



CHINAI THI

(SLAKED LIME)

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FOCUS-MIZORAM

Introduction: Lei thur kan tih hi ‘Acidic cation’ chi hnih H^+ leh Al^{3+} ten an siam a ni a. Lei thur leh thur loh kan hriat dan ber chu a pH kan endik atangin a ni a, pH7 hi neutral a ni a, pH7 hnuai lam zawng hi acidic (thur) kan ti a, a chunglam zawng hi alkaline (al) kan ti thung a ni. pH hi pH meter hmangin a en theih a, Agriculture Department-ah Soil Testing Laboratory-ah lei hi a endik tir theih a ni. Lei thur leh thur loh hriat hi a pawimawh hle a, kan leite hi eng ang chiaha thur nge a nih tih kan hriat a tul a ni. Tawngpawng chinai thi hman hian lei a ti chhe thei a ni tih hriat a pawimawh hle. Chuvang chuan chinai thi kan hman dawnin lei thur dan chen kha hriatchian phawt a, chumi atang chuan hman a tul leh tul loh a hriat dawn a ni. Tin, chubakah, chinai thi hman ngai zat tur pawh a chhut chhuah theih dawn a ni.



Thlai chi hrang hrang hian lei thur an ngam dan chen a in ang lo a, a tlangpui hi chu 6.5 – 7.5 pH ah an to thei a ni, thlai thenkhat chuan pH hniam tak e.g. 5.0 aia hniam te an mamawh a, thenkhat erawh chuan a sang deulte pawh. Chuvang chuan ‘Chinai thi hman a tha’ tia tawngpawng hmang ngawt lovin, kan leiin chinai thi hman a mamawh em tih leh kan lei thur dan mila thlai chin tur kan thlan thiam a tul a ni.

Leithur chhan tlangpuite:

Lei hi amaha rawn thur ringawt a ni bik lo a, thur chhan hrang hrang a nei a, chungte chu:-

1. Lei lo insiamna bul (Parent Material): Lei hi lung kehdarh lo nawi tain a siam a ni a, chutiang lungpui a lo chhuahna a zirin a thurin a thur lo thei a ni.
2. Ruahsur: Ruahtui hian leia 'basic cations' thenkhat e.g. Ca^{2+} , Mg^{2+} leh K^+ te hi a luan ralpui thin a, chutiang basic cations luangral ta te hnawhkhat turin heng, acidic cations 'Al³⁺ leh H⁺ te hi a lo insiam thin a ni.
3. Leitha (Fertilizer): Leitha (Chemical leh Organic), a bik takin 'ammonia based' ho hian leiah H⁺ ions belhin hman rei hnuah chuan lei a lo ti thur thei a ni. E.g. Urea.
4. Thlai chaw ei: Thlai hian lei atangin chaw atan basic cations thenkhat heng K^+ , Ca^{++} leh Mg^{++} te a hip chho a, chutiang hnawhkhat tur chuan H⁺ ions te a lo siam thei bawk a ni.

Lei thur dan hrang hrang te:

1. Active Acidity: Lei leh tui chawhpawlh (Soil-water suspension) atanga pH kan teha kan hmuhchhuah hi active acidity chu a ni, thlai leh micro-organisms te hi hetiang thur satliah-ah hi chuan an to theiin an nung thei a ni.
2. Exchange Acidity: H⁺ ions leh Al³⁺ ions che vel hian exchange acidity a siam thin. Lei leh chi (salts) chawhpawlh (soil-salts suspensions) pH kan endik atangin exchange acidity hi a hriat theih a ni.

Active acidity chauh nilovin exchange acidity pawh hi neutralize chuan H⁺ leh Al³⁺ che vel khan lei a lo tithur leh thuai thin a ni.

3. Hydrolytic Acidity: H⁺ leh Al³⁺ ions te che vel thei lo tura nghet taka awm thin te atanga lo insiam hi hydrolytic acidity an ti. 'Residual acidity te kan neutralize hnuah pawh

ala awm reng thin vang a ni. Hetiang thur hi chu tih reh chi a ni lo.

Lei thur tih reh (Liming):

Lei thur tih reh kan tum hian kan tih ber chu leithur siamtu H^+ ions leh Al^{3+} ions te neutralize turin basic cations Ca^{2+} leh Mg^{2+} te kha leiah kan zuk telh a ni ber a. Lei thur tih rehna hmanrua chi hrang hrang a awm a, chungte chu:-

1. Calcium Oxide (Ca_2O): Hetiang hi chinai kan tih ang hi a ni a, a dip var niin, mi a kang thei a, kut lawnga khawih chi a ni lo.
2. Calcium Hydroxide [$Ca(OH)_2$]: Hetiang hi chinai thi an tih mai a ni a, kut lawnga khawih ngam a ni bik meuh lo.
3. Calcitic limestone or Calcite ($CaCO_3$)
4. Dolomatic limestone or dolomite [$CaCO_3.MgCO_3$]: Hetiangah hian Calcium bakah Magnesium 20% vel a keng tel a, amaherawhchu a thawk muang thung a ni.
5. Marl
6. Slag.

Chinai thi pek hun leh pek dan:

Chinai thi hi engtik lai pawhin, kumtluanin pek theih a ni a, amaherawhchu favangah emaw, thalah emaw, thlai chinna atana lei kan sawngbawl laia pek hi a fuh ber a ni. Chinai thi te hi tuiah an zawp ral ve lova, chuvang chuan a chunglam chauhah kan phul anih chuan, a chunglang chauh a lo al anga, a hnuai lam chu a thur ngaiin a la thur tho dawn a ni. Chuvang chuan, thlai zung awmna awm vel, lei chunglang atanga 6-8 inch vela thukah tal phul theih a tha hle. Tui ah zawp ral thei lo ni mahse, hna thawk (reaction) tur chuan hnawng a mamawh tho a ni.



Picture: Chinai thi theh lai

Kan lei awmdan a zirin chinai thi hi tum khat emaw tum hnih (spit application) telh ah kan hman thei a ni. Vaivut lei (sandy soils) ah chuan vawikhatah (one application) telh vek a paw lova, vut lei (sandy soils) hi a thur hma avangin a pH hi endik deuh reng a tha a, eng lei tan pawh kum tin endik hi a pawimawh hle. Chinai thi pek atanga ni 30 tal nghakin, leitha kan pe duh a nih pawhin chumi hnuah chauh chuan kan pe tur a ni.

Chinai thi kan hman chhan tlangpuite:

1. Lei thur tihrehna turin.
2. Lei tih that nan, Dose tlem deuh zawk, a tam berah 500 kg/Ha. A kan hman hian, lei thur a tireh zo lo a, mahse, thlain micro-nutrients a mamawh thenkhat heng Calcium (Ca) leh Magnesium (Mg) te hi chinai thi hian a supply thei a ni.
3. Insecticides anga hman. Hei pawh hi dose tlem deuha hmanin rannung hlo atan a tangkai hle. A thatna phei chu a ni hauh lo a, mahse, aven nan a bik takin leia inkhuar chi, heng vual leh thildangte ven nan a tha hle.

Chinai hman dawna hriat tur pawimawh te:

1. Lei thur hi neutralize dawnin, chinai hmanna hmun tur zau zawng a zitin hman tur zat kan bithliah tur a ni.
2. Lei dip leh nawi tha tak (fine-textured soil) hian lei hraw (coarse soil) aiin chinai thi a mamawh hnem zawk. Tin, lei, thlai tawih (organic matter) pai tam hian, a pai tlem aiin a mamawh tam zawk bawk.

Chuvang chuan, hetiang lei hraw, lei thlai tawih pai tlem bawk si ang chi ah hi chuan chinai hi tlem te te, kum tin pawlh thin a tha. Lei dur tha takah erawh chuan tum khata tam tham deuh taka pawlh hian kum 3-4 te a daih thin a ni. Chinai thi pawlh reng reng hian pawlh hnem lutuk palh a awm, thei a, chuvang chuan a tawh hriat nan kan pawlh atanga ni 30 hnu velah emaw lei test tir lehin kan lei dinhmun dik tak a hriat theih a ni. Chinai pawlh hnem lutuk (over liming) hi a chuangtlaiin a hek mai bakah, thlaiin an tuar thin a ni. Tin, lei a, micro-nutrients awm te thlaiin an ei theih loh phah thei bawk a ni.

3. Chinai thi duhtawh hman tur awm lohna hmunah chuan, leithur tihreha tur nilovin, leiin Ca^+ a mamawh phuhruk thei tur tawka tlem pawlh kha a pawl lo.
4. Chinai thi hman reng hian lei thur chu ti reh bawk mahse, Mg a tlakchham thin avangin, Mg pe thei tur thil, heng MgO (Magnesia) te, $\text{Mg}(\text{NO}_3)$ (Magnesium nitrate) te, MgSO_4 (Epsom salts) te emaw dolomite emaw telh thin a tha.
5. Chinai dip tha tak hi a thawh rang awm mahse a daih rei lo thung a, chinai hraw deuh hi thawh muang deuh mahse a daih rei ve thung a ni. Chuvang chuan chinai dip tha kan hmang a nih chuan pawlh zin deuh a, a hraw anih erawh chuan pawlh khat deuh mai tur a ni.
6. Lei neutral ah emaw a al-ah chuan chinai pawlh in tangkaina pakhatmah a neih tawhloh avangin a hek thlawn mai mai a ni.

7. Lei chunglang bakah a chhung deuh (sub-soil) hi a thur tel ve thei a, chuang chuan chinai kha a thuk deuh tak e.g. feet 1 (khat) vel awma thukah emaw zuk dah tur a ni.
8. Thlai thenkhat heng bean, be, bekang, nihawi leh la te hian chinai an mamawh sang bik a, wheat te, vaihlo leh kawlbahra te hian an mamawh tam lem lo a, alu te, buh te leh dawnfawh te hian an mamawh tlem leh a, thingpui leh coffee te, lakhuihthei te hian an mamawh tlem leh zual a ni. Chinai mamawh tam leh tlem kan tih hi lei thur an ngam leh ngam loh dan a ni ber. A mamawh hnem ho hian thur an ngam lova, mamawh tlem ho hian an ngam deuh a ni.
9. Lei pH kan test a, 6.0 pH aia a san chuan chinai hman a ngai lova, a hniam erawh chuan hman a ngai anga, mahse 6.8 pH aia tihsan erawh a ngai chuang lo.
10. Buh bikah hi chuan pH hniam takah pawh a to theih avangin chinai thi hi a mamawh lem lo a, mahse kan hmang duh a nih chuan lei tih al nan nilovin micro-nutrients heng Calcium (Ca) leh Magnesium (Mg) te pe tur tawk chauhvin kan hmang tur a ni.

Thlai thenkhatte lei duhzawng:

Thlai	pH
Beans	6.0-7.5
Zikhlum	6.0-7.5
Carrot	5.5-7.0
Grape	6.0-7.0
Lettuce	6.0-7.0
Purun Sen	6.0-7.0
Purun Var	5.0-6.0
Buh	5.0-8.0
Vaimim	6.0-8.5
Alu	4.5-6.0
Broccoli	5.0-6.0
Bawkbawn	5.0-6.0
Tomatoes	5.5-7.5