

Mazingira Bora



TIST

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

English Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Caption: Cluster Servants in a recent seminar.

Inside:

Thinning and pruning your trees for successful growth. Page 2

Choosing the best trees for your farm. Page 4

Nthingini Cluster in Mbeere moves into Mango Processing. Page 4

Be Aware, Maize Lethal Necrosis. Page 5

Karama Cluster, Growing Strong. Page 5

Using TIST Improved Cooking Stoves: Good for people, good for trees. Page 6

Planting Trees in Dry Areas. Page 6



Thinning and pruning your trees for successful growth.

In TIST, we commit to maintain trees we plant for TIST to let them grow for 30 years before harvest. This is one reason it's so important to think carefully about what kinds of trees we want to grow on our farms. However, thinning and pruning can help keep trees healthy and provide useful products while the trees grow.

In general, the purpose of thinning and pruning trees is to improve individual tree health, as well as overall forest health. This is done by selecting the "best" trees in the forest. For many species, including hardwoods, grevillea, eucalyptus and cypress, these are often the largest trees, each with a single, straight stem. Trees may have different needs for space depending on species, site, planting style (woodlot, incorporated into crop fields, or windbreak), and climate, but some general principles apply.

To grow strong, healthy trees, a spacing of two meters is recommended. This spacing works for many TIST trees (i.e. grevillea and cypress), but remember some trees require more space (mango and macadamia, for example). Giving trees proper spacing helps them get enough water and nutrients to grow to their full potential. Closer spacing is acceptable when trees are young. As the trees begin to mature, some trees will be larger and more robust than their neighbors. These are the trees that should be kept. In determining which trees should be removed, look at the best trees and determine if they are appropriately spaced. If they are not, you should remove some nearby trees.

Once you have determined which trees to remove, cut these at the base of the tree. In the weeks and months following cutting, many trees will begin to sprout from the stump. To keep the tree from coming back, cut or break these sprouts off at the base of the tree.

One of the easiest ways to determine if a tree should be taken out is to look at its size relative to nearby trees of the same age and species. Tree growth will vary based on soil, water availability, etc. In general, if all trees of the same species in an area are close to the same age, the larger trees should be chosen to allow to grow. Another good indicator of tree health is the position of the crown of the tree in the canopy. Trees with crowns above the general canopy level can absorb more light than those lower down, and so can grow better. Finally,

trees should have a single stem, with no major disease or rot. However, this does not mean that all small trees should be removed! Aim for a two meter by two meter spacing so that the trees are as large and as healthy as possible to maximize carbon capture.

When making thinning choices, remember that growth rate varies greatly by species. If a mango tree is growing near lots of eucalyptus, the mango may be far smaller and slower growing than the fast-growing eucalyptus, but it certainly should not be cut simply because it is smaller! In fact, a tree like mango is of great importance due to its usefulness in producing fruit for food and sale.

Mango also is better for other crops growing in the field. Eucalyptus can make other trees and crops nearby grow poorly. It is important to remember this as you select which trees to thin. There are many uses for trees, depending upon species besides carbon capture. For example, you may want trees for shade. In this case, you should give the tree more room than usual to expose the tree to more sunlight. This will stimulate the tree to produce new branches on the main stem and on larger limbs.

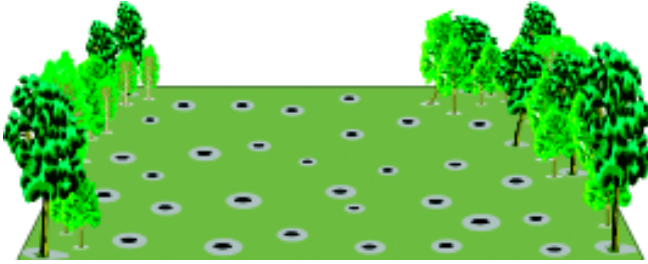
If you want to use a row of trees as a windbreak, keep trees in that row spaced closely together, but remove trees to either side in order to increase the "bushiness" of the trees.

Best Practices while Thinning

- Allow crop trees to grow to maturity.
- Thin to proper stocking (number of trees per acre). In TIST, we can select up to 5% of our trees, after 10 years, thinning by selecting as they grow, and providing income.
- Remove dying, diseased, decaying, and poor quality trees.
- Protect trees from logging damage.
- Use low-impact logging methods where feasible.
- Promote tree species diversity.
- Monitor your forest for insect and disease outbreaks.
- Cooperate with government agencies in controlling forest insect and disease outbreaks.
- Prevent wild fire.

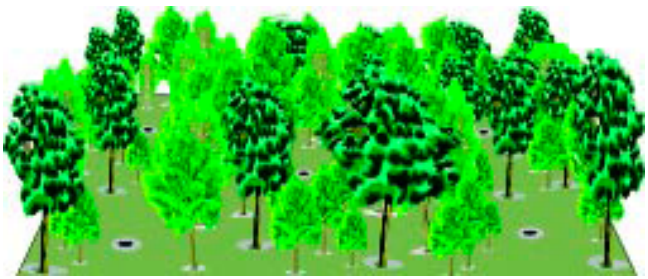


DO NOT do this



Clear cutting

DO THIS



Single tree selection

Pruning

In a natural forest, trees naturally self-prune. Branches in the upper canopy shade out lower branches. As leaves on the lower branches begin to die off, so does the branch to which they are attached. Dead and rotted branches naturally fall off or are knocked off. While natural pruning may happen on TIST sites, it may be necessary, or beneficial to prune trees by hand. While each tree species requires a different pruning technique, some general principles apply to all trees as you decide which limbs to remove.

Most tree species should have a single main stem at the ground level. Trees with a single stem generally grow faster and are less prone to split during storms. If a tree with multiple stems is chosen as a crop tree, when choosing which stem to keep, generally choose the largest, but make sure it is healthy, with lots of leaves, free of rot, and relatively straight

Many people think you should cut limbs parallel to the trunk. This is false. Cuts should be made perpendicular to the limb, slightly out from the trunk. This minimizes the amount of exposed wood, and allows the actively dividing cells in the branch collar to grow over the cut over time (see figure 1). This helps the tree to remain healthy and free of rot.

When pruning, don't be overzealous. Tree trimmings are often used for fuel wood or fodder.

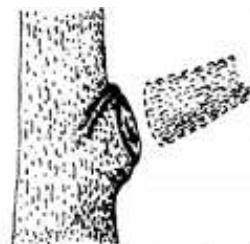
While this is good, remember that while pruning can improve tree health and increase growth over time, removing leaves cutting by simply snapping off the supple shoots. Shoots will often not grow back. Some trees, especially fruit trees, produce better yields with multiple stems.

These are cut near the base of the stem when they are young in order to stimulate new growth. Once the tree has established these new will initially reduce the tree's ability to capture sunlight and cause stress to the tree by creating a scar, which it must heal. If you remove too many, the tree will grow slowly or may die. After removing a limb, leave the area cut alone. Do not cover it with tar or any other material, so the tree can expel any toxic material on the wound. This is essentially the same process used by the human body to heal a cut.

Don't forget that trees tend to produce new shoots near cuts from thinning or pruning. Some species do this more than others. Generally, these are very easy to remove during the first year after cutting by simply snapping off the supple shoots. Shoots will often not grow back.

Some trees, especially fruit trees, produce better yields with multiple stems. These are cut near the base of the stem when they are young in order to stimulate new growth. Once the tree has established these new shoots, they too may be cut in order to produce more growth. This process may be repeated in order to increase the bushiness of the tree, but be sure to allow at least a few months or more between trimmings so the tree can recover from the stress caused by cutting.

Remember that to take part in the carbon market, we have to commit to keep trees for the long term. We should allow trees to grow for at least 30 years, thinning and pruning to produce useful, sustainable forests that provide us benefits for years to come.



Pruning cuts should be made just outside the branch collar.



On a dead branch that has a collar of live wood, the final cut should be made just beyond the outer edge of the collar



Choosing the best trees for your farm.

As farmers, we plan carefully what to grow each season. Often, we choose to plant crops that have produced good harvests in the past, and diverse crops, so that there if there is drought or pests, we will still harvest. When we plant trees on our farms, it's even more important that we take a long-term view of the benefits of different kinds of trees since these trees.

Did you know: some trees can be weeds? Trees like *Leucaena leucocephala*, can become weeds that cause problems on farms and in forests? *Leucaena* is considered to be an invasive weed in 20 countries, and sometimes can crowd out indigenous plants and forest, which can be a problem for animals that depend on these plants and habitats. Other weedy, woody plants, like lantana and *Caesalpinia decapetala* can also cause problems. It is important to consider whether a plant may become a troublesome weed when choosing which trees to grow.

Some trees, like mango and macadamia, may be good choices since they yield fruit and nuts that we can sell, and that also provide good, nutritious

food for our home use. Some indigenous species, like *Croton*, produce useful fruits, too, that can be processed to make fuel. Indigenous trees can be useful because they increase local biodiversity, and this can create value by providing habitat and forage for bees that pollinate our crops and make honey, or for wildlife that can help prevent pests that may be more common in less diverse plantings and landscapes. Since they have evolved along with the local area, indigenous trees are often great survivors, so that when conditions are difficult, they can provide welcome, needed resources.

The best trees to plant may also depend where we plan to grow them. Some trees, like *Gliricidia*, that can add nitrogen to soil, can improve maize yield when intercropped. Others, like eucalyptus, can stunt crops, and so would not be as good a choice for plots where we grow food.

Talk with your Small Group and others in your cluster, and share your experiences and best practices. Which trees do you plant? Why? In TIST, we can learn together.

Nthingini Cluster in Mbeere moves into Mango Processing.

Written by Sarah Murugi, Mbeere TIST Cluster Servant.

During our monthly TIST Cluster meetings, in addition to discussing progress and improvements in TIST, we take extra time to learn new innovations or ideas that help improve our lives. Recently, Small Group members have been learning how to process mango juices.

Farmers have now learnt about mango chipping, drying the fruit by using the sun's heat for two hours. We are happy to learn a new practice of value addition: processing and preserving mangos for use as food. In addition, processing the mango lets us sell our preserved mango product during the off-peak seasons when prices are high. We want to share this information so your groups can benefit, too!

How to prepare

Here are requirements, steps and materials needed:

Ingredients

- a. Mango fruits, variety local Ndoto or Apple, ripe but not soft

- b. Drying net, e.g nylon sack
- c. Clean water

Materials / tools

- a. Sharp knife,
- b. Poly bags.

Method / procedure

- a. Hang 3ft wide by 5ft long piece of nylon sack on 1 1/2ft above the ground level where sunlight is direct
- b. Use clean and cold water to clean half-ripe mango fruit for chipping. Peel the mango.
- c. Use a sharp knife to chip a 20 ksh coin sized of chips of mango onto the drying net then dry in the direct sun light
- d. Check the chips after about two hours. They are ready when they feel like rubber. Store in clean poly bags, or clean pots or gourds, covered. Chips can be stored for up to two years.



Be Aware, Maize Lethal Necrosis.

By Mwangi Kimani, and adapted from KARI and CIMMYT

Maize lethal necrosis (MLN) is a viral maize disease that has of late devastated farms in Kenya. It was first reported in Peru in 1973, and first reported in Kenya in May 2011 in Bomet County where the local people refer it as “Koroito,” meaning plague. Today, the disease has spread to many other parts of the country.

This disease affects all varieties of maize (*Zea mays*). When it strikes in a maize field, it can destroy up to 30%-100% of the crop. Some varieties have some resistance to the blight, and breeders are working on improved varieties, but MLN is a serious challenge.

Signs of Maize lethal necrosis

- a. Leaves turn yellowish with stripes all over the leaves. This may start with the youngest leaves, and on larger leaves, spreads from leaf edge to center.
- b. At advanced stage, the cobs produce very few grains.

How to prevent Maize lethal necrosis

- a. Diversify the crops you grow. Maize lethal necrosis only affects maize.
- b. Do not plant maize near a field that already shows this infection.
- c. Plant maize at the onset of the main rainy season, rather than during the short rain season; this break between maize crops and interrupts the disease cycle.
- d. Avoid bringing fodder of maize stalks or green manure from elsewhere to your farm.
- e. In case your maize stalks are affected, immediately remove diseased plants from the field. You may feed leaves to animals, but ears and grains can be dangerous and should be burnt.

In your next Cluster meeting, discuss with other members about this disease, share experiences and agree on how to curb the menace.

Karama Cluster, Growing Strong.

By Jane Kagwiria

We members of Karama Cluster are grateful for joining TIST. We are among the youngest Clusters in TIST today. So far, we are proud to have made a lot of progress in our Cluster. This includes:

- 1. Fifty Four (54) Small Groups have been registered and are now actively participating.
- 2. 80% of our groups have been quantified.
- 3. Cluster leaders have been elected and monthly Cluster meetings happening

Trainings that we have received so far include:

- 1. Trainings on Conservation Farming. Some of our members have practiced. We have learnt from them because, they are experiencing

better crop than those who used conventional methods.

- 2. Tree Nurseries. Many of our groups are growing tree nurseries. We expect to plant many more trees in the next rainy season.
- 3. Rotational and Servant leadership. At first we were skeptical, and did not think that this could work. But today, every member is happy and has embraced Rotational and servant leadership. We have seen different leadership gifts from different people, even from those we couldn't have afforded leadership in our 'usual' set up!

We hope to continue receiving more trainings. We are ready to practice and improve our lives. In TIST, We Are.



Using TIST Improved Cooking Stoves: Good for people, good for trees.

By Joseph Gituma

Why use an improved stove? There are so many benefits for people and trees. Here are just some:

For the stove user:

- I. Improved stoves minimize the use of firewood. Firewood used for cooking three days in a traditional stove can be used for a week in an improved stove.
- II. Minimizes cost of buying firewood.
- III. Saves time spent searching for firewood.
- IV. The stove uses one piece of wood to heat up to three pots, saving time and firewood.
- V. Minimizes accidents by fire, as the fire is covered.
- VI. Smoke is taken out of the kitchen by the

chimney. This reduces health related problems from smoke, such as respiratory disorders.

For the environment:

The reduced demand for firewood helps to-

- I. Reduce deforestation.
- II. Reduce desertification.
- III. Prevent damage from sudden flooding.
- IV. Protect water resources and catchment areas.

Therefore, it is important to request the TIST stove builders to help you build one at low cost, using locally available materials. You can also purchase ready-made stoves from TIST. Talk to your Cluster Servants for more details.

Planting Trees in Dry Areas.

By Eunice Wambui

As TIST continues to expand both in high potential and dry areas, we face challenges in tree survival. In TIST we always develop and share best practices, and this has always helped us in the TIST family get good results.

Below are some best practices that we can try in tree planting in dry areas:

1. Site selection for your nursery is especially important in dry areas. Seedlings will need to be watered once or twice each day when they are young. Consider keeping the seedlings in a convenient area near your home so you can use household water for seedlings. Using a windbreak around the nursery will reduce water use, and provide shade to protect young seedlings.
2. Early Preparation: Prepare the holes for tree planting possibly 1 month before the onset of the rain, the hole will crack and this will help in easy water penetration when it rains. After the first downpour plant the trees and fill in the hole starting with the top soil and manure.
3. Try using rainwater harvesting techniques, like negarims and micro-basins, so that more water reaches trees. Trees may also better survive if planted near areas where water flows seasonally.
4. Mulching: Mulch after planting the trees. This will help in moisture retention as it reduces evaporation. Using a compost manure will add nutrients to soils, but rock mulching can also

provide some benefit in rocky areas.

5. Agro forestry: Let us try to practice agro forestry. The survival rate of trees planted in farm areas is higher than those planted in grassland and bushy areas since trees are better cared for and on better soil.
6. Choose species that grow well in dry areas. Often indigenous species from the surrounding area are strong survivors. Some examples include *Melia*, *Acacia seyal*, and *Muuuku (Terminalia brownii)*.
7. Protect existing trees and allow them to regenerate. These established trees are strong, and can often survive difficult seasons if we protect them. They provide an important source of locally adapted seeds as well as shade and other services.
8. Raised seedbeds or sunken seedbeds can help. When we establish the raised seedbed, we get seedlings with strong roots, so their survival rate is high. It may also help to keep seedlings a bit longer in the nursery so they can grow bigger and stronger. However, a sunken seedbed may also be a good choice since it shelters the seedlings and reduces drying. In this case, be careful to turn seedlings frequently so roots don't grow into the ground below the tubes, damaging roots in transplanting.

Let's use the best practices we have, and develop and share with others so that we can achieve more results and help TIST grow in our areas.

Mazingira Bora



TIST

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

Kimereu Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Caption: Cluster Servants in a recent seminar.

Inside:

Gutura miti na kugiita mathangu ja miti yaku nikenda miti ikura bwega. Page 2

Gutaara miti iria miega buru ya kuanda muundene jwaku. Page 4

Nthingi Cluster ndene ya Mbeere nikuthithia maembe ja gwika. Page 4

Menyeera, murimo jwa mpempe jumuthuku jwa Necrosis. Page 5

Karama Cluster, nikwongera inya. Page 5

Gutumira mariku jamathongi nkuruki ja TIST: Nigukuega kiri antu, nigukuega kiri miti. Page 6

Uandi miti ndene ya ntuura injumu. Page 6



Gutura miti na kugiita mathangu ja miti yaku nikenda miti ikura bwega.

Ndene ya TIST, nituciritagira kumenyeera miti iria tuandaga niuntu bwa TIST nikenda ikinya miaka mirongo ithatu mbele ya kumigita. Giki nikio gitumi kimwe kurina bata mono kuthugania bwega kwegie ni miti ya muthemba juriku tukwenda kuanda ndene ya miunda yetu. Indiri, gutaura miti na kugiita mathangu nogutethie gwika miti irina thiria injega na igituejaga into bingi o uria miti iu igukura.

Na ukui, gitumi gia kunyiyia miti na gutaura matangu kiri miti ni kuthongomia thiria ya o muti amwe na thiria ya mwitu junthe. Bubu nibuthithagua gukurukira gutaara miti iria mithongi ndene ya mwitu. Kiri mithemba imingi amwe na miti imuumo, mikima, mibao na mithithinda, iji nio miti iria minene nkuruki jaria maingi, o muti jurina gitina kimwe gigitamburuku. Miti no ithirwe igitagia gutarania mwanya kuringana na mutheba, aria juri, uria juandi (kethira juandi milainine ndene ya miunda ya imera bia iro kana kunyiyia ruugo) na rera, indi mantu jamwe nijoonekanaga rionthe.

Gukuria miti iri inya na thiria injega, gutarania miti na 2m nikwendekaga. Gutarania na meter ijiiri nikuritaga ngugi kiri miti imingi ya TIST (ta mibao, mikima na mithithinda), indi ririkana ati miti imwe niendaga gutarania gukunenene nkuruki (miembe na mikandamia). Gutarania miti bwega nikumiejaga kanya ga gukinyirwa na ruuji na irio bing'ani, biria bitethagia miti kunenea mwanka aria ibati. Kuanda miti akui nigwitikiritue riria miti ianaki. Riria miti ikwambiria gukura, kuri na miti iria ikaneneanga na kugia inya kiri ingi. Iji niyo miti iria ibati gutigwa muundene (Imera miti). Kiri gutara ni miti iriku ikagitwa, tega miti iji mithongi na umenyekethira nitarenie bwega. Kethira ititarenie bwega, miti iria iri akui ikendeka kugitwa.

Warikia kumenya ni miti iriku ikugitwa, migitire nthiguru buru. Ndene ya biumia na mieri iria ikathingata, miti imingi ikaambiria kumira kairi. Nikenda miti iji itigacoke, niigitwe kana iunirwe nthiguru buru.

Njira imwe iria mbuthu buru kumenya kethira muti nijubati kugitwa ni gutega uria jung'anaugiteganagiria na miti iria iri akui ya ukuru bumwe. Ririkana ati gukura kwa muti gukaringana na muthetu, ruuji na jangi jamaingi. Antune aria anene, kethira miti yonthe iria iri amwe iri na ukuru akui bumwe, miti iria minene niyo ibati gutarwa gutigwa muundene. Gintu kingi kiria umbu gutega

thiria ya muti nakio ni aria mathangu jaria maingi ja muti jou jari wateganiria na ingi. Miti iria iri mathangu jamaingi iguru ria miti ingi niumbaga kujukia weru bubwingi nkuruki ya iria iri nthiguru na kwou igakuura bwega nkuruki. Kuthiria, miti iria igutigwa no mwanka ithirwe iri imitamburuku itiumirite ingi rutere na itina mirimo kana kurota. Indi bubu ti kuuga ati miti yonthe iria itinenenei igitwe. Muntu nabati gutegeera gutarania kwa meter ijiiri ni kenda umenya miti ikunenea na yagia thiria injega buru nikenda ruugo rurwingi ruruthuku rumba kujukua.

Riria ukuthithia mantu jau jariau iguru, rikana ati gukuranga kwa muti ni mwanya mono kiri mithemb mwanya ya miti. Kethira muembe jurikuura akui na mibao imingi, muembe no jwithirwe junii mono nkuruki na jugikuraga gapori nkuruki ya mubao juria jukurangaga, indi jutibati kugitwa nontu niju munini! Kwaria mma, muti ta muembe ni muti kimera juria juri bata niuntu bwa utumiki bwaju ja kuejana irio. Kurina utumiri bungi bubwingi bwa miti, kulingana na muthemba, tutigutara kugwatia ruugo ruruthuku. Mung'uanano, muti nojwendeke niuntu bwa kirundu kiaju. Antune aja, nubati kua muti kanya nkuruki ya ingi nikenda jukinyirwa ni riuu, riria rigatuma muti jugia biang'i bibieru kiri gitina na kiri biang'i biria biri iguru.

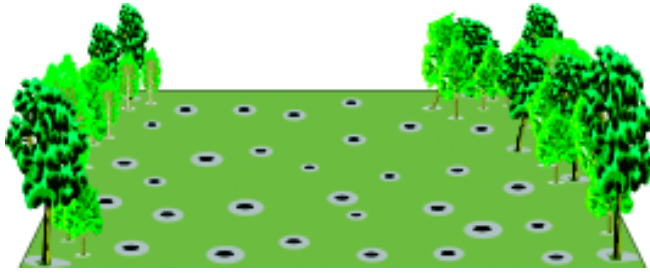
Ukenda gutumira miti kunyiyia ruugo, nubati kumenyeera ati miti iu iri lainine nikwianiritie, indi rita miti nteere cionthe nikenda juumba kwingiyia mathangu na biang'i amwe.

Mitire iria miega buru riria ukunyiyia miti

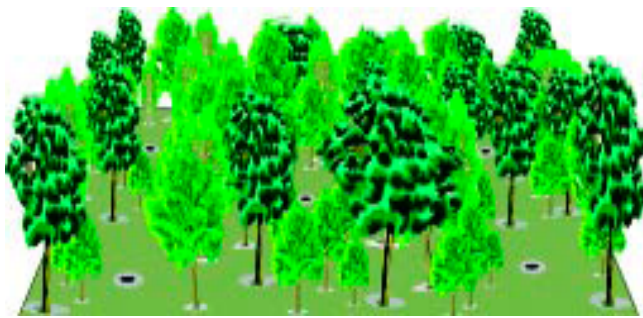
- Reka imera miti bikure buru.
- Nyinyia uria kubati (kuringana na miti iria iri ndene ya o acre). Ndene ya TIST, notuthuure mwaka gicunci gia miti itano kiri o miti igana, nyuma ya miaka ikumi, ikinyiagua na njira ya kuthuura o uria igukura, na uria ikureta mbeba.
- Rita miti iria igukua, iajitua, ikwora na iria iti ya iguru.
- Menyeera miti yaku itikathukue riria ukugita ingi.
- Tumira njira cia kunyiyia miti iria itithukagia nainya iria ciumbika
- Ikiira uandi miti ya mithemba imingi mwanya.
- Tegeera mwitu jwaku niuntu bwa kwija gwa tunyomoo na mirimo.
- Gwatanira na kambuni cia thirikari kiri kunyiyia gutamba kwa tunyomoo na mirimo
- Rigiria mianki ya kithaka.



UKATHITHIA UJU



Kugiita miti yonthe



Gutaara muti jumwe jumwe

Kunyiya mathangu

Ndene ya mwitu jwa kuuma jungwa, miti nicinyiagia mathangu yongwa. Biang’i biria biri iguru buru nibigwithagia biang’i biria biri rungu. Ouria mathangu jakuuma kiri biang’i bia nthiguru nou kinya kiang’i kiria mathangu jau jari kiendeleagaa kuuma. Gukurukira kugaruka kwa rera ya ntuku, biangi biria bikuite na biria biori bikagua kana bigwithue. Kinya kethira miti nicinyiagia mathangu yongwa miundene ya TIST, kwethira kubui kana kurina gitumi kunyiyia mathangu na njara. Riria ukuthuura ni biangi biriko ukugiita, nubati kuthingatira mantu jamakai. Kinya kethira o muthemba jwa muti nijwendaga njira mwanya ya kunyiyia mathangu, mantu jamwe nijathithagua kiri miti yonthe.

Mithemba imingi ya miti nibati kwithirwa irina gitina kimwe nthiguru. Miti iria irina gitina kimwe niyo ikurangaga na itiunikanga igita ria ruugo kana ngai inyingi. Muti jurina itina bibingi jwatarwa gutigwa muundene, kurina mantu jamaingi jaria uumba gutegea riria ugutara ni gitina giku ugutiga. Ja uria uumba kuthugania, gitina kiria kinene nikio kibati gutarwa gutigwa. Kwongera, gitina kiu kithirwe gitikurota, kionanie kiri na thiria (ta kithirwe kirina mathangu jamaingi), na kithirwe gitamburuki.

Gintu kimwe kithuganagirua uria gitibati niati nuubati kugita kiang’i, winami bwa gitina. Bubu ni urongo. Ubati kugita uumarite bwa ome ya gitina. Njira iji ninyiagia antu aria ugukunura na igetikiria

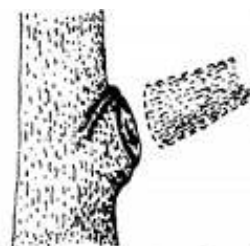
muti juumba guciorangia kironda nyuma ya igita. (Tega Mbicha I), untu buri butethagia muti gukara juri na thiria na jutikwora.

Riria ukunyiya mathangu ukenda kuthithia uju mono. Biang’i na mathangu jaria jagitagwa nijatumagirwa mono ja nkuu kana iria. Kinya kethira bubu nibwitikiritue buru, rikana kunyiyia mathangu nogutethie kuthongomia thiria ya muti na kujuneneangia igitene, indi kurita mathangu gukamba kunyiyia kuumba kwa muti kugwatia riuu na nogutume muti jukaga inya nontu bwa kujwikira kironda, kiria no mwanka kiore. Warkia kugita kiang’i, au kugita gutibati gutongwa. Ugagakunikira na gintu kinya gikari, nikenda muti jumba kurita maira kirondene. Iji noyo njira iria mwiri jwa muntu jutumagira riria jukworia kironda.

Gintu kimwe kiria kiurairia kiri kunyiyia mathangu na kunyiyia miti ni ati miti niu magira itina bingi akuina aria kwagitwa. Mithemba imwe nithithagia uju nkuruki ya ingi. Antune anene, itina bibi biaritwa na uuthu mwakene jwa mbele nyuma ya kugita na njira ya kuuna aki. Jaria maingi itina bibi bitiuma kairi.

Miti imwe, mono mitunda, ikaciara bwega nkuruki irina itina bibingi. Iji nigitagwa akui na muthia jwa gitina iri iminini nikenda itina bingi biumira. Muti jwarikia kuuma tutina tunini, kinyatu notugitwe nikenda tungi tuuma. Bubu nobucokerwe nikenda muti jumata, indi menyeera ati nukua muti mieri imikai kana imingi nikenda yumba kwora kuumania na kugitwa kou.

Rikana ati gutonya thokone ya ruugo, nitubati gwika wirane gwika miti yetu igita ririnene. Nitubati gwitikiria miti ikuura mwanka miaka mirongo ithatu, tukiminiyagia na kunyiyia mathangu nikenda yumba kua miitu ya bata na iria tukomba gwika itue baita miaka iria iijite.



Pruning cuts should be made just outside the branch collar.



On a dead branch that has a collar of live wood, the final cut should be made just beyond the outer edge of the collar



Gutaara miti iria miega buru ya kuanda muundene jwaku.

Ja arimi, nitubangaga tutariritie kiria tukaanda o mbura. Jaria maingi, nituthuura kuanda imera biria bituete iketha ririega ndene ya mbura iria kurukite na mithemba imingi nikenda kwagia na uumo kana tunyomoo, tukoomba guketha. Twaanda miti miundene yetu, kurina bata kinya nkuruki ati tutege baita cia igita ririnene iria miti ya mithemba mwanya iretaga.

Nwiji: miti imwe no ie iria? Miti ja *Leucaena leucocephala*, no ie iria riria riretaga thina ndene ya miunda na miitu yetu? *Leucaena* nijuthuganagirua juri kiria gikithuku ndene ya nthi mirongo iiri na rimwe no ithirie imera na miti ya gintwire, untu buria bumba kua thina kiri nyomoo iria cirijaga kana gutuura kiri miri na imera bibi. Imera bingi biria biri miti indi ni iria ja lantana na *Caesalpinia decapetala* niretaga thina kinyayo. Burina bata kumenya kethira kimera gikaa iria riria thina riria ugutaara ni miti iriku ukuanda.

Miti imwe ja miembe na mikandi no ithirwe iri imiega niuntu nituejaga matunda na nkandi iria tuumba kwendia na iria cirri irio bibiega mono

ndene ya nja cietu. Mithemba imwe ya gintwire ja Croton, niejanaga matunda jarina bata kinya jo jaria jathithagia maguta. Miti ya gintwire ni miega niuntu niingiagia nyomoo na imera na bubu nibubwega niuntu niejaga antu a gukara na irio bia njuki iri igwataga imera bietu na ikathithia naicu kana ikaro bia nyomoo cia kithaka iria ciumba kurigiria tunyomoo turia turi guntu kuria kurina mithemba imikai ya imera na uria miunda ikari. Niuntu nigarukite o uria antu au gukugaruka, miti ya gintwire niumbaga gutuura bega nikenda riria mantu jakuuma, niendekaga kiri utumiri.

Miti iria miega ya kuanda niringanaga kinya na aria tukubanga kumianda. Miti imwe ja *Gliricidia*, iria yongagira nitrojeni kiri muthetu, no ineneyie iketha riria mpempe riria biaandwa amwe. Ingi ja mibao, no ithukie imera, na kwou ti imiega ya kuandaniria na imera bia irio.

Aria na gikundi giaku gikinini na bang indene ya cluster yaku, na ugaane jaria wonete na mitire imiega nkuruki ya kuthithia mantu. Ni miti iriku uandaga? Niki? Ndene ya TIST no tuthomanirie amwe.

Nthingi Cluster ndene ya Mbeere nikuthithia maembe ja gwika.

Ni Sarah Murugi, Nthumba ndene ya cluster ya TIST ya Mbeere ukuuga

Micemanione yetu ya o mweri ya cluster, amwe na kwariria witi na mbere na mantu jamega nkuruki ja TIST, nitujukagia igita kuthoma mantu na mathuganio jameru jaria jomba gutethia kuthongomia miturire yetu. Kanyuma nyuma, amemba ba ikundi bibinini nibethritwe bakithomaga kuthithia ruuji kuumania na maembe.

Arimi nandi nibamenyete kugita maembe, na kujoomia gutumira riu mathaa jairi. Turina gikeno kuthoma mwitire jumweru juria jutwongera: kuthithia na gwika maembe nikenda jatumirwa ja irio. Kwongera, kuthithia ruuji kuumania na maembe nigututethagia kwendia maembe jeeki bwega riria maembe jatiku riria maguri jari iguru. Nitukwenda kugaana umenyo bubu nikenda ikundi bienu kinyabio biona baita.

Kuthithia

Aja ni jaria jakwendeka, matagara na into biria bigutumirwa:

Biria bigutumirwa

- Maembe, muthemba jwa gintwire Ndoto kana Apple, jamagundu indi jatiuthi
- Neti ya kuumia, ja nkunia ya nailoni
- Ruuji rurutheru

Into bia gutumirwa

- Gaciu gakoogi,
- Maratasi .

Njira ya kuthithia

- Curia nikunia kia nailoni kirina warie bwa fiti ithatu na uraja bwa fiti ithano igikinyaga fiti imwe na nusu iguru riria muthetu aria itegene na riu
- Tumira ruuji rurutheru rwa mpio kuthambia nusu kiembe nikenda kigitangwa. Aja kiembe kiu.
- Tuumira gaciu gakoogi kugitira maembe jang'ana ja kibao kiri neti iu ya kunyaria riu uumie riuene
- Tega maembe jau nyuma ya mathaa jairi. Jari tayari riria ukaigua joothi ja rubber. lika ndene ya maratasi jamatheru kana nyungune kana ikiri bikuniki. Maembe jaja no jekwe mwanka miaka iri.



Menyeera, murimo jwa mpempe jumuthuku jwa Necrosis.

Ni Mwangi Kimani, athomete kuumania na KARI na CIMMYT ukuuga

Maize lethal necrosis (MLN) ni murimo jwa mpempe juria jutambaga na mpui mono na juria jwithiritwe jukithuukagia miunda nainya ndene ya Kenya. Nijwonekanire mbele Peru mwakene jwa 1973 na ri mbele ndene ya Kenya mwakene 2011, mweri jwa itano ndene ya county ya Bomet naria antu bajwitaga Koroito, yaani kirumi. Narua, murimo juju nijutambite guntu kungi ndene ya Kenya

Murimo juju nijuthukagia mpempe cia mithemba yonthe (*Zea mays*). Jwaambiria muundene jwa mpempe, nojuthukie mwaka gicunci kia mirongo ithatu mwaka gicunci kia igana kiri o mpempe igana. Mithemba imwe itijaga na athithia nibakurita ngugi kuthithia mpempe injega nkuruki, indi MLN ni thina irina urito.

Moonia ja Maize lethal necrosis

- Mathangu nijaejaga yellow irina migira mathanguni jonthe. Bubu nobwambie na mathangu jaria meeru buru na kiri mathangu jaria manenen na bugatamba kuuma mithiene gwita gatigati ka mathangu.
- Jwakara nkuruki, micakwe niciaraga mpempe inkai.

Njira ya kirigiria Maize lethal necrosis

- Anda mithemba imingi ya imera. MLN ithukagia mpempe aki.
- Ukaanda mpempe akui na muunda jukuonania murimo juju
- Aanda mpempe mbura inene ikiambiria, ti mbura inini; kurega kuanda mpempe mbura ijiri ithingatene nikuunaga kwendele a kwa murimo juju.
- Ebera kureta mati ja mpempe na mboleo itiumi kuuma kungi muundene jwaku.
- Mipempe yaku yonania niyajitue, ita imera biu biyajitue muundene juju orio. No urumie ndithia ciaku, indi mantu na mpempe niinthuku na kwou ibati kuithua.

Ndene ya mucemano jou jungijwenu jwa cluster, aririeni murimo juju na amemba bangi, bugaane jaria bwonete na bwitikanirie njira ya gukabana na thina iji.

Karama Cluster, nikwongera inya.

Ni Jane Kagwiria ukuuga

Batwi amemba ba cluster ya Karama nitugucokeria turina nkatho niuntu bwa gutonya kiri TIST. Turi bamwe ba cluster iria ciri injeru kiri TIST narua. Gukinyira au, nitugwikumiria mantu jamanene jaria tumbite gukinyira ndene ya cluster yetu. Jaja ni amwe na:

- Ikundi bibinini mirongo itano na inya nibiandikithitue na nandi nibikurita ngugi cia TIST
- Ikundi bietu mirongo inana kiri o ikundi igana nibitariri miti.
- Atongeria ba cluster nibathuri na micemano ya cluster ya o mweri nithithagua

Moritani jaria jatukinyirite mwankira au ni:

- Moritani jegie urimi bubwega. Amemba bamwe beetu nibarimite na njira iji. Nituthomete

kuumania nabo niuntu nibakwona iketha ririega nkuruki ya baria batumirite njira cia gintwire.

- Minanda ya miti. Ikundi bietu bibingi nibithithitie minanda ya miti. Nitubangite kuanda miti ingi imingi mburene iu ijite.
- Utongeria bwa kthiuruko bwa uthumba. Mbele itwabumenaga na tutathuganagia no burite ngugi. Indi narua, mumemba wonthe arina gikeno na netikiritie utongeria bwa kithiuruko na bwa uthumba. Nitwonete iewa mwanya bia utongeria kiri antu mwanya, kinya kiri baria tutingitugania batongeria kiri utongeria bwetu bwa kawaida!

Nitukuromba ati tugeta na mbele kuritanwa nkuruki. Turi tayari kuthithia na kuthongomia miturire yetu. Ndene ya TIST turi.



Gutumira mariku jamathongi nkuruki ja TIST: Nigukuega kiri antu, nigukuega kiri miti.

Ni Joseph Gituma ukuuga

Niki ubati gutumira riiko ririega nkuruki? Kurina baita inyingi mono kiri antu na kiri miti. Aja ni inkai ciacio:

Kiri mutumiri mariiko:

- I. Mariko jaja nijanyiagia utumiri bwa nkuu. Nkuu iria citumagirwa kuruga ntuku ithatu na kiriko kia kawaida no itumirwe kiumia kimwe kiri riiko ririega nkuruki.
- II. Nijanyiagia mbeba cia gutumira kiri kugura nkuu.
- III. Nijoonokagia mathaa jaria jatumagirwa kiri gucua nkuu.
- IV. Kiriko giki gitumagira ruku rumwe kuruga nyongo ithatu, na kwou kwonokia mathaa na nkuu.
- V. Nijanyiagia mitino ya mwanki, niuntu mwanki nijukuniki
- VI. Toi niumaragua oome ya nyomba ya kurugira gukurukira chimney. Bubu nibunyiagia thina cia

thiria iria ciumanagia na toi, ta thina cia gukucia miruko.

Kiri naria gututhiurukite:

Utumiri bwa nkuu inkai nibutethagia-

- I. Reduce deforestation. Kunyiyia ugiti miitu.
- II. Reduce desertification. Kunyiyia gutamba kwa uumo.
- III. Kurigiria kuthuka kuria kuumanagia na mbura inyingi iria ijaga o rimwe.
- IV. Kumenyera nduji na biumo biaru.

Kwou, burina bata kuuria athithia mariiko ndene ya TIST bagutethie kuthithia rimwe na mbeba inkai, bugitumagira into biria bikwoneka aria uri. Kinya no ugre mariiko jathithitue kuuma kiri TIST. Aria na nthumba cia cluster yaku nikenda umenya nkuruki.

Uandi miti ndene ya ntuura injumu.

Ni Eunice Wambui ukuuga.

Ouria TIST igwita na mbele gutamba ndene ya ntuura irina kanya gakathongi na injumu, nitugutirimana na magerio jamaingi kiri gutuura kwa miti. Ndene ya TIST nituthithagia na kugaana mitire imiega buru ya kuthithia mantu, na bubu nibututethagia batwi ndene ya nja ya TIST rionthe kwona maciara jamathongi.

Aja ni mitire imwe iria miega buru iria tuumba kugeria kiri uandi miti ndene ya ntuura injumu:

1. Utaari bwa antu a gwika munanda jwaku burina bata mono ndene ya ntuura injumu. Miti igetie gwikirwa ruuji rimwe kana jairi o ntuku riria inyii. Thugania gwika miti antu aria gukuiriteie nja nikenda ugatumira ruuji ruria rugutumirwa nja gwikira miti. Kunyiyia ruugo akui na munanda gugatethia kunyiyia utumiri bwa ruuji na kua miti iminini kirundu.
2. Kuthuranira kurio: Thuranira marinya ja kuanda miti kwombika mweri jumwe mbele ya mbura, kirinya gikaunika na bubu bugatethiakuuthioa gutonya kwa ruuji riria gukaura. Nyuma ya ngai ya mbele anda miti na ujurie kirinya ukiambagiria na muthetu jwa iguru riu mboleo.
3. Geria gutumira njira cia kugwatia ruuji rwa ngai nikenda ruuji rurwingi rukinyira miti. Miti ikoomba gutuura yaandwa akui na aria ruuji rwithagirwa ruriku rionthe.
4. Gukunikira muthetu: Gukunikira muthetu warikia kuanda miti. Bubu bugatethua gwika ruuji niuntu nikunyiagia gukamatwa ni riu. Gutumira mboleo ya imera gukoongera nutrienti muthetune indi gukunikira na maiga

kinya ku no kulete baita guntune kuria kurina maiga jamaingi.

5. Kuungania imera na miti: Tugerieni kungania imera na miti. Miti iria iandagwa muundene niyo yuumbaga gutuura nkuruki ya iria iri ithakene niuntu nimenyagirwa na iri muthetune jumwega nkuruki.
6. Taara mithemba iria igakura bwega ndene ya ntuura injumu. Miti ya gintwirekuuma kiri ntuura iria ithiurukite niumbaga gutuura. Mng'uanano imwe ni Melia, *Acacia seyal*, na *Muuuku (Terminalia brownii)*.
7. Menyeera miti iria irio na umitikirie iciarane. Miti iji irio irina inya na niumbaga gukurukira mbura injumu twamikaria. Niejanaga kiumo kia bata kia mbeu cia gintwire amwe na kirundu na mantu jangi.
8. Minanda itiritie kana injiri no itethie. Riria twambia minanda itithitue, nituonaga miti irina miti imiriku na kwou igatuura. No itethie kinya gwika miti munandene igita riraja nikenda inenea nkuruki na igia inya. Indi minanda ya kwinjira no ithirwe iri imiega niuntu nikunikagira miti na ikanyia kuuma. Aja, menyeera kugaruria miti o nyuma ya igita nikenda miri itigakure itonya muthetune rungu rwa mubuko, na kwou igitaria miiri igita ria kuthamia.

Tutumireni mitire iria miega buru iria turinayo, na tuthithie na kugaana na bangi nikenda tukinyira maciara jamaingi na tutethia TIST gukura ndene ya ntuura cietu.

Mazingira Bora



TIST

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

Kikuyu Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Caption: Cluster Servants in a recent seminar.

Thiini:

Guceha na gutagania miti yaku niguu ikure wega. Page 2

Guchagura miti iria miega mugunda-ini waku. Page 4

Cluster ya Nthingi thiini wa Mbeere guthamira uthondeki-ini wa maembe. Page 4

Wimenyere Maize Lethal Necrosis. Page 5

Cluster ya Karama, Gukura na hinya. Page 5

Kuhuthira riiko ria TIST: niriega kuri miti. Niriega kuri andu. Page 6

Uhandi wa miti kundu kumu. Page 6



Guceha na gutagania miti yaku niguu ikure wega.

Thiini wa TIST, nitwirutagira guturia miti iria twahanda na tukatreke ikure miaka itanyihire 30 mebre ya gutemwo. Giki nikio gitumi kinene giagutuma twicirie muno mithemba ya miti iria turahanda migunda-ini iitu. No ona kuri o uguo, guceha na ggutagania miti niguteithagia miti gukura ii na hinya na kuheana umithio mwega riria irakura. Hamwe, gitumi kia guceha na gutagania miti ni kwongerera ugima wa muti kiumbe na wa mutitu uri wothe. Uu wikikana kuhitukira gucchagura miti iria miega thiini wa mutitu. Kuri mithemba miingi, hamwe na miti iria itagwo hardwoods, grevillea na mibau na mithithinda, niyo muno ikoragwo iri minene gukura iria ingi iri mitungu wega. Miti niibataraga muigana wa mugunda ngurani kuringana na muthemba waguo, kuria uri, muhandire na riera no maundu mangi nimatumaga.

Niguu muti ukure uri na hinya, utaganu wa 2 mtrs niwagiriire. Utaganu uyu wagagirira miti miingi (ta grevilla na cypress), no uririkane miti ingi niibataraga utaganu munenanene (ta maembe, macadamia). Riria wahee miti utaganu muiganu nigutumaga miti ikinyirwo ni maai na unoru wa tiiri ni igakura wega na iri na hinya. Utaganu munini wa miti nimwitikiriku riria miti iri minini. Na riria yambiriria kugimara, miti ingi niigukorwo iri miraihu gukura iria ingi. Ino niyo miti iria yagiriirwo gutigwo mugunda. Niguu umenye miti iria ugutema, rora miti iria miraihu na wone kana niitaganitio wega na angikorwo timitaganu no uteme imwe yayo.

Thutha wa kumenya miti iria ugutema, mitemere haria gitina-ini. Thutha wa ciumia na mieri, imwe yayo niithudukaga. Na niguu ndigakure ringi, tinia mahuti maria marathunduka kuma githuki-ini. Njira imwe ya iria huthu ya kumenya muti kana niwagiriirwo nigutemwo nikurora unene wayo uringithanitie na iria iriganitie nayo iri ya riika na mutemba umwe. Gukura kwa miti nogukorwo kuri na utiganu kuringana na tiiri na maai na mangi maingi. Angikorwo miti ya muthemba umwe mwena umwe iri na ukuru uiganaine, miti iria minene niyagiriirwo ni gucagurwo niguu ikure. Njira ingi ya kumenya ugima wa miti ni kurora mururi waguo. Miti iria iri

na mururi muraihu gukura iiria ingi noihote kwamukira utheri muiganu na ikure na ihenya. Na muthia, miti yagiriirwo gukura na mwahu umwe, na itari na mirimu minene kana ironda. No ona kuri o uguo, uu tikuga ati miti yothe minii niyagiriirwo nigutemwo! Tigirira utaganu niwa 2-3mtrs niguu miti ikure iri minene niguu ihote kugucia carbon nyingi.

Ugitua matua ma gutagania, ririkana mukurirme wa muti ningurani kuringana na muthemba wa muti. Angikorwo miti ya maembe irakuranira na mibau, maembe nomakure mari manini na ikure kahora muno gukura mibau iria ikuraga na ihenya, na ndiagiriirwo nigutemwo tondu niminini! Muti ta muembe niwabata niundu wa matunda maria ukuragia na makendio.

Maembe nimakuranagira na indo ingi migunda-ini. Mibau ndirekaga muti kana mumera ungi ukure hakuhi. Niwega kuririkana uguo riria uracagura miti ya gutagania.

Miti niikoragwo na mabata maingi kuringana na muthemba waguo. Kwa muhiano, nowende muti niundu wa kiruru. Niundu wa uguo, niwagiriirwo kuhe muti mweke muiganu niguu utheremie mahuti.

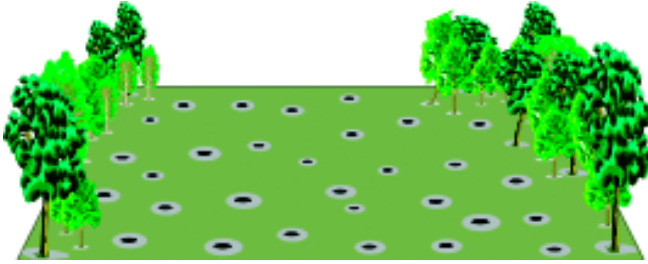
Angikorwo urenda gukuria muhari wa miti niundu wa kunyihia ruhuho, tigirira miti niyakuhaniriria no wehutie iria itari mahariini niguu ndugathondeke githaka.

Mitaratara ya gutagania.

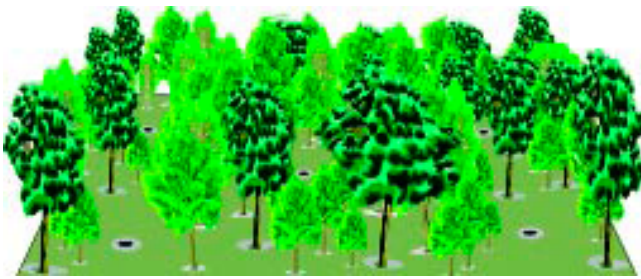
- Reke miti ikure nginya igimare.
- Korwo na namba ya miti iratwarana na muigana wa mugunda waku. Thiini wa TIST, noucagure gicunji kia miti kia 5%, thutha wa miako 10, gutagania miti o igukuraga na kurehe umithio.
- Eheria miti iria irakua, iri na mirimu na itari na ugima mwega.
- Gitira miti kumana na utemi utari mwitikiriku.
- Tema miti na njira itakuhukia mutitu waku.
- Handa miti mithemba miingi.
- Rora mutitu waku ndugatharikirwo ni tutambi.
- Nyitanira na honge cia thirikari niguu kugitira mirimu.
- Gitira miaki.



Ndugeke uu.



Clear cutting



Single tree selection

Guceha

Thiini wa mutitu wa ki-nduire, miti niyo ikuragia na igeceha. honge iria iri iguru nicio ihumbagira miti. Riria mahuti ma na-thi mahoha na maitika noguo honge cia na-thi ikuaga. Honge niciiyuragaga cio nyene. Na ona miti igiicehaga thiini wa migunda ya TIST, niwegaga na undu wa bata guceha wee mwene na moko. Na o muthemba wa muti ukibatara mucehere ngurani, maundu mamwe nimahuthagirwo kuri miti o yothe.

Mithemba miingi ya miti ikoragwo na mwahu umwe haria gitina-ini. Miti ta ino niikuraga na ihenya na ndiguithagio ni ruhuho na-ihenya. Riria wacagura muti uri na mياهو miingi ikure, chagura iria minene na iri na hinya na mahuti maingi na mirungaru.

Andu andgi meciragia wagiriirwo nigutema honge kuganana na muti. Honge ciagiriirwo ni gutemerwe iguru hanini kuma kuri muti. Njira ino igitagira kirona kuneneha na muti ugakura na njira iria yagiriirwo.

Ndugacehe muno. Honge iria ciahururwo nichihuthikaga ta ngu kana irio cia mahiu.

Na njira ino iri njega, ririkana ati riria urahurura

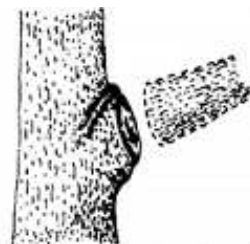
niurateithia muti gukura, unghurura uuru miti iyo ndingithunduka ringi. Miti miingi na makiria miti ya matunda niikuragia matunda maingi riria iri na mياهو miingi.

Mياهو ino itemagwo riria miti iri minini niguo ikure wega. Riria muti wagia na wendi uyu niunyihagia uhoti wa gukinyira riuu na muti ukaga gukura na njira iria yagiriire. Ungitema honge nyingi thiini wa muti, niukuraga kahora kana ukoma. Thutha wa gutema, ndugathumbure kirona kiu. Ndukahumbire na kindu o giothe niguo kirona kirute giko giothe kuhitukira kirona kiu. Njir ino noyo ihuthagirwo ni mundu riria agia na kirona.

Ndukariganirwo ati miti niuthundukaga hakuhi na kirona na mithemba ingi ya mti niithundukaga muno gukira iria ingi na mahuti macio nimakoragwo mari mahuthu kuruta mbere ya mwaka umwe na nourute na moko na ndingithunduka ringi.

Miti ingi na makiria ya matunda niirutaga maciaro maingi riria iri na mياهو miingi. Mياهو ino yagiriirwo nigitemerwo hakuhi na gitina-ini riria iri minini niguo ithii na-mbere na gukura ringi. Uhoro uyu nouthii ugicokagirwo maita maingi niguo miti ndigakuririre muno, no utigirire niyaikaranga gwa kahinda.

Ririkana ati niguo uhote kwonjoria thoko-ini ya carbon, no muhaka utigirire miti yaku niyakura na miaka itanyihire 30, ugiceha nagutagania niguo irute maciaro, na mititu ikure iri minene kwa miaka miingi iguuka.



Pruning cuts should be made just outside the branch collar.



On a dead branch that has a collar of live wood, the final cut should be made just beyond the outer edge of the collar



Guchagura miti iria miega mugunda-ini waku.

Ta arimi, nitucaguraga miti iria igukura migunda-ini iitu na umenyereki munene muno. Maita maingi, tucaguraga kuhanda miti iria irutaga maciaro maingi niguu ona riuu riaru kana migunda igumirwo ni mirimu no tukugetha. Riria twahanda miti migunda-ini iitu, ni undu wa bata makiria kurora umithio wa kahinda karaihu wa miti mithemba ngurani.

Niuui: miti ingi noikorwo iri riia? Miti ta *Leucaena leucocephala*, noikorwo iri riia ringirehe maundu maingi thiini wa migunda na mititu? *Leucaena utaragwo* uri riia thiini wa mabururi makiria ma 20 na maita maingi niukuraga na njira nene na inini miti ya ki-nduire na mititu, njira iria ingikorwo iri ugwati kuri mahiu maria maturagio ni miti ino. Miti ini iria ni riia ta *lantana* na *Caesalpinia decapetala* no ikorwo iri ugwati muno. Niwega kumenya muti kana niugukorwo uri ugwati mugunda-ini.

Miti ingi ta maembe na macadamia, ni miega tondu niiciaraga matunda maria twendagia, na magatuhe irio iria citeithagia miiri iitu na micii iitu. Miti ingi ya ki-nduire ta *Croton*, onayo niiciaraga matunda mega muno maria marutaga maguta mangaari. Miti ya ki-nduire niya bata kwongerera biodiversity, na tukongerera wagiruru na cikaro cia nyamu na njuki iria iciarithanagia irio ciitu na guthondeka uuki, kana nyamu iria cigiragiriria tutambi tuingi. Na tondu niikoretwo kuo gwa kahinda karaihu migundaini iitu, miti ya ki-nduire nihotaga gukura ona kuri na mathina maingi. Miti ingi ta *Gliricidia*, iria yongagirira nitrogen tiiri-ini niyongagirira magetha ma mbembe riria ciakuranira hamwe. Ingi ta mibau niingicaga irio na timiega migunda-ini iitu.

Araniria na gikundi kianyu na angi thiini wa cluster yanyu na uheane uri uthomete ni miti iriku urenda kuhanda? Niki? Thiini wa TIST, nituthomaga turi hamwe.

Cluster ya Nthingi thiini wa Mbeere guthamira uthondeki-ini wa maembe.

Mwandiki: Sarah Murugi, Mbeere TIST Servant.

Hindi ya micemano iitu ya o mweri ya cluster, iguru ria kwaria uthii wa na-mbere wa TIST, nituoyaga mahinda makiria guthoma maundu meeru namecira maria mangiagirithia miturire iitu. Ica ikuhi, amemba a ikundi nini nimakoretwo magithoma uria mangithondeka maembe maumie juice.

Arimi riiru nimathomete gutua, kumithia na urugari wa riuu gwa kahinda ka mathaa 2. nitukenete ni guthoma undu uyu mweru: kumiira na guthondeka maembe mahinda matari ma kimera riria thogora uri iguru. Niturenda guthomithania uhoro uyu niguu gikundi kianyu giteithike!

Kuhariria

mmaria marbatarania, makinya na indo iria cirabatarania:

Indo cia guthondeka

- Maembe, mithema ya Ndoto kana apple, mari meeru na matari mahihinye.
- Neti ya kumithia kana ikonia.
- Maai matheru

Indi cia kuhuthira;

- Kahiu koogi
- Iratathi ria nylon

Mutaratara wa kuhuthira

- Curia warii 3ft na uraihu 5ft ikonia iguru 1 1/2ft riuu-ini.
- Huthira maai mahehu matheru guthambia maembe niguu utinangie. Unura maembe.
- Huthira kahiu koogi na utinie muigana wa coin ya 20sh na wikire neti-ini na umaige riuu-ini
- Rora matunda thtua wa mathaa 2, makoragwo mari meega riria mahana ta mubira. Iga thiini wa iratathi ria nylon kana mukebe-ini. Maembe macio nomaikare gwa kaginda ka miaka 2.



Wimenyerere Maize Lethal Necrosis.

Mwandiki: Kimani arutite KARI na CIMMYT

Maize Lethal necrosis (MLN) ni murimu wa virus wa mbembe uria umakitie migunda thiini wa bururi wa Kenya. Wonekire ria mbere mwaka wa 1973 bururi wa Peru na guku Kenya ukioneka May 2011 thiini wa county ya Bomet kuria arimi akuo mawitaga “Koroito” kuuga pluugue. Umuthi, murimu uyu niutheremete miena ingi ya bururi na ugatharikira mithemba yothe ya mbembe. Riria waingira mugunda-ini wa mbembe, nouthukie nginya gicunji kia 30%-10% kia mimera. Mithemba ingi niitiragia murimu wa heho na aciarithania nimararora uria mangiongerera mbegu hinya wa gwitiria murimu uyu no ni murimu muuru muno.

Kionania kia Maize Lethal necrosis

- a) mahuti magatuika ma yellow na micoora mahuti-ini. Uu nowambiririe riria mahuti mari manini na mahuti maria maraihu magakunjana.

- b) Riria wathianga, mimera irutaga magetha manini.

Kugiriria Maize Lethal necrosis

- a) handa mimera mithemba ngurani. Maize Lethal necrosis unyitaga o mbembe.
- b) Ndukahande mbembe kuria kwonekete murimu uyu.
- c) Handa mbembe kimera kia riu;
- d) Ndukarehe thumu wa mabebe kuma mugunda ungi mugunda-ini waku.
- e) Mabebe maku manginyitwo, orio eheria maria manyite. No umahe mahiu kana ucine.

Thiini wa mucemano ucio ungi wa cluster yanyu, araniriai na amemba othe uhoru wigii murimu uyu na uria mungigitira.

Cluster ya Karama, Gukura na hinya.

Mwandiki Jane Kagwiria

Ithui amemba a cluster ya Karama nitukenete niundu wa kuingira TIST. Turi amwe a cluster iria nini muno thiini wa TIST umuthi. Gukinyia riu, nituretiira ugaciru wiitu na njira ici:

- 1) ikundi 54 niciandikithitio na niciraruta wira.
- 2) Gicunji kia 80% kia ikundi nigitarire miti.
- 3) Atongoria a cluster nimathuritwo na tugakorwo na micemano ya o mweri.

Ithomo iria twamukirite nita ici:

1. githomo kia Kilimo Hai. Amwe a arimi aitu nimahuthirite urimi uyu. Nitothomete kuma kuri o tondu, nimakoretwo na maciaro gukira aria marimite urimi wa kawaida.

2. Nathari cia miti. Aingi a arimi aitu nimakoretwo na nathari cia miti na nimehokete kuhanda miti ingi miingi makiria kimera kia mbura.

3. Utongoria wa guthiururukana. Mbere tutietikagia ati nokuhoteteke. No umuthi, o mumemba nimukenu na akamukiria utongoria uyu. Nituonete iheo ngurani cia atongoria, nginya kuma kuri aria matangiahotire gutongoria!

Nitwirigiriire guthii na-mbere na githomo.

Nitukunete na tukagirithia miturire iitu thiini wa TIST.



Kuhuthira riiko ria TIST: niriega kuri miti. Niriega kuri andu.

Mwandiki Joseph Gituma

Ukuhuthira riiko riri niki? Nikuri na umithio munene wa andu na miti. Umwe wa maya ni:

Kuri ahuthiria a riiko riri:

1. riiko riri nirinyihagia uhuthiri wa ngu. Ngu iria cihuthagirwo thiini wa matuku 3 na mariiko maya mangi nocihuthike na week I .
2. kunyihia uguri wa ngu.
3. Kunyihia mahinda ma gwetha ngu.
4. Riiko riri rihuthagira ruku rumwe kuhuhia nyungu.ngu 3, kunyihia uhuthiri wa ngu na mahinda ma kuruga.
5. Kunyihia mitino ya miaki tondu mwaki nimuhumbire.

6. Ndogo niyumagio nja ya riiko na chimney. Kunyihia mirimu.

Kuri maria maturigiciirie:

unyihu wa ubatari wa ngu uteithagia na

- I. kunyihia utemi wa miti.
- II. Kunyihia nyanjara.
- III. Kunyihia ugwati wa miiyuro ya maai.
- IV. Kugitira ihumo cia maai.

Niundu wa uguo, niwega gwitia riiko ria TIST kana urie aria mathondekagaa maguteithie guthondeka ukihuthira indo ciaku. Araniria na atongoria a cluster yaku niundu wa ugoro makiria.

Uhandi wa miti kundu kumu.

Mwandiki: Eunice Wambui

o TIST igithiaga na-mbere na gukura miena yothe iria yaraga na yumaga, nitukoragwo na mathina ma gukuria miti. Thiini wa TIST tukuragia na tugatwarithia mitaratara miega, na njira ino niituteithitie thiini wa TIST kugia na maciaro mega. Ino ni imwe ya mitaratara ya kurumirira gukuria miti kundu kumu:

1. guchagura handu hega ha ha nathari ya miti. Mimera niiribatara kuheo maai riita I kana maita 2 hari o muthenya riria iri minini. Cagura kuhanda mimera hakuhi na mucii niguu uhuthire maai manyumba gutiriria mimera. Ukihuthira indo ciakugitira ruhuu guthiururukiria nathari yaku nigukunyihia uhuthiri wa maai na kuhe mimera kiiruru.
2. Uhariria wa tene: hariria marima ma kuhandira miti muno mweri I mbere ya mbura, iria nirigwatuka na uteithie maai kuingira tiiri-ini wega mbura yaura.
3. Geria gutega maai ma mbura niguu maai maingi makinyire miti. Miti noikure wega riria yahandwo kuria maai mageraga.
4. Ikira mahuti mugundaini niguu maige ugunyu tiiri-ini.

5. Hamda miti mugundaini wa irio. Riria wahanda miti mugunda-ini niikuraga wega tondu niiramenyererwo hamwe na irio iria iri mugunda.
6. Cagura mithemba ya miti iria ikuraga wega na riuu. Muno miti ya ki-nduire niyo miega. Kwa muhiano Melia, Acacia, na Muuku(Terminalia brownii).
7. Menyerera miti iria iri kuo na umihotihie gutherema. Miti ino mikuru iri na hinya, na noiikare gwa kahinda karaihu twamimenyerera. Niiheanaga kihumo kia mbegu cia kuhanda.
8. Tuta njoe iguru nociteithie. Riria twathondeka tuta njoe iguru, nitugiaga na mimera iri na miri iri na hinya na irakura wega. Noiteithie kuiga mimera iri na hinya thiini wa nathari niguu ikure iri minene na ikure na uraihu munene. No ona kuri o uguo tuta njoe iguru noikorwo iri njega tondu niitumaga mimera ndigakue na ihenya. Niundu wa uguo, menyerera na ugarure mimera niguu miri ndigakinye thi.

Reke tuhuthire mitaratara miega na tukurania na tuthomithanie na nitukwigwatira maundu manene thiini wa TIST.

Mazingira Bora



TIST

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

Kiswahili Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Caption: Cluster Servants in a recent seminar.

Ndani:

Kupunguza na kupogoa miti kwa ukuzi mwema. *Ukurasa 2*

Kuchagua miti bora zaidi ya shamba lako. *Ukurasa 4*

Nthingi Cluster iliyo Mbeere inanza usindikaji wa maembe. *Ukurasa 4*

Chunga, Ugonjwa mbaya wa mahindi (Maize Lethal Necrosis) *Ukurasa 5*

Karama Cluster, Yazidi kukua. *Ukurasa 5*

Kutumia meko bora ya TIST: jambo zuri kwa watu, jambo zuri kwa miti. *Ukurasa 6*

Kupanda miti katika maeneo kavu. *Ukurasa 6*



Kupunguza na kupogoa miti kwa ukuzi mwema.

Katika TIST, tumejitolea kutunza miti tunayopanda kwa ajiri ya TIST kuikuza kwa miaka thelathini kabla ya kuikata. Hii ni sababu mojawapo ya ni kwa nini ni muhimu kufikiria vizuri kuhusu ni miti ya aina gani twataka kukuza katika mashamba yetu. Hata hivyo, kupunguza na kupogoa miti kwaweza kusaidia kuiweka miti yako ikiwa yenye afya na inayotupa vitu muhimu mti unapokua.

Kwa ujumla, maana ya kupunguza na kuipogoa miti ni kuboresha afya ya kila mti, pamoja na ya msitu wote. Hili litafanyika kupitia kuichagua miti iliyo bora zaidi katika msitu. Kwa aina nyingi za miti, pamoja na miti ya mbao, grevillea, mikaratusi na cypress, miti hii san asana huwa miti mikubwa zaidi, kila mti ukiwa na shina moja lililonyooka. Miti yaweza kuwa na mahitaji mbalimbali ya nafasi kulingana na aina, mahali, ilivyopandwa (miti iliyo mashambani ya mimea ya vyakula ama miti iliyopandwa ili kupunguza upepo) na tabia nchi, lakini kuna kanuni zingine za kijumla hutumika.

Kukuza miti iliyo na nguvu na afya, nafasi ya mita mbili hupendekezwa. Nafasi hii ni sawa kwa miti mingi ya TIST (grevillea na cypress), lakini kumbuka kuwa miti mingine huitaji nafasi zaidi (miembe na mikandamia, kwa mfano). Kuipa miti nafasi inayofaa huisaidia kupata maji na virutubisho tosha vya kuikuza hadi panapowezekana. Nafasi ndogo zaidi inaruhusiwa miti ilipo michanga. Miti inapokua, miti mingine itakuwa mikubwa kuliko majirani. Hii ndiyo miti wapaswa kuacha. Kuchagua ni miti gani ya kukata, angalia miti iliyo bora zaidi na ujue kama ina nafasi ifaayo. Kama haina, wafaa kutoa miti mingine iliyo karibu.

Ukishachagua miti ya kutoa, ikatie chini kabisa. Katika wiki na miezi inayofuata kukata, miti mingi itaanza kuchipua kutokana na kisiki cha mti. Ili kuzuia mti kuchipuka tena, kata au uvunje miche iyo chipukizi iliyo katika kisiki.

Njia mojawapo iliyo rahisi zaidi ya kujua kama mti wapaswa kukatwa ni kuangalia ukubwa wake ukilinganisha na miti iliyo karibu ya umri na aina moja. Ukuaji wa mti utatofautiana kulingana na udongo, maji yaliyopo na kadhalika. Kwa ujumla, ikiwa miti yote ya aina moja katika eneo Fulani ina karibu umri mmoja, miti iliyo mikubwa zaidi inaweza kuchaguliwa kuachwa kukua. Kiashiria kingine cha afya ya mti ni mahali taji la mti katika dari lilipo. Miti liyo na taji juu ya dari la kijumla la miti yaweza

kunyonya mwanga zaidi ya miti iliyo na taji chini zaidi na kwa hivyo huweza kukua bora. Kumaliza, miti yafaa kuwa na shina moja, lisilo na ugonjwa mkuu au kuoza. Hata hivyo, ili halimaanishi kuwa miti yote midogo yafaa kukatwa! Langa kunafasisha kwa mita mbili ili miti iwe mikubwa ba yenye afya iwezekanavyo ili kuzidisha kunyonywa kwa kaboni.

Unapofanya uhamuzi wa kupunguza miti, kumbuka kuwa kiwango cha ukuaji hutofautiana kulingana na aina ya mti. Kama mwembe unakua karibu na mikaratusi mingi, mwembe unaweza kuwa mdogo na unaokua pole pole zaidi ya mikaratusi inayokua haraka, lakini kwa uhakika haupaswi kukatwa kwa sababu ni mdogo zaidi! Kwa kweli, mti kama mwembe ni wenye umuhimu mkubwa kwa sababu ya matumizi yake katika kupeana matunda ya kula na a kuuza.

Mwembe ni bora zaidi pia kwa mimea mingine iliyo shambani. Mkaratusi waweza kufanya miti na mimea mingine iliyo karibu kukua vibaya. Ni muhimu kukumbuka hili unapochagua ni miti gani utapunguza. Kuna matumizi mengi ya miti, kulingana na aina zaidi ya kunyonya kaboni. Kwa mfano, waweza hitaji miti ya kivuli. Hapa, wafaa kuupa mti nafasi kubwa zaidi ili kuufungulia jua zaidi. Hili litasisimua mti kutengeneza matawi mapya katika shina kuu na matawi makubwa.

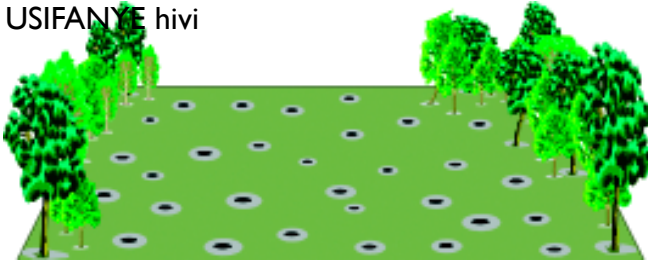
Ukitaka kutumia miti ili kupunguza upepo, iache miti iyo katika mistari kuwa karibu zaidi, lakini kata miti iliyo pande hizo zingine ili kuongeza kichaka.

Mazoezi bora unapopunguza miti

- Iruhusu miti kukua hadi ukomavu.
- Punguza hadi inavyofaa (nambari ya miti katika ekari). Katika TIST, twaweza kuchagua hadi asilimia tano ya miti yetu, baada ya miaka kumi, kupunguza kupitia kuchagua inavyokua na kutuletea pesa.
- Kata miti inayokufa, iliyo na magonjwa, inayooza na isiyo na ubora.
- Linda miti kutokana na uharibifu kutakana na ukataji wa magogo.
- Tumia njia za ukataji magogo zenye athari chache inapowezekana.
- Himiza wingi wa aina za miti.
- Fuatilia msitu wako ili kujua kukizuka wadudu na magonjwa.
- Shirikiana na kampuni za serikali katika kudhibiti kuzuka kwa wadudu na magonjwa.
- Zuia mioto ya msitu.

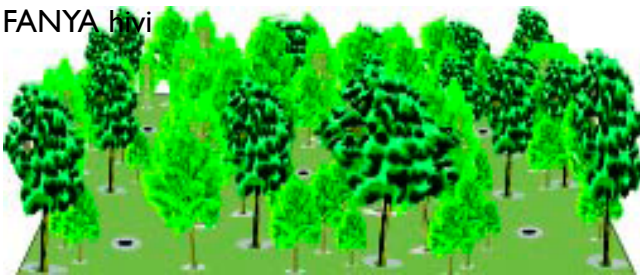


USIFANYE hivi



Kukata miti yote

FANYA hivi



Chagua mti mmoja mmoja

Kupogoa

Katika msitu asili, miti hujipogoa yenyewe. Matawi katika dari la juu hufunikia matawi yaliyo chini zaidi. Jinsi majani yaliyo katika matawi ya chini ya yanakufa, ndivyo tawi lililoyashikilia pia linafa. Matawi yaliyokufa na kuoza huanguka yenyewe au kuangushwa. Hata kama kupogoa huku kwaweza kuonekana katika mashamba ya JTIST, inaweza kuwa muhimu, ama kwenye faida kupogoa kwa kutumia mikono. Ingawapo kila aina huitaji njia tofauti ya kupogoa, kanuni chache za kijumla hutumika katika miti yote unapokuwa ukichagua ni matawi gani yatakatwa.

Aina nyingi za miti huwa na shina moja kuu lililo mchangani. Miti iliyo na shina moja hukua haraka zaidi na haiwezi kupasuka kwa urahisi wakati wa dhoruba. Ikiwa mti wenye mashina mengi umechaguliwa kama mti mmea, wakati wa kuchagua ni tawi gani kuacha, kwa ujumla chagua tawi lilio kubwa ziadi, lakini hakikisha lina afya, matawi mengi, halijaoza na limenyooka.

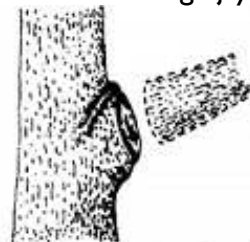
Watu wengi hufikiri wapaswa kukata matawi sambamba na shina. Huu ni uongo. Mikato yafaa

kufanywa kwa upande tofauti na shina la mti, kidogo nje kutoka kwa shina. Hili hupunguza mti hulio wazi na huruhusu seli zinazojitenganisha katika tawi kukua juu ya mkato huo jinsi wakati unavyokwenda (angalia picha ya kwanza). Hili husaidia mti kukaa na afya na huzuia kuoza.

Unapopogoa usifanye zaidi ya inavyotakikana. Matawi yaliyokatwa yaweza kutumiwa kama kuni au chakula cha mifugo. Ata kama hili ni jambo nzuri, kumbuka kuwa ata kama kupogoa huboresha afya ya mti na huongeza ukuaji jinsi wakati unavyoenda, Usisahau kuwa miti hutengeza mashina mapya karibu na kulipokatwa. Kwa ujumla, mashina haya ni rahisi kutoa katika mwaka wa kwanza wa kukata kwa kuvunja mashina. Mashina mara nyingi hayakui tena.

Miti mingine, sanasana miti ya matunda, hutupa mazao bora yakiwa na mashina mengi. Miti hii hukatwa chini karibu na mwisho wa shina ikiwa michanga ili kulisimua ukuaji mpya. Mti unapoimarisha mashina haya, kwanza uwezo wa mti wa kunyonya jua utapungua na mti utakazwa kwa sababu ya kidonda ambacho lazima kipone. Ukitoa mengi sana, mti hutakua pole pole au ufe. Ukishatoa tawi, liache eneo ilo. Usilifunike kwa chochote, ili mti hutoe sumu yoyote iliyopo katika kidonda. Hii pia ni njia ya kimsingi inayotumika katika binadamu kuponya anapokatwa.

Kumbuka kuwa ili kuingia katika soko la kaboni, twahitajika kujitolea kuikuza miti kwa muda mrefu. Twafaa kuruhusu miti kukua kwa miaka isiyopungua thelathini, kuipunguza na kuipogoa ili kutengeza misitu yenye matumizi na endelevu itakayotupa faida kwa miaka mingi ijayo.



Pruning cuts should be made just outside the branch collar.



On a dead branch that has a collar of live wood, the final cut should be made just beyond the outer edge of the collar



Kuchagua miti bora zaidi ya shamba lako.

Kama wakulima, sisi hupanga kwa uangalifu ni nini tutakuza kila msimu. Mara nyingi, tunachagua mimea iliyotupa mazao mazuri hapo zamani na mimea tofauti ili kukiwa naukavu au wadudu, bado tutaweza kuvuna. Tukipanda miti katika mashamba yetu, ni muhimu zaidi tuangalie faida za muda mrefu zinazoletwa na miti tofauti .

Ulijua: miti mingine yaweza kuwa magugu? Miti kama *Leucaena leucocephala*, yaweza kuwa magugu ambayo yanaweza kuleta shida katika mashamba na misitu yetu? *Leucaena* ufikiriwa kama gugu linalovamia katika nchi ishirini, na mara nyingine hutoa mimea na miti ya kiasili, jambo ambalo laweza kuwa shida kwa wanyama wanaotegemea mimea hii kama makao. Mimea mingine yenye mbao ambayo huwa magugu kama lantana na *Caesalpinia decapetala* pia yaweza kuleta shida. Ni muhimu kufikiria kama mmea utakuwa gugu lenye shida wakati unapochagua miti ya kukuza.

Miti mingine, kama mwembe na macadamia, ni chaguo zuri kwani hutupa matunda na njugu ambazo twaweza kuuza na ambazo pia hutupa chakula chenye virutubisho cha kutumika nyumbani. Aina zingine za kiasili, kama Crotom, hutupa matunda

yenye matumizi pia, ambayo yaweza kutengeza ngataa. Miti ya kiasili yaweza kuwa yenye matumizi kani inaongeza bionuwai, na hili huongeza kwa sababu huwapa nyuki wanaochavua mimea yetu na kutupa asali makao na chakula, au kwa wanyama wa pori wanaosaidia kuzuia wadudu wanaopatikana sanasana katika mashamba na ardhi isiyo na mimea tofauti. Kwa sababu imebadirika pamoja na eneo hilo, miti ya kiasili huweza kuishi, ili wakati hali ni ngumu, inatupa rasilimali iliyokaribishwa inayohitajika.

Miti bora zaidi ya kupanda yaweza pia kulingana na ni wapi tumepanga kuikuza. Miti mingine kama *Gliricidia*, ambayo yaweza kuongeza naitrojeni udongoni, yaweza kuongeza zao la mahindi inapopandwa pamoja. Mingine kama mikaratusi, hudidimiza mimea, na kwa hivyo si chaguo zuri la kupanda katika shamba tulilopanda mimea ya chakula.

Ogea na kikundi chako kidogo na wengine katika cluster yako, na ugawane uliyoona na njia bora za kufanya mambo. Ni miti gani unayopanda? Kwa nini? Katika TIST, tunasoma pamoja.

Nthingi Cluster iliyo Mbeere inaanza usindikaji wa maembe.

Umeletewa na Sarah Murugi, Mtumishi katika cluster ya TIST ya Mbeere.

Katika mikutano ya cluster yetu ya TIST ya kila mwezi, pamoja na kujadiliana kuhusu mambo tuliyoyafanya na mambo bora katika TIST, tunachukua wasaa kusoma kuhusu mambo na mafikiria mapya yanayosaidi kuboresha maisha yetu. Hivi karibuni, wanavikundi vidogo wamekuwa wakisoma kuhusu kusindika maji ya maembe. Wakulima sasa wamejua kuhusu kukata maembe, kuyakausha kutumia joto la jua kwa masaa mawili. Tuna furaha kujua jambo jipya ambalo limetuboresha: kusindika na kuhifadhi maembe ya kutumika kama chakula. Pamoja na hayo, kusindika maembe kunaturuhusu kuuza maembe tuliyohifadhi wakati maembe hayajazaliwa bei ikiwa juu. Tunataka kugawana ujuzi huu ili vikundi vyenu pia vifaidike!

Jinsi ya kutayarisha

Yaliyo hapa ni mahitaji, hatua na vifaa vinavyotakikana:

Mahitaji

a. Maembe, aina ya Ndoto ama Aple, yaliyoiva lakini yasiyo lainika

- Neti ya kukausha kwa mfano gunia la nailoni
- Maji safi

Vifaa

- Kisu kikali,
- Mifuko.

Utaratibu

- Tundika gunia la nailoni lenye upana wa fiti tatu na urefu wa fiti tano likiwa fiti moja na nusu juu ya ardhi mahali ambapo jua linalifikia.
- Tumia maji safi na yenye baridi kuosha nusu embe ili kukatakata. Yatoe maganda ya embe.
- Tumia kisu kikali kukatia maembe madogo madogo yenye ukubwa wa sarafu ya shilingi ishirini na kuyaweka katika neti ya kukausha halafu yakausha na joto la jua.
- Angalia maembe baada ya masaa mawili. Yako tayari yanapokaa kama mpira. Hifadhi katika mifuko safi au chungu au mtango safi, ufunike. Maembe haya yanaweza hifadhiwa hadi miaka miwili.



Chunga, Ugonjwa mbaya wa mahindi (Maize Lethal Necrosis)

Umeletewa na Mwangi Kimani, na kuombwa kutoka kwa KARI na CIMMYT

Maize lethal necrosis (MLN) ni ugonjwa unaosababishwa na virusi wa mahindi ambao humekuwa ukiharibu mashamba Kenya. Uliripotiwa kwanza katika nchi ya Peru mwaka 1973, na kuripotiwa mara ya kwanza katika Kenya mwezi wa tano mwaka 2011 katika jimbo la Bomet ambapo watu huuita “Koroito” kumaanisha tauni. Leo, ugonjwa huu umetambaa katika maeneo mengine ya nchi.

Ugonjwa huu unaathiri aina mbalimbali za mahindi (*Zea mays*). Unapoingia katika shamba la mahindi, unaweza kuharibu asilimia thelathini hadi mia moja ya mimea. Aina zingine zina usugu kidogo katika kukauka na wanaotengeza wanajaribu kutengeza aina bora, lakini MLN ni changamoto kubwa.

Ishara za ugonjwa huu wa Maize lethal necrosis

- Majani yanageuka na kuwa rangi ya manjano iliyo na mistari majanini. Inaweza kuanza katika majani yaliyo machanga zaidi na majani makubwa, ikitambaa kutoka ukingoni hadi kati kati ya jani.
- Ugonjwa ukikaa sana, nafaka chache za mahindi hupatikana

Jinsi ya kuzuia Maize lethal necrosis

- Panda aina nyingi za mimea. MLN huathiri mahindi pekee.
- Usipande mahindi karibu na shamba lilaloonyesha ugonjwa huu.
- Panda mahindi msimu mkuu wa mvua, badala ya wakati wa msimu mdogo wa mvua; pumziko ili kati ya mimea ya mahindi huhinikiza mzunguko wa ugonjwa huu.
- Epuka kuleta mahindi na mbplea isiyokauka kutoka kwinginepo hadi shambani mwako.
- Iwapo mahindi yako yamefikiwa na ugonjwa huu, toa mimea iliyogonjeka kutoka shambani. Unaweza kuipa mifugo majani, lakini masikio na nafaka zaweza kuwa hatari na zafaa kuchomwa.

Katika mkutano huo mwingine wa cluster yako, jadiliana na wancluster wengine kuhusu ugonjwa huu, gawana mliyoona na mkubaliane kuhusu njia ya kukabana na hatari hii.

Karama Cluster, Yazidi kukua.

Umeletewa na Jane Kagwiria

Sisi wanacluster ya Karama tunashukrani kwa kuingia TIST. Tupo mojawapo ya cluster change zaidi katika TIST leo. Mpaka sasa tunajivunia kufanikiwa sana katika cluster yetu. Kufanikiwa huku ni pamoja na:

- Vikundi vidogo hamsini na nne vimesajiriwa na sasa vinajihusisha katika mambo ya TIST.
- Asilimia themanini vimehesabiwa miti.
- Viongozi wa cluster wamechaguliwa na mikutano ya kila mwezi ya cluster inafanyika

Mafunzo tuliyopata hadi sasa ni:

- Mafunzo kuhusu kilimo hai. Wanacluster yetu wengine wamepanda kwa njia hii. Tumesoma kutokana nao kwa sababu wanapata mazao

bora kuliko waliotumia njia za kawaida.

- Vitalu vya miti. Vikundi vyetu vingi vina vitalu. Tumepanga kupanda miti mingine mingi msimu wa mvua hujao.
- Uongozi wa mzunguko na wa kiutumishi. Kwanza tulikuwa na shaka na hatukufikiri uongozi huu waweza kufanya kazi. Lakini leo, kila memba ana furaha na ameupenda uongozi huu. Tumeona vipawa vya uongozi katika watu tofauti, hata katika wale hatungepea uongozi katika uongozi wetu wa kawaida!

Tunatumaini kuendelea kufikiwa na mafunzo zaidi. Tuko tayari kuyatumia na kuboresha maisha yetu. Katika TIST, Tupo.



Kutumia meko bora ya TIST: jambo zuri kwa watu, jambo zuri kwa miti.

Umeletewa na Joseph Gituma

Mbona utumie jiko bora? Kuna faida nyingi kwa watu na kwa miti. Hapa ni faida chache:

Kwa anayetumia jiko bora:

- I. Meko bora hupunguza utumizi wa kuni. Kuni zinazotumika siku tatu katika jiko jadi zaweza kutumika wiki mzima katika jiko bora.
- II. Hupunguza gharama ya kununua kuni.
- III. Huokoa masaa yanayotumika kutafuta kuni.
- IV. stove uses one piece of wood to heat up to three pots, saving time and firewood. Jiko hutumia kuni moja kupika vyungu vitatu, kwa hivyo kuokoa wakati na kuni.
- V. Hupunguza ajali za moto, kwa sababu moto umefunikwa.
- VI. Moshi hutolewa nje ya chumba kwa kutumia chemni. Hili hupunguza shida za kiafya

zinazoambatana na moshi, kwa mfano shida za kupumua.

Kwa mazingira:

Kupungua kwa mahitaji ya kuni husaidia-

- I. Kupunguza ukataji miti.
- II. Kupunguza kuenea kwa ukavu.
- III. Huzuia uharibifu wa mafuriko ya ghafla.
- IV. Hulinda rasilimali za maji na maeneo maji yanapooanza .

Hivyo basi, ni muhimu kuuliza wajenzi wa meko katika TIST kukusaidia kujenga moja kwa gharama ya chini, mkitumia vifaa vilivyopo katika eneo lako. Pia waweza kunua jiko lililo tayari kutumika kutoka kwa TIST. Ongea na watumishi wa cluster yako ili kupata maelezo zaidi.

Kupanda miti katika maeneo kavu.

Umeletewa na Eunice Wambui

Jinsi TIST inavyoendelea kutamba katika maeneo yaliyo na uwezo mkuu na makavu, inakumbana na changamoto katika kuishi kwa miti. Katika TIST sisi huanzisha na kugawana mazoezi au njia bora za kufanya mambo, na hili limetusaidia kila wakati katika familia ya TIST kupata matokeo mazuri.

Hapa chini ni njia chache bora tunazoweza kujaribu tunapopanda miti katika maeneo kavu:

1. Uteuzi wa mahali pa kuanzisha kitalu chako. Miche itahitaji kuwekewa maji mara moja au mbili kila siku ikiwa michanga. Fikiria kuweka miche yako karibu na nyumba ili uweze kutumia maji yanayotumika nyumbani kuimwagia. Kutumia miti ya kupunguza upepo kutapunguza matumizi ya maji na itaipaa miche yako michanga kivuli.
2. Maandalizi ya mapema: Andaa mashimo ya kupanda miti mwezi mmoja kabla ya mvua kuanza ikiwezekana, shimo litapasukapasuka na ili litasaidia maji kuingia udongoni kwa urahisi kunaponyesha. Mvua wa kwanza ukishaanguka, panda miti na ujaze shimo kwanza na udongo wa juu halafu mbolea.
3. Jaribu kutumia njia za kushika maji ya mvua ili maji mengi zaidi yaweze kufikia miti. Miti pia itaweza kuishi ukiipanda karibu na maji yaliyopo kila msimu.
4. Kufunika ardhi: Funika ardhi baada ya kupanda miti. Hili litasaidia kuzuia kupotea kwa maji kwa sababu kunapunguza kubebwa kwa maji na jua. Kutumia boji kutaongeza virutubisho udongoni, lakini kufunika kwa mawe pia kwaweza kuleta

faida zingine katika maeneo yenye mawe.

5. Kilimo mseto: Tujaribu kilimo mseto. Kiwango cha kuishi cha miti iliyopandwa katika mashamba ni juu zaidi ya iliyopandwa misituni na vichakani kwa sababu itatunzwa na ipo katika udongo bora.
6. Chagua aina inayokua vizuri katika maeneo kavu. Mara nyingi miti ya kiasili iliyotoka eneo linalozingira huweza kuishi san asana. Mifano ni Melia, *Acacia seyal*, na *Muuuku (Terminalia brownii)*.
7. Linda miti iliyopo na uiruhusu kuzaa. Miti hii iliyopo ni yenye nguvu na yaweza kuishi katika misimu iliyo na ugumu tunapoilinda. Inatupa chanzo la mbegu zilizo zoea eneo hilo pamoja na kivuli na vinginevyo.
8. Vitalu vilivyoinuka vyaweza kusaidia. Tunapoanzisha vitalu hivi, tunapata miche yenye mizizi yenye nguvu kwa hivyo itaishi. Vinaweza pia kusaidia kuweka miche kwa muda mrefu zaidi katika kitalu ili iwe mikubwa na yenye nguvu. Hata hivyo, vitalu vilivyochimbiwa vyaweza kuwa chaguo nzuri kwa sababu vinafunikia miche na vinapunguza kufa. Hapa, kuwa mwangalifu na ugeuze miche kila baada ya wakati Fulani ili mizizi isimee na kuingia udongoni.

Tutumieni njia bora zaidi tulizonazo, na tutengeze na kugawana na wengine ili tuweze kufikia matokeo mengi na kusaidia TIST kukua katika maeneo yetu.

Mazingira Bora



TIST

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

Kikamba Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Caption: Cluster Servants in a recent seminar.

Nthiini:

Kunzea na kwenga kutaanisa miti kwa kwiana kuseo. Page 2

Kusakua miti miseo kwa muunda waku. Page 4

Ngwa ya Nthingini(cluster) nthini wa Mbeere nilikite nthini wa kuthia maembetanioa. Page 4

Manya, Kwina uwau wa mbemba ukwitwa “Lethal Necrosis” Page 5

Ngwataniao ya Karma, Kuendee na kwiana na vinya. Page 5

Kutumia maiko mongele useo ma Tist: Ni maseo kwa andu na nimaseo kwa miti. Page 6

Kuvanda miti isioni ila nyumu. Page 6



Kunzea na kwenga kutaanisa miti kwa kwiana kuseo.

Nthini wa Tist, nitweeyumisye kusuvia na kuvanda miti vandu va ivinda ya yinyiva myaka mingo itatu (30 years) nambee wa kumiketha. Kii nikitumi kimwe kya vata kyaile utuma mundu amba kwisilya muthemba na muvai wa miti ila ukuvanda muundani wake. Onakau kusea vamwe na kwenga nikutonya kutuma miti iseuva na yiana yina usyao museo.

Kwa vamwe, Kitumi kya kusea na kwengea miti ni kutuma imea yina onou ula waile kwa kila muti na kwa mutitu w’othe. Uu wikawa kwa kunyuva miti ila miseo nthini wa mutitu. Kwa mithemba mingi ta miti ila myumu, Mikuvulya, misanduku na minyoonyoo ila miyo minene na ikuaa mwanya munene na yi muthamba mulungalu ute mbonge. Miti niyithiawa na mawendi kivathukany’o ta ma uthei/mwanya kulingana na muthemba/ muvai wa muti, vala uvaandwa, wivandiwa ki? (wivandwa muundani na liu, niwausiiia nzeve) na nzeve ya kisio kiu, onakau mawendi amwe ma miti nimavwanene.

Kuvanda miti yina vinya, na mianie niyaile ithiwa na utaaniu wa matambya eli mainyiv. Utaaniu uyu niw’o tuthukumaa naw’o kaingi kwa miti mingi thini wa Tist ta mikuvulya na minyoonyoo, lilikana kana miti ingi niyendaa mwanya munenange ta iembe na makandania. Kunenga miti mwanya ula waile nitumaa ikwata kiw’u kya kwiana na unou wa munyanga ula waile. Miti ithengeanie ndithiawa na nthina kwa miti yiminini. Mitiyambiiia kuneneva imwe niyithiawa yi minene kwi ingi, ino niyo miti ila yaile utiwa. uisisya miti ila ukuveta niwaile usisya ila itaendee nesa na itena vinya ukavta yo utite ila ikwonana kwina nesa kwianana na utaaniu ula ukwenda kunenge miti yaku. Veta miti ila ithungity’e ila ingi.

Wamina usakua miti ila uuveta mitilile vaaya nthi vvu, itina wa syumwa kana myai itina yii noyambiie uthongooa, ndukaeke thongoo ithi syokale iteme unasyo kuma kitinani.

Nzia imwe ya mituki na yilaisi kumanya miti ila uuveta nukisisya unenene wa muti uisianisya na miti ila ya muthemba umwe ila yavandiwe ivinda yimwe. Kwiana kwa miti kwithiawa kivathukany’o kwianana na muthanga, muthemba wa muti, na kiw’u. Kwa vamwe ethiwa miti ila uvandite nimuvai umwe na niyaivinda yimwe miti ila minou na yianite mituki niyo yaile utiwa. Kingi waile usisya ni muunyi kana ngava sya muti undu siyaiikite. Miti ila Ngava syayo

yi yiulu kwi sya miti ila ingi nisyosaa kyeni kya sua kwi miti ila yinthi na kwoou miti ino ni useo ikatiwa eyo yianite. Muthya ni kana muti waile ithiwa na muthamba umwe ute na kiinyi na utemw’ou kana utena uwau . Eleelya utaaniu wa matambya eli kwa miti nikana miti ineneve na itonye kwosa nzeve itavisaa kwa wingi.

Yila usakua miti ila uutia lilikana kana miti mithemba/mivai kivathukany’o yianaa kivathukany’o. Ethiwa muti wa kiembe nukwiana vakuvi na misanduku ukeethiwa wi munini muno wasianisya na musanduku nundu misanduku yianaa na mituki kwi miembe, na kii ti kitumi kya kutila muembe usu nundu ndwianite undumwe na misanduku. Kwa w’o muembe niwavata muno kwi musanduku nundu nutunengae matunda na liu wa uta.

Ingi muembe nduthuanaa na mimea ingi muundani. Musanduku nutonya utuma mimea ingi iteka nesa muundani mavandaniw’a vamwe, ingi niuseo kulilikana uuu yila uusea na kuola miti. Kwi nzia mbingi sya utumia miti kulingana na muvai wa kila muti. Kwa ngelekany’o ethiwa wienda miti ya muunyi, miti ino niyendaa mwanya munene nikana ikwte kyeni kay sua kingi itonye kimya mbonge mbingi.

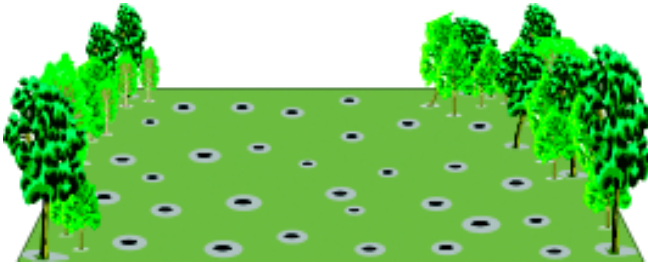
Ethiwa wienda utumia miti kusiiia nzeve, ikiithya miti isu yi musitalini imwe na ni ithengeanie kwongela uthungu.

Nzia nzeo sya kuatiia yila ukuola/kutaanisa miti.

- Eteela muti wiane utwike muima.
- Ola miti kuvika numba ila yaile kwa eka umwe. Nthini wa Tist notunyivi kuvikia kilungu kya 5% kya miti yitu itina wa myaka ikumi, Kuola miti o yianite na kuseuvya ueti.
- Kuveta miti ila miwau, iendee na kuma, yina muinyu, ikwoa kana ila itaendee nesa.
- Siia miti kwanangwa ni kiw’u kutuumana
- Tumia nzia itena uvinduku munene kuola kutuumana kwa kiw’u.
- Nzuvia mithemba ya miti
- Syaiisya uwau na tusamu tula tutonya uvithukia mutitu waku.
- Kwatana na ikundi sya silikali kuola uwau na uvithukii wa tusamu
- Siia mwaki.

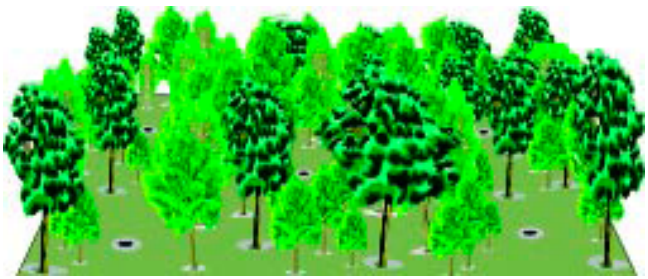


Ndukeke uu



kwenga vyu

IKA UU



ola miti ukilila.

Kusea

kwa mutitu wa kwimesya miti niyiseea. Ngava ila syi yiulu niwikaa ila syi nthi. Na yila matu ma ngava syi nthi mooma nasyo ingava iyoa na iitilika syisyoka. onakau kwisea kwa miti nokwikike isioni sya TIST, ni yithiwe yi useo mbee kwa mundu kwika kusea nundu nukwithiwe na vaita. Tuimanya kana kila muthemba wa muti niwendaa nzia yaw’o ya kusewa maundu amwe mundu aisea nimethiawa ma vwanene ta kuamua ni ukava wiva ukuma.

Miti mingi niyaile ithiwa na muthamba umwekuma muthangani. Miti yina muthamba umwe kaingi niyia naa kwa mituki na ndya tukaa kweethiwa na kilingi. Ethiwa muti wina mithamba mingi niwasakuwa, yila uunyuva ni mithamba yiva utitia kaingi niwaile unyuva ula muthathau, utena uwau na wina matu maingi na nimulungalu.

Andu aingi mesilasya niwaile utila ngava sianene na muthamba, uu tiw’o. Waile usea umite na muthambani nikana withie kitau kila watia ti kinene na novathongooe ingi. (sisya visa I). Kii kitetheeasya muti kithiwa wi muima na utekwoa.

Yila ukusea ndukethiwe na itomo. Nundu kila wasea kaingi nikitumikaa ta ngu kana liu wa indo. Yila uu ni useo, lilikana kusea nikusevasya kwiana

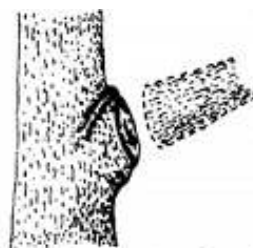
kwa muti, kuola matu na nthongoo kaingi nikutumaa thongoo isu itasyoka ingi. Miti imwe ta ya matunda niyendaa ngava mbingi nikana yithiwe na usyao mwingi.

Ngava sya miti ino nisiolawa miti yi minini kuma vaaya muthambani nikana ngava ingi ithongooe iulangu. Yila muti uu weana ngava ithi niolaa vinya wa muti uyu kwosa sua na kutuma withiwa uteanite nesa na nowikie malanga ala nimaile uvoa. Ethiwa niwaumya ngava mbingi muti uyu nutonya kwiana mbola kana ukoma . Wamina kumya ukava ndukavwike kitau kiu na kindu nikana muti uyu mumye syindu ila nthuku kitauni kiu, otondu kitau kya mundu kivoaa.

Ndukolwe kana miti nikothaa uthongooa vakuvi na kitau kiiu miti mithemba imwe niyikaa uu kaingi kwi ingi. Kaingi kuveta nthongoo ii nilaisi yila syina itheo wa mwaka umwe na kaingi isyokaa kuthongooa ingi.

Miti imwe munamuno ta ya matunda niyithiawa na usyao museo yina ngava mbingi. Yila ngava ikulwa nitilawa vakuvi na muthamba syi nini nikana itume ingi ithongooa, yila muti wa nthongooa na ngava syambiia ukwata vinya onasyo no siolwe kutuma ingi ithongoa nikana muti wiane na uu nutonya kutungiiiwa kuikiithya muti ni wathunga, lakini ni waile uekwa itau ikavoa mbee wa kuusea ingi.

Lilikana kana kwithiwa nthini wa soko wa nzeve itavisaa (carbon market) nonginya winyumye kwikalaya miti vandu va ivinda iasa to myaka miongo itatu, kusea na kumiola kwithiwa na mutitu utonya kwiyilalya na kutune vaita kwa myaka isu yukite.



Kusea nikwaile ikwa utee wa ukava uu



Kwa ukava mukw’u nikwaile ikwa uu



Kusakua miti miseo kwa muunda waku.

Kaingi nitusakuaa kuvanda mimea ila ietae usyao museo na mithemba kivathukany'o nikana ukethia ethiwa kwina munyao kana uwau, nitwaketha. Yila twavanda miti miundani, nonginya tuisisye vaita wa ivinda iasa wa kuvanda mithemba kivathukany'o ya miti.

Niwisi kana miti imwe niyia? Miti imwe ta "leucaena leucocephala", no itwike yia na noiете thina miundani na mitituni? Leuzaena niyeethiwe yi yia nthini wa nthi 20 na mavinda angi noyingvanie kwa miti yakiene na mitituni na iyithiwa nthina ona kwa nyamu ila itumiaa miti ya mititu ta mawikalo na liu. mithemba ingi ya miti ila italikaa ta yia kana itonya kuete nthina nita *Caesalpinia decapetala* na *Lantana*. Nuseo kumanya kana muti muna nowithiwe wi thina kana yia wauvanda.

Miti imwe ta iembe na makandania nomethiwe maseo nundu wa usyao woo wa matunda na mbindi ila itonya utewa na noitunenge liu museo wa utumia misiyini. Mithemba imwe ya kiene ta mbaiki

niyumasya usyao tutumiaa na mbindi syaw'o nitutonya kutumia kuseuvya mauta. Miti ya kiene noyithiwe yiyavata nundu wa utumiku kivathukany'o, na noiете vaita kwa kuseuvya wikalo na liu wa nzuki na nyamu sya kithekani. Ingi noyithiwe itonya kusiaa tusamu tula twanangaa mimea. Nundu niyithiitwe kisioni kiiu kwa ivinda iasa na ialyukite imwe nakyo kaingi miti ya kiene niyithiawa itonya kumiisya muno kundu kwina mathina na kwoou niyithiawa yaile.

Miti miseo ya kivainda ingi noiendanie na niva ikuvandwa. Miti imwe ta *Gliricidia*, ila itonya kwingela nitrogen muthangani, na ikongela usyao wa mbemba ya vandaniw'a. Ingi ta misanduku no itume mimea itina na no yithiwe itemiseo kula tuvandaa liu wa uya.

Nenania na kakundi kenyu kana ngwatanio yenyu, iulu wa nzia nzeo sya uvanda miti na ni miti yiva utonya uvanda? na niki?. Nthini wa Tist notumanyanye vamwe.

Ngwa ya Nthingini(cluster) nthini wa Mbeere nilikite nthini wa kuthia maembetanioa.

Muandiki ni Sarah Murigi, Muthukumi wa TIST Mbeere

Yila taina wumbano wa kila mwai ngwatnioni yitu nitwa neenanisye undu tutonya kuendesya Tist, nitwo saa ivinda ya kwimanyisya maw'oni meu na mawalany'o angi ma kuete uvandiliku thini wa mathayu maitu. Ivindani yitevaasa ene tukundi tunini nimethiitwe mayivundisya undu wa kuseuvya kiw'u kya maembe.

Aimi yu nimamanyite undu maembe matilawa na kuyaw'a suani kwa masaa eli. Twi na utanu kumanya nzia nzau ya kuseuvya na kwia maembe na kutumia ta liu. Kwa kwongeleela nitutonya uta maembe maitu maseuvye ivindani yila matekw'o na thooa wamo wi yiulu. Ni tukwenda kumumanyithya onenyu ngwatanio ingi iulu wa useo na vaita uyu.

Undu wa kuseuvya

li nisyo syindu ila syendekaa na matambya ma kuatiia

a. Maembe methiwe ma ndoto kana

makusingania meu lakini mate matotoku

b. Neti ya unyasya ngelekany'o Kavasania

c. Kiw'u kitheu

Miio ya utumia

a. Kavyu koi

b. Mathangu ma niloni

Nzia ya useuvya / matambya makuatiia.

a. Anika kavasania ka viti 3 uthathau na uasa wa viti 5 utaani wi iulu ta viti imwe na nyusu kuma muthangani vala ve sua nesa.

b. Tumia kiw'u kitheu na kithithu kuthambya yiembe na uiyisua.

c. Tumia kavyu koi kutilanga tulungu twiana koini ya miongo ili na uyita yila ivasaniani yisuanii

d. Syaiisya vandu va masaa ta eli. Metayali ethiwa nimoololoa ta lava. Maie mathanguni matheu ma nailoni, kana ikuuni theu na uikunika. tulungu tuu nitwiwe vandu va ivinda iasa ta myaka itatu.



Manya, Kwina uwau wa mbemba ukwitwa “Lethal Necrosis”

Na Mwangi Kimani, na uvoo kuma kwa KARI na CIMMYT

Maize Lethal Necrosis (MLN) niwau uetawe mbembani ni virus na niwithiitwe uisumbua aimi ingi nthini wa Kenya mithenyani ino. Uwauu wa mbemba wawetiwe ya mbee vyu mwakani wa 1973 kisioni kya Peru nthini wa Kenya wavikie May 2011 kisioni kya Bomet County vala ene kisio mawitaa “koroito”. Umuthi uwau uyu nuyaiikite kundu kwingi nthini wa nthi ino yitu.

Uwau uu ukwataa mithemba ya mbemba (Zea mays). Yavika muundani niwanangaa kilungu kya 30% kuvika 100% kya liu uyu. Mithemba imwe niyiyumiiasya na kukita uwau uyu onakau blight na breeders nimaendee kuthukuma vamwe kwailya mivai ya mbemba onakau uwauu wa MLN ni uito munene.

Wonany’o wa uwau uu wa MLN.

- a. Matu kwikala yelo na kwithiwa na lini sumite na thini iendete na nza kwambiia matu ala

maniini kuma itu utee kuka kati.

- b. Ila uwauu uendete muno utumaa isakwa syithiwa na mbeke nini.

Undu wa kusii MLN

- a. Kuvanda mivai kivathukany’o ya liu, tondu MLN ikwataa mbemba syoka
- b. Ndukavande mbemba vakuvi na muunda kana levu. kisio kinainauwau uu.
- c. Vanda mbemba mwambiioni wa mbua ndasa vandu va mbua nguvi nikana withie niaola kithyululu kya kwiana kwa uwau uu.
- d. Ndukaete vuu / mbolea kuma muundani ungi kana vandu vangi.
- e. Ethiwa mavemba maku nimakwatitwe ni uwau uu no unenge mavya indo indi mbivya mbindi nundu nimuisyo.

Nthini wa wumbano wenyu ula ukite ikiithya nimwaneenanisya uwau uyu na kwitikilana kuusii.

Ngwatanio ya Karma, Kuendee na kwiana na vinya.

Na Jane Kagwiria

Ithi ene ma Karama cluser twina utanu na muvea nundu wa kulika nthini wa TIST. Twi amwe kati wa ngwatanio ila syana nthini wa Tist umuthi. Mbee twina utanu nundu wa kwithiwa tuendee na mbee. Na ni kwa:-

1. Tukuni 54 nituandikithye na nituendee na uthukuma
2. 80% ya ikundi situ nimbitukithye (quantified)
3. Atongoi ma ngwatanio ni anyuve na nitwithiawa na umbano wa kila mwai.

Umanyisyo ula tukwatite nginya vau ni vamwe na:-

1. Umanyisyo iulu wa uimi wa kusuvia (CF) Aimi

amwe maitu nimatatite nzia ino na nitusomete kuma kwoo, nundu nimethiitwe na ngetha nzeo kwi ala matumiite nzia ya kitene.

2. Ivuio sya miti. Ikundi yingi situ syina ivuio sya miti na nitukwikwatya kuvanda miti ingi mingi mbua yukite.
3. Utongoi wa kithyululu. Mbeeni nitwakiaa na tuyezi kana undu uu nutonyeka. Indi umunthi kila mumemba ena utanu na niwitikilite utongoi uyu wa kithyululu. Nitwonete mautongoi kivathukany’o na inengo kuma anduni kivathukany’o ona kuma kwa ala tuteekwatasya kwithiwa matonya utongosya kwa kawaita.

Twina wikwatyo nitukuendee ukwata umanyisyo mbeange. Nitwi yumbanitye kwika kila twamanyiw’a na kwailya mathayu maitu. Nthini wa Tist Twi Vo.



Kutumia maiko mongele useo ma Tist: Ni maseo kwa andu na nimaseo kwa miti.

Na Joseph Gituma

Niki kutumia maiko mena useo mwongelelee? Ve vaita mwingi muno kwa andu na kwa miti. Vaa ve amwe kati wa vaita sya utumia maiko aya

Kwa mutumii wa yiiko:-

- i.) Ni yiola utumiku wa ngu. Ngu itonya utumika mithenya itatu kwa yiiko ya kikamba yu niutumika kyumwa kwa maiko aya mongele useo.
- ii.) Niyiolaa utumiku wa mbesa sya kuuu ngu.
- iii.) Niyisuvia ivinda yila yitumikaa kumatha ngu.
- iv.) Niyitumiaa uku umwe kuuu mbitu itatu kwoou yisuvia ivinda na ngu.

- v) Niyiolaa ivuso ithuku ya mwaki nundu mwaki nimukunike.
- vi.) Syuki niyumaalaa nza kwa mulingoti, kwoou uyithia niyasuvia uima wa mwii ta mathina ma kuveva.

Kwa mawithyululuko.

Uoleku wa utumii wa ngu nutetheeasya ku:-

- I) kuola mititu kwengwa
- ii) Kuola unyaiiku wa Mangalata
- iii) Nuolaa wanangiko ula uetawe nikiw'u kisémbete (matwiku, muthanga kukuwa)
- iv) Nisuvia w'umo wa kiw'u na mbusi.

Kwoou, ni undu wa vata kwia aseuvya ma maiko ma Tist mautetheesye kuseuvya yimwe na thooa winthi kwa syindu ila syivakuvi. Ingi no uthooe iiko iseuvye kuma kwa TIST. Neenany'a na muthukumi wa ngwatanio yenyu kwa uvoo mbeange.

Kuvanda miti isioni ila nyumu.

Na Eunice Wambui

Oundu Tist iendee kwiana isioni ila itembunu na ila mbumu, now'o kuendee kwithiwa na uito wa miti kwikala. Nthini wa Tist nitwianasya na kumanyiana iulu wa nzia nzeo, na uu nututethetye ta musyi wa Tist kukwata ueti museo.

Vaa ve nzia imwe nzeo tutonya utata kutumia tuivanda miti isioni mbumu

1. Kisio kya kivuio. kivuio nikyaile unghithwa keli kwa muthenya, Sisy wikie kivuio vakuvi vandu utonya kungithya na kiw'u kila uutumia vu musyi. Uitumia kusii nzeve niikuola utumiku wa kiw'u na uimanthia muunyi kusuvia miti isu minini.
2. Inza maima tene ta mwai umwe mbee wa mbua kwambiia, yiima yii niyikwatuka na na kutuma kiw'u kilika na nthi. itina wa mbua ya mbee kua vanda miti na uyusuya yiima na muthanga wa yiulu na vuu.
3. Tata utumie nzia ya uketha kiw'u kya mbua ta tutila na kuikiithya kiw'u nikyavikia miti. Miti ingi noyikale nakwika nesa ethiwa yandandwa vala kiw'u kisilaa.
4. Kwikia muunyi ungu kana matu. kii nikitetheeasya kwia kimeu na kuola kukuwa kwa kiw'u ni nzeve. Kutumia vuu wa yiima nikwongelelea unou wa muthanga na ingi ithiwa vai matu ona ivia noyitumike kuvwika muthanga.

5. Ingi tutate uvanda miti miundani nundu muti uvanditwe muundani withiwa na ivuso inene ya kwikala kwi ula uvanditwe kithekani nundu vaa muundani nusuvia na muthanga wavo nimuseo.
6. Nzakua mithemba ya miti ila yikaa nesa isioni nyumu kuma mawithyululukoni. Ngelekany'o ni Melia, musemei, Muuku (terminalia brownii)
7. Nzuvia miti ila yivo noimieka iendee na kuyaana. Miti ino yithiawa yi milumu na kaingi nivitukaa mawumu othe ala yeethiana namo. Yithiawa yi ya vata kunengane mbeu na ninenganae muunyi na moseo angi.
8. Ivuio syi kitandani nitethasya. Yila twavua itandani nitukwataa mbeu yina mii milumu na niyithiawa itonya kwikala na kumiisya. Ingi noitetheesye miti kwikala kivuioni ikaneneva na kwithiwa na vinya. Ingi kitanga kii ethiwa nikiliku nokisiie sua na kiw'u kuthi na mituki. Ingi ithiwa uivindua miti yikivuieni kusuvia mii ndikamee ilike na muthangani ungu na kwanangika ivinda ya kumithamya kuma kivuioni.

Ekai tutumie nzia nzeo ila twinasyo, twiane na kumanyiany'a ithyothu tuvikie ukwati museo na kutethye Tist kwiana isioni situ.

Mazingira Bora



TIST

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

Kipsigis Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Caption: Cluster Servants in a recent seminar.

Inside:

Thinning ak pruning nebo ketikuk asi ibor saidi. Page 2

Chaguanet ab ketik che kiboishen en imbarenik. Page 4

Nthingi Cluster en Mbeere kogonagta koba mango processing. Page 4

Oriben ge, Maize Lethal Necrosis. Page 5

Karama Cluster, kites eta keyechegitu. Page 5

Keboishen Cooking Stoves chebo TIST che improvenotin : Kororon en bik ak en ketik. Page 6

Minet AB'ketik en emet ne ya'mat. Page 6



Thinning ak pruning nebo ketikuk asi ibor saidi.

En TIST, kogikegonu ge' kemin ketik chebo TIST age kebogochi ketichuton koyechegitun got koiit kenysishek 30 asi gekese. Niton ne iborwech maana nebo lewenet 'ab ketik che kimine en imbarenikchok. Lakini, thinning ak pruning kootoreti ketik kogoronegitun ak kkonyor afya ne tala. En tugul, maana nebo thinning ak pruning en ketik kokotoret afya nebo age' tugul en ketik, ak afya nebo osnet kotugul. Niton kimuche keyai yon kogilewen ketik che'gororon en osnet. Chebo species che agetugul, kou, hardwood, grevillea, eucalyptus ak cheborus, ichochuton ko ketik che yechen sanasana, ne tinye age tugul stem ageng'e ne tetayat. ketik komuch kotinye mogutik che terterchin yon koit ngalek 'ab spacing, ole kiminen, ole kimindo (woodlot, nen kakimnichi kwenet en minutik, anan ko'windbreak), ak climate, lakini kisubi oratinwek alak en general.

Asi kemin ketik che kimen ago tinye afya, koyoche gikochin ketik spacing nebo 2 meters. Spacing initon konomege ak ketik chechang' chebo TIST (kou. grevillea ak cypress), lakini ibwat ile ketik alak komogchinge spacing newon (ketik cheu mango ak macadamia,). Kokochinet 'ab spacing ne kararan en ketik kotoretik icheget konyor bek ak omitwogik asi koyechegitun koit olenyounot. Yon tagomengechen ketik kimuche gikochi spacing ne korig'chige. Kotese ta ketik koyechegitun, koyechegitun alak kosir alak, chuton ketik che nyolu kekonor. Yon kiamuoni ketig che kemine keger che kororon ak angot kogigikochi spacing ne kararan. angot komogikochi spacing koyoche icheru alak en ketik che minotin.

Yon kariaamuan ketik che kiisto, itil ketichuton en ng'weny. En wikishek ak orowek che isubu tilet 'ab ketik, konome ketik chechang' korute en ngweny. Asi iter ketikchuton komorut kora keirie sprouts en ngweny'.

Oret ne nyumnyum ne kimuche kegere angot koyomege ketil ketit, iroo woindonyin ak ketik ch rubege. Yetunet 'ab ketik kotieenge ng'ung'unyek, ak bek, etc. Tugul en tugul yon bo keyit agenge ketik chebo species ageng'e, koyolu kebogochi ketik che yechen korut. Oret age negi kimuche kenaen angot kogararan ketit kegere crown nebo ketit angot komi kwenet en canopy. Ketik chemiten barak crowns en canopy level komuche konyor asista kosir chemiten ng'weny, ago imuche koyechegitun. En let, konyolu kotinye

ketik stem ageng'e, ago motinye miondo agetugul. lakini, inonito komoimaanishoni kole nyolu kicher ketik tugul che meng'echen! Nyolu iger ile kenyoru spacing nebo 2 meters en ketik tugul asi konyor ketik afya negararan.

Yon iyoe uchaguzi nebo thinning, ibwaat ile yetunet 'ab ketik kotienge species nenyin. Angot kkorutu ketit 'ab mango en ole ube ge ak ole miten eucalyptus, komuche komingin ak komochogu mango kosir eucalyptus, lakini komoiboru kole nyolu ketil anngamun mingin! Ketit 'ab mango kobo maana saidi angamun konech omitwogik ak kimuche kialden.

Mango kora kobo maana en minutik alak chemiten en imbarenik. Eucalyptus komuche koyai minutik alak chemiten imbaret komorut komye. Niton kobo maana ibwaat yon ichaguoni ketik chebo thinning.

Ketik kotinye manufaa chechang', kotienge species netinye kotabala borotet nebo carbon. Kou, imuche inyoru urwet en ketik. en yuton konyolu igochi ketik space newon asi koyechegitun ago konyor asista. Inotin koyoe ketik kosich braches che chang'.

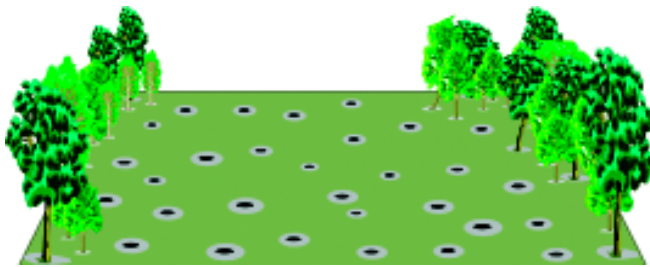
Yon imoche iboishen ketik koik windbreak, imin ketik en rowit noton ak igochi spacing ne noton, lakini min ketik en komoswek tuaan nebo imbaret asi inyoru 'windbreak' nekararan.

Che kororon yo iyoe thinning

- Chomchin ketik koyechegitun koit maturity.
- Thinen kotinyoru stocking negararan en kila acres. En TIST, kimuche kelewen 5% en ketik chechog'et, yon kagobata kenysishek 10, thinning yon tese ta koyechegitun ak kenyoru income.
- Icherun cho kigomeyo, chon miandos, chon nundos, ak chebo quality neya.
- Rib ketik komonyor shida nebo logging.
- Boishen oratinwek chebo low-impact logging yon imugogse.
- Endelesan species che terterchin en imbar.
- Rib osnet ngung komanam mianwogik anan ko insects.
- Otoretge ak agencies chebo serikali keter insect chebo osnet ak mianwigik.
- Ter maat koma nam osnet.

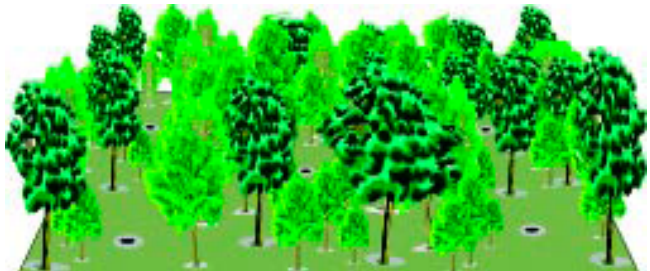


Matiyai chu:



Clear cutting

YAI KOU NI.



Chaguanet 'ab ketit agenge.

Pruning

En osnet ne natural ,koue ketik pruning icheget . Branches chemiten barak en canopy koisto branches chemiten ng'eny.Yon isto ge sogek chemiten ketit , koisto ge agichek branches . branches che kagomeyo koisto ge ichegen. Angandan imuch koyaak pruning naturally en sites chebo TIST, lakini kobo maana kora keyae pruning ak eut. Kora ketik komoche pruning che terterchin kotiyenge ak species inyinet, kisubi principles en pruning.

Ketik chechang' koyolu kotinye stem angenge en ground level. Ketik chetinye stem agenge korutu kochogu ak komanyumnyum kolul yon miten robwek. Yon kagichaguan ketit netinye stems c, when choosing which stem to keep, generally choose the largest, but make chechang' kemin ak minutik alak kiro kele tinye afya negararan, netinye sogek chechang, ne tomo konun, ak kotetayat.

Pik chechang' kobwote kole yoche ketil limbs kosibge ak Temet. Inoniton komoiman . ole kagitil koyoche perpendicular ak limb, ole monegit ak trunk. Inoniton kobose wood ne kag'iexposen , ak chomchin cells che tagorutu korut kosir ole kagitilen asikomanun ketit.

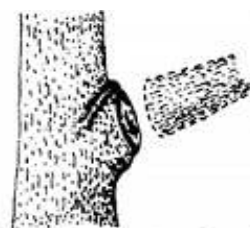
Yon kiyoe pruning, komatiigu overzealous. Trimmings chebo ketk keboishen kwenik anan ko fodder. Angandan kararan niton, ibwaat ile pruning kotoreti afya nebo ketit ak koteret ketit koyet kochok, kocherunet 'ab sogek kora kimuche keyae yon kogiisto . Ketik alak sanasana ketik 'ab ogoek kocheru rurutik chechang' yon tinye stems chechang'.

Ichochuto ketile konegit ak base nebo stemsyon tagomeng'echen asigoyechegitun asigo chomchi koyechegitun .Angot ichure che chang', komoyetu ketit komye anan ogot kome. Yon kericheru limb en ketit, ibagach komosoton kotilat. Matituch komosoton ak muanik , asikoisto ketit tugun che yachen che imuch komiten en moet noton.

Ibwaat ile ketik kocheru shots che imbya en ole kakitilen en thinning anan ko pruning. Species alak koyoe chuton kosir alak . ichochu koroisi kocherunet angamun kiisto kityo en ole karutunen. Shoots che kageisto komorutu.

En ketik alak ,sanasana en logoek , kocheru rurutik chechang' yon tinye branches che chang'. Ichochu ketile en ye negit ak ng'weny.Yon kagocher ketit shoots alak kimuche kora ketil chutona asi koyet ketit kochok. Kasi niton kimuche kigetchi asi kosich ketit ki ne kaige osnet, akini ibwaat ibagaach orawet agenge anan ko oeng yon iyoe trimmings asi kosigchi ketit kosob .

Ibwaat ile asi ketestech en carbon market, koyoche kegonun ge kerib ketik en kenysishek che mong'ering. Yoche kebogochin ketik korut en kenysishek chemorugunen 30, thinning ak pruning asi kicherun ,osnoshek cheribogsek chegonech manufaa en kenysishek che isubu.



Pruning cuts should be made just outside the branch collar.



On a dead branch that has a collar of live wood, the final cut should be made just beyond the outer edge of the collar



Chaguanet ab ketik che kiboishen en imbarenik.

Kogi' temik ,kimuche kebang'an komye ole kimindoi minutik en season age tugul. sanasana, kechaguani minutik che kigogonech rurutik en kenyishek che kigobata, ak minutik alak che'terterchin, asi angot komiten asista ,kimuche kora kenyorun rurutik.Yon kagimin ketik en imbarenikchok, kobo maana keger manufaa nebo ketichuton en kasarta negoi en ketik che terterchin.

Kiingen ile : ketik alak komuche ko chemasai? Ketik cheu *Leucaena leucocephala*, komuche koik chemasai che konu asenet en imbarenikchok ak en osnoshek? *Leucaena* kite kele kogoik chemasai nekigoitchi emotinwek chesire 20, ak en saaishek alak komuche koyechegitun kosir ketik anan ko minutik che kikakimin en ta, ne en let koigu shida en minutikchok anan ko ketikchok. Ketik alak che imuche koik chemasai ko, lantana ak *Caesalpinia decapetala* che imuche kora kokon shida. Niton amaune asikoyoche keker angot koigu ketik chemasai kotomo kemin.

Ketik alak cheu mango ak macadamia, komuche koig chaguo nekararan angamun konech logoek ak nuts che kimuche kealden , ak kora chegonu ,

omitwogik chebo korigchok.species alak che indigenous, cheu *Croton*, kogonech logoek,ak kora kimuche keboishen koik kwenik. Ketik che Indigenous kobo maana angamun tese biodiversity en koretnyon, ago niton kobo maana angamun imuch koig korig 'ab segemik che toreti en pollination ak kogonech kumyat, ana ko en tyongik 'ab timin cheimuche kotoret koter pest en ole machang' minutik che terterchin ak landscapes. Angamun kigoevolven en emetnyon, ketik che indigenous kosobtos ogot en conditions che yachen, asi yon yachen conditions en emet kotorettech ketichuton.

Kora ketik chekimine koamuoni ole kemin ketichoton. Ketik cheu , *Gliricidia*, che imuche koes nitrogen en ng'ungunyek , komuche kotes rurutik chebo bandek yon kagimin ak bandek. Alak cheu eucalyptus, kotere minutik komoyechegitun, so ingunon komogororon kemin ak minutik alak.

Ongalal ak membaek alak chebo groupit ak chebo cluster, ak obchei gerutik ak experience cheotinye agobo practice ichuton .ketik achon che omina? ene? En TIST, kinetege tugul.

Nthingi Cluster en Mbeere kogonagta koba mango processing.

Kosire inendet by Sarah Murugi, Mbeere TIST Cluster Servant.

En tuyet nyon nebo cluster negogobata , kobota discussion negigitinye nebo bandap ta en TIST, keibe kasarta kinetege agobo tuguk che kigetou en cluster neyonet.komolo, Groupishek che meng'echen kogotagonetege agobo ole kimuche kechopto juice chebo mango.

Kokonetege temik agobo chippings chebo mango, kayamsiet 'ab logoyat keboishen asista en saaishek oeng'. Kiboiboi kinetege practice ne imbya nebo value addition: processing RIBET 'AB mangos asikobunchin omitwogik. Kora processing nebo mango kotorettech konyorun robinik yon miten barak beit. Kimoche kebcheiten ngalechuton asi konai groupishek tugul!

Ole kichopto.

Ichochu ko mogutik, ak oratinwek ak materials chekimogchinge:

mogutik

- a. *Mango fruits, variety local Ndoto anan ko Apple*

- b. *Netit nebo , kou kinuet 'ab nylon*
- c. *Bek che tililen.*

Materials / tools

- a. *Rotwet ne ngatib.*
- b. *Poly bags.*

Oret

- a. *Ngobun kinuet neten 3ft wide by 5ft en koindo en 1 1/2ft en ngweny ole itchin asista.*
- b. *Boishen bek chetillilen ak kokoitit iunen mango fruit nebo chipping . isten barak en mango.*
- c. *Boishen rotwet ne ngatib iyaen chip neten 20shs. Nebo mango agityo iyamsi en asista.*
- d. *Ker ile kerib chips en saishak oeng.Yon kagoige rubber kogakochobok. Konor en bagit ne tilil, anan ko pots che tililen. Chips kimuche kegonor en kenyishek che ite oeng'.*



Oriben ge, Maize Lethal Necrosis.

Kosire inendet Mwangi Kimani, and adapted from KARI and CIMMYT

Maize lethal necrosis (MLN) ko miondo nebo bandek ne viral ne kogotar bandek en imbarenik chechang' en kenya. Kiginyoru neta en Peru en kenyit 'ab 1973, ak kereporten neta en Kenya arawet 'ab May 2011 en Bomet County ole kuren bik 'ab komosoton "Koroito," ne maanishoni plague. Raani, kogoit mionoton komoswek alak chebo emet.

Mionotong konome bandek che terterchin (*Zea mays*). Yon kanam imbarenik 'ab bandek, komuche kobar 30%-100% chebo bandek. Alak en bandek komuche komabar mianiton, ago tese ta koimproveni bandek breeders lakini MLN ko miondo ne hatari.

Signs chebo Maize lethal necrosis

- a. Wologse sogek kotolelyonegitun ak kosich stripes. Inoni komuch konaam ak sogek che meng'echen, ak sogek che yechen, ago inogto kowendi kwenitit 'ab sokyot.
- b. Yon kogoit mionoton ole kogoet, komoicheru rurutik bandyat.

Ole kiterto Maize lethal necrosis

- a. Wal minutik che imine en imbarenikkuk. Maize lethal necrosis konome bandek icheken.
- b. Matimin bandek en ole negit ak ole miten bandek che tinye mionoton.
- c. Min bandek yon kagonaam koit robwek, kosir yon miten robta ne terter; inoniton kobchee cycle nebo mionoton.
- d. Matiibu mbolea en imbarenik mionoton.
- e. Angot konam mionoton bandekguk, icheru bandek che kogonaam mionoton kotomo kospreaden. Imuche ibaen sogek tuga lakini grains komuche koig asenet angot kiaam.

En tuyetngwong' ne isubu nebo Cluster, ongalalen ak membaek agobo mioniton, obchei experience ne otinye agobo mioniton.

Karama Cluster, kites eta keyechegitu.

By Jane Kagwiria

Echek membaek 'ab Karama Cluster kemwoe kongoi angamun kigichutu TIST. Botech Clusters che tagomeng'echen en in TIST raaini. Agoi raaini kiboiboi en maendeleo che kigeyai en Cluster nenyonet. Tuguk cheu:

- 1. Groupishek che meng'echen 54 chegikeregisteren en cluster nenyonet ago tugul koyoe kasit komye.
- 2. 80% chebo groupishek chigitinye, kokige quantifyen.
- 3. Kigelewen kondoik chebo clusters ago tese ta tuyoshek chebo Cluster en kila arawet.

Trainings che kigenyuru ogoi inguni ko cheu:

- 1. Trainings chetinye ge ak Conservation Farming. Alak en membaekchok kogonetge agobo practice initon. Kikinetge en yoton angamun siche ichaget rurutik che chang' kosir

cheboishen conventional methods.

- 2. Nurseries chebo ketik. kokochoob groupishek che chang' petishek chebo ketik. Kimong'u kemin ketik che chang' en orowek che isubu chebo robwek.
- 3. Rotational ak Servant leadership. En ta kogikibwote kele moboishe oratinwechuton. lakini en raini kogikiyan keyai kou noton, Boiboi membaek tugul ak kigoyan Rotational ak servant leadership. Kigiro kandoinatet ne terterchin ak zawadishek che tereterechin koyobu bik che terterchin, ogot koyob bik che kimogitichin kogonech kandoinatoshek en oratinwek chombo kila!

Kimongu kile tage nyoru trainings chechang'. Kitayari kenyorun maisha ne walat. En TIST, kogi echek.



Keboishen Cooking Stoves chebo TIST che improvenotin : Kororon en bik ak en ketik.

By Joseph Gituma

Ene asi iboishen stove che improvenotin? Tinye manufaa che chang' en bik ak en ketik. Ichochu ko alak en manufaa ichoton;

En chi neboishen stove initon:

- I. Stoves che improvenotin kobose kwenik . kwenik che kiboishen en betushek somok yon kiboishen stovit nombo kawaida, keboishen en weekit en stove ne improved .
- II. Bose alaet 'ab kwenik.
- III. Bose saishhek che kiboishen en cheng'et 'ab kwenik.
- IV. Stove inoton koboishen kwendet agenge koyo chebung'ushek somok.
- V. Bose ajalishhek chebo maat, angamun tuchot maat.
- VI. Iyet koisto chimnit nemiten en stove inoton.

Inoniton kobose mionwokik che tinyege ak iyet cheu mionwokik 'ab teget.

En emet nyon:

Yon kagobosok maget 'ab kwenik -

- I. Kobose tilet 'ab osnoshek.
- II. Kobose churatet en imbarenik.
- III. Kobose flooding yon koet robta.
- IV. Kora koter ole yobu bek 'ab oinoshek.

Ingunon kobo maana keteb kegonech stove builders chebo TIST asi kotoretech ketech ageng'e en beit nemiten ng'weny, keboishen tuguk che kitinye en karibu. Kora imuche l'al stoves che chobotin en TIST .onglolchinen ak Cluster Servants asi kogonin maelekezo.

Minet AB'ketik en emet ne ya'mat.

By Eunice Wambui

Kotese ta TIST kotese tai en ole yamaat ak ole moginyorunen bek, Kiger komi yomutyet en sobet 'ab ketik. En TIST Kogibche kila ak kila practices che impya, ak kigo torettech niton en family nenyon neboTIST kenyorun wolutik cheyachen.

Che isubu ko oratinwek che kimuche keboishen en emotinwek che yomyotin:

1. Lewenet 'ab ole ichoben nursery neng'unget ko kit nebo maana. Seedlings koyoche kinde bek yon kagemin. Imuche imin seedlings en ole negit ak kaa asi konyumnyumit kondeet 'ab bek. Kora kimuche iboishen windbreak en kaa koter korito komabar seedlings.
2. Preparation ne taa: Chob keringoik 'ab ketik en arawet ageng'e kotomo koit robwek, Toret inoniton keringoik kochut pek . Yon kagoit robta neta imin ketik .Min ketik ak ikonaam ngungunyek chebo barak kosibu mbolea.
3. Yom iboishen oret 'ab harvesting bek 'ab robta, kou negarims ak micro-basins, Asi koitchi ketik beek chechang'. Kora ketik kosobtos zaidi en ole neg'it ak bek.
4. Mulching: mulchen ketik yon karimiin . inoniton kobose komoib asista anan ko koristo, beek . Kora yon kogiboishen mbolea che compost kotese rurutik, Lakini en ole miten koik kimuche keboishen rock mulching .
5. Agro forestry: ongeyom kinetge , ak keyai agro forestry . Ketik che kagimin en imbarenik

kotinye nafasi newon koechegitun kosir che minotin en ole miten osnoshek ak suswek angamun riboksek komye ago nyoru ng'ung'unyek che kororon.

6. Chaguan species cherutu en korotinwek che yomyotin. Sanasan ketik chebo komosoton che indeginous ko choton che yechegitun kosir igo. Ketik cheu Melia, *Acacia seyal*, ak *Muuuku (Terminalia brownii)*.
7. Rib ketik che miten en inguni ak itoret icheget koregenereten . Ketichuton kogimen , ago ichek komuche kosobcho ogot en betushek che momiten robwek. Konu ichek seeds che kimuche kenyor en oret ne nyumnyum ak uronok.
8. Raised seedbeds anan ko sunken seedbeds komuche kotoret. Yon kogichob seedbed ne kitogos , kenyoru seedlings che kimen , so ingunon kosobtos. Kora kotoreti seedlings koyechegitun en petit agoik che kimen . lakini seedbed ne sunken komuche kora kogararan angamun tere asista komabar seedlings . En komositon ibwaat iwisowisi seedlings asi mochut tigitik ngweny, tun kowe chok yon kisibto.

Ongeboishen practice che kitinye, ak keendelezan oratinwechuton asi kenyorun rurutik ak koyet TIST en komoswechok.