



MAZINGIRA BORA

August 2009 Newsletter

ENGLISH VERSION



www.tist.org

The International Small Group and Tree Planting Program (TIST)

An Environmental, Sustainable Development and Community Forestry Program.



MutuntuCluster Meeting: Members of Small Groups and TIST officials in a Cluster Meeting.

TIST Values: We are Honest. We are Accurate. We are Mutually Accountable.
We are Transparent. We are servant to each other.

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To submit your Small Groups articles or to advertise in this publication contact;

TIST Kenya-0722-846501.martinweru@tist.org.

Or

- Field Offices Staffs in Narumoro, Lamulia, Ntugi, Kinyartha, Chugu, Wendo and Kirimara.
- TSE Laikipia West - 0724 - 255 369
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Conservation Farming Field Preparation

- ❖ After the harvest, do not burn the crop residues. Instead, leave them on the ground. The more residues remaining on the ground the better because they enrich the soil, making it more fertile. A layer of crop residue around the bottom of trees and seedlings will help increase the amount of moisture in the soil which prevents trees from getting too dry. Remember that crop remainders can also be used for compost manure.
- ❖ Try to stop animals from grazing on the area. If they graze there will be less crop remainders left covering the ground.
- ❖ Conservation farming holes have to be dug before the rains come. It is therefore vital to start digging them early.
- ❖ Mark out where you are going to dig your holes. Get a long piece of rope or string and squeeze bottle tops on to it 70cm apart. Stretch the rope across the width of your field. Each bottle top marks the centre of a hole and it makes sure that the holes are correctly spaced out. Mark out the rows of holes using a hoe. Each row should be 90cm apart. Just mark out the rows and holes you think can be completed that day.
- ❖ On the same day as you mark a block of holes, dig the holes. The holes need to be oblong. They should be between 15cm wide, 35cm long and 15cm deep.



A Small Group member from Tharaka TSE preparing conservation farming holes.

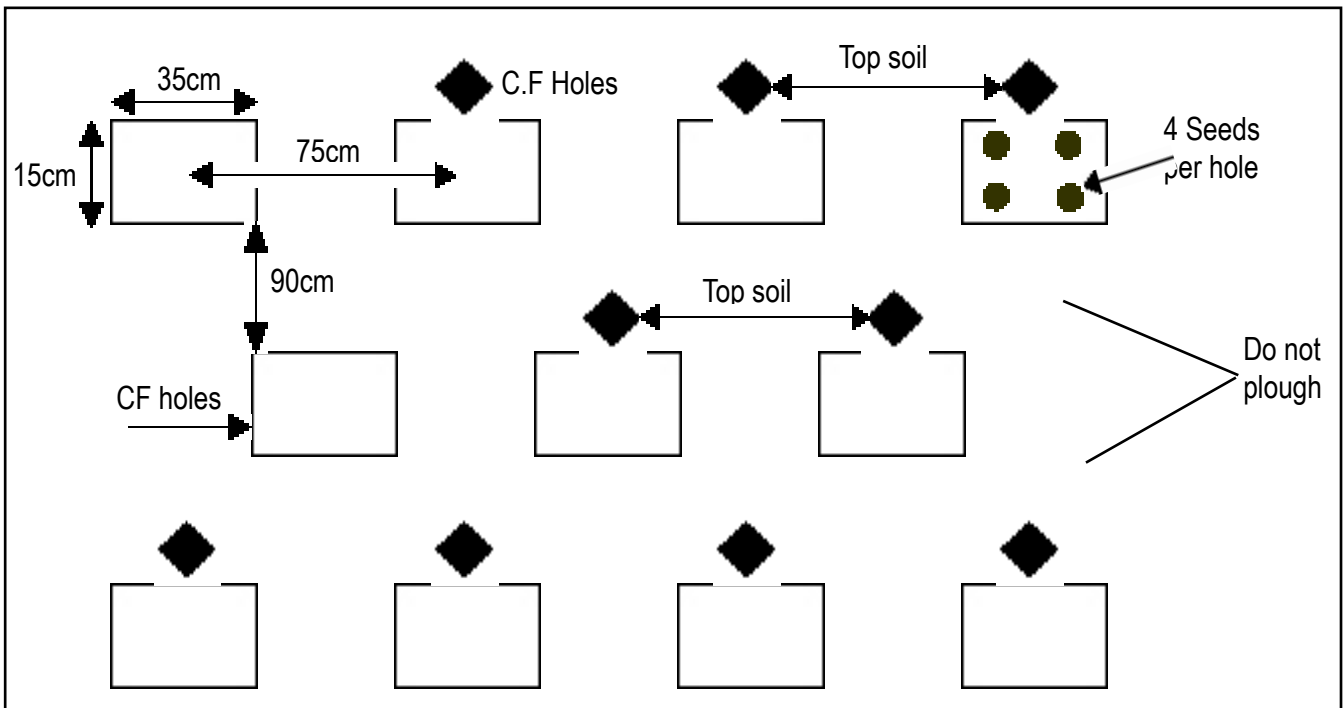


- ❖ When you are ready to plant the grain it is important to put some very fertile soil into the holes to help the crop to be stronger. Take some manure and good topsoil and mix it together, or use compost manure. Fill the hole with the mixture up to 5cm from the surface. That space will help capture more rain.
- ❖ If you are planting maize, soak the seeds in some water for 6-7 hours before planting them. This speeds up germination and means that more will survive. When you plant the seeds, plant 4 seeds in the soil across the hole. Cover them with 2.5cm of the rich soil and manure mixture. After this the soil in the hole should be about 2.5cm below the surface of the field. It should never be

more than this. Clods (big lumps of soil) should always be broken up so that the soil makes good contact with the seed.

- ❖ If you are planting sorghum, plant 5-6 seeds at each end of the planting hole after a good shower of rain. Cover the seeds with 2.5 cm of the rich soil and manure mixture.
- ❖ The space at the top of the hole enables water to get to the plants when the rains come. Without this space the rain will just run off the land, taking a lot of the soil nutrients with it.
- ❖ Weed around the holes regularly. Each year there will be few and fewer weeds.

You do not need chemical fertilizer on the kilimo hai/ conservation farming plot!



Do not plough your plot

Start planting indigenous trees along the farm boundaries, and especially along the streams and rivers. Do NOT plant Eucalyptus trees anywhere near a stream or



Nursery care and protection

A. Pest control

Organisms like fungi, bacteria, viruses, nematodes and insects (e.g. ants, termites, aphids) can damage seedlings.

A common nursery disease is called *damping off* and is caused by fungi. It causes seeds to rot before germination, roots to decay before the shoot appears and the shoot to become thin and collapse. The typical symptoms are

- The thinning and death of the stem at ground level.
- The subsequent wilting and falling over of the seedling.
- The leaves turn yellow.
- The seedling eventually dies.

Control damping off by:

- Changing seedbed soil every 1-2 years. Loosening the soil also helps.
- Immediately removing affected seedlings and burning them.
- Avoiding excessive watering.
- Ensuring good drainage.
- Providing better aeration.
- Weeding effectively and on time.
- The soil should not be overly fertile. The proper ratios of the soil should be followed. Reduce nitrogen content by applying less manure.
- There should be enough spacing between seedlings to avoid overcrowding.
- Make sure that the nursery is clean at all times.



A Small Group member from Kirinyaga TSE tending their group nursery.

Diseases can also be managed by the proper use of chemicals and insecticides. It is best to use natural insecticides as chemical ones can be expensive and may damage the environment. For instance.

- Application of ash.
- Ensure the seedbed is clean to avoid encouraging pests.

B. Root pruning

Move the seedlings around once a week so that the taproots do not sink into the ground and need to be cut. A healthy taproot helps the trees get water after transplanting.

When the seedlings are growing in the pots after 3-4 months (depending on species and climate) their roots start to grow out of the bottom of the pots. These roots should be cut every 1-2 months with knives. Note that care must be taken when lifting the pots so as not to damage the young roots.

Alternatively, try the raised nursery beds which reduce the need for root pruning as the roots drop off naturally.

C. Watering, weeding and shading

- Sprinklers should be attached to the watering cans so as not to cause soil erosion.
- Avoid too much or too little watering.
- Water every morning and evening when possible.
- Avoid watering during mid day because more water will evaporate because of the heat.
- Be careful not to damage roots when weeding.
- Do not leave the weeding too late. Weeding is necessary as the weeds increase competition for light, soil water and nutrients.
- Some seeds require shading – make sure simple shades are constructed.
- During the rainy season, cover the seedlings using dry grasses or hay. Seedlings should be moved away from under trees so water does not drip onto the seedlings and cause damage.
- **Fence off the nursery to protect from cattle and playing children.**
- **Let the seedlings grow to about 30 cm before transplanting. This may take from 1 month to 6 months.**



Tree Spacing Guide.

Why more than 2m is the best spacing.

TIST has been tracking tree baseline and putting data over the past three years about tree spacing. We have found that the tree and the groves where the farmers plant the trees will grow the best only if the spacing between trees is two meters or more. Some farmers have been using this spacing for many years, and their trees have been growing much better and larger than trees planted at one meter.

We have seen that trees planted at one meter grow slower, are smaller, and most importantly, do not sequester a lot of carbon. The main goal of TIST and our farmers is to plant trees

to capture carbon and improve the land of the farmer. Our goal is not to plant trees very close together that are going to be harvested and cut down soon for utility poles. TIST and the farmers who plant at two meters have seen the good results of that spacing. Trees planted at two meters or more do not have to fight for water and minerals in the ground.

It is important for all TIST farmers to know that **quantifiers will only be counting trees planted at two meters or more**. This spacing still allows farmers to plant up to 1,000 trees on a hectare of land! This also means that the trees planted farther apart will grow stronger and yield more fruit and nuts.

TIST: The Best Practice in Conducting Weekly Meetings.

It is important for your Small Group to be having regular meetings. For instance, once a week or once after two weeks. This will give all members in your Small Group an opportunity to strengthen your group and also share and learn new ideas.

Meeting Schedule.

In managing our time better, a small group should have well-organized meeting schedule. This is important because it will help your small group keep focus of your agendas and other activities. Since we are farmers, time is important to us, and we need to make sure we hold efficient meetings that do not take up most of the day light hours.

During your meeting, it is necessary to focus on important issues. To be able to accomplish this, other TIST small groups have practiced the below steps when conducting their meetings;

Step I. Greetings and introductions for any new members (5 – 15 minutes):

Make sure everyone feels welcomed. Make it brief but let each you introduce himself or herself.

Step II. Opening prayer (2 minutes):

It is important to begin your meeting with a word of prayer. Keep it short.

Step III. Songs (5 minutes):

These could be songs written by your group, or songs that encourage people

such as religious songs. A song sung by all will relax us and put us in a better mood.

Step IV. Agreement on task and time (5 minutes):

The leader explains what will be done in the meeting and the group members agree to do the task. The time spent should be agreed so that the co-leader can help keep the meeting on time.

Step V. Group work on tasks (1 hour):

Ideally the tasks should have been discussed at the end of the last meeting. Tasks might include sharing what each person has done to help TIST activities, sharing best practices, training and any other important issue that will help your small group to prosper.

Step VI. Kujengana (5 minutes):

Each group member makes one positive, specific statement to that week's leader about his or her observable leadership of the meeting. In addition, anyone may identify a gift seen in the leader.

Step VII. Closing prayer (2 minutes):

End your meeting with a word of prayer.



How to control soil erosion.

Soil erosion is the loss of soil due to water or wind transportation.

What causes soil erosion?

- a) **Cultivated soil left uncovered:** Digging land loosens the soil and exposes it to erosion. Such soil is vulnerable to erosion unless it is covered by trees or plants.
- b) **Cultivation of easily damaged land:** Certain types of land are unsuitable for agriculture, such as land on steep slopes. When people attempt to cultivate it the soil cannot endure the strain and thus erodes.



Planting of trees along the river banks helps prevent soil erosion.

- c) **Overgrazing:** When too many animals are allowed to use a piece of land there is loss of vegetation and subsequent soil erosion.
- d) **Cutting down of trees:** When land is cleared of trees soil can become exposed and be eroded.

Consequences

Food shortage: Soil erosion reduces soil fertility and hence reduces food productivity.

Water impacts: Soil entering water can disrupt habitats, enter the drinking water supply, and carry chemicals used on fields into the water supply.

Hazard risk: Soil erosion can cause flooding. When the soil settles in streams and rivers it raises the water level. It can also provoke landslides.

Displacement: When soil erosion degrades land to the extent that it can no longer support agriculture people are forced to move to other land.

Spread of deserts: As soil is lost vegetation also decreases and so the climate gradually becomes drier. Eventually the land is at risk of becoming a desert.

How can we reduce the amount of soil erosion?

- ✓ **Practising Conservation farming.** when practising CF or Kilimo hai, the land is left untilled. You only prepare holes. This prevents rill erosion in your plot since the soil structures are firm.
- ✓ **Provide soil cover:** ensure that soil is continually covered e.g. plant a cover crop, intercrop (plant two or more crops together on the same land), and practice agro-forestry (growing trees on the same land as crops).
- ✓ **Plant trees:** trees cover and bind the soil, and are the most effective solution.



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Mutuntu Cluster Meeting: Amemba a tukindi tunini hamwe na aruti wira a TIST mari mucemanio wa Cluster.

TIST Values: 1. Turi etikua. 2. Turi antu ba uuma bugwa.
3. Turi antu ba weru. 4. Turi atethaniria. 5. Turi amenyaniiri.

Ndene ya gazeti iji

- ✓ Kuthuranira aria ukaanda na urimi bubwega (C.F.)
- ✓ Kumenyeera na kurigiiria nursery.
- ✓ Njira ya gututongerira kiri gutaaraniria kwa miti
- ✓ TIST: Njira injega ya kuthithagia micemaio yetu ya o kiumia.
- ✓ Niatia tuumba kunyiyia gukamatwa kwa muthetu ?

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Kuthuranira aria ukaanda na urimi bubwega (C.F.)

- Wona waketha, ukaithia mati jaria jatigara raga tigana najo jakare nathi. Oo uria mati jagutigwa nathi nou muthetu junoraga. Mati jari gitina kia muti kana mbeune yaku ijatumaga ruuji rugakara nathi jakarigagiria gutikoome. Rikana ati mati jaria jatigara raga joraga jakaa mboreo.
- Aria ukarima ukareka kurithua o tuntu kwarithua guti mati jagutigwa nathi.
- Marinya ja kwanda jenjagwa mbere ngai itiraura. Jukia murigi jumuraaja utonyithi tubiira twa tukuniki twa cuuba tutugeene na 70 cm. kucia murigi jugitenie mundene jwaku. Oo aria kabira ka nkuniki kari nio gatigati ka irinya na nitumaga marinya jethirwa jataraniritie bwega. Ikira arama ya misitari gwita kiri jungi ni 90 cm. Ikira arama ya misitari iria ukuminya ukenja na uthirie ntuku iu.
- Inja mariinya jaria ugekira arama ntuku iu. Marinya jethirwe jari na warie bwa 15cm, uraaja bwa 35cm na kworokera kwa 15cm.
- Waa tayari ya kwaanda mbeu yaku, no mwanka wikire muthetu juria munoru irinyene kenda imera bikura biri na inya.



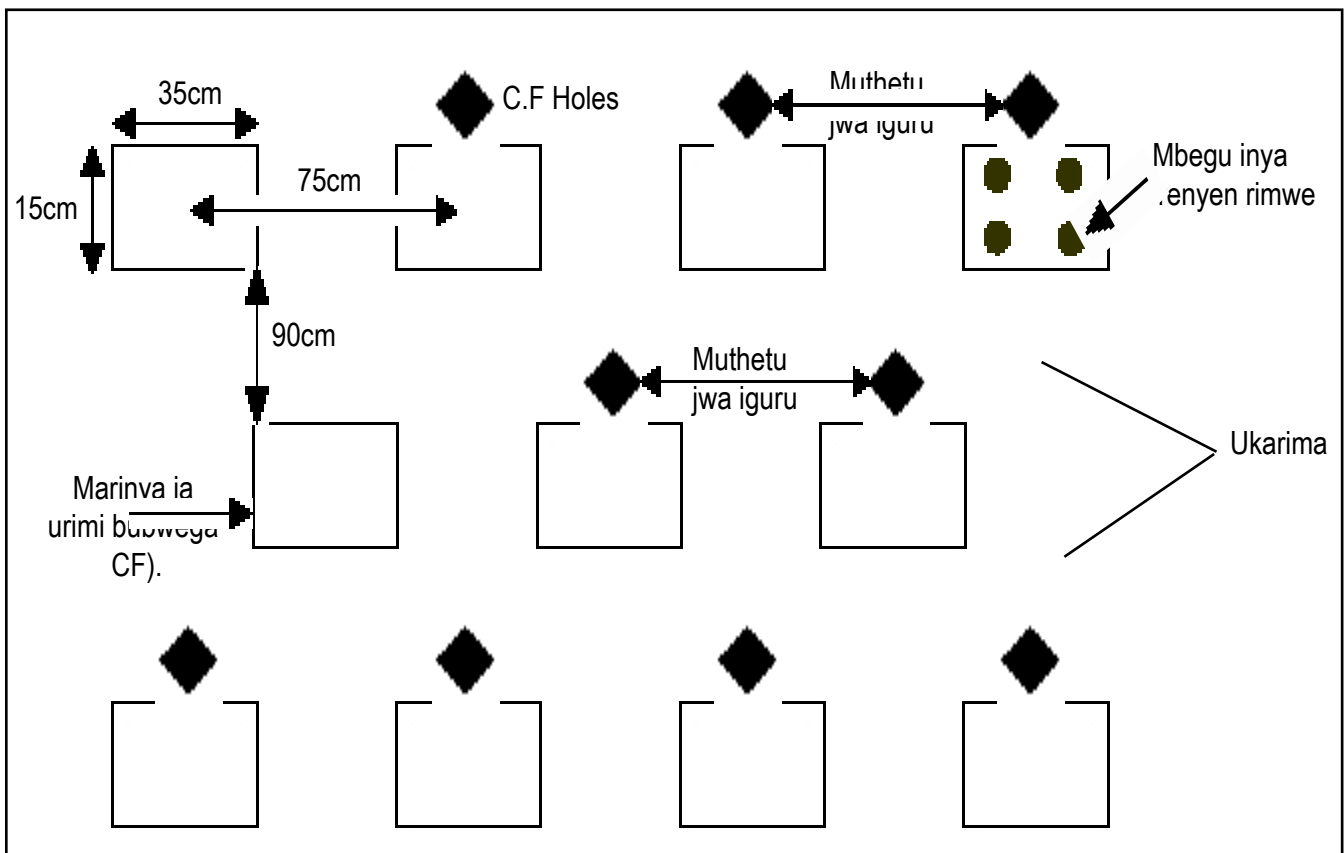


Jukia mboreo na muthetu jwa iguru ujanganie bwega kana utumire mboreo ya mati jaria joraga. Ikira irinyene riaku utigarie 5cm iguru. Kaanya kau otigaria gagatetheria kugwata ruuji rwa ngai.

- Kethira urianda mpempe mirinde mathaa 6-7 mbere utiraanda. Guku igutethagia ciuma na ikwonania iria nyingi ikauma. Aanda mbeu 4 muthetune ugitenie irinyene. Ikunikiri 2.5cm na muthetu jumunoru jungenu na mboreo. Kwou ikwonania mbeu yaku ikethirwa iri 2.5cm kuuma iguru. Ikethirwa iri nkuruki ya uu. Matheng'eng'e ijabwirithe kuurwa buru kenda mbeu yumba kwithirwa iringithie muthetu.

- Wethirwa urianda muyaa aanda mbeu 5-6 oo irinyene ngai yanyunyua . kunikira irinya 2.5cm muthetu jumunoru.
- Kaanya kau gatigarite iguru ni ka kugwata ngai yeja. Kaanya gaka gakethirwa gatio ngai yaura ruuji rutigwatia ka rukaura na rujukie mboreo iria iri muthetune.
- Rimagira gatigati ka marinya. Oo uria uku-rimira nou iria rigeta na mbere rikinyiaga.
- Ugakua mwoyo. Wona wenja marinya mwaka juju utijeenja mwaka juu jungi.

Ugatumira fertilizer kamundene gaka



Ugatiira munda buru. Tuguta iria aki winje marinya.

Ukaiambiriria kuunda miti ya gituiire na ja matunda ndene muunda jwaku na juuine. Ukaanda mbau mauta kana minyua nijii hakui na mihuro (mierene)



Kumenyeera na kurigiiria nursery.

A:Kurigiiria murimo.

Bacteria na tunyamu (muthwa na tunyamu tungi) nituthukagia mbeu cia miti.

Murimo juria jwithagirwa jurio jwitagwa “damping off” na juretagwa ni fungi. Nijutumaga mpindi cia miti ciora mbere ya kuuma, miri yooru mbere ya jwambiria kuuma orio kana jwauma kamuti gakethirwa gati na inya mwanka muthiene gakagwa. Uria umbu kumenya murimo juju nita uju:-

- ❖ Mbeu ya muti igacekea na ikomira nthi.
- ❖ Kamuti gakagwa.
- ❖ Mabuura jakagaruka jakaa yellow.
- ❖ Muthiene jugakua

URIA UMBU KURIGIIRIA DAMPING OFF

- ❖ Guchanjia muthetu jwa nursery nyuma ya mwaka 1kana 2. kinya kwinyia muthetu buu ibutethagia.
- ❖ Ukarita mbeu iria igwati ni murimo oorio na ukaciithia.
- ❖ Ugatiga gwikiira ruuji rurwingi.
- ❖ Ukamenyeera ruuji rutikethirwe rutikurungama amwe.
- ❖ Ruugo rukethirwa rugitonyaga bwega.
- ❖ Kurimagira igiita ririo.
- ❖ Muthetu jukethirwa junori nkuruki. Kithimi kia muthetu kiongwa kithingatwe (beere kithimi kia muthetu kethira batikumenya.)
- ❖ No mwanka mbeu ya muti yumwithue itaraniiritie itikaimbane.
- ❖ Nursery ithagirwe iri intheru igiita rionthe.



Amemba a TIST Small Group makirimira nathari yao

Mirimo no imenyewe na kuugiira ndagwa. Ibubuugi gutumira ndagwa cia kienyeji tontu iti goro na itithukagia aria gututhiurukiite. Kwa mung’uanano ta:-

1. kuminyiria mujuu.
2. menyeera kiumithirio kithagirwe kitheri igiita rionthe. Njira iji nirigagiiria tunginyo.

B. Gucaa miri.

Itaitithagia mbeu ciaku oo rimwe kiumia kenda urigiiria muri jwa itumo jutigatonye nthi jwenda gucawa. Muri jwa itumo jukethirwa juri na inya ijutethagiria mbeu yaku yumba gucwaaga ruuji wamianda. Wona mbeu yakurira mibukone nyuma ya mieri 3-4 (kuringana na muthemba jwa muti na climate ya au). Miiri niyambagiria kuumira oome bwa nthi. Miiri nibwirite kwithirwa ikigitwa nyuma ya mweri jumwe kana iiri na gaciu. Menyeera miri mono riria ugukiiria mibuko yaaku utikathukie tumiri turia tuniini.

Kana ugerie nursery iria ithagirwa yukiritue kenda umbu kunyiyia gucaa miri tontu igujaga yongwa.

C. Gwikira ruuji, kurimira na gukunikira.

- ❖ Gintu kiria ugukundia nakio ruuji kithirwe gitorangi tukutho tuniini kenda muthetu jutigakondorue.
- ❖ Ugekagiira ruuji rurwingi mono kana tuniini mono.
- ❖ Riria ukumba ikagira ruuji rukiiri na ugoro.
- ❖ Tiga gwikagira ruuji muthenya gatigati tontu ruuji rugeta na riuwa niuntu bwa murutira.
- ❖ Menyera miiri mono riria ukurimira
- ❖ Ukarimagira ucereri. Kurimira kuri bata tontu iiria iriongagiira gucindanira weru, muthetu na mboreo.
- ❖ Mbeu imwe iciendaga kwimbirwa – menyera gwakira karutara ga kwimbira.
- ❖ Igita ria ngai kunikira mbeu yaku na nyaki injumu. Mbeu yaku ikaumithirua ruungu rwa miti kenda matanta ja ruuji jatikathukangie mbeu ciaku.
- ❖ Irigira nursery kenda umbu kurigiria nyomoo kana twana tutikeeje gutindaniria o.
- ❖ Reka mbeu ikinye centimeter 30 ukimianda. Iji ikajukia mweri jumwe mwanka mieri itantantu. Teega notes ciaku.



Njira ya gututongeria kiri gutaaraniria kwa miti

Imbi itumaga miti yaandwa iri na utiganu bwa 2m.

TIST niumbite kwithirwa igitwiria aria miti yaandi na gwikira data nandi miaka ithatu mithiru. Itumbite kwona ati miti iria yaandi itigene na 2m na nkuruki niyo ikuraga bwega. Arimi bamwe ibatumirite ithimi bibi miaka imingi, na miti yao igakura bwega na ikamata bubwega nkuruki ya iria yaandi iri na gutaraniria kwa 1m.

Itwonete ati miti iria yaandi itigene na 1m ikuraga mpaara na inyii na bungi itumbaga kugwata ruugo ruria ruthuuku mono. Yerekeria ria TIST riria rinene ni kwaanda miti iria ikomba

kugwata ruugo ruthuku na kuthithia munda jwa murimi. Yerekeria rietu ti kwaanda miti inyeene kenda ikethwa na mpwi yaa ikingi. TIST na arimi baria baandite miti iri na gutaraniria kwa 2m ibonete uria igukura bwega. Miti iria yaandi itigene na 2m na nkuruki itithagirwa igicindanira ruuji kana mboreo muthetune.

Kuri na bata mono arimi bonthe ba TIST bamenya ati atari ba miti bagatara miti iria yonka yaandi iri na gutaraniria kwa 2m kana nkuruki. Iji nitumaga murimi aanda miti 1000 kiri Hectare imwe ya munda. Ikwonania miti yaandi itaaraniritie kuraaja ikuraga iri na inya

TIST: Njira injega ya kuthithagia micemaio yetu ya o kiumia.

Ni uritu bubwega Gikundi kieru kwithirwa gigicemanagia o kiumia kana nyuma ya biumia biiri. Uu gugagiteithia gwikira Gikundi kieru inya kenda buumbakuthoma thaantu jameeru.

Mutaratara jwa mucemanio:

Kenda tuumba gutumira mathaa yetu bwega thabwiri twira mibango jwa mathaa yetu. Kenda twimba kuthithia mantu yetu jarithe Gikundi gietu kibwiri kuthingata mantu joja micemanioine yetu.

Nkeethi na kumenyithania amemba babeeru kethirwa kuri bo (Dagika 5-15)

Tigiira aguciimenyinyania wegwa na agatwa ugeni.

Iromba ria mbere (dagika 2)

Ni untu bubwega kwambiria mucemanio na iromba.

Dwimbo (Dagika 5)

Dwimbo iji no cithirwe iri iria citungi ni amemba kana cia gwikira amembe inya.

Gwitikaniria kiri utumiri bwa mathaa (Dagika 5). Mutongerya okeera amembe ngugi iria ikanitwa ni amemba nabo beetikaniirie. Mathaa muteetheria omba gwika mathaa.

Kurita Ngugi (Dagika 60)

Mantu jaja jabwirite kwithirwa jaaririthemutemanio muthiru. Ngugi iji ita; mathithio ja o muntu kuri TIST, urita kana mantu jangi jaria Gikundi kieru kiendekia.

Gwakana (Dagika 5)

O mumemba akarita untu bubwega bwa mutongeria wa kiumia kiu na aritu bungwa kana untu buria wona kiri mutongeria uu.

Iromba ria kuthiria (Dagika 2)

Niuntu bubwega kuthiria mucemanio na



Niatia tuumba kunyiyia gukamatwa kwa muthetu ?

Soil erosion ni gukamatwa kwa muthetu kuuma miundene gukurukira gukamatwa ni ruuji kana ruugo

Nimbi itumaga muthetu jukamatwa?

- ✓ Mithetu irimi gutigwa itikunikiri-kurima muunda nikuaraganagia muthetu jugatiga kugwatana na kwou jukaa raisi gukamatika. Muthetu ja juju tinga jugakunikirwa nijukamangawa.
- ✓ Kurimwa kwa miunda iria ithukangaga-miunda imwe itithaira ibui ya kurima(ta miunda iria iri kibarine). Antu riria bgeragia kumirima muthetu jutiumagiria urito bubu na kwou muth-



Uhandi wa miti thigiririkaini cia njui niguteithigia ugutiri wa tiiri.

- etunijukamatangawa na uraisi
- ✓ Kuriithia ndiithia inyiingi nkuruki ya uria muunda jumba kuumiria- ndiithia inyiingi ciarithua kamuunda kanini imera nibithukagua, muthetu naju jugakunurwa jugakamatwa
- ✓ Kugita miti- riria miti igitagwa muthetu nijukunurawa na kwou jugakamatwa

Jaria jakarikaga muthetu jwakamatwa

- ✓ Irio nibinyiaga-gwita kwa mithetu nikunyia-gia unoru bwa muunda na nyumene maciara ja muunda jakanyia
- ✓ Kiri ruuji- muthetu jwatonya ndene ya ruuji nijuthukagia ikaro bia nyomoo cia ruuji, jukathuukia ruuji rukarema kunyuika na kinya jukaleta dawa cia muunda ruujine
- ✓ Uthuku- gukamatwa kwa muthetu nigutumaga ruuji rukaingia mwanka rukaigara . muthetu jwamarira ruujine ruuji nirwitayia na nobutume kinya kugituka kwa mithetu
- ✓ Kuthamithua kwa antu- muthetu jwakamat-

wa na maciara janyia, antu nibathamaira miunda ingi

- ✓ Gutaamba kwa uumo-o uria muthetu ju-kuura nou imera binyiaga na rera ikathuuka naku gukooma. Muthiene, muunda nijwithagira jwina mutino jwa kuuma

Niatia tuumba kunyiyia gukamatwa kwa muthetu kuuma miundene yetu?

- ✓ Gutumira urimi bubwega- riria twatumira urimi bubwega, muunda jutirimawa. Ni marinya jenjawa. Bubu nibunyiagia kuura kwa muthetu nontu muthetu nijugwatene
- ✓ Gukunikira muthetu - muthetu nijukunikwe magita jonthe. Anda imera bia gukunika muthetu, kana uunganie imera(biiri kana nkuruki), kana uande imera amwe na miti muundene jumwe
- ✓ Kuanda miti-miti nikunikaira na kurikia muthetu. Iji niyo njira iria njega buru



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Mutuntu Cluster Meeting: Amemba a tukindi tunini hamwe na aruti wira a TIST mari mucemanio wa Cluster.

TIST Values: 1) Turi eehokeku .2) Ithui turi andu a uria kuri.
3) Turi andu autheri. 4) Turi atungataniri.5) Turi a and aigiririku.

Maria mari thiini wa gazeti ino

- ✓ Urimi mwega – Uhariria wa Mugunda waku
- ✓ Umenyereri na utungata wa tuta.
- ✓ Utaganu wa Miti yaku.
Wega wa kuhanda miti utigani wa mita igiri na makiria.
- ✓ TIST: Mibango miega ya michemanio ya o wiki.
- ✓ Uria tungigiriria gukuo gwa tiri ni kiguu.

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Urimi mwega – Uhariria wa Mugunda waku

- ✓ Thutha wa kugetha ndugachine matigari no umaige kuu mugunda. Oro uria kuri na matigari maingi mugundaini waku, niguo tiri waku ukunora makiria. Ririkana no uhuthire matigari maya ma mumera guthondeka thumu.
- ✓ Ndukari-ithie mahiu maku mugundaini waku, ungiriithia mahiu mugunda waku niukwaga matigari ma kunuria tiri.
- ✓ Marima ka kuhanda mendaga kwenjwo mbere ya mbura yurite.
- ✓ Wamenya haria urenda kwenja marima
- ✓ maku, oya rurigi na woherere tukuniko twa chuba utigani wa 70cm na uguchie rurigi ruu kuringana na uraya wa mugunda waku. Haria tukuniko turi niho gatagati ka irima riaku. Huthira thechi kwenja marima maku. Warie wa raini imwe nginya iria ingi yagiriire gukorwo iri 90cm.
- ✓ Enja marima maku muthetha oroucio wa thima. Marima maya magiriire gukorwo mari ma kona inya. Makorwo mari gatagati ka warie wa 15cm, uraihu wa 35cm na uriku wa 15cm.
- ✓ Ukihanda mbegu ciaku niwega kuhanda na tiri munuru nigetha ikure iri na hinya.

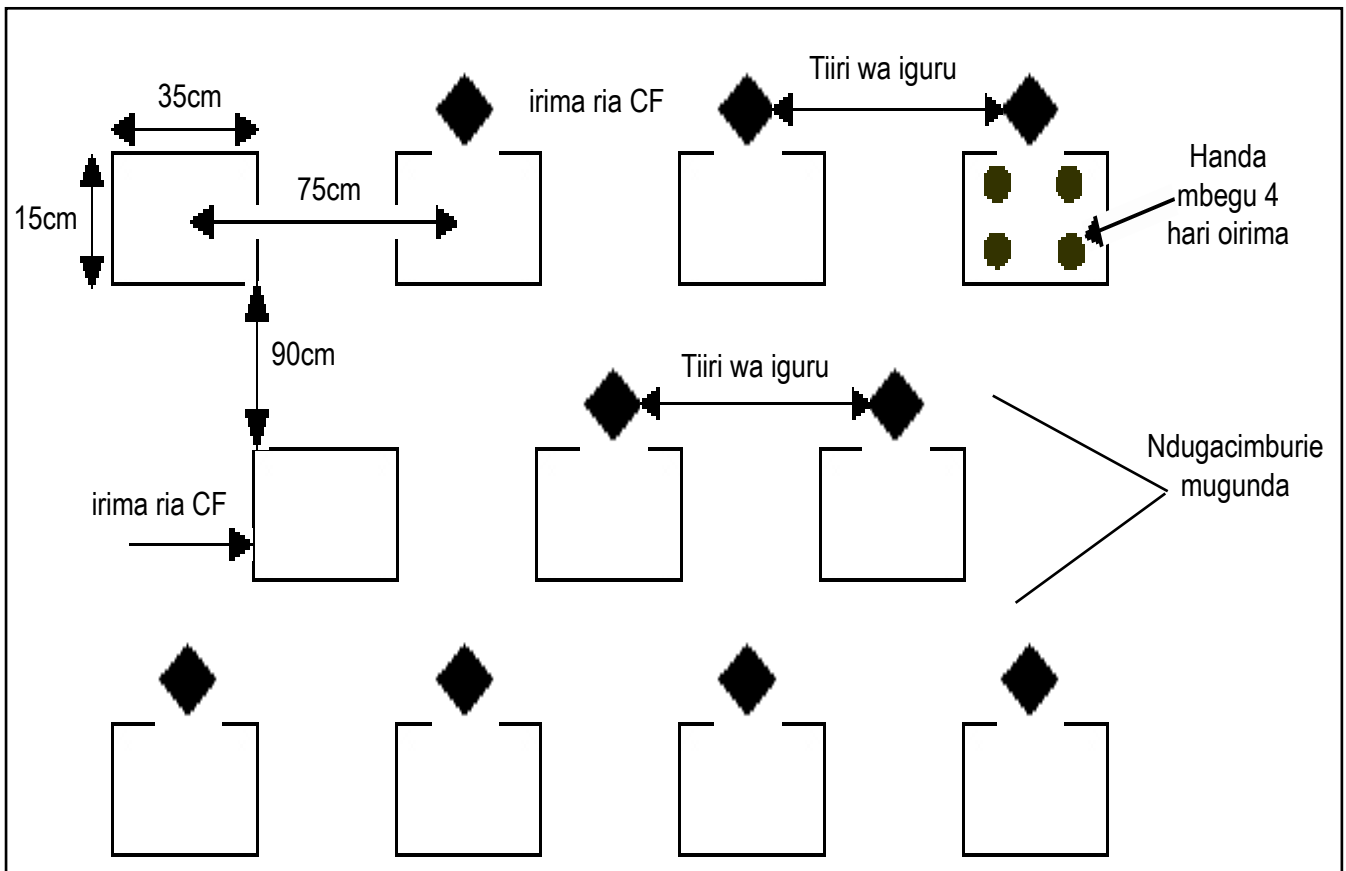


Mumbemba wa TIST akihariria mugunda wake wa conservation farming (CF)



- Niwega guikira thumu na uthike na utigie handu ha uriku wa 5cm.
- ✓ Angikorwo urahanda mbembe niwega gucirikiamai-ini mathaa 6-7 mbere ya ku-handa. Uu nigutumaga cimere naihenya na igatuma cikure nyingi itekura muno. Ukihanda mbegu ciaku, handa mbegu inya ukiranite irimaini. Thika na tiri utukanitio na thumu nginya uraya wa 2.5cm. thutha waguikira tiri uyu, hagiri-ire gukorwo na utiganu wa 2.5cm kuma haria tiri ukinyite nginya iguru. Mumuthura mathui nigetha tiri unyitane wega na mbegu ciaku.
- ✓ Angikorwo urahanda muhia, handa kuma mbegu 5-6 konaini cia irima riaku. Hum-bira tiri waku na tiri muigana wa 2.5cm utukanitio na thumu.
- ✓ Karima kau uratigia hau iguru gateithagia mai maingire tirini wega riria mbura yoiri. Ungiaga gurigia karima gaka mbura ikoira na ikururie tiri uria munuru.
- ✓ Rimagira mumera waku maita maingi. Oro mwaka kurikoragwo na ria rinini.
- ✓ Ndukage hinya, Kwenja marima riu ni-kuga ati niukamahuthira mwaka uria ungi.

Ndwagiriirwo ni kuhuthira bataraita hari urimi uyu.



Ndugachimburie mugunda waku. Wagiriirwo no kewga marima tu ta uria mbica ino ironania.

Ambiriria kuhanda miti ya kiunduire mugunda-ini waku na makiria ndere-ini cia ruui. Na ndukahande miti ya mibau kana minyua mai hakuhi na rui.



Umenyereri na utungata wa tuta.

A. Kugiriria Tutambi

Tutambi twamithemba mi-ingi (ta Muthua na) hamwe na viruses no cithukie mimera yaku muno.

Umwe wa murimu uthukangagia tuta yaku witagwo “*damping off*” na urehagwo ni “fungi”. Murimu uyu utumaga mbegu cibuthe mbere ya cimerete, miri niyoraga mbere ya mumera ume-rete na ukaga hinya na muthia ukagwa. Ndaricia murimu uyu ni; -

- ❖ Mumera ugachekeha na ukoma uri omuni-ni.
- ❖ Mumera ukahoha na muthia ukagwa.
- ❖ Mathangu makagia na rangi wa ngoikoni.
- ❖ Mumera ukoma.

No ugiri-rie murimu uyu na njira ici:

- ❖ Ugachenjia tiri wa tuta yaku thutha wa mwaka umwe nginya miaka iri.
- ❖ Irute mimera iria irinamurimu uyu na umich-ine.
- ❖ Ndugekagire mai maingi makiria.
- ❖ Ona ati tuta yaku ndiraraha mai.
- ❖ Wone ati tiri waku niuraingiria riera wega.
- ❖ Urimagire mumera waku kahinda karia kagiri-ire.
- ❖ Ona ati tiri waku tumunoru makiria ma uria kwagiri-ire. Ona ati tiri waku niuhingitie mabataro mothe. Ndugekire thumu muingi muno
- ❖ Ona ati hari hari na utigani muiganu mimer-aini yaku nigetha ndigatumane muno.



Amemba a TIST Small Group makirimira nathari yao

- ❖ Ona ati tuta yaku nitheru mahinda mothe.

Murimu uyu no uninwo na njira ya kuhuthira ndawa. Niwega kuhuthira ndawa ya gwith-ondekera itari na goro muno na iria itangithukia mariamatuthiururki-irie. Kwa ngerekano.

- ❖ No uitiririe muhu.
- ❖ Ona na kinyi ati tuya yaku nitheru nigetha kugiri-ria tutambi.

B. Gucheha Miri.

Thamagia mumera waku rita rimwe hari oro wiki nigetha muri waitimu ndugatonye tirini. Muri mwege wa itimu niutumaga mumera waku uhote kunyua mai wega thutha wa kuuhanda mugundaini.

Miri ya kamumera gaku niyambagia kuma nja ya karatathi karia uhandi-ire thutha ya mieri 3-4 kuringana na riera ria kuria uhandite muti ucio. Miri ino yagiri-ire kurengwo thutha wa mieri iri. Ririkana kunyita mumera waku na umenyereri munene muno nigetha ndugathukie tumiri turia tunini.

Geria muno kuhuthira tuta iria yoetwo iguru nigetha ndugatindage ugitinia miri yaku tondu miri iri-itinagia oyo miene.

C. Guitirirua mai, Kurimira hamwe na Guikira Kiruru

- ❖ Ikira gichungi hari ndoo ya mai nigetha ndugathukie tiri wa tuta yakuugitiiriria mai.
- ❖ Ndugaitagiririe mai maingi muno.
- ❖ Itagiriria mai rucini na hwaini kungihotekeka
- ❖ Menyerera guthukia miri riria urarimira.
- ❖ Ndukarimagire uchereirwo muno tondu ria niri gayanaga utheri, mai hamwe na unoru wa tiri
- ❖ Mimera ingi niyendaga kiruru. Ona ati niwa gitira mimera yaku kumana na riuwa inene.
- ❖ Kahinda ka mbura nene, niwega kugitira mimera yaku ukihuthira nyeki. Angikorwo tuta yaku iri rungu rwa muti niwega umi-eherie nigetha mimera yaku ndigathukio ni matata ma muti.
- ❖ Gitira tuta yaku kumana na mahiu na ciana.



Utaganu wa Miti yaku

Wega wa kuhanda miti utigani wa mita igiri na makiria.

TIST niikoretwo ikiungania uhoro iguru ria uhandi na utiganu wa kuhanda miti gwa kahinda ka miaka itatu. Nitwonete ati arimi aria mahandaga miti utiganu wa makiria ma mita igiri ni ikuraga wega makiria. Arimi aingi makoretwo makihuthira njira ini na nitwonete ikuraga makiria ma miti iria ihanditwo thi ya utiganu wa mita imwe.

Miti iria ihanditwo thi wa mita imwe ikuraga kahora, igakorwo iriminini na ndiheanaga riera riingi. Kiroto kinene gia TIST ni kuhanda miti iria ikwagiria riera hamwe na kwagiria mugunda wa murimi. Kiroto gitu ti kuhanda miti

ikuhaniri-irie muno iria igutemwo na ihandwo niundu wa kuhuthirwo ta itugi. Arimi aria mahandaga miti makiria ma mita igiri nimonete wega wa utiganu ucio. Miti iria ihanditwo utiganu uyu ndichindanagira mai na unoru uria uri tirini.

Niwega muno kuri arimi a TIST kumenya ati atari a miti maritaraga miti iria ihanditwo nautiganu wa makiria ma mita igiri. Utiganu uu niuheaga kamweke arimi kuhanda makiria ma miti 1,000 hari acre imwe ya mugunda. Uu nitakuga ati miti iria ihanditwo makiri ma mita igiri ni irikuraga ina hinya na igakorwo na ma-

TIST: Mibango miega ya michemanio ya o wiki.

Kwina bata munene inyui ikundi nini gukoragwo na micemanio kaingi. Ta ngerekano, rimwe hari wiki kana rimwe thutha wa wiki igiri. Uu nigukuhe mweke mundu wothe wa gikundi kianyu gukuria gikundi orohamwe na kumenya maundu meru.

Mibango ya michemanio.

Hari kubanga mathaa maitu wega, gikundi kinini kiagiri-ire gukorwo na michemanio ibangitwo wega. Kwina bata munene muno tondu nigugutuma muikare mukimenyaga maria mukaririria na maundu mangi.

Thi-ini ya michemanio, niwega guthingata maundu maria mabata. Nigetha muhote kurikia uu, ikundi ingi nini cia TIST ciekaga maundu maya riria cikoragwo namicemanio.

NJIRA YA I.

Kugeithania na kumenyithania amemba eru. (ndagika 5 – 15): Ona ati mundu wothe niaiganira. woe kahinda kanini no wone ati mundu wothe niemenyekithania.

NJIRA YA II.

Mahoya ma kuhingura (ndagika 2): Niwega kwambiriria mucemanio waku na mahoya. Reke makorwo mari makuhi.

NJIRA YA III.

Nyimbo (ndagika 5):

Ici nocikorwo ari nyimbo ciandikitwo ni ikundi cianyu kana ikorwo ari nyimbo cia kugocha.

NJIRA YA IV.

Gwitikaniria wira na mathaa. (ndagika 5):

Atongoria mataragiria uria gugwikwo mucemanio-ini na andu a gikundi magetikira gwika uguo. Mathaa metikanirio nigetha mutabariri ahote kuiga mathaa.

NJIRA YA V.

Ikundi irute wira uria ihetwo. (Ithaa Rimwe):

Wira uyu wagiriire gukorwo wabangitwo muchemanio-ini muhituku. wira uyu no ukorwo ari gutariria uria mundu ekite guteithia TIST, kurutana oronakana maundu mangi ma bata maria maguteithiriria ikundi cianyu nini ikure.

NJIRA YA VI.

Kujengana (ndagika 5):

Oro mumemba oige kaundu kamwe ka mwanya angikorwo onete muchemanioini oro na kana kiheo onete hari mutongoria.

NJIRA YA VII.



Uria tungigiriria gukuo gwa tiri ni kiguu.

Gukuo gwa tiri ni kiguu ni guteyaga mai kana ruhuho.

Niki kirehaga gukuo gwa tiri ni kiguu.

Gutemanga miti gutigaga tiri utari muhumbire. Kurima mugunda ni guteyaga tiri na gukarehe gukuo gwatiri ni kiguu. Tiri tocio ndungiteithia gukuo gwatiri ni kiguu otiga tuhandire miti kana mimea.

- a) **Gutemanga kwa miti ni guthukagia mugunda:** Migunda teo timiega na urimi, tamugunda muinamu. Hindi iria andu marageria kuhanda mimea tiri ndungihota

gweterera guthukangio na kunyihia udu uria munene.

- b) **Uriithi wa mahiu.** Hindi iria nyamu nyingi ciretikirio kuhuthira mwana umwe wa mugunda nigukoraguo na wagi wa mimea na guthii na mbere tiri gukuo ni kiguu.
- c) **Utemangi wa miti :** Hindi iria miti ya temenguo mugunda tiri utigaguo uteri muhumbire na kunyihia undu uria munene.

Maumirira.

Wagi wairio: Gukuo gwatiri ni kiguu ni kunyihagia tiri uria munoru na kunyihia magetha.

Guthukia mai: Tiri waingira mai-ini niuthuburaga kuria nyamu cekaraga, ukaingira mai-ini makunyua ,na gukua ndawa iria ihuthirituo tirini-ini nginya maria mai mageragira.

Maugwati. Gukuo gwatiri ni kurehaga muiyuro wa njui. Hindiria tiri weiga githma-ini na rui githimo kia mai ni kiongererekaga. Nirehaga mugunda muinamu

Guthama: Hindi iria tiri wakuo ni kiguu nigithukagia mugunda nginya ndiri hindi



Uhandi wa miti thigirikaini cia njui niguteithigia ugutiri wa tiiri.

ingiteithiria arimi na gutuma mathii migunda-ini ingi.

Kuongerereka kwa migunda miumu: Hindiria tiri wate mimea na kunyihia ,kwoguo weru-ini gugatuika kumu. muico-ini mugunda ugatuika mumu.

Tunginyihanyihia atia wongerereku wa gutwaruo gwa tiri ni kiguu

- ✓ **Urii wa Kilimo hai kana CF (conservation farming).** Riria ukurima kuhuthithira njiro ino ya CF, ndwagiriirwo ni guchimba mugunda waku. Uria wagiriirwo ni kwenja marima kuringana na ithimi iria uthomithitio. Njira ino niirigagiria gukuo gwa tiiri ni kiguu tondu tiiri ukoragwo unyitanite.
- ✓ **Kuhuthira mulching:** kumenyerera tiri ni mugitire mahinda mothe kwa muhiano, Handa mimera mithemba itahianaine (handa mithemba iri kana mingi hamwe mugunda-ini umwe) na kuhanda miti na irio thi-ini wa mugunda waku
- ✓ **Kuhanda miti:** Miti nihumbagira na kurumia tiri, na njira iria njega ya kuhuthiruo.