April 2014 Newsletter *Not for sale*

Mazingira Bora

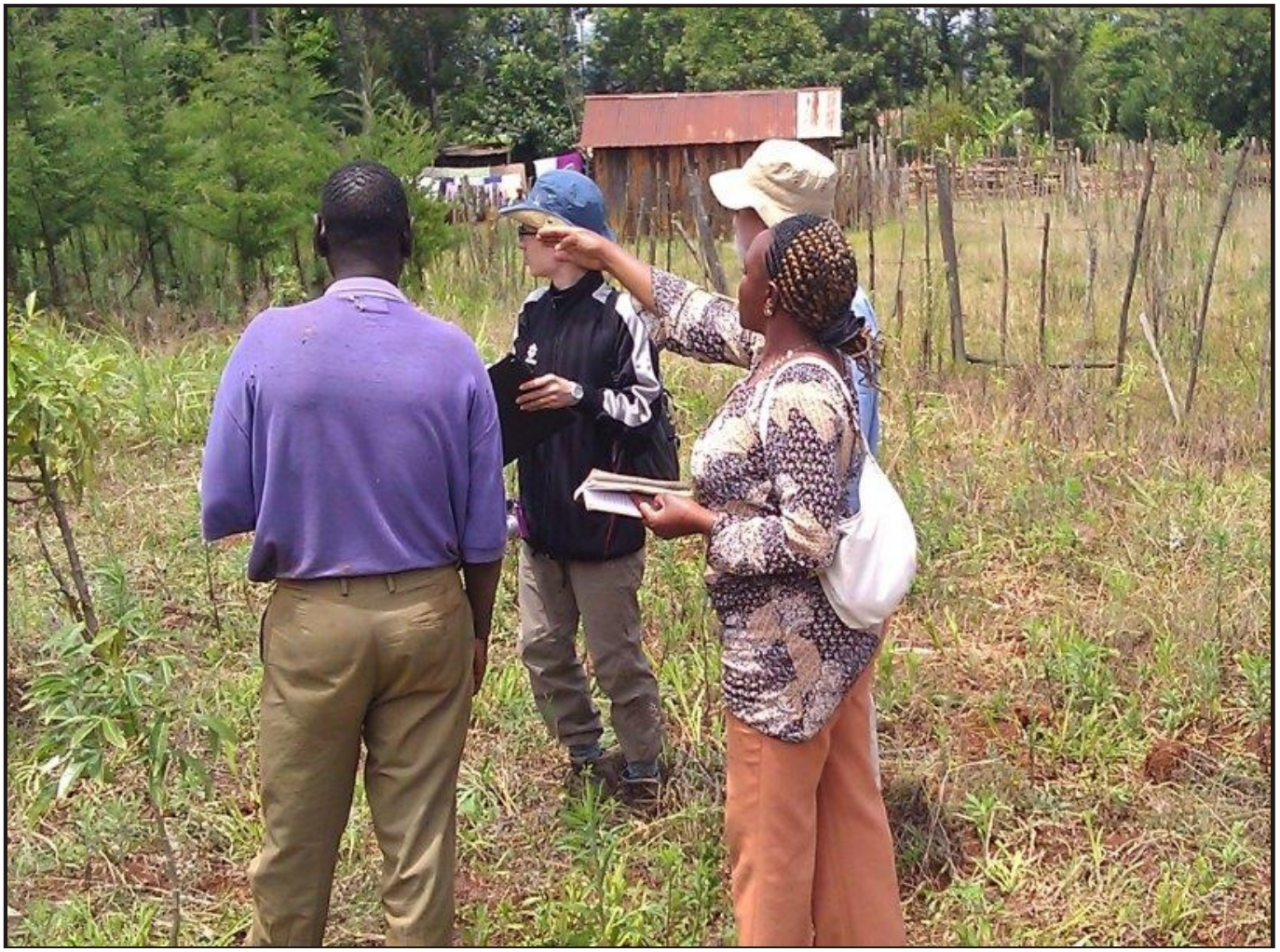
TIST

The International Small Group & Tree Planting Program

www.tist.org

English Version

An Environmental, Sustainable Development and Community Forestry Program.



Patricia Wachuka, TIST Quantifiers together with TIST farmer and Verifier auditing the tree groves during the recent Verification exercise.

Inside:

Published by TIST-Kenya. Web: www.tist.org Email: martinweru@tist.org Tel: 0722 - 846 501

Sustainable Agriculture: Agroforestry.

An important topic for sustainable agriculture is agroforestry.

Definition: Growing trees and shrubs together with agricultural crops or livestock.

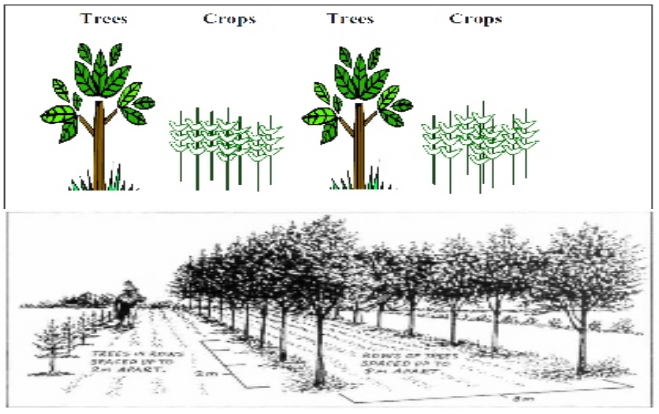
The overall aim of agroforestry is to increase the productivity of the land through the use of trees. Trees have many benefits for the farmer:

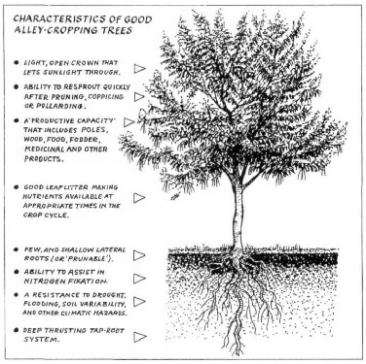
- Building material
- Fuel wood
- Fruits and other food
- Fodder
- Soil stabilization
- Soil fertility
- Moisture retention
- Wind shelter
- Marking of boundaries
- Medicine
- Cash income
- Reduced erosion (if a layer of litter/mulch is kept)

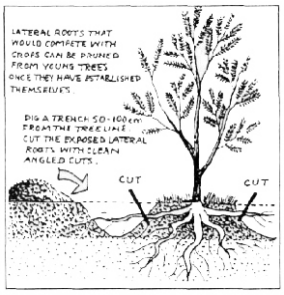
Agroforestry practices: There are many different techniques and new methods are being discovered all the time. Some techniques are successful in one place and a disaster in others. People need to try different techniques and share the best practices in the training meetings. The following are some common methods of agro-forestry:

1. Hedges: This involves selecting a tree species which can be placed in a line and which have benefits for the land. Hedges require little space, control erosion, and can produce leaves for fodder or mulch. An example of hedging is to plant a row of trees around the field boundary.
Recommended spacing is around 1.5 - 2m. The best design includes a mixture of tall and short trees.
e.g. *Croton megalocarpus planted with Euphorbia tirucalli and/or Lantana camara*.

2. Alley cropping: This involves establishing trees at very narrow spacing (0.5-2m) in rows along fields. There may be a tree row, then two or three rows of crops, then another tree row, then crops etc. An example of this is planting alternating rows of maize with leucaena, or coffee and bananas.
The most suitable trees are leguminous ones (ones that fix nitrogen for the soil). Spacing between rows of trees should not be more than 5-8m. The tree rows need to be weeded and pruned regularly. The trees cannot grow too tall otherwise they will compete with the crops for soil nutrients and light. The pruned leaves can be added to the soil to improve the soil fertility. So these trees will not be suitable for TIST payments, as they have to be kept short, but they will improve the agricultural land and provide many other benefits to the farmer.
Some good alley cropping trees have the ability to re-grow after they have been cut. This means they can be cut every crop season so that they do not grow too big and compete too much with the crops. This practice is called coppicing, and only works with some species. Some commonly coppiced species are *Calliandra calothyrsus, Cassia siamea, Cassia spectabilis, Eucalyptus spp., Leucaena leucocephala, Markhamia lutea.* Some species coppice well when they are young but may not coppice when they are mature e.g. *Casuarina spp., Grevillea robusta, Sesbania sesban* and some *Albizia* spp.



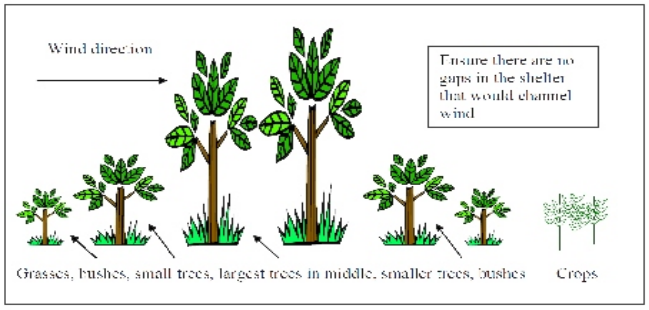


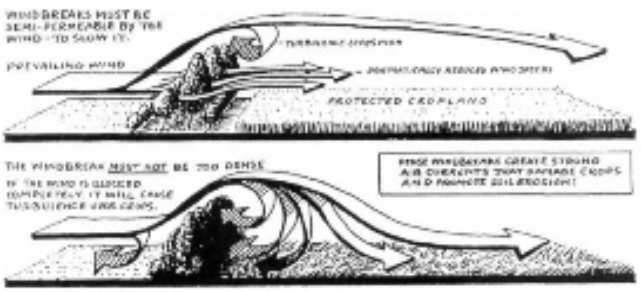


Have any farmers used this method of planting trees and crops together? If so, what were suitable combinations? Ask them to share their experiences and bring the information to the next training session.

Maybe farmers could try just a few rows of trees in their fields. Then they can see the results. If the results are good the number of tree rows can be increased next season.

3. Windbreak: Planting wide strips of trees to provide a windbreak. This then protects crops from the oncoming wind. Plant large trees in the center, smaller trees for the next two rows and low shrubs, bushes and grasses on the outside. Plant at right angles to the prevailing wind. Spacing within the lines of trees can be 4-5 m with 2-4 m between the lines.





The advantage of windbreaks is that the farmer does not have to sacrifice an entire plot of land for trees. It only takes a strip of land, and the benefits can improve yields by 30% in some areas. Note that poorly planned windbreaks can damage crops more because it can channel the wind through gaps. Find someone experienced in this to help you design your windbreak.

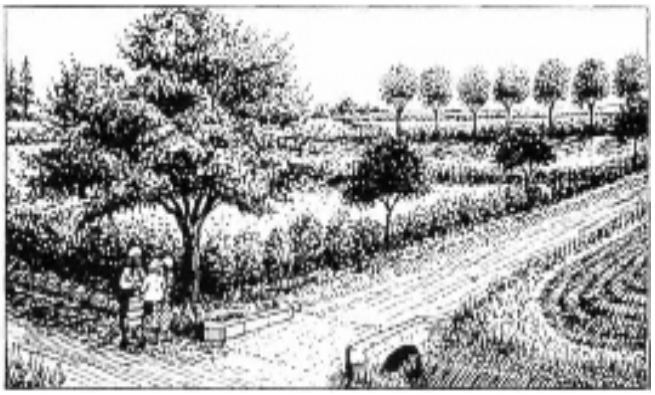
4. Fallow cropping: This is where farmers stop growing crops on a piece of land and let trees take over to help restore soil fertility. Mostly nitrogen-fixing shrubs are chosen e.g. Sesbania spp. and Gliricidia sepium.

5. Inter-cropping: This involves wide and even spacing of trees among food crops. Good trees are those that have light canopies and fix nitrogen. More on this in the next unit.

6. Grazing area improvement: Managing trees on grazing land to provide wood and fodder. For example, in arid and semi-arid lands, consider Acacia tortilis or some of the following: *Salvadora persica, Cordia sinensis, Acacia eliator, Ziziphus mauritiana, Acacia albida, Acacia nubica, Acacia Senegal, Hyphaene compressa.*
In higher potential areas, depending on the altitude, consider *Leucaena leucocephala, Sesbania sesban, Calliandra calothyrsus and Leucaena diversifolia.*
Consider supplementary feeding using leaves (15-20% of the feed) during the dry season for your animals.

7. Woodlots: Small woodlots can be grown on unused or unproductive land, e.g. woodlots planted on stony outcrops or in gullies. Woodlots can also be planted on cropland to serve as a windbreak, or they can be planted on fallow land.

8. Marking boundaries e.g. *Croton megalocarpus and Commiphora zimmermannii subsp.*



Trainers, note that TIST trees have to be correctly spaced in order to grow fully and remain in the ground long-term. Some of the above agro-forestry methods are best practices for agriculture, but may not qualify for TIST tree payments.

Other ideas to consider for certain ecological zones in Kenya.

Higher altitude slopes with acidic soils (e.g. areas where tea grows well)

Consider *Calliandra calothyrsus and Morus alba* for fodder production.

Consider boundary planting and windbreaks with *Croton megalocarpus, Grevillea robusta* , *Casuarina cunninghamiana, Millettia dura, Hakea saligna.*

Consider orchards for temperate fruits (e.g. *plums, peaches, pears*).

Lower altitude slopes (e.g. *where coffee grows well*) Consider Jacaranda mimosifolia for boundary planting.

Consider *Syzygium spp.* for windbreaks and planting along water courses.

Consider fruit trees such as *Cyphomandra betacea* (tree tomato), *Persea americana*(avocado), *Macadamia tetraphylla* (macadamia), *Passiflora edulis* (passion fruit), *Casimiroa.*

Edulis (white sapota), Annona senegalensis (custard apple), Psidium guajava (guava), Eriobotrya japonica (loquat).

Calliandra, Morus alba, Grevillea and Markhamia lutea are good options for planting on areas you want to control for soil erosion (soil conservation structures).

Grevillea is a good shade tree for coffee.

High altitude plains, with gentle sloping land and scarce numbers of trees:

Consider windbreaks to protect crops, boundary planting and live fences e.g. *Acacia mearnsii, Grevillea robusta, Hakea saligna, Croton macrostachyus, Dombeya spp., Dodonaea angustifolia, Casuarina cunningharniana, and Dovyalis caffra.* Some temperate fruit trees may do well.

Rift valley maize and dairy system.
Since maize does not do well in shade, consider small woodlots or windbreaks, or trees planted on soil conservation structures e.g. *Grevillea robusta, Sesbania spp., Croton macrostachyus, Croton megalocarpus, Acacia abyssinica, Eucalyptus spp., Acacia mearnsii, Casuarina cunninghamiana, Dovyalis caffra, Markhamia lutea, Cordia abyssinica.*

Reminder
Do remember that whilst planting trees brings many benefits you need to research the best types for your specific land type. Remember that trees compete with crops for water, and some crops do not like a lot of shade, for example. Get information from your nearby small groups and your extension workers.

- Particularly get advice on suitable trees with deep roots and fewer surface roots (these trees are beneficial in agroforestry since surface roots compete with crops). Casuarina spp., Leucaena leucocephala, Cupressus lusitanica, and Sesbania sesbanhave shalloe root systems and may be better for stabilising soil on conservation areas. Eucalyptus spp. and Gmelina arborea can produce compounds which inhibit crop growth.

- Intercropping may not work very well in areas receiving less than 800mm rainfall annually.

Resources:
There is a very useful website giving details on suitable trees for agroforestry in Kenya. You can search for details on specific trees. Available here: http://agroforesttrees.cisat.jmu.edu/

Videos
'Grevillea agroforestry' (6:26) introduces the many benefits of grevillea within farming systems. It explains some of the management procedures such as pollarding and coppicing.
http://www.accessagriculture.org/node/895/en

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NEMA (1998) Caring for our environment: A handbook for local leaders. National Environment Management Authority, Kampala.

Tengnäs B (1994) Agroforestry Extension Manual for Kenya. International Centre for Research in Agroforestry: Nairobi.

Sustainable Agriculture: Weeding & Post-Harvest Reminder

Weeding

Weeding is important for these reasons:

1. Your crops need water, soil nutrients and light to grow strong. If there are weeds they will compete with your crops for these things. The weeds will use the soil nutrients and water that your crops need. The result is that your crops will be weaker and may not survive.

2. If your area is not weeded there will be more pests attracted to the area. Pests can damage and kill your crops. The fewer weeds there are, the less chance there will be of snakes and insects.

Here are some of the advantages of weeding your fields:

- Crops grow faster because weeds don't take the nutrients and water from the soil
- Crops will become stronger and grow taller in a shorter period of time
- Crops can get the sunlight they need unhindered
- Crops are not exposed to as many diseases
- Crops are more protected from a fire spreading
- Clean fields indicate that small groups are maintaining them and are good examples of the TIST program. This will attract people to come and see your work.

Post-Harvest Reminder

- Do not let your animals eat the crop remainder like maize and millet stalks, beans, legume leaves, groundnut leaves etc. Also do not burn the remainders. Instead you should collect them and store them in a safe place where they won't be disturbed by animals or fire. This is so that you can use the crop remainders to make compost manure, a very effective natural fertilizer. Details about how to make compost manure are given in unit on soil fertility, and could be taught now as well.
- If you have excess crop remainders leave them on the fields so that there is a covering over the field. The crop remains will rot down returning many good nutrients to the soil preparing and enriching it for the next planting season.
- If you had conservation farming holes this year, do not close them up but leave them open ready for next planting season. The more years you do conservation farming in your fields the better the soil will become and the more harvest you will get (and even better if you can rotate the crops you put into that field).
- Once you have weeded the area make sure you remove the weeds from the field. If you leave the dead weeds by the crops they may still attract pests and diseases that can damage your crop.

We are Accurate, Honest, and Mutually Accountable: Keeping trees for Long-term Makes TIST Sustainable.

Working together in TIST, we have accomplished great things. Today, there are more than 6.6 million trees growing because of our efforts. For TIST to be truly sustainable and help members earn extra income from the carbon sale, it is important that we all adhere to TIST Values. Majority of TIST Farmers are keeping their word on the terms signed on the Green House Gas agreement when they joined TIST.

However, we have a few farmers who are going against this agreement. Whereas TIST allows sustainable thinning of trees, and 10% harvest of the Small Group's trees when they are 10 years or older, some farmers are clear-cutting all their trees. This practice not only harms our environment, but also hurts other TIST farmers in the carbon business. During a recent Verification, the Independent Auditors raised serious concerns on the farmers who have clear-cut their trees. Such practices raise the risk buffer making significant amounts of carbon sequestered by other farmers not available to be sold.

It is important to note, while such farmers cut their trees for sale, thereby earning income, farmers who continue to participate in TIST and the global carbon market have their carbon income negatively affected.

TIST is therefore proposing that any farmers who clear-cut their trees for sale, she/he should refund 12.5% their gross sales of the tree products. One third of this amount shall be shared with the Cluster where the member belongs to help the Cluster recover from the loss of trees. One third should go to TIST to offset some of the expenses incurred while serving such a group through quantification, training, and MB. The remaining third should be shared with CAAC to offset Validation and Verification costs among other costs.

TIST is encouraging Clusters to discuss this proposal in their next meeting. Their leaders should communicate the names of Small Groups where large amount of trees have been clear-cut to any member of the OLC or to the Cluster Servants.

From Right to Left: Yuguchi T. (JACO-CDM Verifier), Fukuda T. (JACO - CDM Verifier), Charlie Williams (CAAC), Josephine Mwangi (TIST Quantifier), Martin Weru (TIST Auditor) during Verification exercise in February 2014.

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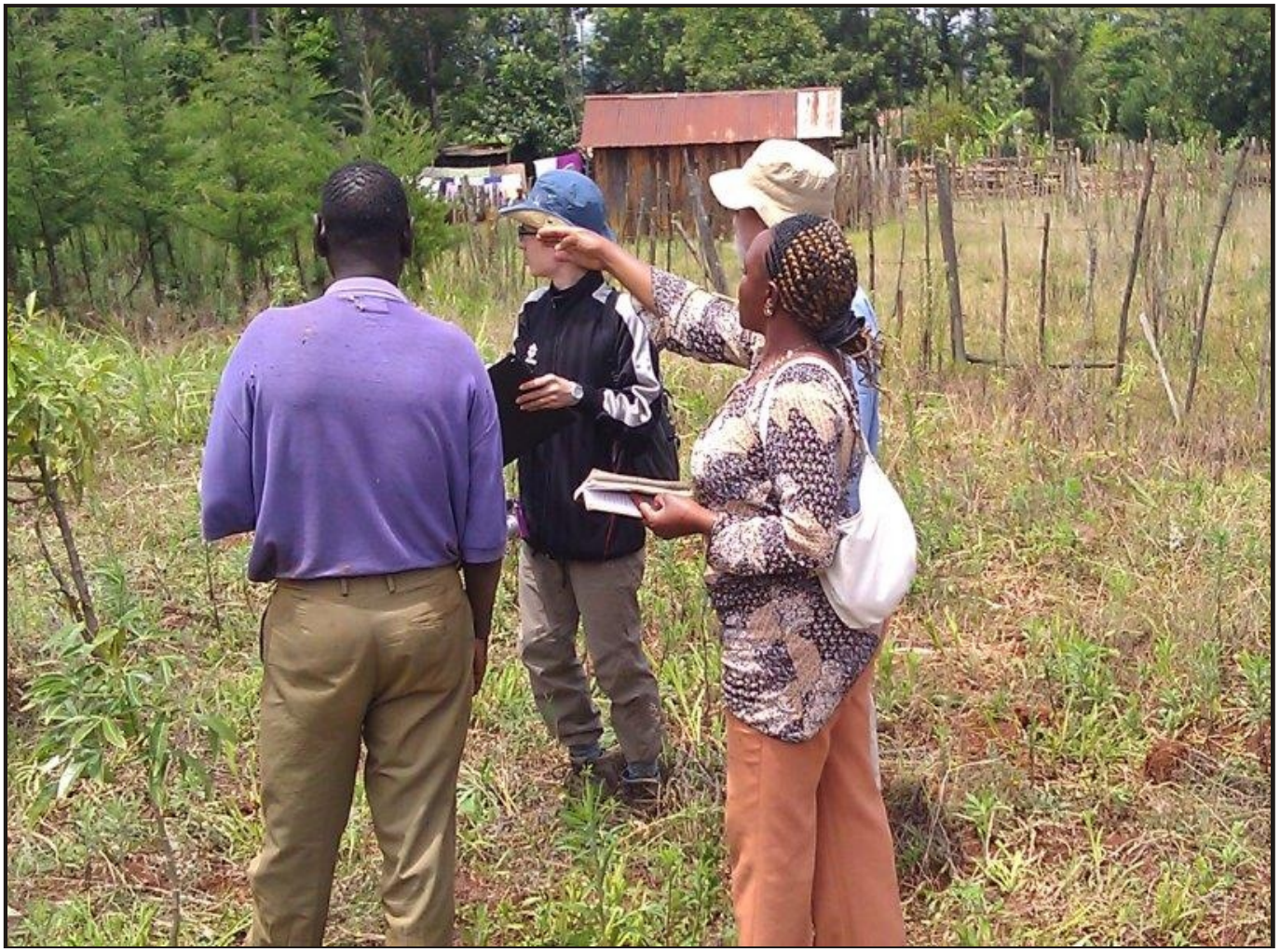

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Urimi bwa Kungaania miiti na Imera Bingi.

Nteto cia gitumi iguru ria urimi bwa gitegemea bwa kungania miti na imera.

Maana: Gukuria miti amwe na imera bingi bia muunda.

Mworoto jwa kwaanda miti amwe na imera bingi ni gutetheria maciaro ja miunda jongerekete niuntu bwa gutumira miiti.Miiti iji iri na gitumi gikinene kiri murimi. Itumi bimwe ni:

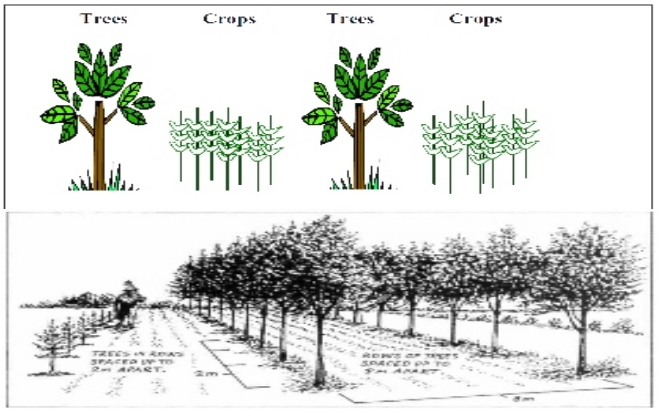
- Mbao cia gwaka nyomba
- Nku
- Matunda na biakuria bingi
- Iria ria ndithia
- Kurigiria muthetu jutigetithue ni ruuji
- Kwongera unoru bwa muthetu
- Kwongera ruuji muthetune
- Kurigiria ruuo rurwingi
- Gwita mianka ya miunda
- Ndawa cia mithemba imingi
- Kureta Mbeca
- Kirugiria muthetu gwita na ruuji

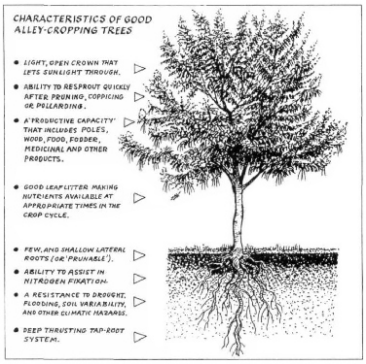
Kurima gwa kungania Imera na miiti: Kuri na njira inyingi na ingi injeru iria ikwenderea kumenyekana o igita na igita. Njira imwe ni injega gitumirwa na ingi ni inthuku.Antu ni babwiri kugeria njira mwanya mwanya na kwirana iria njega nkuruki ya iria ingi igita ria micemanio ya kuritanwa.. Aja nandi ni ni njira iria itumagirwa mono mono kiri urimi bwa kungania imera na miiti.

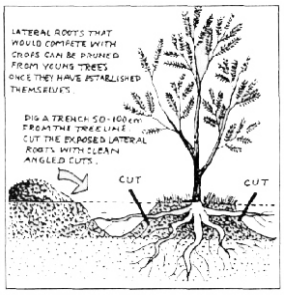
1. Mianka ya miti: Iji ni njira ya kwaanda miti itaari na muraini. Mianka iji itiendaga kaanya gakanene gati gati ka miiti na ni itethagiria kurigiria mono muthetu gukamatwa ni ruuji. Miti iji ni imiega ya gutwira iria ria ndithia kana mati ja gukunikira imeera bia kumiithia. Kionekaria gikiega ni kwaanda miiti ithiurukirite mwanka jwa muunda kana kieni. Watho bwa kwaanda ni mita imwe na nusu mwanka ijiri(1.5M – 2m). Mwaandire juria mwega ni kuungania miiti imiraaja na imikui

tirucalli amwe na kana na Lantana camara

2. Kwaanda na Mistari: Iji ni njira ya kwaanda miti na twaanya tutuceke mono.Twanya ja twa nusu mita (0.5 – 2M) na mistari gati gati ka mistaari iri kana ithatu ya imera na gwita na mbeere muundeene junthe. Biria bibujanagira mono na njira iji ni imera ja mpempe amwe na Leucaena kana kauwa na marigu. Miiti iria miega mono ya urimi bubu ni iria iretaga riera ririega mithetune. Mianya gatigati ga mistaari iji ni kuuma mita ithano mwanka inyanya (5-8) na igakurikia kithimi kiu. Miiti iji nibwiri kurimirwa na gwitwa sakasi ogita na igita. Miiti iji itibwiri kurekerua irea mono nontu igashindana na imera bingi na bitikura bwega ikwaga biakuria muthetune na weru bwa kungana. Mabura jaria jaiti sakasi nijatethagia kwongera unoru muthetune. Niuntu bwa untu bubu, miti iji itiumba kuriwa ni TIST niuntu no mwanka igitwe ikare iri imikui. Amwe na buu miti iji ni itenthagiria kunoria mithetu ya muunda na kwongera mantu jangi jamega kiri murimi.Miti imwe iria itumagirwa kiri urimi bubu ni kuraga bwega kinya nyuma ya gutemwa. Guku ni ja kuuga no mwanka igitwe o nyuma ya iketha rionthe kurigiria itakanenee mono yambiria gushindanira irio na weru na imera bingi. Urimi bubu bubujaa na miti imitare. Imwe ya miti iji ni Calliandra calothyrsus, Cassisa Siamea, Cassia Spectabilis, Euchalyptus ssp,Grevillea robusta, Sesbania Sesban na miti imwe ya Mwiriga jwa Albiza spp.



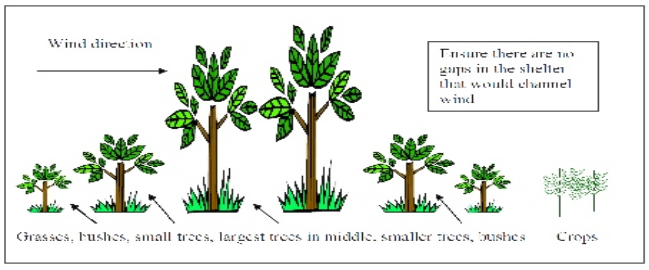




Ni Arimi babaingi bagutumira njira iji ya urimi ya kungania miti na imera amwe? Kethira niu ri, ibakwona urimi bubu bukibatethia? Borie berane uria bakwona urimi bubu bukari na beeje na ntento nkuruki mucamanione juu jungi jwa kuritanwa mantu nkuruki.

Arimi bamwe ibabwiri kugeria kwaanda mistari imikai ya miti miundene yao maanda jaja boone uria maketha jakethirwa jakari. Boona jabui no bongere mistari ingi ya miti maandene jau jangi

3. Miti ya kurigiria Ruuo: Kwaanda miiti na mistari itaraniritie ni itethagiria kurigiria kurutwa mono ni ruuo. Miiti iji ni irigagiria imera kurutwa ni ruuo rurwingi nkuruki.Anda miti imenene gatigati, na iminiini mistarine iu ingi iiri na tumiti tungi tutukui ruteere. Miiti iji ibwiri kwaandwa itegene na naria ruuo rukuma.Twanya twa kwaanda miti iji ni gatigati ka mita inya na ithano (4 –5) na mita ijiiri na inya (2 – 4) gatigati ka mistari



Weega bwa miti Iji ya kurigiria ruuo ni ati murimi atiendeka gutumira muunda jumunene kwaanda miiti Iji. Miiti iji ijukagia kamunda kaniini aki na mawega ja miiti iji nijamaingi niuntu nijatethagiria kwongera maciara ja munda na kiwango gia mirongo ithatu kiri igana(30%) guntu kumwe na kumwe. ni bwega kumenya ati miti imwe ya kurigiria ruuo ikarega kwaandwa bwega ni ithukagia imera nkuruki nontu ni itemere ruuo njira kwethirwa gutigi na twanya tutwingi nkuruki ya turia tubwirite. Ni bwega kuuria muntu uria uri na umenyo guguthenteria kubangangania kwaanda muunda jwaku.

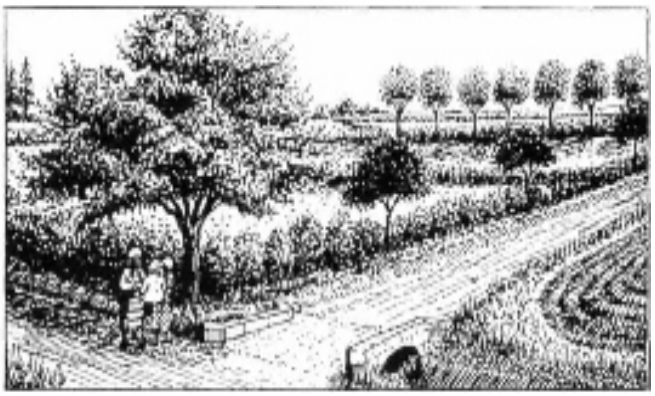
4. Kwaanda Miti Yonka: Urimi bubu ni buria mirimi andaaga miti yonka guti kimera kinya kimwe muundene jwawe. Urimi bubu ni butethagiria muthetu gucokia unoru. Ni bwega mono mono kwaanda tumiti turia twongagiria riera riria mithetu yendaaga mono (nitrogen) ja Sebania spp na Gliricidia sepium

5. Urimi bwa Kungania: Kwanadaniria miti amwe na imera ukiejaga miti twanya gatigati ka imera biaku. Mithemba imiega ni iria iri na mugunya munini na iyongagira riera ririega muthetune. Tukabwira ntento nkuruki au mbere.

6. Kubwithia antu akurithiria: Iji ni njira ya kubangania miti muundene jwa kurithia kenda miiti iji Yuma nku na iria ria ndithia ciaku. Ja kethirwa kuri guntu Rwanda nibwega kwaanda ja Acaciatortilis kana ingi ja Salvadora persica, cordial sinensis, Acasia eliator, ziziphus mauritiana, Acacia albida, Acacia nubica, Acacia Senegal, Hyphaene compressa.
Kuri guntu kuria kuumba gukura miiti nkuruki kuringana na riera ria ku ri thugania kwaanda miiti ja Leucaena Leucocephela, Sesbania sesban, Calliandra calothyrsus na leucaena diversifolia. Miiti iji no ikwee gancunci ga mirongo iri kiri igana(20%) ga iria ria ndithia ciaku.

7. Urimi bubu ni bwa kwaanda miiti rutere rwa muunda jwaku naria gutikuraa imera bwega. Ja kwaanda miti rurete rwa muunda naria kwina maiga kana mitaro imenene. Miiti iji no yaandwe mundeene amwe na imera na gutumirwa kurigiiria ruuo rurwingi kana kinya kwaandwa ja urimi buria twariririe au mbeere bwa namba inya

8. Gwita mianka. Ja Croton Megalocarpus na Commiphora zimmermannii subsp.



Aritani, menyeni ati miiti ya TIST no mwanka yaandwe bwega na ikejagwa twanya turia tubwiri kenda ikura bwega na ituura muthetune igita ririraja. Njiira Imwe iria twarikia kwariria ya kwaanda miti na imera ni njira injega mono cia uriimi Indi nibwega kumenya ati no ti mwanka iriwe ni TIST.

Njira ingi cia urimi cia nteere imwe cia Kenya iria cirimaga na njira cia kumenyera mithetu.

Nteere Iria iria iri mpio mono na muthetu ya acidi (Ja nteere iria ciandagwa majani)

Ni bwega kwaanda Calliandra calothyrsus na Morus alba. Iji niejanaga iria ria ndithia.

Gwita mianka ya miunda no waande Croton megalocarpus, Grevillea robusta , Casuarina cunninghamiana, Millettia dura, Hakea saligna.

Thugania kwaanda Plum na pear ja matunda nterene iu.

Nteere iria iti na mpio mono. Ja naria kauwa gakuraa bwega anda miti ja misakaranda (Jacaranda mimosofolia) gwita mianka

Thugania kwaanda Syzygium spp. Kurigiria ruuo rurwingi na nteere cia miuro ya ruuji.

Matunda najo ni ja Cyphomandra betacea (Ntunda cia ndamu), Persea amer icana(mibokado)

Macadamia tetraphylla (macadamia), Passiflora edulis (ntuunda cia muugu), Casimiroa.
Edulis (white sapota),Annona senegalensis (custard apple), Psidium guajava (Mbeera), Eriobotrya japonica (ndukuati).

Calliandra, Morus alba, ngirivillea and Markhamia lutea iji ni miiti imiega mono ya kurigiria mithetu gukamatwa ni ruuji.

Ngirivillea ni muti jumwega jwa kwaa kauwa mugunya jumwega.

Nteere cia mpio na guntu guti na rigiri mono na naria guti na miiti:
Thugania kwaanda miti ja Acacia mearnsii, ngiriverea robusta, Hakea saligna, Croton macrostachyus, Dombeya spp., Dodonaea angustifolia, Casuarina cunningharniana, and Dovyalis caffra. Na kinya miiti imwe ya matunda, ni ikuraa bwega mono nteere Iji.

Mpempe cia Rift Valley na ndairi. Nontu mpempe citikuraga bwega rungu rwa kirundu, thugania kwaanda miiti miniini kana miti ya kurigiria ruuo kana ya kurigiria mithetu gwitithua ni ruuji jayo Ngiriverea robusta,Sesbania spp., Croton macrostachyus, Croton megalocarpus,Acacia abyssinica, Eucalyptus spp.,Acacia mearnsii, Casuarina cunninghamiana, Dovyalis caffra, Markhamia lutea, Cordia abyssinica.

Kirikania
Rikana ati ukianda miti ati kinya kethira nikuretagira mantu jamaingi jamega, ni bwega kithithia ucunkuni bwaku kenda umenya munda jwaku bwega na uumba gutaara miti iria igakara bwega mundeene jwaku. rikana ati miri na imera ibicindanagira ruuji na imera, na Imera bingi nabio bitienda mugunya. No urie ntento nkuruki kuuma kiri ikundi biria biri akui na aritani baria bariungaga na miunda.

- Mono mono, uria nkuagaya iguru ria miiti iria iri na miiri iria yorokagagira mono na Iria iri na miiri imikai Itiorokagira (ntento iji no igutenthia mono nontu miiri iria itiorokagira nio ishindanagira ruuji na irio na imera bingi) Casuarina spp., Leucaena leucocephala, cupressus lisutanica na Sesbania sesbania iiri miiri itorokagira nthi mono na ibui mono ya gucokanaria mithetu Eucalyptus spp. na Gmelina arborea ni ciitaga kimiko Irigagiria imera bikura bwega.

- Kungania imera na miti no ir ege kubwa nterene iria cionaga ngai yarungu rwa milimita magana 800mm) o mwaka

Utethio
Kuri na mutandao jwa intaneti juejanite ntento inyingi iguru ria urimi bubu bwa kuungania imera na miti aja Kenya.Weenda ntento nkuruki,Thingata anderesi iji
http://agroforesttrees.cisat.jmu.edu/

Mitambo ya video
'Grevillea agroforestry' (6:26) ni Ikwejana ntento Inyingi nkuruki iguru ria miti ya Ngriveria. Video iji ni kwariria mantu jamaingi uria umba kubangania miti iji kiri urimi bwaku
http://www.accessagriculture.org/node/895/en

8. Ntento Nkuruki
CARE-International (1989) Agroforestry Extension Training Sourcebook. Module 6: Agroforestry Design. Educational Resources Development Unit, Nairobi.

NEMA (1998) Caring for our environment:A handbook for local leaders. National Environment Management Authority, Kampala.

Urimi bwa gwitegemea: Kiririkania gia kirimira na nyuuma ya guketha.

Kurimira

Kurimira kuri gitumi mono niuntu bwa:

1. Imera biaku nibikwenda ruuji, muthetu juminoru na weru bwa kungana kenda bikuura bwega. kuri na iria muundene, Imera abigashindanira Intu biu. Iria rigatumira ruuji, unoru bwa muthetu na weru buria imera bikwenda kenda bikura bwega. Guku ni ja kuuga imera biaku abikonja kana bikue.

2. Kethira munda jwaku jutirimi, tunyomoo twa kuthukia Imera tukenda mono kwija mundeene jwaku. Ngugi ya tunyomoo tutu ni kuthukia imera. kwou kethira guti na iria, gutithirwa kuri na tunyomoo mundeene jwaku.

Mantu jameega ja kurimimira muunda

Imera ibukuraa bwega mono riria muunda jurimi bwega nontu iria ritijukagia ruuji na into bingi buria bikwendekana ni imera

- Imera ibireaga ntunti na kugia na inya ndene ya igita riikui
- Imera bionaa riua ria kungana
- Imera bitigwatagwa ni mirimo ntuti
- Imera bitiumba kuya ni mwanki kinya jugatua gutamba.
- Miunda irimiri ikonania kionerereria gikiega gia mutaratara jwa Tist. untu bubu bugatuma antu beende kwija kwona ngugi yaku untu bubu bugatuma antu beende kwija kwona ngugi yaku

Kiririkania gia Nyuuma ya guketha.

- Ukareka ndithia yaku iria matigari ja maketha ja mati jwa muya na mpempe, mati ja mungau na nchugu karanga. Na ukaithia mati jau. jothuranie na ujeke antu amwe aria jutiagua ni ndithia kana mwanki. kenda ukajatumira kuthithia najo mboreo iria ithagirwa iri ingega mono nontu guti gintu yongeri kina kimiko.uritani nkuruki nibuejani gancucine ka njira ya kithuthia mboreo ya kirinya.na no iritanwe nandi.
- Kethira uri na na mati jamaingi mono kumania na maketha jaku, jatige ona u mundeene kenda jakunikira muunda. nyuuma ya kaagita, mati jaria jakora na jacokie unoru buria o kiri muthetu na kujunoria nkuruki.
- Kethira kuri marinya urenjite mwaka juju, ukajakunika, jatige jakunuri jeteere maanda jau jangi. O uria ugutiga marinya jau jakunuki miaka imingi no uu mithetu ikwonera unoru na nou maketha jakaingia.(Na ibwega kugarura imera mundeene juu)
- Wathiria kurima:
wiite iria mundeene. watiga iria riria rikuite mundeene nirituma tunyomoo kwija kuthukia imera.

Turiantu ba umma, etikua naantu ba kumenyera miiti kenda TIST icirunangamira.

Tukiritanagiria ngugi amwe TIST, ni tuumbite kuthithia mantu jamaingi manene. Narua kuri na miti nkuruki ya million ithanthatu na Magana jatantu(6.6 Million) igukura niuntu bwa gucitaniria gwetu. Kenda TIST yumba kuirungamira na gutethia Amemba kwona mbeca mpongeri niuntu bwa kwendia riera (Carbon sale) ni bwega tuthingatirie mantu jaria TIST iguturitana. Arimi babaingi ba TIST nibetanitie na mutaratara jwa TIST na kwingia mawatho jaria bekire saini iguru ria Green House Gas Agreement riria batonyere TIST.

Indi kuri na arimi bamwe bagwita giutati na mutaratara juju.. Riria TIST igwitikiria kunyiya miti na gacunci ga ikumi kiri igana (10%) gukethwa kiri tukundi tutinini riria yakinya miaka ikumi kana nkuruki, Arimi bamwe nibakugita miti iji yonthe. Kithithia uju gutikuthukia nthi iria ituthiurukirite aki, no ni ikuthukiria kinya Arimi bangi baria bari kiri biashara iji ya kwendia riera . Kumania na uncukuni buria burigitie kuthithua ni karani ba kwingurungamira, mantu jakwenda gutegerwa ni jaumire iguru ria arimi baria barikitie gutema miti yao. Muthithirie juju jwa mantu nijugwikira atarine kithimi kia riera riria riumba kwendua ni arimi bangi.

Kuri na gitumi kumenya ati riria arimi baba bakugita miti yao na kwendia na kwona mbeca, arimi baria bendeerete na mutaratara jwa TIST na thoko ya riera nigutaukirwa.

Niuntu bubu, TIST nikouneria arimi baria bakugita miiti yao yonthe na kumiendia, nibabwiri gocokia gancunci ga ikumi na ijiri na nusu (12.5%) ya mbeca iria bakeendia. Gancunci ga imwe iguru ria ithatu (1/3) gakagaaurirwa amemba ba Cluster iria ari mumbemba. Kenda bomba gucokia mbeca cia kugitwa kwa miiti.

Gancunci kangi ka imwe iguru ria ithatu (1/3) nako kanenkerwe TIST kenda bacokia mbeca cia maitaji jamwe jaria bakurukirite bakiritira gikundi kiu ngugi mwanya mwanya cia kubaritana, kubatarira na MB. Gancunci kangi ka imwe iguru ya ithatu (1/3) nako kanenkerwe CACC kurea ngugi cia uncukuni na ingi iria baitire gikundi.

TIST ni ikwaa moyo Clusters kwariria ntento iji kiri mucemanio jwao juu jungi. Atongeria bao bamenyithie maritwa ja ikundi biniini naria miti igiti na wingi ni Amemba ba OLC kana ariti ngugi ba Cluster .

From Left to Right to Left: Yuguchi T. (JACO-CDM Verifier), Fukuda. T (JACO-CDM Verifier), Charlie William (TIST), Josephine Mwangi (TIST Quantifier), Martin Weru (TIST Auditor) during Verification exercise on February 2014

April 2014 Newsletter *Not for sale*

Mazingira Bora

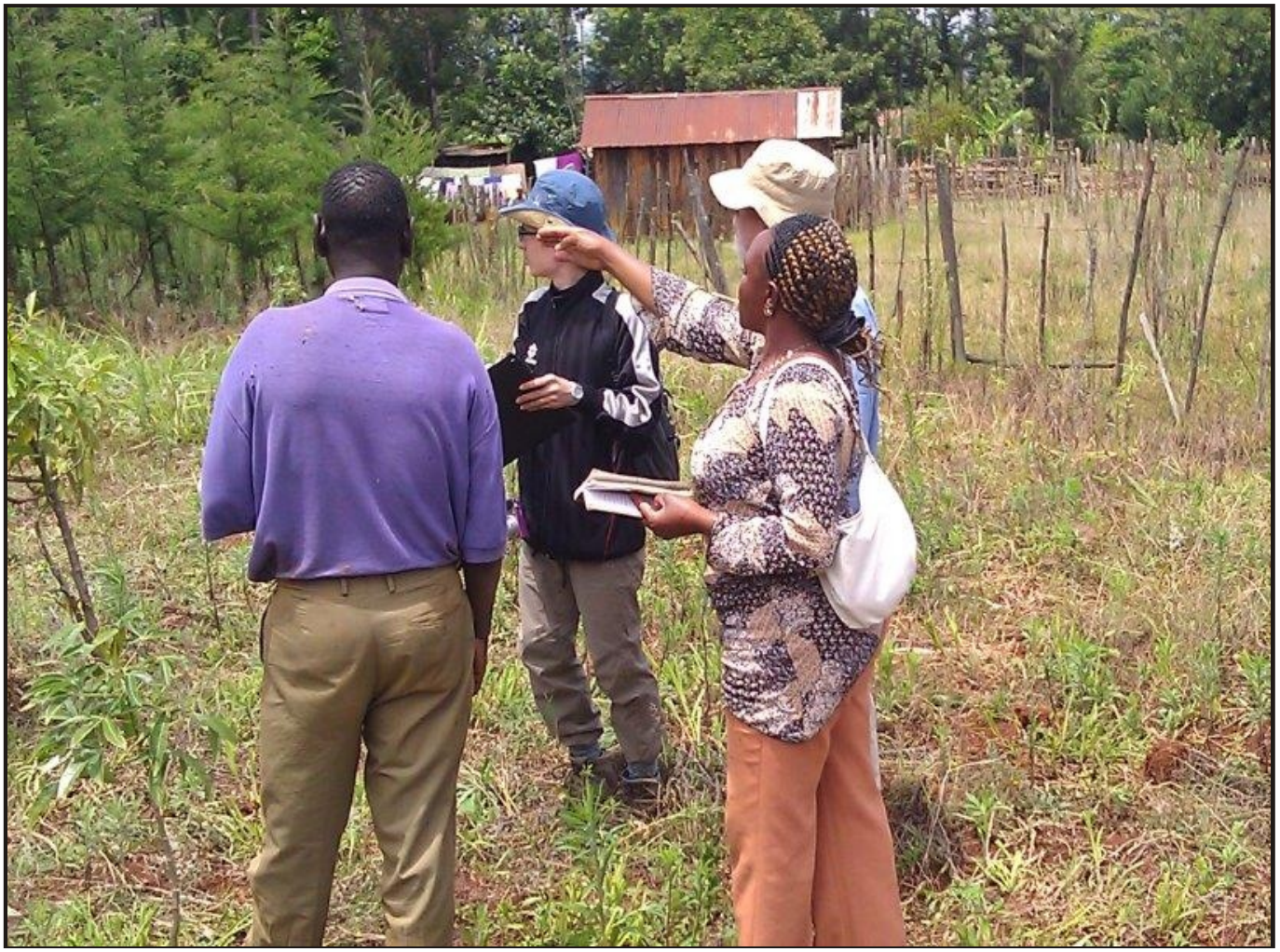
TIST

The International Small Group & Tree Planting Program

www.tist.org

Kikuyu Version

An Environmental, Sustainable Development and Community Forestry Program.



Patricia Wachuka, TIST Quantifiers hamwe na arimi a TIST mari na atari a miti hindi ira maracemanitie.

Inside:

Published by TIST-Kenya. Web: www.tist.org Email: martinweru@tist.org Tel: 0722 - 846 501

Uhandi wa miti migunda-ini ya irio.

Gutariria: Guku ni kuhanda miti hamwe na irio cia mugunda na kuriithia mahiu mugunda-ini umwe.

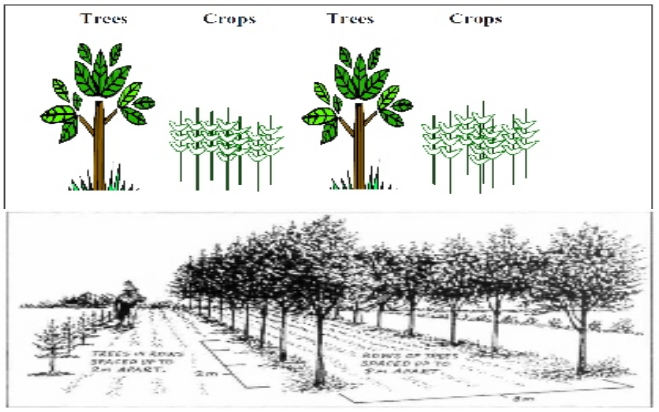
Gitumi kinene kia urimi uyu ni kwongerera magetha kuhitukira uhandi wa miti.
Miti niikoragwo na mawega maingi kuri arimi.

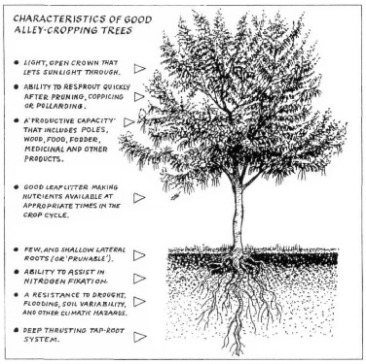
- Indo cia gwaka.
- Ngu cia riiko.
- Matunda na mangi maingi.
- Irio cia mahiu.
- Kwagirithia tiiri.
- Kwongerera unoru tiiri-ini.
- Kuiga tiiri uri mugunyu.
- Kunyihia ruhuho.
- Kuonania mihaka ya mugunda.
- Dawa cia urigitani.
- Kurehe mbeca.
- Kunyihia tiiri gukuuo ni maai.

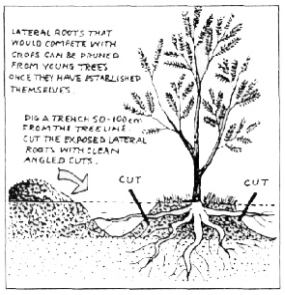
Urimi wa agroforestry: kuri na njira nyingi na ingi cirathundurwo. Njira ingi nicikoretwo na umithio kundu kumwe no cigakorwo citakwagirira kuria kungi. Andu nimagiriirwo nikugeria njira ngurani na mathomithanie micemanio-ini. Ici ni imwe cia njira cia agro-forestry.

1. Hedges: ino ni njira imwe kuria ucaguraga miti iria ukuhanda na muhari na iri na umithio kuri mugunda. Hedges ibataraga mugunda munini, niugiragiriria tiiri gukuuo ni maai na nourute irio cia mahiu na mahuti ma kuiga ugunyu. Muhiano wa hedges ni kuhanda muhari wa miti mugunda-ini na utaganu uria mwitikiriku ni 1.5-2M. Njira njega nigutukania miti miraihu n amikuhi. Kwa muhiano Croton megalocarpus ihandaniirio na Euphorbia tirucalli na lantana camara.

2. Alley cropping: ino ni njira ya guchagura miti ini na utaganu munini wa (0.5-2m) thiini wa muhari mugunda-ini. Nogukorwo na muhari wa miti urumiriirwo ni mihari 2 kana 3 ya irio cia mugunda. Muhiano wa njira ino ni kuhanda mihari ya mbembe utukanitie na ya leucena kana kahuwa na marigu. Miti iria miega na alley ni iria ithondekaga tiiri. Utaganu wagiriirwo nigukorwo uri wa 5-8M. Miti thiini wa mihari niyagiriirwo nikurimirwo maita maingi kana miti yage kuraiha muno. Ningi, noicindanire irio na riia ohamwe na utheri. Mahuti maria macehwo nomarekio thi niguo mongerere unoru no miti ndingitikirika marihi-ini ma TIST tondu timiraihu , no niiguteithia migunda na njira ingi nyingi.Miti imwe miega na alley niikoragwo na uhoti wa gukura ringi ona thutha wa gutemwo. Uu nikuga ati noitemwe thutha wa kimera niguo ikure iri minene na ihote gukuranira na irio. Njira ino itagwo coppicing, na irutaga wiro na mithemba imwe. Mithemba iria ihuthikaga muno ni *Calliandra calothyrsus, Cassia siamea, Cassia spectabilis, Eucalyptus spp., Leucaena leucocephala, Markhamia lutea.* Mithemba imwe niyagagirira riria iri minini, muhiano, *Casuarina spp., Grevillea robusta, Sesbania sesban* ana ingi ta *Albizia* spp.

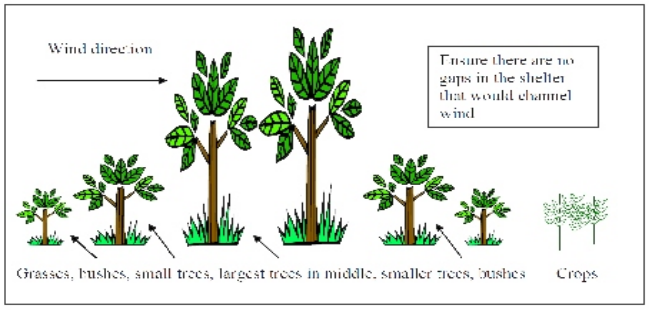


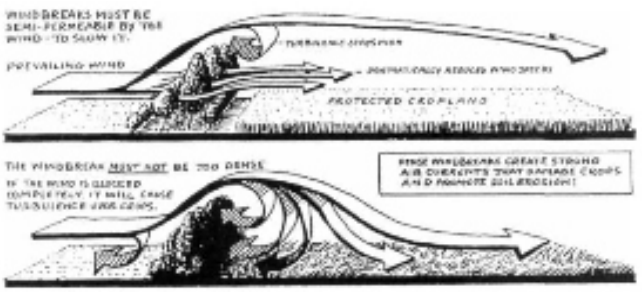




Nikuri murimi uhuthirite urimi uyu wa kuhandaniria miti na irio cia mugunda? Angikorwo nikuri, ni mitukanio iriko yakwagiriire? Morie mamwonie na mamuthomithie mucemanio-ini. Ringi arimi nomagerie mihari minini ya miti migunda-ini. Niguo macoke mone maciaro. Angikorwo nikuri na umithio, wongerere kimeara kingi.

3. Windbreak: kuhanda miti miingi niguo kunyihia ruhuho niguteithagia irio. Niwega makiria kuhanda miti minene gatagati-ini ka mugunda, mini mininanini mihari-ini iri irumiriire, ithaka na nyeki nja ya mugunda. Na ningi, niiteithagiriria kuhanda miti na njira njega niguo inyihie ruhuho. Gutagania mihari-ini ni gwa 4-5m na 2-4 mihari-ini.





Nikuri na mawega ma kuhuthira windbreaks tondu murimi to muhaka ahuthire gicunji kinene kia mugunda niguo ahande miti. Ihuthagira muconjo umwe na noyongerere maciaro na gicunji kia 30% miena ingi. Ririkana ati, uhandi utabangitwo wega wa windbreak nouthukie irio makiria tondu nouhitukie ruhuho mianya-ini. Caria mundu uui uhoro uyu niguo akwonererie wega.

4. Fallow Cropping: njira ino ni riria murimi atiga kuhanda irio mugunda-ini na arekereria miti ikure niguo gucokereria unoru wa tiiri. Muno makiria miti iria ikiraga unoru tiiriini niihuthikaga ta Sesbania spp na Gilricidia sepium.

5. Inter-cropping: kuhuthira utaganu munene wa miti gatagati-ini ka irio na kuhanda miti iri na gacumbiri kahuthu na kunoria tiiri. Makiria urimi-ini uyu niuguthomitahnio mahinda mokite.

6. Grazing Area Improvement: rira wamenyerera miti yaku mugunda-ini wa kuriithia niguo ugie na ngu hamwe na irio cia mahiu. Kuri kuria kumaga, handa miti ya Acacia nubica, Acacia Senegal, Hyphaene compressa.
Kuri kuria kuri na maciaro mega, kuringana na riera, handa *Leucaena leucocephala, Sesbania sesban, Calliandra calothyrsus and Leucaena diversifolia.* Huthira mahuti kuhe mahiu(gicunji kia 15-20%) kimera kia riua kuri mahiu.

7. Woodlots: woodlots nini nocikurio mugunda-ini utarahuthika na utari munoru, na uria uri na mahiga maingi, woodlots nouhandwo mugunda-ini niguo unyihie ruhuho kana mugunda muinamu

8. Marking Bounderies: athomithania nimagiriirwo ni kuririkana ati miti ya TIST

niyagiriirwo nigutaganio niguo ikure wega na iikare kahinda kanene. Imwe cia njira irianjega kuri urimi, no citingihuthika thiini wa TIST ta *roton megalocarpus and Commiphora zimmermannii subsp.*

Rora maundu maya niundu wa kundu kungi thiini wa Kenya:

Kundu kuri na riera riega(kuria miti ikuraga wega)

Calliandra calothyrsus and Morus alba niundu wa irio cia mahiu.

Handa miti muhaka-ini niguo unyihie ruhuho na *Croton megalocarpus, Grevillea robusta* , *Casuarina cunninghamiana, Millettia dura, Hakea saligna*

Huthira orchards kuri miti ya matunda ta prumd, peaches na pears.

Riera ria thi kundu kuinamu kuria kahuwa gakuraga wega.

Huthira jacaranda mimosifolia mihaka-ini

Huthira Syzgium spp niguo kunyihia ruhuho na kuhanda njuui-ini.

Handa matunda ta *Cyphomandra betacea* (tree tomato), *Persea Americana* (avocado), *Macadamia tetraphylla* (macadamia), *Passiflora edulis* (passion fruit), *Casimiroa Edulis* (white sapota), *Annona senegalensis* (custard apple), *Psidium guajava* (guava), *Eriobotrya japonica* (loquat)

Calliandra, Morus alba, Grevillea and Markhamia lutea. Nimiega kuhanda niguo kugiriririria tiiri. Grevillea nimiega ningi niundu wa kiiruru gia kahuwa

Kuria riera riri iguru na kuinamu hanini na miti mitaganu

Huthira windbreaks kugitira irio, mihakana rugiri ta *Acacia mearnsii, Grevillea robusta, Hakea saligna, Croton macrostachyus, Dombeya spp., Dodonaea angustifolia, Casuarina cunningharniana, and Dovyalis caffra.*miti ingi ya matunda noikorwo iri miega

Ruhonge rwa urimi wa mbembe na uriithi wa mahiu Riftvalley.

Tondu mbembe nicikuraga wega handu hari na kiiruru, huthira woodlots kana windbreaks kana miti iria ikuragio kuria tiiri uramenyererwo ta *Grevillea robusta, Sesbania spp., Croton macrostachyus, Croton megalocarpus,Acacia abyssinica, Eucalyptus spp.,Acacia mearnsii, Casuarina cunninghamiana, Dovyalis caffra, Markhamia lutea, Cordia abyssinica.*

Kiririkania – ona uhandi wa miti ukirehaga mawega maguo, niwagiriirwo nikuhanda miti iria miega kuri migunda. Ririkana ati miti niicindanagira maai na irio na irio cikaga gukura wega. Caria uhoro kuma ikundi-ini na aruti wira angi.

- Makiria caria utaaro wa miti iria miega iri na miri mirumu(miti ino niikoragwo iri miega na agroforestry tondu miri yayo icindanaga na irio) *Casuarina spp., Leucaena leucocephala, Cupressus lusitanica, and Sesbania sesbanhave shalloe* niikoragwo na miri miega na nimiega hari guthondeka tiiri. *Eucalyptus spp. na Gmelina arborea* niithondekaga indo njega ciagukuria irio. Kuhandaniria miti na irio nokwage gukorwo kuru kwega miena iria itamukagira mbura nyingi.

- Resources: rurenda rwega muno ruria ruraheana uhoro wa miti iria miega thiini wa Kenya kuria ungicaria uhoro uyu ni http://agroforesttrees.cisat.jmu.edu/

Video:

'Grevillea Agroforestry' (6:26) niwonanagia mawega maingi ma urimi . Niwonanagia imwe cia njira ici ta pollardinf na coppicing http://www.accessagriculture.org/node/895/en

References for #8: CARE-International Agroforestry Extension Training Sourcebook. Module 6: Agroforestry Design (1989)
Educational Resources Development Unit, Nairobi.

NEMA (1998) Caring For Our Environment: A handbook for local leaders
National Environment Management Authority, Kampala.

Tengnäs B (1994) Agroforestry Extension Manual for Kenya
International Centre for Research in Agroforestry: Nairobi.

Urimi Mwega: Kurimira na matigari ma thutha wa magetha.

Kurimira nikwega niundu wa maundu maya:

1. mimera yaku niiirabatara maai, unoru wa tiiri na utheri niguo ikure wega na iri na hinya. Riia nirigucindanira indo ici na mimera . Mimera yaku nikuga igukura itari na hinya.
2. Angikorwo gwaku ti kurimire, tutambi na memenyi ingi nicikuingira kuo. O uria riia riri inini noguo gutari na uhoteteku wa gukorwo na nyoka na tutambi tungi.

Mawega ma kurimira mugunda waku:

- Mimera niikuraga naihenya tondu ndiracindanira indo na riia.
- Mimera niigukura iri na hinya na iraihe gwa kahinda kanini.
- Mimera niyamukagira riua wega.
- Mimera ndikoragwo ugwati-ini wa kunyitwo ni mirimu.
- Mimera ni migitire makiria kumana na utheremu wa mwaki.
- Migunda mitheru iria ikundi ciri na yo ni kionereria kiega kia TIST. Niikuguciriria arimi angi aingi moke mone wira wao.

Matigari ma thutha wa magetha.

- Ndukareke mahiu maku marie matigari ma irio thutha wa magetha ta mbembe na muhia, mboco, mahuti ma irio ingi. Na ningi ndugacine matigari maya no umonganie na umaige handu hega haria mataguthumburwo ni nyamu kana mwaki. Niguo nouhuthire matigari ma ya guthondeka thumu wa mahuti uria ni wega muno tondu ti fertilizer. Uhoro makiria wa uria ungithondeka thumu uyu niuheanitwo gicunji-ini kia unoru wa tiiri, no nouthomithanio ona riu.
- Angikorwo uri na matigari makiria noumatige mugunda niguo mahumbire mugunda. Matigari maya nimekubutha na mekire tiiri unoru uyu niuguo magetha magakorwo mari maingi kimera kingi.
- Angikorwo niurari na marima ma kilimo hai mwaka uyu, ndukamathike no umatige uguo niundu wa kimera giki kingi. O uria wahuthira Kilimo Hai miaka miingi, noguo tiiri waku ukwagira na magetha maingihe (na makiria ungirima urimi wa guthiururukania irio).
- Thutha wa kurimira mugunda tigirira niwanina riia kuma mugunda-ini. Ungitiga riia riu rikuu norirehe tutambi na tuthukie mimera yaku.

Turi akinyaniru, Ehokeku, na andu mari na uigiririki hari kuiga miti gwa kahinda kanene niguo kuhotithia TIST kwirugamirira.

Kuruta wira hamwe thiini wa TIST, nituhotete gukinyaniria maundu maingi muno. Umuthi, kuri na makiria ma miti 6.6million iria irakura tondu wa kio gitu. Niguo TIST ikorwo ikirugamirira na iteithie amemba kwona mbeca kumana na wendia wa carbon, niwega ithuothe turumirire mawatho ma TIST. Makiria ma arimi a TIST nimareka uria mauga nimegwika uigutthananio-ini wa Green House Gas riria maingira TIST.

Ona kuri o uguo, arimi angi aria marathii mugaru na uiguithanio uyu. Ona angikorwo TIST niiretikiria utaganu wa miti, na kugetha gicunji gia 10% kia miti ya TIS thutha wa miaka 10 na makiria, arimi angi nimaratema miti ino mbere. Maundu maya toguthukia maria maturigiciirie no nikuhinyiriria murimi thiini wa wendia wa carbon. Hingo ya uthuthuria, auditors nimaugire kuri na ugwati niundu wa arimi aria maratema miti yao. Maundu ta maya nimaratuma carbon credits ciage gukorwo ciri nyingi kuma kuri arimi aya.

Niwega kumenya ati, riria arimi aya maratema miti yao niguo mendie na magie mbeca, arimi aria angi marathii nambere na mutaratara wa TIST na thoko ya kimabururi ya carbon nimarathukirio thoko.

TIST niundu wa uguo nimaroria arimi aria matema miti niguo mendie, macokie gicunji kia 12.5% kia iria mendia. Gicunji kia ithatu kigayanwo thiini wa cluster kuria memba akoragwo niguo amemba mahote gucokereria. Gicunji kingi kia ithatu githii kuri TIST niguo ihote kuriha mahuthiro maria yahuthirire hari utari wa miti iyo na githomo. Gicunji kiu kingi kigayanwo ni CAAC niguo kuriha marihi ma utari wa miti.

TIST niirahinyiriria cluster mariririe uhoro ucio mucemanio-ini ukite. Atongoria ao maheane maritwa ma ikundi iria ikoretwo miti yao igitemwo muno kuri memba wa OLC.

From Left to Right to Left: Yuguchi T. (JACO-CDM Verifier), Fukuda. T (JACO-CDM Verifier), Charlie William (TIST), Josephine Mwangi (TIST Quantifier), Martin Weru (TIST Auditor) during Verification exercise on February 2014

April 2014 Newsletter *Not for sale*

Mazingira Bora

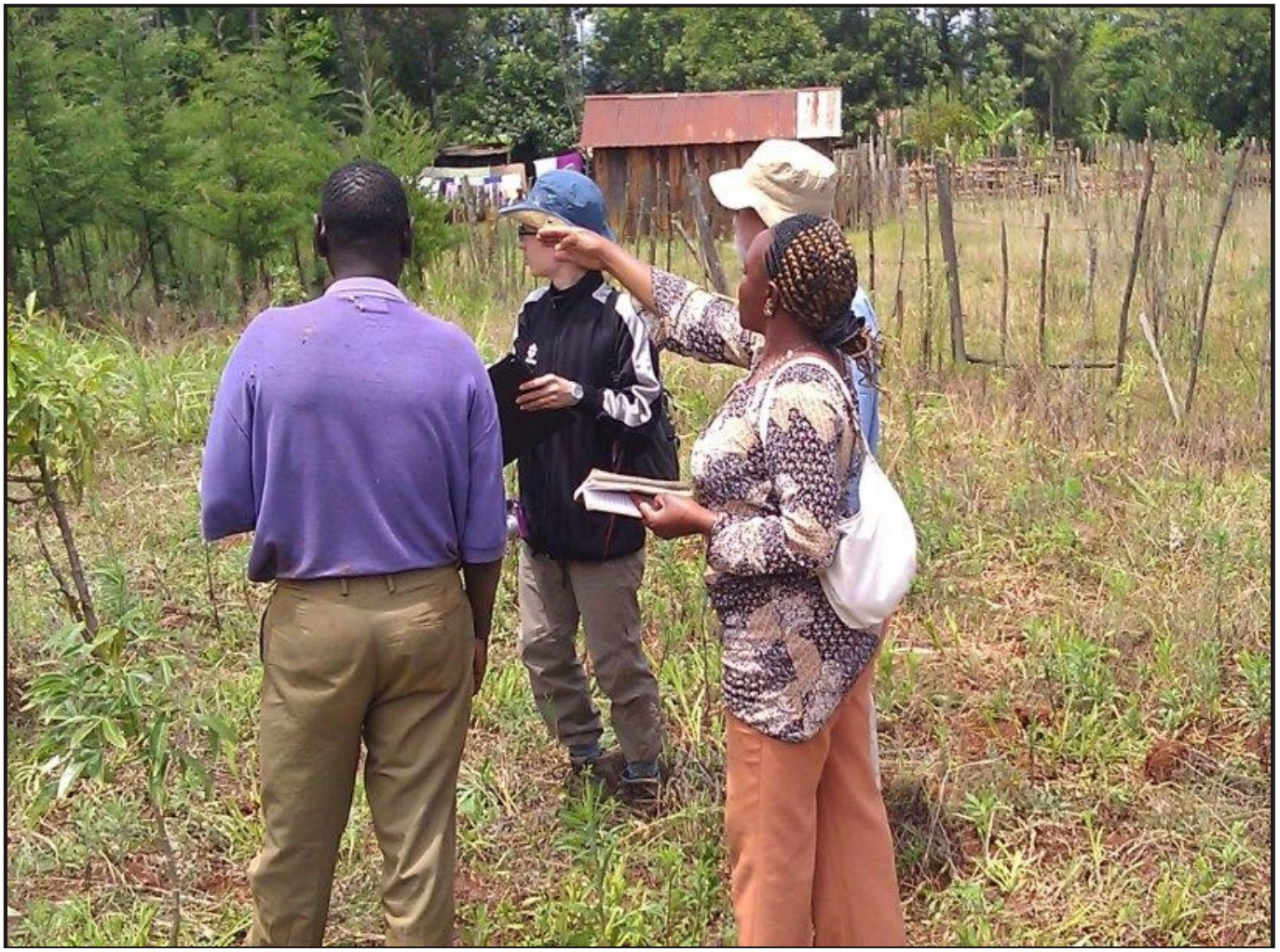
TIST

The International Small Group & Tree Planting Program

www.tist.org

Kiswahili Version

An Environmental, Sustainable Development and Community Forestry Program.



Patricia Wachuka, TIST Quantifiers wakiwa na wakulima wa TIST na wakaguzi wa mahesabu ya miti katika ukaguzi uliofanyika hivi karibuni.

Ndani:

Published by TIST-Kenya. Web: www.tist.org Email: martinweru@tist.org Tel: 0722 - 846 501

Kilimo Endelevu: Kilimo Mseto.

Mada muhimu kwa kilimo endelevu ni Kilimo mseto.

Ufafanuzi: Kupanda miti na vichaka pamoja na mimea ya chakula au mifugo.

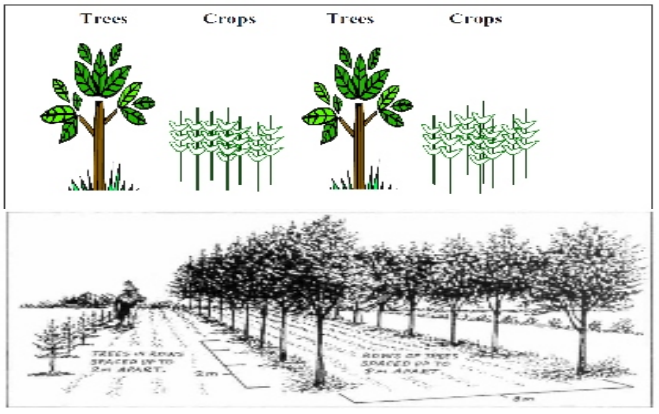
Lengo la kijumla la klimo mseto ni kuongeza uzalishaji wa ardhi kupitia matumizi ya miti. Miti ina faida nyingi kwa mkulima:

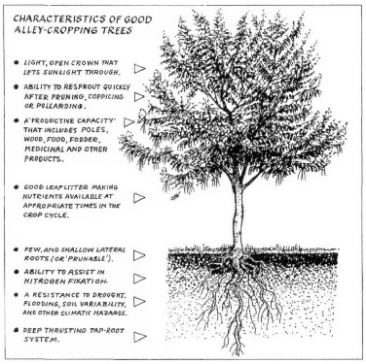
- Vitu vya ujenzi
- Kuni
- Matunda na chakula kinginecho
- Chakula cha mifugo
- Kutuliza udongo
- Rutuba ya udongo
- Kuweka unyevu
- Wind shelter
- Kiashiria cha mipaka
- Dawa
- Mapato ya kifedha
- Kupungua kwa mmomonyoko wa udongo (iwapo safu ya taka au mimea itatandazwa)

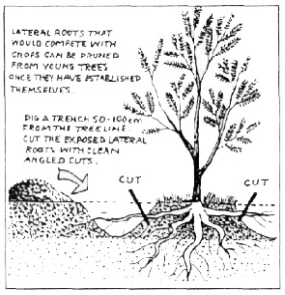
Mitindo katika kilimo mseto:
Kuna mbinu mbalimbali na zingine mp ya zinazogunduliwa kila wakati. Baadhi ya mbinu hufanikiwa mahali pamoja na kuwa na maafa kwingine.W atu wanahitajika kujaribu mbn u mbalimbali na kugawana mitindo iliyo bora zaidi katika mikutano ya mafunzo. Zifuatazo ni baadhi ya mbinu zinazotumika sana katika kilimo mseto:

1. Nyua: Hili huhusisha kuchagua aina ya mti utakaopandwa kwa mstari na ambao una faida kwa ardhi. Nyua huhitaji nafasi ndogo, huzuia mmomonyoko wa udongo na hutengeneza majani kwa ajili ya chakula cha mifugo na matandazo. Mfano wa kutengeza ua ni kupanda miti kwa mstari ikizunguka mpaka wa shamba.
Nafasi kati ya miti inayopendekezwa ni kati ya mita moja na nusu na mita mbili. Njia bora zaidi ni kuchanganya miti mirefu na mifupi.
Kwa mfano Croton megalocarpus wawezwa pandwa pamoja na Euphorbia tirucalli pamoja na /au Lantana camara.

2. Kilimo mseto kwa mistari: Hili huhusisha kupanda miti iliyo na nafasi ndogo sana (nusu mita kufika mita mbili) iliyopandwa kwa mistari shamba lilivyo. Kwaweza kuwa na mstari wa miti halafu mistari miwili au mitatu ya mimea, halafu mstari mwingine wa miti, halafu mimea, na kadhalika. Mfano wa hili ni kupanda mistari ya mahindi iliyoandana nay a Leucaena au kahawa na ndizi. Miti iliyo bora zaidi ni ile ya familia ya kunde (inayoweka naitrojeni udongoni). Nafasi kati ya mistari ya miti yafaa kuwa mita tano kufika nane. Mistari hiyo ya miti yafaa kupaliliwa na kupunguzwa majani mara kwa mara. Miti hiyo isiwe mirefu au itaanza kupigana na mimea ili kupata virutubisho na mwangaza. Majani yaliyokatwa yaweza kuongezwa kwa udongo ili kuongeza rutuba ya udongo. Kwa hivyo miti hii haitaweza kupata malipo ya TIST, kwani inafaa kuwekwa ikiwa mifupi, lakini itaboresha ardhi kwa kilimo na kumpa mkulima faida zingine nyingi. Baadhi ya mimea mizuri ya kupanda pamoja na mimea huweza kukua tena inapokatwa. Kumaanisha inaweza kukatwa kila msimu wa mimea ili isiwe mikubwa sana isije ikapigana sana na mimea. Mtindo huu unaitwa 'copicing' na hufanikiwa kwa baadhi ya mimea. Aina za miti hii ni *Calliandra calothyrsus, Cassia siamea, Cassia spectabilis, Eucalyptus* spp., *Leucaena leucocephala, Markhamia lutea*. Baadhi ya miti humea tena vizuri inapokuwa change lakini haimei tena inapokomaa kwa mfano *Casuarina spp., Grevillea robusta, Sesbania sesban na baadhi ya Albizia* spp.



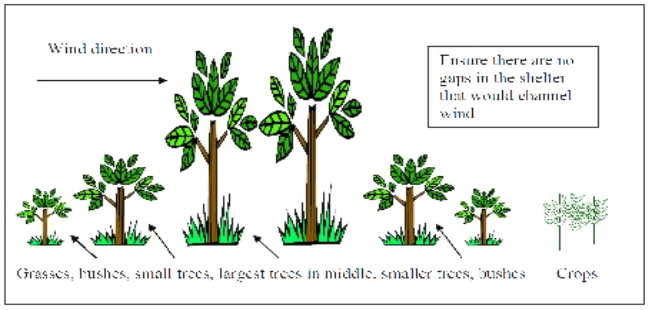


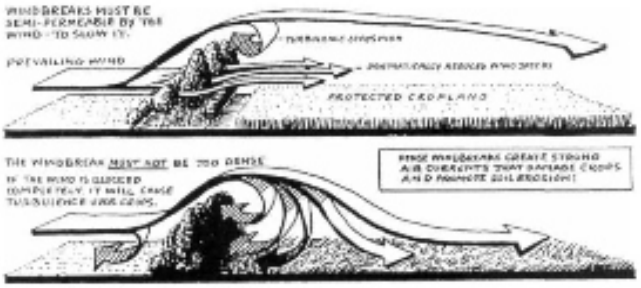


Je, wakulima wametumia jinsi hii ya kupanda miti na kulima? Kama ndivyo ni njia gani mwafaka ya kuchanganya? Wauleze wajandiliene na wakuje na majibu kwenye mkutano ujao.

Pengine wakulima wanaweze jaribu mistari kadhaa kwenye mashamba zao.W angalie majibu. Kama majibu iko sawa waongeze mistari mingine musimu ujao

3. Kizuia upepo: Kupanda miti iliyofuatana ili kutengeneza kizuia upepo. Miti hii hulinda mimea kutokana na upepo unaokuja. Panda miti mikubwa kati kati, midogo zaidi mistari miwili inayofuata na miti mifupi, vichaka na nyasi nje. Panda ikiwa dhidi ya upepo unaokuja. Nafasi kati ya miti iwe mita nne au tano na mbili kufika nne kati ya mistari.





Faida ya vizuia upepo ni kuwa mkulima si lazima hatoe shamba lote ili kupanda miti. Inachukua kipande cha ardhi na faida zaweza ongeza mazao kwa asilimia thelathini katika baadhi ya maeneo. Kumbuka kuwa vizuia upepo visivyopangiwa vizuri vyaweza kuharibu mimea kwani vinaweza kupitisha upepokupitia nafasi. Tafuta mtu aliye na ujuzi kukusaidia kupangia kizuia upepo.

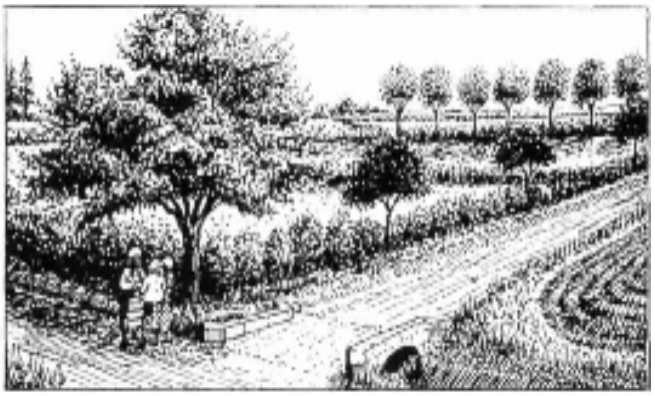
4. Kupumzisha ardhi:
Hapa ni ambapo wakulima huacha kupanda mimea kwa kipande cha ardhi na kuiacha miti kumea ili kusaidia kurejesha rutuba ya udongo. Ni miti mifupi inayoweka naitrojini udongoni inayochaguliwa mara nyingi kwa mfano Sesbania spp. na Gliricidia sepium.

5. Kuchanganya mimea na miti: Hili huhusisha kupanda miti yenye nafasi kubwa kati kati ya mimea. Miti mizuri ni isiyo na matawi mengi na inayoweka naitrojeni udongoni.

6. Kuboresha pahali pa kulisha mifugo: kuchunga miti iliyo katika ardhi ya kulisha mifugo ili kukupa kuni na chakula cha mifugo. Kwa mfano, katika maeneo kame fikiria kupanda Acacia tortilis ama baadhi ya miti ifuatayo: *Salvadora persica, Cordia sinensis, Acacia eliator, Ziziphus mauritiana, Acacia albida, Acacia nubica, Acacia Senegal, Hyphaene compressa*.
Katika maeneo mazuri zaidi, kulingana na urefu juu ya ziwa, panda *Leucaena leucocephala, Sesbania sesban, Calliandra calothyrsus na Leucaena diversifolia*. Fikiria kuhusu malisho ya nyongeza kutumia majani (asili mia kumi na tano kufika ishirini ya malisho) wakati wa ukame ya mifugo wako.

7. Misitu midogo wa miti:
Miti mifupi yaweza kupandwa katika maeneo yasiyotumika au yasiyozalisha, kwa mfano miti ilipondwa katika eneo lenye mawe yaliyojitokeza juu na katika mitaro. Miti mifupi pia yaweza kupandwa katika ardhi yenye mimea kufanya kazi ya kizuia upepo, ama yaweza kupandwa katika ardhi iliyopumzishwa.

8. Kuashiria mipaka *e.g. Croton megalocarpus na Commiphora zimmermannii* subsp.



Wanaofunza, jua kuwa miti ya TIST inapewa nafasi nzuri ili ikue inavyofaa na ikae ardhini kwa muda mrefu. Baadhi ya mbinu za kilimo mseto zilizo hapo juu ni mitindo bora zaid ya kilimo lakini miti haitaweza kupata malipo ya TIST.

Fikira zingine za kujaribu katika baadhi ya maeneo ya kiasiri Kenya.

Miteremko iliyo katika maeneo ya urefu mkubwa yenye udongo wenye acidi (kwa mfano ambapo majani chai hukua vizuri).

Fikiria kupanda Calliandra calothyrsus na Morus alba kupata chakula cha mifugo.

Kupanda mipaka na vizuia upepo fikiria miti kama Croton megalocarpus, Grevillea robusta,

Casuarina cunninghamiana, Millettia dura, Hakea saligna.

Kwa matunda fikiria miti ya bustani (kama plums, peaches, pears).

Miteremko iliyo maeneo yenye urefu mdogo (kwa mfano ambapo kahawa hukua vizuri)

Fikiria kupanda Jacaranda mimosifolia kama mti wa kutengeza mipaka

Unweza panda Syzygium spp. Ili kuzuia upepo au kando ya mikondo ya maji.

Fikiria kupanda miti ya matunda kama Cyphomandra betacea (tree tomato), Persea americana(avocado), Macadamia tetraphylla (macadamia), Passiflora edulis (passion fruit), Casimiroa edulis (white sa pota), Annona senegalensis (custard apple), Psidium guajava (guava), Eriobotrya japonica (loquat).

Calliandra, Morus alba, Grevillea na Markhamia lutea ni miti mizuri ya kupanda katika maeneo unayotaka kudhibiti mmomonyoko wa udongo (miundo ya kuhifadhi udongo).

Grevillea ni mti mzuri wa kuipa mimea ya kahawa kivuli

Maeneo tambarare yaliyo na urefu mkubwa, yenye ardhi iliyo na mteremko mdogo na miti michache:
Kama vizuia upepo ili kulinda mimea yako, miti ya mipaka na nyua zilizo hai fikiria miti kama Acacia mearnsii, Grevillea robusta, Hakea saligna, Croton macrostachyus, Dombeya spp., Dodonaea angustifolia, Casuarina cunningharniana, and Dovyalis caffra. Baadhi ya miti ya matunda inayokua mahali penye joto la kawaida yaweza kukua vizuri. Mfumo wa mahindi na maziwa katika bonde la ufa Kwa sababu miti haikui vizuri chini ya kivuli, fikiria miti mifupi ama vizuia upepo au miti inayopandwa katika mifumo ya kuhifadhi udongo kwa mfano Grevillea robusta,Sesbania spp., Croton macrostachyus, Croton megalocarpus, Acacia abyssinica, Eucalyptus spp., Acacia mearnsii, Casuarina cunninghamiana, Dovyalis caffra, Markhamia lutea, Cordia abyssinica.

Kumbuka
Kumbuka kuwa ingawa kupanda miti huleta faida nyingi unahitajika kutafiti kuhusu aina bora zaidi kwa aina maalum ya ardhi yako. Kumbuka kuwa miti hushindana na mimea kupata maji na mimea mingine haipendi kivuli kingi, kwa mfano. Pata taarifa kutokana na vikundi vidogo vilivyo karibu nawe na wafanyikazi katika sekta ya kilimo.

- Pata ushauri sana sana kuhusu aina ya miti inayofaa iliyo na mizizi inayofika chini zaidi na yenye mizizi ya juu michache (miti hii ina faida katika kilimo mseto kwa sababu mizizi ya juu hushindana na mimea). Mizizi ya Casuarina spp., Leucaena leucocephala, Cupressus lusitanica, na Sesbania sesbanhave shalloe yaweza kuwa bora kwani inatuliza udongo katika maeneo yanayohifadhiwa. Eucalyptus spp. na Gmelina arborea hutengeneza misombo inayozuia mimea kukua.
- Kupanda mimea pamoja na miti haifanikiwi san asana katika maeneo yanayopata mvua isiyozidi milimita mia nane kila mwaka.

Marejeo:
Kuna tovuti inayosaidia sana iliyo na maelezo kuhusu miti mwafaka kwa kilimo mseto katika Kenya. Waw eza kutafuta maelezo kuhusu miti maalum. Ipo hapa:
http://agroforesttrees.cisat.jmu.edu/

Video
'Grevillea agroforestry' (6:26) hukupa utangulizi kuhusu faida kadhaa za grevillea katika miseto ya ukulima. Inaeleza baadhi ya taratibu katika usimamizi kama kukata vichwa na kukata miti kabisa.
http://www.accessagriculture.org/node/895/en

8. Marejeo
CARE-International (1989) Agroforestry Extension Training Sourcebook. Module 6: Agroforestry Design. Educational Resources Development Unit, Nairobi.

NEMA (1998) Caring for our environment: A handbook for local leaders. National Environment Management Authority, Kampala.

Tengnäs B (1994) Agroforestry Extension Manual for Kenya. International Centre for Research in Agroforestry: Nairobi.

Kilimo Endelevu: Mawaidha kuhusu kupalilia na baada ya kuvuna.

Kupalilia

Kupalilia ni muhimu kwa sababu zifuatazo.

1. Mimea yako huhitaji maji, virutubisho vya udongo na mwanga ili kuongeza nguvu. Kunapokuwa na magugu, yatashindana na mimea yako kupata vitu hivi. Magugu yatatumia virutubisho na maji yanayohitajiwa na mimea yako. Mwishowe mimea yako itapunguza nguvu na yaweza kushindwa kuishi.

2. Iwapo eneo lako halijapaliliwa wadudu watavutwa kuja katika eneo hilo. Wadudu waweza kuharibu na kuua mimea yako. Jinsi magugu yalivyo machache ndivyo kutakuwa na nafasi iliyopungua ya kuwa na nyoka na wadudu.

Zinazofuata ni baadhi ya faida za kupalilia mashamba yako:

- Mimea hukua kwa upesi zaidi kwani magugu hayachukui virutubisho na maji kutoka kwa udongo
- Mimea itakua zaidi kinguvu na kuwa mirefu zaidi kwa wakati mdogo
- Mimea yaweza kupata mwanga bila ya kufunikwa
- Mimea haijawazishwwa kwa magonjwa mengi
- Mimea hulindwa zaidi kutokana na kuenea kwa moto
- Mashamba safi huonyesha kuwa kikundi kinayachunga nan i mifano mizuri katika mradi wa TIST. Hili litavuta watu kuja na kuona kazi yenu.

Mawaidha kuhusu baada ya kuvuna.

- Usiache mifugo ile mabaki ya mimea kama ya mahindi au mtama, maharagwe, majani ya kunde, majani ya njugu na kadhalika. Pia usiyachome mabaki hayo. Badalake, wafaa kuyakusanya na kuyaweka mahali pazuri ambapo hayatasumbuliwa na wanyama au moto. Sababu ya haya ni ili uyatumie mabaki kutengeza mbolea, ambayo ni mbolea nzuri sana ya kiasiri.

- Iwapo una mabaki kuzidi yanayotosha yaache shambani ili yafunike shamba lako. Mabaki ya mimea huoza na kurudisha virutubisho vizuri udongoni na kuhutayarisha kwa msimu unofuata wa kupanda.

- Iwapo ulikuwa na mashimo ya kilimo hai mwezi huu, usiyafunike lakini uyaache yakiwa wazi na tayari kwa msimu hujao wa kupanda. Jinsi miaka uliyotumia mbinu ya kilimo hai shambani mwako inavyoongezeka ndivyo udongo wako unavyoboreka na mavuno utakayopata yanavyoongezeka (na pia ni bora zaidi iwapo unaweza kubadilisha mimea unayopanda katika shamba hilo).

- Unapopalilia eneo hilo hakikisha umetoa magugu kutoka shambani. Unapoacha magugu yaliyokufa shambani karibu na mimea, yanaweza kuvuta wadudu na magonjwa yanayoweza kuumiza mimea yako.

Sisi ni wenye usahihi, waaminifu na wanaotumikiana Kuweka miti ardhini kwa muda mrefu hutengeneza TIST.

Tukifanya kazi pamoja katika TIST, tumetimiza mambo makubwa. Leo, kuna zaidi ya miti milioni sita nukta sita inayokua kwa sababu ya juhudi zetu. Ili TIST iwe endelevu kwa ukweli na isaidie memba kupata mapato ya ziada kutokana na uuzaji wa kaboni, ni muhimu kwetu sote kufuatilia na maadili ya TIST.W engi wa wakulima katika TIST wanafuatilia ahadi zao zilizopo katika mkataba wa makubaliano wa GhG waliotia saini walipoingia katika TIST.

Hata hivyo, kuna wakulima wachache wanaoenda kinyume na mkataba huu. Ingawa TIST huruhusu upunguzaji wa miti na mavuno ya asilimia kumi ya miti katika kikundi kidogo ikifikia umri wa miaka kumi au zaidi, wakulima wengine wanakata miti yote. Zoezi hili halidhuru mazingira tu, bali linadhuru wakulima wengine wa TIST katika biashara ya kaboni. Wakati wa ukaguzi wa kupitishwa hivi karibuni, wakaguzi walizusha wasiwasi mkubwa kwa wakulima waliokata miti yote. Mitindo kama hiyo huongeza kiwango cha kaboni isiyolipwa inayokuwa kama ishara ya kuzuia hasara na hivyo basi kufanya kaboni iliyotengezwa na wakulima wengine kukosa kuuzwa.

Ni muhimu kutambua, ingawa wakulima kama hao hukata miti ili kuuza, kwa hivyo kupata mapato, wakulima wanaoendelea kushiriki katika TIST na soko ya dunia nzima ya kaboni hupata mapato yao yakipungua.

Hivyobasi, TIST inapendekeza kuwa wakulima wowote watakaokata miti yao yote, warudishe asilimia kumi na mbili nukta tano ya mapato yao yote kutokana na mauzo hayo. Theluthi moja ya kiasi hiki itagawanwa na cluster ya memba huyo kusaidia cluster kupona kutokana na kupoteza miti hiyo. Theluji moja iende kwa TISt ili kurudisha pesa zilizotumika wakati wa kutumikia kikundi hicho kwa kuhesabu miti, kuwafunza na gazeti la MB. Theluji ya mwisho igawanwe na kampuni ya CAAC ili irudishe pesa zilizotumika katika ukaguzi ili kupitishwa pamoja na matumizi mengine.

TIST inahimiza cluster kujadiliana mapendekezo haya katika mkutano wao ujao. Viongozi wao wanafaa kuwasiliana majina ya vikundi vidogo ambapo nambari kubwa ya miti ilikatwa kwa memba yeyote wa chama cha uongozi cha OLC ama kwa watumishi katika cluster.

Kutoka kulia hadi kushoto:Yuguchi T. (JACO-CDM Verifier), Fukuda T. (JACO-CDM Verifier), Charlie Williams (CAAC), Josephine Mwangi (Kwantifaya katika TIST), Martin Weru (Mkaguzi TIST) katika mazoezi ya kukagua na kuhakikisha kazi mwezi wa February mwaka 2014.

April 2014 Newsletter *Not for sale*

Mazingira Bora

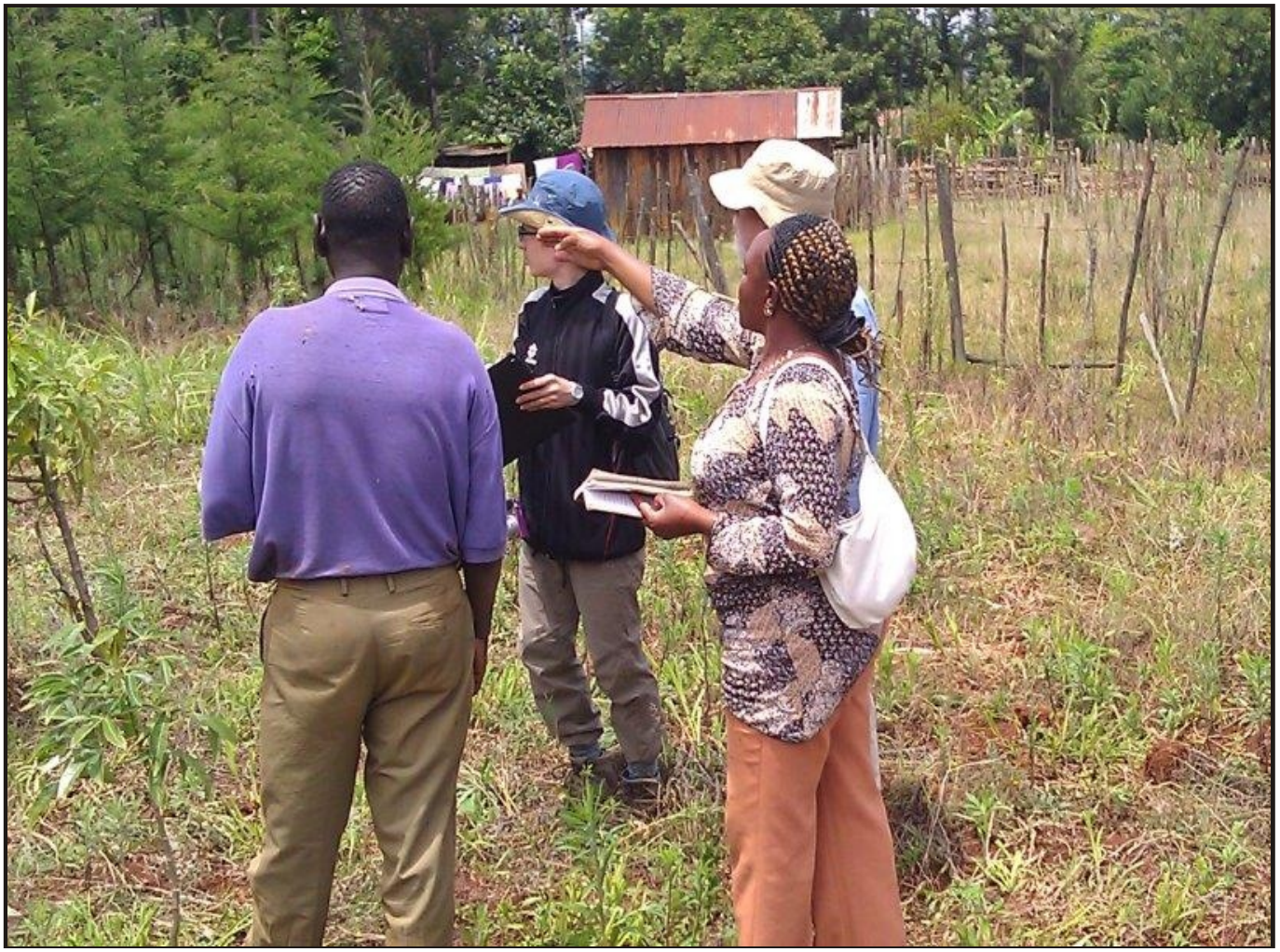
TIST

The International Small Group & Tree Planting Program

www.tist.org

Kikamba Version

An Environmental, Sustainable Development and Community Forestry Program.



Patricia Wachuka, Avitukithya mat TIST na aimi ma TIST na aithini maiikiithya na kutala miti nthini wa uvitukithya ula wila kwikwa.

Inside:

Published by TIST-Kenya. Web: www.tist.org Email: martinweru@tist.org Tel: 0722 - 846 501

Uimi kana ndilikasa ya kuendeea.

Nima ya miti la liu Kilungu kya vata kya uimi na ndilikasa ni nima ya liu na miti.

Ualyulo: Kuvanda miti, ikuthu vamwe na liu kana mimea na kana ndithya ya indo Mwolooto wa nima ya miti na liu yithiawa na mwelekelo umwe ula ni kwongela w'umi wa kitheka kwa nzia ya kutumia miti.

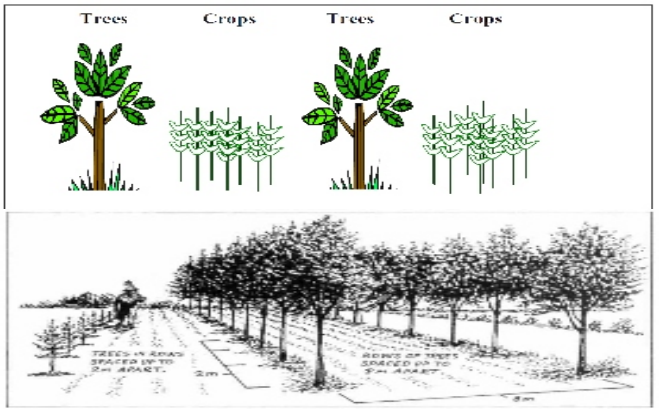
Miti yithiawa ya vaita mwingi kwa muimi ta:-

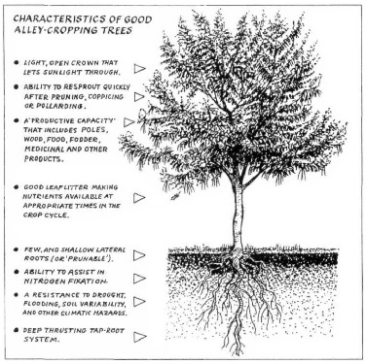
- Miti ya kwaka
- Ngu
- Matunda na liu
- Uithyo / Wovo
- Kulumya mbithanga
- Kwongela muthanga unou
- Kwikalya kimeu
- Kusiia kiseve
- Kwikia muvaka
- Ndawa
- Kuete mbesa
- Kuola kukuwa kwa muthanga.

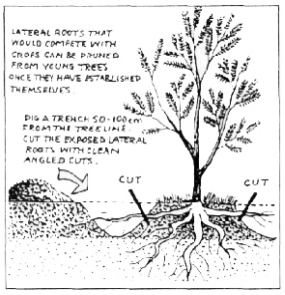
Nzia sya uvandi na uimi wa miti na liu; Kwi nzia mbingi ila iatiawa na kwi ona ingi nzau. Nzia imwe ni nzeo kwa isio imwe na nithuku kwa isio ingi. Andu nimendaa kutata nzia kwiana na kisio kila mai na kuete ona nzia ingi nzau na kwona nisyiva syaile kisio kyoo, ingi nimaile kwonasya ala angi yila mena mbumbano undu wa nzia ithi.Vaa ve nzia imwe ila itumiawa kaingi nthini wa nima ino:-

1.Wiio: Nzia ino yendaa ukamba usakua muthemba wa miti ula wavandwa lainini wikaa nesa na unengae muthanga vaita. Wiio wendaa kisio kinini, nusiiaa muthanga kukuwa, niwumasya matu ma liu wa indo na kuvwika muthanga. Ngelekany'o ni kuvanda miti ithyululukitwe kiwanza ta muvaka. Miti ino niyaile uvandwa na utaaniu wa1.5 - 2m. Kingi wiio withiawa museo yila wavanda miti miasa na mikuvi ivulene ngelekany'o Mithulu na ndau kana mutavisi.

2. Kuvanda mitauni:- Nzia no yendaa kuvanda kwa misitali ithengeanie tanyusu itambya kuvika matambya eli. No uvande mutau wa miti, mitau ili kana itatu ya liu ngelekany'o mutau wa mbemba mutau wa lusina kana maiu na kaawa. Miti ila miseo ya uvandaniw'a na liu ni ila inengae muthanga nzeve ya nitrogen. Utaaniu wa miti waile matmbya 5 - 8(m). Utaaniu niwaile kwika uyiimwa na iisewa nikana ndikasindane na liu undu wa unou na kyeni. Matu ala masewa no mavulanwe namuthanaga kuete unou kana makanengwa indo ta liu. Kwoou miti ino nundu niseawa ndikaasave muno ndithiawa yaile kwondu wa nima ya ndivi nthini wa TIST onakau nimiseu niseuvasya mawithyululuko undu wa nima nzeo na kwithiwa yi ya vaita kwa muimi. Miti imwe ila ivanda mitauni yithiawa nzeo nundu nithongooa nesa na kwoou noyithiwe itemwe kila mbua nikana inenge mimea/liu nzeve nesa. Nzia ino yithiwa nzeo na mithemba imwe ya miti ta Cassia siamea, Cassia Spectabilis, musanduku, Lusina, Kyoo miti imwe niyithiawa miseo ila mini no yeananga withiaa ndivandaniw'a na kindu nayo nita Mvinje, mukima / muvaliti, munyongo na Albzia spp.



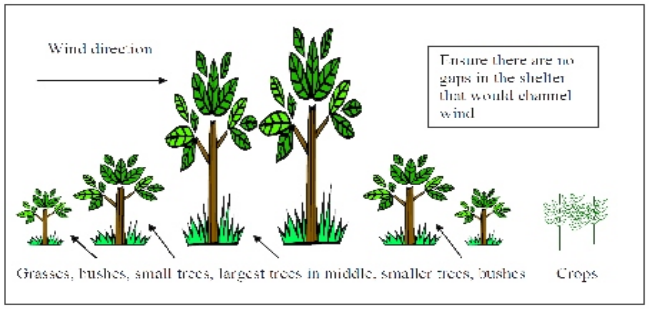


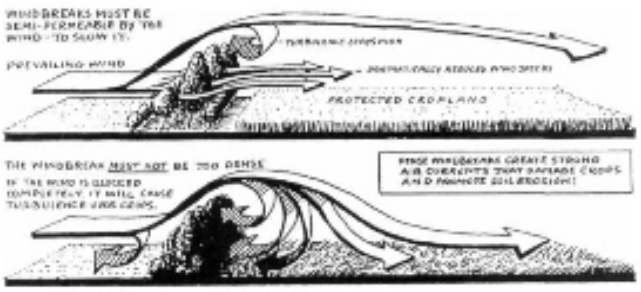


Ve muimi waatumia nzia ino ya kuvanda miti na liu vamwe? ethiwa evo, ni miti na liu wiva syeekie nesa syavandaniw'a? Makulye mamunenge uvoo iulu wa kila mamanyie kumanana na mbanda ino na muyuka na umanyi uyu ila ingi kukwithiwa na mauvundisyo.

Imwe aimi no matate kwa kuvanda mitau o minini niundani yoo na kwona kana vena kivathukany'o na mbua ila ingi.

3. Kusiia kiseve: Kuvanda miti laini itaanie nisiiaa kiseve. Uu naw'o nusiiaa mimea/liu kumana na kukomwa ni kiseve na kwanangika,Vanda miti ila minene kati, miti ila mini iatiioe lainini usu ungi, na ikuthu na nyeki iyiatiia.Vanda isiie kiseve. utaaniu wa laini sya miti waile ithiwa wi 4-5m na 2.4m katikati wa miti ila yi lainini.





Useo wa kuvanda miti ya kusiia nzeve nundu muimi ndeithiawa ayumya kisio kinene kya muunda kuvanda miti no viata wa miti ino niwonekaa na ukatuma withiwa na ngetha nzeo nundu kiseve kila kitonya kwananga liu nikisiie. Ingi miti ya kusiia nzeve yavandwa nai nitonya utuma liu wangika nundu ethiwa nzeve yeelekelw'a ngali ila itaile kana mwina mwanya nzeve itonya ulikila nitonya kwananga mimea. Sisya mundu wisi undu miti ya kusiia nzeve ivandawa autetheesye ethiwa wienda uvanda miti ya kusiia nzeve.

4. Kutiia uvanda:- Vaa ni vala muimi wambaa ukilila mbia siana una ate kuima kisio kina kya muunda na ayieka ikuthu iimea nikana muthanga utunge unou. Kana nutonya uvanda ikuthu ila syongelaa muthanga nitrogen ta munyongo na wuti.
5. Nima ya Kuvulany'a: vaa ni vala muimi uvandaa miti na liu vamwe indi miti uyithia ivanditwe mataila. Miti miseo ya nima ino ni miti ila ietae muunyi na kwongela unou wa muthanga. Uvoo mbeange kilunguni kingi.

6. Kwailya kisio kya ndithya: Kusuvia miti kisioni kya ndithya nikana wongele uithyo/ wovo na ngu. Kwa ngelekany'o kundu kula kumu miti ya imwea na isemei kana imwele, ivoa, muthiia, kyaiki, mulaa, kilului nimiseo nundu matu mayo ni maseo kwa kwa liu wa indo yila kwi thano.

7. Kuvanda miti ta tukuthu:- Kuu ni kuvanda miti mingi vandu vamwe tusio tusio tula twavandwa liu tutekaa nesa na no ivandaniw'e na liu ngelekany'o kuvanda muundani vala vakue ni kiw'u na kuu utee uivanda liu. ingi miti ino nisiiaa nzeve. Miti ino no ivandwe vandu vamosu kuseuvya muthanga wavo.

8. Kwikia muvaka: ngelekany'o Mithulu kana commiphora zimmermannii subsp.

Amanyisya, lilikanai kana miti ya TIST niyaile ithiwa itaaniw'e undu vaile nikana yiane na kwikala kwa ivinda yila yaile. Nzia imwe kati wa ila ineenewe vaa iulu ni nzeo kwa nima ya uvandi wa miti na liu kana ndithya yoka na iitonya utumika kwa nima ya TIST ya ndivi.

Mawoni angi ma kusisya nundu wa mbua isioni imwe sya Kenya.

Isio ila syi iimani syithiawa na muthanga wina asiti mbingi (kula maiani mekaa nesa)

Sisya kuvanda Calliandra Calothyrsus na Morus alba kwa uithyo wa indo.

Kwa muvaka na kusiia kiseve vanda Mithulu, Mikuvulya, Casuarina Cunninghamiana, Millettia dura kana Hakea saligna.

Kwondu wa matunda vanda miti ite uthui ta Ndunda, Ndula kana mapeasi.

Isio ila syinthi (ta kula kaawa kekaa nesa)

Sisya uvande jacaranda Mimosifolia mivakani
Kwa kusiia nzeve na w'umo wa kiw'u vanda mumba-aume/kisambalau.

Kwondu wa matunda vanda kitanda, kiluma, kivakato, kikandania, kikundi, casimiroa. Edulis (white sapota),Annona senegalensis (custard apple), ivela, naEriobbotrya japonica

Vala ukwenda usiia kukuwa kwa muthnga no uvande Calliandra, Morus alba, Grevillea na Markhamia.

Mukima ni muti museo kwa muunyi wa kaawa.

Kundu kula kwiiulu muno na kwikitheeo kite kinene na miti ni minini.

Vanda miti ya usiia kiseve na wiio ila nita Imwea, Mikima, Hakea saligna, Mithulu, Dombeya Spp., Dodoneae angustifolia, Casuarina cunningharniana, Dovyalis caffra. Na mithemba imwe ya miti ya mitunda noyikaa nesa kuu

Memba na ndithya ya ngombe syeia nthini wa Rift Valley.

Nundu mbemba iyikaa nesa vandu ve muunyi sisya uvande na isio sya miti ithengeanie (wood lots) kana miti ya usiia nzeve undu wa kusuvia muthanga ta mikima, Sesbania Spp., Mithulu,mutundu, imwea, ndau, mithiia, ming'olola,casuarina cunninghamiana, Dovyalis Caffra, Markhamia lutea, cordia abyssinica. kililikany'o

Lilikana

Kila miti ietae na uyika ukunikili umanye muthemba ula museo kwa kisio kyaku. Lilikana miti niyuaniia kiw'u, liu na mimea na mithemba ingi ya miemea ndyendete muunyi. Osa uvoo na utao mbeange kuma kwa tukundi twaku kana kwa athukumi maitu ma TIST.

- Kwa ngelekany'o kulya muti ula withiawa na mii miliku na mii minini vaa yiulu kwondu wa uimi wa miti na liu/mimea. Casuarina Spp. Leucaena leucocephala, Cupressus lusitanica na Sesbania sesban syithiawa na mii yi vaa iulu na noyithiwe miseo kwa kusuvia muthanga kukw'a. Ndau (eucalyptus spp na Gmelina arborea niyumasya sumu ula wuaa mimea ila ingi kana ukethia ndimea.

- Nima ya kuvulanya ndikaa nesa kwa isio ila ikwataa mbua yi itheo wa 800mm kwa mwaka.

Vala utonya ukwata umanyi:

Vewna uvoo wa vata unenganitwe iulu wa nima ya miti na mimea kuma website ya Kenya foest na no wisyaisye kwisila
(http:/ agroforesttress.cisat.jmu.edu/

Videos

"Grevillea Agroforestry" (mutalakwe) (6:26) Ninenganite vaita mbingi sya mutalaklwe kwa muimi na nthini wa uimi. ni ieleetye undu wa kusuvia na undu utonya uvandaniw'a na liu/mimea.Wenda sisya http/www.accessagriculture.org/node/895/en

8. Mavuku /Kundu kwa usisya na masyitwa mamo

CARE-International (1989) Agroforestry extension Training Source book. Module 6. Agroforestry Design. Educational Resources Development unit, Nairobi

NEMA (1998) Kusuvia mawithyululuko- A kavuku ka kw'oko na atongoi ma nduani. National Envionment Management Authority, Kampala.

Tengnas B (1994) Agroforestry Extension Manual for Kenya. International Centre for Research in Agroforestry: Nairobi

Ndilikasa ya kuendeea: Kililikany'o kya Kuimia na Itina wa uketha.

Kuimia

Kumia ni kwa vata kila ivinda.

1. Mimea yaku niyendaa kiw'u, liu kuma muthangani na kyeni nikana yiane undu vaile. Ethiwa muunda wina yiia niyisindanaa na mumea ula uvandite na yiia yikatumia kiw'u, unou wa muthanga na kyeni kila kikwendeka ni mumea ula uvandite. Na mwiso ukeethia kana mimea yaku niyamosa na ingi nitonya kuma.

2. Ethiwa nduimite kaingi iinyu na syindu ila syanangaa mimea/liu nisyendeeaw's nivandu tavau muno.T usamu tuu nitutonya kuaa mumea waku. Manya kana undu vandu veany'a yiia now'o minyoo, nzoka, maumbi, syingolond'o na inyu ila syanangaa mimea syithiawa mbingi.

Vaa ve moseo amwe ma kuima.

- Mimea niyianaa na mituki nundu vaikindu kiusindania liu, kiw'u na kyeni nayo.

- Mimea ni kwithiwa na ulumu na nikuasava kwa ivinda inini.

- Mimea nikwataa kyeni kila ikwenda vate kusiiwa.

- Mimea nithiawa na ivuso ya ukwatwa nimauwau maingi.

- Mimea nimisuviiku kumana na mwaki undu unyaiikaa.

- Miunda mitheu niwonany'o wa kana tukundi tunini nitwithiitwe twi ngelekany'o nzeo sya TIST. Na kii kikathokya andu kuka kwona wia wenyu.

Ulilikany'o -Itina wa kuketha.

- Ndukaeke indo ilike muundani kuya matilyo ma mavemba/makusa ala matialaa waketha mbemba, muvya, mboso ona ndwaile uvivya. Indi kolany'a wie nesa nikana utumie kuseuvya vuu wa yiima ula ni museo kwi wakuua. undu wa useuvya vuu wa yiima niwaneenei iulu wa unou wa muthanga na ethiwa ndwaivo no uvindiw'e ingi.

- Ethiwa wina makusa /matialyo maingi ma kumangethani matie muundani nikana mavwike muthanga. Matialyo aya moa nimeutungia muthanga unou kwoondu wa mbanda mbua ila yukite.

- Ethiwa uneekite nima ya kusuvia maima ala unenzite tukamavwike maeke kwondu wa kuvanda mbua ila yukite. Oundu weeka nima ya kusuvia kaingi muundani waku now'o muthanga waku ukuseuva na ngetha kwingiva. (Na mbeange ethiwa ukavandaa uikuany'a mithemba ya kila uuvanda).

- Wamina kuima ikiithya kana niwaveta yiia muundani nundu watia yiia yoee ungu wa mumea niyitonya kuete tumitutu tula twanangaa liu kana uwau kwa mume usu.

Twithiawa na utalo wa w'o, twi akiikiku, na nitutonya kumya utalo kwasia ieleeka. Kwikalya miti vandu va ivinda iasa nikutumaa TIST yikala na kuendeea.

Kuthuka vamwe nthini wa TIST nituvikiiite maundu manene. Umunthi, kwina miti mbee wa milioni 6.6 nundu wa kithito kitu. Kwa Tist kwithiwa itonya kwikala na kutehtya ene na kwithiwa yina ueti kwa nzia ya kuta nzeve itavisaa (Carbon sale) ni undu wa vata kwa aimi kwikala walany'oni na myamuloni ya TIST. Aimi aingi ma Tist nimaendee na kwia ndeto na witikilano/ wiw'ano woo undu wa nzeve ya nyumba sya ngilini ila tweekiie ngiithilo yila twalikile ngwatanioni ya TIST.

Onakau twina aimi amwe oanini ala matethiitwe mayia wiw'ano uyu. Onakau TIST niyitikilitye kusea na kuola uthungu wa miti na kukethat kilungu kya 10% kwa tukundi tunini tula twina miti yina ukuu wa mbee wa myaka ikumi, aimi amwe nimethiitwe maitema miti yothe. Undu uu ti useo kwianana na wiw'ano wa TIST na kwa nzia ino nimaumiasya aimi ma
na soko ya nzeve itavisaa. Nthini wa iseso ya kuvitukithya na ukunikili na eki mamasa vu nimanookililye wasya undu wa aimi amwe kwithiwa maitema miti yonthe. Kitumi nundu undu uu niwukilasya uito kwa miti ila inatalitwe ya carbo na kwithiwa itemetwe ivindani inini muno ta ethiwa inai inatewa.

Ni undu wavata kumanya kana oyila aimi aya matemaa miti yoo na kumita niwaile utunga 12.5% ya viata wa muti usu. Kilungu kya 1/3 kya miti no nikyaile uaanwa kwa ene kikundi kila muimi uyu wi nthini nikana aimi mavikiie kuola wasyo ula meukwata kuma na wasyo wa miti isu ila inatalikaa nthini wa ndivi ya TIST na ingi kuola mbilu na ngala ila matumiie undu wa Avitukithya kusomethw'a na kilungu kya katatu kila kyatialla kyaile kuaiwa CAAC kuiva ngalama ila syalikile kwikala uitalika na maundu angi.

TIST nikuthuthya Ngwatanio ineneenee undu uu nthini wa wumbano ula ungi mekwithiwa naw'o. Atongoi moo nimaile uneena na mutongoi umwe wa nzama ya OLC kana kwa athukumi ma ngwatanio (cluster) na kunengane masyitwa ma aimi na tukundi tula aimi matw'o methiwa matemete miti ngulutu yonthe.

Kuma kw'oko kwa aume kuthi kwa aka: Yuguchi (Muthiani wa JACO-CDM), Fukuda (Muthiani wa JACO - Cdm), Charlie William (TIST), Josephine Mwangi (Muvitukithya wa TIST), Martin Waweru (Mwiki wa masavu wa TIST) ivindani yila manathianaa mwaini wa keli 2014.

April 2014 Newsletter *Not for sale*

Mazingira Bora

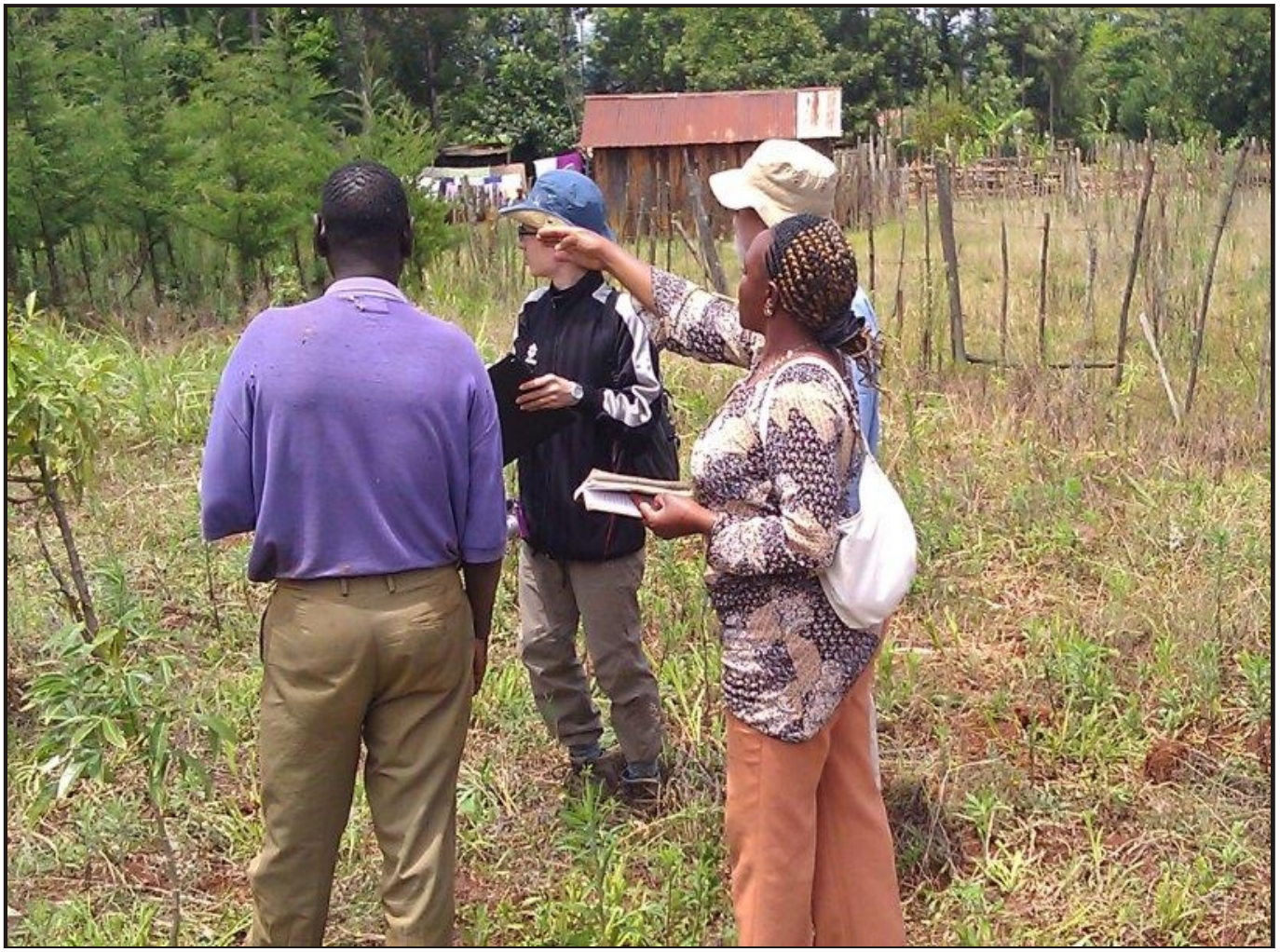
TIST

The International Small Group & Tree Planting Program

www.tist.org

Kipsigis Version

An Environmental, Sustainable Development and Community Forestry Program.



Patricia Wachuka, TIST Quantifiers together with TIST farmer and Verifier auditing the tree groves during the recent Verification exercise.

Inside:

Published by TIST-Kenya. Web: www.tist.org Email: martinweru@tist.org Tel: 0722 - 846 501

Tononetab minutik: Minetab ketik ak minutik.

Ororunet: minetab ketik ak bugonok koboto minutikab imbar anan ko baetab kiyakik en kayumetab niton kotogingei minetab ketik ak rurutik asi kotes rurutik chebo emet ye kiboisien ketik.

Tinye temik kelulenoik chechak en ketik.

- Kiteksen, logoek ak omitwogik alak.
- Kinyorunen kwenik, omitwogikab tuga.
- Ngungunyek chegororon, ngetunen beek ngungunyek, tere koristo, toreti kiwotosiek.
- Kerichek, konu rabinik, tere ngungunye komoib beek.

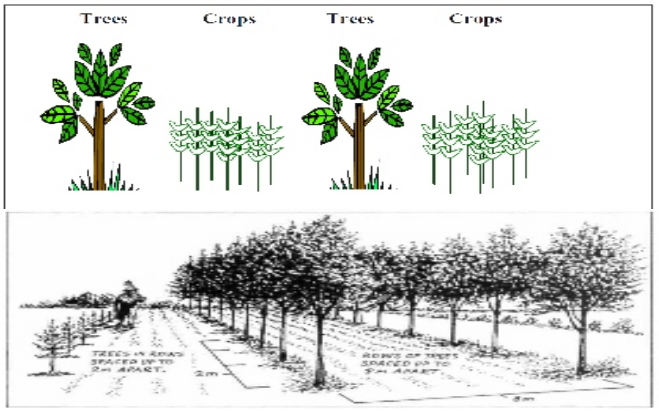
Koborunetab minutik ak ketik.

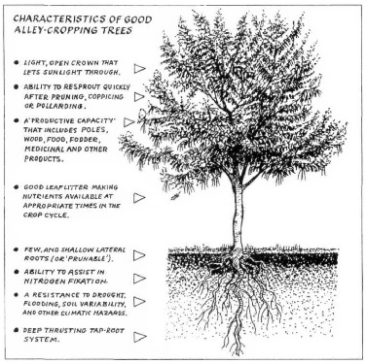
Miten kobotutik cheterchin chechang ak ortinuwek chelelachen chekinyoru en kasarta age tugul, kobowotutik alak kenyorunen kelut en komosto age ak kewelnatet en orage, kimoche biik koboisien kobotutik cheter ak kobchei en tuyosiek, cheisibu ko ortinuwek chebo.

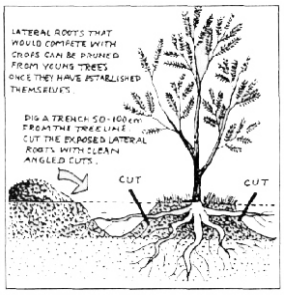
Koletab minutik ak ketik;

1. **Ngotuet:** Niton kotinyegei ak lewenet nebo ketik cheichome asi imin koik ngotuet an chetoreti imbaret, ketichuton kemin komoginge kokwoutik che mengech asi komuch koter ngungunyek ak kogonon beek ak kenyorunen omitwogikab tuga, koborunent nebo ketichu kemine en kiwoto komuti moche anyun kokwoutik kongeten 1.5-2m niton ko koborunet ne kararan komiten ketik chemengech ak chenuongen kou kelelwet ak lantana camara

2. **Ketik chetinye boronik:** Niton kotinyegei ak kakwoutik chemengech (0.5-2m) en tebesindo imuchi kolainitab ketik ko oeng konebo minutik agichek ko somok kounoton en imbar korogunet ko kou bandaek ak indabibit ana ko gawek ak ndisinik, ketik anyun chegororo ko cheteche omitwogik en ngungunyek, en kokwoutik chebo ketik komosire (5-8m) en ketichun konyolu anyun kechoror en abogora asi komoegitun asi kobor chigei omitwogik ak loboiyet, sogek anyun

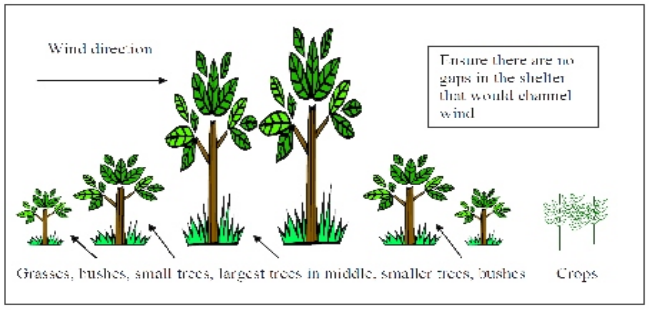


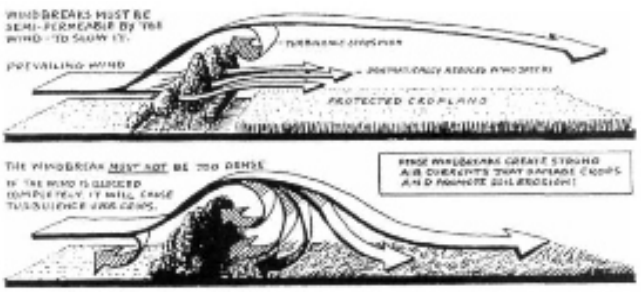




kogochin konyor okwoiyet ngungunyek en abogora ketichon anyun komoliboni TIST amun ibe kasarta ne mingin toreti temik en tugul alak chechang, chechang en ketichu ko ingetil kongotos, niton kogochin ko moegitun koba barak, chenootin mising ko kou, calliandra, cassi siameo, cassia spectabilus, eucalyptus spp, leucaena, markhamia alak kogororon yon mengechen kou chesarur, sebesebe, sesbania sesban

Ara anyu miten temik che kogotiem koyai kouniton agot kogitiem konee ne kararan, ongebchei en tuiyosiek yon kitinye en abogora, asi kesuen walet





3. Tere koristo: kemin ketik chetinye kimnotet asi komuchi koter minutik en kasarta nemiten koristo ko kararan ingeminchin kwenetab imbar, kosib ketik chemengech en lainisiek oeng ak bugonok, ak susuek en komosta age, ibe kokwoutik (4-5) kongen ketit kot koit ak kokwouk (2-4m) en lainit, toret mising temik amun nyurenen ketik chechang, toronito bo koristo komoche biik cheigen amun imuch kogon asenet agot komanai ole keminte

4. Keter imbaret amakikol: Niton komu che timik kobat imbaret ak kebagach koma kigol minutik alak tugul asi korut ketik kowegik okwoiyet ngungunyet, choton cheteche ngungunyek ko kou sesbania spp and gliricidia sepium

5. koyometar minutik ak ketik: Nito koibe kokwoutik cheboroen en minuitik ak ketik asi kengalalen en kasarta ne nyone

6. Kiyagen kiyakik kotoreti: Yeimuch irib ketik en imbar inyoru ibai tuga amun inyoru kwenik ak omitwokikab tuga en komosto ne momiten robta kekole ketik kou chepnyolilok, sertuwet, chebitet, nikiruwet, chepkomon en emet ne miten robta komuche koboisien kou; callianda calothyrus, sesbania, sesban ak leucaena, diversifolia, kiboisien sogek cheyomiotin keboen tugaana ko lego

7. Kimin kosibiny: En minaniton kemine ketik kosibiny en ole morutunen kii anan ole miten koik anan ko chepnyesut, toreti koter kosito ana ketem agebagach ko magigol

8. Kiyoen kinotosiek: Toretikab TIST kongen kole en minetab ketik chebo TIST kotinye kokwouting asi konyor ketik koengitun ago cheibe kasarta negoi, kararan niton baten monyoru chekondok chebo TIST kou; kelelwet, ak commiphora zimermnnii susp

Kerchinel kabwatan ak kebeberuwek chemiten en kenya;

- Korotinuwek chemiten barak ago tororen ago birir ngungunyat (kemine ketitab chaiyat)
- Kerchinen callianda calothyrus ak morus aiba en bayetab tuga
- Kerchinen kiwotosiek ak koristo kou; kelelwet, sebesebe, chesarur, milletia dura ak hakea saliga
- Kerchinen ketikab logoek kou; plums, peaches and pears
- Ole burgei ago chortaat ole rure kawek komie
- Kerchinen jacaranda ole kagiminen en kiwotosiek
- Kerchinen lamaiyat ye kagimin kosim oinet ak kotoreti koristo
- Kerchinen ketikab logoek kou; tree tomoto, persea american (avocado) macadamia teraphylla, passiflora aduilus (kirintila) psidium guajara (maberiat) eriobotrya japonica (lakwat)
- Miten ketik chegororon en teretab ngungunyek kou; calliandra, morus alba, sebesebe ak markhamia lutea sebesebe ko kararan en uronok en kapchain ana en kawek

Koret nemi barak amaleike ako miten ketik che ngerin

Kerchinen ketik chetoreti minutik chemiten kiyotosiek ak ketik kou; chebitoik, sebesebe, hakea saliga, kelelwet silibwet, chesarur ak logoek koyoe komie

Baetak kiyakik ak minetab bandek en rift valley.

En bandek komorure en olemiten uronok chebo ketik kou olekagiminen ketik chechang, olemiten che tere koristo, olemiten chetere ngungunyek ketik kou; grevillea robusta, sesbania spp, croton macrostachyus, kelewet, chepnyaliliet, eucayptus ssp ak corchia abbyssnica

Kibwat: yon kimine ketik ko konech kelunoik chechang ko nyolu ilewen komie chebo oleimenye, alage kogororon en minutik alak komomoche keurto onyoru konetisiek koyob kurubit anan ko en kiboitinikwok

Ketik chetinye tigitik che koen ko kororon amun motinye en baragunyin chechak nomegei niton ak minutik miten che mogororon en minutik kou; eucalyptbhus spp ak gmelina arborea

Tukuk chekonech konetisiet; Miten kou website kenyorunen ketik chegimuche kegol ak minutik en emenyon kinyorunen htt// agroforesttrees.cisat.jmu.edu/

Videos: Gravillea aggravillea agroferesty. (6: 26) ororu mising agobo ketik ak minutik en htt//www.accessagriculture.or/node/8951/

Ibuwotun en

8: Care:-international.
Agroforesty extension training source book module 6: agroforesty design (1989) educational resources development unit Nairobi

Tononetab minutik: Semberet ak keset: Tinye amunee isiyek semberet.

1. Moche minutik beek, omituwogik ak laboiyet asi konyor kimnotet, timndo koen minutik beek ak en let koyomdos.

2. Timndo kounye susurik che en let ko ngeme rurutik ak komeny indorok

Kororintab semberet

- Chogu rurutik amun tinye beek ak omituwogik.
- En kasarta neluach ko egitu rurutik.
- Nyoru rurutik assta .
- Monyoru rurutik mionuwek.
- Ribose rurutik itobitu ngoyonditab.
- Ye kirib mbarenikyok en sembert kogonu koborunet ne chome biik.

Okibwat yon kageges rurutik

Bogomonut mising igonor ngetunonikab rurutik igobo bandaek, ngendaek, mosogik, njuguk ak alak, konor en ole kararan asi itounen iyai kotoltoneiwek chebo imbar, ibosigei anyun karamet.

Agot itinye chechang ichobe kouni; tet kosib imbar en kokuwoutik cheigere ile yomege ak imete konunchi imbar kot koit kolset ne nyole.

Agot ko kogebal keringonikab cf go mat itub igotebi kogany kasrta ne nyone, nito kotoreti konyor ngugnunyek toltoliet, ako inyoru rurutik chewchang.

Kerine keste saratikab seberet komanda en imbar amun konori susurik che ome minutik.

Kobo imanit chelitit, kiitigei, kigochi ni TIST kotonon ye kimin ketik chobo kasrta ne goi.

Ye kiboisien kibagenge en TIST kituwoistoi kii neo mising, amun en niguni ketinye ketik 6.6m amun kimnotenyon, en kayanenyon kototone tist amun nyorunen biik rabisiekab ketik kotoretech tolochikab TIST, miten koyochinet ak iligab koristo asi kotachech TIST, miten temik chomchinet koges chiton ketik 10% en kurubit chegogonyor kenyisiek taman (10yrs) kongeten ingemin, temik alak komuche kotil tugul imuchi niton kogolen TIST en altatab koristo ak temik amun mochomchin niton nmungaret,

Bogomonut niton koguiyo temik che yoe kouniton ago miten en TIST kole monyorunen melekwekwak amun kiisto en kibagenge nebo mungaretab koristo.

Koyonchin TIST kole chiton ne katil ketik tugul en imbarenyin ketilel 12.5% chebo ketik che kalnda, agenge en somok koibe kilasta asi kogiranen asenet, agenge en somok koib tist amun kogiraran chebo masingira bora, ak kiboitiot, alak chegonget kobunchini caac, kogiraranen kiboitikwak.

Igimiti TIST kilastaisiek ko ngalalen en tuiyosiek ko ngalalen en tuiyosiek agobo niton, igonyon kondoik ak kogochi kanaik chebo kurubisiek chetinye mumuset neuni; konyor kiboitiotab olc ana kiboitiotab kilasta

From Left to Right to Left: Yuguchi T. (JACO-CDM Verifier), Fukuda. T (JACO-CDM Verifier), Charlie William (TIST), Josephine Mwangi (TIST Quantifier), Martin Weru (TIST Auditor) during Verification exercise on February 2014