

# MLOZO WAKALIMIDWE KOSAKANIZA MITENGO NDI MBEWU ZOSIYANASIYANA

— Samalani chilengedwe ndipo chilengedwe chidzakusamalani —



March 2024



# MLOZO WAKALIMIDWE KOSAKANIZA MITENGO NDI MBEWU ZOSIYANASIYANA

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Ndikuthokoza Mulungu mwapadera chifukwa chondipatsa mphamvu komanso luntha pa ntchitoyi pobweretsa anthu oyenera kuti ntchitoyi itheke. Anthu ochuluka agwirana manja kuti ntchitoyi itheke, zikomo kwambiri kwa aliyense yemwe anathandiza ntchitoyi ndipo mukudzidziwa.

## **ULIMI WA KASAKANIZA WA MBEWU NDI MTENGO**

Uwu ndi ulimi wosakaniza mitengo ndi mbewu zosiyanasiyana mwa chilengedwe womwe phindu lake ndi lalikulu komanso kubweretsa kusintha pa ulimi wa makono.

## **CHYAMBI CHA ULIMIWU**

Kalimidwe kosakaniza mbewu ndi mitengo kanayambitsidwa ndi Ernst Goetsch. Ubwino wake ndi woti chilengedwe chimagwiritsidwa ntchito pofuna kukonza nthaka poyisintha kuti ikhale ya chonde komanso kuti isinthe kukhala nthaka yosabala ndi kukhala ndi zomera zochuluka pamwamba pake.

Ernst anapeza kuti dongosololi limayendetsedwa ndi zamoyo zachilengedwe komaso kupindulira zamoyo zomwezo. Izi ndi zosiyana ndizomwe Darwin adanena zoti dongosololi limatheka lokha potengera mpikisano wa zachilengedwezi womwe ungawoneke ngati mpikisano kapena chionongeko ku zachilengedwe, koma ndi njira



yokhayo yobweretsa kudalirana ndi kupindulirana mofanana mu dongosolo lonse la zochitikazi kapena tchitoyi.

Ndi mchitidwewu, ulimiwu ukutengedwa ngati njira yanzeru komaso yokhazikika yomwe ibweretse kusintha pakutha kwa nthawi. Kuti izi zitheke pali kudalirana pakati pa zomera ndi zinyama ndipo mbali zonse ndizofunika pa ntchitoyi. Ngati ubale wambewu ndi nyama (tizilombo) ukupititsidwa patsogolo ndi mlimi, munda umakhala wamphamvu, wathazi komanso wamuyaya.

Kuti izi zitheke mlimi amabzala mbewu zomwe sizimadyedwa koma zimathandizira kwakukulu ku munda monga mitengo ndi mbewu zina zomwe zimabweretsa chonde mnthaka, komanso mlimi amasakaniza mbewu zomwe zimapereka zokolola zopindulitsa kwakukulu komanso zimakhala zofunika. Mbewuzi ndi mitengoyi zimabzalidwa malo amodzi moyandikana mwanjira yoti zidzithandizana, mulimi amakhalanso ndi chidziwitso pa momwe zomerazi zimakulira zikasengulidwa komanso zikadulidwa mu nthawi yake pofuna kuthamangitsa makulidwe ake.

Pakapita zaka zochepe njira yakalimidweyi imadzikonza yokha, monga kudzithilira, kudzipatsa chakudya chofunika ku zomera, kudziteza ku matenda komanso zomera zina zosafunika zimatha zokha kufa (kutha), chofunika kwambiri ndi luntha ndi kasamalidwe kabwino ka Mlimi ku zomerazi .

Zomerazi zimadziteza bwanji ku matenda? mchimodzimodzi ngati mthupi la munthu muli tizilombo tina tamphamvu tolimbana tolimbana ndi tizilombo tomwe tingabwere kudzaononga thupilo, timatha kungonjetsedwa mosavuta .

Izi ndi zofanana ndi munda omwe mlimi wasamala bwino. Kuti izi zitheke, mpofunika kuti zamoyo zonse zisamalidwe moyenera pofuna kupanga nkhalango yamoyo, izi zikatheka munda sumagwidwa ndi matenda komanso umapereka zokolola zochukula . Mulimi ayenera kuyika dongosolo komanso kukhala ndi masomphenya ndi kasamalidwe ka munda wake kufika nthawi yokhwima mbewu ndi mitengo komaso kukhala ndi luso lakasenguliridwe ka mitengo,ndipo zikatero mundawo umadzisamalira wokha.

Ulimiwu umadalira nzeru pa kasakanizidwe kambewu ndi kabzalidwe ka mbewu potengera mtundu wake ndi kakulidwe kake . Mulimi ayenera kudziwa mbewu komanso mitengo yomwe ikhoza kukulira pamodzi mopanda vuto . Izi ndi zofanana ndi kabzalidwe ka mbewu zosiyanasiyana mwa kasakaniza. koma izi ndi zofunika chidwi chambiri chifukwa pamafunika kudziwa kufunika kwa mbewu iliyonse ndi ntchito ya mbewu iliyonse pothandizira mwa chilengedwe kamba koti zimatengera kapiliridwe ku chilengedwe kuti mbewu zichite bwino. Mbewuzi zimasakanizidwa potengera moyo wake monga zina zimakololedwa koyambirira kwa moyo wake zina kumapeto kwa moyo wake choncho mulimi ayenera kukhala ndi ndondomeko yoyenera yakabzalidwe potengera masomphenya a kakololedwe mtsogolo. Mwachitsanzo, poyamba kuyamba ndi mbewu zokhwina mnsanga kenaka mbewu monga zipatso ndipo pomaliza mitengo ya matabwa, monga ndanena kale mbewu



zina zimabzalidwa pofuna zokolola zake ndipo zina kuti zibwezeretse chonde mthaka ndikuyikonza patsogolo .

Ulimi wantunduwu umagwiritsidwa ntchito pofuna kubwezera chonde mthaka kapenaso pamalo pomwe pakutsegulidwa munda watsopano. Ulimiwu umathaso kusintha tchire lopanda ntchito kukhala malo opangira zakudya. Cholinga chachikulu ndikuonetsetsa momwe njirayi ingagwiritsidwire ntchito pamalo atsopano kapena omwe amalimidwa kale .

Ulimiwu umazindikiritsa kuti malo olima ndi nkhalango ali ndi ubwino osiyana, sikuti zimafanana kweni kweni. Bukhuli limathandiza kuzindikira m'mene nthaka ilili komanso momwe ingasithidwire ngakhaleenso kudziwa njira zothandiza poyisintha kuyambira poyamba.

Masophenya /malingaliro a Ernst pa chilengedwe pophatikiza mbewu ndi mitengo anawunikiridwa potsatira njira zomwe anthu kale amagwiritsa ntchito. Ndizodadwitsa kuti Ernst anapanga maphuziro a momwe angasinthire chilengedwe mokomera anthu, koma kenaka anatsimikiza kuti chilengedwe sichingasintho ndipo ndi kwabwino anthu kuphuzira zomwe chilengedwe chimafuna.

Ernst akufotokoza bwino bwino momwe zimakhala zomwe anthu ambiri sangathe ndipo ndikofunikira kupitiliza kafukufuku pa ntchitoyi .

Ubwino wa ulimiwu ndi wakuti umapezetsa phindu lalikilu komanso kwa nthawi yayitali mbewu zoyamba zikabzalidwa nthaka imabwerera m'chimake ndipo mbewu yoyenera kubzalidwa ikhoza kukula ndi kupereka zipatso zabwino. Anthu ena amaganiza molakwika kuti ulimi osagwiritsa ntchito chilengedwe ndi wabwino poyerekekeza ndi ulimi odzidalira. Zimaoneka ngati kuti chilichonse chimangodzimerera chokha Panthaka zomwe zili zolakwika. Ulimi omwe sumadalira Chilengedwe umadalira zinthu monga fetereza, mankhwala ophera zirombo, mankhwala ophera udzu komanso makina odalira mafuta (therekitale) kuti zigwire ntchito. Nthawi zina amadaliranso zinthu zina zoonjera.

Ulimiwu ndiwopindulitsa posadalira zinthu zina zonjezera kuchokera kwina, izi zikutsimikizira zomwe anthu amaganiza akamanena za phindu la mpakampaka. Ulimiwu ndi osiyana ndi maulimi ena chifukwa umapyola pakudzidalira okha komanso umapereka phindu laliklu popanda kuonjezera zinthu zina za kunja. Zotsatira zikusonyeza kuti zokolola zimatha kufikira 40 tons pa hekitala imodzi pa chaka kuyerekeza ndi ulimi wobzala mbuwu imodzi mmunda omwe zokolola zimakhala 11 kapena 15 tons pa hekitala pa chaka.

Ndizodabwitsa kuti ulimi wodalira zinthu zina monga fetereza sumapereka zokolola zochuluka komanso zokwanira kupatula zina zomwe zimaikidwa pa ulimiwu komanso chonde chimachepa mthaka pakupita kwa nthawi . Powerenga bukhuli, mwachidziwikire zidziwika kuti ndi chifukwa chani ulimi wosakaniza mbewu ndi



mitengo ndi wopindulitsa poyerekeza ndi wodalira zinthu zina zochokera kunja kwa munda womwe siwopindulitsa.

## **ULIMI WOSAKANIZA MITENGO NDI MBEWU ZINA KU HAITI**

- Ulimiwa unakhazikitsidwa ku madera a kumidzi ku Haiti ndipo bukhuli linalembedwa ndi cholinga chofuna kugawa zotsatira za ntchitoyo. Alimi kumeneku amadalira malo awo pa chakudya, zofuna zina komanso ndalama. Alimiwa amakhala mmalo omwe amalandira dzuwa lokwanira; ndipo ntchito yonse samagwiritsa ntchito makina. Makina akuluakulu, mankhwala, komanso njira zikuluzikulu zamthirira ndi zovuta kugwiritsidwa ntchito ndi mlimi ovutika mdzikoli. Dzikoli lili pa vuto lakutha kwa mitengo, kukokoloka kwa nthaka komanso chonde. Njira zomwe zikugwiritsidwa ntchito pano ku dzikoli za ulimi sizoyenera pofuna kukwaniritsa zosowa za anthu m'dzikoli komanso pofuna kuthetsa umphawi wadzaoneni.





Ulimi wamtunduwu umapereka mayankho kwa anthu omwe ndi olimbikira. Njira zomwe zakhazikitsidwa m'bukhuli zikhoza kugwiritsidwa ntchito m'madera omwe dzuwa limawala bwino ngakhale nthawi zina njirazi zingathe kugwiritsidwa ntchito m'madera omwe dzuwa limawala mochepa komanso pang'ono. Bukhuli likusonyeza njira zomwe nkhalango yodzadza ndi zakudya ingalimidwire kuphatikizanso matabwa ndi zakudya zaziweto. Njirazi zimakonza malo kukhala a chonde komanso kukonza nthaka kuti idzisunga madzi.

Mzoonadi ulimiwu ndiwodalilika ndipo zostatira zake ndi zamphamvu kamba koti zinthu monga fetereza, mankhwala ophera udzu komanso mankhwala opha tizirombo towononga mbewu sizigwiritsidwa ntchito ngakhale pang'ono. Kutchetcha komanso kuotcha zinyalala sikofunika mu ulimiwu. Kutipula kumakhala kophweka chifukwa dothi limakhala lofewa kwambiri moti nthawi zina sikumafunika.

## **MBIRI YA MUNDA WA ERNST**

- Anayamba kulima malo akulu omwe anabweretsa kusintha mu chigawochi. Mwachitsanzo mu chaka cha 1984 Ernst Gotsch anayamba kulima pa malo akulu ouma omwe analibe mitengo ku Brazil. Malowa samalimidwa kamba koti analibe chonde. Pofuna kukonza nthaka anabzala mitengo kenaka ndikuisadzulira ndicholinga chofuna kupeza zophimbira nthaka. Mitengoyi itasadzulidwa chilichonse chinasintha pa mundawu. Kutentha kunasintha kwambiri, dothi linasanduka kukhala labwino komanso lachonde. Malowa ndi akulu kwambiri pafupifupi mahekitala 500 amene lero ndi nkhalango ya mvula, ena mwa malowa anagwiritsidwa ntchito polima mbuwe ya Cacao. Munda wa Cacao wa Ernst umatulutsa zokolola zofanana ndi zomwe anthu ena amakolola akalima pogwiritsa ntchito njira zodula kapena zokwera mtengo, komanso zokolola za m'munda wa Ernst zimakhala za mphamvu komanso za maonekedwe abwino. Ernst amapanga phindu lochuluka kwambiri pa malonda ake. Kuchuluka kwa a ntchito pa munda wake omwe amayenera kugwira ntchito ndi kofanana ndi kuchuluka kwa a ntchito omwe amayenera kugwiritsa ntchito ku minda yonse ya Cacao m'deralo.
- Chifukwa choti ulimiwu umachitika madera osiyanasiyana, ulimiwu umapereka phindu kwa mlimi ndi malo pa ntchitoyi. Mwachitsanzo munda wa Ernst wa Cacao sunagwidwe ndi matenda kwambiri poyerekeza ndi minda yosatsatira ndondomeko monga ya munda wa Ernst. Phindu la ulimiwu limatengera momwe mbewu zikusamalidwira poziphatikiza ndi mitengo munkhalango yamvula, osati chifukwa chongowandikana ndi nkhalango ya mvulayi. Mwachitsanzo minda ina ya Cacao yokwana 500 hekitala ku nkhalango ya mvulayi imakhudzidwa ndi mavuto osiyanasiyana monga

nyerere, pomwe munda wa Ernst umakhala wamphamvu komanso mbewu zimakhala bwino popanda mavuto ochuluka.

- Komanso pali kusintha kwa nyengo pang'ono mdera lomwe kuli munda wa Ernst. Patapita zaka mvula inaonjezereka m'derali ndipo mitsinje yonse yomwe imapezeka m'dera lozungulira mundawu yokwana 17 imakhala ndi madzi chaka chonse ngakhale mu nyengo ya chilimwe.



### **MMENE MUNDA WA ERNST UNALILI KALE ISANAFIKE 1984**



### **MMENE MUNDA WA ERNST UNALILI MU 2015 NDI ZAKA ZOTSATIRAZO**

Ntchito ya munda wa ulimiwu ndi yaikulu ndipo ili ndondomeko komanso mfundo zoyenera kutsatidwa ngakhale kuti kuphunzira kwakukulu ndi kukhala mu ulimiwu kwa zaka zochuluka. Cholinga cha bukhuli ndi kupereka chilimbikitso kwa anthu kuti ayambe ulimiwu. Izi zikhoza kukwaniritsidwa popereka mfundo molunjika

komanso mwatsatanetsane komanso kufotokozera njira ndi kabzalidwe ka mbewu mu ulimiwu.

Dera lina lililonse limakhala ndi chilengedwe chakechake chomwe chimayenera kuti chigwirizane ndi dongosolo loyenera kutsatidwa pa munda wa mtunduwu. Ngakhale ku madera owandikana, nyengo imakahala yosafanana, izi zimabweretsa mavuto kwa mlimi komanso chilimbikitso kwa anthu ofuna kuyambitsa ulimi wa mtunduwu pofuna kulumikizitsa chilengedwe potengera dera lomwe munda uli.

Bukhuli silokwanira palokha, nzoyenera kukhala ndi mlangizi wodziwa za ulimiwu amene ayenera kuthandiza ndi maluso osiyanasiyana mu nthawi zosiyanasiyana makamaka chaka chachiwiri pamene kusengulira kwakukulu kumafunika kuyamba. komanso bukhuli ndi chiyambi chabe, nzeru zina zikhoza kuonjezedwa pophatikiza ndi zina zomwe zinaperekedwa ku Haiti.

## **UBWINO NDI KUIPA KWA ULIMIWU**

### ***UBWINO***

1. Zokolola zimakhala zochuluka.
2. Phindi limapezeka mu nyengo yonse yakalimidwe chifukwa mbewu zimasankhidwa ndi kabzalidwe kuti zidzikololedwa mu nthawi zosiyana mwa kanthawi.
3. Cholowa chimaonjezereka pakupita kwa nthawi kamba koti zipatso ndi mitengo zimayamba kukhwima.
4. Malo amagwiritsidwa ntchito bwino mwachitsanzo ulimi wamasamba umachitikira pamodzi ndi zipatso komanso pamodzi ndi mitengo ya matabwa.
5. Zolowa zimachepetsedwa, fetereza, mankhwala a tizilombo komanso zipangizo zogwirira ntchito zokwera mtengo sizifunika.
6. Dothi limakhala la chonde, lofewa losavuta kugwiramo ntchito komanso mpweya umayenda mosavuta.
7. Mundawu sumadalira kwambiri mvula chifukwa umasunga chinyezi ndi madzi.
8. Mitengo imapereka mthunzi zomwe zimapangitsa anthu kuti asmagwire ntchito padzuwa.
9. Zinyalala zimapangitsa kuti udzu usakule zomwe zimachepetsa ntchito yochotsa udzu.
10. China chilichonse chimakula, pamene munda ukukula ngakhale mitundu ina ya zomera yovuta kusamala.
11. Zimathandizira mbewu kukula bwino komanso kupilira ku tizirombo ndi matenda chifukwa muli umodzi mu kasakaniza.

### ***ZOVUTA***

1. Cholowa/phindu lochuluka limachedwerapo



2. Mundawu umaoneka opanda dongosolo kwa munthu yemwe sadziwa za kalimidwe ka mtunduwu.
3. Zimatenga nthawi komanso mphamvu kuphuzira ntchitoyi
4. Ndi zovuta kwa munthu yemwe ali ndi chidwi chachikulu pa mbewu za malonda kwambiri, chifukwa zikhoza kulimidwa zaka zinayi zoyambirira zokha.

## **KOMA ZIMATHEKADI KUDALIRA NDIKUPEZA PHINDU PA ULIMIWU?**

Inde ndi zotheka, minda yambiri ya mtunduwu yakhadzikitsidwa dziko lonse lapansi. Mwachitsanzo kafukufuku wawonetsa kuti munda wolimidwa ndi Ernst zokolola zake ndi zofanana ndi minda ina yomwe ayikamo fetereza komanso mankhwala oteteza ku tizirombo.

Palinso zotsatira zakafukufuku wina wokhudza ulimiwu zabwino zochokera ku Bolivia. Uku munda wa ma Oranje walimidwa potsatira njira zoyambitsidwa ndi Ernst, umapereka zokolola zochuluka poyerekeza ndi munda wofanana nawo koma wobzala mbewu imodzi yokha omwe zokolola ndi zochepa komanso munda wa mtundu wu zipatso zake zambiri zinali zowonongeka kuyerekeza ndi munda wosakaniza mbewu ndi mitengo.

Mwanjira ina ogwira ntchito amafunika ochepa mmunda wosakaniza mbewu ndi mitengo kusiyana ndi munda wobzala mbewu imodzi yokha. Zokolola zimakhala zochuluka pa munda wosakanizawu ngakhalenso matenda amakhala ochepa kuyerekeza ndi munda wobzala mbewu imodzi. Kafukufuku akupitilirabe pa izi.

## **ZIMAGWIRA NTCHITO BWANJI KUTI ZITHEKE?**

- Pali mfundo ziwiri zomwe zimathandizira kuti ulimi wakanizayutheke mosavuta komanso moyenera.
  1. Kapangidwe ka chakudya choyenera cha zomera ndi machitidwe ake.
  2. Kafulumizidwe kakukula kwa zomera ndi kusintha kwake potengera zomwe zikuchitika.

Chilengedwe chili ndi kuthekera kopanga fetereza kuchokera mu mpweya. Mlimi wakanizayutheke amadziwa momwe angapangire chilengedwe kuti chithe kudzipanjira chokha fetereza popanga njira zothandiza chilengedwe kugwira ntchito chokha. Nkhalango zambiri zimalephera kupanga fetereza kamba ka momwe munkhalangomo mulili. Mlimi wakanizayutheke amatsata njira zoyenera poonetsetsa kuti nkhalango zikudzipangira zakudya zokha.

Tikakamba za chakudya chazomera ndi kapezedwe kake tikunena zakubzala zomera mwadongosolo loyenera lomwe lingapangitse zomera kupanga chakudya kuchokera mu mpweya. Kusadzira mitengo komanso mbewu ndi luso lakayendetsedwe ka munda ndi kofunika kwambiri pofuna kupititsa patsogolo kakulidwe ka mbewu ndi mitengo.

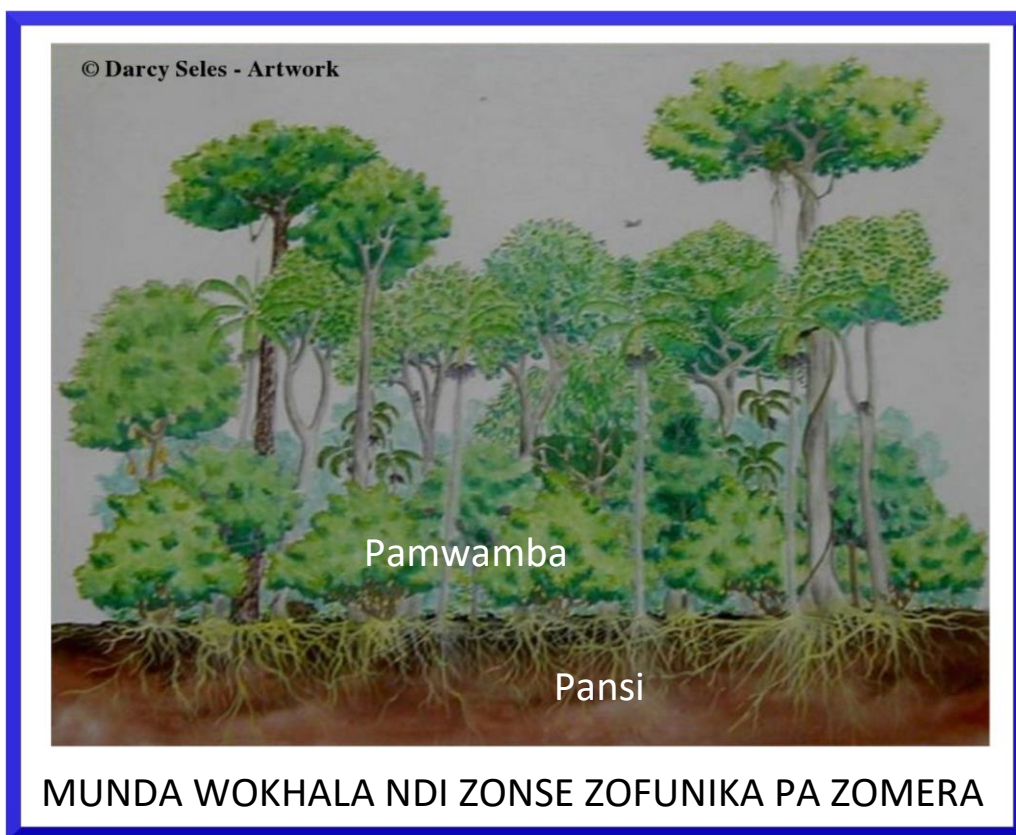
## KAPANGIDWE KA CHAKUDYA KA ZOMERA NDI KAGWIRITSIDWE NTCHITO KAKE

- Mphamvu za dzuwa ndi zofunika ku zomera chifukwa zomera zimagwiritsa ntchito dzuwa popanga chakudya komanso pali zakudya zina zomwe zimatengedwa mu mpweya ndi tizilombo tomwe timapezeka mu zinyalala zowolerana za zomera.

Choncho mulimi wa ulimi wa mbewu ndi mitengo amapanga nkhalango yomwe imakhala ndi zowolerana zofunika zomwe zimathandiza kupanga chakudya chofunika munthaka ku zomera. Choncho ndi bwino kumakwilira dothi ndi zinyalala zoti zikhoza kuwola mosavuta.

## NKHALANGO YA THANZI KOMANSO YA MOYO

- Iyi ndi nkhalango yomwe imakhala ndi mitengo yosiyanasiyana, zomera ndi zina. Izi zimapangitsa kuti zomera zosiyanasiyana zitetezedwe ku mphepo, mvula ndi dzuwa. Zomera zimathandizira kuteteza nthaka ku dzuwa, mvula ndi zina komanso nthawi yomweyo kukhazikitsa chitetezo choyenera mu nthawi ya nyengo yovuta.



Pansi pa nthaka ndi pofunika ndipo pamachitika zambiri zofunika kuti ndondomekoyi ichite bwino munkhalango posunga madzi munthaka, manyowa ndi zina zofunika kuzomera kuti zikule mwa thanzi modalirana chinthu china ndi chinzake.

Popeza tsopano muli ndi ukadaulo wa momwe zimachitikira munthaka komanso m'mwamba mwa nkhalango yothinana bwino. Ndongomeko ndi ukadaulo wa momwe izi zimachitikira zimagawidwa patatu.

### **1. ZAMOYO ZOPEZEKA MU NTHAKA**

- Umu mumaonetsa zopezeka mdothi ndi momwe zimagwirira ntchito popindulira mlimi.

### **2. ZIROMBO ZACHILENGEDWE**

- Izi ndi monga tizirombo tating'ono tating'ono, zinyama kuphatikizapo anthu.

### **3. ZOMERA**

- Izi ndi monga mitengo yosiyanasiyana ndi mbewu zosiyanasiyana zimakhaliisa.

### **1. ZAMOYO ZOPEZEKA MU NTHAKA**

- Nthaka ndi yosiyana ndi matope. Nthaka yabwino imakhala ndi moyo, imakhala ndi zinthu zoyenera kusunga zamoyo mu nthaka. Nthaka yomwe imakhala ndi kuthekera kosunga zamoyo, imatengedwa kukhala nthaka yabwino. Ndipo zamoyozi zimakhala pansi pa nthaka ndipo zimadalirana mu njira zosiyanasiyana monga:

1. Kusintha chakudya cha zomera kuti chithe kugwiritsidwa bwino ntchito ndi zomerazo.
2. Kutenga chakudya cha zomera mumpweya ndi kuchipereka ku zomera kuti chigwire ntchito.
3. Kupititsa patsogolo kulukana kwa nthaka ndikupititsa patsogolo kayendedwe ka mpweya mu nthaka.
4. Kusunga tizilombo tomwe timadya kapena kuononga tizilombo tina tomwe timaononga zomera.
5. Kupangitsa kuti madzi apezake mosavuta ku mizu ya mitengo yomwe ili patali ndi pomwe zomera sizingafikire.
6. Kusunga ndi kugwira madzi moyenera, monga panthawi ya chilala ngati madzi akufunika komanso panthawi ya mvula ngati madzi sakufunika ndi cholinga choti mpweya udziyenda mosavuta munthaka.

Chinthu china chofunika kwambiri pa zamoyo zomwe zimapezeka munthaka ndi mafangasi(fungi). Omwe amafuna malo a chinyezi osagwiridwagwiridwa omwe ali ndi zoworerana za mitengo zochulukira komanso mitsitsi yambiri ya moyo. Mbewu zomwe zimakhala kupitilira chaka komanso mitengo ndi zofunika chifukwa mitsitsi yake simaola msanga zomwe zimapangitsa kuti mafangasi apezake pokhala. Mafangasi ndi mitsitsi ya zomera zimadalirana. Mafangasi amathandizira zomera



komanso madzi munthaka chimodzimodzinsu Mafangasi amatenga mitsitsi ya moyo ngati mokhalamo.



## **UBALE WATIROMBO TOPEZEKA MNTHAKA ND I MIZU**

Ma bacteria omwe amapezeka munthaka ndi ofunika kwambiri. Amathandiza kuteteza komanso kupereka chakudya ku zomera. Ma bacteria opezeka mu nthakawa si aja amadziwika ndi dzina loti Rhizobacteria. Ma bacteria opezeka munthaka amaphika chakudya chofunika kuzomera kenaka ndi kuchipereka ku mizu kuti chigwiritsidwe ntchito ndi zomera. Nthawi zina nthaka zina zopanda chonde zimatha kukakhala ndi chakudya chomwe si chingathe kugwiritsidwa ntchito ngati ma bacteria opezeka mnthakawa sanagwire ntchito yake moyenera pophika chakudyacho. Kuonjezera apo Rhizobacteria amapereka chitetezo ku mizu ya zomera poiteteza ku ma bacteria ena omwe siabwino ku zomera. Pofuna kulingalira zamabacteria tidzilingalira za chitetezo chazomera ndi momwe ma bacteria amafunikira popanga chakudya cha zomera.



**UBALE WATIZILOMBO TOPEZEKA MNTHAKA NDI MIZU**

Ubale wa mafungi ndi ma bacteria opezeka mu nthaka ndi mizu ya mtengo ndi ofunika chifukwa mbali zonse zimadalira chimnzake. Ngati chinthu china mwa zinthuzi zikusoweka munthaka ndiye kuti china chake chimasowa.

Tizilombo topezeka m’nthaka tomwe timakhala tating’onoting’ono nditovuta kutiona ndi maso popanda makina nditofunika polowetsa zinthu mnthaka maka pofuna kukonza nthaka kuti ikhale yokomera zomera. Tizilombo tamtunduwu timalimbana ndi tizilombo tina tosafunikira mnthaka. Nthaka yabwino imakhala ndi tizilombo tofunikira tochulukuka pamlo pamodzi.

**TIZIROMBO TAMNTHAKA TOMWE NDI TOFUNIKA KU ZOMERA KOMA SITIONEKA OPANDA MAKINA**



© Andy Murray - all collage photos

## ***TIZIROMBO TOKWAWA NDI TINA TOFUNIKA KU ZOMERA***

Pali tizilombo tina tomwe nditofunika kuzomera ndipo nditoyenera kupezeka pamunda. Tina mwa tiziromboti ndi munga nyongolosi, ndi a bongololo zomwe zimaoletsa zinyalala mnthaka. Zina zowuluka munga njuchi, agulugufe, mileme ndi mabalame zina zimathandizira kuti mbewu zibereke bwino. 35 mwa mbewu 100 zilizonse padziko lapansi zimadalira tizirombo tomwe timatheketsa pollination kuti ichitike. Achule, Abuluzi, mbalame komanso akangaude ndi zina zachilengedwe zomwe zimagwira tiziromboti.

Nyama zazing'onozing'ono munga mbalame komanso anyani zimathandiza kufalitsa mbewu zamitundu yosiyanasiyana. Nyama zazikuluzikulu zimapereka manyowa kuonjezera pa mbewu zina zomwe zimayenera kuyamba zadutsa kaye mmimba mwa nyamazi kuti zithe kumera mosavuta. Chimodzi mwa chilengedwe chofunika pa dziko lapansi ndi munthu wanzeru. Ngati mlimi angamvetsetse ulimi wophatikiza mbewu ndi mitengo pamodzi, izi zingathandize kupitisa patsogolo umoyo ndi tizirombo tofunikira mnthaka. Choncho ndibwino kusagwiritsa ntchito mankhwala ophera tizirombo mnthaka chifukwa amapha tizirombo tabwino pamodzi ndi toyipa tomwe mnthaka mapeto ake munda umakhala wosatetezedwa ndi wofowoka.

## **TIZIROMBO TOTHANDIZIRA KUWOLETSA ZINTHU MNTHAKA**

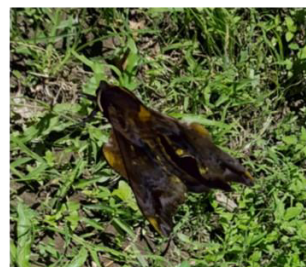
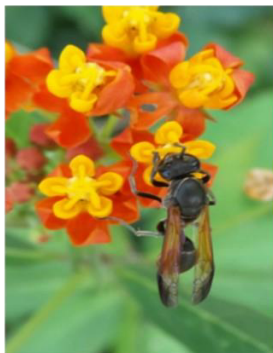
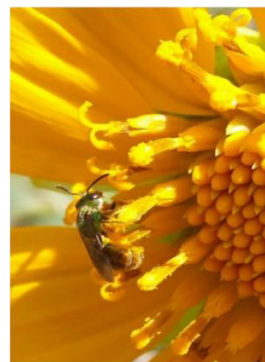
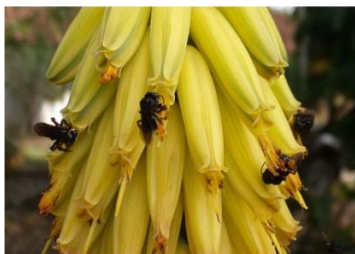


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**TIZIROMBO TOTHANDIZIRA KUTI ZOMERA ZIBEREKE ZIPATSO  
MOTHANDIZIDWA NDI MALUWA**

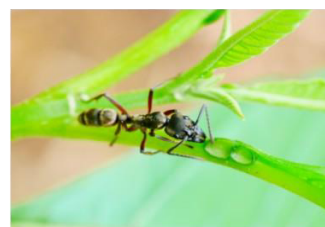


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**TIZIROMBO TOMWE TIMADYA TIZIROMBO TINZAWO TOMWE  
NDITOWONGA ZOMERA**



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## ZOMERA

- Mitengo ndi mbewu zosiyanasiyana ndi gawo lalikulu la za moyo lalikulu pa dziko lapansi. Izi zimagwira ntchito yofunik kwambiri pamwamba panthaka komanso panso pa nthaka. Ndikoyenera komanso kofunika kulola zimenezi zizipezeka pa nthaka mochuluka kapena mochepea.

Mukukumbukira momwe zopezeka mnthaka komanso ma fungi opezeka mnthaka amadalilira kwambiri mitsitsi kuti akhale ndi moyo. Apa ndi pomwe ulimiwu umasiyana ndi ulimi wamtundu wina. Mitengo komanso mbewu zomwe zimakhala kupyolera chaka chimodzi zimalimidwa kwambiri ndipo zimaoneka kuti ndi zofunika kwambiri. Ngati zikutchinga dzuwa lochuluka lofunika ku mbewu zina zimangosadzulidwa koma osati kudulidwa. Mlimi amadziwanso kuti kutipula ndikovuta kamba ka mizu ya mitengo zomwensho zimachepetsa mchitidwewu. Mchitidwe wotchetcha ndi kuotcha siwabwino chifukwa umapha mbewu powononga mbewu mnthaka. Choncho zikatero mlimi amayenera kuyambanso pamayambiro.

Mlimi ayenera kuchilimika pofuna kukhala ndi zomera zathanzi pa munda wake, zomwe zimathandiza kupanga mgwirizano wa zamoyo zonse mmundamo, chinthu chimodzi chofunika kwambiri ndipo choyenera kukwanilitsidwa nchoti mlimi ayenera kumvetsa ndi kudziwa mlingo wakatalikidwe ka zomera zake kuti zizidalirana mmundamo.

## MULINGO WAKUTALIKA KWA MBEWU NDI MITENGO YOSIYANASIYANA

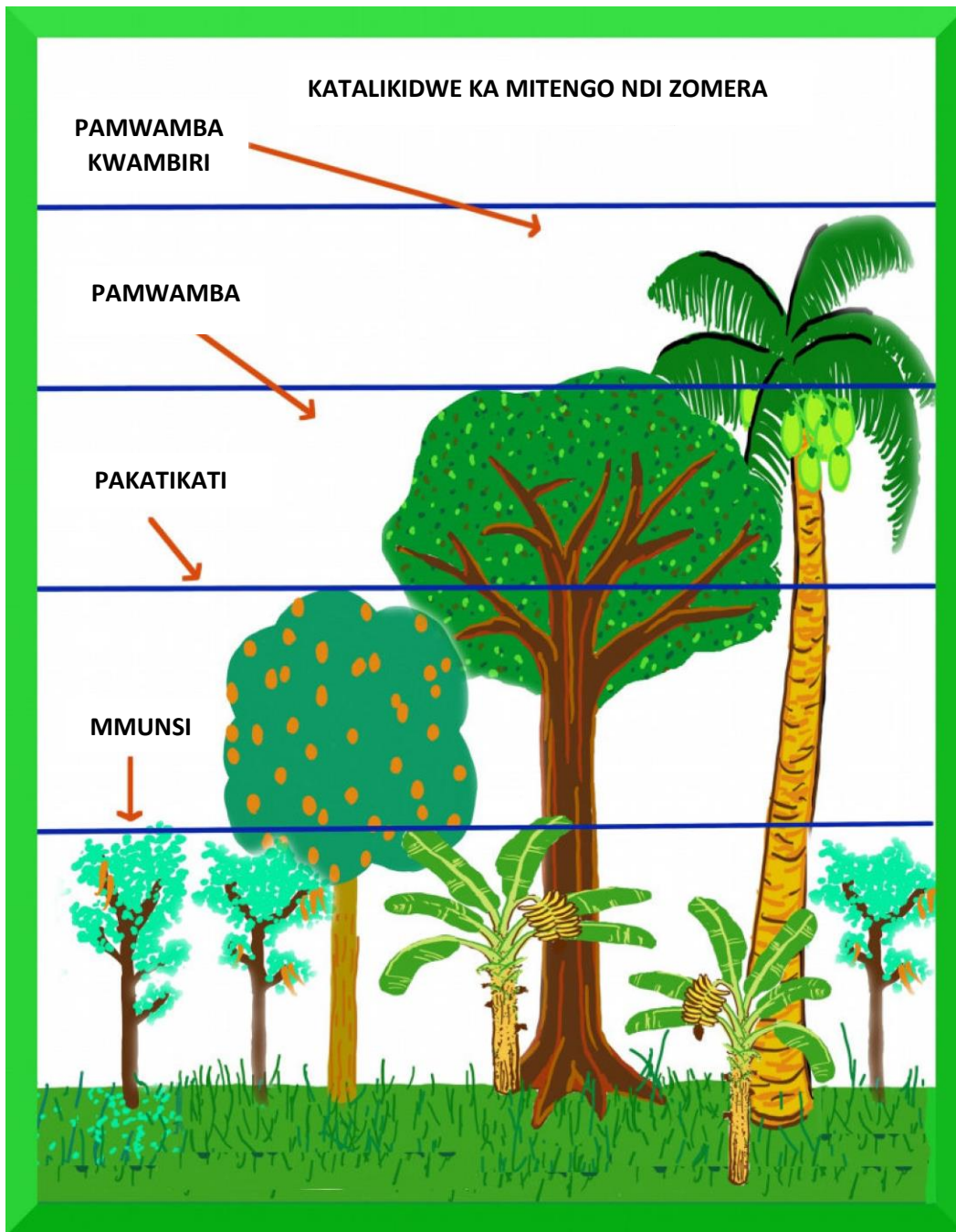
- M'magulu amitengo yobzalidwa mmunda mulingo wa mitengo yosiya nasiyana uyenera kuunikidwa bwino ndipo milingoyi ya m'munda wakasakanizawu yagawidwa motere: yapansi, yapakati ndi pakati komanso yaitali. Izi zingathe kugwiritsidwa momwe mukufunira.

Pamene mitengo ya msinkhu wofanana ndi mitengo yomwe imatakasuka kwambiri pofuna dzuwa ikubzalidwa ndipo ndi pofunika kubzala mitengoyi mwadongosolo komanso mwaluso potengera zofuna zambewuzo. Zina zimafuna dzuwa lambiri ndipo zina zimafuna dzuwa lochepea.

Kawirikawiri kafunidwe kadzuwa kumbewu ndi mitengo komanso katalikidwe kake kamayendera limodzi komanso nthawi zonse magulu ena a mitengo yokhwima amakhala atali koposa. Mu chitsanzochi mitengo yomwe imafuna dzuwa lambiri imakhala yaitali choncho kutalika kwa mtengo kumasonyeza momwe mtengowo umafunira dzuwa. Tsopano tione mitundu kapena makhalidwe ena a mbewu zomwe zimafuna dzuwa lambiri komanso lochepea.

Mitengo yomwe imafuna dzuwa lambiri nthawi zambiri imakhala pamwamba pa mitengo ina potengera kutalika kwake. Mitengo ya zipatso yambiri imakhala yayitali komanso nthawi zina pakati ndi pakati. Tinganene kuti mitengo yomwe

imakhwina ili yayifupi imakhala pansi pa mitengo ya mbewu zina ndipo imatchingidwa kwambiri monga Coffee.



Ndikoyenera kudziwa mulingo wa kutalika kwa mitengo komanso mbewu chifukwa zimathandiza kudziwa mpata wa zinthu zobzalidwa mmunda wa mlimi. Ngakhale njira zamlimi za ulimiwu ziyenera kupangidwa komanso kusiyilidwa mipata yoyenera ndi yabwino chifukwa imatengera zomwe chilengedwe chimafuna. Mitengo yomwe imatalika mofanana imayenera kupatsidwa mpata wabwino ndi cholinga choti masamba ndi nthambi zisagundane zisanakhwime. Nthawi zina zimayenera kupatsidwa mpata waukulu pofuna kupereka mpata kuti



dzuwa lidzilowerera bwino bwino mpaka pansi pa mundawu. Ngakhale zili choncho milingo yosiyanasiyana ya mitengo ikhoza kudzalidwa mowandikana chifukwa dzuwa limathabe kufikira mbewu zina za pansi kamba ka mmene m’masamba ake amayalidwira. Ngati masamba ake ali owandikana kwambiri akuyenera kusengulidwa.

Kuti munda udzigwiritsa ntchito mphamvu za dzuwa bwino ndi koyenera kusaka mbewu za mitundu inayi zomwe zimakololedwa mosiyana. Ichi ndi chitsanzo chabe komabe ndikoyenera kutsatira milingo iyi.

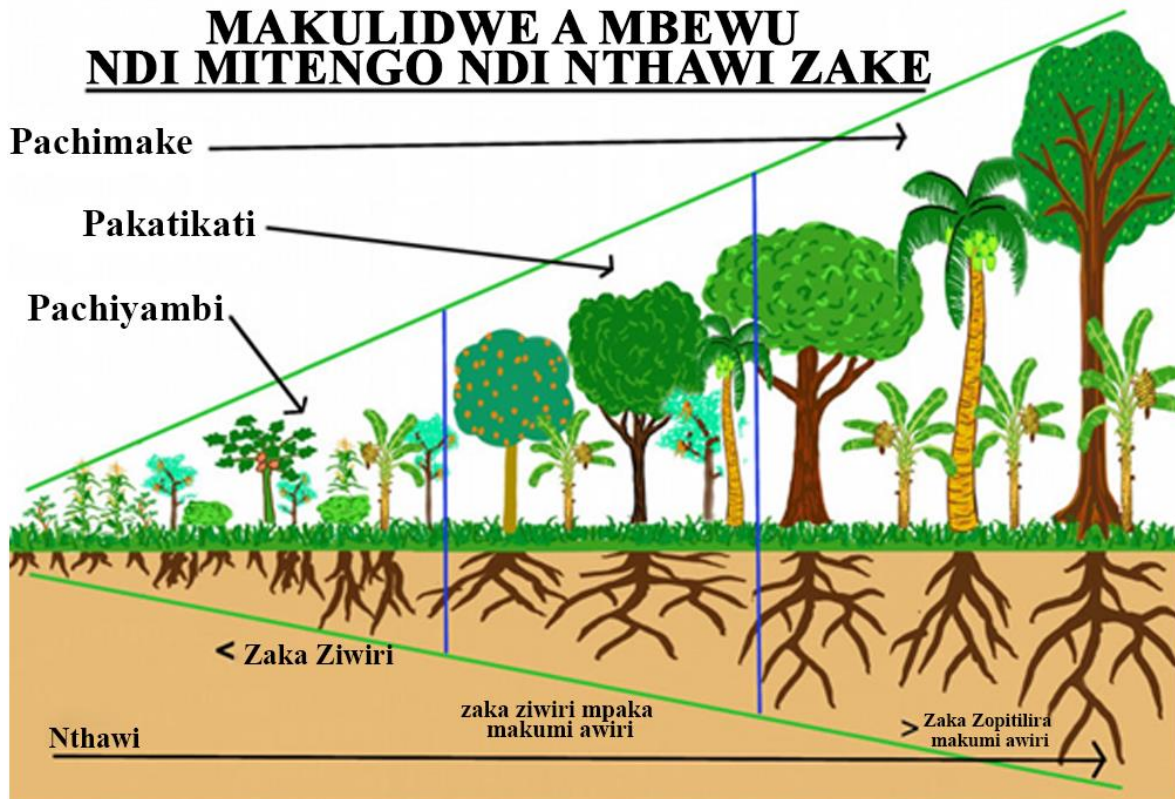
<b>MIRINGO YAKUTALIKA</b>			
<b>ZAPANSI</b>	<b>PAMWAMBA</b>	<b>PAKATIKATI</b>	<b>KUTSIKA</b>
20%	40%	60%	80%

Mulingowu ukuonetsa malo womwe amakutidwa ndi zomera, miringo yonse ikaphatikizidwa imafika 100% chifukwa miringoyi imatha , mwa chitsanzo pa mbewu za m’mwamba ndi pakati komanso zotsikirako zonse zimakuta dera limodzi la malo.

Izi zimakwanilitsidwa pobzala mbewu pa mipata yoyenera komanso kusengulira kwabwino. Mwachidziwikire mitengo nthawi zonse imakula ndipo munda nthawi zonse umasintha ndipo kakutidwe ka malo ka zomera kamasintha. Choncho ngati mitengo yatenga malo ambiri imayenera kusengulidwa. Miringo iyi ndi yothandiza mlimi kudziwa momwe angasengulire mitengo koma siyoti ndiyokhazikika.

Tangomaliza kumene kuona momwe chilengedwe cha moyo chimapezera mphamvu yochuluka. Luso lodziwa kakulidwe ka mitengo kamatidziwitsa kagwiritsidwe ntchito ka malo pakadzalidwe ka mbewu ndi mitengo. Kumbukirani kuti kapezedwe ka mphamvu zofunika mu zomera kwambiri kamatheka kutengera momwe mbewu zabzalidwira ngakhale kuti sinthawi zonse izi zimatheka chifukwa mbali ina imatheka kudzera mu mphamvu za chilengedwe.

# **MAKULIDWE A MBEWU NDI MITENGO NDI NTHAWI ZAKE**



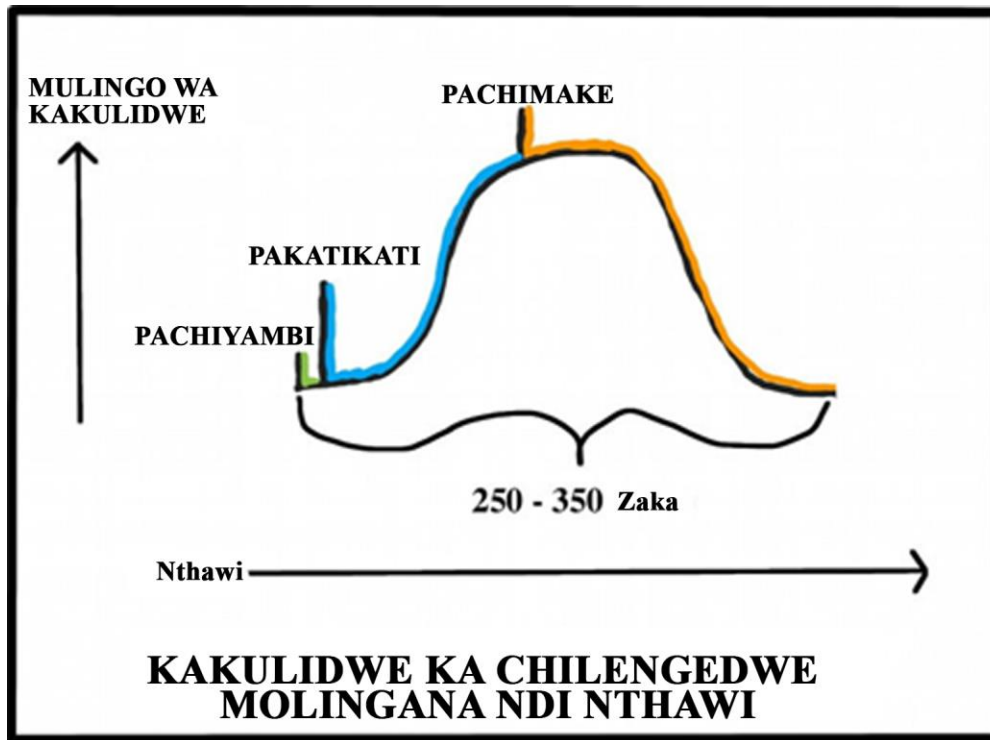
## **KUDALIRA CHILENGEDWE**

Uku ndi kusintha kwa chilengedwe kuchokera pa mulingo wina kufika pa mulingo wapatsogolo. Kudzera mu kusinthaku, mbewu zimatha kukula ndi kupeza chakudya mosavuta. Izi zimakhudza kalimidwe ka chilengedwe komwe mitengo ndi mbewu zimasakanizidwa.

Kulima kodalira chilengedwe kumathandiza kukonza nthaka, kubzala ndi kudalira mbewu zosiyanasiyana zomwe zimathandiza kukhala ndi zomera zathanzi komanso zokhalitsa. Ngati izi sizingasokonezedwe, chilengedwe chikhoza kusintha malo opanda kanthu kukhala nkhalango kapena ziyangoyango zomwe zikhoza kumadzisamalira zokha. Nkhalango yaziyangoyango imakhala ndi cholowa chachikulu komanso zosiyanasiyana kusiyana ndi munda umene ndondomekoyi imakwanilitsidwa kudzera mukukhwimitsa zomera ndi mitundu yosiyanasiyana m'magulu zomwe gulu lililonse limagwira ntchito zosiyanasiyana panthawi yochepa.

Pofuna kumvetsa momwe chilengedwe chingadalilidwere ngakhale ndi zovuta kuona koma zagawidwa magawo osiyanasiyana. Mu ulimi wakasakaniza ka mbewu ndi mitengo gawo loyamba lotchedwa Chiyambi "placenta" ndipo gawo lachiwiri limatchedwa pakatikati "secondary" koma gawo lomaliza limadziwika ndi mau oti pachimake "climax" kutanthauza kuti pachiindeinde. Gawo lililonse limapititsa patsogolo gawo lotsatira pokonza chilengedwe zomwe zimapangitsa nthaka kukhala ya chonde komanso kukhala ndikuthekera kusunga za moyo zochulukira kufikira itafika pa chimake.

Zikafika pa chimake makulidwe amayamba kusintha pomachedwa komanso kukhwima. Mitengo yomwe simakula kwambiri imafa kamba kosowa dzuwa. Izi zimapangitsa kukhala ndi nkhalango zokhala ndi mipata yoti nkumayendamo. Gawo la pachimake limakhala nthawi yayitali ndilo mitengo yomwe yapulumuka imakhala kuti yozolowera komanso kupilira ku nyengo ndi zina zovuta ngakhale kuti pamapeto pake mitengo yotsalayo imafa ndi ukalamba mwachilengedwe. Ngakhale zili choncho sizimathera pompa chifukwa m’badwo wina umayambiranso poyamba. Izi zifokonzedwa bwino kwambiri mtsogolo.



Mwachilengedwe kuti ndondomeko monga iyi itheke kuchoka kumayambiriro mpaka pachiindeinde zimatenga nthawi yaitali monga zaka 250-350 koma ngati mlimi akuchita ulimi wakasakaniza zimangotenga zaka zosapitilira 20 basi.

Chigawo choyambirira chimakhala ndi zomera zomwe zimakula mu nyengo yovuta komanso dothi lopanda chonde chokwanira. Zomerazi kawirikawiri zimakula mnsanga komanso zimapereka mbewu yokwanira. Tikamakamba za chigawo choyamba tidzikamba za udzu ndi zomera zina zowononga. Anthu ambiri amaganiza kuti mitundu ina ya udzu yowonongayi siyabwino koma choonadi ndi choti palinso kufunikira kwake ku chilengedwe. Mitundu ya udzu wonga uwu umabweretsa chonde mnthaka.

Mitundu ya zomera yomwe imamera mchigawo choyambirirachi imangokhala nthawi yochepe pofuna kukonzekeretsa magawo ena omwe akubwerawo ndi kufa basi. Chigawo choyambachi muchingerezi chimatchedwa chiyambi “placenta” ndiko kutanthauza kuti machitachita opereka moyo, izi zimatanthauza kuti

magawo onse amakhala alipo koma amakhala asanabwere poyera ngati momwe amakhalira mwana m'mimba mwa mayi.

Gawo lachiwiri limadzakhala ndi mitengo komanso zomera zazitali, nthawi yamoyo wake imakhala yayitali koma imafunika malo omwe ali ndi chonde chabwino.

Pomaliza pamponda chimera ndi gawo lomwe limakhala ndi mitengo yaitali komanso yakale ndi mbewu zomwe kawiri kawiri sizimakhala ndi kuthekera kopanga mbewu zoti zingabzalidwe zochulukira. Pa chigawochi mitundu yokhayo yomwe imakhala ndikuthekera kokhala ndi moyo ndi yomwe imapulumuka. Izi zikutanthauza kuchepa kwa zomera m'gawo poyerekeza ndi gawo lachiwiri.

### **MIRINGO YA NTHAWI YOPEREKA PHINDU KOMANSO KUDALIRANA KWA ZIGAWO**

Ndizofunika kuzindikira kuti nthawi yopeza phindu mu zomera imafanananso ndi nthawi yomwe zomera zimadalirana pagawo lomwe zomera zimakhwima. Pa chifukwa ich ndikofunikanso kuwunikira kudalirana kwa zomera tikamakamba za nthawi yopeza phindu. Mwachitsanzo mu chigawo choyamba zomwe zimapezeka ngati phindu ndi masamba. Pamene mgawo lachiwiri ndi lomaliza imakhala mitengo.

### **CHILINGANIZO CHOTENGERA ZOKOLOLA KOMANSO KUDALIRANA KWA ZOMERA**

	<b>Chigawo choyamba 1</b>	<b>Chigawo choyamba 2</b>	<b>Pakatikati</b>	<b>Pachimake</b>
Mbewu Zazitali kwambiri	Chimanga, there, chidede	Papaya, nzimbe	Bulugamu	Tsanya/m'bawa
Mbewu zazitali	Mpunga, kabetchi, broccoli	Chinangwa, nthochi	Chamwamba, Gliricidia, mtangatanga	Bwemba, mapeyala, mango, coconut
Mbewu zapakati ndipakati	nyemba zoyanga, tomato, mabiringanya	Nandolo, zicheche (air potato),	Mandimu, larange, mpoza, malitchi	Manachesi, Cashew
Mbewu zammunsi	Pumpkin (maungu)	Pineapple (chinanazi)	Annatto (kale)	Khofi

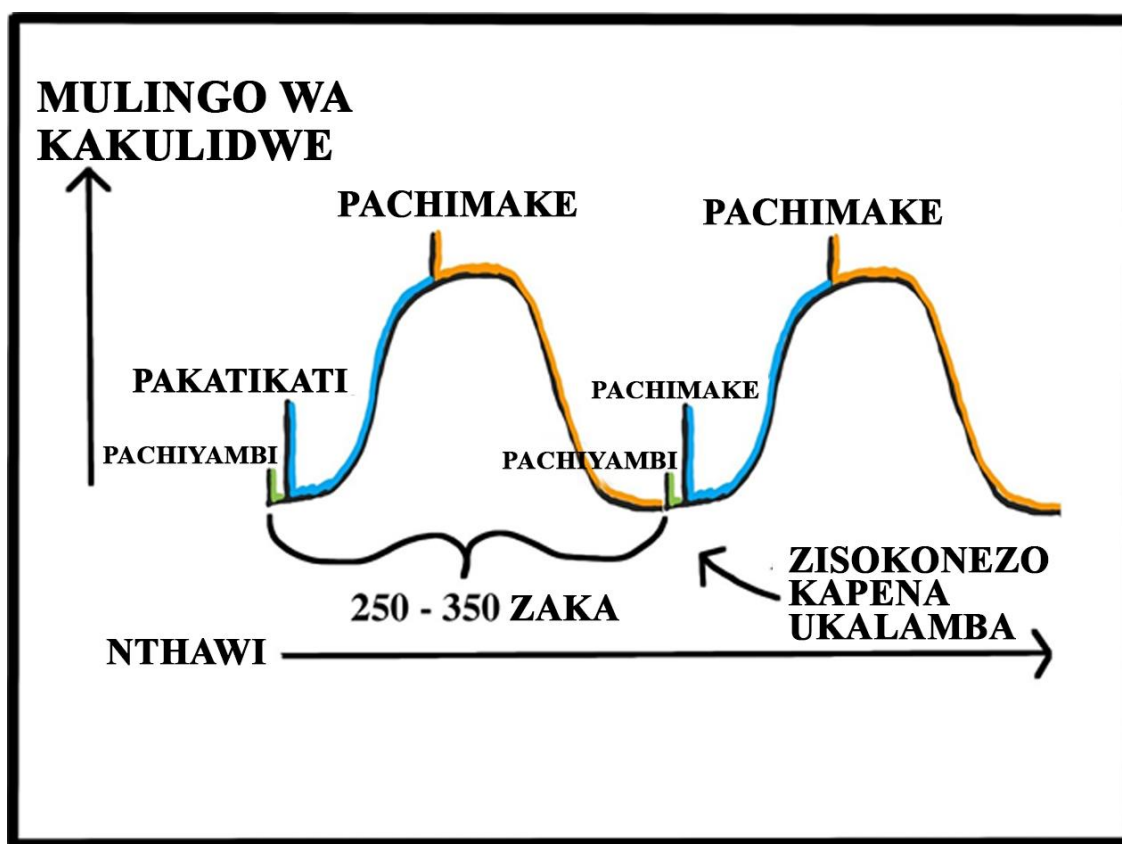
### **MAGAWO ATATU A CHISINTHIKO**

Ernst akuzindikira kuti pa mpondachimera sikuti ndi mpamathero. Ikatha mnkhalango ya pamponda chimera, ndondomeko yonse yakupatsirana itha kuyambiranso ndi nthaka yatsopano yabwino ya gawo loyamba zikatero nthakayi imasintha nkukhala mbali ya yapakati ndi pakati yabwino kwambiri ndinso mponda chimera wabwino. Zachilengedwe zomwe zili panthaka zitha kusiyanyiriranatu ndi



zomwe taona poyamba ndinso zimachita bwino mwakupita kwanthawi, chonde chimasungunuka mpaka chitakhala chakwanira kubweretsa ndi kubwezeretsa zokolera zambiri zoyenera kukwanira zamoyo zonse zili mderalo.

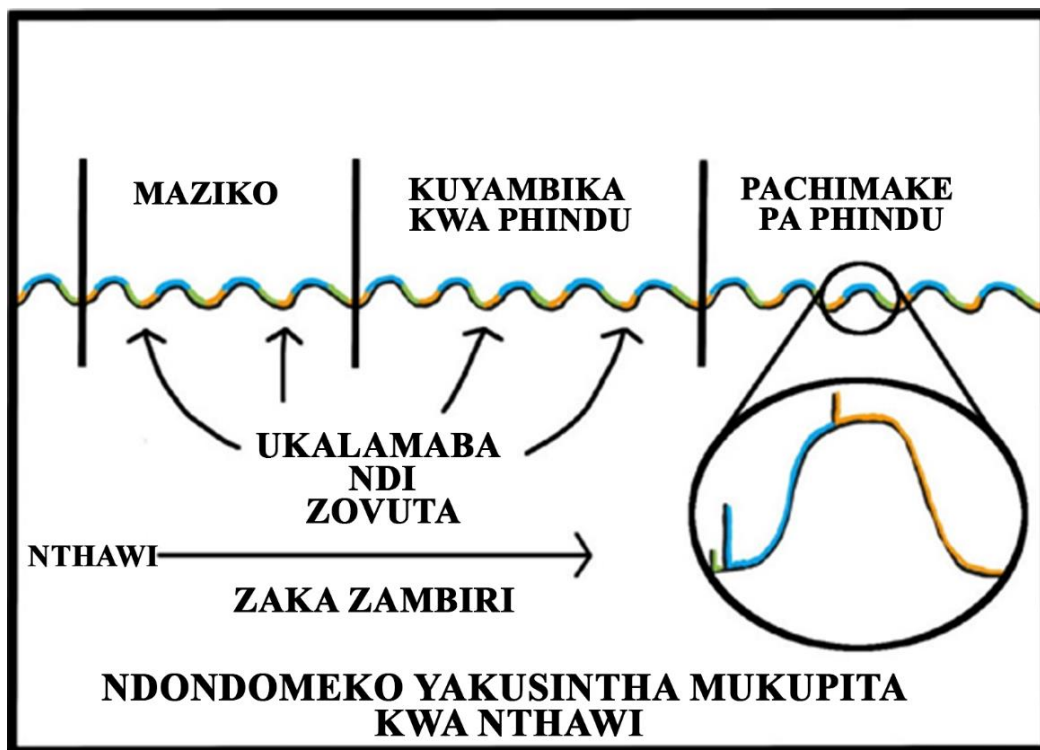
Chenicheni chomwe chimayambitsa ka zunguliridwe ka pa mponda chimera kuti pathe ndi kukula ndi kukalamba kwa mitengo. Kuonjezera zinthu monga nyengo, moto, zilombo zoononnga mbewu ndinso nyama ndi zosokoneza za chilengedwe zomwe zimakhudza dongosolo la nkhalango. Ernst adapeza kuti pamene mitengo ikumera imaonjezera chonde ku nthaka ndi kuyambitsa kakulidwe kamphamvu munjira yopindulira nthaka yamoyo. Izi ndi zabwino pokhapokha ngati nkhalango ya kwanitsako gawo lachiwiri la kupatsirana ndinso mbali ya pansipansi ya munda ikhalebe yamoyo. Chisokonezo chachikulu sichaphindu ngati chionongeratu moyo kapena chichitika pamene nthaka sinakonzeke bwino monga ziliri pa gawo loyamba. Zikatere, nthaka yamoyo iyenera kuyambanso kuchokera pachiyambi.



Ndi chisokonekero chaphindu choopitilira, kulandirana kwachilengedwe kubwerezabwerezeka kufikira kutadutsa magawo atatu. Izi, mwachilengedwe, zikhoza kutenga zaka zikwizikwi. Mu ulimi wa mbewu zosiyanasiyana zosunga mphamvu magawo amenewa amatchedwa “Atsamunda, kuunjika ndi kuchuluka” Gawo la atsamunda ndi gawo la kuyesa kwa chilengedwe kubwenzanso moyo ku nthaka yomwe idaferatu konse kapena pang’ono.

Lachiwiri ndi gawo la kuunjika. Pa gawoli nthaka yamoyo imakwanitsa kuthandiza nyama zazing'ono (kulekera pa mlingo wa nkuku). Pamenepo nthakayi imayamba kukhala ndi chonde, komabe zinthu sizikwanira. Poti nthaka siyikhala yozisungira yokha ndiponso yimafunika Kaboni wambiri kuti “yinenepo”. Kufunika kwa madzi ndi mpweya wa Niyitilojeni ku dongosololi kumakhala kochepa zikafika pamemepa. Malo ambiri olima padziko lapansi akakamira pa gawo la kuunjika chifukwa ulimi wa makono mopitilira umabwenzersano nthaka yamoyo kudzera mu kutipula, kuchotsa zosokoneza zomera zokhalitsa ndi zina. Izi zimayimitsa nthaka yamoyoyi kuti isazungulire potulutsa zochuluka. Ndikofunika kunena kuti ulimi wamakono umakwanitsa kudiyetsa nyama zazikuluzikulu panthawi ya gawo la kuunjika, koma zimatengera kuti fotereza (chakudya cha nthaka) zayikidwa mopitilira kuti kudiyetsako kutheke. Zotere ndizovuta kuzichita mokhazikika ndinso pamapeto pake zimalowa mthumba.

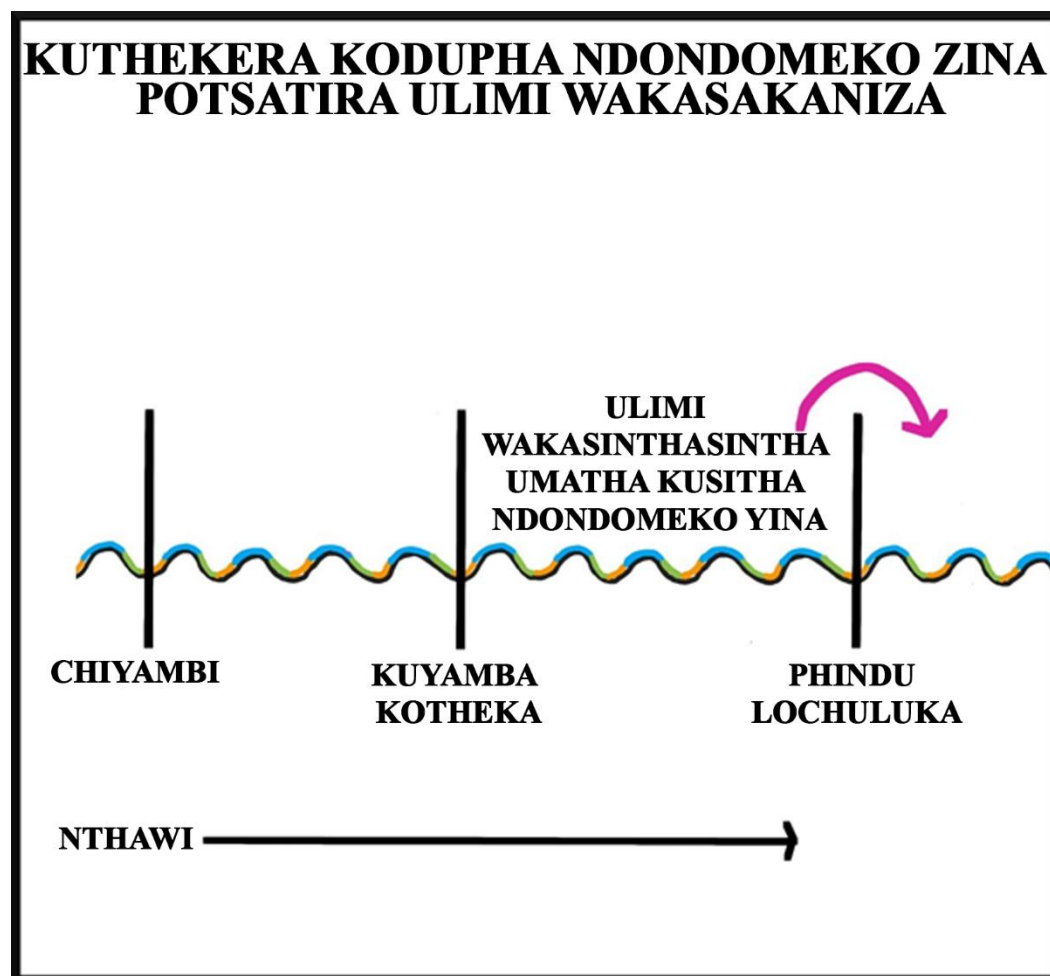
Ngati nthaka yamoyo iloledwa kusintha ndi kudutsa njira zokwanira, nthaka imakhala ya chonde ndinso pamapeto pake imalowa gawo la kuchuluka. Zikafika apa nthakayi imatulutsa chakudya cha fosifolo chambiri komano pamafunika cha kudya cha mpweya wa Niyitilojeni ndi madzi. Chonde chake chimafika pokhonza kuthandiza nyama zikuluzikulu ndipo zikhoza kukhala choncho kwa nthawi yosaneneka. Zopangidwa kuchokera ku zamoyo zopezeka m'nthaka, zamoyo zosiyanasiyana ndi kusintha kwa chibadwa kopezeka pakati pa zamoyo pa nthaka kumakulirakulira. Ndichapamwamba kwambiri kuti njirayi imatha kuyamwa mphamvu zake ndi kupeza chakudya kuchokera ku dzuwa, ku mpweya ndinso kusokola zofunikazi kuchokera m'malo osungika mkati mwa nthaka.



Kwenikweni ulimi wa zomera zosiyanasiyana osunga mphamvu umayenera kufika pa mlingo wa kuchuluka. Apa mpamene zinthu zabwino zimachikitika mosavuta ndipo chokhumbitsa ndi chokuti suyenera kudikira makumi a zaka kapena kupitilira apo kuti zitheke. Ngati mulimi ayamba ndi malo abwino komanso akhonza kuyika zobwerezetsa chonde zachilengedwe mu nthaka kuchokera tsiku loyamba lenileni, ndekuti iyeyu angathe kufikira pa mulingo wa kuchuluka posapyolera zaka ziwiri.

Kodi mulimi amathamangitsa bwanji chisinthikochi? Popanga kudulira komanso kayendetsedwe ka nzeru. kudulira zomera kuli ndi phindu losiyana losiyanasiyana

limene limapangitsa kukula mothamanga kwa zomera pamunda. Komanso zotsalira ku zomera zomwe amazipangira kuti zizitchinjiriza pamwamba pa mbewu zimabweretsa kuchuluka kwa chakudya china cha nthaka chotchchedwa Kaboni ngati mbalinso yoonjezera mu zakudya zofunika za kudothi. Pochita zimenezi, nthaka yamoyo imadyetsedwa mwachangu zomwe ikufuna kusiyana ndi mmene zichitikira mu munda wa chilengedwe. Kuonjezerapo, nthaka yamoyo imachita bwino kuchokera pa gawo la kuunjika nkufikira pa gawo la kuchuluka.



## **MFUNDO ZITATU ZA ULIMI WA ZOMERA ZOSUNGA MPHAMVU**

Tiyeni tione mfungulo zitatu za ulimi wa mbewu zosunga mphamvu ziwiri zoyamba ndi zofunika kwambiri chifukwa ndi zamchitidwe wa kudulira ndi kayendetsedwe zomwe zimathandiza kuthamangitsa makulidwe ndi kasinthidwe. Pophatikiza mfungulo zonse zitatu mlimi amakhala ndi tizidutswa tonse tofunika kwambiri kuti amange nthaka yamoyo wathanzi.

1. Kudulira kuti kukula kuyambike
2. Kuyala pamwamba pa dothi ndi zotsalira mu chilengedwe (zinyalala)
3. Kubzala mbewu zaubale zanzeru

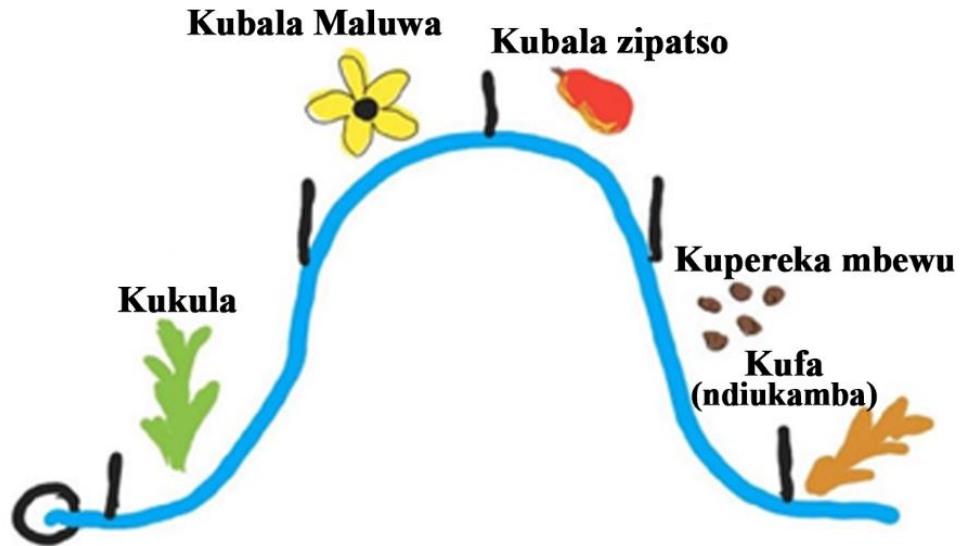
### **1) KUDULIRA KUTI KUKULA KUYAMBIKE**

- Kakulidwe kochulukirapo kamatukula kwambiri nthaka yamoyo. Zomera zokalamba zimachedwetsa makulidwe a munda onse. Koma mukadulira zomera zomayambilanso gawo lina la makulidwe. Kotero kudulira kumachita ngati phazi longoyelekezera pa pedulo oyimitsira, koma zimaposeranso pamenepo, kuduliraku kumaikanso phazi pa pedulo wa mpweya! Kudulira kumatumiza uthenga okulitsa mu dongosololi ku tizinthu tamoyo tambiri tomwe timapangitsa mbewu kukula. Zikaterere kumakulidwe zimathandidzanso mbewu zomera zoyandikanazo osangoti mitengo yokhayo yoduliridwa.

Kuti zimveke mmmene izi zichitikiramu, nkofunika kudziwa kuti zomera zonse zimadutsa mu njira ya moyo. Choyamba ndi nthawi ya kukula mwachangu. Kenako zinthu zikayamba kuchedwa mpamene chomera chikutulutsa maluwa. Zikatha izi chomera chimakonzekera kupanga chipatso ndinso chimauma pang'ono. Pamene kakulidwe ka chomera kachedwa, zimakhala ndi kuipa ku zomera zomwe zayandikana nazonso. Chotsatira cha kuumaku chimapewedwa mu ulimi wa kasakaniza kudzera mu kudulira. Zomera zothandizira chonde (Biomass) zimaduliridwa zikangoyamba kuonetsa kukalamba, kapangidwe ka maluwa kasanayambe. Mbeu zofunikazo ziyenera kuloledwa kuti zibereke zipatso poti ichi ndiye cholinga chokhalira ndi mbewuzi. Komano ziyenera kuti mbewu zofunikazi zidulidwe mwachangu ndithu kukolola kukangotha.



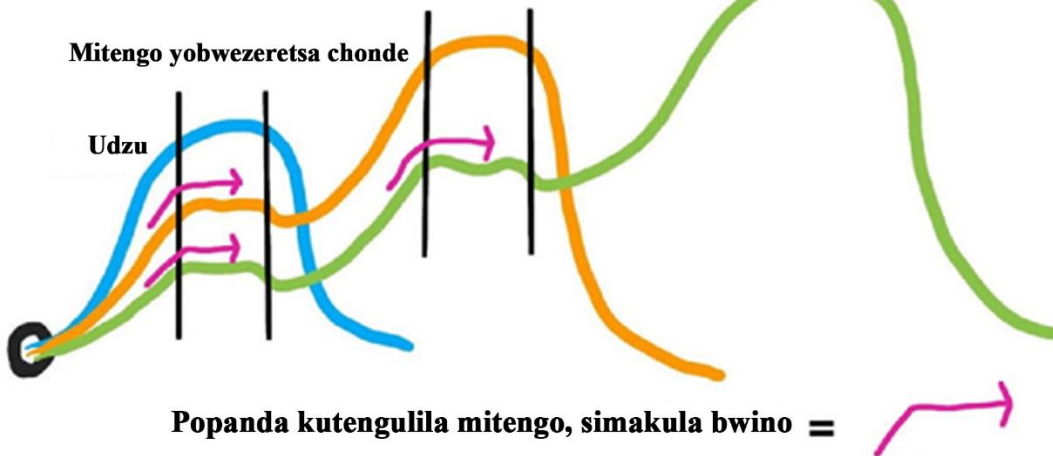
# MOYO WACHOMERA

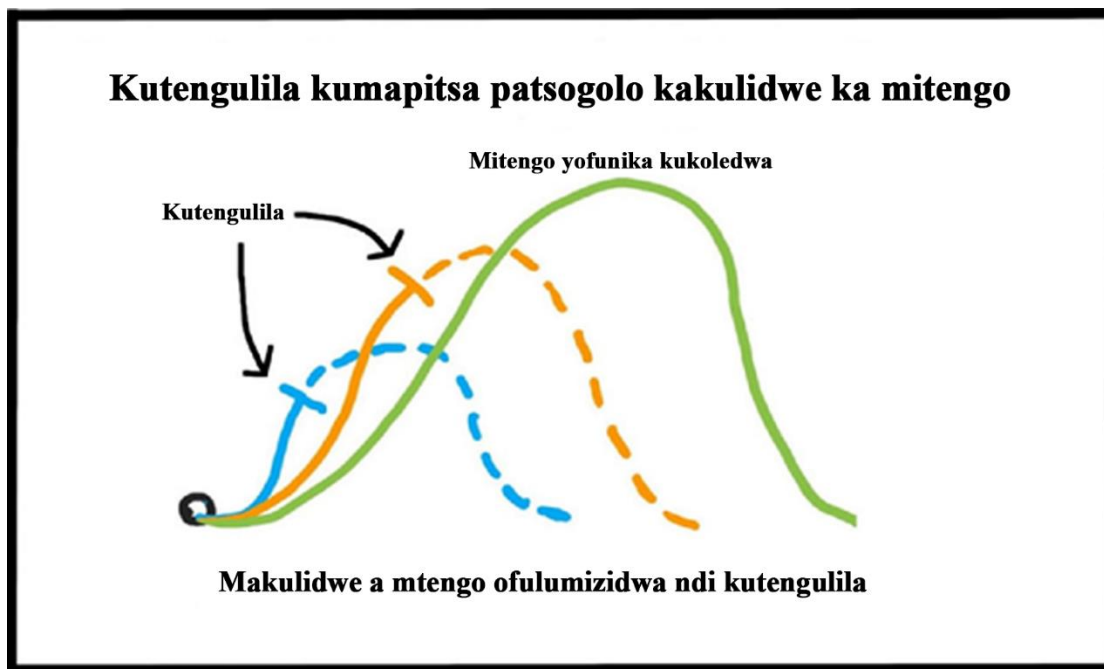


## KUSATENGULIRA NDIKUSASAMALA MITENGO KUMACHEDWETSA KAKULIDWE KAKE

Nkhoto uliwonse ukuonetsa mbewu zosiyana ziyana, komanso zamoyo osiyana siyana

Mitengo yofunika





Mitengo yanthambi zambiri ndi zomera zizakhala zothandiza zoposa kwambiri ku makulidwewa. Mitengo ya nthambiyi ndi zomera zimaduliridwa kwambiri makamaka zaka zoyambilira. Mitengo yofunikira yobzalidwira zipatso izidulidwa mochedwa, komabe nayonso imathandiza ku makulidwewa.

Chomaliza kupalira kosankha kumathandiza munda. Zomera zonse za pamunda zimagana kuyang'aniridwa ngati zili ndi zizindikiro za ukalamba cholinga ziduliridwe. Potero, chomera chilichonse chingathandize pa kakakulidwe. Ngakhale mtengo ndi zomera zing'onozing'ono zinali zotsalira zoonjezera chonde munthaka. Poyamba Ernst anagwiritsa ntchito udzu wa mtundu umodzi pamunda wake koma panopa iyeyu akumalimbikitsa kubzala mitundu ina ya udzu pa nthaka.

Zomera zothandizira nthawi zambiri zimayikidwa mnzere limodzi ndi mitengo y yazipatso. Nzerewu umatchedwa njira –A (A-line) malire apakati pa mizere iwiri amatchedw a dera –B (B-area) ndipo amagwitritsa ntchito povala masamba kapena udzu wa Bayomasi (obwenzeretsa mphamvu ya chilengedwe mnthaka)



## **Zomera zomwe zimakhala ndi zakudya zochuluka mu -A zisanatenguliridwe**

Kutulutsa kwa Homoni wokulitsa kumayamba pompopompo pamene mitengo ndi zomera zaduliridwa ndipo kuthandiza kwa homoniyi kumatengera kukula ndi mchitidwe wa mtengo kapena chomera chadulidwacho. Ngati mulimi ali ndi zomera zosiyanasiyana, zokwanira pa nzere –A, zimathandiza dera lonse la –B kulandira makulidwe akathithi. Kubzala mu dera –B kuchitike tikangotha kudulilira. ngati zomera zakhazikika, nthawi zambiri makulidwe oonekeratu amachitika ikangotha sabata yoyamba. Masamba a Khofi (coffee leaves) amatalika ndiponso mitengo imachuluka zipatso zokolola. Chimanga chimatha kuonjezera ma inchesi 12 akutalika!

Pali ma phindu ena ambiri obwera chifukwa cha kudulira. Mizu ya zomera zina imafa ndipo izi zimapereka chakudya cha chilengedwe ku dothi ndinso zimatsekula njira zina zothandizira zinthu zodalirana mudothi kuti zigwiritse ntchito. Dera limalandira dzuwa lambiri ndiponso nkhalango imalandira zotsalira kuzomera zofunikira kunthaka zambiri, komabe kakulidwe ka zomera sikanafoketsedwe kwenikweni chifukwa cha kuolerana kwa zotsalira za kuzomera zomwe timayika pamwamba pa dothi poti zotchinjiriza dothizi zimatenga masabata ambiri kuti ziole. Kwambiri chomwe chimagwira ntchito mwachangu ndi kutulutsidwa kwama homoni okulitsa.





## **MITENGO YOTHANDIZIRA IYENERA KUTSENGULIRIDWA KWAMBIRI**

Pali maphindu ena ambiri obwera chifukwa cha kudulira. Mizu ya zomera zina imafa ndipo izi zimapereka chakudya cha chilengedwe ku dothi ndinso zimatsekula njira zina zothandizira zinthu zodalirana mudothi kuti zigwiritse ntchito. Dera limalandira dzuwa lambiri ndiponso nkhalango imalandira zotsalira kuzomera zofunikira kunthaka zambiri, komabe kakulidwe ka zomera sikanafotokozedwe kwenikweni chifukwa cha kuolerana kwa zotsalira za kuzomera zomwe timayika pamwamba pa dothi poti zotchinjiriza dothizi zimatenga masabata ambiri kuti zitheke. Kwambiri, chomwe chimagwira ntchito mwachangu ndi kutulutsidwa kwama homoni okulitsa.

### **a. Kasamalidwe kakutsatizana ndi kudulira kuti zomera zikule**



**1.** Munda womwe sunasengulidwe    **2.** Kutengulira popanga zakudya mnthaka    **3.** Munda womwe ukukula bwino



Ngati mlimi ali ndi mitengo ya zipatso yokhwima, zimafunika kuti kudulira kuchitike mopenda nthawi kuti zipindulirensa ku zipatso zobwerazo. Mitengo yambiri makamaka panthawi yotulutsa maluwa ndinso pa mulingo obereka zipatso. Kotero, kudulira kwa zomera zothandizira kumakonzekeredwa kwambiri kuti mupereke mpata ku dzuwa. Zimenezi zimatchedwa kudulira kwa kulunzanitsa. Kumadera otentha, kudulira kwa kulunzanitsa, nthawi zambiri kumachitika munyengo ya chilimwe, pachifukwachi sipakhala kakulidwe kalikonse ndi kusokonezekaku. Mitengoyi imafuna madzi ambiri munthaka.

Komanso mutha kuona zithunzi zili pamwambapa kuti pali nthochi zambiri. Nthawi zambiri Ernst amanena kuti ngati mukufuna masamba ndekuti mubzale nthochi. Nthochi zili ndi zambiri zothandizira zomera zina. Chomerachi chili ndi phindu kwambiri kunthaka moti alimi ena amalima nthochi ngati mbewu yothandizira mbewu zina pa kakulidwe kabwino koma osati akufuna akolore kalikonse kunthochiyi. Thunthu la nthochi limadulidwa mulitali kulisandutsa tizidutswa kenako mkutiya pa nthaka. Tizidutswati timaikidwa moyandikana ndi zomera zobzalidwa kumene. Tizidutswa ta nthochi timagwiranso ntchito ngati msampha ophera anankafumbwe a munthochi. Nankafumbwe wamunthochi ndi kachilombo kakang'ono kamene kamagwira ndikuononga zomera. Kachilomboka kamakopeka ndi nthochi yongodulidwa kumene ndipo kakayikira madzira pa nthochi yodulidwayo, posachedwa timatha kufa chifukwa sitimapeza zonse zoyenera kukula moyenera ndiye timafa.

Ndikoyenera kudziwa kuti kudulira ndikofunika osangoti pakupereka zinyalala zobwenzeretsa chonde kokha ayi. Mwachitsanzo, kukanakhala kuti zobweretsa chonde kapena zinyalala zoolerana munthakazi zikumabweretsedwa nthawi zonse kuchokera kwina kwake, ndekuti munda bwenzi ukumasowa kukula kwa zomera komwe kumabwera chifukwa choyambitsidwa ndi kudulira kwa mphamvu. Ndikofunika kukhala ndi mitengo ndi zomera zina m'munda zimene zingaduliridwe. Kupatula kutchinjiriza nthaka ndi kuthandiza ku zomera komanso kuthandiza kakulidwe ka zomera zina, palinso zifukwa zina zimene anthu amadulira mitengo kapena zomera zina. Kudulira kungagwiritsidwe ntchito ngati njira yochotsera zosafunika m'munda. Kudulira kumayenera kuchitika kawirikawiri kuti muchotse nthambi kapena mbali za chipatso zimene zili zouma, zogwidwa ndi nthenda ndinso zopanda phindu. Kuduliraku kumachitikanso kuti makulidwe kapena matalikidwe osiyanasiyana a zomera akhalebe omwewo. Pomaliza, kudulira kungagwiritsidwenso ntchito popereka mpata munthaka. Ndipamene ili nthawi yofunika kuchotselatu chomera kapena mtengo cholinga papezeke mpata kapena malo ambiri m'munda.

## **2.TCHINGIRANI NTHAKA NDI ZINYALALA ZOOLERANA MUNTHAKA**

Ikanu pamwamba panthaka zinyalala zoolerana ndipo nthakayo ikhalebe yotchinjirizidwa.

Kodi ndi zinyalala zochuluka bwanji zimene zimafunikira? Zambiri! Mukufunika zokwanira kuti mupewe kumera kwa tchire kapena udzu osafunika. Kuchuluka kwa zinyalala zoolerana munthaka kumatengera mtundu wa chomera kapena mitengo yomwe yagwiritsidwa ntchito popanga zinyalalazi. Komabe nthawi zambiri zinyalalazi zimakhala ma sentimitala khumi (10cm) kapena kuposera apo utali wake kuchokera panthaka.

Ernst akuti dothi losavekedwa kapena kutchinjirizidwa lili ngati bala la panthaka. Zinyalala zokwanira ndi mankhwala. Zinyalalazi zimasanduka chakudya cholemelera chanthaka pakupita panthawi chimagwira ntchito ngati chakudya cha nthaka chachilengedwe (organic fertilizer). Zinyalala zooleranazi zimatetezanso dothi ku dzuwa komanso kupewa kusowa kwa madzi munthaka. Zinyalalazi zimachepetsanso kudalira kuti mvula izigwa kawirikawiri, potchinga kameredwe ka udzu ndi tchire losafunika, zimathandiza kupeputsa moyo wa mulimi. Kuonjezera apo, kakoloredwe kamakhala kaukhondo.

Pomaliza, mukumbukira ukonde wa chakudya chamdothi? Ubalewu umafuna zinyalala zambiri. Tamoyo ting'onoting'ono, tamoyo tosaoneka monga fungi ndi mphutsi zimachita bwino pamalo a zinyalala zambiri choncho. Mukayika matabwa amitengo (wood) yambiri mu zinyalalazo tizilombo tosaoneka ta fungi timakula bwino. Mitengoyi imayikidwa pamwamba padothi penipeni kuti ithandizire kuolerana kwa zinyalalazi, pamene masamba ndi udzu zimayikidwa pa matabwawo. Zinyalala zoolerana munthakazi, zikakhala zochepa ndikwabwino kuziyika mozungulira zomera ndi mitengo yomwe ikufunika kukoloredwa.

Alimi amene angathe kugula zinyalalazi poyamba pomwe zimawathandiza pa munda wawo. Komano izi sizotheka kwa mulimi wamba ku Haiti. Alimiwa amadikira mpaka mitengo ndi zomera zina zongothandizira zikhwime. Mitengo yothandizira imatenga zaka ziwiri kuti ikhwime pamene udzu umatenga chaka chimodzi.



**Kukwirira nthaka ndi zowolerana  
maka mozungulira mitengo**



**Kuonetsetsa kuti nthaka yonse yakwiridwa bwino**



**Zomera zimakhala bwino kwambiri ngati pali zophimbiri pamwamba pa nthaka monga  
momwe mukuoneramu kuti mbali zomwe sinaphimbidwe zomera sizikukula bwino**

2. Kubzala zomera mwanzeru zosiyana makulidwe koma zomverana, zomera zosiyana makulidwe koma zomverana ndi mudzi wa zomera umene umakula limodzi momverana, nufikira mitundu yonse inayi ya matalikidwe osiyanasiyana a zomera ndiponso mudziwu umakhwima pakatha nthawi komanso pakadutsa ndime zonse za kupatsirana.

Zimenezi zikutanthauza kuti muyenera kukonza malo anu ndi masomphenya. Lingalirani mmene zomera ndi mitengo pamalo imakhwimira pakatha nthawi.

Kulingaliraku kumafunika kudziwa kwa ndithu maka za mmene zomera zosiyanasiyana zimakulira. Kakonzedwe ka ulimi osunga mphamvu wakasakaniza (syntropic designing) ndi kozunguza kwambiri koma kakonzedweka kakachitika molondola kamapindulitsa kwambiri. Mbali ina ya buku la kalozerali ikuthandizani mmene mungapangire zimenezi. Koma tiyeni kaye tione chitsanzo chimodzi choyerekeza chammene munda wa nzeru ungakhalire.

Tingoyerekeza kuti kuyamba ndi malo opanda kanthu. Masamba ndi maudzu a zakudya za ziweto zimayambilira ndi izo kupezeka paliponse koma pakutha pa nthawi malowa amasanduka nkhalango ya zakudya. Masamba adabzalidwa koyambilira aja amamubweretsera mlimi phindu komanso amapereka malo oyambilira otetezeka kwa mbande za mitengo.

Midzi ya zomera zodalirana zosunga mphamvu (syntropic consortium) imadziwka ndi dongosolo lothinana lobzala zomera zosiyanasiyana zimene zimakololedwa nthawi zosiyananso. Kukolola masamba kungachitike mu masabata atatu kuti kutheke ndipo mulimi atha kupitiliza kukolora mopitilira chaka chimodzi, mopenda makulidwe, maka kutengera ndi mtundu wa masamba obzalidwawo. Pamene chomera choyamba kucha chachotsedwa zimapereka danga la malo ochuluka kwa zipatso zochedwerapo kuti zigwiritse ntchito. Munjira imeneyi, nthaka imagwiritsidwa ntchito mopambana ndipo sipakhalanso mpata kwa zomera zina kuti zipikisane ndi zofunikazo.

Masamba akhoza kubzalidwa motsatizana potengera nyengo ya mvula mmene iliri kufikira malo onse atatchingidwiratu chikamatha chaka choyamba udzu umakhala wakonzeka ndipo chikamafika chaka cha chiwiri mitengo yothandizira imakhala kuti yafika posadzidwa masamba ndi nthambi(wood) Mu mayiko amene akutukuka kumene matabwa ndiofunika kwambiri, mulimi akhoza kusankha kugwiritsa ntchito zina ngati nkuni. Koma ndizotheka kusiya zothandizira kakulidwe kamphamvu ka tizirombo ta fungi tomwe timadalira mitengo. Malo amayamba kutchingika (kuyanga) pakatha zaka zinayi zoyambilira. Pali njira zambiri zimene malo olimapo angathe kuonekera panthawiyi kutengera ndi mmene zomera zidabzalidwira. Kunena mwachidule, malo olima amapita kwambiri kumbali ya mbewu zokonda mnthunzi monga ngati masamba obiliwira (leafy greens) Nanazi komanso mitengo yokonda nthunzi monga Khofi.

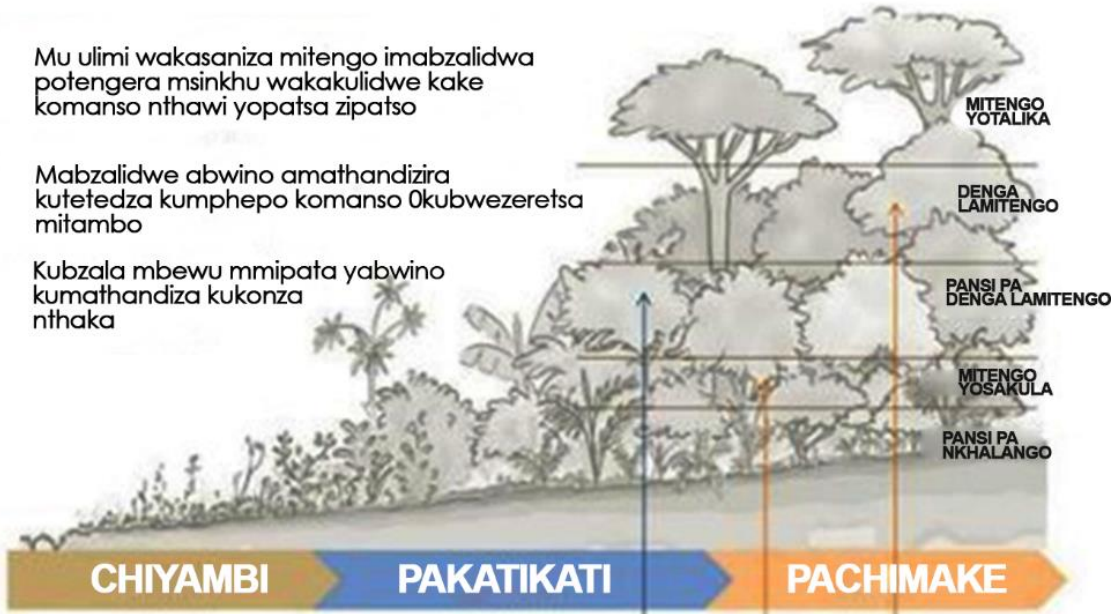
Ngati mitengo inabzalidwa kuti izitulutsa matabwa omangira zinthu, mitengoyo imayamba kulamulira pamalopo nayonso. Poyikamo zinthu zonsezi pamene kukupangidwa dongosolo loyamba lamabzalidwe, chaka ndi chaka malo olima amatulutsa zokolola zamitundumitundu, zazikulu ndi zambiri. Nthawi zina, mkatikati mwa zaka ziwiri zoyambilira, kukhoza kukhala kwabwino kusadza kwambiri zomera malo onse cholinga mbewu zokonda dzuwa zoti zigulitsidwe komanso zibzalidwe pamalopo kenanso.



Mu ulimi wakasaniza mitengo imabzalidwa potengera msinkhu wakakulidwe kake komanso nthawi yopatsa zipatso

Mabzalidwe abwino amathandizira kutetedza kumphepo komanso Okubwezeretsa mitambo

Kubzala mbewu mmipata yabwino kumathandiza kukonza nthaka



**2** ZOYENERA KUBZALIDWA MU NTHAWI YAKE



mbewu zimasankhidwa potengela nthawi yonkhwima, ndimomwe zimakulira pamodzi ndi zinthu zina

Izi zimagwilizana munyengo yokula



## Kasinthidwe ka munda pakupita kwa nthawi



**Miyezi 4:** chimanga, mapira, nyemba, maungu, tomato, mpunga ndi mavegetables osiyanasiyana



**Pakatha chaka ndi theka:** magombo, papaya, chinangwa, nzimbe, galadeya ndi chinanazi



**Pakatha zaka zisanu:** Nthochi, coffee, mabulosi, mandimu, avocado, cashew, mango, mpoza (ya chizungu), guaffa ndi mitengo ya nkhuni (e. g. bluegum)



**Pakatha zaka 18:** nthochi, macadamia, cashew, mabulosi, coffee, ndi mitengo ya nkhuni



**Pakatha zaka 40:** Mitengo monga ikuonekayi ndi ina ya ziptaso kapena nkhuni imakhala kuti yayamba kupereka mphindu monga m'bawa, mlombwa, mkhuyu, jujube

### NDONDOMEKO YA KADZALIDWE

Ndikwabwino koposa kubzaliratu zomera ndi mitengo yonse mu munda wamoyo panthawi imodzi kumayambiro akubzala makamaka ngati malowo ali a chonde chokwanira kulandira zobzalidwa zonse. Izi zili choncho bwanji? Chifukwa ndichokuti pamene mitengo yakhwima kumakhala kovuta kubzalamo zomera zina

zatsopano nthawi zambiri pamene mitengo yatsopano ingathe kuonjezedwa, koma kupitilira pamene kudulira koyenera kumafunika kuti pabzalidwe mitengo yatsopano. Koma ndikofunika kwambiri kuyamba ndi mitengo ndi mbewu zonse kumayambiro ngati nkotheke. Komanso ndikwabwino kubzala mitengo pogwiritsa ntchito njere mochuluka kenako ndikuchotsa zonse zofooka pamene njerezo zikukhwima kufikira mipata ya pakati pa zomera yoyenera yafikilidwa kuti kukhwima kuchitike. Njere ndizabwino poti zimafuna ntchito yochepera pobzala maka pofanizira ndi kubzala mbande pa mitengo pa munda oyamba. Njere sizimakhala zokwera mtengo ndiponso sizimavuta kulora zomera zosiyanasiyana. Komanso pogwiritsa ntchito njere pobzala, mlimi amapereka mpata kwa nthaka yamoyo kuti isankhe mtundu wa chomera umene utakule mwamphamvu pa dera lililonse.

Komabe pali zovuta zina. Mitengo ina siingathe kubzalidwa pogwiritsa ntchito njere (mwachitsanzo ndi breadfruit) ndi mitengo ina imene singakule modalilika pogwiritsa ntchito njere yomweyo (mango ndi zina) zotere zimayenera kubzalidwa polumikiza nthambi ndi phata la chomera china (grafter) mitundu ina ya miyengo imakula mwamphamvu pobzala nthambi zodulidwa (cuttings)ndipo sizivuta kukhazikika pamalo kusiyana ndi kuyamba kubzala kaye njere yake. Komanso mbewu zina zimayenera kubzalidwa tikangomaliza kuthyola zipatso. Ngati nthaka siili yokonzeka kulandira mbewuzi ndiye kuti nkofunika kuti mbewuzi zibzalidwiretu ku mayambiro kwenikweni. Mwachitsanzo, mbali zina za ku Haiti, mbewu ya Koko (cacao) imakhwima nthawi ya chilimwe ndipo mbewu zake zimakula bwino kwambiri ndinso mwachangu. Zikatero, chomera cha Koko chimafunika kuchiyamba kuchibzala pogwiritsa ntchito mbande zamitengo. Kubzala pogwiritsa ntchito njere ndikokondedwa, komabe pali nthawi zambiri pamene kudzala mbande kumafunika.

Nkofunika kuzindikira kuti mitundu ya zomera za chilengedwe kapena zomera zokha zimathanso kukulira limodzi mosapereka mabvuto ku zomera zosiyanasiyana zomwe zabzalidwa. Panthawi ya gawo la chiyambi (placenta phase), tchire lina limatha kumera limene lingagwiritsidwe ntchito ngati zomera zothandizira pa kusadza. Mbewu ya mitengo yomera yokha paliponse imathanso kupezeka m'munda momwemo. Nthawi zambiri mitengoyi imatha kubzalidwa ndi mbalame kapena zamoyo zina zakuthengo ndicholinga chokuti zomera zikwaniritse ntchito inayake yothandizira mundawo. Koma ngati sizitero, zomera zokhazo zimangoyenera kuchotsedwa ndipo ndikoyenera kwambiri kudikira ndi kuona kaye. Mitengo yomera yokhayi ingathe kuonjezera pa mitundu ya zomera zosiyanasiyana m'munda ndiponso mitengo imatha kusokelera malo onse amene anasiyidwa pambalambanda ndi mlimi wosadziwa. Ndikosavuta kuuchotsa mtengo mtsogolo pamene mukuona kuti ukupikisana ndi zomera zanu zobzalidwa popeza kuchotsa nkosavuta kusiyana ndi kubwenzeretsa mtengo omwe wachotsedwa.



## ZOTSATIRA ZOCHOKERA KU GAWO LA KUCHULUKA

Ngati mulimi wa ulimi osunga mphamvu watsata ndondomeko zonse zofunika zopezeka apa. Ndipo ngati iye wayamba ndi dongosolo labwino ndiponso wasamalira munda wake poona mbali zonse zofunikira, mundawu umasintha pakatha nthawi. Alimi ambiri amangodziwa zinthu zikamachita bwino, koma ndikwabwiiio kumakhala ndi zolinga zogwirika zolozera mayankho. Mumadziwa bwanji pamene munada wanu ukulowa mu gawo la kuchukuluka? Izi ndi mwazina zokuthandizirani kudziwa:

1. Mtundu onse umasinthiratu mokoma, kuchokera ku mtundu wa phuluza nkusanduka mtundu obiliwira owala.
2. Kulukana kwa dothi kumakweranso chifukwa cha kuchuluka kwa tizilombo ta mnthaka (ma fungi).
3. Kakulidwe ka tchire wamba kamasintha nkusanduka mtundu wa zomera zopezeka mmene muli matabwa mmalo momagomera pa nthaka iliyonse yopanda kanthu.
4. Mtundu wa zomera zosankha malo (finicky) umayamba kumera.
5. Mtundu wa mitengo yokhalitsa umakula nkufikira pa gawo la pamponda chimera.



**Pachinthunzipa pakuonetsa zomera zomwe zinali zosabiliwira zitasintha kukhala zobiliwira kwambiri ndi zowala.**





**Chinthunzichi chikusonyeza nthaka yopanda zowolerana komanso yopanda tizirombo tobweretsa chonde mnthaka**



**Chinthunzichi chikusonyeza nthaka yokhala ndi zoworerana komanso tizirombo tofunika mnthaka totchedwa ma fungi tomwe timathandiza kuoletsa zinthu mnthaka kuti ikhale ya Chonde.**





**Chinthunzi chomwe chikusonyedwachi, chikuonetsa gawo lapakati ndi pakati lomwe nthaka imakhala ndi chonde chochepa.**

**Chinthunzi chomwe chikusonyezedwachi chikuonetsa gawo la nthaka lomwe limakhala ndizirombo tofunikira mnthaka tomwe timabweretsa chonde pofulumiza kuwoletsa zinthu mnthaka**

## **KUSINTHA KWA DONGOSOLO LA ULIMI**

Ulimi osunga mphamvu umasonyeza kusintha kwa ulimi kwakukulu kuchokera ku ulimi wa chikhalidwe, ingakhale ulimi odalira zotsatira za chilengedwe. Kumbukirani kuti malo olima amaonedwa ngati nthaka yamoyo, yanzeru, yaumodzi ndipo zonse zochitika pamundawu zimayenera kupindulira munda onse. Kuchokera pakuunika mbali zonse zofunika, nthaka yonse ingathe kupereka zochuluka, koma nthawi zina nthakayi imayenera kutulutsa zokolola zosiyana ndi zimene mulimi amakhumba. Ndikwabwino kukhala ndi cholinga, komanso ndikofunika kukhala okonzeka kusintha cholinga chako ngati zinthu sizikuyenda bwino. Mukakwanitsa kudziwa chomwe mundawu uyenera kutulutsa, chilichonse sichivuta. Pamene pali kuchuluka, malo olima amakhala okhazikika kunkhani yachuma. Koma pakakhala mkangano mphamvu zimaonongedwa.

Kuti mulimi apitilizebe kuunika mbali zonse zofunikira zimatanthauzanso kuti zomera zothandizira zipatsidwe chisamaliro chofanana ndi mbewu kapena mitengo yofunikira. Mitundu iwiri ya zomerayi ili ndi ntchito zosiyana komabe yonseyi ndiyofunika mofanana. Zonsezi zimathandizana ndikudalirana kuti zonse zichite bwino. Nthaka yamoyo imazisamalira yokha pamene iyoyi isungidwa yamphamvu

ndi yathanzi. Pamapeto pake malo olima amafuna kukonza kochepa pamene zokolola zimakhala zochuluka. Nthaka imabwereranso mchimake ndipo nthenda ndi tizilombo toononga mbewu zimasowa.

Kupezeka kwa nthenda, tizilombo toononga kapena zokolola zochepa ndi chenjezo lakuti nthaka ili yofooka komanso yosalinganizika. Mukukumbukira kufunika kwa zopezeka zathanzi zosiyanasiyana zamunthaka? (Health gut flora) zikafika apa, opanga ulimi wakasakaniza osunga mphamvu ayenera afufuze kuti amvetse chomwe chikuyambitsa vuto m'munda. Iye amachitapo kanthu kuti abwenzeretsenso dongosolo monga ngati kusadza mbewu mwaukadaulo, kuonjezera zomera zambiri zosiyanasiyana mitundu kapena kubweretsa tizilombo tachilengedwe.

Nthawi zina zonse zikhoza kudulidwa ndipo mulimi amayenera ayambirenso ndi dongosolo latsopano. Ilipo nyengo imene “kachilombo koononga” ndiye njira yoyenera kukonza zochitika, kumakhala kuukira mbali ya kumene kukupangitsa nthaka kuti ifooke. Zikaterere, mulimi amangoyenera kulola kuukiraku kuti kuchitike kenako ndikupenda chabwino kwambiri choyenera kuchita ndi munda maka maka mpungwepungwe onse ukazizira.

Njirayi ndiyosiyaniratu ndi zimene alimi ambiri amadziwa, alimi ambirinso maso awo amakhala pa zomera akuzifunazo posaganizira kapena kuwerengera mbeu zina zili mmundamo. Iwo sasamalira za zomera zokhala nthawi yayitali m'nthaka, mitengo ndi machitidwe osunga nthaka amene amathandizira kulimbitsa chonde cha chilengedwe pamalo. M'chitidwe osalabadirowu umapangitsa nthaka yamoyo kukhala yofooka kotero iyo imakhala yosatetezeka ku kuukira ndinso mpikisano.

M'malo movomereza kuti nthaka yafooka, alimi amaona tizilombo toononga ngati ndiye vuto lenileni loyamba. Tizirombo toonongati nthawi zambiri timakumana ndi nkhondo monga ngati kuthiridwa kwa mankhwala ophera tizilombo ndi ophera udzu. Zokolola zimakhala zochepa ndipo zimaonedwa ngati vuto lakusowa kwa fotereza ndilomwe lapangitsa ndichifukwa dothi limakonzedwa nthawi zambiri.

Ngakhale njira yachilengedweyi imatulutsa zotsatira zabwino, njirayi imagwira ntchito koma pantengo wake ndithu. Vuto la zachuma silokhalo limene limabwera pogwiritsa ntchito zolowetsa zakunja, komanso, chipsinjo chachikulu ndichakuti mavuto a nthaka samadziwidwa kapena kukonzedwa ndiponso amakulitsidwa kwambiri pamene mankhwala ophera tizilombo amasokoneza zamoyo zofunika m'munda. Nthaka yotere imasanduka yodalira kwambiri fotereza ndi mankhwala ophera tizilombo ndipo chaka ndi chaka nthaka yabwino idzapitilirabe kutha.

Ili ndi vuto lalikulu limene dziko lapansi likukumana nalo panopa. Zotsatira za kuonongeka kwa nthaka ndi zazikulu, kuphatikizapo kutayika kwa chitetezo cha chakudya padziko lonse ndinso kusintha kwa nyengo (nthaka imakhala ngati malo abwino kwambiri osungirapo kaboni).

## **KALOZERA WOBZALA MBEWU ZOSIYANASIYANA ZOSUNGA MPHAMVU**

### **KUSANKHA MALO:**

Cholinga cha kalozerayu ndicho kugwiritsa ntchito munda omwe ulipo. Njira za kabzalidwe zomwe zapangidwa pano zapangidwira madera otentha, makamaka malo a kumapiri ku Haiti kapena ena ofanana nawo. Kuti mulimi agwiritse ntchito njira za kabzalidwezi, nthaka iyenera kulandira mitengo yomwe yalembedwa apayi. Ngakhale njira imeneyi imabweretsa nthaka yathanzi, pamalo pamene chonde palibe, dongosololi silifunikira ku nthaka yomwe yagugiratu kwambri kapenanso malo ooneka ngati chipululu.

Mukapatsidwa mpata osankha malo abwino, awa ndi maonekedwe abwino a malo:

- Papezeke mitengo kapena zomera zina zilipo (zomwe zingathe kusandutsidwa zinyalala zotchinjiriza pamwamba pa nthaka.
- Magwero amadzi achilengedwe
- Chitetezo cholimbana ndi nyama zakudya mitengo (makamaka mbuzi ndi ng'ombe)

### **KULUNJIKI KWA MIZERE**

Njira yokonedwa yobzalira mitengo m'mizere ndi mpoto/mmwera. Izi zimapanga “khoma” la mitengo imene imayamwa mphamvu yadzuwa yambiri. Khoma limeneli limapeza kuwala kwa dzuwa kwabwino ingakhale dzuwa liwale pang'ono kum'mawa ndi kumadzulo. Ngati pali vuto la kukokoloka kwa

nthaka, ganizirani kubzala mitengo mmizere. Izi zimatanthauza kuti mzerewo wayima mopingasa mtsetse, kapena kuti mzerewu umakumbatira phiri kuti uletse madzi amvula. Mukhoza kuganizira njira imeneyi ngati pali malo otsetsereka ndipo ngati dothi silingathe kutchinjirizidwa kuyambira tsiku loyamba. Ngati nthaka ingatchinjilidwe ndipo ndondomeko yobzalira mwakathithi yagwiritsidwa ntchito, monga imene ili mukalozerayi, nthaka imatha kusunga madzi pangakhale pamalo otsetsereka, komanso ingakhale mizere ikwere m'mwamba ndikutsika m'munsi mwa phiri, koma ku Haiti, mlimi wamba sangathe kukwanitsa kukhala ndi zinyalala zotchinjiriza zokwanira pa nthaka kuchokera tsiku loyamba ndipo ndikofunika kulingalira kuyika mizere yamitengo m'malire.





Chida chaukadaulo chotsika, koma cholondola kwambiri cha A- frame chingagwiritsedwe ntchito kupanga mizere yozungulira pamunda. Ndi maphunziro ochepa, mlimi akhonza kuphunzira kulemba malire oyenera a malo onse ndi kupanga mizere yabwino kwambiri yamitengo. Kanema wabwino kwambiri wawonetsa momwe mungapangire komanso kugwiritsa ntchito A- frame angapezeke apa.



**Chipangizo chopangira mizere mosavuta**

## ZITHUNZI ZA DONGOSOLO LA UDZU WA VETIVA



*Chithunzi choonetsa kapangidwe ka malo a thyathyathya omwe apangidwa kopitilira zaka ziwiri ndi theka.*



*Apa masitepe a thyathyathya amachita kupangidwa pamanja ndipo udzu wa Vetiva wabzalidwa kuti malowa akhazikike.*



*Mpanda wa Vetiva (kumanja) wachepetsa mphamvu ya madzi osefukira ndopinso mpandawu watsekereza dothi m'mundawu.*



*Pamunda ku Haiti Vetiva wapanga bwalo la masitepe pogwira nthaka isakokoleke. Zimenezi zapangidwa miyezi 8 yokha.*



*Mpanda wa Vetiva okhwima okhala pakati pa munda wa thyathyathya umatkula zokolora kwa mbewu.*



Nagti nthaka ili yotsetsereka, ndikwabwino kugwiritsa ntchito mpanda wa vetiva ngati chomera chothandizira zinzake pamizere ina iliyonse. Udzu wa Vetiva ndi othandiza popewa kukokoloka kwanthaka m'chaka choyamba komanso udzuwu umatha kupanga masitepe mosavuta ngati ubzalidwa monga mpanda wathunthu mmalire a munda.

## **KAKONZEDWE KA MALO**

- Sankhani malo oti muyambepo. Ngati mukufuna kokonza mundawo pang'onopang'ono pakupita kwa zaka, ganizirani za kuyambira pamalo omwe sangawonongeke malo amtsogolo.
- Chotsani mitengo ndi zomera zambiri zomwe lilipo kale kuti zomwe mukufuna mubzalepo zipeze malo oti zikulepo. Sungani mitengo iliyonse yabwino monga mitengo ya zipatso koma nthambi zamitengoyi zam'musi ziyenera kudulidwa kuti kuwala kwa dzuwa kuzidutsa. Mitengo ina imatha kuduliridwa kwambiri cholinga kuti denga(nsonga) lokha la mitengoyi ndilimene litsalire. Mitengo yomwe imameranso pomwe nsonga zake zadulidwa umathanso kudulidwa motere ndikutengedwa ngati mtengo wothandizira.
- Ikani mpanda mozungulira malowa kapena tetezani iwo kwa nyama zakudya mitengo maka ngati kukufunika kute ro.
- Pangani kapena gulani manyowa ochokera ku zoolerana za zomera ndi nyama, zimene zimagwiritsidwa ntchito pobzala mbande za mitengo ya zipatso.
- Sonkhanitsani zotsalira kumbewu zotchingira nthaka zambiri m'mene mungathere.
- Konzani mizere ya mbewu mundondomeko yomwe mwakonda. Kapangidwe kameneka kamagwiritsa ntchito mizere yotalikira mamitala anayi.
- Tipulani malo okhawa amene mukufuna mubzalepo.

## **MAKONZEDWE A KUBZALA MITENGO**

Kutengera kapangidwe kameneka ngati kalozera, mutha kusinthanitsa mitengo iliyonse yomwe ili m'gulu limodzi la matalikidwe, wina ndi mnzake.

Onani kupangidweka, mfunguli ndi zojambula zoonetsa kuchepa kwa kutalikirana. Ndikofunika ku:







- Khala ndi matalikidwe onse aonetsedwe
- Khala ndi mitundu yosiyanasiyana ya zinyalala zotchinjiriza nthaka mmene mungathere
- Phatikizapo zomera zamoyo wautali, zofika pampondachimera.
- Yesetsa kwambiri kubzala zonse nthawi imodzi
- Ona kuti ngati nkotheke kubzala, gwiritsani ntchito njere, mmalo mwa mbande ndi zobzala nthambi zodula.

**KAPANGIDWE KA KABZALIDWE KA MBEWU ZOSIYANASIYANA ZODALIRANA**

	Zoyamba 1	Zoyamba 2	Zachiwiri	Zachiwiri/pachimake
Zotalika kwambiri	chimanga, mapira, there're, chidede	Papaya, nzimbe, nsenjere	Bulugamu, Akesha, Mpini (mpululu)	M'bawa, mlombwa,
Zapamwamba	Lettuce, mpunga, kabitchi, Broccoli	chinangwa, nthochi	Chamwamba, Gliricidia, Leucena	Bwemba, Coconut, Mango, mapeyala, Jackfruit, Breadfruit, Mvumo (mulala)
Zapakati	Nyemba zokwerera, Tomato, mabiringanya	Zicheche (air potatoe), cocoyam, nandolo	Mpoza (ya chizungu), malalanje, mandimu, malitchi	Manatchesi, Cashew
Zapansi	maungu, mbatata	Nanazi	Kale	Khofi, koko






**Mbewu zosiyanasiyana zomwe zimagwiritsidwa ntchito zanthete (zaziwisi) komanso zimabweretsa chonde chochulukuka munthaka**

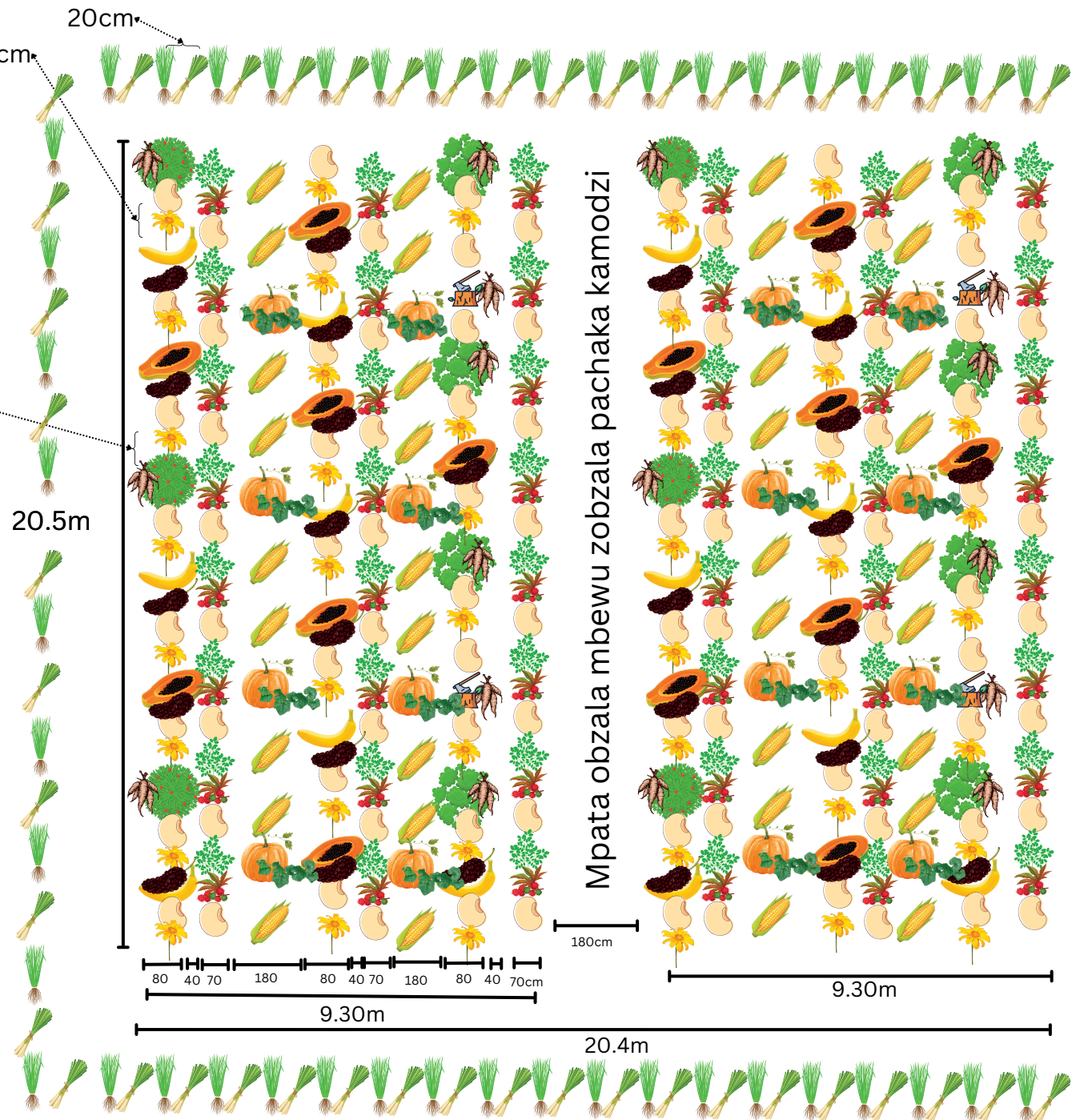
 Lemongrass	 Mexican sunflower, denya
 Vetiver grass	 Nsatsi
 Gliricidia/Pigeon pea/Moringa/Wombwe /Msangu/Mtanga Tanga	 Chinangwa

**Mbewu zokoledwa zitakhwima (zitapsa) ndipo zimakahala ndi mitengo kapena mapesi**

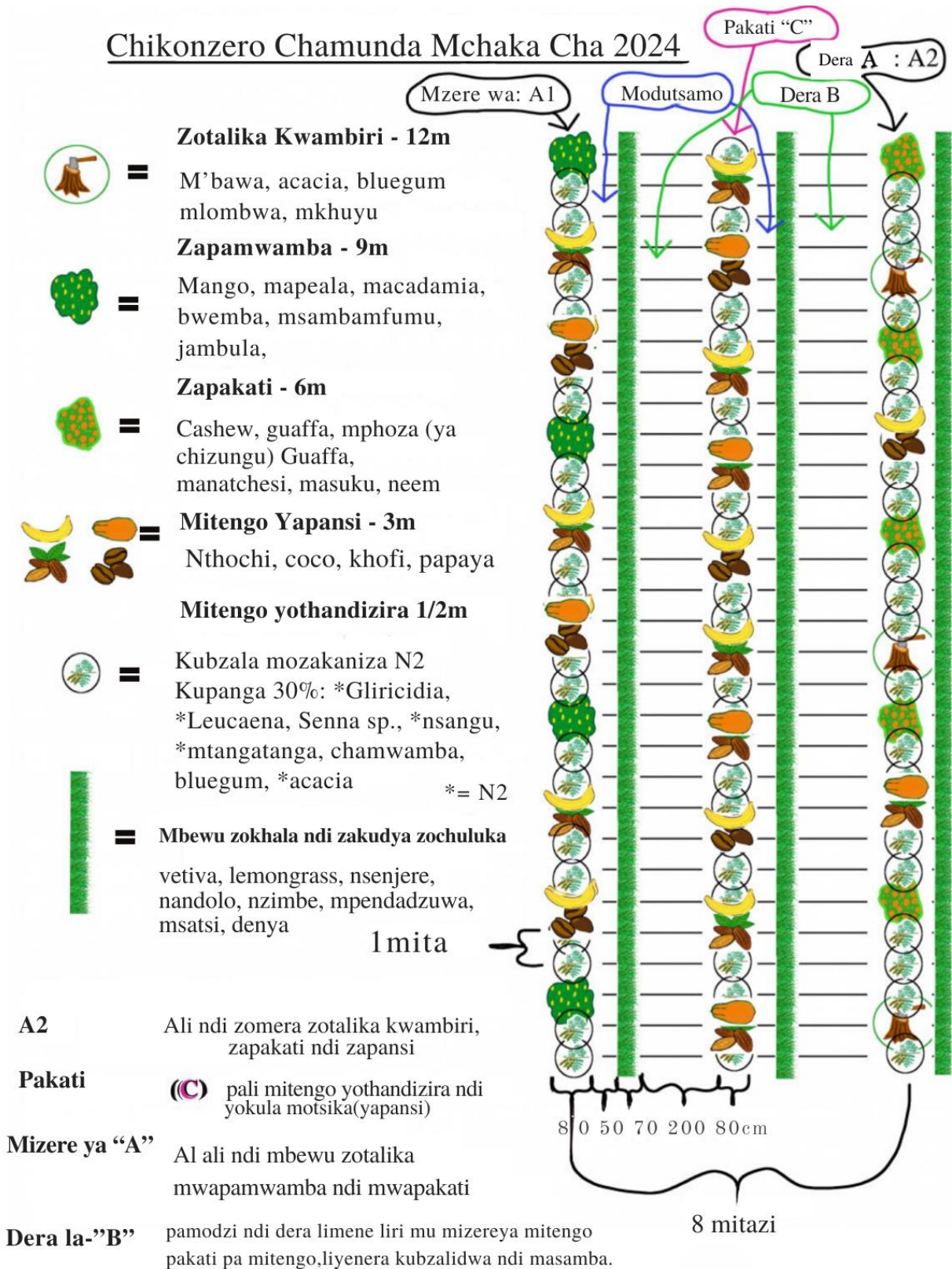
 Dzungu (ndi nyemba)	 Nthochi	 Papaya
 Mabulosi	 Chimanga/masamba	

**Mitengo yobzalizidwa ndi cholinga cha malonda yaitali pang'ono komanso yaitali kwambiri**

-  Emergent (12m): Mbawa, Mlombwa
-  High (9m): Mango, Avocado pear, Macadamia, Jambula/Katope, Kachere, Msambamfumu
-  Medium (6m): Cashew nut, Tangerine, Mphoza, Neem, Masuku



# Chikonzero Chamunda Mchaka Cha 2024



Mitengo ya mmusi imabzalidwa pamodzi ndi nthochi kapena ma papaya, chifukwa izi zimapereka nthuzi kumitengo ing'ono ing'ono mitengo ya cocoa kapena cofee iyenera kubzalidwa mbali yaku madzulo kuiteteza kudzuwa

Ziwirizi zimapereka nthunzi pamene mtengo ofunkira uli wau ng'ono izizo zibzalidwe kumpoto- chakumadzulo kwa mtengo wa Koko/khofi kuti koko/khofi atetezedwe ku dzuwa lakumadzulo. Ndikofunika kugwiritsa ntchito nthochi zosachepera theka chifukwa ndi zofunika komanso gwero lapaderadera la zomera zothandizira zinzake.

Chidule cha mapangidwe, makonzedwe oyenera kubwerezedwa iwo atha kukulitsidwa m'litali ndi m'lifupi. Koma ndikofunika kuonetsetsa kuti mmene mzere uliwonse wamitengo umasiyanyirana ndikusunga makonzedwewo chikhalire makonzedwe ndi A1, C, A2, C, A2, C ndi zina.

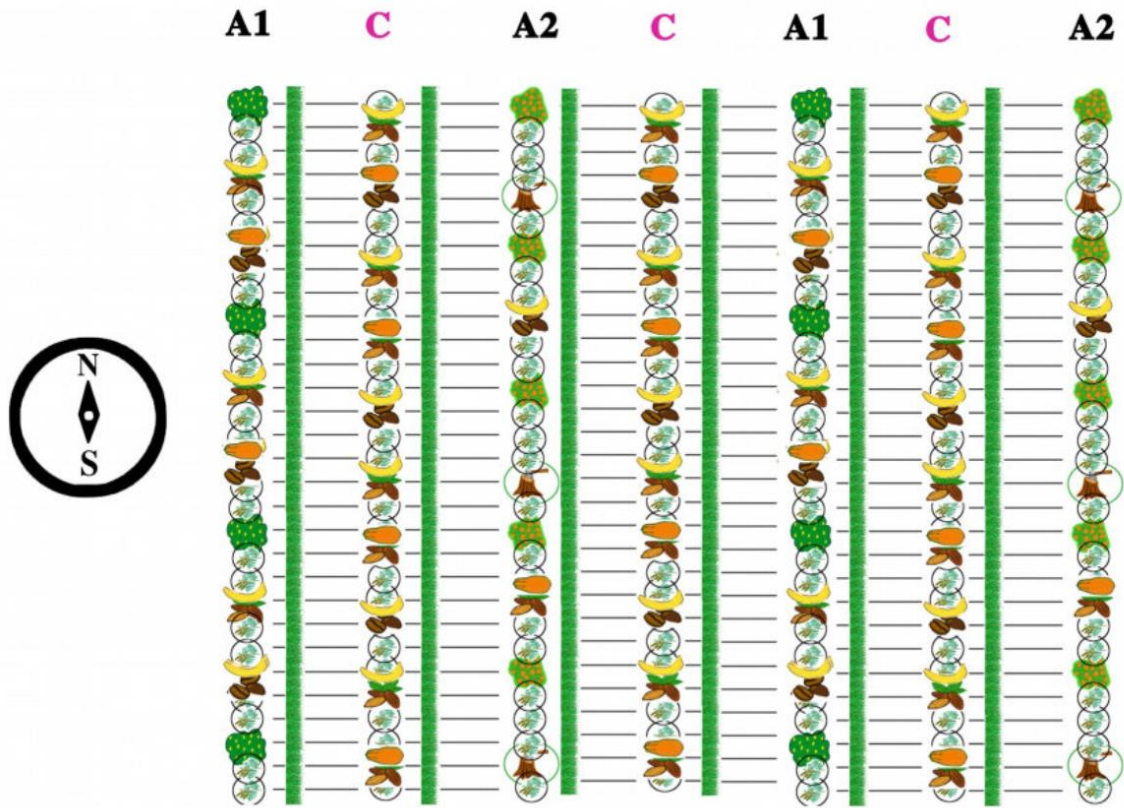
**A1**= yapamwamba ndi yotsika (yapansi)

**C**=mitengo yothandizira ndi yotsika (pakati)

**A2**= yayitali kwambiri, yapakati ndi ya pansu

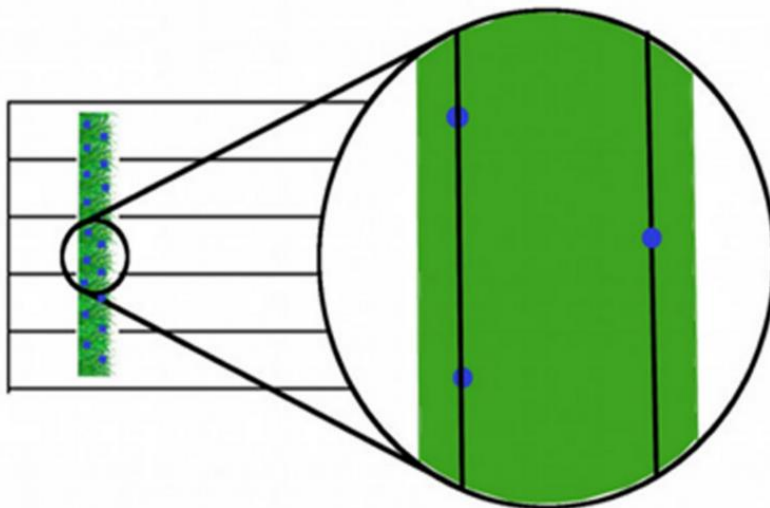
Mzere ulionse wa mitengo uli ndi kanjira ndi mzere wa zomera zothandizira zosatulutsa matabwa. Komanso zindikirani kuti mzere wa mitengo ya pakatikati izakhala yapafupi. Iyoyi ndi yongothandizira chabe nthaka ndiponso yamatalikidwe am'mudzi. Mitengo yothandizira imadulidwa nsonga zake ndipo mitengo ina imakhala yapafupi. Mitengo yayitali isabzalidwe pamzerewu zimene zingapangitse mundawu kukhala ndi mnthuzi oonjeza.





**KUTALIKANA KWA CHOMERA CHOHANDIZIRA**

Kutalikana kwa chomera chothandizira



Udzu wa Vetiva, udzu wa nsenjere, nandolo kapena denya  
= masentimitala 30 (pafupifupi kutalika kwa phazi)





# Mfungulo Wachizindikiro Cha Mtengo

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Yotalika  
Kwambiri  
**12m**



M'bawa, Mng'wenya, Bulugamu,  
Acacia, mlombwa,

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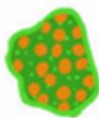


Yapamwamba - **9m**



Mango, Mapeyala, Coconut, jackfruit,  
macadamia, jambula, msambamfumu

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Yapakati - **6m**



Mpoza (ya chizungu), Gwafa, cashew,  
nimu, masuku, manatchesi

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Yammusi - **3m**



Coco, khofi, nthochi, magombo

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Mitengo yopereka  
chonde mntshaka  
**1/2m**



Gliricidia, Bulugamu, Chammwamba  
(Moringa), Kesha, Cassia (Senna),  
Leucena, nsatsi, nandolo, denya, vetiva  
grass, nsenjere

# Mipata Yoyenera pobzala mitengo



Mtengo wautali ku wautali unzake - **12m**



Mtengo wapansi ku wapansi - **3m**



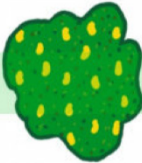
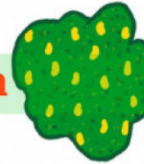
Mtengo wautali ku wapakati - **2m**



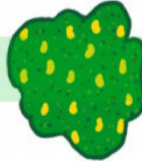
Mtengo wautali ku mtengo wothandizira - **1/2m**



Mtengo wapamwamba ku wapamwamba - **9m**



Mtengo wapamwamba ku wapansi - **2m**



Mtengo wapamwamba ku wothandizira **1/2m**



Mtengo wapakati ku wapakati - **6m**



Mtengo wapamwamba ku wothandizira - **1/2m**



Mtengo wothandizira ku wothandizira - **1/2m**

## KUDZIWRIRATU MBEWU NDI MTUNDU WAKE ZOYENERA KUGWIRITSA NTCHITO MMUNDA

Ndibwino kudziwiratu momwe mbewu zingayalidwire mundandanda woyenera pa munda komanso muyeso wake wa mbewu. chiyerekezo chotsatirachi chikuonetsa munda omwe uli ndi mindandanda itatu wotalika 18m ndipo chikuyerekezewa kuti mindandanda ulionse uli ndi utali ofanana.

- Mitengo yotalika kwambiri 2
- Mitengo yotalika 3
- Mitengo yapakati ndi pakati 4
- Mitengo yaifupi 11
- Mitengo yokhala ndi mphamvu yochulukira 100
- Mbewu zokhala ndi mphamvu yochulukira 240

Ngati mitengo yokhala ndi mphamvu kwambiri mbewu zake zikusowa chithunzithunzi chili mmusichi chikhoza kuthandiza kudziwa nthawi yokhwima komanso nthawi yoyenera kuzitenga kumunda. Mitengo ina ikhoza kulimidwa pogwiritsa ntchito mphindi za mitengo zoduladula

MOMWE MITENGO IMALIMIDWIRA KU MALAWI			
MITUNDU YA MITENGO	MBEWU	ZODULIDWA	NTHAWI YOKHWIMA
GLIRICIDIA	X	X- DEC-MAR	
BULUGAMU	X		
CHAMWAMBA	X	X- DEC-MAR	
AKESHA	X		
CASSIA	X		
LEUCAENA	X	X	
MTANGATANGA	X	X	
NSANGU	X		

### KACHITIDWE KAKE

Zomwe zikuonetsedwa pamwambapo ndi ntchito yomwe kafukufuku wake akupitilira ndipo kutsogoloku zikhoza kusintha momwe ziliri.

Kusengulira mbali zina za zomera, kupalira komanso kupatulira mbewu ndi zofunika kwambiri padongosolo lofunika pamunda. Pali zifukwa zochulukira zomwe anthu /alimi amasengulilira mitengo. Zina mwa zitsanzozi ndi izi:

- a. - Kupereka mpata ku mbewu kapena mitengo kuti zikhale ndi dzuwa lokwanira.
- b. – kudziwa momwe mbewu zikukulira
- c. – kuchotsa mbewu zakufa komanso za matenda.



- d. -Kuchotsa ndi kusengulira mitengo ndi mbewu zosafunika m'munda.
- e. -Zinyalala zovundikira zima funika
- f. -Mpata wabwino uma funika pakati pa mitengo
- g. -Kuonetsetsa kuti mitengo ndi yotalika moyenera kupangira kuti mulimi azitha kukolola mosavuta.

Njira zina zomwe ziyenera kutsatidwa podzala mitengo ndi mbewu zina

### **MITENGO YOMWE IMASUNGA CHAKUDYA CHAMBIRI**

Pamafunika kudikira kaye kuti mtengo ufike 3m mvula ikayamba kenaka ndikudula mnsonga za mitengoyo. Madulidwe akuyenera kukhala a luso ndi cholinga choti mtengo udzitha kutaya madzi mosavuta kuti ukule bwino. Kuchotsa masamba a nthambi ndikuwaika pamwamba pa zipika choyamba. Mulimi akhoza kufuna kugwiritsa ntchito nthambizi ngati nkhu komanso mirimo, koma ndikoyenera zambiri kuziyala mmunda kuti ziwole pofuna kukonza nthaka kuti ikhale yabwino komanso kuchulukitsa tizilombo topezeka mnthaka.

Ndibwino kuonetsa kuti munthawi ya malimidwewa nthambi zazing'ono zikuyenera kusengulidwa ndi cholinga chofuna kupereka mapata wa dzuwa labwino komanso kutakasuka kwa mbewu.



**NJIRA ZABWINO ZOSENKULIRA  
MITENGO MOYENERA** © World Vision Australia



**Kudula Pogwiritsa Ntchito Chipangizo  
Chakuthwa Mokweza Mmwamba**



**Kudula Mogwiritsa Ntchito Chipangizo  
Chosathwa Komanso Moyangana Pansi**

**MBEWU ZOMWE ZIMASUNGA CHAKUDYA CHAMBIRI**

- Nthochi ndi mbewu yomwe imasunga chakudya chambiri. Nchinthu choyenera kuti zidzilimidwa mochuluka. Mmusimu mukuonetsa momwe chithime cha nthochi chimadulidwira mzidutswa zazing'onozin'gono nkuziika panso mozungulira mitengo ndi zomera. Izi ndi zofunika chifukwa zikatero nthaka imasunga madzi.



**Nthochi itasengulidwa ndipo zosengulira zakezo  
ndikuziyalamozungulira mitengo**

Pamene mbewu zina zomwe zimakhala ndi chakudya chambiri chofunika mnthaka zagwiritsidwanso ntchito monga udzu, nandolo komanso mpendadzuwa; mbewuzi ndizoyenera kudulidwa pa nthawi yomwe zili ndi maluwa. Udzu uyenera kudulidwa panthawi yomwe watsala pang'ono kukhwima.

Zodulidwazi zikuyenera kuyalidwa mozungulira pansu pa zomera ndi mitengo. Mwachitsanzo mozungulira mitengo ya zipatso kusegulira ndi kofunika munthawi yomwe mitengo ikukula.

## **MITENGO YA MGULU LA MALALANJE NDI MANDIMU**

Mitengo monga Malalanje ndi mandimu komanso mpesa simakhala yaitali kwenikweni ndipo imagwirizana kwambiri ndi ulimi wakasakaniza koma zimafunika maphunziro apadera komanso zipangizo. Mitengo yomwe imakhala yaitali ngati yabzalidwa pamodzi ndi mitengo ya mtunduwa ikuyenera kusengulidwa bwino kwambiri.

Ndikofunika kuonetsetsa kuti mitengo ya zipatso monga iyi isamakhale pa mnthunzi nthawi zonse.

Kusengulira mitengo ndizofunikira kamba ka zifukwa ziwiri: choyamba ndi choti mitengo ya mgulu la Mandimu ndi Malalanje sizoyenera kudulidwa mnsonga yake choncho mitengo yonse yomwe ili pafupi ndi mitengoyi ikuyenera kusenguliridwa pofuna kulola kuti mitengo ya zipatsoyi itambasuke bwino komanso mitengo ya mtunduwa imafuna dzuwa lambiri maka panthawi yomwe ikupanga maluwa. Choncho mitengo yonse yomwe ikutchingira inzake ku dzuwa imayenera kusengulidwa chaka chili chonse kuti izi zitheke mitengo iyenera kusengululudwa m'mwamba kumnsonga.

Izi zikhoza kukala zoopsa komanso ndizofunikira maphunziro apadera ndi zipangizo zapaderadera komanso izi ziyenera kupangidwa ndi anthu omwe amadziwa bwino ntchito yawo chifukwa cha izi mitengo ya mgulu la Mandimu ndi Malalanje sikuyenera kukhala mgulu la mitengo ina.

Njira inanso yofuna kupewa ntchito yosengulirayi mwaluso ndibzala mitengo yomwe ndi yayitali komanso yomwe imataya masamba ake munthawi ya chilimwe.

Mmadera aku Haiti mitengo wotchedwa Cedrela Odorata umakhala bwino kusakanizidwa ndi mitengo ya mgulu ya Mandimuyi chifukwa nthawi zina mitengoyi mwachilengedwe imatha kuchotsa masamba ake pamene dzuwa lakula kwambiri. Mu mchitidwewu mulimi ayenera kusankha mitengo yomwe imakololedwa ili yayitali ikuyenera kusengulidwa kwambiri, ina mwa mitengoyi ndi monga; Moringa, Inga.

## MTSOGOLO MWA ZONSE

- Gawo loyambirira la ndondomekoyi imatenga zaka ziwiri

Izi zimathandizira kuti ngati mitengo in yafa ndipo mukufuna kudzala `ina kapena ya mtundu wina ikhoza kudzalidwanso mu gawo ili, koma ngati nthawi yapitilira zaka ziwiri ndizosatheka kuonjezera mitengo kwambiri chifukwa chilichonse chimakhala chikudzionjezera chokha.

Pa zaka ziwiri zoyambirira mulimi ayenera koinjezera mbewu zomwe zimakula kufikira pa chiindeinde. Ndikoyenera kubzala mbewu posafuna kudalira kufesa kaye. Ernst amakonda kabzalidwe ka mbewu komwaza ndi cholinga chofuna kuona mbewu zomwe zikhoza kupitilira ndi kumera pazokha.

Potsatira njira iyi pakutha kwa nthawi munda umasintha kuchoka kukabzalidwe kadongosolo ndikumakhala ngati zomera zokha mwa chilengedwe.

Mbewu zachilengedwe zimadzaoneka apo ndi apo zitamera m'chikonzero chonga ichi. Izi ndizabwino ndipo ndizolimbikitsa kamba koti ndibwino kusamalira chilengedwe ndipo chilengedwe chimakusamala.

## ULIMI WA MTSOGOLO



Ndicholinga komanso masomphenya a munthu wina aliyense mtsogolo muno pa ulimi adzidzagwiritsa ntchito zipangizo ngati izi munkhalango yathanzi yodza kamba ka ulimi wakasaniza wa mitengo ndi mbewu pofuna kupindulira tsogolo la la ulimi mdziko lino la Malawi monga momwe anthu ena ngati ku Haiti apandulira pa ulimi wa wamtunduwu.



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## **Ufulu wakagawanidwe kabukuli:**

© 2016 Roger Gietzen. Zinthu zomwe zili m’bukumu ndi zololezedwa kugawidwa kwa anthu onse mdziko la pansu. Bukhuli likhoza kugawidwa popereka kwa anthu mu njira ina iliyonse yomwe angathe kusungira bukhuuli ndi kulipeze mosavuta, siloyenera kugulitsidwa kapena kugwiritsidwa ntchito ngati nyambo yopezera ndalama. Bukhuli siloyenera kusithidwa mfundo zomwe zili mbukumu koma ndilololezedwa kumasulidwa ku chiyankhulo china chili chonse kuti ena athe kupindula nalo. ([roger@healthy-mind-body.com](mailto:roger@healthy-mind-body.com)).

ndi Markus Lemke, Churches Action in Relief and Development (CARD), [mjlgan10@gmail.com](mailto:mjlgan10@gmail.com)

**Kumasulidwa** Ku Chichewa ndi Sidreck Chingwalu 0882404989) [sidreckchingwalu08@gmail.com](mailto:sidreckchingwalu08@gmail.com)

**Kuwunikidwa** ndi Owen Luther



# SYNTROPIC AGROFORESTRY DEMONSTRATION TRIAL


– Chimwala, Msikawanjala EPA, Mulanje –

**Natural succession**




While it takes up to 250 years for a forest to be formed by itself, syntropic agroforestry shortens this time to 20 years.

**Intelligent consortiums**



All plants have a different functions and support each other while restoring soil health and biodiversity.

**Pruning, grafting and mulching**



Plant growth is stimulated by pruning, grafting and soil mulching done with accurate timing.

The project officially runs from September 2023 till August 2024 with the aim to create a longterm experiment.

“**Let nature do the work for you.**”

The 20 active participants in the project benefit from workshops, technical knowledge acquired through observation and guidance, as well as materials such as trees, seeds and agricultural tools.

“If we compare our maize with the maize of the trial, we can clearly see that the one under syntropic is growing healthier and faster than those grown under the normal system that relies on (synthetic-chemical) fertilizer.”

Smallholder farmer and active participant







**FACTSHEET**


# MUNDA WACHITSANZO WAKASAKANIZA (MBEWU NDI MITENGO)

– Chimwala, Msikawanjala EPA, Mulanje –



 Kukula ndi kudzisamalira kwa mitengo ndi zomera mwa chilengedwe  
Pamayenera kutenga zaka pafupifupi 250 kuti nkhalango ipangidwe, koma Ulimi wakasakaniza umachepetsa zakazi kufika pa 20 zokha basi.

 Magawo ofunikira ambewu zosiyanasiyana mmunda wa chitsanzo komanso mitengo yosiyanasiyana potsatira kakulidwe kake komanso katalikidwe  
Zomera zonse zimakhala ndi kufunikira kosiyanasiyana komanso kuthandizana zokha zokha pamene zikubwezera chonde nthaka ndi zonse zofunika mnthaka.

 Kutengulira mitengo ku kwatitsa mitengo komanso kutchingira nthaka poiteteza ku dzuwa posunga chinyezi  
Kakulidwe ka mbewu kamathamangitsidwa kapena kulumizidwa kamba ka kutengulira, kukwatitsa mitengo komanso kutchingira nthaka ngati kwachitidwa mu nthawi yoyenera komanso molondola.

-Ntchitoyi inayamba mu September 2023 mpaka August 2024 ndi cholinga chokhala ndi chiyesero chokwanira.

“**Lolani chilengedwe chikugwirireni ntchito chokha mmalo mwa inu**”

Anthu okwana 20 ndi omwe akutenga nawo mbali pa ntchitoyi ndipo ikuwapindulira kudzera ku maphunziro osiyanasiyana, kaphunzitsidwa nzeru zokhudza kasamalidwe kamundawu komanso zipangizo zosiyanasiyana monga mitengo mbewu ndi zipangizo zogwiritsira ntchito.

**Tikayerekeza munda wathu wa chimanga wa chitsanzo wakafukufuku tikhoza kuona kuti munda omwe uli wakasakanizawu ukukula mwa changu komanso mwa nthanzi kusiyana ndi omwe walimidwa mwa nthawi zonse podalira fetereza.**

“Adatero mlimi wa mderali komanso m’modzi mwa anthu otenga nawo mbali pa kafukufuku”.