

CHANGKHA

Scientific name : *Momordica charantia*

Mizo : Changkha

Hindi : Karela

English : Bitter gourd

Changkha hian Iron, vit: A, B and C a pai tam em em a chubakah Protene leh minerals taksa tana kan hmuhtheihna man tlawm tak a ni. Thisen hrisello, ruhseh, zunthlum leh Ashma tan a tha bawk.

Sik leh sa :

Ram lumah atha duh ber a, mahse hmun hrang hrangah pawh a chin theih. Temp 25°C - 30°C hi a ngeih tawka ngaih a ni. Temp 18°C aia hniamah chuan a thang muangin a rah a tha thin lo. 36°C aia a san chuan a nu par a tlem bikin a rah tam thinlo a ni.

Leilung :

Khawi hmunah pawh a chin theih a, lei dur thatna hmun, luipuiin leitha a chhekna hmunahte hian a tha duh hle.

A chin dan :

Tlang ramah chuan April - July ah an ching ber a, phai lamah chuan January - March, a vawihnihna chu June - July ah a ni thung.

A chi chu 4 - 5 kg / Ha a tawk. A chi chu Thiram 2 gm / 1 kg ah chiah in darkar 6 vel chiah tur a ni. Chu chuan a ti to hma bakah natna lakah a veng ang. Khawvawtah chuan a tiak har deuh thin a, 25 - 35°C ah a tiaktha duh ber. 8°C aia hnuaiah leh 40°C aia sangah a tiaktha thei lo.

Bikhatah 4 in an tuh thin a, a tiah hunah suatthen lehin 2 - 3 vel bikhatah an dah thin. Polythene bag ah pawh kui tiah theih a ni a, ni 15 - 20 velah an phunsawn leh thin.

Lei buatsaih dan leh leitha mamawh zat :

Uluktaka a phunna tur hi buatsaih tue a ni a. Leilet hmun zawlah chuan 4 - 5 vel lehphut tur a ni a, FYM 20 – 25 ton / Ha lehnnan tur a ni. NPK 100 : 50 : 50 / Ha pektur a ni a. N hi

hmunhnihah then a pakhat zawk chu leitha dangte nen a rual a lehnan tur a ni a, a dang leh chu a par lai (ni 45 - 50) ah pek leh tur a ni (a litha mamawh zat hi a leilung a zirin a danglam).

Pit method :

Khur 45 cm X 45cm X 45 cm a zau 2 m danah laihtur a ni. 20 g of N, 30 g of P and 30 g of K chu leichunglang nen chawhpawlh a khurah hnawkhah tur a ni. A par hnu (45 – 50 days)-ah 20 g of N / pit pek lehtur a ni.

A seng :

Changkha hi, ni 45 - 55 ah a par tlangpui a a variety a zir te a phun hun leh a leilung a zir tein ni 60 - 70 ah a rah a lawhtheih tlangpui.

A rahno ei a tan an seng ber a, a lawh tlakhmasa a piang lawhngal zel hian a rah a ti pungin a tithar tam a dahkhawl chuan a rah dang rawn insiamtur a ti tlai thin.

A thar theih zat :

Ni 60 -70 ah a thar trlangpui a, a rahte hi lawh zawh veleh silfai a dah hul tur a ni. 150 Qntl / Ha a thar thei a, a variety leh a leithat dan a zirin a danglam thei bawk.

Table: Cost of cultivation bitter gourd

Sl. No.	Agronomic Practices	Amount/Number	Rate/Unit (Rs.)	Total Cost (Rs.)
•	Land Preparation	2 ploughings	1500/ha	3000.00
•	FYM		600/t	9000.00
	Amount of FYM	15 tonnes	130/manday	1950.00
	Scattering of FYM & initial dose of fertilizer	15 mandays	1500/ha	1500.00
	Mixing of FYM	Once		
•	Cost of seed	3kg	1000	3000.00
•	Sowing of seeds	15 mandays	130/manday	4500.00
•	Preparation of training system	-	-	10000.00
•	Intercultural operations	50 mandays	130/ mandays	6500.00
•	Cost of Fertilizers			
	Urea	40kg	Rs4.83/kg	193.00
	DAP	65kg	Rs 9.35/kg	608.00
	MOP	50kg	Rs4.26/kg	213.00
•	Plant Protection Measures	-	-	5000.00
•	Cost of Harvesting & Marketing			
	Harvesting	20 mandays	130/ mandays	2600.00
	Cleaning, grading & packing	6 mandays	130/ mandays	780.00
	Packing material	Baskets, crates, gunny bags etc. 100q.	-	
			25/q.	2500.00
•	Transportation charges			5000.00

•	Miscellaneous			5000.00
•	Total			61344.00
•	Interest on working capital @ 12% p.a. for 6 months			3681.00
	Total cost of Cultivation			65025.00
	Gross Returns (Rs./ha.)	100q	1200/q	120,000
	Net Returns (Rs./ha.)			54975
	Benefit-Cost Ratio			0.85

Post Harvest Management:

Bitter gourd

A par atanga ni 12 ah a lawh theih tlangpui thin. Room temperature (25-30°C) ah chuan ni 3-6 vel a dahthat theih a. 12°C –ah Ethylene tlem nen pawlh a tuam phui chuan ni 10 vel a dahthat theih a. 12°C.-ah 1-MCP (250 ppm) nen a polythene bag a dah erawh chuan ni 14 vel lai a dahthat theih thung.

Thlai ven him dan:

Rannung:

Red pumpkin beetle (*Aulacophora foveicollis*, *A. lewisii*):

A khawih chhiat dan tlangpui:

- A puithing chuan a hnah, apar leh kuhmum te a ei thin.
- A tetlai (Grubs) huan a zung leh a kung a ei chhe thin.
- A puithling chuan a hnah, a par leh a rah te a eichhe thin a, kua-te hreuhin a tih hlum loh vek pawhin a than a ti thu thin.
- A zung leh kung thi te chu a lo tawih nghal mai thin.
-

A enkawl dan:

- Seng hnu ah a hnah tla awmte halfai a, lei leh phut a nisa hem tir tein a natna a thentir nep thei.
- Rannung lo awm hmasa apiangte chu man khawm a tih hlum zel tur.
- 0.05% malathion a kah emaw 5% malathion dust @ 10 kg/ha a theh tur.

Melon Fruit fly (*Dacus cucurbitae*)

A khawih chhiat dan tlangpui:

- March-May thla vel ah an che nasa zual.
- A rah a khawih ber thin.
- Rannung senduk deuh a thla hmawr dum deuh niin, a rah kawr chhung lamah a tui thin.
- A rah a khawihthe chu an lo tawih nghal mai thin a, ,ei a tan a tlak loh nghal mai thin.
- A rahte chuan a rawn duk bial deuh a, rawn tawihin a hun loah a til vak thin.

A enkawl dan:

- A hmun chu fai tak a dah tur a ni(a rah tla leh a ei chhiat te nitin a paih a halfai tur).
- Thuk deuh a lei leh a a chhunga rannung awm te tih hlum tur.
- 0.05% malathion or 0.2% carbaryl a apar lai a kah tur.

Blister beetle (*Mylabris pustulata*)**A khawih chhiat dan tlangpui:**

- August to December thla vel ah an che nasa zual.
- Rannung, rawng dum a spot lian lutuklo ania, pollen leh a parte an ei a, a rah in siam tur a khawih buai thin.

A enkawl dan:

- Man khawm a tih hlum tur.
- 4% Carbaryl a theh emaw 0.05% Malathion kah tur.

Aphids(*Aphis gossypii*)**A khawih chhiat dan tlangpui:**

- A note leh a puitkingte chuan a huho in a hnah leh a kuangno te chu beiin, a tuihnang an hip thin.
- A hnahte lo kirin a lo ro thin.

A enkawl dan:

- A lan tirhah an awmna hnah leh kuangte chu paih bio nghal tur.
- 0.02% Pyrethrins or 0.05% Malathion or Dichlorvoe (DDVP) a kah tur.

Mites (*Tetranychus cucurbitae*)**A khawih chhiat dan tlangpui:**

- A huhoin a hnah an zuk thin a, ril (web) te takte in an in venghim thin.
- A hnahte lo vuaiin an lo ro mai thin.

A enkawl dan:

- 0.05% wettable sulphur a kah tur.

Natna:**Powdery Mildew(Vut buak):**

A natna thlentu chu *Erysiphe cichoracearum* a ni a, Fanghma te, Dawnfawh, Mai leh Iskut te pawh hm,uh tur a tam hle. A hnah chung lama vut buak awmte kha a natna thlentu chu ani a, a ler lam atawngin a bei tan a, a lo vuaiin a thi mai thin.

**Management:**

- Thlai chin thlak (Crop rotate) tur.
- Dinocap(0.1%) or Wettable sulphur (0.2%) or Calixin (0.5%) in vawi 2-3in ni 10 dan-ah a lo lan chhuah atangin kah tur.

Downy Mildew:

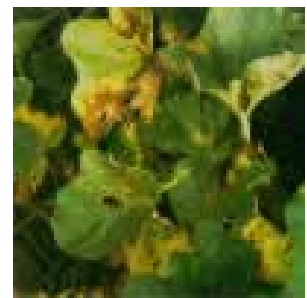
A natna thlentu chu fungus *Pseudoperonospora cubensis* a nia Ahnah hnuailamah vut buak a lo awm thin. Hmun hnawngah a nasa duh thin, a nasat chuan a hnah te chuan an thih phah thin a a hnah upa lam atangin a no lamah a kai chho thin.

**A enkawl dan:**

- A hnah a ei chhiat deuh tawhte chu paih a, a dawmdawiin a vennan kah nghal tur.
- Mancozeb (0.2%)in ni 8-10 danah kah thin tur.

Anthracnose:

Anthracnose, thlentu chu fungus *Colletotrichum lagenarium*, a nia Fanghma, dawnfawh leh hmazil te pawh a bei thin. A hnahte chu a lo eng deuh thet thet a lo lian zelin rang takin a lo buang/uk a chu lai chu a lo kaw (hole) thin. A rah ah te in sawn thla in a a ti chhe thin. Arah lian tah chu a khawih nep deuh a, a then lai chu lo dukin, a tui sen deuh a lo chhuak thin

**A enkawl dan:**

- Mancozeb (0.2%) or Hexacap(0.25%)or carbendazim(0.1%) in ni 15 danah kah thin tur.

Mosaic Viruses:

Fanghma, Dawnfawh, Hmazil. Iskut te a bei bawk..
Cucumber Mosaic Virus (CMV), Watermelon Mosaic-2 (WM-2) and Squash Mosaic Virus (SqMV) te hi a larzual te an ni. heng natna in akhawihte chu an thang theilo a, a hnah tharte pawh an lo te in an tawi bik a ni. Dawnfawh leg



Fanghma a CMV in a a hnah thar a khawihte chu an vuaiin an thi mai thin a, a hnah upa deuhte erawh chu an engin an roa zawi zawiin an thi thin. CMV and WM-2 hrikte hi thlasik lo tuar chhuakin thlai kumhlunah te lo kaiin aphid in pu darh lehin thlai dang emaw phun thar ho kha an bei leh thin. SqMV te chuan thlasik tuar chhuakin a chi (seed) kaltlangin phun thar ho an bei leh bawk. CMV hi a tlangpuiin aphod leh cucumber beetles ten an thehdarh a, WM-2 hi aphids- in, SqMV hi cucumber beetles leh hnathawktu ten an thehdarh thin.

A enkawl dan:

- Hnim dang heng natna kai theiho te chu thenfai tur.
- Thlai pakhat chauh ching ngawr ngawr loin chin karthlak tur.
- Cucurbitaceous family ho chu regular-in lo pakhatah chin ngawr ngawr loh tur.
- Diamehoate (0.05%) or Oxy demeton methyl (0.02%) – in kar danah kah tur.
- Thlai dang heng natna lo dal theitu tur eg Nihawi te a hualin chin thin tur.

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7.	Cost of Fertilizers Urea DAP MOP	40kg 65kg 50kg	Rs4.83/kg Rs 9.35/kg Rs4.26/kg	193.00 608.00 213.00
8.	Plant Protection Measures	-	-	5000.00
9.	Cost of Harvesting & Marketing Harvesting Cleaning, grading & packing Packing material	20 mandays 6 mandays Baskets, crates, gunny bags etc. 100q.	130/ mandays 130/ mandays - 25/q.	2600.00 780.00 - 2500.00

10.	Transportation charges			5000.00
11.	Miscellaneous			5000.00
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