlak daih tur a ni.

A tawp ber atan chuan pesticide kan hman reng rengin tui a pawlh tawk tur chiah pawlh a, kan mamawh ngei a ni tih hriat hunah chauh pesticide te hi hman tur a ni. Tin, kan hman tawk tur chauh lei thin bawk tur a ni a, kan hman bangte tha taka tihral tur a ni. Pesticide hman ngai lo turin natna lo dawng khawm theitu thing kung leh thlai leh rannung tha dang, kan huan leh a vela awmte zuah thiam a, ram ngaw humhalh aur ila, mamawh bak thing kit mai mai lovin i enkawl tha zel ang u.

THINGFANGHMAIN ENG RAM LEILUNG NGE A MAMAWH?

Kan thu sawi tur "Thingfanghmain eng ram leilung nge a mamawh?" tih hi kan sawi dawn chuan, a hmasain thingfanghma hi eng nge a nih chiah a, tih te kan hriat tel a ngaiin a mamawh te hriat kan tum dawn chuan, a chanchin leh a nihna te kan chian a ngaih avangin, ti hian lo sawi dawn ta ila.

Thingfanghma tobul hi hmun lum deuh, Mexico chhim lam ram Degree 14° atanga 20°N hmar lam leh Central America ramri hrul vel nia hriat a ni a, tunah hian, hmun hrang hrangah hmuh tur awmin, dai khang lohna hmunah chuan chin theiha ngaih a ni. Dai khal (Frost) hi a ngeih lo hle a, hmun ro ni lo, tui hul leh thil mawih tha awmna an ngeih ber.

Thingfanghma hian a rah nan leh than that theihna tur hian sik leh sa mamawh leh phut bik riau an nei a, "Boruak lum hi an mamawh kum tuana a ni" ti ila, kan sawi soal lo vang. Vur tla emaw, dai khang chhete pawh a ngeih lovin a tuar a ni tih kan hriat a tha. Hun rei lote chhung centigrade degree 0° a tawn zeuh pawhin a tuar nghal mai thin a. Hun rei deuh khaw vawtin a hmeh pheih chuan a thih phah thei hial thin a ni. Hmun vawt leh chirh hmun lei hi Thingfanghma tan chuan, "RAL" ti ila, kan sawi soal awm lo ve. Tin, boruak dai hian a tuina a khawih danglam thei hle bawh a ni.

Thingfanghma (Papaya), Papaw tih leh Tree Melon tia hriat ni bawh hi, tropical America atanga rawn intan nia hriat niin, a than chak vang te, thar hlawk vang te, kum khat hnua rah chhuah mai thei leh a rah hun chhung rei, kum tuana rah lawh tur awm thei, thei hrisel leh chakna chi hrang hrang tam tak pai a nih vang te hian, thei lar leh hriat hlawh tak a ni a, tin, a rah a hmin tak tak hma a, a raha bawhlo (Enzyme) chi khat "papain" awm hi ei tur siamna Industry hrang hrangah hmanna tur tam tak a awm avang hian thei chin hlawk leh belh-fak tlak tak a ni a, Papain lak nan a ni emaw, a rah hmin hralh chhuah ringawt atang emaw pawh hian, huan siamtu chuan ram Hactare 1

-ah hian Rs 40,000 (singli) chuang chu awlsam takin a senglut thei mai thin.

Thingfanghma hi kum zabi 16-na hun lai khan Malaca atangin Portugese hoin India ramah an rawn keng lut a, kum tuana rah lawh tur awm thei, theikung tlemte zinga pakhat a ni a, a kungin hmun a awm zim vang te, kum khat chhung leka rah chhuah nghal mai thei leh chin awlsam tak a nih bawh vang te, thei hrisel leh chaw tha tam tak pai a nih vang te hian, chin uar leh hriat hlawh tak a ni.

Thingfanghma hi Tropical climate, boruak lum leh hnawngah a tha duh ber a, hetih lai hian, sub-tropical ram puallawi hmunah pawh hlawhtling takin a chin theih bawh a ni. Mahse variety thenkhat chuan khaw lum lutuk a tuar thei lo va, temperature centigrade degree 22 atanga 26 degree inkarah a tha duh ber a, temperature centigrade degree 10° hnua lamah a than a thuin a rah insiam te a chawh phah thin tih kan hriat a tha.

A CHIN DAN LEH ENKAWL DAN TLANGPUI :-

Thingfanghma chin dawn hian a chi kui tiah hmasak hi a pawimawh em em a, buaithlak lai ber chu a chi kui tiah atanga a tiak enkawl lai hi a ni a, a thih leh natna dang lak atanga an

him zawk nan leh hlawhtling taka ching tur chuan heng te hi zawm ngei a tha.

- 1) Gram 20-ah hian a chi 1200 vel a awm thei a, chi gram 20 chu tin khat hmun (Acre khat)-a chin atan a tawk a ni.
- 2) Plastic bag (Sarang) inch 6 x inch 4-a lian, a hnuai lam (a mawng) tih pawh thliah thliahah khan, hmun thuma thena hmun khat 1/3 FYM (Bawng ek lei tha) leh 2/3 hmun thuma thena hmun hnih lei dur pangngai chawhpawha thun tur a ni.
- 3) Chung sarang lei thun khah te chu (Nursery Bed-ah emaw) ni eng dawng thei laiah dah tur a ni.
- 4) Thingfanghma chi te chu darkar 6 chhung tui vawta chiah hnuah a chi mal te tein, a ro hmain sarang lei thun saah khan centimeter 1 (khat)-a thukin phum tur a ni a, centimeter 1 (khat) aia thuk a ni tur a ni lo.
- 5) Saranga lei te kha an huh kim vek theihna turin sprinkler emaw thlai tui pekna bur hmangin emaw tui pek tur a ni.
- 6) Ni tin tui vawi thum pek tur a ni a, mahse, an lo tiah hnuah chuan tui pek kha thltlem hret hret tur a ni.
- 7) A chi hrang (Variety) azirin a tiah hun rei zawng a inang lo va, a tlangpuiin ni 15 atanga ni 24 vel chhung an mamawh a ni.
- 8) A tiakin hnah pathum vel a rawn neih hnu chuan kar khatah vawi thum chauh tui pek tawh tur a ni. Tin, a tiak te kha za zela 60 a ni chuan a tlangpui thuah tiak thaa ngaih a ni.

APHUN SAWN DAN :-

A tiak san zawng chu cm 15 atanga cm 20 vel a rawn nih hunah Nursery atangin huan kan phunna turah, a thar inhlat zawng. Meter

hnih leh a chanvea inhlat, khur em 45-a thuk leh cm 45-a zau siamah phun sawn tur a ni. Heng a tiak te hi phun sawn hmain, a phunna tur khur siamsaah khan bawng ek lei tha (PYM) tin 1, Furadon 5 gm leh sulphur Phosphate Kg chanve te pawlhin chhun khah phawt tur a ni a, a tiak te an tluk mai loh nan lei tha thun kha tlema tih muk deuh tur a ni.

LEI THA PEK :-

Thingfanghma kung hian lei tha an mamawh hnem em em a, tin khat hmunah tons 10 an mamawh a, phun atanga thla 1 hnuah kung khat zel tan Neem Cake gm 250 leh NPK (7:10:5) gm 250 leh Micro Nutrient te a kung hualin (ring System)-in pek tur a niin, thla hnih dan zelah pek nawn leh tur a ni. A rah te lawh theiha an lo hmin tan hunah, lei tha chawhpawh te kha Kg chanve theuhin kung 1 (khat) zelah pek tur a ni. Heng chawhpawhah hian Potash te kha tlem deuha a lan chuan, kung tin kha Sulphate of Potash Gm 250 pek leh theuh tur a ni.

TUI PEK :-

Drip hmanga tui pek hi a tha duh ber a, mahse Drip irrigation hi neih a harsat deuh avangin, tui pekna remchan dan angin, a kung hualin (ring method)-in tui pek tur a ni. Tui kan peka kan hriat reng tur chu a kung hmah takah, a kung chimin pek loh tur a ni a, lei kha tui luang ral zung zung thei a ni tur a ni.

ARAH LAWH (HARVESTING) :

Thingfanghma hi kung khat nei a ni tlangpui a, a than len dan azirin a peng (zar) a insiam ve thin a, a rah hnuai ber hi a upa ber niin, a hnuai atangin a indawtin a hmin chho thin.

Thingfanghma hi a tiah atanga kum khat hnuah a rah tan a, kum thuanin a rah lawh tur a awm a ni. A rah te hi enkawl dan leh a variety

azirin a rah hi a tein a lian a, a tlemin a rah tam thei bawk a ni. Thingfanghma rah te hi a rah bring dap atangin a hring dal deuhah a rawn inthlakin, a rah vai deuh thawin a rawn eng tan a, a hmin pheí chu hmun lia thena hmun thum a rawn eng tanin loh tur a ni. A kung te a la tet lai chuan lei atangin a lawh theih mai a, mahse, lei atanga ban phak loh chinah chuan, tiang sei tak, a hmawra no ang deuh tawn beh a, a hmun tihthlawnin, a him dam thei ang bera lawh tur a ni.

SOIL :-

§ Thingfanghma hi lei chi hran hranah a chin theih a, hetih lai hian, lei tak chhahna, lui kam rai, hnawm tawih chhekkhawm awm thatna hmun te hi a that duhna a ni.

§ Thingfanghma hlawhtling taka ching tur atana hriat tur pawimawh tak mai chu, a chinna lei chu lei thawl tui luan hul zung zung theihna a ngaih avangin, phun hmam uluk taka lo buatsaih lawk a tha.

§ Thingfanghma thar hlawk tur chuan ram hmun, lei thatna emaw, fertilizer hmanga Nitrogen leh a chaw mamawh dang te tam tawk awm tura buatsaih a tul a ni.

§ Lei mur intluk ruai tak lei tuihang tha cm 15 vela chhah awmna leh lei thur leh al teha pH reading-a 6.5 atanga 7 awmna hmun hi a that berna hmuna ngaih a ni.

§ Thingfanghma hi a zung thuk lutuk lo a nih avang hian, a chinna hmun lei tha thuk hian nghawng a nei lutuk lo va, a pawimawh ber zawk chu, a hmun lei chu tui thlithlawr tha a duhna hi a ni.

§ Thingfanghma hian tui ting a ngeih lovin a haw em em mai a, darkar rei lote chhung tui cm 2.5 vel lekin a kung a bawh pawh a kung tan chuan thih phalma khawp hial a ting thei a ni.

§ Thingfanghma chinna hmun atan hian lei hnawng ban hmun pumpelh hram tur. Tui te luang ral mai thei lovin an chelh thin a, chu chuan Thingfanghma tan thihna a thlen thin.

§ Thingfanghma chin nan chuan pH reading duh tawk chu 6.5 atanga 7 a nih avang leh hemi tawka awmtir thei tur hian chinna tur ram pH reading azirin ram Ha khatah hian chinai ton 2 atanga ton 4 te pawlh a ngai thin.

SIK LEH SA, RAM BORUAK chung-changah chuan :-

Thingfanghma hi hmun lum ngeih deuh an nih angin a thar chhuaktu ram te pawh hi hmun lum deuh, khawvel dulkiar lai Equator atanga hmar lam degree 30 N leh chhim lam degree 40 S vel huam hi a ni tlangpui a ni.

Sumdawnnaa thar chhuaktu lar leh langsar ramte pawh hi rum lum hmun, a tlangpuiin khawvel dulkiar Equator atanga hmar lam degree 25 N leh chhim lam degree 25 S huam chhung ram te an ni.

Tui pui zawl level atanga meter 1000 leh 1200-a sang thlengin a tha duh em em a ni.

Hmun lum lutuk emaw, dai khangna hmun te erawh chuan a than a tikhawlo thei thin.

Thli natna hmunah chuan thingfanghma phun leh chin a fuh lo hle.

Thingfanghma hian hmun lum rualkhai mai a mamawh a ni lo va, ni sensa kham tawk leh lei hnawng tha tawk an mamawh tel bawk a ni.

Thingfanghma in ruahtui tla an mamawh huam hi a zau khawp mai a, kum khata ruahtui tla cm 35 atanga cm 250-ah a chin theih a ni.

Hmun hnawng lutuk hian a thlai a khawih pawh mai bakaah a rah thatna thlengin a khawih buai thei tih hriat a tha.

Thli na tak rawn awm fo mai, boruak daiin a belhchhah leh hian thingfanghmain a thih phah fo thin.

Boruak lumna duh khawp tawk a hmuh loh emaw a awm theih lohna hian thingfanghma chu a rah puitlinnaah leh a rah hminnaah a títuanfumin a tikhawtlai thei hle a ni.

Boruak ro leh lumna hian thingfanghma chu a hmin thattirin, thlumna pawh mumal takin a insiamtir thin.

Thingfanghma chinna hmun boruak lum leh vawt hian a par chhuahna kawngah leh rah chhuahna kawngah nasa takin nghawng a nei thei thin.

Thingfanghma chi tiahna tura boruak lum zawng duhthusam chu, centigrade degree 35 vel bawr a ni a, boruak lum zawng chu centigrade degree 23 hnuai lam a ni emaw, centigrade degree 44 chunglam emaw a lo nih chuan, a tjak mawh hlea ngaih a ni.

Thli hian nasa takin Thingfanghma a tichhe thei tih hriat a tha. Thli natna hmun pumpel hram tum tur a ni.

Thli leh ruahin a khawih natna hmunah chuan lei a lo hnip a, a zung a lo nghing thawlin

a zung te nasa takin a lo chhum a, a kung te pawhin a tluk phah hial thei thin a, sumdawna atana chingtute tan pheii chuan hlohna nasa tak a thlen phah thin a ni.

Boruak dai, thli natna hmunah chuan Thingfanghma a hlawhtling tak tak thei lo.

Thingfanghma hian tha taka zung te a kaih thuk that chuan, thli thaw, darkar khata Km 60 vela thaw te chu a do tlang ve thei mai a, thli natna hmunah chuan, thingfanghma hnah te an thlawn hma a, an than a buaiin a rah chhuahna thlenga a nghawng thei thin avangin, thli dangtu (wind-break) thingkung a awm a pawimawhin a tul hle a ni.

Thli dangtu thingkung phun leh siam a nih chuan, a tlangpuiin thli daltu thingkung san zawng let 20 atanga a let 30-a tlar inhlatah thli dal tlar hi siam a tawk viaua ngaih a ni.

Entir nan, thingkung meter 3-a sang chuan, meter 60 atanga meter 90 chin thli na a dodal theia ngaih a ni.

Thli thawt hawi zawng inthlak fo leh chi hrang hrang awm theihna hmunah chuan, thli daltu siam hi a hmaa kan sawi zatve, thli daltu kung san zawng let 10 atanga a let 15 dana inhlatah thli dal tlar hi siam a tha.

*A thim zawnga thil thlir mi chuan remchannaah
harsatna a hmu a; a eng zawnga thil thlir mi
erawh chuan harsatna apiangah remchanna a
hmu thung thin.*

CITRUS GRANULATION

AAWMZIA :

Granulation hi 'Crystallization' emaw 'Section drying' tia sawi a ni bawk a, rannung leh natna vang ni lovin Ser pianphunga danglamna thleng 'Physiological disorder' a ni ber. Ser rah chhunga a juice pai a tlem phahin a chang chuan ser rah zung chhunga a Ser tui bawm 'Juice Sac' a sawng te a, hei hi thil hnang 'Gel' insiam vang a ni.

Boruak vawt lutuk (Freezing) leh Ni em/Ni sa (Sunburn) vangin Granulation ang tak Ser rahah chhiatna thleng a awm ve thei a, mahse hei hi chuan Ser timur kehchhia (cellular collapse) leh rona a thlenin a tui (Juice) pai a titem ve na a, tuihnang (gel) erawh a siam ve lo thung a ni.

Ser Granulation-a a tui bawm Parenchyma Cell tuamtu chu a chhah bik a, a nasaah chuan a inthuah hial thin a ni. Hetiang khawpa nasaah hi chuan Cell wall hrang hrang Cellulose, Hemicellulose, Pectin leh Lignin a tam phah thin a ni.

Tin, Ser rah atanga boruak chhuak (respiration) a titam a, a tui pH a tisang bawk a, Sugar leh Acid zawp ral mai thei (Soluble Sugar & Acids) a tlem phah bawk a ni.

Granulated Vesicle-ah hian a pangngai aiin thil inthlak danglam a nasa a, Phosphorus leh Boron a tlem lain Magnesium a let 1.7 leh Calcium a let 2.0 lain a pai tam zawk nghe nghe a ni. Pectin leh Calcium lo pung ta vak hian 'Gel' hi a siam phah ta nia ngaih a ni.

AAWM CHHAN :

(i) RAH LIAN LEH HMIN HMA :

Granulation awm chhan tlanglawn ber chu Ser rah pangngai aia lian lutuk leh hmin hma lutuk vang a ni a. Hei hi Ser kung rah tantir (Naupang) leh Ser kungin rah a chhuah tlem kumah a tam bik a. A chhan chu a than nasat lutuk (rapid growth/Vigour) vang leh rah tlem vang a ni. Arah lian lutuk hi Ser rah tlem vang a ni tiangpui a, Ser kunga a rah tlem chuan Carbohydrates leh a thanna lam a lo tam thin a ni.

(ii) LATE BLOOMFRUIT :

Ser par vanglai (Main bloom fruit) a rawn rah chho aiin a par tlai, rah chhuah ve tho (late bloom fruit) teah Granulation hi a tam duh tih hmuh chhuah a ni bawk.

(iii) A BUK CHHUNGA RAH :

Ser kung buk dan taw, rah tha tak chhuah tur chuan a tet lai atangin a zar peng hlawi that a, enkawl ngun a tul a, chu chu 'Canopy management' tiin an sawi thin. Granulation hi Ser kung buk lutuk, a buk chhungril a, a rahah a tam duh bik baw, a chhan chu Ni sa an mamawh taw a hmuh loh vang a ni.

(iv) IRRIGATION & RAINFALL :

Ser in tui an mamawh laia tui pek tam leh lutuk chuan C : N ratio duh taw a pe lo a, a rah

siamtu aiin a thanna lam a pe tam a, chuvangin tui pek tam lutuk lohna zawkah Granulation a tlem zawk thin a ni.

Tin, fur ruah tlak tawp lama ruahtui tam tak a tlak (heavy late-summer rain)-ah hian Granulation a awm duh bawk.

(v) Kum dang aia February - March thlaa temperature a san bik hian Granulation a tam duh bik a. Fort Pierce, Florida-ah chuan kum 2003-a February-March temperature chu kum 29 chhung average temperature aiin a sang fal hle a, hemi kum hian Serthlum (Navel Orange)-ah Granulation a tam phah hle tih hmuhchhuah a ni.

(vi) Heng bakah hian Mite (Ser hrik) bawm nasat lutuk vang te, boruak vawt, ro leh thli thaw nasa lutuk te hian an thlen ve theia hriat a ni.

(vii) Rootstock thang duang lutuk chi hmanin Granulation hi a awm ve thei bawk.

(viii) Ser thanna leh chakna petu Hormone inbuk tawk lo (Hormonal imbalance) awm vangin Granulation hi a awm thei a ni.

A VEN DAN :

- (i) Tui pek tam lutuk loh.
- (ii) Serkung enkawl that (Canopy Management)
- (iii) Rootstock thang duang lutuk hman loh.
- (iv) Ser rah a kunga zuah rei loh.
- (v) Chinai pek (Liming).
- (vi) 2, 4-D (12ppm), Zinc leh Copper-a kah.
- (vii) NAA (300 ppm)-a kah tur.
- (viii) GA (15 ppm)-a kah tur.
- (ix) C : N ratio control nan girdling tih tur a n. Chu chu a kakpui hnuaiah a hawng zai chah tur a ni a, a kur bial chanve velah zai chah tur a ni.
- (x) Bending - A buk chhungah eng (light) a luh theih nan kawih kur tur a ni.

*A dam lai ngeia i thian hnena pangpar bawr tlawmte
i pek chu a thih hnua rose par mawi tak tak a
kuanga i dah ai chuan a tha zawk*

HEI LE! A CHHANNA CHU!

1. Hausak i duh a, hmalak ngaihna i hre si lo va, i fate tan ro hnutchhiah i duh bawk sia, engtin nge i tih dawn?
2. Ram i nei duai a, chin tur i hre si lo va, i dah awl ringawt a, miin hmanng tangkai si lova ram i neih ve ringawt avangin an sawisel thin che a, engtin nge i tih dawn?
3. Huan enkawl leh lo neih bak thiam thil dang i nei si lo va, ram tin khat hmun chuang i nei ve ringawt a, a hman tangkai dan i hre si lo va, engtin nge i fate tan ro i buatsaih ang.
4. Ram i nei a, a enkawl na tur sum pawh i nei a, hman tangkaina i hre si lo va, engtikah emaw compensation hmuh nan a la tha ang i ti ringawt a, a aia tangkaia hman dan a awm lawm ni?

Awle, a chhanna chu Sandal wood chin hi a ni mai awm e. Sandal wood hi ram tin khat hmunah kung 435 vel a chin theih a, kung 300 bawr vel puitling turah ngai ila, kum 12 atanga 15 an lo tlin meuh chuan kung tinin lairil kg 15 vel nei tura beisei an ni a, hei hi tuna a rate kg 1 cheng 6,000/- zela chhutin kung 300-ah cheng vaibelchhe hnih chuang man a awm thei a ni. A man hi tun atanga kum 10-ah chuan nasa taka a san beisei a ni bawk. Ram tin khat hmunah thlai chinga kum 15 chhunga hetiang zat aia tam hmuh theihna tur hi a awm dawn em ni?

Awle, Sandal wood chu eng nge a nih chiah i lo bih chiang chhin dawn teh ang le. Sandal wood hi chi hrang (Species) tam tak a awm nain khawvel huapa an chin thin chu chi hnih a ni ber a, chungte chu Santalum Album (Indian Sandal wood) leh Santalum Spicatum (Australian Sandal wood) te an ni a, Indian Sandal wood hi a quality a tha zawkin a to daih zawk nghe nghe a ni.

Sandal wood Oil hi sahbawn siamnaah te perfume leh cosmetic industry-ah te an hmanng nasa hle a, tin, damdawi leh Agarbati siam nan te, sakhaw biaknaah te leh kut themthiam thil (Handicraft) atan te an hmanng nasa hle a ni.

India chhim lamah nasa taka chin a lo ni thin tawh a, amaherawhchu smuggling thila an hman avang leh sorkar policy khauh tak avangin kum 40 chhungin ton 4000 thar chhuah thin kha ton 400 velah a tlahniam ta dawrh mai a, hei vang hian sorkar chuan kum 10 kal ta atang khan an dan siam te thlah dulin mipuiten zalen zawkin an lo ching thei ta a ni. Hetih lai hian India ram state tam takah chuan ching duh mah se a chinna tur ram neih a har em em a, ram tin khat hmun lek pawh nuaih 100 tel te a nih tawh avangin mi nazawng tan chin theih pawh a ni chuang lo a ni. Mizoramah chuan ram a la tam a, hmalakna tur tha kan la nei teuh a, kan vannei hle a ni.

Sandal wood hi India ramah chuan chhim lam Karnataka, Tamilnadu leh Kerela velah te chin a ni deuh ber thin a, tunah chuan Maha-rastra, Gujarat, Orrisa, UP, Bihar leh Manipur-ah te pawh chin an ni ta. Mizoramah pawh ching hlawhtling mi pahnih khat chu an awm tawh. Ram tui tlin theih lohnaah chin tur a ni a, ruahtui 500-2000 mm tlakna ni thei se, tin elevation (Tuipui atanga a ram san zawng) 650-1200 mtrs-ah a tha duh a, ruahtui tam lutukna hmunah erawh chuan a lairil a tlem phah thei. Tin, lei tha lutuk a mamawh lo va, hmun dam lam aain ni kang lama chinin a ril a tam duh bik.

Sandal wood hi thlai dang zung ring tela nung chi (Semi parasite) a ni a, chuvangin a zungin a ei phak turah thlai dang chin tel a ngai a ni. Hetianga thlai dang zung a rin theih chin (host plant) hi chi 300 lai a awm thei a, chung zingah chuan melia dubia (Sakhithe), Tectona grandis (Teak), Lantana camara (Shillong par), mimosa perdica (Hlonuar), cajanas cajan (Be-hliang), Albizia (Vang) leh Acassia spp (Makpa zangkang chi) te, Acacia pinnata (Khangding, Khangsen) te, casuarinas equisetifolia - (Oak thing) te nen chin pawlh a tha.

Sandal wood hi Acre khat (Tin khat) hmunah fi 10 dana phunin kung 435 vel a chin theih a, a chinna tur khur hi 45 cm 3 (Fit khat leh a chanvea lian, fi khat leh a chanvea thuk) a tawk thei a, hei hi bawng ek lei tha leh lei chung lang hang tha leh lei tha dang tea hnawh khah leh tur a ni.

A phunnaah hian tui a tling thei tur a ni lo. Thal laiah kar khatah tui vawi hmih, kung khatah litres 2 zelin pek thin a tha a, tin lei tha Biofer-tilizer te pek thin a tha bawk a, uluk taka sam fai thin bawk tur a ni. Tin, Sandal wood thar inkarah hian host plant kan tih ang chi khi chin tur a ni a, amaherawhchu sandal wood kung aia lian lo turin a kung leh zar te kan control tur a ni. Sandal wood hi kum 3-4 velah an par tan mai thin a, an par atang hian a ril a insiam tan thin a ni. A tan that dan azirin kum 12 an tlin hian lairil kg 10 atanga kg 25 lai an nei hman thin a, enkawl uluk kung chu a kung teh kualin fi 2 lai an tling thei a ni.

Tin khat hmunah hlawk theih dan (Mahni thawk thei lo, hlawhfa ring tan)

1. Thlai kung tam zawng	=	435 Nos.
2. Seedlings man (Rs 100/0 per seedling)	=	Rs 43,500.00
3. Host plant 435 Nos (Rs 10/- per seedling)	=	Rs 4,350.00
4. A ram vahna leh mangkhawhna etc.	=	Rs 10,000.00
5. Khur laihna leh a phun man leh lei tha	=	Rs 50,000.00
6. Kum tin thal laia tui pekna man (Kum riat chhung Rs 20,000 x 8 yrs)	=	Rs 1,20,000.00
7. A hmun sam faina kum 8 chhung (20,000 x 8 yrs)	=	Rs 1,60,000.00
8. Fertilizer (Rs 5000 x 12 yrs)	=	Rs 60,000.00
9. A hungna	=	Rs 30,000.00
A puitlin thlenga enkawlna	TOTAL:	= Rs 5,97,850.00

Sandal wood lairil kum 15 an tlin huna hmuh theih zat tura beisei, 30% puitling lo tura ngaih ni se.

1. Sandal wood lairil lak tlak tura ngaih	=	305 Nos.
2. Sandal wood lairil beisei zat 15 kgs x 305	=	4,575 kgs
3. Sandal wood lairil atanga pawisa hmuh beisei zat (Rs 6,000/- kg)	=	Rs 2,74,50,000.00

A hlawkna (Rs 2,74,50,000.00 - Rs 5,97,850.00) = Rs 2,68,52,150.00

Hma lak tan mai chi a ni lo maw!!!!

SERTHLUM (MANDARIN ORANGE)

(*Citrus reticulata*)

Serthlum leh ser lam chi tam ber te hi an tobul chu China ram khi a ni a. India hmarchhakah hian ser chi hrang tam tak a tualto hmuhchhuah a ni bawka, ser lam chi tam tak tobul pawh ni ngeia rin a niin Mizoramah pawh hian kan chin tamna a rei ve tawh hle a, ser lam hian tha taka enkawl na a dawn loh chuan, hri leh natna a tuar hma hle a, enkawl dan leh hriat tur tul pawimawh zual deuh deuh tarlan kan han tum dawn a, heta tarlan te hi kan zawm leh zawm loh hian hlawhtlinna leh hlawhchamna thuih thui tak awmzia a nei thei tih kan hriat a tul khawp ang. Serthlum chin dawna hriat tur pawimawh tak tak te chu :-

LEI (Soil)

- i) Lei tak tha chhahna hmun.
- ii) Lei chunglang dur tha leh ban chuai lo, tui hip ral zung zung thei.
- iii) Ram awih-tlan leh lei thawleng lutuk lo.
- iv) Lei al (salty) lam aiin thur lam deuh, pH (lei thur leh al tehna) 5.5-6.5

SIK LEH SA MAMAWH

- i) Boruak him leh vawt inchawih tawka (sub tropical climate)
- ii) Boruak lum leh vawt tehna 14°C - 30°C vel hmun.
- iii) Ruahtui tla 150 cm - 250 cm ni thei se.

HMUN LEH RAM

- i) Hmun thengthaw, chhuah chhawng emaw, zel-em lam (sub montane)
- ii) Tlang sang leh zo lutuk lo (600 - 1100 MSL)

VARIETY

- i) Khasi mandarin
- ii) Satsuma
- iii) Michal

(Hemiah hian Satsuma leh Michal variety te hi Citrus Pilot project-ah enchhinna neih mek a ni).

LEILUNG BUATSAIH DAN LEH A PHUN DAN :-

- i) A bi laih hmawh awih tan zawng (Contour line)-in a bi kar 18 Ft danah peg/perh khen thlap phawt tur a ni.
- ii) A phunna tur khur hi phun hma chawlhkar 5-6 (ni 35-60)-ah laih lawk vek phawt tur a ni.
- iii) A bi khur hi 2-3 Ft-a thuk leh zauin laih lawk tur a ni.
- iv) Khur laih sa chu kar 1 (khat) chhung tal thal ni sa em thianghlintir a tha a, a nih loh chuan, mei chhem pawh a pawl lo.

Hetianga kan tih fel tawh chuan, a hnuai sawi te ang hian khur chu kan buatsaihin kan phun leh tur a ni.

- i) A mawng berah tui tling leh hnawng paihtu leh vual te ven nan ½ Ft vel awn turin lung (kuttum aia lian lo) leh meihawl tin ½ - 1 vela hnawh phawt tur.
- ii) A chung lehah Compost = Kg 40-50, Neem Cake = Kg 5, Bone meal = 2.5Kg, Rock Phosphate 1 Kg leh lei chunglang leidur tha chawhpawhlin, 10 cm vela pawng a khur chu hnawh tur a ni a (hei hi phun hma ni 10 velah tal zawh fel hman ni se, ruah pawnrawn chhilih hman se a tha a).

Phun tura kan inpeih chuan, khur chhun pawn lai tak chu lai khuar lehin, kan thlai phun tur chu uluk taka phun tur a ni. Phun hun tha ber chu, fur ruahtui tantir lam (may-June) a ni a, ruah tlak tam vanglai chuan phun loh a tha a ni.

- iii) Half moon terrace siam ngei ni se, chu chuan a kung enkawl leh tui pek a tiawlsam a, lei luangral tur a veng tel bawk.
- iv) A kung bul chu hnim emaw, Polythene-a khuh (mulching) pawh tih ngei a tha.

CHIN PUNNA (PROPAGATION)-A HRIAT TUR PAWIMAWH TE

- i) A chi/tiak phun tur chu, rah tha leh rah tam, kung hrisel atanga lak nise.
- ii) A kung zawm/mit bel a nih pawhin, a lakna (bud-wood) kha natna laka fihlim leh rah tha bawk a ni tur a ni.
- iii) Kawlawm a nih chuan, tang chawr upa lo, ngil tha, pencil tiat vel, 1-1½ Ft vela sei, kung hrisel leh rah tha bawk hman tur a ni.
- iv) Kan ser phun te hi a (pot a ni lo a nih phei chuan) tir atang hian khawih chhe theitu lakah kan fimkhur a ngai em em a, heta kan tih tur pawimawh zual lo sawi dawn ila.

Borrowing Nematode :- A nu hian a hmoi (Stylet) zum takin ser zung a dawt thin a, hetiang a nih chuam, ser hnah a lo tlemin a te a, a rah pawh a te a, a tang leh zar te a lo ro thin.

Ven leh Enkawl Dan :-

- i) A darh tur ven nan, ser tiak zung chu phun hmain tui lum 50°C-ah minute 10 chhung chiaha a, tui vawtah minute 10 chiaha leh nghal vatin emaw, Damdawi Ethoprop emaw, Fensulfothion tuia chiaha a tha.

- ii) Thlai tiak hrisel chauh phun tur.
- iii) Hmanrua te Sodium hydrochloride (2.65%)-a tihthianglim tur.
- iv) Ser phunna hmun chu a ser tam awmna a nih chuan, ser tam kung te chu puih a, halral vekin, hmun awlah thla 6 chhung thlai chin loh a, kum hnih hnuaah chauh ser phun tur.

Citrus Nematode :- Ser an beih nasat tawh zung chu nuai ila, a pil a khawk puk puk thin a, ser kung than duahna a la bo a, a hnah te a lo eng a, a lo ro a, a thla ta thin. A kung tangte a lo rovin a rah a te a, a rah a insiam puitlin hmain a eng a, a thar hlawk lo thin. A zung a dum a, a tawin a chhah bik thin.

Ven leh Enkawl Dan :-

- i) Phun sawn hmain ser tiak chu tui lum 45°C-ah minute 25 emaw, 49°C-ah minute 10 chiaha tui vawtah chiaha leh nghal tur.
- ii) Nursery atanga lak, ser tiak hrisel chauh phun tur.
- iii) Kan ser kung te chu, Bawkbawn, Tomato, Hmarcha leh Vaihlo chin pawlh loh tur.
- iv) Hmanrua te Sodium hydrochloride (2.65%)-a tihthianglim tur.
- v) Resistant root stock Trifoliate Orange ser tuibur hman a tha.

SER TICHHETU RANNUNG LEH A VENNA :-

1. Citrus psylla :- Hei hi ser eichhetu rannung zinga chimawm ber pakhat a ni a, March-September chhung hian an inlar hun a niin, an tam ber thin a, enkawl loh chuan ser rah te a lo tla nasa thei hlein ser kung zawng zawng ten thih phah nan an hmang thei tih kan hriat a tha.

Enkawl Dan :-

i) Rogor = 67 ml emaw, Malathion = 50ml tui litre 50-a pawlhin kum khatah wawithum tal kah tur a ni. Hetiang hian :

- a) February - Mareth (a chawr no lai)
- b) May - June (Fur ruahtui tlak hma)
- c) July - August (Fur ruahtui tlak hnu)

ii) Nuvan = 10 ml emaw, Malathion = 6.5 ml leh tui litre 10 pawlha kah tur.

2. **Citrus leaf miner** :- Ser hnah hnuai lamah pangang a nih laiin a hnah a ei chhe thin a, zigzag angin a kua kawi ngai thin. A hnah zung zam te a lo dangin a invial a, a roin a tla thin. March atanga Nov. thleng hian an bei deuh ber thin.

Enkawl Dan :-

- i) Citrus psylla control-na (a chungam i ang)
- ii) Neem Cake 300 gm tui litre 5-a pawlhin

emaw, Dimecron 6 ml tui litre 5-a pawlha kah tur.

3. **Trunk Borer** :- A nu hi Ser hawng chhungah a malin a rawn tui a, a lung a rawn chhuah hian a kung chhu a khampei zawngin a verh a, chutah chho zawngin a verh leh a, ser kung an ei chhe thin.

Enkawl Dan :-

- i) A kung nget chu kiha halral hmak a tha ber.
- ii) A nget kuaah chuan Nuvan emaw, Nuvacron emaw neih remchan loh chuan khawnvartui thun luh a, chirha bel phui hmak tur.
- iii) Kan ser kungte chu a bul atanga metre 2-a sang thleng tal Sevin 10 ml leh tui 1 litre chawhpawlha hnawih a tha.
- iv) Chawlkar 2-3 inkar dana wawithum 2 Methyl Parathion emaw, Fenthion 50 ml tui 10 litre-ah pawlha kah tur.

Mi hlawhtling chu a beia beitu, tap mai lo; hna thawktu, pumpelh tum lo; mawhphurhna phur ngam, pehheltu ni lo, a phurh tur nia ngai, en ringawota thurawon petu ni mai lo chu.

- Elbert Hubbard



Date 26th-27th February 2013 khan Convention of Small Tea Growers of Mizoram chu Horticulture Conference Hall ah neih niin Pu S.Hiato, Hon'ble Minister chu khuallian a ni.



Date 28th February-1st March 2013 khan Horticulture Department Sponsore in Chapchar Kut Flower Show chu Pu T.Sangkunga, Secretary, Horticulture etc. in a hawng.



Date 18th January 2013 khan Jatropha Oil Expeller, Khawzawl ami chu Pu R.T.Nghaka, Addl.Secretary, Horticulture Department, G.O.M. chuan a hawng.



Date 22th-28 January 2013 khan 2nd International Flower Show, Gangtok Sikkim ah neih a ni a, hetah hian Horticulture Department chuan pangpar chi hrang hrang khawi entirna neiin Lawmman N.E.State Category ah pakhatna niin Certificate mawi tak leh Prize Money 1 Lakh a dawng.

CARNATION (Dianthus caryophyllus)**Family - Caryophylliaceae**

Carnation hi mediterranean region aţanga chin ţan niin tunah chuan khawvel hmun hrang hrang, Italy, Spain, Netherland, Kenya, Germany, France. U.S.A-ah te chin mek a ni. Pangpar zuartu leh chingtu tam takin Carnation kher chin an duh nachhan ber chu a rimtui vang te, hun rei tak chhung a dah that theih bakah hmun hla taka thawn chhuah dawn pawn pangpar dang anga a vuai hma ve lohna hi a ni. Green house chhunga chin bik Carnation te hi chi hnihah an then a, chungte chu : Standard leh spray te an ni. Standard chi hi chu spray ho ai chuan a par a lian bikin a kuang pawh a sei bik a ni.

Climate & Soil :

Temperature : Nipuih 15-25°C inkarah leh thlasikah 10-11°C inkarah a chin theih a. Boruak hmawn zawng 50-60% a mamawh bawh.

Balu lei leh lei tak inpawh, tui hul zung zung theiah a tha duh a, lei al leh thur zawng pH 6-6.5-ah a tha duh bik.

Micro Environment :

(i) **Light** : Carnation hian darkar 13 chhung eng a mamawh a, pangpar quality tha tak thar chhuak tur chuan carnation hian hnah 4-7 tal a neih a ngai a, chumi tur chuan eng ringawt ni 30 aţanga ni 40 chhung a mamawh a ni.

(ii) **Temperature** : Carnation ţhan len nan leh a par chhuah nan hian temperature hian hmun pawimawh tak a luah a. Temperature 15.5°C hi flower bud (a kuhmum) insiam nan a mamawh a. Thlasik laiin zan lam temperature 10-12°C leh nipui laiin 13-15°C (zan temperature) a mamawh bawh.

(iii) **Carbon Dioxide** : CO₂ level Green house chhunga a san hian pangpar quality a tihthat bakah 10-30% laiin kan thar hnem phah thei a ni. CO₂ tam zawng hi green house chhungah hian ni sat that hun laiin 750ppm - 1500ppm leh 300-400ppm (chhum zin ni deuhah) a ni

tur a ni. Pangpar quality tha tak CO₂ @ 500 ppm leh temperature 14-15.4°C hnuaijah kan thar thei a ni.

Cultivars :**Standard**

white melody,
melody carbasio,
Big Red. Etna

Spray

Siri-1, Candy,
Teresa

Greenhouse hnuaijah standard varieties tha zual te chu : Ballade, Irma, Candy, Las Palmas, Red Carso, Pink Candy, Pamir, Arthur

Propagation : Seeds, cuttings (soft terminal cuttings)

Cuttings : Cuttings kan lakna kung kha a hriseh tha tur a ni a. Cuttings sei zawng hi standard-ah 10-15 cm-a sei leh 7-10 cm-a sei (spray type) a ni tur a ni. October-March inkarah cuttings chu lak tur a ni a. Rooting media atan perlite/sand (balu) a hman theih a. Cuttings phun hmam natna hrik laka ven nan Benomyl- a tihthianghlim (sterilize) phawt tur. Cuttings te hian zung kaih nan temperature 15.5°C kar 3 vel an mamawh bakah kar 2 chhung temperature 21°C an mamawh tel bavvk.

Planting material : Cuttings 10-15 cm-a sei hnah 4-5 tal nei te chu mist chamber hnuaijah sand bed/cocopeal-ah phun tur a ni. Awlsam zawka zung an kaih theih nan phun hma hian

NAA 250 - 500 ppm-ah chiahin a tha duh bik a ni.

Growing Media : A chinna atan hian lei tha a tam thei ang ber a mamawh bakah, tui luan ral zung zung theihna lei thawl deuh a ngai. Cuttings phun hmian natna hrik laka ven nan methyl bromide, chloropicrin leh formalin hmanga tihthianglim hmasak tur a ni.

Bed Preparation : Green House chhungah chuan a tlangpuiin round bed, dawhkan leh pot-ah te awlsam taka tui luan chhuah theihnaah chin thin a ni. Nursery bed chu 1.2 m (a vang) 15-20 cm (a sang), 35cm-a sei a ni tur a ni, bed leh bed inkar 40cm-a zau tur a ni hawk.

Planting : Green house chhungah chuan engtik hunah pawh a phun theih a. Spray leh standard carnation te chu 15cmx15cm leh 10cm x 15cm-a inhlata phun tur.

Netting/Staking : Carnation hian tha taka a than len theih nan support a mamawh a. Support atan hian net size 7.5 cm x 7.5cm (bottom net) 10cmx10cm leh 12.5cmx12.5cm te hman tur a ni.

Nutrition : Pangpar hrisel leh quality tha thar chhuak tur chuan carnation hian chaw tha a mamawh a. Chaw tha tlachhamin emaw chuangliam lutuka pek hian pangpar quality a tihchhiat bakah duh anga tam thar a har a ni. Nutrient solution al leh thur zawng hi 5.5-6.5 pH inkar leh EC 0.8-1.6mm hos/cm a ni tur a ni.

Growth Regulation : Carnation than lenna kawngah growth regulators hian tam takin nghawng a nei thei a. SADH 40 ppm leh CCC 25ppm hman hian pangpar a par hmatir theih bakah calyx splitting a titlem bawk.

Irrigation : Carnation tiak phun hnu kar thum (3) chhung chu overhead sprinkler irrigation hmanga enkawl tur a ni a, a hnuah drip irriga-

tion (3 tubes/bed)-a thlak leh mai tur a ni. Tui hman te hi sand filter hmanga filter vek tur a ni.

Management of Plants :

1. *Pinching* : Pinching hi carnation par quality tak thar chhuak tura thil pawimawh tak a ni a. Carnation tiak phun hnu ni 25 atanga ni 30 inkarah pinching hi tih tur a ni. 6th Node-ah pinch tur a ni.

2. *Disbudding* : Disbudding hi terminal bud diameter 1.5 cm a tlin huna tih tur a ni.

Harvesting : Standard carnation te chu tight bud/cross bud/paint bud stage-ah a thar thei a, spray carnation chu pangpar 2 aia tam an parh hunah thar mai tur a ni. Pangpar thar zawh sa te chu tui thianglim/preservative tuiah chiah vat zel tur a ni.

Yield : 15cmx15cm spacing hnuaiyah
standard carnation - 200 flowers/ sq.m/yr
Spray carnation - 250 nowers/sq.m/yr.
a thar chhuak thei a ni.

Post Harvest Handling :

- i) Refrigeration 10-20°C-ah harvest zawh ve leh dah tur.
- ii) Floral preservative hmangin
- iii) Tui thianglim hmangin
- iv) Thawn chhuahnaah temperature management a pawimawh.

Carnation hi ethylene gas lakah a sensitive em em a. Pangpar te chu kan pack hmian sucrose. AgNO₃ leh HQC leh Silver Throsulphate hmanga treat phawt tur a ni. Temperature 8°C leh R.H 90% hnuaiyah ni 40 atanga 50 thleng a dah that theih a ni.

Packing : Standard size corrugated cardboard boxes (122cm x50cmx30cm LxBxH)-ah bawr 32 vel a pack theih a ni.

GERBERA

Gerbera (*Gerbera jamesonii*) hi a tobul chu South Africa a ni a. Tunah chuan he pangpar mawi leh mi hipna ngah tak mai hi khawvel hmun hrang hrangah sik leh sa chi hrang hrang hnuaih chin mek a ni.

Sik leh sa (Climate) : Khawlhurh leh vawtah a chin theih deuh vek a. Boruak 12-25°C inkar hi a than len nan a mamawh a. Boruak a lum lutuk chuan pangpar quality a tichhe thei a ni.

Leilung ngeih zawng (Soil) : Leilung thawl leh lei dur thaah tui luan ral zung zung theihna, lei thur leh al tehna 5.0-7.0 pH inkarah a tha duh bik.

Micro Environment :

(1) *Temperature* : Chhun temperature 27°C aia sang lo leh zan lam 18°C aia hniam loah a tha duh. Phun zawh hnu thla khat chung chu zan lam temperature 12-15°C inkar leh 10°C aia hniam lovah enkawl tur a ni.

(2) *Light* : Gerbera hian ni eng 70% thlasik lain a mamawh a, nipui lain 50% shade (hlim) a mamawh hawk.

(3) *Humidity* : Boruak hnawng 55-65% a maniawh a, Green house chhungah chuan humidity hian gerbera tha taka a than len leh par chhuah nan nghawng thui tak a nei a ni.

Varieties : Varieties pawimawh zualte -

Pink : Valentine, Fredaisy, Terraqueen

Red : Vesta, Dusty, Fredorella

Yellow : Fredekine, Uranus, Nadja.

Propagation (A chin pun dan) : A chi hmangin emaw a nih loh pawn division of clump, cuttings, tissue culture etc. A tlangpuin cuttings hmanga chin pun a ni.

Plaining Materials : Gerbera tiak hnah 3-4 nei tawh chin a hman theih.

Growing Media : A chinna tur lei chu 50cm-a thuka laih a, phut darha siam tur chuan bawng ek lei tha, hnahthei tawih, cocopeat etc. te nena chawhpawlh tur a ni.

Nursery bed size : 30 m-a sei, 25-30 cm-a sang, 1-1.5 m a vang leh 30-40 cm-a inhlata siam tur a ni.

Soil sterilization : Gerbera tiak phun hmam, a phunna lei kha hriak ilo laka then thianghlim phawt tur a ni a. Hemi atan hian formaldehyde methyl bromide (100g/sq.m), Vapam, Chloropicrin leh Basamid te a hman theih a ni. Chemical leh lei hi chawhpawlh hnuah poletyhne-a khuhin ni 7 chung dah a ngai a, ni 7-10 hnuah chauh gerbera tiak te chu phun tur a ni.

Bed Preparation : Nursery bed 30 cm-a sang, 1-1.2m a vang leh 30 cm bed leh bed inkarah dah awlin, bawng ek lei tha, balu leh coconut coirpith (2:1:1 ratio) hmanga bed siam tur a ni.

Planting : Gerbera hi kumtluanin a phun theih a, August thlaa phun hian nipui leh thlasik laiin duh tawkin a thar theih laiin June thlaa phun a tiak tha duhin a hnah pawh a tam deuh bik.

Nutrition : Lei tha leh fertilizers thlaiin a mamawh zat chiah enfiah hmasaka pek tur a ni. Tui pek rualin awlsam takin lei thate chu pek mai tur a ni.

Standard feeding solution :

Tank A	Tank B
(i) Calcium nitrate - 0.2 Kg	(i) Potassium nitrate (3.2 kg)
(ii) Magnesium sulfate - 1.4 kg	(ii) Calcium nitrate (2.8kg)
(iii) Potash of sulfate - 1.4 Kg	
(iv) Mono Potassium phosphate - 1.4 kg	

Solution al leh thur zawng khi pH 5 - 6.5 inkar a ni tur a ni a, chuan E.C 0.5-2.0 ms/cm a ni bawk tur a ni.

Irrigation : Tui kan pek tam zat leh tui quality-in nghawng lian lak a nei thei a. Green house chhungah chuan sprinkler irrigation system hmangan awlsam takin a pek mai theih. Nipui laiin tui a tam thei ang ber pek a tul a, fur lai erawh chuan pek tam a ngai lo.

Harvesting : A par chanve vel phar hunah leh a par phar kim hnuah te seng mai tur a ni.

Yield : Gerbera thar theih zat hi a inang lo va, varieties leh greenhouse chhunga enkawl dan azirin a tlangpuiin par 180 - 250 vel 1 sqm atangin kum tin a thar theih a ni.



Hnathawok nasate chu dan naranin an rinawm a; a chhan chu taimaknain thlemna chungah a lentir vangin.

- Bovee

XII INTERNATIONAL CITRUS CONGRESS VALENCIA - SPAIN ZIN REPORT

By Samuel Rosanglura, Director of Horticulture
Vanlalruata Chenkual, Dy. Director of Horticulture

International Citrus Congress hi khawvel pum huapa Citrus (Ser) tihhmasawwna tura thawktu - Scientist, Government Agencies, Ser chingtu, Serlema sumdawngte inhmuikhawma Citrus (Ser) tihhmasawwna tura an hriatna leh harsatna te sawihoa hmasawwna khawvel pum huapa buaipui tura inkhawmpui a ni. Kum 4 (four) danah a awm thin a. Kum 2008 khan China ramah an hmang a, tunah chuan Valencia-Spain ramah 18th - 23rd November 2012 nghah a ni. Tin 12th-18th November 2012 hian Pre-congress tour an buatsaih bawk a.

He XII International Citrus Congress ropui takah hian Pu Samuel Rosanglura, Director of Horticulture, Govt. of Mizoram hnung zuin kei Vanlalruata Chenkual, Dy. Director of Horticulture, hi kan Director of horticulture duhsakna lawmawm tak mai changin ka kal ve a. XII International Citrus Congress tan hma hian vanneihthlak takin Pre-congress tour 12th - 18th Nov 2012 chhungin khawvela hmun hrang hranga Ser chingtute nen Spain rama Citrus an chinna Valencia, Murcia, Almeria, Cordaba, Huelva, Sevilla-Provinces-a Serhuan ropui tak tak kan fang a.

Tun tumah chuan a thui dawn avangin Pre-congress tour chauh kan report mai ang. A hmasain Spain rama Citrus (Ser) an chin dan i lo sawi thuak thuak ang. Spain rama Citrus (Serthlum) chin chhoh dan hi thawnthu sei tak a awm a. Kum zabi 5-ah khan Romans hoin an ching tan a. Arab hoin kum zabi 10th-11th chhung a awp lai khan "Serthur" (Sour Orange), Lemon leh Pummelo te an ching belh leh a. Kum zabi 19th-ah chuan mandarins leh grapefruits te U.S.A atangin an la lut bawk a. Ser (Citrus) hi a tir lamah chuan damdawi leh ornamental plant atan an hmang ber a. Kum zabi 18th atang khan sumdawwna atan ser rah te hi Europe ram hrang hrangah an thawn chhuak tan ta a ni.

Ser (Citrus) chin hi awlsam tak chu a ni bik hauh lo a. Kum zabi 19th-ah khan "Sertam" an tuar ve tan a, Ser kung tam tak a thi a. Heng zingah hian Sour Orange rootstock-a hmang te chu an him bik a. A chhan chu Sour Orange hian ser natna Phytophthora root rot lakah a him bik vang a lo ni a. Tichuan Sour Orange rootstock-a hmangin an ser huan an thar thawh leh a. Mahse hei pawh hi engkim channa chu a lo ni leh chuang lo va. Natna dang Citrus tristeza virus (CTV) lo lang lehin ser kung 44,00,000 a thih phah a ni.

Heng natna (Sertam) avang hian ram pumin harsatna leh channa rapthlak tak lo thleng thin hi ser tiak hrisel lo leh natna kai sa phun thin vang a ni tih hriain, Ser tiak siam chhuahna Nursery te sawrkarin nghet taka control-in Nursery act leh plant quarantine 1983-ah an siam ta a. Nursery neitute chuan ser tiak hrisel leh natna kai lo phun tur thar chhuakin, tunah hian 14,000,000 ser an phun thar leh ta a. Tin Drip irrigation hmangin ram ro leh chhengchhe deuh te pawh ser huan atan a siam thar zel a, ruahtui 800mm vel chauh an dawn chu hmang tangkaiin Geomembrane 1000-1500 micron in tuidakhawlina (reservoir) lian pui pui an siam bawk a.

Tunah hian Spain chuan 330,000 Ha.-ah ser an ching a. Kum khat chhungin 6,500,000 tons an thar thin a. Heng zingah hian sweet orange=48% mandarin=35% leh lemons=16% te a ni a. Spain hi Europe ram zingah ser rah export hmasa ber a ni a. Ser rah thar 50% aia tam mah hi an export (thawnchhuak) a, 20% vel hi ram chhungah a hralh ve a. 18% vel hi an processed thin a. 12% vel hralh tlak loha ngaih a ni. Ser hi Mediterranean tuipui kam chheh vel - Tarragona, Castellon, Valencia, Murcia, Almorja, Maloga, Guadalquivir valley-Cordoba, Sevilla leh Atlantic tuipui kam-Huelva-ah te an ching nasa. Ser (Citrus) hi an ram thlai pawimawh ber a nih angin, sawrkar pawhin a ngai pawimawhin hma nasa takin a lain, scientist rualin an ser variety te tichanglungin ser variety hrang hrang hrisel leh thar hlawk leh hmin hun inang lo siam chhuakin, kumtluan a ser rah thar lam thar chhuak reng thei turin an kalpui mup mup a, hemi kawngah hian nasa takin hma an sawn tawh a ni.

Pre-Congress tour chung hian Spain rama serhuan ropui tak tak ni sarih (7 days) chhung kan fang a. Scientist, Tour Guide leh huan neitu ten hawihhawm takin min lo dawngsawng a. An ser huan a zau em em hlawmin mit tlin tawk a ni mai e. A ram pumpui a hmun rem chinah chuan ser huanin a khat a ni ber mai e. A tlangpuiin an ser te chu leihuipawn (ridge)-in thlur fel takin an siam a, leihuipawnah serthlum an phun a. Drip irrigation-in tui leh thlai chaw (nutrient/ fertilizer) pek a ni a, ruahtui an dawn ang ang (800mm/ annual) te tha takin Geomembrane 1000-1500 micron hmangin reservoir lian pui pui an siam a. Heng an tui dahkhawl hian an ser huan te an chawm thin a ni. Ser huanah hian ser variety hrang leh a thar/hmin hun hrang hrang an ching a, kum tluanin ser rah ser tur nei turin an inbuatsaih a. Tin an ser rah te chu a kawr a chhah a, a chhung chu sertui tam tak nei a ni a. A ser kawr chhah hi a phurh (transportation)-ah a chhe ve mai mai lo a, a remchang hle a ni. Tin, Ser huan siamtute chu mi hausa tak tak a ni a, sawrkar atangin tanpuina an beisei hran lo va, an bul tanna tur sum leh pai chu bank atangin loan-in an la mai thin.

Tin, ser huan siam turin ser phun tur tha hriatchiah Nursery atang lo chuan a leiin an phum ngai lo. Kan ser huan tlawh hrang hrangte han tarlang ila :-

Sl. No.	Serhuan Hming	Area Ha.	Ser Variety Hming	Location	Yield
1	El Canarico	165 Ha.	Finno Lemon Nadarcott	Alhama de Murcia	50-60 ton/Ha.
2	Almendricos	200 Ha.	Navelate orange Powell orange Nadarcott Mandarin Chislett orange Clemenrubi Iwasaki mandarin	Lorca, Murcia	
3	El Turbinto	150 Ha.	Chislett orange Fino49 lemon Nova mandarin Lane Late orange Clemenrubi Iwasaki mandarin Murcott mandarin	Pulpi, Almaria	45-70 ton/Ha.
4	Citroplant Nursery	25 Ha.	Iwasaki Clemenrubi Nadarcott Murcott Fukumoto Powell Chislet	Pulpi, Almaria	500,000 Nos of plants
5	El Taraje	185 Ha.	Clemenrubi Clemenules Clemenmapo Nova Ortanique	Cantillana, Sevilla	40-59 ton/Ha.
6	Majaloba	8 Ha.	Sour Orange	La Rinconada, Sevilla	50 ton/ Ha.
7	La Dehesilla	1200 Ha.	Valencia Late Lane Late Sanguina Salustiana Sucrena Fukumoto	Villannueva de los Castillejos, Huelva	10,000 ton/Ha.
8	La Calvilla	221 Ha.	Owari Satsuma Navelina Powell Orange Nova Orri Nadarcott	Gibraleon, Huelva	7500-10,000 ton/Ha.
9	Manzorrales	262 Ha.	Clemenrubi Nova Nadarcott mandarin Barberina Barnfield Powell Midnight	Gibraleon, Huelva	9000-12000 ton/Ha.

XII International Citrus Congress, Valencia, Spain ram kan hman leh Pre-Congress tour-a kan thil hmuh aʔangin Mizoram tana sengluh awm ʔhenkhatte :

1. Serhuan siam tur ten Ser phun tur hriseh ʔha leh hriatchian phun. Hemi kawngah hian Horticulture Department-in Nursery neite a register-in a khuahkhirh (control) dan chhonzawm zel.
2. Khawvel hmun danga Ser variety ʔha, hun bi hrang hranga rah thei, lak luha kum tluana Ser (Citrus) rah nei tura hma lak.
3. Kum tina kan ruahtui tam tak kan neih hi hman ʔangkai. A dawn khawmna (reservoir) Geomembrane hmanga siamin, kan tui dawn khawmte chu ʔhal lai (Jan-April)-in Drip Irrigation hmanga Ser kung tui pek.
4. Kan rama huan siam nan a leilung leh tui ʔhatna hmun te hi hman ʔangkai theih turin kawngpui ʔha leh Electric power-a ʔhuam nise, tah chuan awmze nei leh felfai taka hma lak a chawkawm hle mai.
5. Ser huan siam hi sumdawmna ʔha leh hlawk tak a ni tih hriain, kan ram mi hausa leh sumdawngte pawh hian he mi kawngah hian an ngaihtuahna han pe ʔhar se. Anmahni hlawkna bakah mi tam tak eizawmna/hna a siamsak thei bawk ang.
6. Kan Ser (serthlum) chin lai hi a hawng a pan avangin a phurh velna lamah a chhia a tam thei hlein kan ram a kilkhawr bawk si a. Ser (serthlum) hawng chhah, a chhung lam ʔha leh tui tam si, phurh velna lamah pawh chhe har tur phun uar ni se.
7. Tuna Mizoram Horticulture Department-in hmanrua leh Technology a chhawp chhuah te hi khawvel hmun hrang hrangah changkang zawk ena kan en te pawh hian hei bak hi chu an neiin an hmang chuang lo a. A nih dan tur ang takin hmang ʔangkai tum ila.

Miin a dik lohna a pawm ngamin a zak tur a ni lo; a chhan chu chutianga a tih ngam chuan nimin aiin vawiiinah a fing ta zawk a ni tih a hriat phah a ni.

- Jonathan Swift

KEIMAHNI**❖ PROMOTION**

Sl No.	Name	Designation	Promoted to	Place of posting
1	Pu Vanlahuntluanga Renthlei	HDO, Aizawl	Dy. Director	Dy. Director (IF), Directorate of Horticulture
2	Pu C. Zosangliana	HEO, Thingdawl Farm	HDO	HDO, Thingdawl Farm
3	Pu Lalthanhawla	AHEO, Lunglei	HEO	DHO Office, Lawngtlai
4	Pu K. Zonunsanga	AHEO, Champhai	HEO	SDHO Office, Champhai
5	Pu B. Lalchamlana	AHEO, Aizawl	HEO	DHO Office, Tuidam
6	Pu Ngurkhuma	AHEO, Directorate	HEO	SDHO Office, Rawpuichhip
7	Pu F. Lalrawna,	AHEO, Aizawl	HEO	DHO Office, Aizawl

❖ TRANSFER AND POSTING

Sl No.	Name	Designation	New Place of Posting
1	Pu C. Lalrinawma (Mamir Sub-Division)	HEO	Directorate of Horticulture
2	Pu Vanlalvuana Rokhum (Rawpuichhip Sub-Division)	HEO	Mamir Sub-Division
3	Pu Hunlawmawma (Tuidam Division)	HEO	DHO's Office, Kolasib
4	Pu B. Lalzarzova (Lawngtlai Division)	HEO	DHO's Office, Serchhip
5	Pu K. Zahmingliana (Kolasib Division)	HEO	W. Phaileng Horti. Circle (SDHO Mamir)
6	Pu P.C Lalmalesawma (Kolasib Division)	HEO	Bukpui Horti. Circle
7	Pu P. Vanngaia (Tuidam Division)	LDC	Directorate of Horticulture
8	Pi Lalhlamuani (Tuidam Division)	Peon	Directorate of Horticulture
9	Pu H. Lalrawnawla (Saiha Division)	H.D	DHO's Office, Lawngtlai

❖ **Superannuation Pension/ Voluntary Pension :**

- 1) Pu S.R.Namasudra, HEO -31.12.2012- Superannuation pension
- 2) Pu R.Dengchhuma, Assistant as H.A of DHO, Serchhip 31.01.2013 -Superannuation Pension.
- 3) Pu C. Lalchhandama, Assistant, Directorate of Horticulture - 01.03.2013 -Voluntary pension

❖ **Death/RIP**

- 1) Pu Ngurbiakvela, H.D., under Aizawl Division - 29/12/2012.
 - 2) TV. C. Lalremsanga, H.D., under Khawzawl Horti. Division - 01/02/2013
- ❖ Dt. 10th December, 2012 khan Directorate of Horticulture Conference Hall-ah Post Harvest Management of Horticulture Crops Training Central Institute of Horticulture, Medziphema, Nagaland buatsaiha neih a ni a. He Training-ah hian Divison hrang hrang atangin Staff an kal tha hle.
- ❖ Dt. 13th - 14th December, 2012 khan Directorate of Horticulture Conference Hall-ah National Research Centre on Seed Spices, Ajmer Farmers Training on Production, Processing & Value addition in seed spices training neih a ni.
- ❖ Committee room changtlung leh changchang tak mai kan lo nei ta a, Dt. 4th January, 2013 khan Pu Samuel Rosanglura, Director-in a hawng a, thingpui inhona neih nghal a ni.
- ❖ Jatropha Oil Expeller, Khawzawla awm chu Dt. 18th January, 2013 khan Pu R. T.Nghaka, Addl. Secretary, Horticulture Department, Govt. of Mizoram chuan a hawng. Department lam atangin Pu R.Zotawna, Jt. Director-in a tawiawm bawk.
- ❖ Dt. 22th - 30th January, 2013 khan Training on Artificial Flowers & Board making training Directorate of Horticulture Conference Hall-ah Training neih a ni.
- ❖ Convention of Samll Tea Growers of Mizoram chu Dt. 16th - 17th February, 2013 khan Directorate of Horticulture Conference Hall-ah neih a ni a. He Convention-ah hian Pu S.Hiato, Hon'ble Minister khuallian niin, khuallian chuan Mizoram thingpui chingtuten anmahnia thingpui fe an siamte uluk tak leh thianghlim leh tui taka siam turin a chah. Tea Board Adviser Pu Roy Coudhury chuan Mizorama thingpui chin te la tam tawk lo mah se a ram leilung, sik leh sa te thingpui that duhna tih hriat chian a nih avangin Mizoram thingpui chingtute tan la sauh sauh turin a fuih bawk.

OBITUARY

Pu Ngurbiakvela
Horticulture Demonstrator
DHO Office, Aizawl
Thih Ni - 29.12.2012

Tv. C.Lalremsanga
Horticulture Demonstrator
DHO Office, Khawzawl
Thih Ni - 1.2.2013

*Department of Horticulture-ah
kum rei tak an thawh hnuah
min lo boralsan ta a.*

*Kan thawhpui duh tak ten hun to taka
min lo boralsan hi*

*Department of Horticulture tan
channa nasa tak niin kan ui tak zet a ni.*

*An kalsan tak an chhungte Pathianin
thlamuanin awmpui zel so tih
hi kan taungtaina a ni*

**DEPARTMENT OF HORTICULTURE
MIZORAM**