



MAZINGIRA BORA

August / Sept. 2008 Newsletter



www.tist.org

ENGLISH VERSION

The International Small Group and Tree Planting Program (TIST)

An Environmental, Sustainable Development and Community Forestry Program.



A section of Small Group members from Nkodi during their cluster meeting. Nkodi cluster is under Tharaka TSE.

Editorial

Tree Spacing Guide.

Why 2m x 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.



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.

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. See transplanting notes.



Members of Kiambugo Small Group tending their nursery.



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.
- ❖ 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.
- ❖ Don't be discouraged! Digging the holes now will mean they are ready for this year and you will not have to dig them next year.



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



Maize growing under conservation farming.

How to Make Compost Manure

This compost manure is a natural fertilizer to help your crops grow. It is better than chemical fertilizer because it is natural and has no damaging effects for the crops and environment. There are lots of different methods, of which the following is just one that has been useful in some areas.

Preparation of compost

1. Choose an area for your compost pit. It should be 4m by 4m.
2. Clean the area.
3. Dig a hole of diameter 3 - 4m and 1.5m deep.
4. Collect all the remains of the crops you have (e.g. the leaves and stalks of maize, millet, beans). Cut these remains into small pieces.
5. Put these crops remains into the hole up to a depth of 0.5m.
6. Then add 5 litres of ash.
7. Next add about 30cm (or as much as available) of animal dung (e.g. dung from pig, cow, goat or chicken).

8. Next put another layer of crop leaves and stalks (0.5m)
9. Add another 5 litres of ash.
10. Add the leaves and stalks again until the hole is almost filled.
11. Finally, add a layer of soil until the hole is filled.
12. Whilst filling the hole with soil, put a long stick in the middle of the hole so it reaches the bottom.
13. Leave the compost pit for 90 days (3 months).
14. During this period use your dirty water to water the compost pit. For example, after cleaning your house or clothes, empty the used water over the compost pit unless it has dangerous chemicals in the water. If you have animals you can also pour animal urine over the pit.
15. Try to water the compost pit in this way every day, or whenever water is available.
16. After the 90 days the manure will be ready. Use the stick as a thermometer – when the compost is ready it should be hot and you may even see steam coming from the stick after you have removed it.

Use of compost

When you have dug your holes for planting maize, millet or other crops, add one handful of compost to each hole.



Thumaita – Kamwende Small Group: Embracing TIST Values.

We are a TIST Small Group in Karumande Location of Gichugu Division.

Since joining TIST I January 2008, we have been taught tree planting and nursery, “Kilimo hai” also known as conservation farming. We have established a demonstration plot whereby the maize crop planted is doing well despite this dry season

Each of our members is now busy preparing their respective fields for kilimo hai farming to be ready for planting in the coming short rainy season.

We are also preparing holes to plant trees. We intend to plant mainly indigenous trees this season.

The H.I.V topics have also been very helpful because we also run a HIV orphans support programme.

With TIST, we are doing very well and hope to recruit more members of our communities to join the program and reap the benefits.



Members of Ngarima sharing notes from Mazingira Bora during one of their cluster meetings.

Itangi Muiriga TIST Small Group:

We, Itangi Muiriga are situated at Kahurura sub-location, Gakawa Location, Nyeri North district. We are 12 members, 9 men and 3 ladies.

We are involved in conservation work in order to improve our environment. Currently, we have over 1,000 seedlings in our group nursery. All are indigenous species seedlings.

We have planted over 4,200 trees in our lands which we have continue to maintain. We plan to plant additional 2,000 trees in the next rainy season.

We have benefited from conservation farming. All our members are witness that conservation farming produces more yield than the traditional method, yet using fewer resources.

Since joining TIST, our group and

several others in our neighborhood have immensely contributed towards increase of farm forestry cover. This has resulted to improved rainfall and regular rain patterns. Most of the steams that had hitherto dried up are beginning to rejuvenate.

There is also plenty of wood fuel that we get out of pruning the trees. We do not cut down the trees, but we occasionally prune them and get fire wood. This has increased our capacity to get firewood and thereby having not to strain the nearby forests. This also means we do not have to walk so far to the forest to get fuel which results in us being able to spend more time on our shambas and with our families.

We thank TIST for keeping their word on tree payments. We have received our payments through M - PESA system. Hongera TIST!



TIST Values: A new best practice.

Majority of TIST Small Groups are knowledgeable of TIST values. A new best practice that will resonate well with all TIST participants was developed during a recent TSE seminar held at Gitoro Conference Center, Meru. The participants, led by Ben Henneke and Vannesa Henneke deliberated in length on this new best practice.

More often, companies and organizations develop their own mission and vision statements. The purpose of doing this is to communicate to their clients what they do, intend to achieve and their values. This, in most cases is meant to give them a competitive edge against their competitors.

TIST program has it's own values that are unique from other organizations and or companies. These values are based on the integrity and effort of individual members within the entire TIST system, i.e. who we are, how we do things, things that we do and the expected results we ultimately get.

Who We Are.

- 1) We are honest.
- 2) We are accurate.
- 3) We are transparent
- 4) We are servants to each other.
- 5) We are mutually accountable to each other

How We Do Things *that other people can see*

- 1) We are volunteers.
- 2) We do the work ourselves in small groups
- 3) We develop and use best practices

- 4) We use our head and hands.

What do we do

- 1) We plant variety of trees for long –term.
- 2) We find ways to improve our health.
- 3) We practice Conservation Farming.
- 4) We do other projects and businesses (sustainable agriculture, nurseries, citrus growing, dairy goats and farming, chickens, bee keeping, fish ponds and fish keeping, silkworm farming etc)
- 5) We sell carbon credits.

What we create.

This is different from what we do. When we have these values and as we live and do business that way on those projects, we create something that was not there before. These include;

- 1) We create Team Work—by doing things this way, we end up working like a team.
- 2) We create Capacity—we create organization, strength, and a system that is strong.
- 3) We create Enjoyment—we see results, we accomplish big things that we enjoy
- 4) We create Big Results—Big results in planting trees. Big results in Conservation farming and from other projects and business that we do.
- 5) We create Low Budget/ cost, yet we achieve big results.



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Ngatheti ya mweri wa August / Sept. 2008

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KIKUYU VERSION

The International Small Group and Tree Planting Program (TIST)

An Environmental, Sustainable Development and Community Forestry Program.



Amemba a tukundi tunini kuuma Nkodi cluster mari mucemanio Nkodi cluster iri thiinii wa Tharaka TSE.

Tabarira ya Mwandiki.

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 matunda maingi.



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 umerete na ukaga hinya na muthia ukagwa. Ndariri cia murimu uyu ni; -

- ❖ Mumera ugachekeha na ukoma uri omunini.
- ❖ 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 umichine.
- ❖ 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 mimeraini yaku nigetha ndigatumane muno.
- ❖ Ona ati tuta yaku nitheru mahinda mothe.

Murimu uyu no uninwo na njira ya kuhuthira ndawa. Niwega kuhuthira ndawa ya gwithondekera 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 mwega wa itimu niutumaga mumera waku uhote

kunyua mai wega thutha wa kuuhandu 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

- ❖ Ikiragichungi hari ndoo ya mai nigetha ndugathukie tiri wa tuta yakuugitirirua mai.
- ❖ Ndugaitagiririe mai maingi muno.
- ❖ Itagiriria mai rucini na hwaini kungihotekeka
- ❖ Menyerera guthukia miri riria urarimira.
- ❖ Ndugarimagire 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 riuu inene.
- ❖ Kahinda ka mbura nene, niwega kugitira mimera yaku ukihuthira nyeki. Angikorwo tuta yaku iri rungu rwa muti niwega umieherie nigetha mimera yaku ndigathukio ni matata ma muti.
- ❖ Gitira tuta yaku kumana na mahiu na ciana.
- ❖ Rekemumera waku ukure uraya wa 30cm mbere ya kuuthamia na no woe kahinda ka mweri umwe nginya itandatu. (Ona uria munda athamagia muti wake.)



Amemba a gakundi ka Kiambugo makirimira nathari yao ya miti



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. Niwega guikira thumu na uthike na utigie handu ha uriku wa 5cm.
- ✓ Angikorwo urahanda mbembe niwega gucirikiamai-ini mathaa 6-7 mbere ya kuhanda. 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. Humbira tiri waku na tiri muigana wa 2.5cm utukanitio na thumu.
- ✓ Karima kau uratigia hau iguru gateithagia mai maingire tirini wega riria mbura yoiria. 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 nikuga ati niukamahuthira mwaka uria ungi.



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



Mugunda wa mbembe cia CF

Uria ungithondeka thumu waku.

Thumu uyu nimwega na gutuma mumera waku ukure wega. Nimwega gukira bataraita ya ndukaini tondu nduthukagia mumera kana maria matuthiuruki-irie. Nikuri njira nyingi cia guthondeka thumu uyu, no ino no njira imwe ya guthondeka; -

Guthondeka Thumu waku.

1. Hariria handu ha guthondekera. Hagiri-ire gukorwo hari ha 4m by 4m.
2. Theria handu hau.
3. Enja irima ria githiururi kia 3 - 4m na uriku wa 1.5m .
4. Ungania matigari ma mimera yaku (Mabebe na makoni) na umatinangie tuchunji tunini.
5. Ikiya tuchunji tutu nginya tukinyie uriku wa 0.5m
6. Ikira lita ithano cia muhu.

7. Ikira kioro kia mahiu (Kana Gichoro) maku, no akorwo mari makuma kuri ngurwe, Mburi, Ngombe kana Nguku.
8. Ikira tuchinji tungi twa matigari macio ma mimera yaku handu ha 0.5m.
9. Ongerera lita 5 cia muhu.
10. Ongerera machunji macio utinangitie nginya hakuhi kuihuria irima.
11. Muthia ongerera tiri nginya irina riaku ri-ihure
12. Thutha wa kuihuria tiri, Ikira muti muraya gatagati nginya ukinye thi.
13. Reke Thumu waku uikare hau mieri itatu.
14. Gwakahinda gaka huthagira mai maku ma giko guitiriria thumu uyu. Kwa ngerekano thutha wa guthambia nyumba kana nguo. Angikorwo ni uri mahiu, no wiritirie mathugumo macio thumuini uru.
15. Itagiriria thumu waku mai oromuthenya kana kuringana na uria wonamai.
16. Thutha wa matuku 90. Huthira muti ucio uri wa guthima. Riria thumu waku waharirika muti waku ukoragwo uri muhiu na no wone ugitoga.

Mahuthiro ma Thumu uyu.

Thutha wa kwenja marima ma kuhandira ikira ngundi imwe ya thumu uyu.



Thumaita – Gikundi Kinini Kamwende: Gwitikani na Wendi wa TIST.

Turi gikundi kinini gia TIST kuma gichigo kia Karumande - Gichugu

Kumi ariria twa ingirire TIST, mweri 1 January 2008, nituthomithituo iguru ria tuta na urimi mwega. Twina mugunda tuhandite mbebe iria irakura wegamuno oronakuri na riu inene uu.

Riu murimi wothe niahariri-irie mugunda wake haria akahanda kimera giki giukite kinini.

No turahariri-ria marima ma kuhanda miti. Turenda kuhanda makia miti ya unduire. Githomo iguru ria murimu wa Mukingo niututeithitie tondu nitukoragwo a ngwataniro na ciana cia ndigwa.

Nitukenete muno ni TIST na niturenda kuingiria andu aingi a matura maitu nigetha magethe matunda oro nao.



Amemba a Ngiriama cluster mari mucemanio wao.

Gikundi kinini gia Itangi Muiriga

Ithui Itangi Muiriga tukoragwo itura Kahurura gichigo kia Gakawa - Nyeri North. Tukoragwo turi amemba 12, arume 9 na atumia 3.

Nitukoretwo tukihuthira urimi mwega nigetha kwagiria maria matuthiururuki-irie. Hau turi, twina tumimera 1,000 tutaini citu. Tumimera tutu twothe nitwa miti ya unduire.

Nituhandite makiria ma miti 4,200 iria turathii na mbere gutungata. Niturabanga kuhanda miti makiria ma 2,000 kimera giki giukite.

Nitugunikite muno kumana na urimi mwega. Amemba aitu othe mena uira ati urimi uyu niukoragwo na magetha maigi na wina mahuthiro manini.

Kuma riria twaingirire TIST, gikundi gitu hamwe na andu angi kuma maturaini maitu nimakortwo makiruta wira na hinya muno kwagiria maria mititu itu. Gwika uu nigutumite mbura yongerereke makiria. Miti iria yanjitie kuma riu niirarura.

Kuri na ngu nyingi muno iri tuonaga thutha wa kuhurura miti ino. Tutitemaga miti no tumiburaga na tukahuthira mathamburi macho ta ngu. Gwika uu nigutumite tugie na ngu nyingi na tutithiaga mitituini kuharia ngu.

Niturachokeria TIST ngatho niundu wa kuhingia uge wao wa kuriha aria mahanda miti. Nitwamukirite marihi maitu kuhitukira M-Pesa. Ngatho nene muno kuri TIST.



Maundu maria TIST ikagirira muno: Njira njeru.

Ikundi cia TIST ni mooi TIST na mawega mayo. Kaundu karia keru gakugacirithia unyiti mbaru gathondekirwo semina iria yari |Giotoro, Meru. Aria mari githimoini kiu matongoretio ni Ben Henneke ohamwe na mutumia wake, Vannesa Henneke nimahinyiriirie na njira nene mubango uyu.

Kaingi kaingi kambuni na honge ingi itari cia thirikari (NGO) nimathondekaga mwerekera na mwiwoko wao. Gitumi kiri kumenyithia andu ndumiriri iigii uria mekaga na maundu maria merigiriire gwika ohamwe na uhoti wao, gwika uu nigutumaga biashara kan wira wao ugachire.

Mutaratara wa TIST ni ukoragwo na wega wa guo uria uri ngurani na ikundi ici ingi uria ukoragwo urongoreirie wihokeku na unyitaniri gatagati ka amemba thiini wa ikundi.

Uguo ni kuuga; Uria twikaga maundu, maundu maria twikaga na maciaro mamu.

Turi ma

- 1) Turi eehokeyu
- 2) Ithui turi andu a uria kuri
- 3) Turi andu autheri.
- 4) Turi atungataniri
- 5) Turi a and aigiririku.

Uria twikaga maundu

- Turi erutiri
- Nitwirutagira wira oithui enyewe
- Nituhondekaga na kuhuthira mibango miega
- Tuhuthagira hakiri na mooko maitu

Maria twikaga

- Tuhandaga mithemba miingi ya miti turongoreirie kahinda kanini
- Nitwethaga njira cia kumenyerera ugima wiitu wa miiri
- Nitukoragwo na urimi wa Conservation
- Nitwikaga maundu mangi ta urimi wikinyiire, tuta, urimi wa Machungwa, uriithiwa nguku, uriithi wa njuki, uriithi wa thamaki hamwe na ciikaro ciacio, igunyu cia guthondeka nguo na mangi maingi.
- Nitwendagia riera

Maria tuthondekaga

- Uyu ni utiganu na uria twikaga, turi na mawega maya otugithiaga na mbere na biashara ya kwendi riera ohamwe na tabaarira ciitu, nituiokaga maundu mangi matarari kuo hau kabere na nimo maya;
 - Nituhinyagiriria unyitaniri uria ututeithagia guthondeka nwataniro njega.
 - Nituhondekaga mieke, ngataniro na mibango ina hinya.
 - Nitukoragwo na maumirira mega uhandini wa miti na urimi wa conservation na tabaarira ingi ohamwe na biashara iria turutaga
 - Tabaarira ciitu ni cia mahuthiro manini onagutuika nitukoragwo na maumirira mega.



MAZINGIRA BORA

NOT FOR SALE.

August / Sept. 2008 Newsletter

KIMERU VERSION

www.tist.org



The International Small Group and Tree Planting Program (TIST)

An Environmental, Sustainable Development and Community Forestry Program.



Amemba a tukundi tunini kuuma Nkodi cluster mari mucemania Nkodi cluster iri thiinii wa Tharaka TSE

KUMA KIRI MWANDIKI

Njira ya gututongeria kiri gutaaraniria kwa miti

Imbi itumaga miti yaandwa iri na utiganu bwa 2m x 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 itigeene 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 na ikethirwa iri na matunda jamaingi.



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 jurettagwa 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. Mirimo no imenyewe na kuugiira ndagwa. Ibubuugi gutumira ndagwa cia kienyeji tontu iti goru 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 kumira 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 giturangi 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 riu 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.



Amemba a gakundi ka Kiambogo makirimira nathari yao ya miti



KUTHURANIRA ARIA UKAANDA NA URIMI BUBWEGA (C.F)

- Wona waketha, ukaithia mati jaria jatigaraga tigana najo jakare nthi. Oo uria mati jagutigwa nthi nou muthetu junoraga. Mati jari gitina kia muti kana mbeune yaku ijatumaga ruuji rugakara nthi jakarigagiria gutikoome. Rikana ati mati jaria jatigaraga joraga jakaa mboreo.
- Aria ukarima ukareka kurithua o tuntu kwarithua guti mati jagutigwa nthi.
- 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



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

irinyene kenda imera bikura biri na inya. Jukia mboreo na muthetu jwa iguru ujunganie 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 ikwonesia iria nyingi ikauma. Aanda mbeu 4 muthetune ugitenie irinyene. Ikunikiri 2.5cm na muthetu jumunoru jungenu na mboreo. Kwou ikwonesia mbeu yaku ikethirwa iri 2.5cm kuuma iguru. Ikethirwa iri nkuruki ya uu. Matheng'eng'e ijabwirite 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 ukurimira nou iria rigeta na mbere rikinyaga.
- Ugakua mwoyo. Wona wenja marinya mwaka juu utijeenza mwaka juu jungi.

URIA UMBA KUTHITHIA MBOREO

Mboreo ni fertilizer yaku ya kwithithiria ya



Mugunda wa mbembe cia CF

gukuria imera biaku. Iji niyo njega nkuruki ya iria ithithagua , yaku ni ya kawaida na iti na bia kuthukia imera biaku kana aria gututhiurukirite (environment) kuri na njira inyingi mono cia kumithithia indi iji ni njira imwe iria itumagira guntu kumwe.

NJIRA YA KUTHITHIA MBOREO

- ✓ Thurania aria ukenja irinya. Rikethirwa riri ria 4mx4m.
- ✓ Theria au
- ✓ Inja irinya 3-4m na kworokera kwa 1.5m.
- ✓ Ooja mati jaria jatigaraga waketha (e.g. mabua ja mpempe, mwere kana mati ja mung'au) jagitange tucunci tuniini.
- ✓ Wajagitanga jekire irinyene mwanda 0.5m.
- ✓ Ongera 5ltrs cia ruuji rwa muju.
- ✓ Ongeera mati jangi 30cm (kana uria jakwonekana) na ntaka ya nyomoo(e.g.

ntaka ya ng'ombe, ngurwe, mburi kana nguku.

- ✓ Cooka wikire mati jangi 0.5cm.
- ✓ Ongeera ruuji rungi rwa muju 5ltrs.
- ✓ Ongeera mati jangi mwanka jatigarie aniini irinya riujura.
- ✓ Muthiene, ongeera muthetu mwanka ujurie irinya.
- ✓ Riria ukujuria muthetu tonyithia muti jumuraja gatigati ka irinya mwanka jukinye nthi.
- ✓ Tigana na irinya ria mboreo ntuku 90 (mieri 3)
- ✓ Igitene riri geraga ruuji rwa ruko irinyene riri. Kwa mung'uanano, ruuji ruria ukuthambia naru nyomba, into kana waura naru nguu urugerage kirinyene giki indi ti ruria ruri na chemical inthuku.
- ✓ Geragia gwikagira irinya riri ruuji na njira iji ntuku cionthe kana riria ruuji rukwonora.
- ✓ Nyuma ya ntuku 90, mboreo ikethirwa ikubua. Tumira muti ta thermometer mboreo yabwa muti jukethirwa juri na mwanki na no wone kinya togi ikiuma wajukuura.

UTUMIRI BWA MBOREO IJI.

Wenja marinya ja kwaanda mpempe, mwere kana imera bingi, ongeera nkundi imwe ya mboreo iji irinyene



THUMAITA- GAKUNDI KANIINI KA KAMWENDE: KUGWATIIRA BIRIA TIST IKAGIIRA

Turi gakundi kaniini Location ya Karumande Division ya Gichugu. Kuuma January imwe 2008, ituritani kwanda miti, kuthithia nursery, “kilimo hai” buria bwitagwa urimi bubwega (C.F.) Itumbite kwithirwa turi na plot cia kuthomera iria ikwonia mpempe igikura bwega oo amwe na ngai kwithirwa inyii.

Arimi betu bonthe ibakuthuranira miunda yao ithirwa iri tayari ngai ikiura. Kinya itukuthuranira marinya ja kwaanda miti. Turi na ithuganio ria kwaanda miti yetu yongwa ngaine iji.

Uritani bwa HIV ibumbite kwithirwa buri na utethio nkuruki niuntu itwithagirwa turi na programme ya gutethia twana twa HIV. Turi na TIST itugwita na mbere bwega na turi na wirigiuro bwa gucwa amemba bangi babeeru kenda batonya kiri programe bombe kwona baita.



Amemba a Ngiriama cluster mari mucemano wao.

GAKUNDI KANIINI KA ITANGI MUIRIGA

Twi, Itangi Muiriga turi Sub-location ya Kaharura, Gakawa Location, Nyeri North District. Turi amemba 12, arume 9 na aaka 3. Twithagirwa tukirita ngugi ya kuthithia aria gututhiurukite. Au turi, turi na nursery iri na miti 1000 nurserine yetu ya gikuundi. Yonthe ni miti ya kienyeji.

Itwaandite nkuruki ya miti 4,200 miundene yetu iria twitite na mbere kumimenyeera. Turi na ithuganio ria kwongera miti ingi 2000 ngaine iji ijite. Itwonete baita ya urimi bubwega. Amemba betu bonthe bari na ukuuji ati urimi bubwega (C.F) iburetaga maketha mono nkuruki ya urimi bubu bungi bwa kienyeji na buti ngarama inyingi.

Kuuma tugutonya kiri TIST, amemba betu na baria bangi bari akui natwi ibombite gutethia mono gucokia mwitu aria jwari. Buu ibutumite ngai yongereka na yambiria kuuraga bwega. Nduuji iria ciagwire ikwambiria gucokeera.

Ikwithirwa kuri na kinya nku inyingi riria twacaa miti yetu. Tutirikaga miti yetu indi gatumicaaga ikauma nku. Iji nitumite twonera nku akui tutikarea thiina ya gwitaga mwitune kuuna nku. Kuu ikwonia tutigutumira mathaa jamaingi tugita gucwa nku mwitune na buu ibutumite twomba gutumira mathaa jamaingi miundene yetu. Itugukatha TIST niuntu bwa gwika wirane bwao bwa kurea miti. Itumbite kuriwa miti yetu na njira ya M-PESA. Hongera TIST.



Mantu jaria TIST ikagiira: Njira injaru ya kujathitha

Tukundi tuniini twa TIST turia twingi turi na umenyo bwa mantu jaria TIST ukagiira. Baria baari seminene ya TSE iria yaari Gitoro Conference Centre Meru, ibombire kwaraniria na kuma na njira iji. Batongeretue ni Ben Henneke na Vannesa Henneke ibaaririe njira iji njeru kindene mono.

Jamaingi, company na biuthurano bibingi ibiithagirwa biri na njira ciao. Kwithagirwa gukari uju kenda bomba gukinyanira na baria baritagira ngugi bamenya uria bakuthithia na aria bakwenda gukinya. Jaria maingi nikenda bomba gucindana na company ingi.

TIST iri mantu jayo jaria jari mwanya mono na company kana biuthurano bingi. Mantu jaja jethagirwa jakiumania na amemba bonthe ba TIST i.e turi baau, niatia turitaga ngugi cietu, ngugi iria turitaga na jaria jaumanagia na ngugi iu.

Turi baau

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

Uria turitaga ngugi kenda antu bangi boona

1. Turi antu ba guciejana.
2. Turitaga ngugi twingwa turi ikundi.
3. Ibatwi tucwaga muritire jumwega jwa ngugi.

4. Tutumagira mathuganio jetu na njara.

Uria tuthithagia

1. Twandaga miti mithemba imingi iria ikaraga igita riraaja.
2. Itucwaga njira cia kwithirwa turi na afya injega.
3. Turimaga urimi bubwaga (conservation farming).
4. Turi mirandi ingi na biashara (urimi, nursery cia miti,urithi bwa mburi, urithi bwa nguku, maugu ja njuki, urithi ba makuyu na urimi bwa silk worm).
5. Ituritaga biashara ya wendia bwa ruugo.

Biria biumanagia na ngugi yetu

Buu buri mwanya mono na uria tuthithagia. Riria twethirwa turi na jau jonthe na kurita biashara, itwithagirwa turi na biria biumanagia na buu, ta:

1. Turitaga ngugi twithe- kuthithia uju twithagirwa tukiritaga ngugi ta team imwe.
2. Twikanagira inya- tuthithagia ikundi, tugekanira inya na tugacwa njira iri na inya ya kurita ngugi.
3. Tugacwa ngugi- itwonaga matunda kumania na ngugi cietu, tukona matunda jamaingi ja kugwirirua.
4. Ituthithagia ngugi inene- ngugi inene ya kwaanda miti, urimi bubwaga, mirandi ingi imingi na biashara.
5. Kurita ngugi na ngarama inkai.