

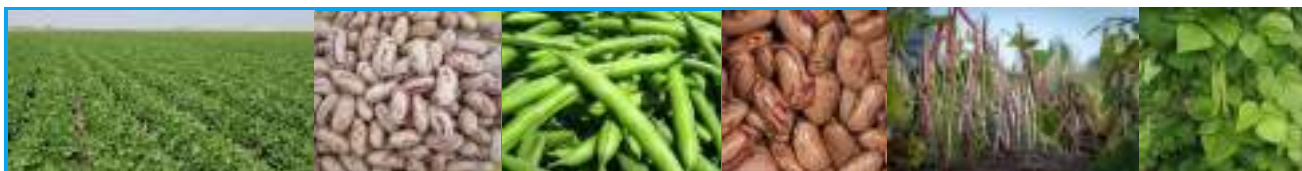


## Gwaro Rekudzidzisana Kurima Bhinzi (Training Guide for sugar beans production)



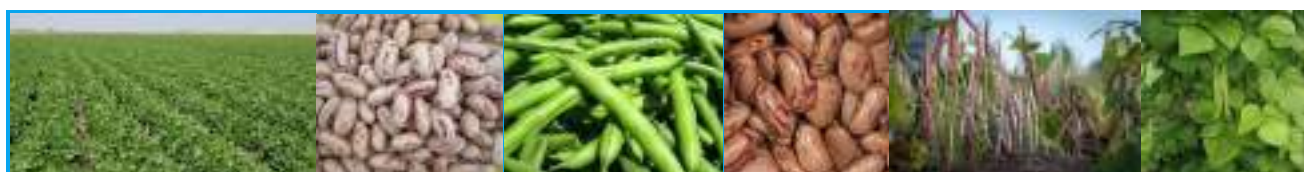
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## Kutenda

Iri gwaro rakanyorerwa chironywa cheLivihoods and Food Security Program (LFSP), Agricultural Productivity and Nutrition (APN) Component inotungamirirwa nebazi reFood and Agriculture Organization of the UN (FAO). Mari yekuti basa reLFSP rifambe yakapiwa neDepartment for International Development (DFID) pasi pechironywa cheUnited Kingdom Aid (UKAID). Kuburikidza nekushanda pamwechete neFAO INSPIRE (Improved Nutrition for Sustainable Production, Increased Resilience and Economic) yakatungamira kunyorwa kwegwaro rino rinoshandiswa muzvidzidzo zvevarimi vekumaruwa. INSPIRE mubatanidzwa we mapoka anoshanda munezvebudiriro mukurima anosanganisa Goal Ziombabwe, Practical Action, Sustainable Agriculture Technology and Technoserve. Chinangwa cheLFSP ndechekuti kurimwa kwebhinzi kusimudzirwe kubva patiri ikozvino uye kuti zviripe mari yekushandisa mumabasa emumhuri. Pasi pechironywa cheLFSP-APN INSPIRE irikushanda mumatunhu anoti Mutare, Mutasa and Makoni ari muManicaland Province. Tinovimba kuti zvinyorwa izvi zvichashandiswa nevarimi varimumatunhu iwaya kana vari kunenzvimbo dzakafanana nematunhu iwaya kuti goho rerebhinzi nemari yacho zwiwande. Tinotenda INSPIRE nevese vakabata basa rakanaka kudai rekuitira kuti varimi vasimudzirike mukurima bhinzi. Kukohwa bhinzi, kukohwa mari!

## Mabatirwe ezvidzidzo

1. Gwaro rino rinotarirwa kushandiswa nevarimisi kana malead farmers (vatungamiriri vezvidzidzo) ari kushanda neboka revarimi vane chido nekurima bhinzi zvakana.
2. Vatungamiriri vezvidzidzo vanotarirwa kudzidzisa vamwe varimi veboka ravo vachitevedza marongerwe ezvidzidzo ari mubhuku vachitevedza mwaka vekurima.
3. Vatungamiriri vezvidzidzo vanotarirwa kudzidzisa varimi, nguva yekuita basa racho mumunda isati yakwana kuitira kuti panozokwana nguva yacho varimi vange vava kuziva zvinoda kuitwa. Rongai mazuva ekupota muchisangana neboka renyu kuti muite zvidzidzo uye sarudzai pekuitira zvidzidzo pakasunungukira vanhu vese vari muboka renyu pamwe nenguva yakasununguka.
4. Torai nguva isingadariki maawa mairi panguva yese yamunosangana.
5. Onai kuti makagara makaita denderedzwa zvinoita kuti vadzidzi vese vadzidze vachionana.
6. Zvidzidzo zvisati zvatanga bvunzai varimi zvavanenge vachinyanya kuda kunzwa pamusoro pechidzidzo ichocho kubva pazvinangwa zvechidzidzo moedza kunyanya kubatsirana nevarimi ipapo.
7. Pane zvidzidzo zvinenge zvichionekwa nemudzidzisi kuti zvingadewo rubatsiro rwemumwewo munhu garai maronga kuti murimisi venyu kana vamwewo varimisi vazouya kunotsigira musi wechidzidzo.
8. Mudzidzisi anokurudzirwa kunge achinzwisisa zvidzidzo zvaanenge achitungamirira zvakadzama. Mudzidzisi ngaatore nguva yekumboverenga kuti chidzidzo chichazoda kufambiswa sei musi wacho wechidzidzo usati wasvika, uye chidzidzo kana chichizoda kuti varimi varatidzwe maitirwe ebaso, mudzidzisi ngaasarudze pekudzidzira pakasununguka nekuunganidza zvese zvichazodiwa musi wechidzidzo usati wasvika
9. Uku kudzidza kwevakuru vanogarobata mabasa avari kudzidziswa nezvawo muhupenyu. Nokudaro kurudziro ndeyekuti tinzwe mafungiro nemaitiro avo uye zvikonzero zvacho





10. Vadzidzi vose vanokurudzirwa kutaura vachipawo pfungwa dzavo. Zvikadaro zvinoita kuti vose vasununguke kutaura maonero avo. Kuti vawane mukana wakakwana vanopota vachiiswa mumapoka akasiyana siyana kuti vapindure mibvunzo inenge yabvunzwa
11. Mushure mekunge boka roga roga rapakurira vamwe zvarawana, vamwe vanofanira kupihwa mukana wekubvunza mibvunzo uye kutaurawo pfungwa dzavo. Mudzidzisi anokurudzirwa kuzokwenenzvera hurukuro.
12. Kudzidza kuzhinji ngakuve kunosanganisira kuratidzira varimi maitirwe ebaso racho chaiwo nekuti vanhu vakuru vanodzidza nekuona nekuita.
13. Pamusoro pema activities (pezviitwa) zvakaiswa muzvidzidzo itaiwo mitambo yakaita sema drama, kuimba, nhetembo kana quiz pamusoro pechizvidzidzo zvamunenge muchiita.
14. Kana paine zvinenge zvakubvunzwa kana kukurukurwa zvisingakwanise kuti mudzidzisi ape mhindiro ipapo, anokurudzirwa kunotsvaga mhinduro kuvarimisi ozopa mhinduro kuvadzidzi muchikamu chinotevera.
15. Pamusoro peizvi, rongaiwo mazuva ekunoona zviri kuitwawo nevamwe varimi vari kurimawo zvamuri kurima zvepamusoro kuti munodzidzawo ikoko. Zvakare kana paitawo murimi abudirira zvakananyanya muboka renyu kudarika vamwe rongaiwo zuva rekuungana pamunda pake (field day) kuti mudzidzewo kuti akazvifambisa sei. Njere moto, unogokwa.



## Chitsauko chekutanga - Nhanganyaya

### Kugadzirira chidzidzo

1. Verenga zvakazara unzwisise zviri muchidzidzo nezvinoda kuitwa, zuva rechidzidzo risati rasvika

### Zvinangwa zvichidzidzo

Tsanangurira varimi kuti panozopera chidzidzo ichi varimi vanenge vava kuziwa zvinotevera:-

- Zvakanakira bhinzi
- Ivhu rakanakira bhinzi

### Zvakakoshera bhinzi

#### Activity 1

Bvunza varimi kuti bhinzi dzakakosherei? Kana wapihwa mhinduro tsigira nezvinotevera:-

- Bhinzi dzinodiwa semuriwo. Dzinogona kudyiwa dzakaomeswa kana dziri nyoro.
- Bhinzi dzine protein, *folic acid*, *dietary fibre* pamwe ne *carbohydrates*, Bhinzi dzinopawo *iron* inowanikwa munyama.
- Bhinzi dzinotipa mari tikadzitengesa. Dzinotipa mari yakawanda pa tonne imwe chete zvichienzaniswa nechibage, nyemba, nyimo, soyabeans, mapfunde nezvimwewo zvirimwa zvizhinji zvakajairika kurimwa pamusha.
- Bhinzi dzinosiya chikafu cheNitrogen muvhu chinozoshandiswa nembesa dzimwe dzinozorimwa mumashure mechirimwa chebhinzi.
- Bhinzi dzinogona kurimwa dzega kana mukati mezvimwe zvirimwa zvakaita sechibage kuti dzi dzivire sora, kutorwa kwevhu, nekurasikirwa nehunyoro muvhu.

#### Activity 2

Inzwa kune varimi kuti ndezvipi zvinopa goho rakawanda, kurima bhinzi dziri dzega kana kuti kudzisanganisa nedzimwe mbesa dzakaita sechibage. Ngavape zvikonzero kuti sei vachifunga kudaro.

### Ivhu rakanyanya kunakira bhinzi nderipi?

#### Activity 3

Inzwa kune varimi kuti ndezvipi zvinhu zvavanochedza maererano nemhando yevhu kana vachisarudza munda wekurimira bhinzi. Unogona kutsigira hurukuro iyi nezvinotevera:-

- Bhinzi dzinokura pamhando yevhu rakasiyana siyana sezvinogodawo zvirimwa zvizhinji zvakaita sechibage.
- Dzinonyanya kuda paivhu rakati korei zishoma (>15% clay content).
- Bhinzi hadzidiwo ivhu rinowawa (*acidic*). Ivhu rinofanira kunge riine pH iri pakati pe5.0-5.5
- Ivhu harifanirwi kunge richinjenga mvura. Musarima munzvimbo dzine unyoro hwakanyanya.

### Kuvhara chidzidzo



1. Ipa varimi mukana wekubvunza mibvunzo. Ipa vamwe veboka vanzwisisa chidzidzo kuti vapindure. Kana vatadza pindura. Asi kana iwe watadza nyora pasi mubvunzo vozobvunza murimisi vako pamunosangana.
2. Dzokera pazvinangwa zvechidzidzo ubvunze varimi zvavabata pachidzidzo maererano nechinangwa chimwe nechimwe. Kana paine pasina kunzwiswa neruzhinji rwevarimi, panoda kudzororwa zvakare.





## Chitsauko chechipiri: - Kugadzira munda vekurima bhinzi

### Kugadzirira chidzidzo

1. Verenga zvazazara unzwisise zviri muchidzidzo nezvinoda kuitwa, zuva rechidzidzo risati rasvika
2. Gara waronga kuti uzoratidzire varimi magadzirirwe nemataramutsirwe emigero yebhinzi

### Zvinangwa zvichidzidzidzo

Tsanangurira varimi kuti panozopera chidzidzo ichi varimi vanenge vava kuziwa zvinotevera:-

- Kusarudza munda wakanaka wekurima bhinzi
- Zvimoreva kugadzirira munda
- Zvakanakira kugadzira munda nenguva
- Nguva yekugadzira munda
- Kugadzira migero yekudyara bhinzi

### Kusarudza munda

#### Activity 1

Varimi ngavadome zvinhu zvavanotarisa kana vachisarudza munda vekurima bhinzi. Pane zvabuda wedzera nezvinotevera:-

- Sarudzai munda unevhu rinoenderana nezvakurukurwa muchitsauko chekutanga
- Bhinzi dzinovhiringidzwa zvakananyanya dzikarimwa mumunda makamboiswa mishonga yemasora inogara muvhu kwenguva yakareba uye ichishanda muzvirimwa zvemhando yehuswa chete zvakaita sechibage. Muenzaniso vemushonga uyu iAtrazine. Musadzirima mumunda wakamboshandiswa mushonga yakaita seAtrazine mumwaka pasati padarika mwaka miviri.
- Dzinoda kuchinjaniwa nezvirimwa zvakaita sechibage nemapfunde. Ngapave nemusiyano wemwaka miviri kubva pamunorima bhinzi nepamunozodzirimazve.

#### Activity 2

- Tauriranai nevarimi kuti minda yenyu munoigadzirira sei uye kuti zvingadiwa ndezvipi. Izvi zvingasanganisira zvinotevera:-
  - (a) Kubvisa mabundo
  - (b) Kurima nejejo tisinga pepeti kana kupindura ivhu zvakananyanya
  - (c) Kuchera migero
  - (d) Kuisa mupfudze pamwe nemafotireza
  - (e) Kuunganidza zvekuchengetedza mwando zvakaita sehuswa kana mashanga embesa dzemwaka vapfuura dzakakohwewa (Mulching)

### Zvakanakira kugadzira munda nenguva

#### Activity 3

Tauriranai zvakanakira kukurumidza kugadzirira pekurima uye kupagadzirira zvakanaka. Izvi zvinosanganisira zvinotevera:-



- (a) Kugadzirira munda zvakanaka kunokosha pakubatsira kumera kwakanaka kwembesa nekukura kwadzo kwakanaka.
- (b) Kukurumidza kugadzirira munda kunobatsira kuti murimi akurumidze kudyara mbesa nekuti dzikurumidze kubata mwando wekutanga nekuushandisa mukukura kwadzo.
- (c) Kukurumidza kugadzirira munda kunobatsira kuchengetedza mvura nekudzikisira kukukurwa kwe ivhu.
- (d) Kuchengetedzwa kwemvura muvhu nekudzivirira kukukurwa kwevhu kunoita kuti goho risimukire zvikuru.
- (e) Tsangadzi nezvirwere hazvizonetsi kurwisa nekudzivirira.
- (f) Zvinoitawo kuti ivhu rive neunyororo hwakanaka uye kuzobatawo fetereza yepasi.
- (g) Varimi havanyanyi kutimba mumunda. Izvi zvinochengetedza mari, nguva pamwe nesimba.

## Nguva yokugadzirira munda

### Activity 4

Tsanangura zvinotevera:-

- Kugadzirira munda kunofanira kutanga nguva iyo munhu paanongo pedza kukohwa mbesa dzake uye kunofanira kupera Gumiguru (October) asati asvika pakati kana kuti mvura isati yatanga kunaya.
- Varimi vanokurudzirwa kugadzira munda vachishandisa nzira dzeconversation agriculture dzinokurudzira kusapindura pindura ivhu zvakananyanya. Izvi zvinosanganisira kugadzira migero, pamunda musina kumbotanga marima.
- Kana izvi zvikakwanisa kuitwa mvura isati yanaya, panongonaya mvura munenge mavakukwanisa kutanga nekutodyara. Izvi zvinodzivirira kurasika kwe mamwando unodiwa pakumera nekukura kwembesa.

### Activity 5

Varimi ngavadome zvigozhero zvingaita kuti vatadze kupedza kugadzirira munda nenguva. Kurukuraiwo zvimwe zvezvinhu zvingaita kuti zvireruke kuti varimi vapedze kugadzirira munda nenguva. Zvimwe zvinotarisirwa kubuda munhaurirano yenyu ndeizvi:-

1. Varimi ngavaite mapoka mapoka okugadzirira munda yavo, batsiranai muchiita majana muchienda kumunda komumwe nomumwe muchikurudzirana kuita basa renyu nguva ichipo uye yakafanira. Mapoka evarimi vari munharaunda imwe chete, vanogona kuita makwikwi okuona kuti vanotanga kupedza kugadzira ndima dzawo ndevapi.
2. Muri mumapoka gadzirai karenda rekukuyeuchidzai kuti basa rimwe nerimwe rinoitwa nguva ipi yegore. Garai muchiyeuchidzana basa rinofanirwa kunge richiitwa panguva imwe neimwe. Mafoni anogona kushandiswa kutumira yeuchidzo kuvanhu vakawanda nguva imwe kuti vanhu vachitanga kuchera makomba avo.
3. Kana varimi vachiona kuti zvekushandisa mapadza kugadzira munda zvinovanetsa varimi vanogona kushandisawo michina yakaita semagejo akasungirwa maripper tynes. Varimi vanogonawo kushandisa ma direct seeders panguva yekudyara. Madirect seeders anogona kushandiswakudyara mbeu pasina kumbobvira parimwa.
4. Varimi vanoona kuti kugadzira munda nezira yeconversation agriculture kunoita kuti pazoitwa masora nekuti munda unenge usina kupidigurwa. Nekudaro kurudziranai kushandisa mishonga yemasora.
5. Panoitwa dzidziso yakaita seiyi, nemamwe magungano evarimi akaita sema field days, varimi vanofanira kukurudzirwa kutsanangura nekupa huchapupu hwezvavakaonavo zvakanakira kugadzira munda nenguva kune vamwe varimi. Zvakanakawo kuti vataure mashandire avanoita semapoka kana nemhuri



dzawo kuti vamwe varimi vaone kuti zviru nyore kupedza kugadzirira minda nenguva yakanaka nekuti kazhinji varimi vanotoregedza kutanga kugadzira minda nekuti vanoona zviru zvinhu zvinorema.

6. Mitambo nekuimba senzira yekufadzana panodzidzisiwa varimi zvinobatsirawo kuratidza vanhu kuti hapana chinombonetsa pakurima kwe mhando iyi. Mitambo iyi nekuimba uku zvinofanirwa kuratidza kuti zviru nyore kugadzira minda nguva iripo kana varimi vakatanga nguva iripo, vakaita izvi mumapoka, vakashandisa maripper tynes pamwe nemadirect seeders. Zvinofanirwa kuburitsawo kuti varimi vanodai vanowana goho rakakura, vasingaiti izvi vanowana goho rakadzikira zvikuru.

## Kugadzira migero yekudyara

### Activity 6

Tsanangura pamwe nekuratidzira zvinotevera:-

- Mitsara yebhinzi ngaitaramutswe 45cm kubva pane umwe mutsara kusvika pane umwe mutsara. 45cm dzinokurudzirwa nekuti patinoita crop rotation tichiunza bhinzi mumashure mechibage chinenge chakataramutswa 90cm kubva pane mutsara kusvika pane umwe mutsara, zvinotibvumidza kuti tidzoke mumitsara yechibage asi tichiisa umwe mutsara zvakare pakati pemitsara yekare.
- Migero inogona kugadzirwa nebadza, gejo rine ripper tyne kana tichirima tichishandisa nzira yeconservation agriculture inokurudzira kusarima negejo, kana tichida kutara mitsara pakarimwa, nechikoforo (*cultivator*) kana direct seeder asi direct seeder inobva yadonhedzera fetiraiza, mbeu pamwe nekubva yatovhara.
- Kana uchida kuisa manyowa mumugero, mugero vacho unogona kuudzikisa kusvika pa 15cm asi kana usingadi kuzoisa manyowa unogona kudzikisa migero 5cm-7.5cm.

*Mufananidzo vemigero yakagadzirwa zvakakanaka*





## Kuvhara chidzidzo

1. Ipa varimi mukana vekubvunza mibvunzo. Ipa vamwe veboka vanzwisisa chidzidzo kuti vapindure. Kana vatadza pindura. Asi kana iwe watadza nyora pasi mubvunzo vozobvunza murimisi vako pamunosangana.
2. Dzokera pazvinangwa zvechidzidzo ubvunze varimi zvavabata pachidzidzo maererano nechinangwa chimwe nechimwe. Kana paine pasina kunzwiswa neruzhinji rwevarimi, panoda kudzokororwa zvakare.



## Chitsauko chechitatu: - Kuisa lime nefetiraiza yepasi

### Kugadzirira chidzidzo

1. Verenga zvakazara unzwisise zviri muchidzidzo nezvinoda kuitwa, zuva rechidzidzo risati rasvika
2. Gara waronga kuti uzoratidzire varimi maisirwe elime, manyowa pamwe nefetiraiza uye kuweka kuti inoiswa yakawanda sei mamita imwe neimwe yemugero.

### Zvinangwa zvichidzidzidzo

Tsanangurira varimi kuti panozopera chidzidzo ichi varimi vanenge vava kuziwa zvinotevera: -

- Kukosha kwe lime, chii chinonzi pH, pH yakanakira bhinzi, mhando dzelime uye huwandu hwe hwelime hunodiwa kuiswa mumunda
- Maisirwe elime mumunda
- Kuisa manyowa nefetiraiza yepasi mumunda

### Kukosha kwelime

Bvunza varimi zvinotevera: -

#### Activity 1

Bvunza varimi zvinotevera mukurukure mhinduro dzavo.

1. Lime yakakosherei?
2. Chii chinonzi pH?
3. pH yakanakira bhinzi ndeipi?
4. Mhando dzelime dzinozivikanwa nevarimi ndedzipi uye mhando imwe neimwe inoshanda papi?
5. Unoziva sei kuti woisa lime yakawanda zvakadii mumunda?

Zvimwe zvinotarisa kukururwa ndezvinotevera: -

- Lime inoderedza kuvava kwevhu kunokonzerwa nekuramba tichiisa fetiraiza ine nitrogen gore nnegore, kutorwa kwechikafu chiri muvhu nemvura chichidzika pasi (leaching) nekufufunuka kwematombo achiita ivhu
- Ivhu rikavava (acid) kana kutapirisa (alkaline) zvinoita kuti zvirimwa zvitadze kutora chikafu chiri muvhu zvichishandisa kunyangwe chikafu ichi chirimo chakawanda.
- pH zvinoreva kuvava kana kutapira kwevhu. Kana pH ichiyerwa inobva pa 0 kusvika pa 14. Kubva pa 0 kusvika pa 6.9 zvinoreva kuti ivhu rinovava. Kuvava kunoderera kubva ku 0 kusvika pa 6.9. Pa7 pakati nepakati. Kubva pa 7.1 kusvika pa14 ivhu rinenge richitapira. Kutapira kwevhu kunowedzera kubva pa7.1 kusvika pa 14.
- Bhinzi dzinoda pH iri pakati pe5.0 ne 5.5.
- Kune mhando mbiri dzelime. Calcitic lime ne dolomitic lime. Calcitic lime ine calcium asi dolomitic lime ine magnesium inowanikwa iri shoma muvhu rakaita jecha. Saka ndiyo inonyanya kukurudzirwa kuiswa muvhu rakadai.
- Lime inogona kuwanikwa yakaita upfu kana kuti iri magodo (granulated lime). Dzimwewo fertilizer dzepasi dzava kugadzirwa dziine lime. Kurukurai kuti ndezvipi zvinganakire kana kushatira mhando imwe neimwe.
- Kana muchida kuwedzera pH yevhu ne 0.1 munoisa 150kg yelime pa hectare muvhu rakaita jecha. Asi kana ivhu rakakora kuti muwedzera pH ne 0.1 munoisa 250kg yelime pa hectare imwe. Saka murimi



anotoziva chete kuti oisa lime yakawanda zvakadii nekunge aendesa ivhu rake kunoongororwa oudzwa kuti pH yevhu rake yakamira sei.

## Kuisa lime mumunda

### Activity 2

Tsanangura izvi uchiratidza varimi maitirwe azvo: -

- Lime inofanirwa kuiswa mumunda pachiine mwedzi inokwana kuita mitatau mbesa isati yasimwa.
- Lime inogona kumwaiwa pamusoro pemumunda wabva kurimwa nemaoko akadzivirirwa. Munogona kushandisawo muchina unonzi lime spreader kana muchida kumwaya lime pamusoro pemunda vakarimwa. Kana muchishandisa nzira yemaoko munofanirwa kudimbura munda wenyu muzvidimbu zvidimbu zvakaenzana zvinoenderana nenhamba yemasaga amunofanirwa kuisa mumunda menyu. Kana mapedza isai saga pandima imwe neimwe mochimwaya sagarelime zvakaenzana pandima iyoyo kusvika mapedza munda wese. Mumashure maizvozvo pindai mumunda nehara (harrow) inosanganisa ivhu nelime.
- Imwe nzira inogona kushandiswa kuisa lime ndeyekutoisa mumugero uri kuda kudyarwa mbeu. Onai kuti migero yenyu yese ingareba zvakadii moonawo kuti huwandu hwelime huri kudiwa hwakadii. Chiwekai kuti munda wese uiswe lime yakaenzana mungaise magrams (kana kuti kakapu kefetiraiza kenhamba ipi) elime akawanda zvakadii pa meter imwe chete. Kana mapedza munogona kushandisa badza kusanganisa lime nevhu iriri mumugero. Lime haifanirwi kusara ichionekera kunze kwemigero nepamusoro pevhu.

## Kuisa manyowa nefetiraiza yepasi

### Activity 3

Tsanangura uchiratidza varimi zvinotevera: -

- Munogona kuisawo manyowa emudanga kana emucompost mumugero unoda kudyarwa bhinzi musati maisa fertilizer yepasi asi mapedza kuisa lime. Pametre imwe munogona kuisa zvanza zviiri kana zvitatu zve manyowa zvichienderana nehuwandu hwemanyowa amuinawo, fertiliser yepasi yamuinayo pamwe nesimba ramunofunga kuti ririmo mumanyowa enyu.
- Bhinzi dzinoda kuiswawo fertiliser yepasi. Shandisai huwandu nemhando yefetiraiza inenge yayambirwa navenenge vaongorora ivhu renyu.
- Mubhinzi munogona kuisa fetiraiza yepasi ye Compound 'D', 'S' kana 'C' asi kazhinji kana dzisingadiridziwi shandisai compound 'D' nekuti goho ramunotarisa rinenge ririwo pasi zvishoma kudarika repandiridzirwa saka mukashandisa 'S' kana 'C' profit inoderera.
- Kazhinji munoshandisa 200kg – 300kg pahectare imwe chete yebhinzi yefetiraiza yepasi. Onai kuti migero yenyu yese ingareba zvakadii moonawo kuti huwandu hwefetiraiza huri kudiwa hwakadii. Chiwekai kuti munda wese uiswe fetiraiza yakaenzana mungaise magrams (kana kuti kakapu kefetiraiza kenhamba ipi) efetiraiza yakawanda zvakadii pa meter imwe chete. Kana mapedza kuisa fetiraiza munofanira kuivhara zvishoma nevhu kuti isabatane nembeu dzamuchazodyara nekuti mbeu inopiswa nefetiraiza. Zvakare ikarambawo isina kuvharwa, inopera simba.





## Kuvhara chidzidzo

1. Ipa varimi mukana vekubvunza mibvunzo. Ipa vamwe veboka vanzwisisa chidzidzo kuti vapindure. Kana vatadza kupindura. Asi kana iwe watadza nyora pasi mubvunzo vozobvunza murimisiwako pamunosangana.
2. Dzokera pazvinangwa zvechidzidzo ubvunze varimi zvavabata pachidzidzo maererano nechinangwa chimwe nechimwe. Kana paine pasina kunzwisiswa neruzhinji rwevarimi, panoda kudzororwa zvakare.



## Chitsauko chechina: - Kudyara mbeu yebhinzi

### Kugadzirira chidzidzo

1. Verenga zvazazara unzwisise zviri muchidzidzo nezvinoda kuitwa, zuva rechidzidzo risati rasvika
2. Gara waronga kuti uzoratidzire varimi masanganisirwe embeu nemishonga yekuidzimirira kubva kuhudzi nezvirwere isati yasimwa, madonhedzerwe embeu mumugero vekudyara pamwe nemavhariro emugero vabva kudyarwa bhinzi.

### Zvinangwa zvechidzidzo

Tsanangurira varimi kuti panozopera chidzidzo ichi varimi vanenge vava kuziva zvinotevera:-

- Nguva yakanaka kudyara bhinzi
- Kudzimirira mbeu isati yadyarwa kubva kuhudzi pamwe nezvirwere
- Kudyara bhinzi zvakanaka

### Nguva yekudyara

#### Activity 1

Tsanangurira varimi zvinotevera uchivaratidzira maitirwe azvo (demonstration):-

- Nguva yekudyara yakakosha nekuti ikasacherechedzwa zvinokanganisa kubuda kwebhinzi nekunaka kwemhando yebhinzi.
- Unofanira kuziva nekuona nguva yekudyara kuitira kudzimirira kuti dzisavhiringidzwe neunyoro pakubuda kwadzo, kubuda kwemaruva pamwe nekunge makoko akutanga kuita bhinzi mukati. Zvikasaongororwa unorasikirwa nebhinzi. Mvura ikawandisa panguva inotanga kubuda maruva inoita kuti maruva adonhe izvi zvinoderedza goho rinowanikwa. Mvura inofanira kuita shoma kana kushaikwa. Kana kukanaya bhinzi dzakuda kusvika dzinosviba izvi zvinokanganisa unaku hwebhinzi
- Temburicha kana kudziya kunodarika pa32°C kunoita kuti maruva anobuda adzikire kana kudonha. Kukazoitawo kachando zvekare bhinzi dzinokanganisika. Zvese zvinoita kuti goho ridzikire. Sarudza nguva yekudyara zvakangwarira
- Bhinzi dzinokura nekunaiwa nemvura dzinoda mvura iri pa300 kusvika 600 mm inonaya panguva yakareba kubva pamazuva90 kusvika pamazuva120
- Mazuva ekudyara bhinzi dzinodiridzirwa nemvura yekunaya ndeaye anoti kupera kwaZvita kusvika vhiki rekutanga raKukadzi. Mazuva aya ndeembeu inodyarwa munguva yezhizha munzvimbo dziri kuHighveld neMiddleveld. Kana manonokesa modyara musiya 31 Kurume kuti dzisabatwa nechando.
- Bhinzi dzinodyarwa pakati pezhizha kana zhizha rakunopera dzinoita goho rakanaka nekuti zvirwere zvinenge zvave zvishoma. Asi dzinenge dzave kutoda kudiridzirwa uye izvi zvinodhura.
- Bhinzi dzinogona kudyarwa munguva yechando asi muchidiridzira munzvimbo dzisingabatwe nechando dziri kumaLowveld. Dyarai kubva pakati paKubvumbi kusvika kupera kwaChivabvu. Mukanonokesa munofanira kudyara kupera kwaChivabvu kuti dzisabatwe nechahuvhi uye kuti dzisazonaiwa nemvura inosvibisa bhinzi dzacho.



## Kudzivirira mbeu iri kuda kudyarwa kubva kuzvirwere nehudyi

### Activity 2

Tsanangurira varimi zvinotevera uchivaratidza maitirwe azvo (demonstration):-

- Mbeu inogona kutadziwa kumera nezvirwere zvinogona kuibata kana zvipembenene zvepasi pevhu zvinogona kuidya. Zvakare panogona kuita zvipembenene zvinodya mbesa dzichangomera. Zvese izvi zvinoderedza huwandu hwemiti yebhinzi inozovamo mumunda zvinova zvinoderedzawo goho zvakanyanya.
- Inzwa kune varimi kuti kune nzira here dzavanoshandisa kuchengetedza mbesa dzavo dzavanodyara kubva kune zvadonongorwa pamusoro.
- Mbeu inogona kuiswa Thiram muchiisa 35grammes pa50kg yega yega yembeu kuti mudzivirire nekuuraya zvirerwe zvinobata mbeu iyi. Munogona kushandisawo apron star muchiisa 10 grammes pa 4kg dzega dzega dzembeu. Kutu mudzivirire nekuuraya makonye anopinda mudzinde rebhinzi shandisai Cruiser muchiisa 125 grammes pa 50kg yembeu kana Gaucho muchiisa 250 grammes pa 50kg yembeu.

### Kudyara bhinzi

### Activity 3

Tsanangurira varimi zvinotevera uchivaratidzira maitirwe azvo (demonstration):-

- Vavarira kuwana madzinde 150 000 kusvika 200 000 pahactare imwe chete zvichienderana nemhando yebhinzi.
- Kana uchishandisa mitsara yakapatsanurana 45cm siyanisa tsanga imwe neimwe yebhinzi ne 10 – 15 cm.
- Huwandu hwebhinzi mumunda hunoitirwawo kuti masora/bundo asanyanye kuwanda.
- Kana mapedza kudonhedzera bhinzi, vharai nevhu rese rakabuda mumugero iwoyo. Musasiye mugero uchionekera nekuti mvura inogona kuerera nemugero ichienda nevhu kana mbeu uyewo mvura inogona kujenga mumugero zvinokanganisa kumera kwembeu. Zvimwewo zvinogona kuitika ndezvekuti panooma mvura iyoyo inosiya goko rakaomarara pamusoro pemugero zvinoita kuti mbeu itadze kumera zvakanaka.

### Kuvhara chidzidzo

1. Ipa varimi mukana vekubvunza mibvunzo. Ipa vamwe veboka vanzwisisa chidzidzo kuti vapindure. Kana vatadza pindura. Asi kana iwe watadza nyora pasi mubvunzo vozobvunza murimisi vako pamunosangana.
2. Dzokera pazvinangwa zvechidzidzo ubvunze varimi zvavabata pachidzidzo maererano nechinangwa chimwe nechimwe. Kana paine pasina kunzwisiswa neruzhinji rwevarimi, panoda kudzokororwa zvakare.





## Chitsauko chechishanu – Kuisa fetireza yepamusoro (top dressing) muminda ye bhinzi

### Kugadzirira chidzidzo

1. Verenga zvakanzira unzwisise zviri muchidzidzo nezvinoda kuitwa, zuva rechidzidzo risati rasvika
2. Gara waronga kuti uzoratidzire varimi maisirwe efetiraiza yepamusoro mubhinzi

### Zvinangwa zvichidzidzo

Tsanangurira varimi kuti panozopera chidzidzo ichi varimi vanenge vava kuziva zvinotevera:-

- Mhando yefetiraiza yepamusoro inoiswa mubhinzi
- Maisirwe efetiraiza yepamusoro mubhinzi

### Kuisa yefetiraiza yepamusoro mubhinzi

#### Activity 1

Tsanangurira varimi zvinotevera:-

- Bhinzi dzinoda kuiswa fetiraiza yepamusoro yemhando ye ammonium nitrate (AN).
- Bhinzi hadzidi fetiraiza yepamusoro yakanyanya.
- Zvichienderana nezvabuda paongororo yevhu isai 80 -100kg pahactare yeAmmonium Nitrate (AN).
- AN inoiswa maruva ava kuda kubuda asi asati abuda.
- Munoiisa paivhu rine hunyoro.
- Munoiisa AN padivi mosiya 5 cm pakati pechirimwa nefetereza kuitira kuti chisatsva.
- Musaita AN yekumwaya.
- Mukaona kuti pangangoita njodzi yekuti fetiraiza yenyu inga ende yese nemvura yemudenga, isai chidimbu pakutanga, mozoisazve chimwe kwopera masvondo 2-3.

### Kuvhara chidzidzo

1. Ipa varimi mukana vekubvunza mibvunzo. Ipa vamwe veboka vanzwisisa chidzidzo kuti vapindure. Kana vatadza pindura. Asi kana iwe watadza nyora pasi mubvunzo vozobvunza murimisi vako pamunosangana.
2. Dzokera pazvinangwa zvechidzidzo ubvunze varimi zvavabata pachidzidzo maererano nechinangwa chimwe nechimwe. Kana paine pasina kunzwisiswa neruzhinji rwevarimi, panoda kudzororwa zvakare.



## Chitsauko chechitanhatu - Kurwisana nesora muminda ye bhinzi

### Kugadzirira chidzidzo

3. Verenga zvakazara unzwisise zviri muchidzidzo nezvinoda kuitwa, zuva rechidzidzo risati rasvika
4. Gara waronga kuti uzoratidzire varimi mapimirwe emishonga yemasora

### Zvinangwa zvechidzidzo

Tsanangurira varimi kuti panozopera chidzidzo ichi varimi vanenge vava kuziva zvinotevera:-

- Nzira dzasiyana-siyana dzinogona kushandiswa kurwisana nesora mubhinzi
- Kushandisa mishonga yemasora mubhinzi
- Kupima mishonga yemasora

### Nzira dzinogona kushandiswa kurwisana nesora

#### Activity 1

Bvunza varimi kuti nzira dzvanoziwa dzinogona kushandiswa kurwisana nesora/bundo, ramera kana risati ramera. Zvimwe zvinogona kukurukurwawo ndezvinoti:-

- Kurwisana nemasora kuri nyore kana varimi vakashandisa nzira dzasiyana-siyana pamwe chete (integrated weed management) pane kungoshandisa nzira imwe chete.
- Dzimwe nzira dzinogona kushandiswa kurwisana nemasora inzira dzekutodziwirira sora racho kuti risabude (preventive methods). Idzi inzira dzakareruka pane kuzorwisana naro ramera kana rakura. Nzira idzi inzira dzakaita sekugeza zvinoshandiswa mumunda zvakaita semagejo kubvisa mbeu yemasora, kudyara mbeu yakauchikwa isina mbeu yemasora, kushandisa manyowa anobva muthermal compost anenge asina mbeu yesora, nekutogara munda nzira pamwe nepamukowa pasina sora.
- Varimi vanofanirwa kushandisawo nzira dzekurima zvirimwa dzinoita kuti mumunda muite sora shoma dzakaita sekuona kuti chirimwa chavana zvese zvachinoda kuti chikure chakasimba kudarika masora. izvi zvinosanganisira kutevedzera zvinobuda muongororo yevhu (soil test), kushandisa mhando yembeu inokurudzirwa pamwe nekuenderana nenzvimbo yenyu nemarimire enyu, kudyara mbesa dziine huwandu dzakawanda zvine huwandu hunokurudzirwa pazvirimwa izvozvo kuitira kuti zvikwanise kuvhunga sora, kugara muchitarisa mumunda kuona kuti sora, zvirwere nezvipembenene zvavamo here uye hazvisi kukanganisa zvirimwa here uye hazvisati radarika huwandu kana zera rekuti rinourayika zviri nyore here nekuitao crop rotation.
- Kana sora ramera munogona kushandisawo nzira dzinoti:- kurimira pasi negejo kana disc harrow kana munda usati vadyarwa asi kana mava mumunda mune zvirimwa, varimi vanogona kudzura nemaoko, kushandisa mapadza kusakura, kushandisa karivheti/chikoforo kana kuwaridza huswa kana mishonga zvinova zvinotadzisa masora kukura zvakanaka.
- Mishonga yemasora inogona kushandiswawo kudzivirira mbeu yemasora kuti isamere kana kuuraya masora akamera kare asi achiri madiki.

### Kushandisa mishonga yemasora



## Activity 2

Tsanangura zvinotevera:-

- Mishonga yemasora inogona kuiswa mumunda kudzivirira kuti sora risabude kana kuuraya sora rinenge rabuda.
- Zvimwe zvezvinhu zvinogona kutadzisa mishonga yemasora kushanda zvakanaka ndeizvi:- kusaverenga zvakanyorwa pamushonga, kushandisa nozzle isiyo, kuisa mishonga usivo uye pasipo, mashanga pamusoro pevhu zvinotadzisa mishonga kupinda mvhu, mamwe masora anogona kunge asinga urayiwi nemhando yemushonga vashandiswa (mishonga inogona kusanganiswa kuti iuraye mhando dzemasora dzakati wandei), ivhu rinogona kunge risina hunyoro hwakakwana kana kuti panoshaiwa mvura inonaya kana kudiridzirwa kumashure kwekunge mishonga wamwaiwa, kuisa mishonga mushoma pane huwandu hunokurudzirwa zvichikonzeresa nekutadzisa kupima mishonga (calibration) kana kuda kuchengetedza mari kana kumwaya mishonga masora akurisa.
- Pane mishonga inogona kushandiswa kuuraya masora akamera kare asi pamunda pasati padyarwa yakita reparauat neround-up inowa mishonga. Iyi mishonga yekuti ikaiswa pane zvinhu zvamera inouraya zvese kusanganisira mbesa dzese.
- Imwe yemishonga yemasora inogona kushandiswa muchangodyara ndeinoti: - Metalachlor, Metribuzin, Bateleur gold. Munofanirwa kucherechedza kuti mishonga iyi ishanda zvinoda ivhu riine mwando wakati wandei kana kuti muchizodiridzira zvisoma mumashure mekunge maisa mishonga kuti mishonga ufambe kupinda mvhu. Pakumwaya mishonga iyi, shandisa flat fan nozzle.
- Imwe yemishonga inogona kushandiswa kana sora ramera ndeinoti:- Fusilade, Basagran, Agyl.

Kupima mishonga wemasora (knapsack calibration)

## Activity 3

Ratidzira varimi uchivatsanangurira zvinotevera. Itai izvi muchishandisa mienzaniso yemishonga yakasiyana siyana inoda kumwaiwa nehuwandu hwakasiyana siyana pahectare, kusvika munhu wese ari muboka revadzidzi avakuzvigona:-ishonga yemasora inenge yakanyorwa huwandu hwemushonga hunodiwa pahectare zvichireva kuti mishonga unofanirwa kumwayiwa zvakanaka uye zvakaenzana munda wese kuti mishonga upererane nemunda. Kumwaya mishonga kunoda kuti ari kumwaya mishonga afambe zvakaenzana kubva pakutanga kusvika pakunopedza (constant speed) pamwe nekumwaya zvakaenzana (swath) zvakaenzana kuti mishonga uiswe zvakanana zvakaenzana munda wese. Zvinhu izvi zviru zviiri zvinofanirwa kuonekwa kuti zvichange zvakadii, musati matanga kumwaya.

1. Gezai knapsack, mastrainers nemanozzles
2. Onai kuti hapana pari kuduza here uye chinjai manozzles kana asiri kumwaya mvura zvakanaka.
3. Pimai chindhambwe chakafanira (chakaita 50m)
4. Pimai nguva yamunotoro kufamba chindhambwe ichocho semunhu ari kufamba makarimwa uye akatakura achange achifamba kwenguva yakati rebei.
5. Pombai knapsack modzikisa nozzle kusvika pamunofunga kuti munopedza munda wese iri. (Hamuzofanirwi kuzokwidza kana kudzikisa – kazhinji munokurudzirwa kushandisa 50cm) momwaya pasi makamira, mopima kuti knapsack pairi kumwaya pakafara sei.
6. Isai mvura muknapsack womwaya mvura mugaba kwenguva yakareba zvakaenzana nguva yazvinotoro kufamba chindhambwe chavasarudza (se50m)
7. Chiweka zvinotevera kuti uone kuti muknapsack yega yega munoda kuiswa mishonga wakawanda zvakadii kuti mishonga unatse kupererana nemunda wako maererano nemafambire auchaita (speed), mabudire ari kuita mishonga muknapsack (flow rate) pamwe nemafarire ekumwaya kwedu (swath).





- Area sprayed (m<sup>2</sup>) = Swath (m) x Distance(m)
- Discharge Rate (l/ha) = [Amount of measured water (litres) ÷ Area Sprayed (m<sup>2</sup>)] x 10 000
- Amount of Herbicide/Knapsack (litres) = [Recommended Rate (l/ha) ÷ Discharge Rate (l/ha)] x Tank Capacity (litres)

#### Kuvhara chidzidzo

1. Ipa varimi mukana vekubvunza mibvunzo. Ipa vamwe veboka vanzwisisa chidzidzo kuti vapindure. Kana vatadza pindura. Asi kana iwe watadza nyora pasi mubvunzo vozobvunza murimisi vako pamunosangana.
2. Dzokera pazvinangwa zvechidzidzo ubvunze varimi zvavabata pachidzidzo maererano nechinangwa chimwe nechimwe. Kana paine pasina kunzwisiswa neruzhinji rwevarimi, panoda kudzokororwa zvakare.



## Chitsauko chechinomwe – kudiridzira bhinzi

### Kugadzirira chidzidzo

1. Verenga zvakazara unzwisise zviri muchidzidzo nezvinoda kuitwa, zuva rechidzidzo risati rasvika

### Zvinangwa zvechidzidzo

Tsanangurira varimi kuti panozopera chidzidzo ichi varimi vanenge vava kuziva zvinotevera:-

- Kudiridzira bhinzi zvakanaka

### Kudiridzira bhinzi

#### Activity 1

Tsanangurira varimi zvinotevera:-

- Midzi mizhinji yebhinzi iri mu200mm (20cm) dzekumusoro kwevhu, naizvozvo kana tichidiridzira bhinzi tinofanira kuisa mvura shoma panguva imwe neimwe.
- Kazhinji panguva imwe diridzirai 35 – 40mm muvhu rakati simbei ne 25 – 30mm paivhu rakaita jecha panguva imwe chete.
- Huwandu hwemvura hunosiyanawo nenguva inenge yakadyarwa bhinzi nemhando yevhu sezvinotevera:-

Mhando yevhu	Madiridzirwe ebhinzi dzinenge dzadyarwa chando chava kunopera (Late winter)		Madiridzirwe ebhinzi dzinenge dzadyarwa zhizha rava kunopera (Late summer)	
	Kubva pakumera kusvika pakutanga kuita maruva	Kubva pakutanga kuita maruva kusvika pakukohwa	Kubva pakumera kusvika pakutanga kuita maruva	Kubva pakutanga kuita maruva kusvika pakukohwa
Ivhu rakakora	40 mm pamazuva mapfumbamwe 9 ega ega	40 mm pamazuva mashanu5 ega ega	40 mm pamazuva gumi10 ega ega	40 mm pamazuva masere 8 ega ega
Ivhu rakaita jecha	30 mm pamazuva manomwe 7 ega ega	30 mm pamazuva mana 4 ega ega	30 mm pamazuva masere 8 ega ega	30 m pamazuva 6 matanhatu ega ega



## Activity 2

Bvunza varimi mibvunzo iyi mukurukure mhinduro dzinobuda:-

1. Huwandu hwemvura huri kusiyana sei maererano nenguva yekudyara? Sei zvakadai?
2. Huwandu hwemvura huri kusiyana sei maererano nemhando yevhu? Sei zvakadai?
3. Kusiyana kwemazuva kubva patinodiridza nepatinozotarisa kudiridza zvakare kuri kusiyana sei maererano nenguva yekudyara? Sei zvakadai?
4. Kusiyana kwemazuva kubva patinodiridza nepatinozotarisa kudiridza zvakare kuri kusiyana sei maererano nemhando yevhu? Sei zvakadai?

## Kuvhara chidzidzo

1. Ipa varimi mukana vekubvunza mibvunzo. Ipa vamwe veboka vanzwisisa chidzidzo kuti vapindure. Kana vatadza pindura. Asi kana iwe watadza nyora pasi mubvunzo wozobvunza murimisi vako pamunosangana.
2. Dzokera pazvinangwa zvechidzidzo ubvunze varimi zvavabata pachidzidzo maererano nechinangwa chimwe nechimwe. Kana pane pasina kunzwiswa neruzhinji rwevarimi, panoda kudzororwa zvakare.





## Chitsauko chechisere – Kurwisana nezvipembenene nezvirwere

### Kugadzirira chidzidzo

1. Verenga zvakazara unzwisise zviri muchidzidzo nezvinoda kuitwa, zuva rechidzidzo risati rasvika

### Zvinangwa zvichidzidzidzo

Tsanangurira varimi kuti panzopera chidzidzo ichi varimi vanenge vava kuziva zvinotevera:-

- Kushandiswa kwenzira dzakasiyana siyana pamwe chete kurwisana nezvirwere nezvipembenene (Integrated Pest and Disease Management)
- Zvipembenene zvinonyanya kuwanikwa mubhinzi mamarwisirwe azvo
- Zvirwere zvinonyanya kuwanikwa mubhinzi mamarwisirwo azvo

Kushandiswa kwenzira dzakasiyana siyana pamwe chete nekurwisana nezvirwere nezvipembenene (Integrated Pest and Disease Management)

### Activity 1

Tsanangurira varimi zvinotevera:-

- Varimi vebhinzi vanokurudzirwa kuti vashandisewo pamwe chete nzira dzakasiyana siyana dzekudzivirira nekuuraya zvipuka nezvirwere vasingashandisi mishonga yekutenga chete.
- Garai muchiita crop rotation
- Musape mukana kumasora kuti akure mumunda
- Deredzai kuvhiringidzwa kwezvirimwa nezvirwere nezvipembenene nekukurumidza.
- Dyaraiwo zvirimwa zvese nenguva dzinotenderwa uye kukasika kurima mumwaka kuitira kuti zvirwere nezvipembenene zvisabate mbesa ichiri diki isati yabereka.

### Zvipembenene zvinonyanya kuwanikwa mubhinzi

### Activity 2

Varimi ngavadome zvipembenene zvavanosangana nazvo mubhinzi pamwe nemamirwe azvo pamwe nezviratidzo zvinoratidza kuti chipembenene chapinda mumunda. Ita uchiratidza varimi mifananidzo iri padzasi pamwe nekutsigira nezviri mutable iri padzasi pemifananidzo:-

1. Bean stem maggot

*Mufananidzowebean stem maggot nezvainoita kuzvirimwa*





2. Cutworm

*Mifananidzo yecutworm necutworm pabhinzi*



3. Nhata (aphids)

*Mifananidzo yenhata mubhinzi*







4. Bean foliage beetle

*Mifananidzo ye bean foliage beetle nezvainoita mubhinzi*



5. Blister beetle (CMR beetle)

*Mifananidzo yeblister/CMR beetle iri mubhinzi*



6. Zvipembenene zvinoboora makanda ebhinzi (Pod borers)





*Mifananidzo yezvipembenene zvinoboora makanda ebhinzi*

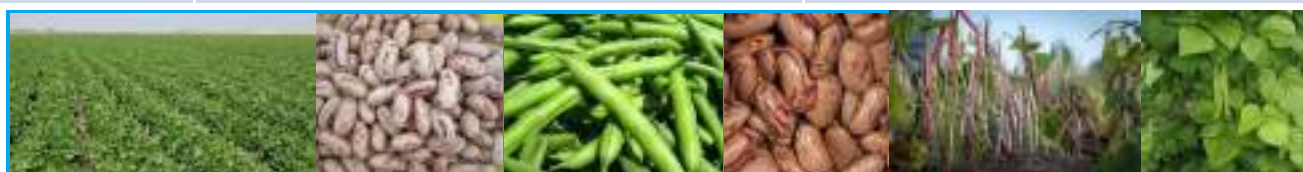


7. Zvipembenene zvinosveta muto mubhinzi (sap sucking pests) – Giant coreid bug, Spiny brown bug, Green stink

*Mufananidzo wezvipembenene zvinosveta muto mubhinzi*



Zvipembenene	Zviratidzo nemakanganisirwe anoitwa zvirimwa nezvipembenene	Mushonga kana nzira dzinogona kushandiswa kudziirira kana kuraya zvipembenene
Bean stem maggot	Mbesa dzichangomera dzinosvava Gonye racho rinogara kudzasi kwedzinde rembeu rokanganisa kufamba kwechikafu	Isai mbeu yenyu Apron Star pakudyara Mwayai Diazinon pamazuva 3, 6, 13 ne 20 mbeu yabva kumera
Cutworm	Inodya nekudimbura dzinde rembesa dzichangobva kumera nechekuzasi kwaro	Shandisai cabaryl
Nhata (Aphids)	Nhata sviba dzinomwa muto pamwoyo wechirimwa	Unogona kushandisa Dimethoate kana Malathion 50% kana Endosulfan 35%.
Bean foliage beetle	Dzinonyanya kuonekwa muhuvandu mumashure memvura yekutanga Munoono kuti dzava mumunda nekutsemuka kana kuboowa kwakanyanya kwemashizha. Makonye acho anodya midzi zvinozoonekwa nema kamba makamba eyellow pamashizha	Shandisai cabaryl
Blister beetle/CMR beetle	Anodya maruva. Mateko ebhinzi haazari zvakakwana nevana	Shandisai cabaryl
Zvipembenene zvinoboora makanda ebhinzi	Makonye anoboora odyo vana vari mukati memakanda asi anogona kusapinza muviri wese mumakanda	Crop rotation inogona kubatsira zvakanyanya kudzivirira zvipembenene izvi Shandisai cabaryl kana monocrotophos
Pod sucking bugs (Giant coreid bug, Spiny brown bug, Green stink)	Zvino boora makanda ebhinzi, zvosveta muto uri mukati mevana vari mukata. Izvi zvinooresa nekusvavisa vana kana makanda acho ese. Zvinoitawo kuti mbeu iyi ikadyarwa itadze kumera.	Shandisai Monocrotophos kana Endosulfan kana Cypermethrin
Heliothus bollworm	Inoboora moyo vechirimwa	Shandisai Endosulfan
Red spider mite	Inogadzira dandemutande pasi peshizha rinoita kuti shisha rite ruvara rwe silver vozoona shisha raaku kokonyara.	Shandisai Malathion 25%
Makonye (Loopers)	Zvinodya mashizha nevana vebhinzi	Shandisai Cabaryl





Zvirwere zvinonyanya kuwanikwa mubhinzi

### Activity 3

Varimi ngavadome zvirwere zvavanosangana nazvo mubhinzi pamwe nezvinoratidzo zvazvo. Ita uchiratidza varimi mifananidzo iri padzasi pamwe nekutsigira nezviri mutable iri padzasi pemifananidzo:-

#### 1. Anthracnose

*Mufananidzo yebhinzi dzine anthracnose*





2. Bacterial blight

*Mufananidzo webhinzi dzine bacterial blight*



3. White mould

*Mufananidzo webhinzi dzine white mould*



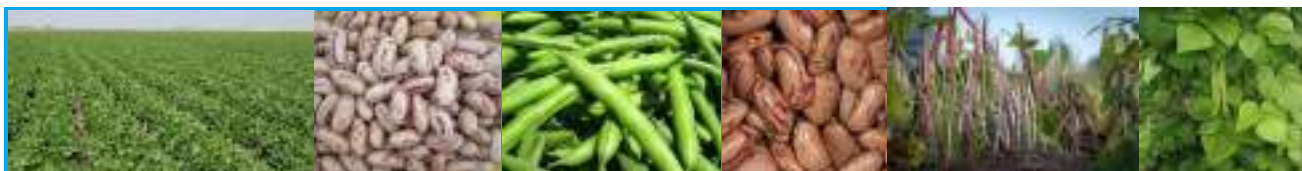
#### 4. Powdery mildew

*Mifananidzo yebhinzi dzine powdery mildew*



Zvirwere	Zviratidzo nemakanganisirwe anoitwa zvirimwa nezvirwere	Mushonga kana nzira dzinogona kushandiswa kudziirira kana kupedza zvirwere
Anthracnose	Chinotanga semavara matema anotevedza tsinga pasi pemashizha. Panoitawo mawara pamateko akatenderedzwa neruvara rutema rakapoterredzwawo neruvara rwutsvuku Mateko madiki anogona kusvava ooma asati asvika	Varimi vanogona kuisa mishonga inodzivirira yakaita se Ridomil gold kana Mancozeb Shandisai mbeu yakauchikwa isina zvirwere Itai crop rotation nguva nenguva
Bacterial blight	Pasi pemashizha nemateko ebhinzi anoita mavara akatenderera anoita seanokonzerwa nemvura yagara ikaomera ipapo Kutsukuruka kwemashizha Dzinde rinogona kuora panobatira mashizha ekutanga pamwe nekutyoka	Shandisai mbeu isina chirwere yakauchikwa. Mbeu inogona kuiswawo mishonga ine Copper Sulphate yakaita seMicronized, Basicop 53WP, Blue stone. Itai crop rotaion nguva nenguva Munogona kumwayawo mishonga yakaita se Copper Oxychloride kudzivirira chirwere ichi kanawo Micronized, Basicop 53WP, Kocide 4.5LF and Streptomycin mumunda wese kana panzvimbo pane chirwere chete.
Rust	Mavara akaita brown pamashizha epasi akatenderdzwa nekuvara rweyellow	Shandisai Mancozeb kana Score
White mould	Chirimwa chinoita mawara akaita greyish-green anoita sekunge pakaendwa nemvura ikaomerapo. Zvirimwa zvinogona kungotanga nekungooma kumashizha. Vana vanokanganiswa vari mukati memakwati	Taramutsai mbeu yenyu zvakafanira kuitira kufamba zvakanaka kwemhepo.
Powdery mildew	Mashizha anocheneruka seane dota	Kurima mhando (varieties) dzisingabatwi nyore nechirwere ichi Kurima mhando dzebhini dzinokasika kusvika Mafungicides eneSulphur

Kudzivirira zvirwere zvebhini varimi vanokurudzirwa kumwaya Copper oxychloride ne Dithane M45 vachiti vakamwaya imwe vhiki rino, vhiki rinouya vomwaya imwe yacho. Vanofanirwa kumwayawo bravo panopera





mavhiki mairi ega ega. Kumwaya uku kunofanirwa kutanga papera mavhiki mairi, mbeu yamera kana kuchinge kuchipisa uye mumhepo muine mwando vakawanda, asi kana kwakanaka, zvinogona kuzotanga mbeu yati kurei. Kudzivirira zvirwere zvemashizha kwakakosha nekuti mashizha ndivo anogadzira chikafu chinoenda kumbesa.

### Kuvhara chidzidzo

3. Ipa varimi mukana wekubvunza mibvunzo. Ipa vamwe veboka vanzwisisa chidzidzo kuti vapindure. Kana vatadza pindura. Asi kana iwe watadza nyora pasi mubvunzo vozobvunza murimisi wako pamunosangana.
4. Dzokera pazvinangwa zvechidzidzo ubvunze varimi zvavabata pachidzidzo maererano nechinangwa chimwe nechimwe. Kana paine pasina kunzwiswa neruzhinji rwevarimi, panoda kudzokororwa zvakare.



## Chitsauko chechipfumbamwe – kukohwa bhinzi nekugadzira bhinzi

### Kugadzirira chidzidzo

1. Verenga zvazazara unzwisise zviri muchidzidzo nezvinoda kuitwa, zuva rechidzidzo risati rasvika
2. Gara varonga kuti uzoratidzire varimi masanganisire emushonga vekuchengetedza mbesa mudura nembesa

### Zvinangwa zvichidzidzidzo

Tsanangurira varimi kuti panozopera chidzidzo ichi varimi vanenge vava kuziva zvinotevera:-

- Nguva yekukohwa bhinzi
- Kukohwa, kuomesa, kupura, kupepeta nekusarudza bhinzi zvakanaka
- Kuisa mushonga wekuchengetedza bhinzi dzakohwewa
- Kuchengetedza bhinzi

### Nguva yekukohwa bhinzi

#### Activity 1

Muzvikwata zviiri varimi ngavakurukure kuti ndezvipi zvinoratidza kuti mbesa iri mumunda yaibva. Kana vanhu vapedza ngavataurire vamwewo zvavabuda nazvo: - Tsigira zvabuda muhurukuro nezvinotevera:-

- Mbeu inowanzosvika mazuva 90-120 kubva painenge yadyarwa.
- Kana bhinzi dzaibva, mashizha anoita ruvara rwe yellow odonha
- Makoko mazhinji anenge ava kuratidza ruvara chairwo rwe mhando yembeu
- Bhinzi rinoparadzana negoko mukati
- Kana chikamu 95% chemakoko acho chava neruvara rwekuibva munda unofanira kukohwewa.

### Kukohwa, kuomesa, kupura, kupepeta nekusarudza bhinzi

#### Activity 2

Isa varimi mumapoka mashanu. Ipa boka rimwe nerimwe kuti vakurukure zvinofanirwa kucherechedzwa pakukohwa bhinzi mumunda, kuomesa dzichiri mumakwande, kupura, kuomesa bhinzi dzapurwa, kupepeta nekusarudza bhinzi. Hurukuro yenyu inogona kusanganisirawo nzvinotevera:-

### Kukohwa bhinzi

- Kana beans dzenyu dzichitambara kana kuti dziri dzemhando iye inoti ikawana mvura inotanga zvakare kubereka (indeterminate variety) kohwai vana vacho vari mumakwati musingadzuri dzinde racho. Vakohwei pamunongoona kuti vasvika.
- Kohwai bhinzi kuchiri kuseni zuva risati rakwira kuitira kuti mateko acho asabaduke zvinozoita kuti murasikirwe nebhinzi pakukohwa.
- Itai zvekudzura madzinde acho muchiaunganidza mumunda. Onai kuti hadzigari pavhu chaipo nekuti dzinogona kutora zvirwere.
- Musasiye bhinzi dzichiomera mumunda nekuti dzinogona kubatwa nezvirwere kana kudyiwa nezvipembenene, zvipfuyo kana mhuka dzesango.
- Musaita kuti bhinzi dzigarise mumunda musati madzitakura kuenda kumba nekuti dzikaomesa dziri mumunda dzinozobaduka pakutakura uye tsnag dzacho dzinozotsemuka nyore pakupura



### Kuomesa bhinzi dzichiri mumakwande

- Kupura bhinzi dzichangobva mukukohwewa kunoita kuti dzipwatike nekuti dzinenge dzisati dzaoma zvakakwana.
- Kana muchiomesa bhinzi, itai kuti dziome dziri mumakwande atanhaurwa kubva padzinde.
- Musawaridze bhinzi pasi nekuti dzinotora mavhu, dzinogona kutora hunyoro kana kudyiwa nezvipfuyo. Varidzai tende pasi kana kuyanika pakavakirwa pakakwirira paine simende, pakatsvairwa pakachena.
- Munogona kuomesera bhinzi dzenyu mumatara ekuomesera chibage.
- Kana pekuomesera pagadzirwa onai kuti maparadzira bhinzi dzenyu zvakanaka kuti dzese dziwane mukana wekuoma wakaenzana.
- Pamunenge muchiparadzira bhinzi dzenyu, munogona kutora mukana uyu kubvisawo zvimwe zvinhu zvakaita semasora zvinenge zvakabatana nebhinzi dzenyu kunyangewo nemakwandi ebhinzi amunoona kuti haana kusvika zvakaenzana nedzimwe.

### Kupura bhinzi

- Vakai dara rekupurira bhinzi rakana rinoita kuti bhinzi dzisarasi kure kunonetsa kuzodzidyorera.
- Onai kuti bhinzi dzamunoda kupura dzaoma zvakakwana uye hadzina kuomesesa.
- Pakupura shandisaiwo simba rine mwero wakafanira zvinoita kuti tsanga dzebhinzi dzisatsemuke.
- Onaiwo kuti tsanga dzebhinzi hadzisi kurasikira pasi pane ivhu.
- Cherechedzai kuti hapana marara ari kupindira pane mbeu.

### Kuomesa bhinzi dzapurwa

- Kana bhinzi dzapurwa dzinofanirwa kuomeswa zvakare.
- waridzai tende pasi kana kuyanika pakawakirwa pakakwirira paine simende, pakatsvairwa pakachena.
- warirai bhinzi dzenyu dzisina kunya kuturikidzana kuti kuti mhopo inoomesa ifambe zvakanaka nemutsanga dzese dzebhinzi.
- Kana padarika kachinguva, munofanirwa kumbopindura bhinzi dzacho kuti dzinenge dziri pasi dzimboendawo pamusoro kuitira kuti bhinzi dziri pamusoro dzisanyanye kutsva nezuva.
- Kutu muone kuti bhinzi dzenyu dzaoma zvakakwana munogona kushandisa nzira dzinotevera
  1. Munogona kuruma tsanga pakati pemazino.
  2. Munogona kuedzawo kuidzvanyidzira tsanga yebhinzi pakati pezvigumwe.
  3. Munogona kuisa bhinzi shoma mugaba rine sauti, movhara, mochukucha. Mukaona sauti ichinamira kumadziro kwegaba zvinoreva kuti bhinzi dzenyu dzichine hunyoro hwakanyanya. Asi mukaona sauti isina kunamira kumadziro kwebhodhoro zvinoreva kuti hunyoro hwanaka kuti dzipurwe. dzisisina

### Kupepeta nekusarudza

- Tinopepeta kuti tibvise hunde nemamwe marara anogona kunge apindira mumbeu
- Kana mapedza kupepeta, bvisai tsanga dzisina kunatsa kusvika, tsanga dzine chirwere, tsanga dzakapaduka, netsanga dzinoratidza kuti ndedzeimwewo mhando yebhinzi isiri yamuri kuda.
- Izvi zvinogona kuitirwa pane kadara kakagadzirwa ne wire mesh nekuti dzimwe mbesa dzisina kusvika sezvinodiwa nemarara, zvinobva dzangodonhera pasi zvega.





## Kuisa mushonga mumbeu

### Activity 3

Tsanangurira varimi kuti tinoona sei kuti toshandisa mushonga wakawanda sei. Kana vapedza izvozvo ipa mapoka mana huwandu hwembesa hwakasiyana-siyana vakuudze kuti hunoda mapaketi mangani emushonga. Kana mapedza izvi, ratidzira varimi masanganisirwe emushonga nembesa sezviri muchitsauko 2 chendima ino.

#### 1. Toshandisa mushonga wakawanda sei?

- Gaba kana bepa romushonga rakanyorwa kuti makirogiramu mangani embesa angasanganiswa nemushonga uyu somuenzaniso. “mushonga uyu unokwanisa kuiswa pa100kg dzembesa”.
- Kana une 50kg dzembesa zvino unofanira kushandisa hafu yemushonga uri mugaba rako kana une 200kg dzembesa unenge woda magaba maviri omushonga mumwe chete iwoyo zvichiyenda zvakadaro.
- Munogona kuweka huwandu hwemapaketi anodiwa muchishandisa zvinoti:-

Nhamba yemapaketi = Nhamba yema kg embesa arikuda kuchengetedzwa

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Nhamba yema kg embesa anochengetedzwa nepaketi imwechete



## 2. Kusanganisa mbesa nemushonga

(a) Bvisa mbesa dzako musaga rimwe kana maviri woita dutu panzvimbo yakachena Pakaita sepasamende, patende kana bepa etc. paivhu chaipo.



(b) Mwaya mushonga pamusoro pembesa wakafanira padutu rembesa yako uchicherechedza kuti hapana mhengo inotora kwete mushonga



(c) Chishandisa foshoro kusanganisa mbesa dzako nemushonga wanyatsoona kuti zvasangana zvakanaka.



(d) Bvisa dutu rembesa yako pariri kusvika uchiisa pane rumwe rutivi nefoshoro



(e) Dzorera mbesa paya payambobva



(f) Chifoshorera kwawambotanga kufoshorera



(g) Paunenge wapedza hapafaniri kumboonekwa mushonga wakaungana panzvimbo imwe chete pambesa. Uchishandisa foshoro yako zvineungwaru, chiisa mbesa yaiswa mushonga mumasaga kana painofanira kuchengeterwa. Geza maoko ako zvakasimba uchishandisa sipo



## Kuchengetedza bhinzi

### Activity 4

Tsanangurira varimi zvinotevera:-

- Bhinzi dzinochengetwa kuti dzizodyiwa pamba, kuita mbeu kana kuona kuti mitengo yakadii kumisika dzozotengeswa.
- Chengetai zvakana kuti dzirambe dzakawanda uye mhando yacho irambe yakanaka.
- Kuderedza mukana wekuti dzinganyorove kana kushata chengeterai munzvimbo dzakaoma (dziine unyoro huri pa11% kusvika pa13%) dziine hutano uye dzakachena musina zvipuka.
- Varimi ngavazive kuti mishonga iyi ine njodzi kuvanhu. Nyatsokuchenesa bhinzi musati madzidya. Kana muchinge machengeta bhinzi munofanira kupota muchitarisa pamakadzichengetera kuti hadzisi kukanganisika here.
- Rambai muchidzigadzirira nguva dzose.

## Kuvhara chidzidzo

1. Ipa varimi mukana wekubvunza mibvunzo. Ipa vamwe veboka vanzwisisa chidzidzo kuti vapindure. Kana vatadza pindura. Asi kana iwe watadza nyora pasi mubvunzo wozobvunza murimisi wako pamunosangana.
2. Dzokera pazvinangwa zvechidzidzo ubvunze varimi zvavabata pachidzidzo maererano nechinangwa chimwe nechimwe. Kana paine pasina kunzwisisa neruzhinji rwevarimi, panoda kudzokororwa zvakare.





## Chitsauko chegumi – Kutengesa bhinzi

### Kugadzirira chidzidzo

1. Verenga zvakazara unzwisise zviri muchidzidzo nezvinoda kuitwa, zuva rechidzidzo risati rasvika

### Zvinangwa zvechidzidzo

Tsanangurira varimi kuti panozopera chidzidzo ichi varimi vanenge vava kuziva zvinotevera:-

- Matengeserwe ebhinzi

### Misika yebhinzi nemashandisirwo ebhinzi

#### Activity 1

Tsanangurira varimi zvinotevera:-

- Garai muchiziva kuti misika yebhinzi yakasiyana siyana inodawo mhando dzakasiyana-siyana dzebhinzi zvichienderana nekushandiswa kwadzo bhinzi idzi. Mitengo inosiyana zvichienderana nemhando yebhinzi dzacho uye nenguva yadzinotengeswa.
- Tsvagai ruzivo rwekumusika kubva kune mapoka evarimi, AMA, Agritex kana kuEcofarmer Call Centre panhamba dzinoti 144 (Econet Lines).
- Panogona kuitawo mari yakati wandei pakutengeswa kwebhinzi nyoro. Tsvagai ruzivo mutsvage musika bhinzi dzisati dzakura kana muine urongwa hwekudzitengeswa dziri nyoro.
- Munogona kukohwa modya henyu bhinzi nyoro dzisati dzanyatsooma. Kazhinji kana dzakadai dzinokurumidza kuibva izvi zvinochengetedza magetsi kana huni. Munogona kudziisa muchando kuti muzodzidya henyu kana modzida henyu
- Kana varimi vachinge varima pamwe chete vakakohwa mhando yebhinzi yakafanana yakawanda vanofanira kutengesa vakabatana. Mukana wekuwana mutengi ane mari yakawanda unenge uripo. Bhinzi dzakawanda dzinogona kuita kuti muwane mari yakati wandei sezvo mari yekutakurisa kuenda kumiska inenge yakaderera uye zvekare hazvinetse kuti mutengi atengewe.
- Kana muchirongedza bhinzi zivai kuti misika inotevera mitemo inogona kutarisa makuriro akaita bhinzi dzacho, unyoro hwebhinzi dzacho, zera, kuchena dzakanangisika uye kufanana, nemhando yebhinzi. GMB inoda bhinzi dzegrade A dzinenge dzine unyoro huri pasi 11%, matombo ariwo pasi pe0.5%, dzine ruvara rwepurple dziri pasi pe1%, dzisiri dzemhando imwe chete dziri pasi pe2% dzakatsemuka dziri pasi pe10%, dzakanangisika dziri pasi pe2.5%.

### Kuvhara chidzidzo

1. Ipa varimi mukana wekubvunza mibvunzo. Ipa vamwe veboka vanzwisisa chidzidzo kuti vapindure. Kana vatadza pindura. Asi kana iwe watadza nyora pasi mubvunzo wozobvunza murimisi wako pamunosangana.
2. Dzokera pazvinangwa zvechidzidzo ubvunze varimi zvavabata pachidzidzo maererano nechinangwa chimwe nechimwe. Kana paine pasina kunzwisiswa neruzhinji rwevarimi, panoda kudzororwa zvakare

