

Mazingira Bora



TIST

The International Small Group & Tree Planting Program
www.tist.org

English Version

An Environmental, Sustainable
Development and Community Forestry
Program.



TIST Cluster Leaders During Recent Seminar at Gitoro Conference Center, Meru.

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Sustainable Development.

According to the World Commission on Environment and Development (1987), sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.

TIST farmers go beyond this definition of sustainability by meeting their present needs while improving the ability of future generations to meet their own needs. By restoring the environment and planting trees that are an asset for future generations, TIST can improve the future while improving their own lives in the present.

Sustainable development aims to increase the quality of life while making sure the environment is able to continually supply the natural resources and services required:

1. Resources should not be removed faster than they can be renewed.
2. Waste products from resources should not be produced faster than the environment can safely absorb them (forest absorbing the carbon dioxide from burning fossil fuels).

Common Characteristics of Sustainable Development .

Although there is no one single definition of sustainable development, as the idea continually evolves, there are some constant underlying principles:

1. Concern for equity and fairness, which protects the rights of the poor and marginalized while considering the welfare of future generations. Each nation should be able to develop in keeping with its own cultural and social values without preventing other nations from doing the same. No country

should participate in activities that destroy the quality of environmental resources in other countries. Future generations are not able to speak for themselves, yet if development is to be sustainable then it must consider their interests and their rights.

2. Considers the long-term view, which requires us to think about the consequences of our actions beyond the present day. When activity threatens to harm the environment or human health in the long run (even if the threat can not be scientifically proven yet) then precautionary measures should be taken to prevent future damage. This is called precautionary principle. Some people have said that a sustainable world could be realistic if each generation properly considered the interest of the next generation, by considering impacts over the next 50 years.
3. Systems thinking - understanding that there is one Earth with finite resources, and that all our actions operate within this larger system. The consequences of decisions made in one part of the world can quickly affect other parts.

Sustainable development clearly involves understanding our environment problems and solutions. It is only when the environment is fully considered and appreciated that social and economic development can take place in a sustainable way. We have looked at different environmental problems in your community throughout TIST training and you have helped identify ways to overcome the problems in your small groups. Continue to look after your environment for yourselves and your children so that you can improve your lives in ways that our earth.

Garlic – An Herb that Heals!

Garlic is a member of the onion family and affectionately called the ‘stinking rose’. It has been used as a medicinal herb since the time of the ancient Egyptians and many studies show that in cultures where people eat lots of garlic there are fewer incidences of gastric cancer, high blood pressure, and high cholesterol. Professor Barbara Levine, Cornell University Medical College in New York, adds that garlic seems to ‘enhance the immune system by increasing the activity of immune cells’. It also has antibacterial properties

that come from sulphur-containing compounds called allicin, which are formed when garlic is crushed or sliced. Overall, garlic has many beneficial compounds.

Unless you are allergic, you can’t go wrong by adding this healthy herb to your diet. Any grocery near your hometown or market carries garlic for your use.

To prepare the garlic, peel the outer skin off and cut it into small pieces, then you can mix it into your cooked food on a plate ready for eating. Healthy people make a strong TIST family!



Mahgamia Tree: Good Tree in Mara Region.

Mahgamia tree is among the good indigenous trees that grow in Mara region. In our two Clusters, Kutete and Chemaner, many TIST farmers have already started growing it in their tree groves. It is good for enriching our soil with natural manure. As a result, we get higher yields. Further, it is a good tree for shade and windbreak.

Another advantage of Mahgamia tree is that it grows faster and helps improve the microclimate within a short period of time. Farmers begin to get firewood as they prune it sooner and avoid deforestation in the area.

We encourage farmers, both in TIST and outside, to plant such friendly trees as Mahgamia. Careful selection of trees to plant helps us get maximum benefits. Though many trees are good, there are a few trees that endanger our environment and suppress other plants and crops. Farmers need to share amongst themselves the benefit of each tree they want to adopt especially

those that are brought from outside their area. Forest and Agriculture extension officers can help give informed alternatives. Cluster meetings offer a good opportunity to discuss, share and gather important information about trees and crops.



Trees make the environment better for us all.

In TIST, we plant trees to improve our local environment and also to take part in the carbon market and earn income from carbon credit sales. However, the other benefits of trees are enormous!

Here are just a few benefits we (and the rest of the world) enjoy:

- ☐ Trees serve as a natural habitat to support a wide variety of flora and fauna. They provide a sense of privacy and security to wildlife seeking shelter in the woods and provide them with food. Protecting biodiversity makes our farms and our planet more productive and resilient to climate change and other challenges.
- ☐ Trees improve the quality of air and reduce dangerous pollution. Trees remove excess carbon dioxide and air pollutants including sulfur dioxide, ozone and nitrogen oxide. In return, they give us oxygen required for life.
- ☐ The visual quality of a landscape is improved by planting trees, which, in turn, improves the quality of life. The greenery of trees adds color to the landscape and enhances the picturesque beauty of the environment.
- ☐ Trees control the climate by moderating the effects of sun, wind, and rain. They can help prevent severe floods, landslides, and wind damage. Trees moderate flood hazards by allowing the rainwater to percolate into the soil instead of running over it.
- ☐ Trees reduce soil erosion. Their roots bind soil that would otherwise wash away in rainstorms and floods. Trees also help improve the fertility of soil. Rich soil transfers nutrients to food, which contributes to human health.
- ☐ Trees are great absorbers of noise. Noise pollution can be reduced to a great extent by planting more and more trees.
- ☐ The demand for clean drinking water can be met by planting indigenous trees. Forests and plant cover naturally slows the runoff of rainwater and filters it into the soil. Once slowed, rainwater seeps down to refill underground aquifers we depend on for our use. Trees also shade rivers, keeping water cool, and slowing its loss through evaporation.



Strength in diversity: TIST protects biodiversity.

Biodiversity—the richness and variety of nature—is essential to a healthy environment. Variety is especially important for responding to change and challenges, like drought, pests, or climate change. Since biodiversity is so important, you might think that people everywhere are working to make sure we protect and preserve this natural richness. However, each day, because of our human actions, we are losing species and genetic diversity as forests are cut, wetlands are drained, and resources are over-exploited. We see this loss every day. Think of how many kinds of plants, birds, and animals that you saw often when you or your parents were young but that are rare or gone today? There are nine million different species of organisms on our planet, and when we destroy them, it is a permanent loss for each of the seven billion people who share this planet, for our children, and for their children.

TIST farmers are making a difference, working to preserve this rich diversity. Each tree

we plant is an important renewable resource. Each tree we plant reduces pressure on natural, diverse forest since we can use it instead of cutting forests for fuel wood, timber, and other products. When we plant indigenous trees, as many groups have in riparian buffer groves and thousands of TIST farmers have on their farms, we directly protect biodiversity. These diverse indigenous trees also provide habitat and food for insects, birds, and animals, many of which are important for pollinating our crops, eating pests, or keeping our soil healthy.

TIST farmers are also sharing their knowledge about biodiversity. Farmers are being interviewed in clusters in a pilot project to share information about biodiversity in their areas. When we learn more about the plants and animals around us, the changes in these areas, and the threats to this diversity, we can take action to preserve this amazing resource. Let's all come together, and share our knowledge, and plant indigenous trees to make a better world for all.

Time to prepare tree nurseries for next season planting.

Many Small Groups in TIST, after transplanting their trees during October – December rains, begin in to prepare their nurseries for the next tree planting season. This helps them to make sure they have enough new trees to plant and to replace those that didn't survive in previous seasons. Many groups also sell surplus seedlings to neighbours and thereby increase their incomes.

Here is how to prepare your seedbed, pots and nurseries:

Pot-bed Preparation

A. Use

When the seeds have germinated and show 3-4 leaves, they can be transplanted into plastic bags filled with soil (pots). The size of the pots varies according to the seed requirements and the resources you have.

B. Preparation

- Most seeds will use a 6"x4" or 8"x5" polythene bag. However, these can be expensive and so you can use:
 - Tin cans
 - Banana leaves

- Plastic bags – cut the plastic to the size you require and seal using heat to melt the plastic to stick the sides together.
- Used plastic water bottles
- Other materials you have available—share your ideas in your cluster!
- Whichever pot you use, be sure to leave holes at the bottom so water can drain out.
- Cut the lengths of these pots to 5 or 6 inches and make sure there are some small holes in the bottom of the pot.
- Prepare the soil by mixing in the ratio of 5:2:1
 - 5 parts sieved forest topsoil
 - 2 parts sand
 - 1 part manure
- Sieve the topsoil to remove stones and coarse material. A sieve can be made by fitting mesh wire (1.5cm) to a 1m by 1m wooden frame.
- Mix the soil thoroughly.
- Moisten the soil to make it stick together.
- Fill the soil into the pot slowly, gently compacting at each stage to avoid air pockets. You can use a funnel to make filling easier.
- Leave a space at the top where the seedling will be put.



- Transplant seedlings into the pots by making a hole and inserting the seedling without twisting the roots. Fill the hole in with soil again.
- The pots can be arranged in rows to form beds for easy maintenance and placed either in the sun or shade according to the seed requirements.
- Arrange the pots in lots of 100 seedlings each. Similar to the seedbeds, the beds are easier to manage if they are 1m wide and 5-10m long.
- Arrange the seedlings according to species so that it will be easier for Quantifiers to record data by species.

New best practice: Raised pot beds

TIST is encouraging farmers to try raised pot beds. Many farmers have found that this improves results. Try raised pot beds and report to your cluster what you observe, and whether this practice works better for you.

Figure 1. Represents the common way of arranging pots, as described above.



Fig 1: Seedlings of *Moringa oleifera* arranged as a stack on the ground

This traditional system of arranging pots on the ground can produce seedlings with weak roots. This is because the roots coil up inside the plastic pot. At transplanting, the roots can be weak and therefore not easily establish in the ground. To avoid this, it is recommended to establish seedlings in **open bottom** tubes and place them on **raised beds** (Fig 2). A raised bed can easily be made from a wooden frame and wire mesh (see photo). Raised beds allow automatic root pruning because when the roots reach the container bottom, they naturally drop off (called air root pruning). This means that roots do not get injured through normal root

pruning methods. The roots then tend to strengthen without growing further. This produces a healthy root system and the seedling has a better chance to establish fast and well in the field. It also eliminates the need for the labour of root pruning, a practice that is often forgotten or done too late, causing serious damage to the roots. Weed control is also easier in raised beds.



Fig 2: Seedlings of various species arranged on a raised bed.

The raised beds might appear to raise the amount of water used in nurseries. However, nursery operators have devised innovations to deal with water constraint. A good innovation from Tanzania is digging a trench, placing planks of wood or wire mesh across it and placing the seedlings on the planks or wire mesh. The seedlings thus appear to be on the ground level but the trench under them provides the space which aids air root pruning. The water is trapped in the trench and will keep seedlings moist through evaporation and so reduce the need for very frequent watering. A polythene sheet can also be placed in the trench to ensure water does not seep into the ground.

Questions to ask during Cluster Trainings

- What materials have small groups successfully used for the pot bags? Share your best practices.**
- How can small groups organize themselves to prepare their pot beds? How many people are needed to prepare the pots? When? How many people need to prepare the soil mixture? Where?**
- Have any groups already tried raised pot beds?**

Do people have any other advice? Share any information at the next trainers' meeting.



TIST Improved Stoves—Get your stove now.

What are improved stoves?

Many people in Kenya still use the three-stone stove for cooking. This consumes a lot of firewood quickly. Improved stoves are stoves that use less firewood and direct smoke out of the kitchen.

Improved stoves have many advantages compared to traditional stoves:

1. For the user

- Improved stoves minimize the use of firewood. Firewood for three days' use in a traditional stove can be more than enough for a week in the improved stove!
- Heat lasts longer in the improved stove as the fire and heat stay inside the stove e.g. improved clay stove.
- Minimizes accidents by the fire, as the fire is covered.
- Minimizes cost of buying firewood.
- Saves time for women searching for firewood.

- The stove uses one fire to heat up to three pots, thus saving time and firewood.
- Smoke is taken out of the kitchen. This reduces health-related problems from smoke such as respiratory disorders and eye irritation.

2. For the environment

The reduced demand for firewood helps to:

- Reduce deforestation
- Reduce desertification
- Prevent dangerous flooding
- Protect water resources and catchment areas

You can experience these benefits when you order a TIST improved stove today. Stoves that are available for sale in TIST today are:

TIST IMPROVED JIKOS



New!! Updated **JIKOPOA**
1,400 ksh



ENVIROFIT Z-Insert for build-in stove
can be used with 2-pot/chimney attachment!
2,000 ksh



2-pot Chimney clay stove: built using Envirofit Z insert (2,000 ksh) and 2 pot chimney attachment (1,200 ksh): labor est. 400 ksh



ENVIROFIT G-ca be used with
2-pot/chimney attachment!
2,500 ksh



ENVIROFIT M-Jiko Tosha-can be
used with 2-pot/chimney attachment!
Coming soon...

ENVIROFIT 2-pot-chimney attachment (for
all Envirofit models): **1,200 ksh**
SOLD SEPARATELY

**For more information
on improved Jikos
contact your
Cluster Servant now.**

The mud stove with ceramic fire chamber is **ONLY AVAILABLE** IN Ngariama, Kianyaga, Salama, Tunyai, Matakiri, Pondo, Kilia, Kamwendei, Nthingini, and Kagaene clusters.

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Witi na mbele bukuumbika ndene ya igita ririraja.

Kuringana na kiama kia nthiguru yonthe kwegie naria gututhiurukite na witi na mbele (World Commission on Environment and Development (1987)), witi na mbele bukuumbika ndene ya igita ririraja nibuujuragia mahitaji ja thaa iji butikunyiya kanya ka ndurijo cia ruuju gukinyira mahitaji jao.

Witi na mbele bukuumbika ndene ya igita ririraja nibucuaga kwongera uthongi bwa utuuro na oriu, kumenyeera ati naria gututhiurukite nigukuumba gwita na mbele gutua into na utethio buria tukwenda:

1. Into biria birio bikajukua na mpwi nkuruki ya uria biumba gucokua.
2. Ruuko kuumania na gintu kina rutibati kuuma kana kuthithua na mpwi nkuruki ya uria naria gututhiurukite kuumba kujukia na njira imbuthu (mwitu jura jukujukia ruugo ruruthuku rwa kaboni kuumania na kuithua kwa magutaja mthemba yonthe).

Mantu jaria joonekaga mono riria kurina witi na mbele bukuumbika ndene ya igita ririraja.

Kinya kethira gutina njira imwe ya kuuga witi na mbele bukuumbika ndene ya igita ririraja nimbi, o uria ithuganio riri rikugaruka, kurina mantu jamwe jario rionthe:

1. Kuthuganiria kung'anana, untu buria bumenyegira haki cia nkia nab aria batikinyagirwa na kinya tukithuganagiria uria antu ba ruuju bagakara. O nthiguru nibati kuumba gwita na mbele na jaria iikirite gikabila kana gigukaranira itigutigithia nthiguru ingi kuthithia ou. Guti nthiguru ibati kuthithia mantu

jaria jakathukia uthongi bwa into biria bithiurukite nthiguru ingi. Antu baria bakeeja nyuma yetu batiumba guciariria thaa iji, indi kethira witi na mbele bukoombika ndene ya igita riraja no mwanka butegeere biria bakenda na haki ciao.

2. Tegera igita ririraja, untu buria butwendaga kuthuganiria mantu jaria jakaumania na mantu jaria tukuthithia ntukune iria ikeja. Riria untu bwenda kugitaria naria gututhiurukite kana thiria ya mwiri jwa muntu ndene ya igita ririraja (kinya kethira kugitara guku gutikuumba kwonanua ni mathomo) matagaria ja kubwebera nijabati kujukua nikenda twebere kugitara ndene ya ntuku iria ciijite. Bubu bwitagwa njira ya kwebere. Antu bamwe nibaugite ati nthiguru ikuumba witi na mbele bukoombika ndene ya igita riraja yoombika kethira o iciara rikathuganiria na uraja mantu jaria jakethira jabui kiri iciara riu ringi, na njira ya gutegeera mantu jaria jakaumani na untu bou mwanka mika mirongo itano iria iijite.
3. Kuthuganiria nthiguru yonthe - kwelewa ati kurina nthi imwe iria irina into bitarika na ati mantu jaria tuthithagia nijaritaga ngug ndene ya nthiguru iji imwe.. Mantu jaria jakaumania na mantu jaria jakathithua ndene ya gicunci kimwe ndene ya nthiguru iji no jaigiue ntuti mono ndene ya icunci bingi.

Witi na mbele bukuumbika ndene ya igita ririnene nigutuejaga mantu jangi ja gwikira jaria jacwaga kumenyera ruuju rwetu. Gutinamubango jumwe juria jukathingatwa, indi ni kiri o nthiguru na mwiriga kugita igamba uria mantu jakoomba kuthithua bwega nkuruki ndene ya antu au.

Gitunguru saumu– kimera kiria kioragia!

Sauumu iri ndene ya gikundi kia matunguru na niitagwa ni babaingi 'kiua kiria kinunkaga'. Niiitumiri ja ndawa kuuma igita ria Egypt inkuru na mathomo jamaingi nijoonenie at ndene ya kabila iria antu barijaga saumu inyingi kurina thina inkai cia cancer ya kiu, cia ndamu na cia maguta jamaingi ndamune. Muthomi umwe, Profesa Barbara Levine kuuma kukuru igwitwa Cornell University Medical College iria iri New York, noongerete at saumu ni gitunguru kiria gikwonania 'nigikwongera mwiri inya ya kurua na mbajua gukurukira kwongera ngugi ya biria biritaga ngugi iji'. Gitunguru saumu kinya nikiuraaga tunyomoo turia turetaga mirimo niuntu kirina into birina sulphur biria biitagwa 'allicin', biria

bithithagua riria gitunguru giki giakimwa kana kiagitangwa. Na ukui, saumu ni gitunguru kirina into bibingi biria birina baita.

Tiga ukethirwa nuthukagirwa nikio, utiumba kuthithia uthuuku kinya buriku woongera kimera giki kiri gikiega kiri mwiri jwaku irione biaku. Nduka yonthe kana thoko yonthe akui na tauni yenu irina itunguru bibi niuntu bwa utumiri bwaku.

Kuthuranira saumu, rita gikonde kia iguru riu ukigitange kinyie, riu no unganie na irio biaku biria birugi ndene ya thani iria iri tayari kuriwa.

Antu barina thiria ya mwiri nibathithagia nja ya TIST irina inya!



Muti jwa Mahgamia: Muti jumwega ndene ya ntuura ya Mara.

Mahgamia ni muti jumwe jwa miti iria miega buru iria iumaga Mara. Ndene ya cluster cietu ijiri, Kutete na Chemaner, arimi babaingi ba TST nibaambiritie kujuanda ndene ya miunda yao ya miti. Ni jumwega jwa kunoria muthetu jwetu na mboleo yongwa. Kwou, nitwonaga maciara jamega nkuruki. Kwongera, ni muti jumwega jwa kirundu na jwa kunyiyia ruugo.

Wega bungi bwa muti juu Mahgamia ni ati nijukurangaga na nijutethagia kuthongomia rera ndene ya igita ririkai mono. Arimi nibaambagiria kwona nkuu nontu nibambagiria kunyiyia mathangu ntuti na kwebera kuthira kwa miitu ndene ya ntuura iu.

Nitwikagira arimi inya, bara bar indene na oome ya TIST, kuanda miti iria iri ucore ta mut juu jwa Mahgamia. Gutara miti ya kuanda gukwega nigututethagia kwona bata iria nyingi buru. Kinyethira miti imingi ni imiega, kurina miti imikai iria igitaragia naria gututhiurukite na gutuma mera bingi birega kubua. Arimi nibetagia kugaana gatigati kao baita cia o muti juria bakwenda kuanda mono

iria ireti kuuma oome ya ntuura iu. Afisaa ba miitu na ba urimi no baejane utethio kiri kubua miti iria buumba kuanda antu a iria bubangirite. Micemanio ya cluster nibuejaga kanya gakega ga kwariria, kugaana na kuuthurania umenyo kwegie miti na imera.



Miti nitumaga naria gututhiurukite gukabua nkuruki kiri twi twinthe.

Ndene ya TIST, nituandaga mit nikenda twithirwa turi thokone ya ruugo na twona mbeca kuumania na kwendia ruugo ruruthuku ruria miti yetu iikite. Indi-ri, baita ingi cia miti ni inene mono!

Aja ni baita imwe inkai iria batwi (na nthiguru yonthe) tugwiragirua:

- ☐ Miti niritaga ngugi ja antu a gukara na kugwatira imera na nyomoo cia mithemba mwanya. Niejaga nyomoo cia kithaka iria igucua kimamo ndene ya miitu antu a gwicitha na gwikaria na gucia irio. Gukaria mithemba iji mingi nigutumaga miunda na nthiguru yetu igaciara nkuruki na kurua na kugaruka kwa rera na thina ingi.
- ☐ Miti niithongomagia ruugo na kunyiyia ruuko ruria rwithagira ruthuki mono. Miti niritaga ruugo ruruthuku rwa kaboni na ruuko ruria ruri ruugone amwe na ruugo rwa sulphur na naitrojeni. Gucokia, nituejaga ruugo rwa oksijeni ruria rwendekaga kiri utuuro.
- ☐ Uthongi bwa muunda methone ni bwongagirwa na njira ya kuanda miti, untu buria buthiongomagia miturire. Rangi ya miti niongagira rangi kiri miunda na kuthongomia naria gututhiurukitie.

- ☐ Miti nimenyagira uria rera ikari gukurukira kunyiyia kana kwongera riuu, ruugo na mbura. No itethie kunyiyia kwigara kwa ruuji, kugua kwa nthi iria cir iguru na kugitarua kuria kuumanagia na ruugo rurwingi. Miti ninyiagia nthinairia iretagwa ni kuigara kwa ruuji gukurukira gwitikiria ruuji rwa ngai gutonya muthetune antua gwitira iguru ria muthetu.
- ☐ Miti ninyiagia gukamatwa kwa muthetu. Miri yayo nigwataga muthetu juria juringi gukamatwa ni ruugo na ruuji rwa mbura inying. Miti kinya nitethagia kwongera unoru bwa muthetu. Muthetu jumunoru nijwongagira into bibiega kiri irio untu buria butethagia kwongera thiria ya mwiri jwa muntu.
- ☐ Miti nijukagia gituma bwega mono. Thina ya gituma noinyiue mono na njira ya kuanda miti ingi na ingi.
- ☐ Kwendeka kwa ruuji rurutheru no gutirimwe na njira ya kuanda miti ya gintwire. Miitu na imera nibinyiagia rwirowa ruuji rwa mbura na kuruchunkira muthetune. Rwirowa ruuji riria rwanyia, ruuji rwa mbura nirutonyaga nthi kuujuria rungu rwa nthi ruria tutumagira. Miti kinya nikunikagira nduui, ikaruika rurina mpio na kunyiyia gutauka kwaru gukurukira gukamatwa kwaru ni riuu.



Inya ndene ya mithemba imingi ya imera na nyomoo gukaranira: TIST niikaragia wingi bubu bwa imera na nyomoo amwe.

Gukaranira guku na utonga bubu bwa imera na nyomoo cia mithemba imingi mwanya—kurina bata kiri gwika aria gututhiurukite kuri na thiria. Wingi bubu bwa mithemba burina bata mono kiri kurua na kugaruka na thina iria tutirimanaga nacio ta uumo, tunyomoo turia tuthukagia imera, na kugaruka kwa rera. Niuntu gukaranira kwa mithembaimingi ya imerana nyomoo kurina bata mono, no uthuganie antu bonthe kuunthe nibakurita ngugi kumenyeera ati nitugukaria na gwika utonga bubu bwijite buungwa. Indi, o ntuku, niuntu bwa mathithio ja antu, nituguta mithemba imingi na nja inyingi o uria miitu ikugitwa, nduuji ikathirua na into biria biro bigatumirwa nkuruki ya uria bibati. Nitwonaga gutaukurwa guku ntuku cionthe. Thuugania ni imera, nyoni na nyomoo mithemba ing'ana iria wonaga riria ugwe kana aciari baku banyii na nandi ni imikai kana itio narua? Kurina mithemba ya imera na nyomoo milioni kenda ndene ya nthiguru yonthe, ni gutaukurwa kwa igita riraja kiri o umwe kiri antu bilioni mugwanja baria bari nthigurune iji, kiri aana betu na kiri aana bao.

Arimi ba TIST nibakuthithia mwanya, bakiritaga ngugi gwika wingi bubu bwa mithemba. O muti juria tuandaga ni gintu kiumba kuthithua kairi kiria kiria na bata mono. O mut juria tuandaga nijunyiagia

murigo kir mwitu jura juumite juungwa na jurina mithemba imingi niuntu no tujutimire antu a kugiita miitu niuntu bwa nkuu, mpao na into bing. Riria twaanda miti ya gintwire, ta uria ikundi bibingi biria birina miunda akui na nduuji na ngiri cia arimi ba TIST bathithitie ndene ya miunda yao, nitukaragia wingi bwa mithemba. Mithemba iji imingi ya miti kinya niretaga ikaro na irio kiri tunyomoo, nyoni na nyomoo, iria nyingi ciacio cirna bata kiri guciarithia mera bietu kuria tunyomoo turia turijaga imera bietu kana gwika muthetu jwetu jurina thiria.

Arimi ba TIST kinya nibakugaana umenyo buria barinabu kwegie gukaranira kwa mithemba imingi mwanya ya nyomoo na imera. Arimi nibakuurua buria ndene ya cluster ndene ya mubango juria jukwambiria jwa kugaana mantu kwegie gukaranira kwa mithemba imingi mwanya ya imera na nyomoo ndene ya ntuura ciao. Riria tumenyaga mantu jangi kwegie imera na nyomoo iria ciri akui natwi, mantu jaria jagarukaga ndene ya ntuura cietu na mantu jaria jeendaga kugitaria gukaranira guku kwa imera na nyomoo mianya, no tujukie itagaria gwika gintu giki gia kurigaria. Twijeni twinthe amwe na tugaane umenyo bwetu na tuande miti ya gintwire kuthithia nthiguru injega nkuruki kiri bonthe.

Ni igita ria kuthuranira minanda ya miti niuntu bwa mbura iji ijite.

Ikundi bibinini bibingi bia TIST, bakurikia kuthamiria miti yao muundene mburene ya mweri jwa inna gwita jwa itantatu, bakambiria mweri jwa mugwanja kuthuranira minanda yao niuntu bwa mbura iu ingi ya mweri jwa ikumi gwita jwa ikumi na iiri. Bubu nibutethagia kumenyeera ati barina miti imieru ing'ani ya kuanda na kuanda antune a iria itombire gutuura mbura nthiru. Ikundi bibingi kinya nibieendagia mbeu iria itigaraga kiri aturi na kwou bakongera mbea iria boonaga.

Womba kuthuranira gitanda kia mbeu ciaku, mibuko na minanda na njira iji:

Kuthuranira gitanda kia mibuko ya mbegu ciaku.

A. Utumiri

Mbegu ciaku ciauma na cionania mabura jathatu kana janna, noithamirue mibukone ya mibira iujuritie na muthetu. Uraja bwa mibuko ni kulingana na uria mbeu iu yeendaga na biria urinabio.

B. Kuthuranira

- Mbeu iria nyingi citumagira mibuko ya mibira ya 6"x4" kana 8"x5". Indi-ri, mibuko iji yomba

kwithirwa iri na goro na kwou no utumire:

- Mikebe
- Mabura
- Mibuko ya plastiki kana ya mibira – Giita mubuko jou jukinye uraja buria ukwenda na uinge na mwanki kugwatithania ntere cioijiri.
- Chuba cia ruuji iria citumiri
- Into bingi biria birio ndene ya cluster yaku-gaana mathuganio jaku na cluster yaku!
- O mubuko juria ukagita igamba gutuumira, ririkana gutura makutho ruteere rwa nthi rwaju nikenda ruuji rumba kumara.
- Giita uraja bwa mibuko iji mwanka bukinye inchi ithano gwita ithanthatu na umenyeere ati kurina ikutho bibinini reteere rwa nthi rwa mubuko jou.
- Prepare the soil by mixing in the ratio of 5:2:1 Thurania muthetu nanjira ya kuthima na gicunci kia bitano, biiri na kimwe
 - Bicunci bitano muthetu jwa iguru jwa muthetu jucunki
 - Bicunci biiri muthanga
 - Gicunci kimwe mboleo



- Cunka muthetu jwa iguru nikenda wiita maiga na into bingi biria biumagari. Gicunki no kithithue na njira ya gutonyithia waya irina makutho (sentimita imwe na nucu) kiri frame ya rubao rurina uraja bwa mita imwe na warie bwa mita imwe.
- Ungaania muthetu bwega.
- Ikira turuji tunini muthetune nikenda jugwatana.
- Ujuria muthetu mubukone mpaara, ukiinyairia mpara o wekira muthetu nikenda turita ruugo. No utumire mukebe jugiti nikenda juumba gutonyithia muthetu nauthu
- Tiga kaanya iguru aria muti jugatonyithua.
- Thaamiria miti mibukone na njira yagutura gikutho na gwikira muti utikuuna miri. Ujuria gikutho kiu na muthetu kairi
- Mibuko noibangwe ithingatene nikenda iumba kumenyeerwa ba uuthu na igeekwa riuene kana kirundune kuringana na uria mbeu iu yendaga.
- Banguania mibuko igana amwe. Umwe na itanda biria wikite mbeu, itanda bia mibuko biri uuthu kumenyeera riria biri na waarie bwa mita imwe na uraja bwa mita ithano gwita ikumi.
- Banguania miti ugiikaga miti ya muthemba jumwe amwe nikenda ithirwa iri na uuthu kiri Atari miti kuandika ni muthemba jwiku

Mwitire juria mwega buru jumweru: Guukiria minanda ya mibuko.

TIST nigwikira arimi moyo kugeria minanda ya mibuko iukirite. Arimi babaingi niboone ati minanda iji nithongomagia maciara. Geria minanda ya mibuko iukiritue na ugaane na cluster yaku jariaukoona na kethira mwitire juu nijumwegankuruki kirigwe.

Mbicha ! nikwonanina njira imwe ya iria itumikaga mono kubanga mibuko, jaou kwiri au iguru



Miti iumithiue ya Muoringa Oleifera ibanganitue amwe nthiguru

Sw2Njira iji ya gintwire ya kubangania mibuko nthiguru niritaga miti irina miiri itina inya. Bubu niuntu miiri niciunangaga ndene ya mubuko jou jwa mubira kana plastiki. Riria jukuthamua , miiri no ithirwe itina inya na kwou ikaremwa kugwatanga nthiguru na uuthu. Kuebera bubu, ni kaba kuumithia miti ndene ya mibuko itikuniki nthi na umirikire

kiri minanda iukiritue (Mbicha 2). Munanda juukiritue no juthithue na uuthu ugitumagira framu ya mpao na waya irina makutho (Tega Mbicha). Minanda iukiritue nitumaga miiri ikaigita yongwa niuntu riria miiri yakinya mubukone nthiguru, niunikaga yongwa (ikaunika yongwa yakinya ruugone). Miiri riu nigiaga inya itigukura kairi. Untu bubu nibuthithagia miri irina thiria injega na miti irina kanya gakeega nkuruki ga kugwatanga na mpwi na bwega muundene. Kinya nibunyiagia ngugi ya kugiita miri, untu jaria maingi burairie kana bukathithua buchereri, na kwou miri ikagitara nainya. Kumenyeera iria ritiraume ni gukuuthu nkuruki kiri minanda iukiritue.



Miti iumithitue ya mithemba imingi ibangi amwe munandene juukiritue.

Minanda iukiritue no yonanie taka itumagira ruuji rurwingi nkuruki ya minanda ya kawaida. Indi-ri, amenyeeeri minanda nibathithitie njira cia kumenyeera utumiri ruuji. Njira imwe kuuma Tanzania ni kwinja mutaro, na kurikira miti kana waya kujugitania na kurikiira miti iu iguru ria miti iu kana waya. Miti iji iumithitue kwou nionanagia iri nthi indi mutaro juria juri rungu nijumiejaga kanya ga kuigita miiri. Ruuji nirugwatagwa mutarone na ruru nirwikaga miti ina ruuji gukurukira gukucua ni riu na kwou rukanyia ngugi ya gwikangira ruuji jamaingi.

Biuria bia kuuria igita ria mucemanio jwa cluster

- Ni into biriku ikundi bibinini bitumirite tamibuko biathithia bwega? Gaana mitire yenu iria miega buru.**
- Niatia ikundi bibinini biumba gucibangania nikenda bithithia minanda ya mibuko? Ni antu bang'ana bakwendeka kuthuranira mibuko? Rii? Ni antu bang'ana bagwitua kuthuranira muunganio jwa muthetu? Naa?**
- Kuri ikundi bigeretie minanda ya mibuko ya guukirua?**
- Kuri na antu barina kirira kingi? Gaana gintu kiria umbu kwithirwa wiji ndene ya mucemanio jou jungi jwa aritani.**



Mariko ja TIST jamega nkuruki – Jukia riiko riaku riri jario!

Mariko jamega nkuruki ni jakari?

Antu babaingi ndene ya Kenya nibatumagira mariko ja maari jathatu mpaka narua kuruga. Jaja nijatumagira nkuu inyingi o rimwe. Mariko jamega nkuruki ni mariko jatumagira nkuu inkai na jaria jaumaragia toi kuuma riikone.

Mariko jaja jarina mantu jamaingi jamega nkuruki ya mariko jaria jatumagirwa:

1. Kiri mutumiri

- Mariko jaja nijanyagia nkuu iria ugutumiira. Nkuu iria iringi tumirwa ntuku ithatu ni riiko ria kawaida no ing'ane kiumia na igatigara kiri riiko riri riega!
- Mwanki nijukara igita riraja nkuruki kiri riiko riri riega niuntu mwanki jukaraga ndene ya riiko ta riiko ria muthetu ririeru
- Riiko nirinyagia mantu jamathuku jaria jomba kuumania na mwanki niuntu mwanki nijukunikiri.
- Nijanyagia mbea cia kuguura nkuu.

- Ninyiagia thaa iria ekuru batumagira gucwaa nkuu.
- Riiko riri niritumagira mwanki jumwe kuithia nyungu ithatu, kwou ikanyiyia thaa na nkuu iria iringitumika.
- Toi niumaragua oome ya riiko. Bubu ni bunyiagia thiina cia thiria iria ciumanagia na toi ta thiina cia gukucia miruki na gwakana metho

2. Kiri naria gututhiurukite

Gutumika gwa nkuu inkai nigutethagia:

- Kunyiyia ugiiti bwa miitu
- Kunyiyia uumo bwa ntuura iu
- Gutigithia gutamba kwa ruuji kuria kuretaga mantu jamathuku
- Kumenyeera nduuji cietu na naria ciumaga

No ukinyirwe ni baita iji weetia riiko ria TIST ririaga nkuruki narua. today are Mariko jaria jario jakwendua ni TIST narua ni:

TIST IMPROVED JIKOS



New!! Updated JIKOPOA
1,400 ksh



ENVIROFIT Z-Insert for build-in stove
can be used with 2-pot/chimney attachment!
2,000 ksh



2-pot Chimney clay stove: built using Envirofit Z insert (2,000 ksh) and 2 pot chimney attachment (1,200 ksh): labor est. 400 ksh



ENVIROFIT G-ca be used with
2-pot/chimney attachment!
2,500 ksh



ENVIROFIT M-Jiko Tosha-can be
used with 2-pot/chimney attachment!
Coming soon...

ENVIROFIT 2-pot-chimney attachment (for
all Envirofit models): 1,200 ksh
SOLD SEPARATELY

**For more information
on improved Jikos
contact your
Cluster Servant now.**

Riiko riu ririna antu a mwanki gwaki na muthetu juria muthongi jari aki ndene ya cluster cia Ngariama, Kianyaga, Salama, Tunyai, Matakiri, Pondo, Kilia, Kamwendei, Nthingini, na Kagaene.

Mazingira Bora



TIST

The International Small Group & Tree Planting Program
www.tist.org

Kikuyu Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Atongoria a TIST Cluster hingo ya githomo kiao Gitoro Conference Center, Meru.

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Ugaruruku urerugamirira.

Kuringana na ruhonge rwa World Commission on Environment and Development (1987) Ugaruruku urerugamirira niuhotaga kuhingia mabata mataguthukia uhoti wa ruciaro rwa kabere.

Ugaruruku urongoreirie kuongerera na kwagiritia miturire ohamwe na gutigirira maria maturigiciirie nimaheana indo iria ciagiriire;

1. Indo citigiriirwo kweherio citahuthikite ringi
2. Indo iria thuku citigiriirwo nikurekererio rieraini cirri nyingi gukira uria riera ringihota gucieheria.

Maundu ma kumenya Ugaruruku urerugamirira.

Ona gutuika gutikoragwo na ritwa riega ria Ugaruruku uyu, ouria turathii tugitaukagwo ni uhoro uyu noguo tuumenyaga makiria;

1. Uigananu na uma, iria ciruagirira ihooto cia andu a kuria gutiganiirio ohamwe na kumenyerera ruciaro rwa ruciu. O bururi niwagiriirwo guthii nambere na maundu mao matakugiririra mabururi maria mangi gwika uguo. Gutiri bururi wagiriirwo ni kwinyitithania na utemi na uthukangia wa miti kana riera kuri mabururi maria mangi. Ruciaro rwa ruciu rutingihota kwiyaririra no angikorwo nitugwika undu wagiriirwo nikumenyerera ihooto cia ruciaro ruru rwa ruciu.
2. Woni wa kabere, uratubata gwiciria muno uhoro wigii maciaro ma ciiko ciitu mahinda

mokite. Riria maundu maria twikaga makorwo na ugwati kuri maria maturigiciirie kana ugima mwega wa miiri gwa kahinda karaihu (onangikorwo ugwati ndutuikite wagwikirwo mukonde) na makinya ma kwigitira nimagiriirwo ni kuoyo niguo kugitira thina o wothe. Njira ino itagwo wigitiri. Andu aingi nimakoretwo makiuga ati thi irerugamirira ingikorwo iri na uma o riria andu meciria miturire ya ruciaro rwa ruciu na njira ya gwiciria ugwati wa makiria ma miaka 50.

3. Mwiciririe - kumenya ati gukoragwo na thi imwe na mawega mamwe na ati maundu maria mothe tureka mekikaga handu hamwe. Maciaro ma maundu maria tweak kundu kuwe nimahutagia thi yothe.

Mogaruruku marerugamirira nimahotaga gutuhe maundu makugitira miturire ya ruciu. Gutiri mutaratara ona umwe wakurumirwo, no ni iguru ria o bururi kumenya nimitwratara iriku ingimateithia na ihuthike wega kwao.

Ugaruruku uyu uhutagia gutaukwo ni maria maturigiciirie na uria mathina mamo mangiona kihonia. No riria twarora na twakurana maria maturigiciirie na kumenya ati ati mogaruruku nomakorwo makiirugamirira na njira njega. Niturorete mathina ngurani ma maria maturigiciirie thiini wa matuura maitu kuhitukira githomo gia TIST na niuteithitie gukurana njira cia kuhurana na mathina maya thiini wa ikundi. Thii na-mbere na kurora maria maturigiciirie niundu waku na ciana ciaku kuhitukira njira cingihoteteka.

Kitunguu Saumu – dawa ya ki-nduire na niihonagia!

Kitunguu saumu gikoragwo kiri kia muhiriga wa gitunguru na nigitagwo na riitwa ringi “stinking rose”. Nigikoretwo gikihuthika ta dawa kuma mahinda ma tene na uthuthuria muingi niukoretwo ukionania ati kuria andu makoretwo makiria gitunguru giki nigukoretwo na unyihu wa cancer ya gastric, kuhaica thakame na kuingihia choretrol. Prof. Barbara Levine, kuma Cornell University Medical College mucii wa New York, ongereire ati gutunguru saumu nigikoragwo na hinya wa kwongerera uhoti wa kwigitira kumana na mirimu na kiri na indo ciakurua na bacteria iria cumanaga na indo iria cirri na sulphur ciitagwo

allicin, iria cithondekagwo riria kitunguu saumu giatinangio kana giathio. Na njira nguhi, kitunguu saumu kiri na mawega maingi.

Utangikorwo uri na allergy, ndungikorwo uhititie ririe wonderera kitunguu saumu irio-ini ciaku. Handu hothe hendagio indo cia kuruga nihendagio kitunguu saumu.

Kuhariria kitunguu saumu, unura gikoni kia iguru na utinangie tunini tunini nanoutukanie na na irio iri thani-ini.

Andu mari na ugima mwega wa mwiri mathondekaga TIST iri na hinya.



Muti wa Mahgamia: muti mwega mwena wa Mara.

Muti wa mahgamia ni umwe wa miti iria ikuraga mwena ma Maara. Thiini wa cluster ciitu igiri na nicio Kutete na Chemaner; arimi aingi a TIST nimambiriirie gukuria muti uyu thiini wa migunda yaao. Niukoragwo uri mwega na guthondeka tiiri na thumu waguo. Niundu wa uguo, nitukoragwo na magetha maingi na nimwega na kiiruru ohamwe na kunyihia ruhuho.

Wega ungi wa muti uyu ni ati niukuraga na-ihanya na ugateithia riera gwa kahinda ka na-ihanya. Arimi mambagiriria kuuna ngu riria marauceha na makanyihia utemi wa miti.

Niturahinyiriria arimi, thiini wa TIST na nja yayo mahande miti miega ta Mahgamia. Ucaguri mumenyerere wa miti ya kuhanda niututeithagia kugia na maciaro maingi. Ona angikorwo miti miingi ni miega, nikuri na ingi minini ingithukia maria maturigiciirie na ithukie mimera na miti ingi. Arimi nimagiriirwo ni kugayana mawega ma miti na

macagure miti iria yumite nja ya matuura maa. Ofisa a mititu na urimi nomateithiririe kuhena njira ingi njega. Micemanio ya cluster ni handu henga na mweke wa kwaririria, kugayana na kungania uhoro wa bata wa miti na mimera.



Miti niyagiragia maria maturigiciirie kuri ithuothe.

Thiini wa TIST, tuhandaga miti niguu twendie carbon na turihwo. No ona kuri o uguo, mawega mangi ma uhandi wa miti ni maingi.

Maya ni mamwe ma mawega maria ithui na andu aria anga thiini wa thi twigiagira.

- ❑ Miti niikoragwo iri ituuro cia nyamu cia githaka na igacihe wihitho na ugitiri ohamwe na gia kuria. Kugitira biodiversity nigutumaga migunda iitu na thi yothe ikorwo na maciaro mega na ihote gwitiria ugaruruku wa riera na mathina maingi.
- ❑ Miti niyongagirira na ugatheria riera na ukanyihia uthukia wario uria ni ugwati. Miti niyeheragia carbon dioxide iria itarahuthika riera-ini na indo ingi cia guthukia riera ta sulphur dioxide, ozone na nitrogen oxide. Na cigatuhe oxygen iria ibatarikanaga hari kuhuhia.
- ❑ Migunda mithaka ithondekagwo kuhitukira uhanadi wa miti, iria yongagirirauthaka wa muturire. Miti niikiraga rangi mwega an igathakaria migunda ohamwe na maria maturigiciirie.

- ❑ Miti niiigananagia riera kuhitukira guthima ugwati wa urugari wa riuu, ruhuho na mbura. Niiteithagiriria kunyihia miyuro ya maa, ituika na ruhoho runene. Miti niinyihagia miyuro riria yahotithia maa kuingira tiiri-ini wega handu ha gutherera.
- ❑ Miti niinyihagia tiiri gukuuo ni maa. Miri yayo nihotaga kunyitirira tiiri wega na ikagiririria gukuuo ni maa na miyuro. Miti ningi niyongagirira unoru wa tiiri. Tiiri munoru niukuragia irio njega na igateithia miiri ya andu.
- ❑ Miti niinyihagia inegene. Inegene norinyihe riria wahanda miti miingi.
- ❑ Ubatarania wa maa matheru ma kunyua nounyihio ni uhandi wa miti ya ki-nduire. Mititu na minera niinyihagia ihanya ria maa na kumacunga tiiri-ini. Riria manyihio muthiire, nimahotaga guthondeka ihumo cia maa. miti ningi niuhumbagira njuui na kuiga maa mari matheru.



Hinya thiini wa biodiversity: TIST niigitagira biodiversity.

Biodiversity – utonga naunduire wayo ni wa bata muno hari maria maturigiciirie. Miaramano ni ya bata hari kuhurana na ugaruruku na mathina ta kwaga mbura, tutambi kana ugaruruku wa riera. Na tondu biodiversity ni ya bata muno nowicirie andu kuma miena ingi nimaratigirira nitwagitira na twamenyerera utonga uyu. No ona kuri o uguo, o muthenya niundu wa maundu maria twikaga niturorirwo ni mithemba miingi ya diversity tondu mititu niiratemwo, kuria kugunyu gukahua na indo cikhuthirwo uuru. Mathina maya turamona o muthenya, wicuranie ni mithemba igana ya miti, nyoni na nyamu iria wonaga riria wari munini no riu niyathirire? Kuri na makiria ma mithemba 9 million ya indo thiini wa thi, na riria twacithukangia, ni kurirwo gutangigaruruka kuri andu 7billion aria makoragwo thi, kuri ciana ciitu na ciana ciacio.

Arimi a TIST nimakoretwo na ugaruruku, makagitira utonga uyu wa diversity. O muti wothe

twahanda ni kindu kingihuthika ringi. O muti wothe twahanda niunyahagia uthukangia wa riera na uni wa ngu, waturi wa mbau na ingi nyingi/ riria twahanda miti ya ki-nduire, ta uria ikundi nyingi iri na mititu kuria kwaraga na makiri ma arimi a TIST mari na migunda, nitugitagira biodiversity. Miti ino ya ki-nduire niiheanaga micii kuri tutambi, nyoni na nyamu ingi iria imwe ciacio niciteithagia hari guciarithi irio, kunina tutambi na kuiga tiiri uri munoru.

Arini a TIST nimaraheana uria marataukwo ni biodiversity. Arimi nimaraheana uhoru thiini wa cluster hari mutaratara wa kugerio wa kugayana uhoru wigii bio diversity. Riria twathoma makiria uhoru wigii mimera na nyamu iria citurigiciirie, mogaruruku miena iitu, mogwati kuri biodiversity, notwoe makinya kugitira undu ucio wa magegania. Rekey tunyitane, tugayane uugi witu na tuhande miti ya ki-nduire niguo tukorwo na thi njega iitu ithuothe.

Ni kahinda ga kuhariria tuta niundu wa kimera giukite.

Ikundi nyingi thiini wa TIST thutha wa kuhanda mimera migunda-ini yao mbura ya kuma April-June nimambiriirie kuhariria tuta niundu wa kimera giukite kia mbura mweri wa October-December. Njira ino niikumateithia gutigirira mari na miti miiganu ya gucokereria iria itagwatire kimera kiu kingi. Ikundi nyingi niciendagia miti iria yatigara kuri arimi angi.

Njira cia kuhariria itanda mikebe na tuta ciakuhurira mbegu.

Kuhariria mikebe.

A. Tumira.

Riria mbegu ciamera, na cionania mathangu 3-4 nocithamirio maratathiini mari na tiiri kana mikebe. Muigana wa mikebe uringanaga na mabata na indo iria uri nacio.

B. Hariria

- Mimera miingi itumagira maratathi ma **6"x4" kana 8"x5"**. No ona kuri o uguo maratathi maya nomakorwo mari na thogora wa iguru na nouhuthire
 - Mikebe
 - Magoto ma marigu
 - Maratathi ma plastic
 - cuba cia plastic
 - Kindu kingi o giothe uri nakio, tuiria aria angi thiini wa cluster yaku maratamira kii!
 - O mukebe uria watumira, tigurira niwatura irima na-thi.
- Tigirira uraihu wa mikebe ino ni 5 kana 6 inches na uture marima.
- Hariria tiiri na uutukanie na ratio ya 5:2:1
 - icunji 5 cia tiiri wa iguru kuma mutitu



- icunji igiri cia muthanga
- gicunjil kia thumu
- Chunga tiiri wa mutitu niguo weherie mahiga na indo ingi njuru. Nouhuthire waya gucunga.
- Tukania tiiri wega.
- Gunya tiiri niguo unyitane wega.
- Ikira tiiri mukebe-ni na uiyurie kahora na uthii ugikindagira niguo ndugatigie handu ha riera.
- Tigia handu hau iguru hakuhandira muti.
- Thamiria miti mikebe-ni na umihande ho na ndukahutie miri uoke uiyurie mukebe na tiiri.
- Mikebe noibanguo wega niguo ihote gutungatirika wega na uoke umiige handu riua-ni kana kiiruru-ni kuringana na bata wa muthemba wa muti.
- Banga mimera kuringana na mithemba yayo niguo ikahota gutarika wega.

Mutaratara mweru:

Mikebe miigirire handu iguru.

TIST niirahinyiriria arimi magerie kuigirira mikebe iria mahandira miti handu iguru. Arimi aingi nimonete njira ino iri njega. Geria njira ino na wire aria angu uria wona na kana niyaguteithia.



Njira ino hituke ni mahinda ya kuiga maratathi ma miti thi noirute mimera iri na miri itari na hinya na nitundu miri ithiururukagiria thiini wa maratathi. Riria uramithamia, miri noikorwo itari na hinya na ikorwo itenyitiriire wega. Na niguo kugitira ugwati uyu, ikira mimera yaku maratathi matari matumanie na umaigirire handu iguru. Gitanda giakuigirira miti ino nogithondekwo na mbau na waya. Itanda ici nicihotithagoa miri

gucehwo wega tondu noguceha urutitie na-rungu tondu yaneneha niicuhaga. Kwa uguo nikwonania ati miri ndithukangagio riria miti irakura na riria iracehwo. Njira ino niitumaga miri igie na hinya na igwate na-ihanya na ikanyihia wira uria ukoragwo maita maingi ukiriganira na noukorwo uri ugwati munene. Kurimira na kwehutia riia nigukoragwo kuri kuhuthi itanda-ini ici.



itanda ici njoe iguru nocioneke tacikwongerera uhei wa maai no arimi nimathundurite njira ya kuhurana na thina ucio. Njira iria yambiriirio Tanzania ni kwenja mutaro, na ukaiga waya ukiranitie ugacoka ukaigirira maratathi maku ma miti. Miti haha yonekaga ta ihutitie thi no mutaro uria uri rungu niumiheaga mweke wa miri gukura. Maai maguikara mutaro thiini na mimera igakorwo na ugunyu hingo ciothe na ndurabataru kuhe miti ino maai o hindi. Iratathi ria nylon noriarwo thi kugiririria maai matikanyuo ni tiiri.

Ciuria ciakuria githomo-ni gia cluster.

- a. Ni indo iriku ikundi ngi cihuthirite na cikagacira uhandi-ni wa miti mikebeini?
- b. Niatia ikundi cingicokanirira niguo ciharirie uhandi uyu wa miti? Ni andu aigana marabatarania uhandi-ni uyu wa miti? Niri? Niandu aigana marabatarania gutukania tiiri. Niku?
- c. Kuri ikundi cigeretie njira ino njeru?
- d. Andu mari na mataro mangi? Araniria na arimi angu thiini wa githomo kiu kingi.



Riiko ria TIST- wigire na riiko riaku matanathira!

Riiko riri niririku?

Andu aingi thiini wa Kenya mahuthagira riiko ria maguru matatu mirugire-ni yao. Mariiko maya nimahuthagira urugri muingi muno wa ngu. Mariiko maya ma TIST mauthagira urugari munini na uhuthiri wa ngu ukanyihanyia.

Mariiko ma TIST mari na mawega maingi muno gukira maya mangi ma ki-nduire:

1. Kuhuthira

- Riko riri ria TIST niunyahigia uhuthiri wa ngu. Ngu cia matuku 3 cia riiko ria ki-nduire nichuthike kuruga kahinda ka kiumia 1 na riiko ria TIST!
- Urugari thiini wa riiko ria TIST niuikaraga muno tondu ndumaga na-nja.
- Nirinyihigia ugwati wa mwaki tondu mwaki nimuhingiririe.
- Nirinyihigia uguri wa ngu.

- Nirihonokagia mahinda ma atumia kuna ngu.
- Riiko riri rihuthagira mwaki umwe gwakia mariiko 3.
- ndogo ndionekaga riiko gwaku na kwa uguo kunyihia ugwati wa mirimu iria irehagwo ni ndogo ta ya githuri na maitho.

2. Niundu wa maria maturigiciirie.

Riria ngu citarabatarania muno niguteithagiriria maundu-ini maya;

- kunyihia utemi wa miti.
- Kunyihia wagi wa miti.
- Kunyihia tiiri gukuo ni maai.
- Kwagirithia ihuma cia mbura ba njuui.

Nowamukire mawega maya riria wegira riiko riri na njira ya gwtia kuma kuri TIST umuthi. Mariiko maria maroneka Kenya ni;

TIST IMPROVED JIKOS



New!! Updated JIKOPOA
1,400 ksh



ENVIROFIT Z-Insert for build-in stove
can be used with 2-pot/chimney attachment!
2,000 ksh



2-pot Chimney clay stove: built using Envirofit Z insert (2,000 ksh) and 2 pot chimney attachment (1,200 ksh): labor est. 400 ksh



ENVIROFIT G-ca be used with
2-pot/chimney attachment!
2,500 ksh



ENVIROFIT M-Jiko Tosha-can be
used with 2-pot/chimney attachment!
Coming soon...

ENVIROFIT 2-pot-chimney attachment (for
all Envirofit models): 1,200 ksh
SOLD SEPARATELY

**For more information
on improved Jikos
contact your
Cluster Servant now.**

Mariiko maria makitwo na ndoro na rumba maroneka o mwena wa Ngariam, Kianyaga, Salama, Tunyai, Matakiri, Pondo, Kilia, Kamwendei, Nthingini, and Kagaene clusters.

Mazingira Bora



TIST

The International Small Group & Tree Planting Program
www.tist.org

Kiswahili Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Viongozi wa TIST Cluster wakiwa kwa warsha katika Gitoro Conference Center, Meru.

Ndani: Maendeleo endelevu. *Ukurasa 2*

Vitunguu saumu – mmea unaoponya! *Ukurasa 2*

Mti wa Mahgamia: Mti mzuri katika eneo la Mara. *Ukurasa 3*

Miti hufanya mazingira kuwa bora kwetu sote. *Ukurasa 3*

Nguvu katika utofauti: TIST hulinda bionuwai. *Ukurasa 4*

Wakati wa kuandaa vitalu vya miti kwa upandaji wa msimu hujao. *Ukurasa 4*

Meko Bora Ya TIST- Pata lako wakati bado yapo! *Ukurasa 5*



Maendeleo endelevu.

Kwa mujibu wa Tume ya Dunia ya Mazingira na Maendeleo (1987), maendeleo endelevu ni yanayokidhi mahitaji ya sasa bila kupunguza uwezo wa vizazi vya baadaye kukidhi mahitaji yao wenyewe.

Maendeleo endelevu hulenga kuongeza ubora wa maisha huku tukihakikisha mazingira yana uwezo wa kuendelea kutupa rasilimali na huduma tunazohitaji:

1. Rasili mali isichukuliwe kwa kasi kuliko inavyoweza kurudishwa.
2. Taka kutokana na rasili mali isitengenezwe kwa kasi kuliko mazingira yanavyoweza kumudu kwa usalama (misitu huchukua gesi ya kaboni inayotokana na kuchomeka kwa ngataa).

Sifa za kawaida za maendeleo endelevu.

Ingawa hakuna ufafanuzi mmoja wa maendeleo endelevu, jinsi wazo ili linavyokua, kuna baadhi ya kanuni za kimsingi zinazobaki:

1. Wasiwasi kwa usawa na haki, jambo ambalo hulinda haki za maskini na waliotengwa huku maslahi ya vizazi vijavyo yakilindwa. Kila taifa lafaa kuwa na uwezo wa kuendelea katika kutii maadili yake ya kitamaduni na kijamii bila kuzuia mataifa mengine kufanya vivyo hivyo. Hakuna nchi inapaswa kufanya mambo yanayoharibu rasilimali ya kimazingira katika nchi zingine. Vizazi vijavyo havina uwezo wa kuongea, hata hivyo kama maendeleo yatakuwa endelevu lazima yazingatie maslahi na haki zao.
2. Yana mtazamo wa muda mrefu, ambao hutulazimu kufikiria matokeo ya matendo yetu

ata baada ya siku ya leo. Vitendo vinapotishia kudhuru mazingira ama afya ya binadamu katika muda mrefu (hata kama tishio hilo bado halijathibitiwa kisayansi), hatua za tahadhari zafaa kuchukuliwa ili kuzuia uharibifu katika siku zijazo. Hili linaitwa kanuni ya tahadhari. Watu wengine wamesema kuwa dunia endelevu inawezekana iwapo kila kizazi kitafikiria kuhusu maslahi ya kizazi kifuatacho, kwa kufikiria athari katika miaka hamsini ijayo.

3. Kufikiria kimfumo - Kuelewa kuna ardhi moja iliyo na rasili mali zinazohesabika, na kuwa vitendo vyetu vinafanyika ndani ya mfumo huu mkubwa. Athari za maamuzi yaliyofanya katika sehemu moja ya dunia yaweza kuathiri sehemu nyingine haraka sana.

Maendeleo endelevu huleta maadili yanayojaribu kulinda maisha yetu ya baadaye. Hakuna mpango mmoja utafuatwa, lakini ni kwa kila nchi na jamii kuamua jinsi kanuni zinavyoweza kutekelezwa kwa ubora zaidi katika kanda hilo.

Maendeleo endelevu kwa uwazi yanahusu kuelewa shida na suluhisho za mazingira yetu. Ni wakati mazingira yatakapoangaliwa kwa ukamilifu na kutiliwa maanani tu, ambapo maendeleo ya kijami na kiikonomia yatapofanyika kwa njia endelevu. Tumeangalia matatizo kadhaa katika jamii yako kupitia mafunzo ya TIST na mmesaidia kutambua njia za kuyaweza matatizo katika vikundi vyenu vidogo. Endeeleni kuchunga mazingira yenu kwa ajili yenu nay a watoto wenu ili muweze kuboresha maisha yenu kwa njia ambazo ardhi itaweza kukimu.

Vitunguu saumu – mmea unaoponya!

Sauumu ipo katika familia ya vitunguu na huitwa 'waridi lenye kunuka' na wanaoipenda. Imetumika kama dawa kutoka wakati wa Misri ya kale na masomo mengi yameonyesha kuwa katika tamaduni ambapo watu hula kitunguu saumu kingi kuna matukio machache ya saratani ya tumbo, shinikizo la damu, na mafuta mengi mwilini. Profesa Barbara Levine, wa Cornell University Medical college iliyo New York, anaongeza kuwa saumu huonekana 'kuimarisha mfumo wa kinga kupitia kuongeza shughuli za seli za kinga'. Pia ina uwezo wa kuua vijidudu ambao hutokana na kuwepo kwa misombo yenye sulphur inavyoitwa allicin, ambavyo

hutengenezwa saumu inapopodwa au kukatwa kidogo kidogo. Kwa upana, saumu ina misombo mingi yenye faida.

Isipokuwa kama una mzio, huwezi kufanya kosa unapoongeza mmea huu wenye afya katika chakula chako. Duka lolote la mimea na matunda karibu nawe au soko lina vitunguu saumu kwa matumizi yako.

Kutengeneza saumu, toa ngozi ya juu halafu hukate ili iwe vipande vidogo, halafu waweza kuichanganya na chakula chako kilichopikwa na kilicho katika sahani ambayo iko tayari kuliwa.

Watu wenye afya hutengeza familia ya TIST yenye nguvu!



Mti wa Mahgamia: Mti mzuri katika eneo la Mara.

Mti wa Mahgamia ni mojawapo ya miti mizuri inayokua katika eneo la Mara. Katika cluster zetu mbili, Kutete na Chemaner, wakulima wengi katika TIST wameanza kukua mti huu katika mashamba yao ya miti. Ni mzuri kwa kurutubisha udongo na mboleo ya kiasili. Kama matokeo, tunapata mazao bora. Kuongeza, ni mti mzuri kwa kivuli na wa kupunguza upepo.

Faida nyingine ya mti wa Mahgamia ni kuwa unakua kwa kasi na unasaidia kuboresha hali ya anga ya muda mrefukwa muda mfupi. Wakulima huanza kupata kuni kwani miti hii hupuguzwa mapema zaidi na huzuia kukata kwa misitu katika eneo hilo.

Tunawahimiza wakulima, katika na wasio katika TIST, kupanda miti iliyo na urafiki kama Mahgamia. Uchaguzi makini wa miti ya kupanda hutusaidia kupata faida nyingi zaidi.

Ingawa miti mingi ni mizuri, kuna miti michche inayohatarisha mazingira yetu na kukandamiza mimea mingine. Wakulima huhitaji kugawana kati

yao faida za kila mti wanaotaka kukuza sanasana kama ni mti unaotoka nje ya eneo hilo. Maafisa wa misitu na kilimo wanaweza kuwasaidia kupata miti ya iliyo sahihi ya kupanda badala. Mikutano ya cluster huwapa nafasi nzuri ya kujadili, kugawana na kukusana taarifa kuhusu miti na mimea.



Miti hufanya mazingira kuwa bora kwetu sote.

Katika TIST, tunapanda miti ili kujihusisha katika soko la kaboni na kupata pesa kutokana na mauzo ya hewa ya kaboni iliyotolewa hewani na miti yetu. Hata hivyo, faida nyingine za miti ni kubwa sana.

Hapa ni chache za faida ambazo sisi (na dunia nzima) hufurahia:

- ☐ Miti hutumika kama makazi ya kiasili kusimamia aina nyingi za mimea na wanyama. Huwapa wanyama pori wanaotafuta makazi mitini hisia ya faragha na usalama na kuwapa chakula. Kutunza bionuwai hufanya mashamba yetu na ardhi kuwa na uzalishaji zaidi na kuwa sugu dhidi ya kubadilika kwa hewa na matattizo mengineyo.
- ☐ Miti huboresha hewa na kupunguza uchafu ulio hatari. Miti hutoa hewa ya kaboni na uchafuzi wa hewa pamoja na hewa ya sulfur, ozone na naitrojeni. Kurudisha, inatupa oksijeni ambayo ni muhimu ili kuishi.
- ☐ Urembo wa pahali kwa macho huboreshwa kwa kupanda miti, ambayo, huboresha maisha. Rangi ya kijani ya miti huongeza rangi kwa ardhi na kuongeza urembo wa mazingira.

- ☐ Miti hudhibiti hali ya hewa kwa kudhibiti athari za jua, upepo na mvua. Yaweza kusaidia kuepuka mafuriko makali, maporomoko ya ardhi na uharibifu wa upepo. Miti hudhibiti athari za mafuriko kwa kuruhusu maji kuingia udongoni badala ya kupitia juu yake.
- ☐ Miti hupunguza mmomonyoko wa ardhi. Mizizi yake hushika udongo ambao badalake hungebebwa wakati wa upepo mkali wa mvua au mafuriko. Miti hurutubisha udongo. Udongo wenye rutuba huleta virutubisho katika chakula jambo ambalo huchangia katika afya ya binadamu.
- ☐ Miti huchukua kiwango kikubwa cha kelele. Uchafuzi wa kelele waweza kupunguzwa kwa upana sana kwa kupanda miti mingine na mingine.
- ☐ Mahitaji ya maji safi ya kunyua yaweza kukimiwa kwa kupanda miti ya kiasili. Misitu na mimea hupunguza mwendo wa maji ya mvua na kuyaruhusu kuingia udongoni. Mwendo unapopunguzwa, maji ya mvua huingia ardhini kujaza huko, maji ambayo tunahitaji kwa matumizi yetu. Miti pia hufunikia mito, na kuweka maji yakiwa baridi na kupunguza kupotea kwa maji kutokana na joto la jua.



Nguvu katika utofauti: TIST hulinda bionuwai.

Bionuwai— utajiri na aina mbalimbali za viumbe hai—ni muhimu kwa mazingira yenye afya. Wingi wa aina ni muhimu hasa katika kukabiliana na mabadiliko na changamoto kama ukame, wadudu au kubadilika kwa hali ya anga. Kwa sababu bionuwai ni muhimu sana, waweza kufikiri kuwa watu kila mahali wanafanya kazi kuhakikisha kuwa tunalinda na kuhifadhi utajiri huu wa kiasili. Hata hivyo, kila siku, kwa sababu ya matendo yetu ya kibinadamu, tunapoteza aina na tofauti za kimaumbile jinsi miti inavyokatwa, maeneo oevu kukaushwa na rasilimali kutumika zaidi ya inavyofaa. Tunaona hasara hii kila siku. Fikiri ni aina ngapi za mimea, ndege na wanyama ambao uliona sana wakati wewe au wazazi wako walikuwa wachanga lakini ambazo zinaonekana kwa nadra au hazipo tena? Kuna aina milioni tisa mbalimbali za viumbe hai katika sayari yetu na tunapoziharibu, ni hasara ya kudumu kwa kla mmoja wa watu bilioni saba wanaoishi katika sayari hii, kwa watoto wetu na kwa watoto wao.

Wakulima wa TIST wanaleta mabadiliko, wakifanya kazi ili kuhifadhi utofauti huu wenye utajiri. Kila mti tunaopanda ni rasili mali muhimu inayoweza

kutumika tena. Kila mti tunaopanda hupunguza shinikizo kwa msitu ulio na utofauti na wa kiasili kwani tunaweza kuutumia badala ya kukata misitu kwa sababu ya kuni, mbao na bidhaa nyinginezo. Tunapopanda miti ya kiasili, kama vikundi vidogo vingi vilivyofanya katika mashamba ya miti yaliyo karibu na mji na melfu ya wakulima katika TIST waliyo nayo katika mashamba yao, tunalinda bionuwai kwa njia ya moja kwa moja. Aina hizi nyingi za miti ya kiasili pia huwapa wadudu, ndge na wanyama makazi, wengi ambao ni muhimu kwa uchavushaji wa mimea, kula wadudu na kuweka udongo wetu ukiwa wenye rutuba.

Wakulima katika TIST pia hugawana ujuzi au maarifa kuhusu bionuwai. Wakulima wanahojiwa katika cluster katika mpango wa kwanza wa kugawana taarifa kuhusu bionuwai katika maeneo yao. Tunpojua mengi kuhusu mimea na wanyama walio karibu nasi, mabadiliko katika maeneno haya na hatari kwa utofuti huu, tunaweza kuchukua hatua ili kuhifadhi rasilimali hii ya kushangaza. Tujeni sote pamoja na tugawane ujuzi wetu na tupande miti ya kiasili ili kufanya dunia kuwa bora kwetu sote.

Wakati wa kuandaa vitalu vya miti kwa upandaji wa msimu hujao.

Vikundi vingi vidogo katika TIST, baada ya kuipandikiza miche yao mvua wa Aprili kufika Juni, waanza mwezi wa Julai kuviandaa vitalu vyao ili kuvitumia msimu hujao wa mvua kati ya Octoba hadi Decemba. Jambo hili husaidia kuhakikisha kuwa vitalu vina miti mipya tosha ya kupanda na hata ya kupanda ilipokuwa miti ambayo haikuweza kuishi misimu iliyopita. Vikundi vingi pia huuza miche inayobaki kwa majirani na hivyo basi huongeza mapato yao.

Hapa ni jinsi ya kuandaa ambapo utaotesha miche yako, mifuko na vitalu:

Pot-bed Preparation Kutayarisha mifuko ya kuotesha

A. Matumizi

Miti ikishaota na kuonyesha majani matatu ama manne, inaweza kupandikizwa hadi mifukoni ya mipira pamoja na mchanga. Ukubwa wamifuko ni kulingana na mbegu aina hiyo itakavyo kwa ujumla pamoja na mifuko uliyonayo.

B. Maandalizi

- Mbegu nyingi hutumia mifuko ya mipira ya ukubwa wa 6"x4" au 8"x5". Hata hivyo, hii

yaweza kuwa ghali na hivyo basi waweza kutumia :

- Makopo ya bati
- Majani ya ndizi
- Mifuko ya plastiki –kata mfuko hadi ukubwa unaohitaji na ufunge kwa kutumia joto kuyeyusha plastiki ili kushikanisha pande pamoja..
- Chupa za maji za plastiki zilizotumika.
- Vitu vinginevyo ulivyonavyo- badilishana mawazo yako katika cluster yako

- Mfuko wowote utakaotumia, hakikisha umeacha mashimo chini ili maji yatiririke nje.
- Kata urefu wa mifuko hii hadi inchi tano kwenda sita na uhakikishe kuwa mashimo mengine madogo yapo upande wa chini wa mfuko.
- Tayarisha mchanga kwa kuchanganya kwa uwiano wa sehemu tano kwa mbili kwa moja
 - Sehemu tano mchanga wa juu wa msitu uliochekechwa kutoa mchanga mwingine
 - Sehemu mbili mchanga
 - Sehemu moja mbolea
- Chekecha mchanga wa juu kutoa mawe na vitu vigumu. Kichungi chaweza kutengenezwa kwa



kuongeza waya wenye matundu (sentimeta moja na nusu) kwa mbao iliyo na urefu wa mita moja na upana wa mita moja.

- Changanya mchanga vizuri.
- Loanisha mchanga ili huweza kushikana
- Jaza mchanga mfukoni, ukiulaza vizuri kutoa nafasi za hewa zilizopo. Waweza kutumia mpare kujaza kwa urahisi.
- Acha nafasi mfukoni juu ambapo mche utawekwa
- Pandikiza miche katika mifuko kwa kuchimba shimo na kuingiza mche bila ya kuipindisha mizizi. Jaza shimo tena na mchanga.
- Mifuko yaweza kupangwa katika safu ili kuunda vitanda kwa ukarabati wa rahisi na yaweza kuwekwa chini ya jua au katika kivuli kulingana na mahitaji ya mbegu.
- Panga mifuko kwa vikundi vya miche mia moja kwa kila kikundi. Vivyo hivyo kwaviunga vyako, vitanda ni rahisi zaidi kuhudumia vinapokuwa na upana wa mita moja na urefu wa mita tano kwenda kumi.
- Panga miche yako kulingana na aina ya mbegu ili iwe rahisi kwa wahesabu miti kurekodi takwimu.

Njia mpya bora ya kutumia: Vitalu vya mifuko vilivyoinuliwa

TIST inawatia moyo wakulima kujaribu vitalu vya mifuko vilivyoinuliwa. Wakulima wengi wamegundua kuwa hivi huboresha matokeo. Jaribu hivi vitalu na uripoti kwa cluster yako utakayoona na kama njia hii ni bora kwako.

Kielelezo kifuatacho kinaonyesha njia moja ya kawaida inayotumika kupanga mifuko, kama ilivyoielezwa hapo juu.



Kielelezo 1: Miche ya *Moringa oleifera* ikiwa imepangwa kwa pango kwa ardhi

Mfumo huu wa kawaida wa kupanga mifuko ardhi waweza kuzalisha miche yenye mizizi isiyo na nguvu. Hii ni kwa sababu mizizi hujisongomeza ndani ya mfuko wa plastiki. Wakati wa kupandikiza, mizizi yaweza kuwa isiyo na nguvu na hivyo basi si rahisi kuthibitika au kuimarika ardhi. Kujiipusha na haya, inashauriwa kuimarisha miche kwa viriba vilivyo

wazi chini na kuiwekelea kwa vitalu vilivyoinuliwa (Kielelezo 2) Kitalu kilichoinuka chaweza kwa urahisi kutengenezwa kwa kutumia mbao zilizopigiliwa pamoja (kiunzi) na waya wenye matundu (Angalia picha). Vitalu vilivyoinuliwa huruhusu kupogoa kwa mizizi kwa moja kwa moja. Mizizi nayo hupata nguvu bila kukua tena. Tendo ili huzalisha mfumo wa mizizi wenye afya na mche huna nafasi bora ya kujiimarisha haraka na vyema shambani. Pia tendo ili linamaliza haja ya kazi ya kupogoa mizizi, zoezi ambalo husahaulika ama kucheleweshwa, na kusababisha uharibifu mkubwa wa mizizi. Kuzuia kwekwe pia ni rahisi zaidi katika vitalu vilivyoinuliwa.



Kielelezo 2: Miche ya aina mbalimbali za miti iliyopangwa kwa kitalu kilichoinuliwa

Vitalu vilivyoinuliwa vyaweza kuongeza kiasi cha maji kinachotumika kitaluni. Lakini, waendeshaji wa vitalu wamebuni njia mpya za kukabiliana na kikwazo cha maji. Njia moja nzuri iliyobuniwa Tanzania ni kuchimba mtaro, kuwekelea mbao au waya wenye matundu kuvuka huo mtaro. Miche hivyo basi huonekana kuwa ardhini lakini mtaro hulio chini hunaipa nafasi ambayo inasaidia kupogoa kwa mizizi kwa hewa. Maji hunaswa mtaroni na yataipa miche unyevu kupitia kunaswa kwa maji na jua na kwa hivyo yatapunguza haja ya kuipa miche kila wakati. Karatasi ya nailoni yaweza pia kuwekelewa mtaroni kuhakikisha kuwamaji hayapotelei mchangani

Maswali ya kuuliza katika mafunzo ya cluster

- a. Ni mifuko ya aina gani imetumika kwa mafanikiona vikundi vidogo kama mifuko ya miche? Gawana na wengine minendo yenu bora zaidi.
- b. Vikundi vidogo vyawezaje kujipanga kutayarisha vitalu vyao? Ni watu wangapi wanahitajika kutayarisha mifuko? Lini? Ni watu wangapi wanahitajika kutengeneza mchanganyiko wa udongo? Wapi?
- c. Kuna vikundi vidogo vyovyote vimeshajaribu vitalu vya kuinua?
- d. Watu wana mawazo mengine? Gawana yote unayojua katika mkutano huo mwingine wa mafunzo



Meko Bora Ya TIST- Pata lako wakati bado yapo!

Meko Bora ni yapi?

Watu wengi katika Kenya bado wanatumia jiko la mawe matatu kupikia. Hili jiko hutumia kuni nyingi haraka. Meko Bora ni meko ambayo hutumia kuni chache na ambayo hutoa moshi nje ya ambapo unapikia.

Meko Bora yana faida nyingi kulika meko ya kawaida:

1. Kwa anayetumia

- Meko bora hupunguza matumizi ya kuni. Kuni ambazo hutumika kwa siku tatu katika jiko la kawaida zaweza kutosha wiki moja na kubaki unapotumia jiko bora!
- Joto hukaa muda mwingi katika Jiko Bora kwani moto na joto hukaa ndani ya jiko Kwa mfano, Jiko Bora la udongo.
- Hupunguza ajali kutokana na moto, kwa sababu moto humo ndani ya jiko.
- Hupunguza pesa zinazonunua kuni.

- Hupunguza muda kwa wanawake wanaotafuta kuni.
- Jiko hutumia moto mmoja kupika hadi sufuria tatu, kwa hivyo linapunguza muda na kuni zinazotumika.
- Hili hupunguza shida za kiafya zinazosababishwa na moshi kama matatizo ya kupumua na kuwashwa kwa macho.

2. Kwa mazingira

Kupunguzwa kwa kuni zinazotakikana husaidia katika:

- Kupunguza ukataji miti
- Kupunguza kuenea kwa ukavu
- Kuachisha kutambaa kwa maji ya mvua ambako kuna madhara
- Kulinda rasilimali ya maji na yanapotoka

Wewe pia waweza kuzipitia faida hizi ukiitisha Jiko bora la TIST leo. Meko yaliyopo ya kuuza katika TIST leo ni:

TIST IMPROVED JIKOS



New!! Updated **JIKOPOA**
1,400 ksh



ENVIROFIT Z-Insert for build-in stove
can be used with 2-pot/chimney attachment!
2,000 ksh



2-pot Chimney clay stove: built using Envirofit Z insert (2,000 ksh) and 2 pot chimney attachment (1,200 ksh): labor est. 400 ksh



ENVIROFIT G-ca be used with
2-pot/chimney attachment!
2,500 ksh



ENVIROFIT M-Jiko Tosha-can be
used with 2-pot/chimney attachment!
Coming soon...

ENVIROFIT 2-pot-chimney attachment (for all Envirofit models): **1,200 ksh**
SOLD SEPARATELY

**For more information
on improved Jikos
contact your
Cluster Servant now.**

Jiko la udongo lenye mahali pa moto palipotengenezwa na kauri yapo tu katika cluster zifuatazo: Ngariamama, Kianyaga, Salama, Tunyai, Matakiri, Pondo, Kilia, Kamwendei, Nthingini na Kagaene.

Mazingira Bora



TIST

The International Small Group & Tree Planting Program
www.tist.org

Kikamba Version

An Environmental, Sustainable
Development and Community Forestry
Program.



TIST Cluster Leaders During Recent Seminar at Gitoro Conference Center, Meru.

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Maendeeo matonya kwikala.

Kwianana na kikalo kya nthi yothe iulu wa mawithyululuko na maendeeo (World Commission on Environment and Development (1987)), maendeeo matonya kwikala ni mavikiiaa mawendi na mavatama umuthi vate kwasya undu wa kisyao kya uni kwithiwa kitonya kuthinikia mavata makyoo.

Maendeeo ma kwikala nimethiawa na kieleelo kya kwongela mwikalile wa thayu nakuikiithya kana mawithyululuko kwithiwa matonya kuendeeo na utunenge mauthwii ala tukwataa kuma vo na tukwenda.

1. Mauthwii ma mawithyululuko mayaile uma mituki kwiundu mekwiseuvya angi.
2. Kiko kiyale ithiwa kiyuma kingi kwiundu mawithyululuko matonya ukiveta (Ngelekany'o mititu kwosa nzeve itavisaa.

Mwikalo umwe wa Maendeeo matonya kwikala maendee

Onakau vai ndeto imwe tutonya utumia kuesya maendeeo, nundu maendeeo ni mithemba mingi na niundu umwe na kwiana na kunzesya kwa kwiana onakau nzia imwe ni ivwanene ilanita:-

1. Kwendeew'a ni uumwe na wiananu, kii nikisuviaa wendi na aki wa ala ngy'a na ala matetonya nthini wa mbai na kuisya undu wa syawa ya uni. Kila nthi niyaile ithiwa itonya kwiana na kuendeeo vate kuaa kithio kyayo na mwikalo wa mbai syayo na uyithia mainasiia nthi ingi kwika uu nundu wa maendeeo moo. Vai nthi yaile ukwatania na maundu me utuma mawithyululuko mayo na manthi ingi manangika. Syawa syukite itonya kwineenea kana kwineeny'a, indi ethiwa maendeeo na kwiana nikwa kwikala nonginya matalwe na kusiw'a vamwe na mawendi na aki syoo.

2. Kwia usyaiisyonni kwa ivinda iasa, li niyendaa twisilye iulu wa kila kikethiwa nundu wa meko maitu umunthi ivindani yukite. Yila maundu ala tukwika ne muisyo kwa mawithyululuko kana uima wa mwii wa mundu muthya (ona ethiwa uthuku ndutonya kwikiwa ngiithilo ni ataalamu ma science) nivailite andu kwosa itambya ya kusii muisyo na uthuku uyu kwondu wa uni. Uyu witawa mwiao wa kusii. Andu amwe nimaisye kana ikeethiwa useo nthi kwikala ethiwa kila umwe akeethiwa aisisya undu wa kisyao kila kyukite kwa kuisya muisyo ula ukuetwe ni meko na mwikalo wa mundu umuthi kwa myaka miongo itano yukite.
3. Kwisilya kwa vamwe - Kuelewa kana nthi ino yina mauthwii amwe na kana meko ma kila umwe nimakwatanaa na kuthukuma ta kindu kimwe. Kwoou uthuku na muisyo wa kwisilya na kuamua kwa kisio okimwe kya ndunia/nthi nikwithiwa kutonya unyaakya muisyo na uthuku usu kwa isio ingi na nthi yonthe.

Maendeeo ma kwikala nimokaa ta nzia imwe ya kusuvia uni witu. Vai nzia ila yitwe ya kuatiia indi ni kwa kila nthi kuisya walany'o ila itonya kuatiia kana kila mbai ikaamua ni ata unzeo mbee wa kwika kuete maendeeo kwa ivinda iasa kisioni kyoo. Maendeeo ma kwikala kaingi nonginya masisye mathina na kuelewa mawithyululuko maitu na usungio wa mathina aya. No yila tu mawithyululuko masiw'a na kutungiwa muvea wiw'ano na kwiana kwa maendeeo kwithiwa kutonya kwikala. Ni twithiitwe tusyaisye mathina kivathukany'o nthini wa isio situ yila tuuvindiw'a ni TIST na tukethiwa tutonya umanya niva tutonya kwithiwa na ukwati na ni ata tutonya kuthinikia mathina maitu kivathukany'o thini wa tukundi twitu. Endeeo na kusyaiisya mawithyululuko kwoondu waku mwene na syana syaku nikana mwaiye mathayu na mwikalile wenyu kwa nzia ila nthi yitu itonya kutwitikilya.

Kitunguu Saumu (Garlic) ni muiito.

Kitunguu saumu ni kimwe kati wa mithemba yaitunguu na nikithiwa na muume museo. Ni kitumiawa ta muiito kuma tene ta ivindani ya Misili na kaingi kula kitumiawa somi meeka ukunikili nimonete kana kuya kitunguu kii muno ni kuolaa kenza ya nyongo, kwambatwa ni nthakame na mikiva kulindwa ni mauta. Professor Barbara Levine kuma Cornell university Medical College nthini wa New York niwongelele na kwasya kitunguu kii nikyongelaa mwii vinya wa kukitana na mauwau. Ingi nikithiwa na

Sulphur ila yitawa allicin kyamina kuthiwa kana kutilangwa na ni yukitanaa na bacteria. Kwa w'o kitunguu kii kithiwa na mauseo maingi.

Ateo withiwe uthuawa ni kitunguu kii ti uthuku kukyongela liuni waku. Kila soko wivakuvi naku uetae kitunguu kii kwoondu waku utumue.

Kuseuvya kitunguu kii ni wumye tukonde twanza na uutilanga tulungu tunini vyyu na uivulany'a na liu waku isaanini uye.

Andu mena uima wa mwii nimaseuvasya musyi mulumu wa Tist!



Muti wa Mahgamia: Muti museo kwa isio sya Mara.

Muti uyu wa mahgamia numeaa isioni sya Mara na kwoou ngwatanio situ ili ila ni Kutete na Chemaner

Clusters, aimi aingi masyo ma TIST nimethiitwe maiuvanda kwa wingi. Muti uyu ni museo kwa vuu vala utumaa tukwata ngetha mbingi, ingi niwithiawa wimuseo kwa kusia nzeve na kuseuvya muunyi.

Vaita ungi wa muti uyu ni numeaa na mituki na kwa ivinda inini uyailya nzeve ya vandu. Aimi nimambiiaa

ukwata ngu nundu nuseawa tene undu wianite.

Nituuthuthya aimi kuma TIST ona nza wa TIST mavande muti uyu wa Mahgamia nundu ni munyanya.

Kusakua muvai wa muti twi metho kuisya vaita waw'o mwingi. Onakau miti mingi nimiseo niyithiawa na uthuku kwa wawithyululuko nundu nitinasya mimea ingi na liu witu.

Aimi nimekwenda kuua na kumanyianya vaita wa miti kivathukany'o ona ila mekwenda uvanda

kuma isioni ingi. Athukumi ma mitiu na maovisa ma ndilikasa nomatetheesye kuamua iulu wa miti ino. Yila kwina mbumbano sya kila mwai ni useo mbee nundu niw'oo kila umwe wivo na nimutonya uneenanisya na kukwata uvoo mwianiu iulu wa muthemba ula mukwenda wa muti na mimea.



Miti niseuvasya mawithyululuko kwitu ithyoothe.

Thini wa Tist tuvandaa miti nundu wa uta sokoni ya nzeve itavisaa (carbon market) and tuikwata vaita twata. Onavala miti yivaita ungi mwingi kwitu. Vaa ve vaita imwe ila tukwata (vamwe na nthi yothe) na tuitania

- ☐ Miti niyithiawa yi mawikalo ma malaa na niyanakavasya. Ninengae nyamu sya kitheka mawikalo na mawivitho vamwe na liu. Yila twa nzuvia miti yitu kivathukany'o nitutumaa miunda yitu yika nesa na ingi tuituma ikonyo inya sya nthi na kithama kila kikalaa andu (earth) yithiwa yina wumi na usyao museo vamwe na nzeve kwithiwa yiya kwaila.
- ☐ Miti niialulaa nzeve na kuola kiko nzeveni. Miti niyosaa nzeve isavisaa na ozone na nitrogen oxide na itunenge nzeve ila ivisaa na ya thayu (oxygen).
- ☐ Miti niyanakavasya vandu undu vekwoneka vailye na kii kiyongela useo wa mwikalo. Ethiva vandu ni ngilini nivonekaa vevaseo na kwailya mawithyululuko muno.

- ☐ Miti niseuvasya uvinduku wa nzeve ta kuthima sua, kuseve na mbua. miti niusia kimeu kuthela mituki, mbua kukua na mauvai na utui kulea kwithiwa vamwe na kiseve kukua na kwananga.
- ☐ Miti niiolaa kukuwa kwa muthanga nundu mii yaw'o nilumasya muthanga na kutetheesya kiw'u kulika nathi vandu va usembela vaa iulu kiklutite na kukua muthanga ula ute mulumu. Miti ingi niyongelaa unou muthangani na unou usu nivikiaa mimea na liu ila tuvikaa nakuya liu wina lato.
- ☐ Ona ingi miti niiolaa kineene nundu nikimelasya.
- ☐ Kiw'u kya kuw'a nikyendekaa muno kwoo kwa kuvanda miti mingi ya kiene niuseo nundu nituusaa kiw'u kusemba na kuthi na kungala mituki. Kiw'u kyalika muthangani mbola muthanga nukisungaa na kiyithiwa kikiseo kwa uw'a na utumia. Ingi miti niyikiaa mbusi muunyi ukethia kiw'u nikyekala kikithithu na kiinang'ala nundu wa sua na kukuwa ni kiseve.



Ulumu thini wa mituo/kithio kitu: TIST niteteaa mituo/kithio kitu.

Kithio/mituo - ni uthui na uvathukanu wa kila tweethiie kimeasya kwa uima wa mawithyululuko. Mithemba ni yavata muno nundu kii nikyo kyonanasya undu muthemba ukwikala yila weethiwa ni sua, tusamu/kiinyu, na uvinduku wa nzeve. Nundu kithio/mituo nikindu kya vat nundu nowisilye andu tambandee kuthukuma kuikiithya nimasuvia uthwii wa nthi. Onakau kilamuthenya, kumana na meko maandu nituendee na kwasya miti ya kiene na mituo / miti ya kithio kitu vamwe na mawithyululuko ta kung'ala kwa ng'otho, ithima, kwenga miti na kwananga syindu ila twasyithiie. Nitwona wasyoo uu kilamuthenya.

Isilye iulu wa mithemba ya nyamu, tusuni, miti ila woonaa kana yoonekaa ni asyai maku nayu yivo kana niyathelile nikutumiwa nai na uisianisya na umuthi kila kivo. Kwi mbee wa mithemba milioni kenda nayila twa myananga niwasyo munene kwa andu mbilioni muonza ala mekalaa ungu wa sua vamwe na syana syoo na syana sya syana syoo. Aimi ma tist niendee na kuete ualyuku kwa kusuvia

kithio/mituo. Yila twavanda muti umwe nitweevya muthemba usu na kuwikalya. Kila muti twavanda nuolaa uito kwa miti ila mikuu yivo na mititu yitu vandu va utemwa andu maimatha ngu na miti ya kwaka. Yila twavanda miti ya kiene ta ikundi mbingi nguumoni sya mbusi na miundani kwitu aimi ma TIST nitwasuvia miti ya kiene. Nundu miti ino niyithiawa wikalo na liu vamwe na kwikalya unou wa muthanga.

Aimi ma TIST ingi nimaendeeaa na kuivya ala angi iulu wa vata na vaita wa miti na kiene. Aimi nimaendee na kukulw'a makulyo iulu wa mithemba ya kiene na undu wakwambiia undu wa kwailya mitui yitu. nituumanyany'a muno iulu wa nyamu, miti na syindu ila itwithyululukite, moalyuku isioni situ, kila ni muisyo kwa mituo yitu na itambya ya kwosa kusuvia miti ya kiene na mothwii maitu. Ekai tuke vamwe tukwatane na kumanyany'a iulu wa mithemba ya miti ya kiene na kusevya nthi ino kwoondu witu ithyothe.

Ni ivinda ya kusevya ivuio kwondu wakuvanda miti mbua yukite.

Ikundi nini mbingi sya tist syamina kuthamiisya miti ila yi ivuiioni miundani nthini wa mwai wa kana kuvika wathathatu nimambiiaa kusevya ivuio ingi nundu wa mbua ila yukite mwa wa ikumi kuvika mwai wa sikuku. Kwika uu kuikiithasya kana mena miti myeu ya uvanda mbua yaua na ya kutungia kula miti ya mbua mbituku yumite. Ikundi mbingi nitesaa ila yaingiva kwi atui nakwoou kukwata ueti kuma mitini ino mivuie.

Vaa ve nzia ya kusevya kikuvio na mbisu ivuioni.

Mbusu/yungu kivuioni

A. Utumiku

Yila ngii syamea na syambiia kwonany'a matu atatu kana ana, noithamiiw'e mathanguni mausuitw'e muthanga kana mbisuni/mikeve. Unene wa mukeve/ithangu/mbisu uendaa kwianana na wendi wa muti ula uvaandwa nthini.

B. Kusevya.

- Mbeu mbingi ya miti utumiaa mathangu ma 6"x4" kana 8"x5". onavala mathangu nimatonya kwithiwa na vei mwingi kwoou

nomutumie.

- Mikeve/mbisu.
- Matu ma maiu
- Mathangu ma manila matilangitwe kwianana na vala mekwenda utumika
- Suva sya plastic sya kiw'u
- Na syindu ila ingi mutumiaa kwenyu na syi ukuvini - noututavye na kumanyisya angi.

- Kila ukutumia ta mbisu ya muti waku ikiithya kana kina maina ungu ma kumya kiw'u.
- Tila uasa wa mbusu isu withiwe na uasa wa inch 5 kana 6 na uyiikiithya vena tulima ungu.
- Seuvya muthanga kwa kuvulanya ilungu ithi 5:2:l
 - 5 Muthanga musunge wa iulu kuma mutituni
 - 2 Kithangathi
 - 1 Vuu/mbolea
- Sunga muthanga wa iulu kumya mavia na syindu ingi.
- kisungi nomuseuvye kya waya ula wakisungi (1.5cm) kuvika 1m framuni ya muti
- Vulany'a muthanga nesa



- Ngithya muthanga ukwatane
- Ususya muthanga mbisuni okavola uilatiila kuola nzeve kwithiwa yusuitye mbisu yaku.
- Tia mwanya vaaya iulu vala ukwikia mbeu
- Kua mbeu yaku umivande ingi mbisuni na mbee wa kumivanda seuvya yiima katikati wa muthanga ula weekia mbisuni nikana uvande mbeu ino ya muti vate kumithingithangya na kumithyuuanga.. Ususya yiima yiu na muthanga wamina kkwikia mbeu yaku.
- Mbisu/mathangu aya noumavange maatianie ta musoso/musitali iseuvye kitanda kya mbisu nundu wa kungithya na kusyaiisya kwa mituki na kwailu umivangite suani kana muunyini kwianana na wendi wa mbeu ya muti ula ukuvanda.
- Mivange na ikundi sya 100 kila muthemba wa muti wina kikundi kyaw'o. itanda ithi syithiawa laisi kusyaiisya ethiwa useuvitye syina uthathau wa itambya ma uasa wa matambya atano kana ikumi.
- Vanga mbeu yaku ya miti kwianana na muthemba wayo kutetheesya ala mavitukithasya/athiani kwosa uvoo na kwia lekoti syoo kwianana na mithamba ya miti.

Nzia nzau na nzeo ya itanda sya mbisu syi yiulu.

Tist ni yiendee na uthuthya aimi kutana kutumia nzia ya mbisu syi kitandani. Aimi aingi nimatatite na makona kana nzia ilu niyithiawa na ueti museo kwi kwia nthi. Tumia nzia ino na utunga usungio ki ngwatanio/kikundi kyanyu undu wonete na kana nithukumite nesa kwaku.

Visa 1. Wionany'a nzia ila itumikaa kaingi kuvanga mbisu otondu tukwona vaa iulu.



Visa 1. Mbeu ya Moringa Oleifera ivangitwe muthangani/nthi.

Nzia ino ya kitene ya kuvanga mbisu sya miti nthi nitonya kuete miti yina mii myonzu. mii ino yonzaw'a ni nundu yikunzia mbisuni kana ithanguni yila ivanditwe. Yila ukuthamya miti nitonya ukwatwa ni wonzu kwoou ukethia nditonya kwikwatila nthi nesa. Kumanwa na nthina uyu, nituuthuthaw'a kuvanda mbeu situ mbisuni ngunue itina na tuyiliila

itandani syi yiulu tondu tukona visani namba 2. Kitanda kiyiulu ni mituki kukiseuvya kuma vulemuni ya waya wa kisungi (ona visa). Itanda syi yiulu niunengae mwaya wa kusea mii nundu mii nivikaa mwiso wa mathangu/mbisu na iivituka. Kii kionany'a kana mii ya muti nditonya kuumia kumana na kusea kwa mii. Mii nayo nikwataa vinya na kuendee na kumea itekuazava. Nzia ino ietae kwithiwa na mii milumu na mbeu ino nitonya kuvandwa na iikwata kwa mituki yina vinya. Nzia ino niolaa wia mwingi wa kunzea mii na ikaola wia wa uthukumi na kaingi isewa kula kaingi nikulaa kana kukekwa kwi kuselee na nikuetae wanangiko munene kwa mii. Kuimia miti yi kivuioni kii nikwathiawa kwi laisi.



Visa 2. Mbeu ya miti mithemba kivathukany'o yiliilwe kivuioni kya kitanda.

kitanda kii kya miti kiyusu kikooneka kikyongela utumiku wa kiw'u, onavala ala makuna wia uyu wa kuseuvya ivuio nimonekete mana nzia nzau ya kusuvia kiw'u. Nzia imwe nzeo kuma Tanzania ni kwinza mutau na kwiliila ilungu ya muti na kwikia waya wa neti naindi maiseuvya kitanda kya miti iulu wa mutau uyu. kwoo uynthia kivuio kii kioneka ta nthi indi ungu wa miti ino ve mutau mwanya uyu utiitwe kati wa mutau na miti ino yi mbisuni ukatetheesya kusea mii ya nzeve. Kiw'u nikisiiawa kuthi ni mutau uyu na kutuma miti ino yikala yinauthithu kila ivinda naingi kutwawa kwa kimeu ni nzeve nikuolekaa na kuola mavinda ala ma kungithya. Ithangu ya nailoni noyalanw'e mutauni uyu kusuvia kiw'u kung'ala.

Makulyo ma ukulw'a ivinda ya kuvundiwa

a. Ni syindu myau ila tukundi tunini tutumiite ta mbisu sya kuvanda miti? neenanisayi nzia nzeo sya kwika uu.

b. Nata tukundi tunini tutonya ukwatana na kuseuvya ivuio? Nandu meana ata ala maile useuvya kivuio kimwe? na ni indii? nandu meana ata ala maile uvulany'a muthanga? na va?

c. Ve kikundi ona kimwe kyaatata kuseuvya kivuio kya kitanda?

d. Andu mena umanyi mwau? nenanyai na amanyisya yila mumbanite.



Maiko ma TIST ala mena wailu mwongele - Itya yiiko yu twinamo!

Maiko mongele useo mbee nimeva ?

Andu aingi nthini wa Kenya matumiaa maiko ma mavia atatu kuvika umunthi. Maiko aya matumiaa ngu mbingi na kkwamituki. Maiko aya mena useo mbee matumiaa ngu nini na syuki yumaalaa nza.

Maiko aya mena moseo maingi maisianisw'a na maiko ma tene

1. Kwa mutumii

- Maiko aya matumiaa ngu nini. Ngu sya mithenya itatu kwa yiiko ya mavia atatu nitoetye utumiwa kyumwa kiima yiikoni yii ya TIST yailu mbee.
- Muutia niwikalaa muno kwa maiko aya ngelekany'o kwa iiko ya yumba
- Niyiolaa mbaka sya mwaki nundu mwaki ni mukunikie
- Niyiolaa ngalama ya kuua ngu

- Niyisuviaa ivinda yila iveti iendaa kuna/kumatha ngu
- Liko yitumiaa mwaki umwe kuua maima/masilia atatu na kwoou yisuvia ngu na invinda
- Syuki yumalukaa nza wa ikoni. Kwoou manthina ala maumanaa na syuki ma mwii ta kukooa na metho kuyeea ni maolekaa.

2. Kwa Mawithyululuko

Uoleku wa ngu kutumika nitetheeasya

- Kuoleka kwa utemi wa miti
- Kuoleka kwa kuyaiika kwa weu/mang'alata
- Kusii kuvwikwa ni kiw'u
- Kusuvia maw'umo ma kiw'u

No ukwate moseo aya kwa kuua iiko yina wailu mwongele ya TIST umunthi. Maiko ala mevo umunthi TIST ikuta nita: _

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1,400 ksh



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Maiko ma yumba/ndaka mena vandu va simiti va mwaki mevo kwa ngwatanio ithi syisyoka Ngariama, Kianyaga, Salama, Tunyai, Matakiri, Pondo, Kilia, Kamwendei, Nthingini na Kagaene Clusters.

Mazingira Bora



TIST

The International Small Group & Tree Planting Program
www.tist.org

Kipsigis Version

An Environmental, Sustainable
Development and Community Forestry
Program.



TIST Cluster Leaders During Recent Seminar at Gitoro Conference Center, Meru.

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Bandabtai ne tononot.

En agobo nguong komugul en itiondab emet ak bandabtai (1987), ko kiyocnchin en tugul che kimoche en betunoton, ko matagoger moginetab tugul che mitentai che ibinda nenyone Tononetab bandabtai kotinye kabwatet kotes anan kogimit mogutik che kororonen en agobo sobetab kimugulmet, as kochomchi kotestai koboisen kelunoik chemiten

1. Kelunoik chemiten komoyomegei kinem kechoki komagites alak
2. Ng'etunanik en chegageboisien komoyomegei kinem chechang entondab emet amu yoche koboisien kou (timwek koboisien koristo neya nebo tugul che kagibei kou kwenik)

Tugul che tononchin bandabtai.

Ngadab momiten agot an'eng'e ororunet ne mwoe tono netab bandabtai ye tesetai kabwate komiten alak chemiten che tononchin ngotutik choton

1. **Kabwatene keiti ak koigoidanyin** niton koribe imatab che kibononok ak kabwatet ibiniwek chebwone. Emet agetugul kotinye kotestai ak koribe en otebenyan ak kayatenyuan amat koyeten. Emotinuwek alak cheyoe kounoton monyolu komiten emet netoreti boisetab keweche keluloikab emet chebo emetinuwek alak. Moimuchi ibinuwek chebwone kongalaten ichiget, agot kerichi bandatai konyoru boiboindo ak imandanyuan.
2. **Keret nebo kasarta ne koi**, niton kogonech kibwat agobo tugul che buwone en youtik

chemitentai en betusiek chu. Yon koginde boisionik keweche itondontab emet anan go tililitab kimugulmet en kogesunet (agot ngot kinya komoimugose) nyolu keib koguwoetik kemi barak asi kimuch keter weget nemitai. Niton keguren ngotutiet neiyanat miten bik chemwoe kole ketononchi nguwendet komugul konyolu kobwat ibinda agetugul agobo kororintab ibinta ne nyone yon gaibwat tugul chemiten tai chebo kenysisiek (50)

3. **Kosibet nebo kabwatet**, ogiguiten kele miten ng'uwodut angenge netinye kelunoik che chang, ago boisionikiyok keboisien en kosiboniton. Kosibetab kabwatetab kebebertab ng'uwendet komuche kochogi keweche keberuwek alak

Tononetab bandabtai nemiten korib komie tugul chebwone. Motinye kosibet angenge neimuchi kisib kobaten emet agetugul ak biikik kobwat ngotutik cheimuchi kotononchi en emonoton.

Bandabtai kotinye gei koguitos komie kewenatosiek ak wolutik che tinye gei ak itondobemet.

Baten yon miten keret ak boiset netesetai ne imuchi kotononchi en oranoton kigeger koimutichuton bo itondab emet cheter ak cheter en mingiyok chebo tist en konetisiosiek ago kigenyuru kobesiet chegimuchi keistoengei en kurubisiek chemegech. Ogetestai keger ole kimuche keribter itondab emenyon echek ak logogiok asi kimuch konyoru sobet neimuchi kogonech ngowoduninyon.

Garlic ko kerichot neimuchi kosobi.

Garlic ko angenge en kobot ketungui neboisie komie ne kiguren manget ne sobei kigeboisien en kenysisiek chechang kerichontoniton en egypt

En somonutik koboru kole en kayanet en biik kikwan kerichonoton komegotinye lubaniyat en moet, megoruoet korotik ak muwaita mwoye professor barbara levine, nebo new york university

kole tesei garlic boisionikab korotik koboisi kobar tiyongik cheyobu sulphur chetinye allicin. En tugul kotinye garlic komonut en korotik

Agot kou allergic koibo imanit itesi omitwogik kerichonoton agot komiten olenegit en kaa anan ko town imuchi ibi iweboisien. Yon imoche iboisien istoi bertet netai ak isegen komegegitun

Itesi omitwogik. Biik chegimen koyoe TIST kogimit



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Toreti ketik itondab emet kokararanit.

En TIST kemine ketik chebo mungaretab koristo ak kenyorunen rabasiek yon konyor mungaret ichochu ko chengerin cheginyorunen kelut ak (kobo nguwoy komugul)

- ☐ Ketik kotoreti emet kongeten tounetab nguwoy ak kogochin itondo nekararan ago nechomoksei igochin tiyongik tugul chemenye konyor kaliet ak omitwogik. Toreti koran osnet imbarenikyok ak nguondet komugul komonyoru kemeusiek ak alak.
- ☐ Ketik koribe kora komanyabira koristo, ome ketik koristo neya (Carbon Dioxide) ak korisuek alak chechang chemiten soetak kogonech koristo ne giboisien eche biik.
- ☐ Tebonok ak chengesut kotoreti ketik ko motok ak kogochi itondo negararan ak kotesuwech sobenyon.

- ☐ Wole ketik kora keretab emet en kasata nemiten asista, keset ak robta toreti kora maranet, chepngesut ak isonet neo, igochin beek komaruai.
- ☐ Tere ngungunyek ko mosut beek toreti tigitik kosub ngungunyek ko moib beek ak kogochin emet ogoindo, konyorunen chiton omituogik.
- ☐ Ole miten ketik komomitgen bolotet neo, niton kogonech kemin ketik chechang en ole kimenye anan en imbarekyok.
- ☐ Ole miten ketik chechang ago cheba kaa kenyorunen beek chegororonen ago tililen amun motinye korua beek koba oinet beekchuton ko moitin asista asi koyeso koba barak.



Kikimit rebetab itondo ribe tist itondab emet.

Itondab emet kokimiten kongeten tounet agobo niton komogornotet nebo nguwoy. Bo komonut amun monyoru emet omset kou, kemeut, tugul cheu susurik, ak waletab emet. Yeiyo kou komatiibwat ile.

Yoe biik tugul kou noton, en boisionikab kimugulmet kotinye weget amun en ngasuretab timwek kogonech gibel ketik chebo keny, yomtos nyan chosiek ak gibel kelunoikyok en emenyon, kin gibel timwek komweso tiyongik ak toritik kobo koloegitun, chemiten en inguni ko gimagomiten en

kanamet miten anyun bitonuek chechang chesobtos en kureretab asista konu kora gibel chechang en ibinda ne mi ak ne nyone.

Temik chebo TIST koyome neimuchi koter ak kowal itondo, ye kimine ketagetugul keyome kigiran chegogiwech toretach kora mising yongagimin ketgikab kaa amun nyorunen toritik ak tiongik omitwogik ak kogochin emet kogararanit. En TIST konyoru bcheetab ngomnotet en tuiyosikwak asi konyor ole imuchi koristo ak kotononchin, asi konyor nguwendet ne kararan.

Kasarta kechop betishek chepo ketik asi kemin en kosorwokik chon bwonen.

Che chang' en groupishek chemenkech en TIST, yon kakosibto ketik en robwek chebo arowet tab' ang'wan ak mut, konome en arowet tab' tisab, kochobchin ketik betishek chebo robwek ab arowet tab' taman agoi taman-ak-oen'g. Inoniton ko toreti icheket kohakikishan kole yomotin ketik che kemine ak chekiroren chon kikomeyo kosorwokik che kiko'bata. Kora gropishek checha'ng ko-aldechichin bik 'ab kokwet ketik yon kacha'nga.

Che isibu ko ole kichobto betishek, pots ak nurseries:

Ole kichobto pot-bed:

A. Boishet nebo pot-bed

Yon kokorut keswek 'ab ketik kotkoboru sokek 3 ann ko 4, kimuche kisibto koba ng'ung'unyek chemit paper-bags kikuren (pots). Woind'ab pots ko tyen-ke mahitaji chebo ketit ak mbolea che-itinye.

B. Chobet 'ab pot-bed

- Che chang' en keswek 'ab ketik koboishen polythene-bags che ten 6"x4" ana ko 8"x5" en woindo. Imuch koik ghali bags ichuton, ne koto bags ichuto iboishen :

- Tin cans
- Sokek 'ab ndizinik.
- Plastic bags – Til plastics ichuton kotiyen ke sizishek che imokchini ke ak kityo iboishen mat ituyen cornerishek.
- Plastics chebo bek.
- Tugun alak tugul che imuche i-itchini.
- lbwat ibakach komoswek 'ab koriswek en bot age tugul ne keboishen.
- Til pots ichuton koik inchishek 5 anan ko 6, ak ichob kong'wek che mengechen en ng'weny en pot.

- Tayarishan ng'ung'unyek iboishen bchewokik 5:2:1
 - Ng'ung'u nyek 'chebo osnet- 5
 - Muchang'ek -2
 - Mbolea chobo tyong'ik -1.
- Chuk-chukan ng'ung'unyek 'ab osnet asi-iste koiwek. Kimuche kechop kibchuk-chuket keboishen wire mesh (1.5cm) neteno 1m ak 1m framit 'ab bokoyot.
- Mixen ng'ung'unyek choto komye.
- l'bis ak bek ng'ung'unyek asi konomchino ke komye.



- l'nyit ng'ung'unyek en pot mutyo, Chil ng'ung'unyek koito ke koristo en pot . Imuche iboishen funnelit inyiten ng'ung'unyek.
- l'tuch nafasi ne kiten en barak olebo ketit.
- l'sibten ketit kwo pot mutyo.Imuche ichob kering'et ne kiten ek kityo inde kolkeyat mutyo komoibar tikitik'ab ketit Inyit keinget noto ak ng'ng'unyek.
- Kimuche ke arrangen pots en rowishek kochob beds asi konyumnyumit ole ke ribto. Yeityo kinde asista ana ko urwet , kotien ke magutik'ab ketit.
- Pang'an pots en groupishek chetinye ketik 100.Kou betishek,beds ko manyumnyum ribet nywai yon 1m boroindo ago 5-10 M koindo .
- Pangan ketik kotiyen ke aina asi konyumnyumit en Quantifiers kosir data chebo ketik choton .

Practice che mbya che kororon: Pot beds che ko ki-raisen.

l'yomise TIST temik koboishen raised pot beds. Temik che chang' ko koker kole inoniton kotese rurutik. Jaribunan raised pot beds akityo l'muitye observation alak tugul en cluster neng'ung'et.,ak ng'ot kotese rurutik raised pot beds. Pichait ne isubu koboru ole ki'pangondo ketik kou ole kakiororundo en barak yuton:



Fig 1: Kolkeinik 'ab ketik chebo Moringa oleifera che'pangonotin en nweny.

Oret niton ,neki'pongoni ketik en ng'weny komu- che koterter tikitik chepo ketit . Imukoksek inonton ang'amun chile ke tikiktik en oritit'ab plastic bag.Tun yon kisibto, ko terter tikitik ago imuch koma nam ng'weny komye.Asi keter komayaak inoniton, kemine keswek en **tubes che yototin en bottom** agityo kinde **raised beds** (Fig 2). Raised beds kimuche kechob ke boishen: bokoinik ak wire mesh(ko'u en pichait). Raised beds kokonu nafasi nepbo pruning en tikitik , ngamun yon kokoechekitun tikitik kotkoit ngweny en pot

kometos ak kobutyo (kikuren inoniton air root pruning). Kopor kole ma'umiandos tikitik kou yon kakitil keboishen pruning nebo kawaida. Komakorutu tikitik komye. Inoniton koko'chin ketit, tikitik che kororon ak komuche kochob ketit tikitik che chang' ak korut komye.l'stoi kora mget 'ab bik che koto'yoe kasit nebo pruning, kasi ne sanasana ke utyen anan keyai kokakochelewan neyoe tikitik ko'meyo.Raised seed beds kora kobose saratik chiten en betishek.



Fig 2: Ketik che terterchin che miten en raised pot beds.

Imuch koboru kole boishen bek che chang' raised pot beds.Lakini,operators chebo beteshik kokoba ak nama ole kimuche kebos bek chekimokche.Namna neta nkararan nekibunu Tanzania ko ke'bal trenches ,akityo bokoinik ketit anan ko wire mesh barak,yeityo kitebsi seedlings barak en bokoinik choton anan ko wire mesh.Kotoku ketik kou yon kokitebsi ng'weny lakini trench chmiten ngweny en ketik ko'kochin ketik nafasi nebo air root pruning. Ng'tu bek en oritit'ab trench kokochin ketik bek kobune evaporation , niton kobose mget nebo bek .Kimuche kora kinde polythene sheet en trench asi koter bek koma kul ng'weny.

Tebutik che kitebe en Cluster Trainings:

- Materials acho che kokoboishen groupishek en pot bags ako nyor rurutik.Mwaitechin groups alak.**
- Imugto ano groups che'mech' kotuyo ke asi kochob pot beds?Kimogchin ke bik ata asi kochobok pots? ou? Bik ata che yoche ko'mixeni ng'ungunyek?Ano ole kitayorishonen?**
- Miten groupit age tugul ne ki'ko'jaribunan raised pot beds?**
- Tinye bik advice alak? obchei noiyet en tuyet neisubu.**



TIST Improved Stoves—Nyorun stove neng'unget kotakomiten stock!

Ne chuton kibore 'Improved Stove'?

Bik che chang en emet 'ap Kenya kotakoboishen mat nikipo keny' nepo koik somok. Inoniton kotore kwenik che chang ach'ei. Improved stoves ko stoves che boishen kwenik che tuten ak kora komondo iyet en got.

'Improved stoves' kotinye manufaa che chang kosir chu kibo keny':

1. En chito ne-boishen:

- 'Improved stoves' ko bose kwenik che kiboishen en maat. Kwenik chepo betushek somok en stove nikipo keny' kotore ogot weekit en 'improved stoves'!
- Maat kop'ure kokoeke en 'improved stove' ngamun maat ak kwenik komiten stovit orit. Kou en improved clay stove.
- pose ajalishek chepo maat, ngamu maat komiten oriti tap stove.
- pose rabishek/chepkondok che kiboishen en

alet 'ap kwenik.

- Ripchin icheket chepyosok saait nepo cheng't 'ap kwenik.
- Stovit niton koboishen komoswek somok kilolishen, basi koripe saait.
- Iyet kimong'isto komanda en got. Inonito kobose mionwokik che nomeke ak iyet cheu respiratory diseases .

2.. En emet :

Angamun posot kwenik che kemokchinke en kalalet 'ap maat :

- Kopose tilet 'ap ketik.
- Pose bukoshok chemiten en emet.
- Isto ropwek che loe bik.
- Ripe bek che bo emet.
-

Imuche inyore manufaa ichutonk angot iyai order nepo TIST 'gimproved stove'h raini. Stove chemiten inguni ko:

TIST IMPROVED JIKOS



New!! Updated **JIKOPOA**
1,400 ksh



ENVIROFIT Z-Insert for build-in stove
can be used with 2-pot/chimney attachment!
2,000 ksh



2-pot Chimney clay stove: built using Envirofit Z insert (2,000 ksh) and 2 pot chimney attachment (1,200 ksh): labor est. 400 ksh



ENVIROFIT G-ca be used with
2-pot/chimney attachment!
2,500 ksh



ENVIROFIT M-Jiko Toshia can be
used with 2-pot/chimney attachment!
Coming soon...

ENVIROFIT 2-pot-chimney attachment (for
all Envirofit models): **1,200 ksh**
SOLD SEPARATELY

**For more information
on improved Jikos
contact your
Cluster Servant now.**

The mud stove with ceramic fire chamber is **ONLY AVAILABLE IN** Ngariama, Kianyaga, Salama, Tunyai, Matakiri, Pondo, Kilia, Kamwendei, Nthingini, and Kagaene clusters.