

Mazingira Bora



TIST

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

English Version

An Environmental, Sustainable
Development and Community Forestry
Program.



GOCC Seminar held on June 2-4, 2014 at Gitoro Conference Center.

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Great News: TIST has been voted The Best (Carbon) Offsetting Program in the World.

SUBSISTENCE FARMERS PROVE THEY CAN BETTER THEIR LOCAL ENVIRONMENT AND HELP THE PLANET

TULSA, Oklahoma, U.S.A., 30 June, 2014 –The International Small Group and Tree Planting Program (TIST) has been voted Best Offsetting Project in a global survey conducted by Environmental Finance. This recognition, voted by carbon market industry professionals throughout the world, identified the many benefits that TIST farmers receive from working together to plant trees, and to develop and share local “best practices” that improve their lives.

Environmental Finance is online news and analysis service established in 1999 to report on sustainable investment, green finance and the people and companies active in environmental markets. TIST is the first offsetting project to be recognized by Environmental Finance.

TIST is an agriculture, tree planting, development and carbon credit program that operates in Kenya, India, Uganda and Tanzania. TIST was developed with and for smallholder and subsistence farmers who plant trees on degraded land to improve their livelihoods and food security. Their actions also address local, regional and global environmental issues such as deforestation, biodiversity loss, adaptation and climate change.

“The real credit for the outstanding results of this program belongs to the farmers of TIST,” said Ben Henneke, co-founder of TIST. “These farmers collect local seeds, make nurseries, plant seedlings, and keep them alive through droughts, floods, and raids by cattle, goats and elephants. TIST farmers are an incredibly inspiring group of people. They are proud of the benefits their trees are having on their lives and on the global environment. This award recognizes the hard work done by more than 70,000 farmers planting trees, sharing information, monitoring results and helping other farmers.”

“Tropical deforestation is one of the largest man-made sources of CO₂, and smallholder farmers are

among those most severely harmed by climate change,” continued Henneke. “For the past 14 years, more and more TIST women and men have taken action to reverse deforestation and to improve their own land and the land in their communities. By carefully measuring the growth of their trees they have created a new ‘Virtual Cash Crop’ – carbon offsets. These carbon credits are sold to companies, organizations and people who want to encourage the TIST farmers’ efforts.”

TIST’s carbon offsets from India, Kenya and Uganda are validated and verified to Verified Carbon Standard (VCS) and Climate, Community & Biodiversity (CCB) standards including the “Gold” level. “Sales of these premium quality TIST tonnes now fully support these existing locations and should continue profitably for another 25-30 years,” noted Henneke. “With additional expansion capital, we will continue to replicate this self-sustaining process.”

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TIST farmers have demonstrated that using the new agricultural approaches, planting a variety of tree species, using higher efficiency stoves for cooking, and adopting better health practices have a large impact on their family’s income and health. Recent studies required for the multiple verifications have shown that the benefits the farmers create far exceed the costs of developing the program.

Henneke added, “We have partnered with USAID Kenya over the last five years to expand TIST in Kenya so that more farmers, especially women and youth, could create more benefits for themselves, improve biodiversity and water quality, and protect forests. USAID’s help in Kenya also benefited participants in each of the other countries when new best practices developed in Kenya were shared from farmer to farmer. TIST is showing that improving the local and the global environment creates more income and more opportunities. With more than one billion hectares of degraded land in



need of restoration, TIST demonstrates that creating 'Payments for Environmental Services' for farmers in the tropics can rapidly reduce greenhouse gasses and provide time for the technological development of other 'low carbon' approaches to mature and be proven out."

Charlie Williams, vice president of Clean Air Action Corporation (CAAC), commented, "For the past 14 years we have had three primary concerns: First, that the farmers who joined TIST create a better life for themselves through their efforts. Second, that CAAC would create the monitoring systems and processes to accurately and transparently measure their results. And third, that their measured results would create a new source of income for them." In May of 2011, the TIST program was "First in the World" to complete the

VCS and CCB certifications and have now completed that process a total of 14 times. Williams added, "We are pleased to have customers who recognize both the technical excellence and the human benefits that purchasing TIST tonnes provides. Two of those important customers, The Carbon Neutral Company, and Microsoft have also won awards from Environmental Finance. The Carbon Neutral Company was voted 'The Best Offset Retailer' and Microsoft was voted 'Best Corporate Offset Programme.' TIST continues to replicate and expand because there are millions of farmers who want to join. We look forward to accomplishing the financing to meet the needs of those farmers, and to increase the beneficial impact of TIST on global climate change"

TIST: Clear cutting of TIST tree groves is a serious violation of TIST Values and Green House Gas contract. It hurts positive actions of thousands of TIST Farmers.

Last month, we discussed about clear tree cutting during the GOCC seminar held at Gitoro in June 2014, immediately after TIST-USAID Five years of successful partnership celebration.

This month, we are carrying a reminder of last month's article with a call for information and suggestion from TIST farmers on the best ideas on how to completely avoid clear cutting. TIST's Leadership council appointed Charles Ibeere (0720 474209) to work closely with Cluster leaders, GOCC Representatives and TIST farmers in addressing this issue.

It is important to note the Green House Gas contract, which all TIST farmers are party to, stipulates an agreement by the farmers to keep trees for long-term. It only allows farmers to thin their trees (if closely spaced), prune branches for firewood, and cut up to 5% of the group trees each year when the trees are 10 years or older.

The above rule is necessary for continued participation in carbon program. Carbon buyers want to be assured that the trees from which they

buy carbon credits are kept alive. Where the farmers cut their trees, carbon buyers always decline to buy credits from such entities because they are considered high risk. This is why an action of few farmers who violate this rule could make carbon buyers shun from buying other TIST farmers carbon credits.

There have been other concerns too. A farmer who cuts down all his trees has been receiving TIST Trainings, Quantification and Mazingira Bora newsletters. All the expenses incurred by him are passed on to other farmers.

As a reminder about actions GOCC said they would implement, please contact Charles (0720 474209) about:

- a) Ideas from other farmers in Clusters meeting about the actions that should be taken on those who clear-cut.
- b) How such a farmer who clear-cut would compensate other farmers so as to cushion them from losses in the carbon business.



TIST Program in Igembe Region.

By William Mwito, TIST Cluster Servant.

We, TIST Farmers from Igembe South are happy to report our achievements from participating in the TIST program. They include but are not limited to:

1. We receive trainings monthly by cluster servants as well as monthly newsletter known as Mazingira Bora. This has enabled us to increase our farm productivity in maize, fruits and other crops. We have learned to organize our shambas better, control soil erosion, increase soil fertility, practice conservation farming and do compost manure.
2. Farmers bordering rivers are trained about conservation of riparian areas. This has ensured consistent and reliable supply of clean water for our animals and for domestic use. Additionally, we have protected our lands from constant degradation as soil erosion is controlled.
3. TIST Values and Rotational Leadership minding

about gender sensitive has greatly transformed our society. Women, Men and Youth have equal opportunities to take leadership positions, demonstrate and pass on their leadership gifts and talents, build confidence amongst themselves and provide new ideas for our development and growth.

4. Tree incentives from TIST have helped change many farmers' lives. In some of the Clusters, farmers have organized themselves to do table banking, merry go rounds and therefore multiplying the amount of help that goes to the farmer.
5. The use of TIST energy saving stoves help increase tree lives as fewer trees are cut for firewood. The stoves have significantly improved health and safety as smoke is minimal and always directed out of kitchen area, and children's safety in the cooking area is greatly enhanced.

Status of TIST Clusters in Igembe

Cluster	Groups	Trees	Next Meeting	Last Election	Members	Groves	Area
Ankamia	40	41820	14 Aug 2014	12 Jun 2014	307	306	104.1
Antubochiu	29	25273	15 Aug 2014	17 Jan 2014	176	241	103.7
Athi	17	16187	06 Aug 2014	04 Jun 2014	104	130	88.7
Burimaria	21	20828	04 Aug 2014	05 May 2014	127	183	84.8
Kangeta	26	1815	27 Aug 2014	30 Jan 2014	165	22	6.7
Kawiru MCK	62	30081	01 Aug 2014	06 Jun 2014	499	359	281.7
Kiegoi	17	6856	27 Aug 2014	31 Jan 2014	116	77	32.0
Kiengu	18	11702	05 Aug 2014	06 Apr 2014	138	108	50.2
Maua	38	9783	07 Aug 2014	02 Jan 2014	224	122	43.9
Mutuati	26	2412	23 Aug 2013	18 Apr 2013	163	68	12.9

The above information is also available from www.tist.org or www.tist.org/mobile.



Athi Cluster is one of the TIST Clusters that are organizing themselves through table banking. These photos were taken during their July 2014 month meeting.



TIST: Soil Fertility.

What is soil?

Soil is the uppermost layer of the earth. It contains air, water, organic matter and mineral matter.

How is Soil formed?

The weathering (breakdown) of rocks provides the minerals needed to support plant life. Plants are then added to the soil as organic matter. As more rock is broken down and more organic matter is added, so more water can be held in the soil, further promoting plant growth

Why is organic matter important?

Organic matter (mainly formed through the decomposition of plant material) releases a lot of nutrients, which are available for uptake to new plants. It also supports the life of beneficial microorganisms in the soil, helps with water infiltration and helps to bind the soil together.

What determines the type of soil found?

- *The climate:* both the temperature and water availability affect the rate of weathering of rock.
- *Organisms:* bacteria, fungi and worms amongst many others live in the soil. Some play a key role in mixing the soil, such as earthworms. Soil organisms help decompose organic matter, and some help plants to fix nitrogen (e.g. Rhizobium bacteria).
- *Topography:* the shape of the land. For example, soil on slopes is generally thinner and more easily eroded than the soil found collected in valleys.
- *Parent material:* the type of rock the soil is formed from.
- *Human behavior:* the way we use and care for our soil (or not) will greatly affect its fertility.

The texture of the soil you have depends on how much sand, silt and clay it is made from. The diagram on the following page shows you the main categories of soil texture. The texture of the soil and structure influence how easily roots can penetrate the soil, and how much water can be retained.

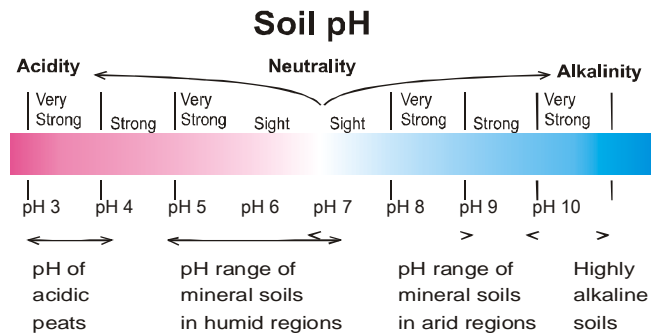
Why is soil pH important?

How acidic or alkali a soil is (its pH) affects how available soil nutrients are for plant uptake and what type of soil organism life can be supported. Generally most soil nutrients are more soluble (and therefore available for plant absorption) when in an acidic soil compared to a neutral or alkaline soil. However, if the soil is too acidic many bacteria cannot grow, and this will affect the rate of decomposition of organic matter. Most good topsoils have a pH between 5.5 and 7.5 and are relatively dark in color.

What is a fertile soil?

A fertile soil is one that has an available supply of all the nutrients needed to support plant life.

- *Primary nutrients:* nitrogen, phosphorus, potassium
- *Secondary nutrients:* sulphur, magnesium, calcium
- *Micronutrients:* iron, manganese, boron, chlorine, zinc, copper, molybdenum, nickel



Strategies to improve soil fertility

- Consider adding nitrogen (in the form of green manure from nitrogen-fixing plants) and phosphorus (in the form of rock phosphate).
- Collect and use livestock manure and urine. This is better in composted form. Fresh sources may contain too much ammonia content (which may harm plants) and may contain higher amounts of pathogens (disease-causing organisms). Composted manure contains fewer pathogens. If you do use fresh manure, use moderately and leave a minimum of two months in between applications.
- Add organic matter through composting (details below).
- Practice conservation agriculture best practices as described in previous units:
 - o Crop rotation
 - o Intercropping
 - o Agroforestry
 - o Planting leguminous cover crops
 - o Leaving land fallow
 - o Use of mulch
 - o Using conservation farming holes
 - o Reduce water erosion through tree planting, terraces, fanya juu
- Consider intercropping with Pigeon pea (*Cajanus cajan*), Dolichos lablab, *Mucuna pruriens*, *Crotalaria*, *Canavalia*.
- Consider adding ash, which is rich in calcium and potassium carbonate.
- Add lime if you know your soil is too acidic
- It is best not to add additional minerals (apart from those found in compost) without testing the soil first to see what nutrients and minerals are actually needed.
- There may be some circumstances when you need to apply inorganic chemical fertilizers. Use accordingly to the manufacturer instructions and research which ones are most ecologically sound for your area through getting advice from your extension officers



Composting

Compost manure is a natural fertilizer to help your crops grow. It is better than chemical fertilizer because it is natural and has no damaging effects

for the crops and environment. Composting is one of the easiest, cheapest and most effective ways of improving soil fertility.

Nitrogen	Phosphorus (P ₂ O ₅)	Potassium (K ₂ O)
<ul style="list-style-type: none"> Leguminous crops that are used as green manures or as mulch provide between 20 to 80 kg N / acre which can be used by subsequent crops. Blood meal/ leather meal 12-15% N. They are applied directly to the crops. Urines from all species contain pure urea (up to 1% N)- It is not a stupid idea to urinate on the compost heap! Poultry manure 8-20 kg N/t Pig manure 3-5 kg N/t Goat / sheep manure 2-4 kg N/t Cattle manures 2-3 kg N/t Compost * 1 kg N/t Manure teas and plant teas provide easily available nitrogen and can be used as top dressing or foliar feeds. 	<ul style="list-style-type: none"> Rock Phosphate 20-33% Bone meals 12-25% Poultry manure 10-25 kg/t Pig manure 3-6 kg/t Goat/sheep 2.5-4 kg/t Cattle manure 2-3 kg/t Compost * 4kg/t 	<ul style="list-style-type: none"> Wood ash 3-7% Goat / sheep manure 12 kg/t Cattle manure 5-12 kg/t Poultry manure 5-12 kg/t Compost * 6 kg/t Pig manure 3-7 kg/t Urines: 1-3 kg/t
<p>Content of purely vegetative compost. If compost is prepared with livestock manures, rock phosphate and wood ash, the product will have higher nutrient contents.</p> <p>Nutrient contents of manures and composts are highly dependent on handling and storage and on feed quality!</p>		

What can be used for compost?

- Crop residues, weeds, dead leaves, any trimmed vegetation, manure and urine from livestock, bedding from livestock, kitchen food waste from fruit and vegetables, ash, shredded paper and cardboard.
- Don't use meat, dairy products, fats, oils, metal or plastic.

General best practices for composting:

- Choose a shaded area for your compost
- Cover with banana leaves or a plastic sheet
- Sprinkle with water during the dry season
- Protect from rain (which will wash nutrients away)
- As a general guide aim for:
 - One third 'green vegetation' (grass clippings, fruit, vegetables, egg shells, nut shells, manure, weeds, plants)
 - One third 'brown vegetation' (dry leaves, straw, sawdust, cardboard and fine crop residues)
 - One third bulky material such as chopped branches and larger crop residues.
 - Ensure you use plant material that has not yet seeded, and do not use diseased material
 - Layer the materials in a pile or in a hole. Air is needed for compost, so mix the materials together and do not compact the material down
- Water the pile of material, cover and leave so that material decomposes over the next couple of months. You can occasionally mix the material.
- If the material becomes slimy or smelly over time it may be too wet or have too much green vegetation. Add more brown vegetation if this is the case, and mix.
- Try to have your batch of material ready for mixing, watering, covering and leaving 2-3 months before the rainy season so it will be useful for the planting season.

- The compost should be brown and crumbly when ready. You can sieve the material to get a finer mixture, and add the larger pieces back into the compost pile for the next batch. Some of the TIST groups use a more specific method, which they have found effective. They have described the process below:

Preparation of compost manure by some TIST groups:

- 1) Choose an area 4m x 4m for your compost pit
- 2) Clean the area
- 3) Dig a hole of diameter 3 - 4m and 1.5m deep
- 4) Collect all the remains of the crops you have and cut them into small pieces. (e.g. the leaves and stalks of maize, millet, beans)
- 5) Put these crops remains into the hole up to a depth of 0.5m.
- 6) Then add 5 liters of ash
- 7) Next add about 30cm (or as much as available) of animal dung (e.g. dung from pig, cow, goat or chicken).
- 8) Next put another layer of crop leaves and stalks (0.5m)
- 9) Add another 5 liters of ash
- 10) Add the leaves and stalks again until the hole is almost filled
- 11) Finally, add a layer of soil until the hole is filled
- 12) While filling the hole with soil, put a long stick in the middle of the hole so it reaches the bottom.
- 13) Leave the compost pit for 90 days (3 months).
- 14) During this period use your dirty water to water the compost pit. For example, after cleaning your house or clothes, empty the used water over the compost pit. If you have animals you can also pour animal urine over the pit.
- 15) Try to water the compost pit in this way every day, or whenever water is available.
- 16) After the 90 days the manure will be ready. Use the stick as a thermometer – when the compost is ready it should be hot and you may even see steam coming from the stick after you have removed it.

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Kimereu Version

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GOCC Seminar held on June 2-4, 2014 at Gitoro Conference Center.

Inside:

Ntumiri inthongi mono:TIST nithuritwe iri muradi juria mwega buru jwa gukucia ruugo ruruthuku ndene ya nthiguru yonthe. Page 2

TIST:Ugiti bwa miti yonthe ndene ya miunda ya TIST ni kuuna na njira inene jaria TIST ikirite na kinya kandarasi ya GhG. Nikugitaragia mantu jameega jaria jakuthithua ni arimi ba TIST ngiri nyingi. Page 3

TIST ndene ya Igembe. Page 4

TIST: Unoru bwa muthetu. Page 5



Ntumiri inthongi mono:TIST nithuritwe iri muradi juria mwega buru jwa gukucia ruugo ruruthuku ndene ya nthiguru yonthe.

ARIMI BA MIUNDA IMININI NIBONENIE ATI NO BATHONGOMIE NARIA KUBATHIURUKITE NA KINYA GUTETHIA NTHIGURUYONTHE

TULSA, Oklahoma, U.S.A., Tariki mirongo ithatu mweri jwa itantatu, 2014 – The International Small Group and Tree Planting Program (TIST) nithuritwe iri muradi juria mwega bru kiri kurita ruugo ruruthuku ndene ya utari bwa nthiguru yonthe buria bwathithirue ni kياما gigwitwa Environmental Finance. Kumenyeka guku, kuria kwaringirwe kura ni bonthe ndene ya thoko ya ruugo ya nthiguru yonthe, nikwonere baita inyingi iria arimi ba TIST boonaga kuumania kuritaniria ngugi kuanda miti, na kwambia na kugaana mitire iria miega buru ya kuthithia mantu gatai gati kao iria itumaga miturire yao ikathongoma nkuruki.

Environmental Finance iji ni nteto iria ciretagwa na gutegerwa gukurukira internet iria yambirue 1999 iri ya kuejana ripoti kwegie utumiri mbeba mantune jaria jakumbika ndene ya igita riraja, mbeba kuumania na uandi na antu na kambuni iria cikwonekana kiri thoko ciegie naria gututhiurukite. TIST ni muradi jwa mbele kiri iria iritaga ruugo ruruthuku iria ionekene ni Environmental finance. TIST ni muradi jwegie urimi, uandi miti, witi na mbele na kwendia ruugo juria jwitaga ngugi ndene ya Kenya, India, Uganda na Tanzania. TIST niyambirie ni arimi babanini ba irio baria baandga miti ndene ya miunda iria ithukitue nikenda bathongomia miturire yao na kumenyeera ati irio birio rionthe. Ngugi cia arimi baba nicitegagiira thiina iria cikwoneka naria kubathiurukite akui, ntuurene na kinya ndene ya nthiguru yonthe ta ugiti miitu, kuthira gwa gukaranira kwa mithemba mwanya na imingi ya imera na nyomoo na kugaruka kwa rera.

“Baria eene kuumbana na aria muradi juju jukinyite ni arimi ba TIST”, Ben Henneke umwe wa aambia ba TIST niu augite. “arimi baba nibojanagia mbeu, bakathithia minanda, bakaanda miti, na bakamika iri moyo riria kurina uumo, kuigara kwa ruuji, kuumania na nyomoo ta ng’ombe, mburi na njogu. Arimi ba TIST ni gikundi kimwe kia antu kiria gigwikira antu bangi wendo bwa kuthtia mantu. Nibagwikumiria baita iria miti iji irinacio ndene ya miturire yao na ndene ya nthiguru yonthe. Kiewa giki nigikuuga ati ngugi ya arimi baba nkuruki ya ngiri mirongo mugwanja ya uandi miti, kugaana

umenyo, kuthima baita na gutethia arimi bangi nioni.”

“Ugiti miitu ndene ya nthiguru iria ciithagira cirina ngai inyingi ni kiumo gia ruugo ruruthuku rwa kaboni kimwe kia biria binene buru, na arimi babanini ni bamwe ba baria bagitaragua nkuruki ni kugaruka kwa rera,” Henneke netire na mbele kuuga. “Ndene ya miaka iria ikurukite ikumi na inna, ekuru na aume bangi na bangi ba TIST nibajukitie itagaria kugarura jaria jaumanagia na ugiti miitu na kuthongomia miunda yao bongwa na ingi ya ntuura ciao. Na njira ya kuthima bwega ukuri bwa miti nibambiritie kimera gikieru gia kurita mbeba gukurukira kwendia ruugo. Krediti iji cia kaboni niciendagirua kambuni na antu baria bakwanda gwikiri ngugi cia arimi ba TIST inya.

Ruugo ruria rugwatitue ni miti ya TIST kuuma India, Kenya na Uganda niruthimi na rwakurukithua ni VCS na CCB amwe na “Gold level”. “Wendia bwa ruugo ruru kuumania na TIST nandi nibugwataga mbaru miunda ya TIST iria irio na niibati gwita na mbele kwona baita ndene ya miaka mirongo iri na itano gwita mirongo ithatu iria iijite,” Henneke oongerera. “Kurina mbeba ingi cia gutamba, tugeeta na mbele gucokera ngugi iji igucirungamira.”

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Arimi ba TIST nibonenie ati bagitumagira mitire imieru ya urimi, bakaanda miti mithemba mwanya ya miti, gutumira mariko ja gutumira nkuu inkai, na kwambiria mitire imiega ya kumenyeera thiria ya mwili ni mantu jarina mwago jumunene kiri mbeba iria bakwona na kiri thiria ya mwili. Uthomi bwa akui buria bukwendekana kiri gukurukithua kairi na kairi nibwonenia ati baita iria arimi boonaga niigukuruka mbeba iria itumiritwe kwambiria na gwitithia muradi juju.

Henneke noongerere, “Nitwitaniiritie ngugi na USAID Kenya ndene ya miaka itano iria ikurukite kuaramia TIST ndene ya Kenya nikenda arimi bangi babaingi, mono ekuru na antu babethi, bacithithiria baita, bathongomia gukaraniria kwa imera na nyomoo cia muthemba mwanya na bathongomia utheru bwa ruuji na bakaria miitu. Utethio bwa USAID ndene ya Kenya nibuete arimi baita ndene ya nthiguru ingi cionthe riria miitire imieru iria ithithagua Kenya ciaganirwe kuuma murimi gwita



kiri ungi. TIST nikwonania ati kuthongomia naria gutukuiritie na kinya naria kuri kuraja natwi nikuthithagia mbecha na twanya tungi tutwingi. Kurina munda hectare nkuruki ya bilioni imwe juthukitue jukwenda gucokanirua, TIST nionenie ati kuambiria “kuriwa niuntu bwa ngugi iriaa iti kuthongomia naria kuthiurukite’ kwa arimi ndene ya nthiguru iji ciri mbura inyingi nikunyiagia ruogo ruria rurutagiria nthiugur na gugatua kanya ka witi na mbele bwa kuthiria kuthithia na gukurukia njira ingi iria itiita ruogo rwa kaboni rurwingi.

Charlie Williams, Munini wa munenene wa Clean Air Action Corporation (CAAC), nawe naugire, “Ndene ya miaka ikumi na inna iu ikurukite nitwithiritwe turina wasi wasi kwegie mantu jathatu: Mbele, ati arimi baria batonyete kiri TIST bathongomie miturire yao gukurukira ngugi ciao. Bwa jairi. Ati CAAC ikathithia bia gutegeera na kuthima mantu ja TIST bwega na gutina witho. Bwa jathatu ati mantu ja TIST jaathimwa arimi bakona

kiumo kingi kia mbecha kiribo.” Mweri jwa itano, 2011, muradi jwa TIST jwari jwa mbele ndene ya nthiguru kurikia gutegeera ngugi na gukurukithua na nandi nibathithiritue untu bou maita ikumi na janna. Williamsa nongerere, “Turina kugwirua kwithirwa turina aguri baria boonete uumbani bwetu kiinto na baita kiri muntu iria kugura ruogo rwa TIST kuretaga. Bairi ba aguri baba ba bata, The Carbon Neutral Company na Microsoft kinyabo nibashindite kiewa kumani na Environmental Finance. Kambuni iji ya The Carbon Neutral Company niyathurirwe iri “Muguri umunini uria mwecha buru” na Microsoft niyathurirwe iri kambuni iria njega buru kiri kambuni inene. TIST nitaga na mbele gucokera na gutamba niuntu kurina milioni inyingi cia arimi baria bakwenda gutonya. Nitweterete mono kuumba kwona mbecha ing’ani cia gukinyira jaria arimi bakwenda, na kwongera baita cia TIST kiri ugaruki bwa rera ya nthiguru.”

TIST: Ugiti bwa miti yonthe ndene ya miunda ya TIST ni kuuna na njira inene jaria TIST ikirite na kinya kandarasi ya GhG. Nikugitaragia mantu jameega jaria jakuthithua ni arimi ba TIST ngiri nyingi.

Mweri muthiru, nitwaariririe ugiti miti yonthe ndene ya semina ya GOCC iria yathithirue Gitoro mweri jwa itantatu 2014, orio tukurikia kiatho gia kugwirirua uritaniri ngugi bwa TIST na USAID miaka itano buria buumbene.

Mweri juju, nitukuburikania uria twaugire mweri muthiru riria tworirie arimi ba TIST batue nteto na mathuganio kwegie njira iria njega buru ya kuthiria ugiti miti yonthe ndene ya miunda ya TIST. Atongereria ba TIST ndene ya LC nibathurire Charles Ibeere (0720 474209) kuritaniria ngugi ya akui na atongereria ba cluster, arungamiri ndene ya GOCC na arimi ba TIST kiri gutegeera untu bubu.

Kurina bata kurikana kandarasi ya GhG, iria arimi bonthe basainiti, iria yugite arimi nibagwitikiria gwika miti igita riraja. Itikagiria arimi aki gutaure miti (kethira nikuianiritie mono), kugita biang’i bia gutumira ja nku, na kugita mwanka gicunci kia miti itano kiri o miti igana ya gikundi o mwaka miti yakinyia miaka ikumi kana yakura nkuruki.

Rwatho ruru rurina bata mono kethira tukendelea kwithirwa turi ndene ya thoko ya ruogo.

Aguri ba kaboni nibendaga guhakikishirwa ati miti iria bakugurira ruogo igekwa iri moyo. Naria arimi bagiitaga miti, aguri ba ruogo nibaregaga kugura kuumania nabo niuntu boonaga kurina ugwati bwa iguru mono. Giki nikio gitumi mathithio ja arimi babakai baria baunaga rwatho ruru jomba gutuma aguri bakarega kugurira arimi bangi ba TIST ruogo rwao.

Nikwithiritwe kurina kinya mantu jangi. Murimi uria ugita miti nethiritwe akiritanagwa, gutarirwa miti na kuewa gazeti o mweri ni TIST. Mbecha iji itumiritwe kiriwe niciriagwa ni arimi bangi.

Kurikanua mantu jaria GOCC yaugire ikathithia, ringira Charles (0720 474209) kwegie:

- a) Mathuganio kuuma kiri arimi bangi indene ya micemano ya cluster kwegie matagara jaria jabati kujukua kiri baria bagitaga miti yonthe ndene ya miunda ya TIST.
- b) Uria murimi uria ugita miti yonthe akaria arimi bangi nikenda abarigiria mbecha iria bakagitwa ndene ya thoko ya ruogo.



TIST ndene ya Igembe.

Ni William Mwito , Nthumba ya cluster ya TIST ikuuga.

Batwi, arimi ba TIST kuuma Igembe ria gaiti nitukugwirua tukinenkanira ripoti ya jaria tuumbite gukinyira gukurukira kwithirwa turi kiri muradi jwa TIST. Ti aki indi ni amwe na:

1. Nituritanagwa o mweri ni nthumba cia cluster na kinya kuewa gazeti ya o mweri iria itagwa Mazingira Bora. Bubu nibutumbithitie kuongerwa uciari bwa miunda yetu bwa mpempe, matunda na imera bingi. Nituthomete kubangira miunda yetu bwega nkuruki, kunyiyia gukamatwa kwa muthetu, kwongera unoru bwa muthetu, kurima na njira ya Kilimo Hai na kuthithia mboleo ya mati.
2. Arimi baria baankene na nduuji nibaritani kumenyeera nteere cia nduuji. Bubu nibutumite gukethirwa kurina ruuji rurutheru igita rionthe rwa ndithia cietu na rwa gutumira mantune jetu ja nja. Kwongera, nitumenyerete miunda yetu kuumania na kuthukua kuria kuumanagia na gukamatwa kwa muthetu.
3. Mantu jaria TIST ikirite na utongeria bwa

kuthiuruka buria bumenyaga ati muntu wonthe muka na murume nakwona kanya nigutumite ntuura cietu ciagaruka na njira inene. Aka, arume na antu babethi nibaei twanya tung'anene twa kujukia itia bwa utongeria, kwonania na kunenkanira iewa bia utongeria, gwakana gatigati kao na kuuma na mathuganio jameru niuntu bwa witi na mbele na gukura gwetu.

4. Mbeca cia gwikanira motisha kuuma kiri TIST nicitethetie kugarura miturire ya arimi babaingi. Ndene ya cluster imwe, arimi nibaibanganitie kuthithia wiki mbeca, kuriunganira kimbeca na kwou bagaciarithania utethio buria bwitaga kiri murimi.
5. Utumiri bwa mariko ja TIST jaria jatumagira nkuu inkai nibutethagia kwongera miti niuntu miti imikai nkuruki nigitagwa gutumirwa ja nku. Mariko jaja nijatethetie kuthongomia thiria na kunyiyia ugwati niuntu toi ni inkai na ieitagwa ikauma riikone na kwou aana no bakare bwega mono riikone niuntu ugwati nibunyiagua.

Status of TIST Clusters in Igembe

Cluster	Groups	Trees	Next Meeting	Last Election	Members	Groves	Area
Ankamia	40	41820	14 Aug 2014	12 Jun 2014	307	306	104.1
Antubochiu	29	25273	15 Aug 2014	17 Jan 2014	176	241	103.7
Athi	17	16187	06 Aug 2014	04 Jun 2014	104	130	88.7
Burimaria	21	20828	04 Aug 2014	05 May 2014	127	183	84.8
Kangeta	26	1815	27 Aug 2014	30 Jan 2014	165	22	6.7
Kawiru MCK	62	30081	01 Aug 2014	06 Jun 2014	499	359	281.7
Kiegoi	17	6856	27 Aug 2014	31 Jan 2014	116	77	32.0
Kiengu	18	11702	05 Aug 2014	06 Apr 2014	138	108	50.2
Maua	38	9783	07 Aug 2014	02 Jan 2014	224	122	43.9
Mutuati	26	2412	23 Aug 2013	18 Apr 2013	163	68	12.9

Mantu jaja no ujone aja www.tist.org kana aja www.tist.org/mobile.



Cluster ya Athi ni imwe ya cluster cia TIST iria ikwibangania gukurukira gwika mbeca. Mbicha iji yajukirue mucemanione jwao jwa o mweri jwa mweri jwa mugwanja 2014



TIST: Unoru bwa muthetu.

Muthetu nimbi?

Muthetu ni gicunci kia iguru buru kia nthi. Jwithagirwa jurina ruugo, ruuji, biria biorete na kinya mineral.

Muthetu juthithagua atia?

Kunangwa kwa maiga nikuejanaga mineral iria ciendekaga kiri imera nikenda bitigakue. Imera riu nibiongagirwa muthetune niuntu nibioraga na bikathuthurukanga. O uria maiga jamaingi jakuunikanga nou imera bibi biori bikwongereka, nikenda ruuji rurwingi nkuruki rumba gwikwa ndene ya muthetu, na kwou rumba gwithithia na mbele gukuria imera.

Niki into bibi biori birina bata?

Into bibi biori (mono kuumania na kwora kwa imera) nibiritaga irio bibingi, biria biithagira birio niuntu bwa imera bibieru. Kinya nibiikaga tunyomoo turia turi baita ndene ya muthetu, bigatethia ruuji gutonya muthetune na kinya bigatethia muthetu kugwatana amwe bwega.

Nimbi yugaga muthetu juria jurio ni jwa muthemba juriku?

- Rera: Murutira na ruuji ruria rurio niruugaga mpwi ya iiga ya kuunikanga
- Tunyomoo: Tunyomoo tumwe nituritaga ngugi ya bata ya kuungania muthetu ja mang'ionyo jaria jetagwa earthworms. Tunyomoo twa muthetu nitutethagia kworia imera na nyomoo na tungi nitutethagia gwikira nitrogen ndene ya muthetu (ja Rhizobium bacteria).
- Uria muunda jukari: Mung'uanano, muthetu kibarine ni jumuceke na jukamatangagwa nkuruki ya muthetu juria jwithagirwa juri miurone.
- Iiga riria juumenie nario: muthemba jwa iiga riria muthetu juumite.
- Mathithio ja antu: uria tutumagira na kumenyeera muthetu jwetu gukauga unoru bwaju.

The texture of the soil you have depends on how much sand, silt and clay it is made from. The diagram on the following page shows you the main categories of soil texture. The texture of the soil and structure influence how easily roots can penetrate the soil, and how much water can be retained.

Niki pH ya muthetu irina bata?

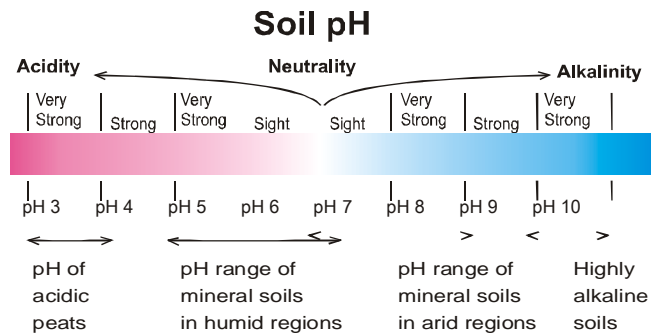
Acidi kana alkali iria iri kiri muthetu (PH yaju) niugaga kethira irio birio niuntu bwa imera nani tunyomoo turiku muthetune tukoomba gutuura. Jaria maingi irio bia muthetu nibitonyaga ruujine (na kwou imera nobibijukie bikijukia ruuji) riria muthetu jurina acidi nkuruki ya riria jukiri kii kana juri alkaline.

Indi, kethira muthetu jurina acidi inyingi mono bakteria inyingi itiumba gukura, na bubu bukanya kwora kwa imera na nyomoo. Mithetu imiega ya iguru imingi iri PH ya 5.5 gwita 7.5 na nimiuru (rangi)

Muthetu jumunoru ni juriku?

- Muthetu jumunoru ni juria jurina irio bionthe biria bikwendeka niuntu bwa imera gutuura bing'ani
- Primary nutrients: nitrogen, phosphorus, potassium

- Secondary nutrients: sulphur, magnesium, calcium
- Micronutrients: iron, manganese, boron, chlorine, zinc, copper, molybdenum, nickel.



Kuongera unoru bwa muthetu

- Thugania kwongera nitrogen (mboleo itiumi kuumania na imera biria biikagira nitrogen muthetune) na Phosphorus (rock phosphate).
- Uthurania na utumire ntaka ya ndithia na maumago. Ni injega nkuruki yathithirua kirinyene. Mboleo itiumi no ithirwe irina ammonia inyingi mono (iria iumba kugitarua imera) na noithirwe iri tunyomoo turia turetaga mirimo tutwingi. Watumira ntaka itiumi, tunmira inkai na ukare mieri nkuruki ya iiri mbele e wikira yo kairi.
- Ongera mati gukurukira gwika kirinyene (ja uria ukwirwa aja nthi)
- Tumira mitire iria miega bubu ya urimi bubwega ja uria wathiri jamaingi kanyuma au:
 - o Kugarurania imera
 - o Kuanda imera biungeneue
 - o Kuungania miti na imera
 - o Anda imera biria bicokagia nitrogen muthetune biri bia gukunikira nthi
 - o Tiga muunda jutiandi
 - o Use of mulch
 - o Tumira marinya ja kilimo hai
 - o Nyiyia ukamati bwa muthetu gukurukira kuanda miti, kwinja mitaro
- Thugania kuandaniria Pigeon pea (Cajanus cajan), Dolichos lablab, Mucuna pruriens, Crotalaria, Canavalia.
- Thugania kwongera muju, juria jurina calcium na potassium carbonate na wingi.
- Ongera lime kethira nwiji muthetu jwaku jurina acidi inyingi
- Ni bwega nkuruki kurega kwongera mineral ingi (nkuruki ya iria ciithagirwa ciri mboleone) utithimite muthetu jwaku kwona ni irio na mineral iriku cikwendeka.
- Magitene jamwe no witie gwikira fertilizer ya nduka. Ikira kulingana na uria muthithia aandikite na urie afisa ba urimi ni iriku ciri injega kiri ntuura yaku

Kuthithia mboleo

Mboleo ya kuthithia na imera ni fertilizer ya kuumania na into bitina ugwati ya gutethia imera biaku bikura bwega. Ni injega nkuruki ya fertilizer cia nduka niuntu



icithithitie yongwa na itina ugwati kiri imera na kiri naria kuthiurukite. Kuthithia mboleo iji ni njira imwe ya iria mbuthu, itina goro na injega ya kwongera unoru bwa muthetu.

Nimbi yumba kuthithia mboleo?

- Matigari ja imera, iria, mathangu jamoomu, imera biria bigiti, mboleo na maumago ja ndithia, mati jaria ndithia imamagira, matigari ja irio kuuma riiko na

Nitrogen	Phosphorus (P ₂ O ₅)	Potassium (K ₂ O)
<ul style="list-style-type: none"> • Leguminous crops that are used as green manures or as mulch provide between 20 to 80 kg N / acre which can be used by subsequent crops. • Blood meal/ leather meal 12-15% N. They are applied directly to the crops. • Urines from all species contain pure urea (up to 1% N)- It is not a stupid idea to urinate on the compost heap! • Poultry manure 8-20 kg N/t • Pig manure 3-5 kg N/t • Goat / sheep manure 2-4 kg N/t • Cattle manures 2-3 kg N/t • Compost * 1 kg N/t • Manure teas and plant teas provide easily available nitrogen and can be used as top dressing or follar feeds. 	<ul style="list-style-type: none"> • Rock Phosphate 20-33% • Bone meals 12-25% • Poultry manure 10-25 kg/t • Pig manure 3-6 kg/t • Goat/sheep 2.5-4 kg/t • Cattle manure 2-3 kg/t • Compost * 4kg/t 	<ul style="list-style-type: none"> • Wood ash 3-7% • Goat / sheep manure 12 kg/t • Cattle manure 5-12 kg/t • Poultry manure 5-12 kg/t • Compost * 6 kg/t • Pig manure 3-7 kg/t • Urines: 1-3 kg/t
<ul style="list-style-type: none"> • Content of purely vegetative compost. If compost is prepared with livestock manures, rock phosphate and wood ash, the product will have higher nutrient contents. <p>Nutrient contents of manures and composts are highly dependent on handling and storage and on feed quality!</p>		

- manyani, muju, maratati jagitangi na kandibodi Ugatumira nyama, into kinya biriku kuumania na ndithia, maguta jamomu kana ja ruuji, sikerebu kana mikebe ya mibira.

Mitire iria miega buru ya kuthithia mboleo ya imera:

- Taara antu kurina kirundu gwa gwika int bibi biri au iguru
- Kunikira na mabura kana kiratasi kia nailoni
- Ikiira ruuji igitene ria uumo
- Karia kuumania na ngai (iria yumba gukamata irio biria bikwendeka)
- Ja mutaratara tegera ati:
 - o Gicunci kimwe kiri bithatu ni imera bitinyaari (manyaki, matunda, nyani, makonyo ja nkara, makonyo ja nkandi, mboleo kuumania na ndithia, maria, imera)
 - o Gicunci kimwe kiri bithatu ni “imera binyaari (mathangu joomi, nyaki injumu, sondasti, makandibondi na matigari ja imera warikia guketha)
 - o Gicunci kimwe kiri bithatu ni into bibirito ja biang’i bigitangi na matigari jamanene ja imera.
 - o Menyeera ati uritumira imera biria bitirathithia mbeu na ugatumira imera biria biajitue.
 - o Rikanira into bibi amwe kana kirinyene. Ruugo nirwendekaga kuthithia mboleo iji, kwou urugania into bibi amwe bwega na ukamamiria into bibi mono.
- Ikiira ruuji, ukunikire na urekane nabio mieri imikai nikenda into bibi bikoora. No uruganie into bibi o igita nyuma ya igita.
- Mboleo iji yeja gutendera kana kununka no ithirwe irina ruuji rurwingi mono kana ithirwe irina into bitiumi bibingi mono. Ongera imera bibiumu gwakarika ou na uruganie.
- Geria into biaku biithirwe biri tayari kuunganua, gwikirwa ruuji, gukunikirwa na gwikwa mieri iiri kana ithatu mbele ya mbura yambiria nikenda igatethia igitene ria kuanda.

- Mboleo iji ibati kwithirwa iria ya rangi ya muthetu na ikiunikang’aga riria iri tayari. No ucunke mboleo iji nikenda wona iria iunikangi bwega, na wongere jau manene kirinyene nikenda ija gutumirwa riu ringi.

Bimwe bia ikundi bia TIST nibitumagira njira imwe iria boonaga igitaga ngugi. Nibaajene matagaria jaja:

Kuthuranira mboleo ya mati na njira iria ikundi bimwe bia TIST bitumagira:

- 1) Taara antu aria ukeenja kirinya giaku kia warie bwa mita inya na uraja bwa mita inya.
- 2) Theria antu au
- 3) Inja kirinya kirina warie bwa mita ithatu gwita inya na mita imwe na nusu kwinama.
- 4) Uthurania matigari ja imera biaku jaria urinajo na ugitange tue tunini. (mung’uanano mathangu na mati ja mpempe, miere na ming’au)
- 5) Ikira matigari jaja kirinyene mwanka gitigare nusu mita.
- 6) Ongeera lita ithano cia muju
- 7) Riu wongere centimita mirongo ithatu (kana o iria ikwoneka) cia mburi kana nguku).
- 8) Ongera matigari ja imera nusu mita
- 9) Ikira lita ingi ithano cia muju
- 10) Ongera matigari ja imera kairi mwanka kirinya kiende kuujura
- 11) Mutia, ikira muthetu mwanka kirinya kiujure
- 12) Ukiujuria kirinya na muthetu, tonyithia muti jumuraja gatigati ga kirinya mwanka jukinye nthiguru buru.
- 13) Tigana na kirinya giki ntuku mirongo kenda (mieri ithatu)
- 14) . Igitene riri tumira ruuji rwaku rwa ruko gwikira boleo. Mung’uanano, warikia kuthambia nyomba kana nguo ciaku, ituura ruuji ruru ugutumagira kirinyene. Kethira urina ndithia ituura maumago jacio iguru ria kirinya.
- 15) Geria wikagire kirinya kiu ruuji na njira iji ntuku cionthe kana oriria ruuji rurio.
- 16) Ntuku mirongo kenda ciathira, mboleo ikethira iri tayari. Tumira muti kuthima mwanki – mboleo yayia no mwanka ithirwe irina mwanki mwanka toi yoneke ikiumaga mutine wajurita ku.

Mazingira Bora



TIST

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

Kikuyu Version

An Environmental, Sustainable
Development and Community Forestry
Program.



GOCC Seminar held on June 2-4, 2014 at Gitoro Conference Center.

Inside:

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TIST: Gutema miti ya TIST ni kuna watho wa TIST values na Greenhouse Gas Contract. Nigutumaga miturire ya arimi angi a TIST ithuke. Page 3

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TIST: Unoru wa tiiri. Page 5



Uhoru mwega: TIST niicaguritwo iri namba I hari honge iria ciniinaga carbon thiini wa thi yothe.

ARIMI KWONANIA NOMAGIRITHIE MARIA MATURIGICIIRIENAMATEITHIETHIYOTHE.

Thiini wa Tulsa, Oklahoma, USA, kuri 30 June, 2014 –The International Small Group and Planting Program (TIST) niyacagurirwo iri namba I hari kueheria na kunina carbon hari utuiriariaiirwekirwo ni Enviromental Finance. Gukuuranwo guku, gucagurwo ni athomi a thoko ya carbon thi yothe nikwonanitie maundu maria arimi a TIST makoretwo makiamukira kumana na kuruta wira hamwe hari kuhanda miti na guthomithania maundu megii kwagirithia miturire.

Enviromental Finance ni ngathiti ya online iria yambiriirie mwaka wa 1999 niguo kuheana uhoru wa wonjorithia, green finance ohamwe na kumurika honge iria cikoragwo thoko-iniino ya carbon. TIST niyo yabere hari honge ici gukuuranwo ni Enviromental Finance.

TIST ni urimi, uhandi wa miti, uthii wanambere na kwehulia carbon iria ikoragwo thiini wa Kenya, Uganda, India na Tanzania. Tisti yambiriirio iri ya murimi munini na unghota kuhanda na gutungata miti kuria kuhinyiririku niguo agirithie mugunda. Njira ino niininaga mathina mucii na ikagirithia maria maturigiciirire na utemi wa miti, biodiversity kuninwo, imamo cia nyamu na ugaruruku wa riera. Ngatho nyingi hari uhotani uyu ciagiriirwo niguthii kuri arimi a TIST, uu niguo Ben Henneke, umwe wa aria mambiriirie TIST augire. “arimi aya monganagia mbegu, magathondeka nathari, makahanda miti na makamiiga iri muoyo kuri na riu, makariithia mahiu, arimi a TIST ni a magegania muno. Nimaretiira umithio wa miti yao ohamwe na kugia na maria maturigiciirire mega. Ngerenwa ino irakurana wira muritu uria urutitwo ni makiria ma arimi 70,000 aria marahanda miti, magithomithanagia na guteithania”

“Kunina mititu niyo njira imwe yak i-mundu

ya kuongerera CO₂, na arimi anini ni amwe a aria mahutagio ni ugaruruku wa riera,” Henneke agithii na mbere. “hari miaka 14 mihetuku, atumia na athuri makiria a TIST nimoete makinya ma gucokereria miti na kwagirithia migunda yao na matuura. Kuhitukira githimi kiega kia gukura kwa miti yao na magathondekanjira ya kwona mbeca kuhitukira kwendia carbon credits. Carbon credits ici ciendagriyo cabuni na andu aria marena guteithia mawira ma arimi a TIST”

Carbon credits cia TIST ciakuma India, Kenya na Uganda cithuthuragio ni Verified Carbon Standards(VCS) na Climate, Community & Biodiversity(CCB) hamwe na “Gold” Level. “wendia wa credits ici ci kirathi kia iguru cia TIST riu niukoretwoukinyitirira miena ino na niyagirwo guthii n mbere guteithia kwa miaka ingi 25-30,” Henneke akiuga. Hari na kigina makiria kia gutheremia, nituguthii na mbere na kwirugamirira hari mutaratara uyu.

Arimi a TIST nimonnanitie ati riria twahuthira njira njeru na cia ki-riu, kuhanda miti mthemba miingi, kuruga na riiko ritarahuthira ngu nyingi na kuiyukia njira njega cia ugima wa mwiri. Uthuthuria wa ica ikuhi niwonanitie ati umithio uria arimi makoretwo naguo niukirite garama ya gutwarithia TIST na mbere.

Henneke ningi niaugire “nitunyitaniire na USAID Kenya makiria ma miaka 5 niguo gutheremia TIST Kenya niguo arimi makiria na muno atumia na mbeu njithi magie na umithio muiingi na meteithie, magirithie biodiversity na uthuru wa maai na kugitira mititu. Uteithio wa USAID thiini wa Kenya ningi niuteithitie andu angi kuma mabururi mangi riria mitaratara miero iria ithondekeirwo Kenya yathomithio arimi angi. TIST niyonanitie ati riria wagirithia matuura hamwe na thi yothe niguo uthondekaga njira nyingi cia



uthondeki wa mbeba. Turi na makiria ma 1 billion acre cia migunda iria itari mirime na irabatra kuhandwo miti, TIST niyonanitie ati “Payments for Enviromental Services” kuri arimi nokunyahie greenhouse gases na gikiro kinene muno na guthondeka mibango yak i-riu ya “Low carbon” Charlie Williams, Vece President wa Clean Air Action Corporation (CAAC) akiuga “gwa kahinda ka miaka 14 tukoretwo na maundu matatu ma mbere: wa mbere ati arimi aria maingira TIST nimagia na miturire miega kuhitukira wira wao. Wa keeri, ati CAAC niiguthondeka mutaratara wa kurumirira niguu ihote guthima maciaro makinyaniru na wa gatatu, ati maciaro mao nimatuika njira ya kwona mbeba kuri o.

Kuri May 2011, mutaratara wa TIST niguu wari

wa mbere thiini wa thi kurikia certification cia VCS na CCB na riu niurikitie mutaratara ucio maita 14. Williams akiuga. “ nitukenete nigukorwo na customers marakuurana ati technical experience na umithio wa mundu uria umanaga na Tist tonnes. Eeri a customer aya a bata ni The Carbon Neutral Company, na Microsoft aria onao makoretwo na ngerenwa kuma kuri Enviromental Finance. The Carbon Neutral Company niyacagurirwo iria njega muno “The Best Offset Retailer” na Microsoft igicagurwo “The Best Corporate Offset Programme.” TIST niithiite nambere na gutherema tondu kuri na arimi milioni nyingi aria marena kuingira. Nitwetereire kugia na kigina gia kuhota gukinyaniria meririria ma arimi niguu tuhote kuhurana na ugaruruku wa riera.

TIST: Gutema miti ya TIST ni kuna watho wa TIST values na Greenhouse Gas Contract. Nigutumaga miturire ya arimi angi a TIST ithuke.

Mweri muhetuku, nitwaririe uhoro wa utemi wa miti thiini wa GOCC semina iria ya Gitoro kuri June 2014, thutha wa gukunguira TIST-USAID partnership ya miaka 5.

Mweri uuyu, nituramuirikania uhoro wa last month niguu kumuthomithia na kuigua maeoni manyu uria tungihota kunina utemi wa miti. Utongoria wa TIST niwathurire Charles Ibeere (0720 474209) niguu arutithanie wira na atongoria a TIST hamwe na arimi niguu uhoro uru wariririo wega.

Niwega kumenya ati contract ya Green House Gas, iria arimi othe a TIST mekirite kirore yugite ati arimi magiriirwo nikuiga miti iri muoyo gwa kahinda karaihu. Niitikiritie arimi kuhurura miti na gutagania (angikorwo niikuhaniriirie) kana gutema gicunji kia 5% kia miti ya gikundi rria yakinyia miaka 10.

Mawatho maya nimathiite na mbere

nakuhuthika thiinwa tabaarira ya carbon. Aguri a carbon nimendaga kuona miti iria maragura carbon credits kuma kuri yo iri muoyo. Riria arimi matema miti yao, aguri aya nimaregaga kugura carbon credits icio kuma kundu kuu tondu gutuikaga kuri na ugwati.

Giki nikio gitumi arimi magiriirwo nigutiga gutema miti niguu carbon credits ciao cigurwo. Kuri na maundu mangi ningi. Murimi uria watema muti akoretwo akiamukira githomo, utari wa miti na ngathiti ya MB. Mahuthiro maria mari make matwaragirwo arimi aria angi.

Ta kiririkania uhoro wigii maundu maria GOCC yangire niikurumirira, araniria na Charles (0720474209) uhoro wigii:

- a) Mawoni ma arimi aria angi thiini wa micemanio ya cluster uhoro wigii makinya maria makwoerwo aria matema miti.
- b) Uria arimi aria matema miti maririhaga aria angi niguu uhoro ucio unyahanyihe.



TIST Thiini wa Igembe.

Mwandiki ni William Mwito, muruti wa wira wa cluster ya TIST

Mwandiki: William Mwito, Ndungata ya Tist Cluster Ithui, arimi a TIST kuma Igembe South turi na gikeno tukimenyithania ati maundu maria tuhotanite ni maingi kumana na gukorwo turi thiini wa tabaarira iro ya TIST. Maya nao ni;

1. Nitwamukagira githomo o mweri kuma kuri ndugata cia cluster na kuamukira ngathiti ya o mweri ya Mazingira Bora. Njira ino niituteithitie kwongerera maciaro ma mbembe, matunda na irio ingi. Nituthomete kwagirithia migunda iitu, kugitira tiiri, kwongerera unoru. Nituthomete maundu ta Kilimo Hai na guthondeka thumu.
2. Arimi aria mari ruui-ini nimathomithagio kugitira njuui. Njira ino niitigiriire ati kuri na maai maingi kur nyamu na andu. Makiria, nitugitirite migunda iitu kumana na kuhinjio gwa tiiri.

3. Values ciaTIST na utongoria wa guthiururukana tukirora muno atumia niciteithitie hari kwagirithia matuura maitu na miikarire. Athuri na atumia makoragwo na mieke iiganaine thiini wa utongoria niguo maheane na kuruithie iheo ciao wira kuri aria aangi.
4. Mikahuro kumana na uhandi wa miti ya TIST nicitumite miturire ya arimi aingi muno igaruruke. Thiini wa cluster imwe arimi nimeyumbite niguo makorwo na itati na meteithie makiria.
5. Uhuthiri wa mariiko ma TIST nimateithagia kwongerera miti tondu ti miingi iratemwo niundu wa ngu. Mariiko maya nimongereire ugima wa mwiri wa andu tondu matirutaga ndogo nyingi na kwa uguo ciana cigakorwo ciri nigitire muno.

Status of TIST Clusters in Igembe

Cluster	Groups	Trees	Next Meeting	Last Election	Members	Groves	Area
Ankamia	40	41820	14 Aug 2014	12 Jun 2014	307	306	104.1
Antubochiu	29	25273	15 Aug 2014	17 Jan 2014	176	241	103.7
Athi	17	16187	06 Aug 2014	04 Jun 2014	104	130	88.7
Burimaria	21	20828	04 Aug 2014	05 May 2014	127	183	84.8
Kangeta	26	1815	27 Aug 2014	30 Jan 2014	165	22	6.7
Kawiru MCK	62	30081	01 Aug 2014	06 Jun 2014	499	359	281.7
Kiegoi	17	6856	27 Aug 2014	31 Jan 2014	116	77	32.0
Kiengu	18	11702	05 Aug 2014	06 Apr 2014	138	108	50.2
Maua	38	9783	07 Aug 2014	02 Jan 2014	224	122	43.9
Mutuati	26	2412	23 Aug 2013	18 Apr 2013	163	68	12.9

The above information is also available from www.tist.org or www.tist.org/mobile.



Athi Cluster is one of the TIST Clusters that are organizing themselves through table banking. These photos were taken during their July 2014 month meeting.



TIST: Unoru wa tiiri.

Tiiri ni kii?

Tiiri ni mwen wan a-iguru wa thi. Ukoragwo na riera, maai na unoru hamwe na minerals.

Tiiri uthondekagwo atia?

Gwatumkanga na kumumuthuka kwa mahiga nikuo guthondekaga tiiri uria uhotithagia mimera gukura. Mimera ningi niyongagirirwo tiiri-ini. Riria mahiga makiria mamumuthuka, noguo tiiri muingi uthondekagwo kwa uguo maai maingi nimakuigwo tiiri-ini na kwongerera gukura kwa mimera.

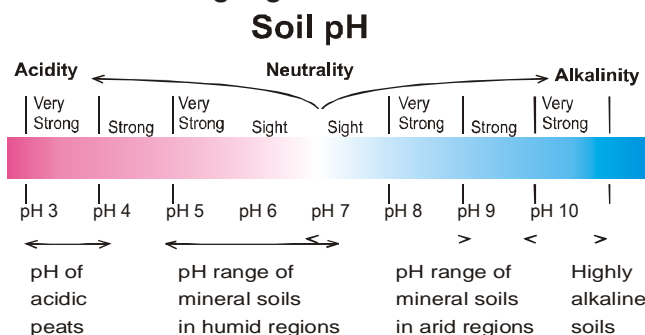
Nikii organic matter iri ya bata?

Organic matter (Iria ithondekagwo muno kumana na kubutha kwa mimera) niurutaga unoru muingi uria woyagwo ni mimera na ikanyitirira miturire ya indo cia tiiri-ini iria cikoragwo na umithio muingi kuri tiiri na ukateithia kugia na hinya na kuhotithia maai gutonya thiini.

Nikii kimenyithanagia muthemba wa tiiri?

- *Riera*: Urugari na maai riria cioneka nicikoragwo na effect kuri kumumuthuka kwa mahiga.
- *Organisms*: Bacteria, fungi na minyongoro ni imwe cia iria ciikaraga tiiri-ini. Imwe nicinnyitaga itemi hari gutukania tiiri ta earthworms. Organisms cia tiiri niciteithagia kubutha na gueithia mimera.
- *Topography*: Uria mugunda uikare. Kwa muhiano, tiiri uri kundu kuinamu niukoragwo uri muceke na ugakuuo ni maai na-ihenyu gukira tiiri ungi uri kundu kuigananu.
- *Parent material*: Muthemba wa mahiga maria mathondekete tiiri.
- *Human Behaviour*: Uria tuhuthagira na kumenyerera tiiri witu niutumaga unoru ukorwo uria uri.

Uria tiiri uhana kuringanaga na muigaa wa muthanga, silt na clay uthondekete. Diagram ino ironania mithemba ngurani ya tiiri. Muthemba wa tiiri niwonanagia uria miri ingiingira tiiri-ini na muigana wa maai uria ungiingira thi.



Bata wa soil pH nikii?

Uria tiiri uri na acini na alkali niyo pH na niyugaga

nutrients iria iri tiiri-ini na muthemba wa tiiri uria ungiingirwo mwena ucio na unyitirirwo wega. Nutrients nyingi cia tiiri nicikoragwo na uhoti wa kumumuthuka na kwa uguo cigateithia kuiyukio ni mimera riria tiiri uri na acid gukira riria uri na alkali. Ona kuri o uguo, angikorwo tiiri uri na acid nyingi noguo bacteria nyingi citangikura na organic matter cikaremwo ni kubutha. Tiiri muingi uria wa iguru ukoragwo na pH ya 5.5-7.5 na ukoragwo na rangi muiru.

Tiiri munoru ni uriku?

Tiiri uria munoru ni uria ukoragwo na nutrients iria cibataranagia hari gukura kwa mimera.

- *Primary nutrients*: nitrogen, phosphorus, potassium
- *Secondary nutrients*: sulphur, magnesium, calcium
- *Micronutrients*: iron, manganese, boron, chlorine, zinc, copper, molybdenum, nickel Maundu ma kwongerera tiiri unoru.
- Ongerera nitrogen(na njira ya thumu muigu) ohamwe na phosphorus(na njira ya mahiga).
- Ungania na uhuthire thumu wa mahiu na mathugumo. Uyu ukoragwo uri mwega riria wabutha. Uria utar mubuthu noukorwo na ammonia nyingi(iria ingithukia mimera). Thumu uyu niukoragwo na pathogens nini. Ungihuthira utari mubuthu, huthira utari muingi na uutige gwa kahinda ka mieri 2 .
- Ongerera organic matter kuhitukira composting
- Huthira njira iria njega na hitukie.
 - o Kuhanda mithemba miingi ya irio hamwe na gucenjania imera.
 - o Kuhanda miti mugunda-ini wa irio
 - o Gutiga mahuti mabuthire mugunda
 - o Kuhuthira marima ma Kilimo Hai.
 - o Nyihia erosion na kuhanda miti, kwenja terraces kana fanya juu.
- Huthira intercropping na Pigeon pea (Cajanus cajan), Dolichos lablab, Mucuna pruriens, Crotalaria, Canavalia.
- Ongerera muhu, uria I ukoragwo na calcium na potassium carbonate.
- Ongerera lime anbatarikgikorwo tiiri waku niukoragwo na acid nyingi.
- Niwega kwaga kwongerera minerals (tiga iria cikoragwo thumuini) utarorete tiiri wega niguo wone kana nicirabatarikana.
- Nikuri hiingo wagiriirwo nikuongerera inorganic chemicals fertilizers. Huthira kuringana na mawatho ma athondeki na ataalamu a maundu egii tiiri.

**Composting**

Compost manure ni thumu utari wa fertilizer uria uteothagia mimera gukura. Niukoragwo urimwega

gukira wa chemical tondu ni wa ki-nduire na nduthukagia mimera na maria maturigiciirie. Composting ni njira imwe ya iria huthu makiria

Nitrogen	Phosphorus (P ₂ O ₅)	Potassium (K ₂ O)
<ul style="list-style-type: none"> Leguminous crops that are used as green manures or as mulch provide between 20 to 80 kg N / acre which can be used by subsequent crops. Blood meal/ leather meal 12-15% N. They are applied directly to the crops. Urines from all species contain pure urea (up to 1% N)- It is not a stupid idea to urinate on the compost heap! Poultry manure 8-20 kg N/t Pig manure 3-5 kg N/t Goat / sheep manure 2-4 kg N/t Cattle manures 2-3 kg N/t Compost * 1 kg N/t Manure teas and plant teas provide easily available nitrogen and can be used as top dressing or follar feeds. 	<ul style="list-style-type: none"> Rock Phosphate 20-33% Bone meals 12-25% Poultry manure 10-25 kg/t Pig manure 3-6 kg/t Goat/sheep 2.5-4 kg/t Cattle manure 2-3 kg/t Compost * 4kg/t 	<ul style="list-style-type: none"> Wood ash 3-7% Goat / sheep manure 12 kg/t Cattle manure 5-12 kg/t Poultry manure 5-12 kg/t Compost * 6 kg/t Pig manure 3-7 kg/t Urines: 1-3 kg/t
<p>Content of purely vegetative compost. If compost is prepared with livestock manures, rock phosphate and wood ash, the product will have higher nutrient contents.</p> <p>Nutrient contents of manures and composts are highly dependent on handling and storage and on feed quality!</p>		

na citari na mahuthiro maingi cia kwongerera unoru wa tiiri.

Nikii kingihuthika hari guthondeka compost?

- Matigari ma irio, riia, mahuti na mahuti ma miti, main a mathugumo ma mahiu, irio cia nyumba matunda, muhu na maratahi .
- Ndukahuthire nyama, daily products, fats, oil Cuma kana plastic.

Maundu maria wagiriirwo nikurumirira riria urathondeka compost.

- Huthira handu hari na kiiruru.
- Humbira na marigu kana plastic
- Itiriria maai riria kuri na riuu.
- Gitira kumana na mbura(iria ingithambia unoru wothe)
- Ta njira ici, tigrira;
 - 1/3 “green vegetation” (nyeki, matunda, mboga, makorogoca, makoni, thumu, riia na mimera)
 - 1/3 ‘brown vegetation’ mahuti momu, straw, nuura, cardboard na matigari ma irio)
 - 1/3 indo nene ta miti
 - Tigrira niwahuthira indo citari nambegu na ndukahuthire kindu kiri na murimu.
 - Iganirira indo ici hamwe na ndugakindire.
- Itiriria indo icio maai, humbira na utige niguo cibuthe gwa kahnda ka mieri ta iiri. Nouikare ugitukanagia indo icio.
- Indo icio cingiambiriria kununga, nikuga ati ciri na maai maingi kana green vegetation ni nyingi, ongerera brown vegetation na utukanie.
- Geria gukorwo na indo ici ciothe niguo utukanie, uitiririe maai na uhumbire na utigie 2-3 months mbere ya mbura niguo ukorwo uri mwega ukihanda.

- Thumu uyu wagiriirwo gukorwo uri wa brown na unyitanite. No ucunge thumu niguo wehutie giko na ukoro na mutukanio mwega.

Ikundi imwe cia TIST nichihuthagira njira ngurani na makona ciri njega na magataariria haha.

Kuhariria compost manure na TIST groups

- 1) Hariria handu ha 4mx4m ha kwenja irima.
- 2) Theria handu hau.
- 3) Enja irima ria 3-4m na 1.5 uriku.
- 4) Ungania matigari mothe ma irio na umatinangie tunini tunini(muhiano mahuti ma mabebe, muhia na mboco)
- 5) Itirira mahuti macio irima-ini na utigie 0.5m.
- 6) Ikira 5l cia muhu
- 7) Ongerera 30cm mai ma mahiu.
- 8) Ikira mahuti mangi.
- 9) Ikira 5l cia muhu ingi.
- 10) Ikira mahuti nginya uihurie mahuti nginya uihurie irima.
- 11) Muthia, ikira tiiri nginya iguru.
- 12) Riria uraihuria tiiri, ikira muti miraihu gatagati niguo ukinye thi.
- 13) Eterera thumu waku matuku 90 kannaa (3months)
- 14) Gwa kahinda gaka, huthira maai mari na giko gwikira irima-ini. Kwa muhiano, thutha wa guthambia nyumba, nguo huthira maai macio kana mathuguma ma mahiu.
- 15) Itiriria irima maai o muthenya na njira ino kana riria maai monekana.

Thutha wa 90days thumu waku niugukorwo uri mwega. Huthira muti uria uhandite gatagati ta thermometer – riria thumu wagira niwagiriirwo nigukokorwo uri muhiu na waruta muti ucio.

Mazingira Bora



TIST

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

Kiswahili Version

An Environmental, Sustainable
Development and Community Forestry
Program.



GOCC Seminar held on June 2-4, 2014 at Gitoro Conference Center.

Inside:

Habari njema: TIST imechaguliwa kuwa mradi unaoshughulikia kusafisha hewa bora zaidi katika dunia nzima. Page 2

Kukata miti yote katika mashamba ya TIST ni kukiuka maadili ya TIST na mkataba wa GhG wenye athari kubwa sana. Unadhuru matendo mazuri ya maelfu ya wakulima katika TIST. Page 3

Mradi wa TIST eneo la Igembe. Page 4

TIST: Rutuba ya udongo. Page 5



Habari njema:TIST imechaguliwa kuwa mradi unaoshughulikia kusafisha hewa bora zaidi katika dunia nzima.

WAKULIMA WA MASHAMBA MADOGO WATHIBITISHA KUWA WANAWENZA KUBOresha MAZINGIRAYAO NA KUSAIDIA SAYARI HII

TULSA, Oklahoma, U.S.A., Juni tareha thelathini, 2014 – Mradi unaoitwa The International Small Group and Tree Planting Program (TIST) ulichaguliwa kuwa mradi bora zaidi katika kusafisha hewa katika utafiti wa dunia nzima uliofanywa na Environment Finance.. Utambuzi huu uliopigiwa kura na wasomi waliopo katika soko la kaboni katika ulimwengu mzima, ulitambua faida nyingi wanazopata wakulima katika TIST kutokana na kufanya kazi pamoja ya kupanda miti, na kuunda na kugawana na wengine njia bora za kufanya mambo ambazo huboresha maisha yao

Environmental Finance ni huduma ya habari na uchambuzi kupitia tovuti iliyoanzishwa mwaka elfu moja mia tisa tisini na tisa ikiwa ya kuripoti uwekezaji endelevu, fedha kutokana na mimea na watu na kampuni zinazojishughulisha katika masoko ya kimazingira. TIST ni mradi wa kusafisha hewa wa kwanza kutambulika na huduma hii ya Environment Finance.

TIST ni mradi wa kilimo, upandaji miti, maendeleo na uuzaji wa kaboni unaofanya kazi Kenya, India, Uganda na Tanzania. TIST ilianzishwa na na kwa sababu ya wakulima wenye mashamba madogo na wanaolima chakula wanaopanda miti katika mashamba yaliyodhoofika ili kuboresha maisha yao na kuboresha usalama wa chakula. Kazi yao inashughulikia pia masuala ya kienyeji, ya kikanda na ya kimataifa yanayohusu mazingira kama ukataji misitu, kupotea kwa bionuwai, kuzoea na mabadiliko ya hali ya hewa.

“Wanaofaa kupongezwa kwa matokeo mazuri ya mradi huu ni wakulima wa TIST”, Ben Henneke, mmoja wa waanzishi wa TIST alisema. “Wakulima hawa wa TIST hukusanya mbegu, kutengeza vitalu, kupanda miche na kuiweka hai wakati wa kiangazi, mafuriko, na uvamizi wa ng’ombe, mbuzi na ndovu. Wakulima wa TIST ni kikundi cha watu chenye msukumo wa kiajabu. Wanajivunia faida miti yao inaleta katika maisha yao na mazingira ya dunia nzima. Zawadi hii ni ya kazi ngumu iliyofanywa na

wakulima zaidi ya elfu sabini wanaopanda miti, kugawana taarifa, kupima matokeo na kusaidia wakulima wengine.”

“Ukataji miti katika maeneo yalio na mvua nyingi ni chanzo moja kubwa zaidi la hewa chafu inayosababishwa na binadamu, na wakulima wadogo ni pamoja na wengine wale wanaodhuriwa zaidi na kubadika kwa hewa, “ aliendelea Henneke. “Katika miaka iliyopita kumi na nne, wanawake na wanaume zaidi katika TIST wamechukua hatua kubadili ukataji wa misitu na kuboresha mashamba yao na yale yalio katika jamii zao. Kwa kupima ukuzi wa miti kwa umakini wametengeneza mmea wa kuleta fedha usioonekana- kaboni inayowekwa katika miti. Hewa hii iliyotolewa na iliyopimwa huuziwa makampuni, mashiriki na pia watu wanaotaka kuhamasisha jitihada za wakulima katika TIST”. Kaboni ya TIST kutoka India, Kenya na Uganda ilihakikishwa na kuthibitishwa na VCS na CCB pamoja na ngazi ya dhahabu. “Mauzo ya tani hizi za TIST za hali ya juu sasa hushikilia maeneo yaliyopo na zafaa kuendelea kuleta faida miaka ishirini na tano hadi thelathini ifuatayo,” alisema Henneke. “Kukiwa na fedha nyongeza za kuanzia, tutaendelea kurudia mchakato huu unaojishikilia wenyewe.”

Wakulima katika TIST wameonyesha kuwa matumizi ya njia mpya za kilimo, kupanda miti ya aina mbali mbali, kutumia meko ya kusalimisha nishati, na kuanza mazoezi mapya bora kiafya yana athari kubwa sana kwa mapato na afya ya familia. Masomo ya hivi karibuni kuhusu kudhibitishwa na kupitishwa mara nyingi yameonyesha kuwa faida wanazopata wakulima zinazidi kwa umbali gharama ya kuendeleza mradi.

Henneke aliongeza, “Tumefanya kazi pamoja na USAID-Kenya miaka mitano iliyopita ya kueneza TIST katika Kenya ili wakulima zaidi wajiunge nayo, sana sana wanawake na vijana, ili wapate faida, waboreshe bionuwai na usfi wa maji, na kulinda misitu. Usaidizi wa USAID nchini Kenya umefaidisha wakulima katika kila nchi wakati njia bora za kufanya mambo huanzishwa Kenya na kupitishwa kutoka kwa mkulima hadi kwa mwingine. TIST



yaonyesha kuwa kuboresha mazingira ya karibu nay a dunia huleta mapato na nafasi zaidi. Kukiwa na zaidi ya bilioni moja ya mashamba yaliyodhoofika yanayohitaji kurejeshwa, TIST inaonyesha kuwa kuanzisha huduma ya kulipia kazi zinazosaidia mazingira za wakulima katika nchi zenye mvua nyingi kwaweza kupunguza kwa kasi gesi zinazoongeza joto duniani na kutupa wakati wa kuendeleza na kuhakikisha njia zingine za kiteknolojia zinazotoa kaboni kidogo zaidi.”

Charlie Williams, Makamu wa raisi wa shirika la Clean Air Action Corporation (CAAC), alisema, “Katika miaka kumi nan ne iliyopita tumekuwa na wasi wasi za aina tatu za kimsingi: Kwanza, kuwa wakulima waliojiunga na TIST wanajiboreshea maisha kupitia kazi zao. Pili, kuwa CAAC itatengeneza mifumo na michakato ya kufuatilia mambo ili kupima kwa usahihi na uwazi matokeo yao. Na tatu, kuwa matokeo yao yaliyopimwa

yatafanya chanzo kipya cha mapato kwao.” Mwezi wa tano 2011, mradi wa TIST ulikuwa wa kwanza katika dunia kukamilisha na kutunikiwa na VCS na CCB na sasa umemaliza mchakato huu mara kumi na nne. Williams aliongeza, “Tuna furaha kuwa na wateja wanaotambua ubora wa kiteknolojia na faida za kibinadamu ambazo huletwa na ununuzi wa kaboni hii ya TIST. Wawili kati ya wateja hawa ni , The Carbon Neutral Company, na Microsoftambao pia wametunukiwa zawadi kutoka kwa Environment Finance. , The Carbon Neutral Company ilichaguliwa kuwa “Mnunuzi mdogo bora zaidi wa kaboni” na Microsoft ilichaguliwa kuwa “. TIST inaendelea kurudia na kupanuka kwa sababu kuna mamilioni ya wakulima wanaotaka kujiunga nayo. Tunangoja sana kupata pesa zitakazosaidia kufikia mahitaji ya wakulima hao, na kuongeza athari yenye faida ya TIST kwa mabadiliko ya hali ya hewa.”

Kukata miti yote katika mashamba ya TIST ni kukiuka maadili ya TIST na mkataba wa GhG wenye athari kubwa sana. Unadhuru matendo mazuri ya maelfu ya wakulima katika TIST.

Mwezi uliopita, tulijadili kuhusu ukataji miti yote katika semina ya GOCC iliyofanyika Gitoro mwezi juni mwaka 2014, mara moja baada ya sherehe za ushirikiano wenye mafanikio wa miaka mitano kati ya TIST na USAID.

Mwezi huu, tunabeba kumbusho la makala mwezi uliopita tukiitisha taarifa na fikira kutoka kwa wakulima wa TIST kuhusu mawazo bora zaidi yatayosaidia kumaliza kabisa ukataji miti yote. Chama cha Uongozi wa TIST kilimchagua Charles Ibeere (0720 474209) kufanya kazi ya karibu na viongozi katika cluster, wawakilishi katika GOCC na wakulima katika TIST kushughulikia suala hili. Ni muhimu kujua kuwa kandarasi ya GhG ambayo wakulima wote wa TIST walitia saina, ina mkataba wa wakulima wa kuweka miti kwa muda mrefu. Inaruhusu tu wakulima kupunguza miti (ikiwa imekaribiana sana), kukata matawi ili kupata kuni, na kukata miti hadi asili mia tano ya miti iliyo katika kikundi kila mwaka miti inapfikisha miaka kumi au zaidi.

Kanuni hii ni muhimu ili kuendelea kuhusika katika mradi wa kaboni. Wanunuzi wa kaboni

uhitaji uhakika kwamba miti ambayo wananunulia kaboni ipo hai. Ambapo wakulima hukata miti yao, wanunuzi wa kaboni hukataa kila wakati kuwanunulia kwani wao huona ni kufanya kazi yenye hatari kubwa. Hii ndio sababu tendo la wakulima wachache wanaokiuka kanuni hii laweza kuwafanya wanunuzi wa kaboni kukataa kuwanunulia wakulima wengine katika TIST.

Kumekuwa pia na wasi wasi zinginezo. Mkulima anayekata miti yake yote amekuwa akipata mafunzo ya TIST, kuhesabiwa miti na kupata gazeti la Mazingira Bora. Gharama hizi zote zilizotumika kwake upitishwa kwa wakulima wengine.

Kama kumbusho, kuhusu hatua GOCC walizoamua kuchukua, tafadhali ongea na Charles (0720 474209) kuhusu:

- a) Mawazo ya wakulima wengine katika mikutano ya TIST kuhusu hatua zinazofaa kuchukuliwa kwa wanaokata miti yote.
- b) Jinsi mkulima aliyekata miti yote anafaa kuwafidia wakulima wengine ili kuwaepusha kutokana na hasara katika biashara ya kaboni.



Mradi wa TIST eneo la Igembe.

Umeletewa na William Mwito, mtumishi katika cluster ya TIST

Sisi, wakulima wa TIST kutoka Igembe Kusini, tunafaraha tukiripoti mafanikio yetu yaliyotokana na kujiunga na mradi wa TIST. Haya ni pamoja na bali si tu:

1. Tunapata mafunzo ya kila mwezi kutokana na watumishi wa cluster pamoja na kupata gazeti la kila mwezi linaloitwa Mazingira Bora. Haya ni lili kutusaidia kuongeza uzalishaji wa mashamba yetu katika mahindi, matunda na mimea mingine. Tumefunzwa kupanga mashamba yetu vizuri zaidi, kudhibiti mmomonyoko wa udongo, kuongeza rutuba ya udongo, kulima kwa njia ya Kilimo hai na kutengeneza mbolea ya majani.
2. Wakulima wanaopakana na mito hufunzwa kuhifadhi maeneo yaliyo kando ya mito. Mafunzo haya huhakikisha uwepo wa maji safi tosha kila wakati kwa sababu ya mifugo yetu na matumizi yetu ya nyumbani. Kuongeza, tunalinda mashamba yetu kutokana na

kudhoofika kwa kila wakati kwani mmomonyoko wa udongo unadhibitika.

3. Maadili ya TIST na uongozi wa mzunguko unaofikiria kuwapa wake na waume nafasi sawa umesaidia sana kubadilisha jamii yetu. Wake, waume na vijana wana nafasi sawa za uongozi, kuonyeshana na kupitisha vipaji vyao vya uongozi, kujenga imani kati yao na kuleta mawazo mapya kwa maendeleo na ukuzi wetu.
4. Motisha za miti kutoka kwa TIST zimesaidia kubadilisha maisha ya wakulima wengi. Katika baadhi ya cluster, wakulima hujipanga kufanya benki kati yao, kutembeleana na hivyo basi kuzidisha usaidizi unaomfikia mkulima.
5. Matumizi ya meko ya kuokoa nishati husaidi kuongeza miti ilio hai kwani ni miti michache hukatwa kuwa kuni. Meko haya yamesaidia sana kuboresha afya na usalama kwani moshi ni kidogo na huelekezwa nje ya eneo la kupikia kila wakati, na usalama wa watoto katika eneo la kupikia huongezeka sana.

Status of TIST Clusters in Igembe

Cluster	Groups	Trees	Next Meeting	Last Election	Members	Groves	Area
Ankamia	40	41820	14 Aug 2014	12 Jun 2014	307	306	104.1
Antubochiu	29	25273	15 Aug 2014	17 Jan 2014	176	241	103.7
Athi	17	16187	06 Aug 2014	04 Jun 2014	104	130	88.7
Burimaria	21	20828	04 Aug 2014	05 May 2014	127	183	84.8
Kangeta	26	1815	27 Aug 2014	30 Jan 2014	165	22	6.7
Kawiru MCK	62	30081	01 Aug 2014	06 Jun 2014	499	359	281.7
Kiegoi	17	6856	27 Aug 2014	31 Jan 2014	116	77	32.0
Kiengu	18	11702	05 Aug 2014	06 Apr 2014	138	108	50.2
Maua	38	9783	07 Aug 2014	02 Jan 2014	224	122	43.9
Mutuati	26	2412	23 Aug 2013	18 Apr 2013	163	68	12.9

The above information is also available from www.tist.org or www.tist.org/mobile.



Athi Cluster is one of the TIST Clusters that are organizing themselves through table banking. These photos were taken during their July 2014 month meeting.



TIST: Rutuba ya udongo.

Udongo ni nini?

Udongo ni safu ya juu zaidi ya ardhi. Udongo una hewa, maji, viumbe hai na madini.

Udongo utengenezwa aje?

Kuvunjika kwa miamba ya mawe hutoa madini yanayoshikilia maisha ya mimea. Mimea ndipo huongezwa udongoni kama viumbe hai. Jinsi mawe zaidi yanavyovunjwa na mabaki ya viumbe hai zaidi kuongezwa ndivyo maji mengi zaidi yaweza kushikiliwa katika udongo, na kuendelea kuboresha ukuzi wa mimea.

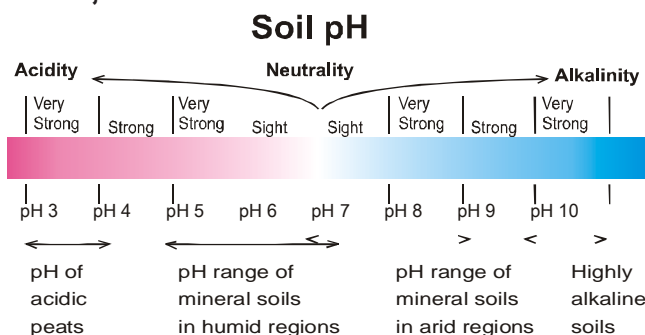
Mbona mabaki ya viumbe hai ni muhimu?

Viumbe hai (sana sana kutokana na kuoza na kutengana kwa mimea) hutoa virutubisho vingi, vinavyopatikana ili kuchukuliwa na mimea mipya. Pia hushikilia maisha ya vijidudu vyenye faida vilivyopo katika udong, husaidia maji kuingia udongoni na pia husaidia kushikilia udongo pamoja.

Ni nini huamua aina ya udongo unaopatikana?

- *Hali ya hewa:* joto pamoja na uwepo wa maji huathiri wepesi wa kuvunjika kwa mawe.
- *Viumbe hai:* bakteria, kuvu na minyoo pamoja na viumbe hai vinginevyo vinavyoishi katika udongo. Baadhi yavyo hufanya kazi muhimu ya kuchanganya udongo kama minyoo. Viumbe hai katika udongo husaidia kuvunja vunjia viumbe hai na vingine husaidia kuingiza naitrojeni udongoni (kwa mfano Rhizobium bacteria).
- *Sura ya ardhi:* Kwa mfano, udongo katika miteremko ni kondefu zaidi kwa ujumla kuliko udongo uliopo katika mabonde.
- *Mawe ulipotoka udongo:* aina ya jiwe udongo ulipotoka.
- *Tabia ya binadamu:* tunavyotumia na kuhudumia udongo wetu huathiri rutuba kwa ukubwa.

Udongo unavyohisika kwa mkono hulingana na ni kiwango kipi cha mchanga, silt na clay kilichopo. Picha iliyopo kwa ukurasa unaofuata inaonyesha aina za udongo tukifuatilia unavyohisika kwa mkono. Udongo unavyohisika kwa mkono na ulivyojengwa huathiri wepesi ambao mizizi itaingia kwa udongo na kiwango cha maji kinachowekwa.



Ni kwa nini PH ya udongo ni muhimu?

Jinsi udongo una acidi au chokaa (PH) huathiri virutubisho vilivyopo ili kutumiwa na mimea na vijidudu vipi katika udongo vyaweza kuishi. Kwa kijumla virutubisho vingi katika udongo umumunyika (na hivyo basi huwa tayari kuchukuliwa na mimea) katika udongo wenye acidi ikilinganishwa na usio na chochote au uliona chokaa.

Hata hivyo, ikiwa udongo una acidi nyingi sana, bakteria hazivezi kuishi na jambo hili litaathiri kutenganishwa kwa viumbe hai. Udongo wa juu mwingi ulio mzuri huwa na PH ya kati ya 5.5 na 7.5 na huwa na rangi ya giza.

Udongo wenye rutuba ni upi?

Udongo wenye rutuba ni uliopo na virutubisho vinavyohitajika ili mimea kuishi kwa wingi.

- *Virutubisho vya kimsingi:* nitrogen, phosphorus, potassium
- *Virutubisho vya sekondari:* sulphur, magnesium, calcium
- *Virutubisho vinavyotakikana kwa kiwango kidogo:* iron, manganese, boron, chlorine, zinc, copper, molybdenum, nickel

Mikakati ya kuboresha rutuba ya udongo

- Fikiria kuongeza naitrojeni (iliyopo katika mbolea ya kijani iliyotokana na mimea inayoweza naitrojeni udongoni) na Phosphorus (iliyopo kama Rock phosphate).
- Kusanya na utumie kinyesi na mikojo ya mifugo yako. Hii ni bora zaidi ikiwa katika mbolea iliyotengenezwa katika shimo.Vyanzo safi huwa na ammonia nyingi zaidi (ambayo hudhuru mimea) na vyaweza kuwa na vijidudu vingi zaidi (vijidudu vinavyoleta magonjwa). Mbolea iliyotengenezwa katika shimo huwa na wadudu wachache. Ikiwa utatumia mbolea isiyokauka, tumia kidogo na ukae kwa muda wa miezi miwili kabla ya kuweka tena.
- Ongeza viumbe hai kupitia kutengeneza mbolea kama ilivyoielezwa hapa chini
- Tumia njia bora zaidi za kilimo hai kama ilivyoielezwa katika makala ya hapo nyuma:
 - o Mzunguko wa mimea
 - o kulima mimea tofauti pamoja
 - o Kilimo mseto
 - o Planting leguminous cover crops Kupanda mimea ya kufunika ardhi inayoongeza naitrojeni udongoni
 - o Kuacha mashamba yakiwa hayajapandwa misimu mingine
 - o Kufunika ardhi kwa mimea
 - o Kutumia mashimo ya kilimo hai
 - o Kupunguza mmomonyoko wa udongo unaosababishwa na maji kwa kupanda miti, kuchimba mitaro
- Fikiria kupanda pamoja Pigeon pea (Cajanus cajan), Dolichos lablab, Mucuna pruriens, Crotalaria, Canavalia.
- Fikiria kuongeza jivu kwani lina madini ya calcium na potassium carbonate kwa wingi.
- Ongeza chokaa (lime) iwapo wajua udongo wako una acidi kali
- Ni bora zaidi usiongeze virutubisho vingine (isipokuwa vilivyopo katika mbolea) kabla ya kupima udongo kwanza ili kuona ni virutubisho na madini vinahitajika.
- Kuna wakati mwingine unahitajika kuongeza mbolea ya viwandani. Tumia kama ilivyoielekezwa na uulizie nizi ni ni nzuri kwa mazingira ya eneo lako kupitia kupata ushauri kutokana na wasimamizi wa kilimo wako



Kutengeneza mbolea ya majani

Mboleo ya majani ni mbolea ya kiasilia ya kusaidia mimea yako kukua. Ni bora zaidi ya mbolea za viwanda kwani ni ya kiasili na haina athari za kuumiza mimea na

mazingira. Kuandaa mbolea hii ni moja ya njia zilizo nyepesi, zenye gharama ndogo na bora zaidi za kuboresha rutuba ya udongo.

Nitrogen	Phosphorus (P ₂ O ₅)	Potassium (K ₂ O)
<ul style="list-style-type: none"> Leguminous crops that are used as green manures or as mulch provide between 20 to 80 kg N / acre which can be used by subsequent crops. Blood meal/ leather meal 12-15% N. They are applied directly to the crops. Urines from all species contain pure urea (up to 1% N)- It is not a stupid idea to urinate on the compost heap! Poultry manure 8-20 kg N/t Pig manure 3-5 kg N/t Goat / sheep manure 2-4 kg N/t Cattle manures 2-3 kg N/t Compost * 1 kg N/t Manure teas and plant teas provide easily available nitrogen and can be used as top dressing or foliar feeds. 	<ul style="list-style-type: none"> Rock Phosphate 20-33% Bone meals 12-25% Poultry manure 10-25 kg/t Pig manure 3-6 kg/t Goat/sheep 2.5-4 kg/t Cattle manure 2-3 kg/t Compost * 4kg/t 	<ul style="list-style-type: none"> Wood ash 3-7% Goat / sheep manure 12 kg/t Cattle manure 5-12 kg/t Poultry manure 5-12 kg/t Compost * 6 kg/t Pig manure 3-7 kg/t Urines: 1-3 kg/t
<p>• Content of purely vegetative compost. If compost is prepared with livestock manures, rock phosphate and wood ash, the product will have higher nutrient contents.</p> <p>Nutrient contents of manures and composts are highly dependent on handling and storage and on feed quality!</p>		

Ni nini hutumika kutengeneza mbolea hii?

- Masali ya mimea, magugu, majani yaliyokauka, mimea iliyokatwa, kinyezi na mikojo ya mifugo, matandiko ya mifugo, chakula kilichobaki jikoni kutokana na matunda na mboga, jivu, makaratasi yaliyokatwa na mbao nyepesi
- Usitumie nyama, vitu vinavyotokana na mifugo, mafuta, chuma au plastiki.

kutenganisha mboleo iliyo na vipande vidogo vidogo na ile yenye vikubwa vikubwa, na kurudisha yenye vipande vikubwa shimoni ili iwe tayari wakati utakaofuata.

Baadhi ya vikundi vya TIST hutumia njia maalum zaidi ambayo waliiona kuwa yenye ufanisi. Wameeleza mchakato huo hapa chini:

Mazoezi ya kijumla yaliyo bora zaidi katika maandalizi ya mbolea hii:

- Chagua eneo lenye kivuli la kuchimba shimo lako
- Funikia kwa majani ya ndizi au kwa karatasi ya plastiki
- Nyunyizia maji wakati wa kiangazi.
- Linda dhidi ya mvua (ambao hubeba virutubisho)
- Kama mwongozo wa kijumla, lenga:
 - Sehemu moja kwa tatu 'mimea ya kijani' (nyasi iliyokatwa, matunda, mboga, mabaki ya mayai, mabaki ya mbegu za mafuta, magugu, mimea)
 - Sehemu moja kwa tatu mimea iliyokauka (majani makavu, nyasi iliyokauka, mabaki ya mbao, mbao nyepesi na masalamadogo madogo ya mimea)
 - Sehemu moja kwa tatu vitu vizito kama matawi yaliyokatwa na mabaki makubwa ya mimea.
 - Hakikisha unatumia mimea ambayo haina mbegu, na usitumie mimea iliyo na ugonjwa.
 - Weka vitu hivi kwa safu au katika shimo. Hewa huhitajika kutengeneza mbolea, kwa hivyo changanya vitu hivi pamoja na usifinyilie chini
- Nyunyizia maji, funika na uache ili vitengane kwa muda na miezi michache inayofuata. Waweza kukuchanganya tena kila baada ya wakati.
- Ikiwa mbolea itakuwa yenye kuteleza au inayonuka jinsi inavyoendelea, yaweza kuwa na maji mengi sana au kuwa na mimea ya kijani mingi sana. Ongeza mimea iliyokauka ili likionekana na uchanganye.
- Jaribu kuhakikisha masala yako yapo tayari kuchanganywa, kuwekewa maji, kufunikwa na kuachwa kwa miezi miwili au mitatu kabla ya msimu wa mvua kuanza ili mbolea iwe tayari wakati wa kupanda.
- Mbolea yafaa kuwa ya rangi ya kahawia na yenye kuvunjika kwa urahisi inapokuwa tayari. Waweza

Hatua za Maandalizi ya mboleo zinazotumika na baadhi ya vikundi katika TIST:

- 1) Chagua eneo lenye upana wa mita nne na urefu wa mita nne la kuchimba shimo lako la taka
- 2) Fagia sehemu hiyo
- 3) Chimba shimo la mduara lenye upana wa mita tatu au nne na mita moja na nusu kina.
- 4) Kusanya masala yote ya mimea uliyo nayo na uyakate kuwa sehemu ndogo ndogo (kwa mfano majani na mashina ya mahindi, mtama, maharagwe)
- 5) Weka masala haya ya mimea katika shimo ilo hadi kina cha nusu mita.
- 6) Halafu ongeza lita tano za jivu
- 7) Halafu uongeze centimita thelathini (ama kiwango kiliopo) za kinyesi cha mifugo (kwa mfano kinyesi cha nguruwe, ng'ombe, mbuzi au kuku).
- 8) Ongeza safu nyingine ya majani ya mimea na mashina (nusu mita)
- 9) Ongeza lita zingine tano za jivu.
- 10) Ongeza majani na mashina tena hadi shimo likaribie kujaa.
- 11) Hatimaye, ongeza safu ya udongo hadi shimo lijae.
- 12) Unapokuwa ukiweka udongo shimoni, ingiza fimbo ndefu katikati mwa shimo hadi ifike chini ya shimo.
- 13) Liache shimo la taka kwa miezi mitatu (siku tisini).
- 14) Katika kipindi hiki tumia maji yako machafu kuweka katika shimo hili. Kwa mfano, baada ya kuosha nguo au nyumba, yamwage maji uliyotumia juu ya shimo. Ikiwa una mifugo waweza pia kumwaga mikojo ya mifugo juu ya shimo.
- 15) Jaribu kuweka maji kila siku kwa njia hii, ama wakati maji yapo.
- 16) Baada ya siku tisini mbolea itakuwa tayari. Tumia fimbo kama kipima joto – mbolea inapokuwa tayari lazima iwe na joto na waweza kuona mvuke ukitoka kwa fimbo hiyo baada ya kuitoa.

Mazingira Bora



TIST

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

Kikamba Version

An Environmental, Sustainable
Development and Community Forestry
Program.



GOCC Seminar held on June 2-4, 2014 at Gitoro Conference Center.

Inside:

Uvoo munene: TIST kusakuwa kwithiwa neyo nzeo kwa walany'o wa nzeve itavisaa (Carbon) nthi yonthe. Page 2

TIST: Kutema miti ngulutu yoothe ila nitalikite nthini wa TIST ni ikosa inene nundu nuuvitya kwialana wiw'ano na walany'o wa TIST na nyumba sya ngilini sya nzeve. Ni iumiasya memoko maseo ma makili ma aimi ma TIST. Page 3

Walany'o wa TIST kisioni kya Igembe. Page 4

TIST: Unou wa muthanga. Page 5



Uvoo munene: TIST kusakuwa kwithiwa neyo nzeo kwa walany'o wa nzeve itavisaa (Carbon) nthi yonthe.

AIMI MA NIMA NINI KUIKIITHYA NIMATONYA KWAILYA MAWITHYULULUKO MOO NA KUTETHEESYA IKONYO INYA SYA NTHI KWAILA.

TULSA, Oklahoma, U.S.A. kwi matuku 30/06/2014 TIST ila ni (The International Small Group and Tree Planting Program) nimasakuiwe kwithiwa nemo mambee nduniani mena walany'o museo wa kwailya mawithyululuko nthi yonthe usakuani ula weekiwe ni Environmental Finance. Kumanyikana kuu kula kwanyuviweni asomi na maprovesa nthini wa soko ya nzeve itavisaa nthi yonthe, imoolotile moseo ala aimi ma TIST makwataa kumanan na kuthukuma vamwe kuvandani kwa miti na kiana vamwe na kumayiany'a iulu wa mawalanyo maseo undu wa kwailya mathayu moo.

Environmental Finance ni kisese kinyaiikasya na kunengane mawoni kwa nzia ya internet ila mambiie unengane livoti syoo kuma mwaka wa 1999 iulu wa kwambiia undu wa kwikalauendee, ukwati wa ngilini, andu na kambuni ila syiyumitye undu wa mawithyululuko. TIST niyo yambee kwambiia kumanyikana ni ngwatanio ino ikwitwa Environmental Finance.

TIST ni nima ya liu, uvandi wa mi, kwiana na kuta nzeve itavisaa ila yina wia wayo Kenya, India, Uganda na Tanzania. TIST niyambiie na aimi anini ala mavandie miti kusii muthanga kukuwa na kwailya mathayu moo vamwe na kwithiwa na liu wa kwiana. Meko moo methiitwa maialyula vala mai, nthi syoo na nthi yonthe mawithyululuko makasenzya nundu wakwithiwa kutemwa kwa miti, kwaa ka mithemba ya tene, na nzeve kukeuka.

“Makukathiia nthini wa wailu wa walany'o uu ni aimi ma Tist” Niw'o Ben Hennek ula ni umwe wa ambiia ma TIST. “Aimi aya nimo makolanasya mbindi na ngii sya miti kivathukany'o makaseuvya ivuio, makavanda na kumisuvia miti ona ivinda yila kumu kana mbua ne mbingi, makamisuvia indo na nyamu

kwananga nginya ikena. Aimi ma TIST ni andu amwe ma kuthuthya muno. Nimeyonea na kwikanthiia undu wa vaita ula makwataa kuma miti mathayuni moo na mawithyululukoni. Muthinzio uyu niwaumanyithya na kwinyanya wia woo museo ula mekite na aimi mbee wa 70,000 ala mavandite miti, makataana na kuolelanila umanyi, kusyaiisya kuvikia

usyao na kutethya aimi angi”.

“Kwengwa kwa miti isioni sya Topical ni kimwe kati ka ila iseuvitye nzeve itavisaa kuma munduni, na aimi anini ni amwe kati wa aimi ala methiitwe maikwata wasyo kumana na uvinduku wa nzeve”, Henneke niwaendeeie na kuweta. “Kwa myaka 14 iveti na aume aingi na aingi moo nimoosie itambya ya kutungia miunda yoo kwa kuvanda miti na kwailya itheka sya mbai syoo. Kwa kuthima undu miti yianite na kuseuvya ingi myeu undu wa “nima ya useuvya mbesa syinekee kwa menyenyi” (“virtual cash crop”) ila ni carbon offsets. Nzeve itavisaa yateewa kambuni, ngwatanio na andu ala mendaakuthuthya kithito kya aimi ma TIST”.

Nzeve itavisaa kuma India, Kenya na Uganda nikunikilawa/kuthianwa na kuvitukithya kuvika kiwango kya Verified Carbon Standard (VCS) na Climate, Community & Biodiversity (CCB) kila kivamwe na kiwango kya “Thaavu”. “kutewa kwa nzeve ya katicati na kiwango kya TIST yu nikikwatitwe mbau vya isioni ila syivo na kuendee kuete vaita kwa myaka 25-30 yukite” Henneke niwawetie. “Kwa kuendee kuthathaa, nitukuendee na kwailya wiko uu wa kwiyikalya.

Ithagu ya 2 kwa 2

Aimi ma TIST nimonanitye kwa kutumia nzia nzau sya nima undu wa kuvanda mithemba kivathukany'o ya miti, kutumia maiko meu mausuvia mwaki kuu, kutumia nzia nzeo sya kwikalalya uima wa mii ni kwithiitwe na uthyo na vaita munene kwa misyi yoo nthini wa ukwati na uima woo. Nthini wa ukunikili ula uneekiwe omituki wionanya kana mauseo ala aimi makwataa kwisila walany'oni uyu nimaingi kwi kila kyatumikie kwambiia walany'o uyu.

Henneke niwongelile kwasya, “nitweethiwe na wiw'ano wa ngwatanio na USAID KENYA kwa ilungu ya myaka itano mivitu kwoondu wa uyaiikya Tist kwa aimi aingi Kenya, munamuno iveti na yiika, ala matonya useuvya moseo maingi kwoo ene, kwa kwailya kila mwikalo wa kila mbai na kiw'u vamwe na kusuvia mititu.

Utethyo wa USAID nthini wa Kenya niwatethisye nthi ila ingi syi nthini wa walany'o uyu wa TIST ila syithiawa na walany'o museo na kumanyiany'a muimi kwa ula ungi ula ni undu wa



mbiie vaa Kenya. Tist yionany'a kwailya isio ila tukwikala na mawithyululuko ma ikonyo inya sya nthi nikusevvasya nzia nzau sya kuete ukwati na mavuso maseo. Twina eka mbee wa mbilioni imwe ila syanangingite na syikwenda utungiiwa, TIST niyonanite kana kusevvasya "ndivi ya kuthukuma mawithyululuo" (Payments for Environmental Service) kwa imi nikutonya utuma kula kwi nyumba sya ngilini ila sumasya nzeve thuku uoleka kwa mituki na ingi kutuma ataalamu mamantha nzia ingi ila itekumya nzeve itavisaa mbingi ila ni muvango umwe wa kusyaiisya uime na kuiikithw'a.

Charlie Williams, ula ni munini wa musumbi wa ngwatanio ya itambya ya nzeve theu (Clean Air Action Corporation (CAA), nimawetie uu, "kwa myaka ikumi na ina mithelu nitwiihitwe na kusisya maundu atatu ala ni: Mbee Kwina aimi eu mailika nthini wa TIST kwailya mathayu moo kwa kwiyumya na kithito kyoo. Keli CAAC kwithiwa itonya kusyaiisya nakwina uw'o na kyenini kwona

nimanengane usyao waw'o. Kya katatu Kithimi kyoo kyaw'o ni kyaaka nzia nzau ya ueti ka aimi". Twi May 2011 muvango wa TIST wai wambee nduniani kuminukiliilya sativiketi sya VCS na CCB nayu nimaminite kwa mavinda 14. Williams niwongelile na kwasya "Twina utanu kwithiwa na athooa ala mekuelewa maana ma kuaa nzeve itavisaa kwa TIST kwa nzia ya kutethya mundu. Eli ma aui maitu ni Carbon Neutral Company na Microsoft ila isindite kwoondu wa ndivi ya mawithyululuko (Environmental Finance). Kambuni ya Carbon Neutral Company niyo yasindie kwithiwa yi nzeo kwa kuaa kuma muimi na Microsoft ya kuniwa kula kwithiwa neyo nzeo kwa kwambiia u walany'o. TIST niyiendee na kwikuna kundu na kuthathaa nundu kwina aimi aimngi me kwenda ulika nthini wayo. Twiite usyaiisyonni kwona nitwavikia kwithiwa na ukwati utaonya kuvikia mawendi ma imi asya na kwongela vaita wa TISTkwoondu wa useo wa uvinduku wa nzeve"

TIST: Kutema miti ngulutu yoothe ila nitalikite nthini wa TIST ni ikosa inene nundu nuuvitya kwialana wiw'ano na walany'o wa TIST na nyumba sya ngilini sya nzeve. Ni iumiasya memoko maseo ma makili ma aimi ma TIST.

Mwai muthelu nitwa neenanisye iulu wa miti kutemwa yonthe yila twai na semina ya GOCC twi Gitoro mwai wathathatu, itina wa kutania wiw'ano wa TIST- USAID wa myaka itano kwithiwa wina wailu.

Mwai uyu nitukumulilikany'a oili iulu wa uzoo na mawoni ma aimi ma Tist undu wa kutema miti ute kwenga. Utongoi wa kanzu ya TIST niwa sakuie Charles Ibeere (0720 474209) kuthukuma kwa vakuvi na atongoi ma ngwatanio(cluster), GOCC na aimi ma tist kusisya undu uu.

Ni useo kumanya kana kondulakiti ya nzeve ya nyumba sya ngilini (Green House Gas) ila aimi othe ma TIST me nthini ya kwikalya miti kwa ivinda iasa. Wiw'ano uu niunengae muimi uthasyo wa kuola miti ila ithengeani, kunzea ngava kwa ngu na kutema miti kilio kya 5% kwa miti a kikundi kila mwaka yila miti yavitukya myaka ikumi kana mbeange.

Mwiao uyu ni wavata nundu kuendee kwithiwa nthini wa soko wa nzeve itavisaa. Aui ma nzeve ino nimekwenda kuikiithw'a kana miti ila

mekuuia nzeve itavisaa yivo. Vala aimi matemanga miti, muui wa nzave ino itavisaa nuleaa kumauia nundu aasyaa nukwasya. Kii nikyo kitumi kwa itambya ya muimi umwe kutemanga miti yikutuma aimi angi matist matauiwa nzeve yoo nundu wa kwithiwa ula wikite uu e ngwatanioni yoo kana kikundini kyoo.

Ingi muimi ukutema miti yake yoothe no ethiwe anakwataa ndivi, umanyisyo wa tist na ithangu ya Mazingira

Bora. Muimi uyu nutumaa ngalama yake itwawa kwa ala me ngwatanioni/kikundini kimwe nake kwoou

uyithia niwamanenga ngalama iteyoo.

Ta ulilikany'o iulu wa matambya kuma GOCC kunia Charles (0720 474 209) iulu wa:-

- a) Lelelo kuma imini ma ngwatanio ingi undu wa itambya yila yaile osewa ula watemanga miti yake atekuatiia walany'o wa TIST
- b) Undu muimi usu utemangite miti yake ukuiva imi ala angi kwa wasyo ula meukwata kuma kwa viasala wa nzeve itavisaa.



Walany'o wa TIST kisioni kya Igembe.

na William Mwito, Muthukumi wa ngwatio ya TIST

Ithyi, aimi ma TIST kuma Igembe South twina utanu kutunga livoti iulu wa kila tuvikiite kumana na kwithiwa

twi amemba ma TIST. Tuvikiite aya:-

1. Nitukwataa umanyisyo kila mwai kuma kwa atongoi maitu ma Tist na tukakwata ithangu ya Mazingira Bora. Kii nikituteesye kwongela nima yitu ya mbemba, matunda na maliu angi. Nitumanyite undu tutonya uvanga miunda yitu kuvikia usyao mwingi, kusuvia muthanga, kwongela unou muundani na ingi nima ya kusuvia (CF) vamwe na kuseuvya vuu wa yiima.
2. Aimi ala matiniie usi nimamanyite iulu wa uvanda miti ithengeanie nguumoni sya mbusi. Undu uu nutumitwe twithiwa na kiw'u kitheu ivinda yonthe kwa kutumia musyo na indo situ. Ingi nikusuvia itheka situ kumana na kukuwa kwa muthanga.
3. Walany'o wa TIST iulu wa utongoi wa kithyululu na ukuatia mivea yothe mundu muka na munduume kwithiwa matonya utolingosya undu ula ualyulite mesilya ma aingi kisioni iulu

wa utongoi. Iveti, aume na yiika mena ivuso yianene kukwata mwanya wa utongosya, kwonany'a utuika woo, na kwithiwa matonya kunengeleanilya umanyi ula menaw'o iulu wa utongoi na inengo kivathukany'o. Ingi kii nikietae ieleelo kivathukany'o ila itonya utumika kwiyeendesya na kwiana kwa ngwatanio.

4. Uthuthio kuma mitini ya TIST nitetheesye kuvindua mikalo ya aimi. Nthini wa ikundi na ngwatanio imwe aimi nimethiitwe matonya kwika kwia kwa mbesa sya mesani (Table banking), sangulo, na kwoou kutetheesya kwongela ueti woo na kwitethya ta aimi.
5. Kutumia kwa maiko ma kusuvia mwaki ma Tist nikutumite mathayu ma miti mongeleka na kwithiwa itonya kwiana na kwikala kwa ivinda iasa nundu ngu iikutumika mbingi. Ingi maiko aya nimatethetye nundu mayithiawana syuki kwoou kwongela uima wa mii ya aimi vamwe na syana syoo na kwithiwa itonya kumatumia vatena w'ia nundu mena muikiio wa kwithiwa mataivivya.

Status of TIST Clusters in Igembe

Cluster	Groups	Trees	Next Meeting	Last Election	Members	Groves	Area
Ankamaia	40	41820	14 Aug 2014	12 Jun 2014	307	306	104.1
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Athi Cluster is one of the TIST Clusters that are organizing themselves through table banking. These photos were taken during their July 2014 month meeting.



TIST: Unou wa muthanga.

Muthanga nikyau?

Muthanga nikaseemu ka yiulu ka nthi. Kethiawa na kiw'u, nzeve, unou, na uthwii wa nthi.

Muthanga useuvaw'a ata?

Mavia mathiana nimo maseuvasya muthanga ula wendekaa ni miti kumea na kwikala. Ingi miti/mimea nisyokaa ikongeleelwa muthangani kuseuvya unouc wa muthanga. Oundu ivia yiendee na kuthiwa now'o mitiyongeleketete na unou wa muthanga kwaila nukana kiw'u kingi kithiwe kitonya ukwatwa ni muthanga na kuendeesya miti/mimea kumea na kwiana.

Niki unou wa muthanga wa vata?

Unou wa muthanga (kaingi usevitw'e kaingi kuma kwoani kwa miti/matu) ila yumasya unou mwingi naw'o uyoswa ni miti ingi nikana yiane. Ingi unou uyu nutetheesya tusamu tula twikalaa muthangani ta yiumbi, mithowe, ngongoo, ing'au, kukwata liu nayo iitetheesya muthanga kukwata nzeve nakiw'u kwikala muthangani.

Nikyau kiamuaa muthemba wa muthanga?

- Nzeve: uvyuvu na uthithu wa vandu na kiw'u nisyoy itetheesya ivia kuthiwa yila yiseuvasya muthanga.
- Organisms: tusamu ta bacteria na fungi vamwe na mithowe, syingolondo na tusamu tula tungi twikalaa muthangani nitetheesya muno kuvulany'a muthanga na ingi kutuma matialyo ma mimea na matu moa na kuseuvya nzeve ya nitrogen ila yikiawa muthangani ni bacteria yitawa rhizobium.
- Utheeu wa vandu: (topograpohy) ethiwa vandu ni vatheeu niw'o muthanga wavo ukuawa na mituki na kutheew'a syandani.
- Muthemba we via: Undu ivia yila yithiikite yiilye.
- Mwikalo wa mundu: undu twatumia muthanga na kuusuvia nikuutumuma unou wa muthanga ueleeka.

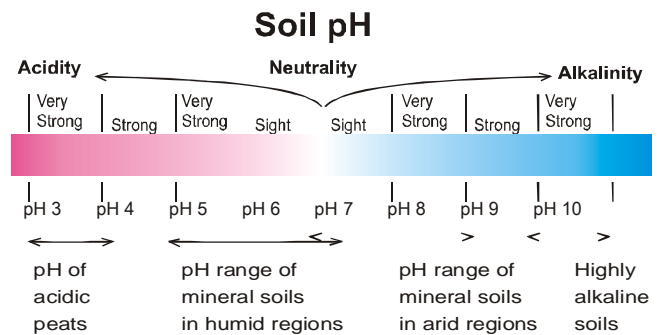
Ingi muthanga ula winaw'o uamuawa ni kithangathi, mututu na yumba yila yiusevitye. Ve ivisa yi ithangu yila yiatie yiukwony'a uaaniku wa muthanga. Uvinyu wa muthanga na undu uaanikite nuamuaa undu mii ya muti ikulika muthangani na undu kiw'u kitonya kwikala muthangani.

Niki asiti kana PH ya vata?

Muthanga kwithiwa wina asiti mbingi kana wi alkali kii niamuaa undu miti ukumya unou muthangani na ni tusamu twau kana bacteria itonya kwikala muthangani usu. Kaingi monou maingi ma muthanga nimethiawa matonya uvikia mimea/miti malika

kiw'uni yila memuthangani wina asiti mbingi kwi ula wikatikati kana muthithu ute asiti.

Onakau muthanga wina aciti mbingi bacteria na mithowe mingi nditonya kwikala muthangani usu kwoou kwoa kwa matu/mavuti kutwika vuu uyithia kwi nthi na kwoou kusisiia kwiana kwa miti. Kaingi muthanga museo waile ithiwa na PH ya 5.5 kana 7.5 na wimwiu kwa langi.



Muthanga munou niwiva?

Muthanga munou nula wina nutrients syonthe ilasyikwendeka kwa muti kumea na kwikala.

- Nutrients sya mbee: Nitrogen, Phosphorus na Potassium
- Nutrients ya keli: Sulphur, magnesium, calcium
- Ila syendekaa niini: Iron, manganese, boron, chlorine, zinc, copper, molybdenum na nickel PH ya muthanga Nzia sya kwongela unou wa muthanga
- Ongele Nitrogen kwanzia ya vuu wa ngilini na phosphorus kwa ivia ya phosphate).
- Kolany'a vuu na maumao ma indo ula withiwa wi museo waindwa kwi wumite indoni na nokwithiwa wina tusamu twingi twa pathogens. vuu uyu useuvaa waindwa vandu va ivinda ya mai ili.
- Ongela vuu kwa nzia ino yivaa nthi
- Tata utumie nzima ya kusuvia undu uvundiitw'e nii TIST
- Kukuany'a mimea
- Kuvandansya
- Kuvanda mitii na liu
- Kuvanda osyindu sya uwika ta nthooko, na mboso
- Kutia muunda kwa ivinda
- Kutumia mavuti kuvwika
- Kutumia maima ma nima ya kusuvia
- Kuvanda miti kusiiia muthanga kikuwa kana kwisa mitau, fanya juu Kuvandansya uitumia Nzuu, Dolichos Lablab, Macuna Pruriens, Crotalaria, Canavalia.

Ongela muu ula withiwa na calcium, potassium carbonate Ongela lime ethiwa niwisi muthanga waku wina asiti mbingi

Ti useo kwongela minerals mbiongi eka ila syinthini



wa vuu wa yiima utathimite muthanga ukamanya ni mineral yiva itevo na ikwendeka.

Ve ivinda yithiawa ukethia no wongelile vuu wa

ndukani yaani vatalisa. Tumia kwiana na uelesyo wa ala masevisye kwianana na kisio kyaku na eka maovisa ma nima ala me kisioni kyaku mautae iulu wa w'o.

Nitrogen	Phosphorus (P ₂ O ₅)	Potassium (K ₂ O)
<ul style="list-style-type: none"> Leguminous crops that are used as green manures or as mulch provide between 20 to 80 kg N / acre which can be used by subsequent crops. Blood meal/ leather meal 12-15% N. They are applied directly to the crops. Urines from all species contain pure urea (up to 1% N)- It is not a stupid idea to urinate on the compost heap! Poultry manure 8-20 kg N/t Pig manure 3-5 kg N/t Goat / sheep manure 2-4 kg N/t Cattle manures 2-3 kg N/t Compost * 1 kg N/t Manure teas and plant teas provide easily available nitrogen and can be used as top dressing or foliar feeds. 	<ul style="list-style-type: none"> Rock Phosphate 20-33% Bone meals 12-25% Poultry manure 10-25 kg/t Pig manure 3-6 kg/t Goat/sheep 2.5-4 kg/t Cattle manure 2-3 kg/t Compost * 4kg/t 	<ul style="list-style-type: none"> Wood ash 3-7% Goat / sheep manure 12 kg/t Cattle manure 5-12 kg/t Poultry manure 5-12 kg/t Compost * 6 kg/t Pig manure 3-7 kg/t Urines: 1-3 kg/t
<p>Content of purely vegetative compost. If compost is prepared with livestock manures, rock phosphate and wood ash, the product will have higher nutrient contents.</p> <p>Nutrient contents of manures and composts are highly dependent on handling and storage and on feed quality!</p>		

Kuseuvya vuu wa yiima Vuu wa yiima niwakuseuvya vate kemikoo na nutetheeasya mimea kwiana. Withiawa wi museo nundu utumiaa syindu sya kwimesya itena kemikoo na ndwanangaa mimea na mawithyululuko. vuu uyu nilaisi kuseuvya na ndwingalama nene ta wakuua na nimuseo mbee kwa kwongela unou wa mithanga.

Nitrogen Phosphorus (P O) Potassium (K O) 2 5 2

Nikya kitonya utumiwa kuseuvya vuu wa yiima?

- Makusa/mavuti ma matialyo ma liu kuma muundani kana matu, usese, kyaa kya ngombe, maumao ma indo, matialyo ma liu wa andu, matunda, muu, mboka, mathngangi matilange na ingi mbingi.
- Ndukatumie nyama, maia, mauta, syuma kana plastic. Nzia nzeo sya kuseuvya vuu wa yiima
- Inza yiima vandu vena muunyi
- Vwika na matu ma maiiu
- Ngithya na kiw'u yila kute kwiu
- Siia mbua ndikakue unou.
- Atiia matambya aya 1/3 ya ngilini ethiwa ni matu, nyeki, matunda, yia kana miti 1/3 Matu momu kana ma langi wa muthanga (brown) ta mavemba, makusa, mutu wa musumeno etc 1/3 syindu ngito ta ngava ndilange Ikiithya watumia kiko kya miti/mimea itanamba usyaa Nzeve niyendekaa kuseuvya vuu kwoou ikiithya niwavilany'a nisa na nduvinyiie muno vena nzeve.

Ikala uinginya, uvwikite na kueka vandu va myai kauta nikana yooe na ilikana nesa Woono yambiia uyunga muno veonany'a wikiite kiw'u kingi kana matu ma ngilini nimmo maingi kwoou ongela syindumbumu ta matu, mavemba, makusa na uivulany'a. Tata withiwe na syindu sya uvulany'a na kuevya vuu tayali mwai ta ili kana itatu mbee wa mbua kwambiia

nikana utumie ivindani ya mbanda. Vuu uyu waile ithiwa ulyi muthanga(brown) na ulekanitye wavya. No usunge vuu uyu kumywa ikuli ila itaneevya na uitungia yiimani iendee uvyu.

Ikundi imwe sya tist syithiitwe iitumia nzia ino yivaa nthi kuseuvya vuu wa yiima nundu kwasyo yithiitwe yi nzeo usevya vuu wa yiima kwa ikundi imwe sya TIST:-

- 1) Kusakua kisio kya matambya 4 x 4m na kwisa yiima
- 2) Enga kisio
- 3) Inza yiima uthathau wa 3-4m na 1.5uliku
- 4) Kolany'a matialyo ma mavemba, muvya, mavoso na uitilanga tulungu tuniini
- 5) Ikiia yiimani itumie uliku wa 0.5m
- 6) Ikiia muu wa lita itano
- 7) Ongela kyaa kya indo ethiwa kivo kya uliku wa 30cm
- 8) Ongela matu na makusa uliku ungi wa 0.5m
- 9) Ikiia muu ungi wa lita itano
- 10) Ongela matu na makusa withie yiima notayausua
- 11) Ususya yiima na muthanga
- 12) Uyusuya yiima ikia muti muasa kati withie utinite yiimani ungu.
- 13) Eka yiima yiu yiyiue vandu va myai itatu kana mithenya miongo kenda
- 14) Ivindani yii yonthe osaa kiw'u kila kina kiko uketa vo ngelekany'o kila wavua nakyo kana kuthambya miio. Ethywa wina maumao ma indo no wite vo.
- 15) Tata navinya ungithye yima yii kila mithenya kwa nzia ila utonya.
- 16) Itina wa mithenya miongo keenda vuu wiithiwa wi tayali. Tumia muti uyu wikati ta kithimi kya uvyuvu. Vuu wasuva ukeethiwa wimuvyu na nowone muti uuyu waumya uitoa.

Mazingira Bora



TIST

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

Kipsigis Version

An Environmental, Sustainable
Development and Community Forestry
Program.



GOCC Seminar held on June 2-4, 2014 at Gitoro Conference Center.

Inside:

Ngalek cheechen: Kigororchinge TIST asentab koristo (Carbon) en tetatb ngwony komugul. Page 2

TIST tiletab ketik en imbarekab TIST ko moiboru kit negararan amun mogitegis tolochigab TIST ak koyonchinet ne kigeyai oak ghg. Page 3

Tetetab TIST en Igembe. Page 4

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Ngalek cheechen: Kigororchinge TIST asentab koristo (Carbon) en tetatb ngwony komugul.

MENGIK CHE TEMIK KOTINYE KAYANET KOLE WOLE OLE MENYE AK KOTORET NGWONDET.

Tulsa, oklohoma, usa 30th June, 2014 – korurugutik chemengen che minetab ketik (TIST) ko kikoborchigei asanet en tetetab tai en segeetab nguony mwoe toretikab chebkondok cheb tolonchin itondab emet. Kinyak anyun initon en chemungarainikab koristo en nguwony, kiitok amun kinyot ketunoik chechang temikab TIST en korurugutietab minetab ketik kotestai konyor sobet.

Mwoe anyun tononikab itondab emet ngalechu ak kerik chegiginam en 1999 asikomwaita tononet kombunisieki ak biik chetinye boisionik en itontab mungaret TIST ko netai en tetetabtai netogunot eng toretikab chebokondok.

Tist ko temik, minikab ketik, tigikab emet ak mungaretab koristo netesetai eng Kenya, India, Tanzania ak Uganda. Tesetai tist eng korurugutik chetononchin temik che kole ketik imbarenikwak kotoreten sobenywan ak konyor omitogik. Iborugei boisionik eng biik ak eng emet kou wegetab osnet, wegetab timwek ak waletab burgeyet en emet.

“Eng kenyit nebo tuguchu tugul en bandab tai kobo temikab TIST wolulik chu,” mwoe ben henneke, ne konomintetab TIST., “temik chuton koyumi keswekab ketik koyai kabotisiet, komin ketik, ago rib kosobcho en kemeusiek, maranet ak korib en tuga, nego ak tiongikab timin. Tinye

temikab TIST kogiletatge en mugulelwekwak. Boiboechin ichek kelunoik chebo ketik chesobtos en ole menyey. Togu boisiet neui missing ne kigoyai temikab tist chesire 70000 chegigomin ketik, che iyomtos kobwotutik, cheribe wolulik ak kotoret temik alak.”

“En emet neo missing burgeiyet ko agenge chegonu wegtab koristo neo missing (CO₂) ago niton knyorunen temik chemengech kewelnatet amun eetu missing burgeyetab emet (kemeut).” Mwoe henneke. En taman ak angwan (14) che kisito ek murenik ak kwonyikab tist ko kigoyom koib kokwout en teretab tiletab ketik ak korib chetinye en imbarenikwak ak chebo boror, en ribetab ketikwak ko kigotoo ole nyorunen melekwek en oliyetab koristo, korisiton kiyotechi kobunisieki, toretik ak biik chemoche kogochi kimnotet temikab TIST.

Oligab koristo koyob inda, kenya ak uganda komiten segeik chebo (VCS) ak chebo (CCB) koboto “Gold Level” icheget ko oltoik che olto kayumanikab koristo ago tetesetai kogoito melekwek en kenyisiek 25-30 mwoe henneke, ak kotoreti chebkondok chebo tetesetai en TIST.

Page 2 of 2

Tinye koborunet temik yeboisien koletab minutik minetab ketik cheter boisitab maisiek ak ribetab tilindo, nyorunen melekwek che chutu kogochin kotestai tetet kotes henneke kole kigetebi ak usaid kenya en kenyisiek mut asi konyor kenya kotesak



TIST, mising ko kwonyik ak nerank asi kotoo ak konyor kelunoik icheget, korib timwek ak beek, ak korib osnosiek, usaud en kenya kokinyor toretet kou emotinuwek alk mising kingonam temik kobchei agobo minetab ketik, kinyo temikab kelunoik ak kobit boroinuek chebo boisionik, ole moche imbaret nebo million agenge hectares ole kigonoren, kelibonchi chebo minetab ketik asi komuch kobos koristo neya en soet.

Charlie william, vice president of clean air action corporation (CAAC) komwa kole “ en kenysisiek 14 che kigisirto ko kigitinye kobwatutik somok netai, temik che miten tist kogitoo sobet

ne kararan en kogilenyuan bogei, nebo oeng caac kotinye ribet ak keret en oretab imanit ak keret ne togunot en wolutik, ak nebo somok, konyoruren icheget melegwek, en kenyitab may of 2011 ko kogoibelis en nguwoy koik netai tetetaib tist, kingo koyamak anan ko tuyosi vcs ak ccb keret nenoto ko kerge ak 14 times, kotes william, kiboiboi en chemungarainik cheingen agobo kororindo ak mogutikab biik cheole korurugutikab tanisisiek chegonu tist, en chemungarainik chuton oeng ko wegin kongoi chelomu chepkondokab ribetab itondap emet, amun kogonyor tist torete kotinye boroindo ko tigak keret kituosi agobo chepkondok asi komuch TIST kotes temik asi kowal emet.

TIST tiletab ketik en imbarekab TIST ko moiboru kit negararan amun mogitegis tolochigab TIST ak koyonchinet ne kigeyai oak ghg.

Kingalalen biik chegimiten tuiyetab gocc en komolo june 2014 ye kigiba igorto negibo koyometabgei tist ak usaid en kenysisiek mut.

En arawani ketinye kabwata noton asi kemwochin temik kelenchin magararan noton en TIST, en betunoton keleben charles ibeere (0720474209) korib ak korigi kondoikab kilasta gocc ak temik asi komwata agobo niton.

Bogonut neo kibwate agobo koyochinenyo ak ghg nebo minetab ketik chebo kasarta negoi tinye temik chomchinet ko choror ak kotil temenik, agotil 5% en kurubit ago ketik chetinye kenysisiek 10 magat niton amun moyoni chemungarainik ketil ketit ne

sobe amun bose koristo, agot komogirib niton kogochin temik chechang asent amun monyoru melekwak.

Ogibwat kele chito negayai kounoton kogochin korubit asi kowegta rabisiechon amun kignet, kigiiti ketik, ak nyoru en kila arawa gosetit, chi negenyoru iyote youtionon kwo (0720 474 209)

- a) Ogemwochigei en tuiyosi kab kilasta agobo niton.
- b) Chito negayai kounoton koyoche kurubit asi mo kitononsi kurubin en mungaretab koristo



Tetetab TIST en Igembe.

By william mwito, TIST cluster servant.

Echek temikab tist en igembe keboiboenchin tuguk chegingenyoru en tetetab tist, koboto mogiutien kele:

1. Kinyoru konetisiet koyob kiboitinikab Kilasta kinyoru kora kosetisiek en kila arawa, nito kogonech ketes minutik kou bandek, logoek ak alak kigenyorunen ole kimuch keriten imbareni kiyok, keter ngungunyek ak kechob keturek.
2. Temik che negiten onit kogignet korib, koitiyech niton kenyorun beek che kororon en tuga ak biik.

3. Tolochikab tist ak katoinatet ko kigotorechek amun tinye age tugul boroinde.
4. Kigotore melekwegab ketik temik chechang en boisionik chechang kou table banking ak alak.
5. Kiboisien maisiek cheboisien kwenik che ngerin kobos anyun koluletab ketik, ak nyorulel tililinto en korikiyok

Athi kilasta ko agenge en kilasta ne kiumge icheget agoboisien table banking

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TIST okwoindab ngungunyek.

Ngungunye ko nee?

Ngu ngunyek ko kebeberta nebo emet netinye koristo, beek nunanikab ketik ana ko tongik ak kotinye munyuk.

Chebtogei ono ngungunyek?

Bitu murmurankab koik kotinye munyuk chetoreti sobetab minutik, kotesin minutik en ngungunyek, so ye yoose kouni kotesin beek kotuiyo ak kogochi minutik kobwa.

Amunee asi kobo komonut ngetunonik?

Bo komonut amun yekagonunchi nguwendet kotinye omitwogik che igochin minutik korut toreti kora kutik chemiten ngungunyek ak kotoretich koyomo anan kutuiyo koik agenge.

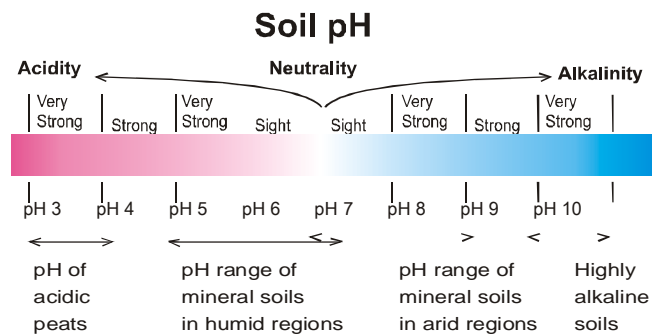
Nee ne ibesto ngungunye yekinyor?

- Burgeyet, burge burgeiyet ak beek kogochin koik kobusbusak
- Kutik chang kutik che menye ngowindet anak koburucheni ngungunyek anak kogochi nunet asi kobit emitwogikab minutik
- Ole emet niton anyun kotiyengei ole kiiburto emet, en tunonok konyumnyum ibetab koik kosir ole soet
- Uketab nhungunyek niton kotiyengei ole kigi tounto koik ngungunyek
- Otebetab kimulmet otebetab biik ak ole koribto ngungunyek asi moibet okwoindo.

Koyometab ngungunye kotingei chongitab ngainet, menet, ak ole gigitounto, miten anyun koborunet nebo ngungunyek en pichaini koyomoniton bo ngungunyek konyumnyum en tigikab ketit kosib, ak koboru beek chemiten,

Amunee asi kobo komonut PH?

Miten anyun ngungunye che tinye munyuk chechang kot kosir anak niton koweche (PH) ak omitwogikab minutik, kimuchi ketoretito ono kutik che menye ngungunye en munyu chuton ko chechang ko eiyomogei ak beek ko chotos akosigi minutik omitwogik, ole miten munyuk chechang komosigin kutik kochanga niton ko gochin nunet kwo nguwoony, ngungunye chegororon kotinye PH kongeten 5.5 ak 7.5 ago tueen en keret.



Nee okwoindab ngungunyet?

Ngungunyat ne karan kotinye omitwogik che igochin sobet minutik

- Omitwogik che tai; nituogen, phosphorus, potassium
- Chebo oeng; sulphur, magnesium, calcium
- Ak chechang; iron, manganese, boron, chlorine, zinc, copper, molybdenum, nickel

Koguwoitik che kitisin ngungunyek

- Ketesi omitwogik keboisien kegot rurutik che teche nitrogen
- Keboisien keture chebo tuga ak sogororek kiruruche asi komumiyo mogiboisien ko morurio
- Tesin ngetunanikab minutik
- Kegol imbaret ma kibat
- Kemin minutik che besiotin



- Kemin ketik che moweche minutik ak che ichugei en kwong kou, robuwonik, chebololet ak sotonik
- Kemin ketik asi koter ngungunyek
- Miten ketik che tinye ngendek –pigeon
- Kitesin orek tinye (calcium, potassium

Nitrogen	Phosphorus (P ₂ O ₅)	Potassium (K ₂ O)
<ul style="list-style-type: none"> • Leguminous crops that are used as green manures or as mulch provide between 20 to 80 kg N / acre which can be used by subsequent crops. • Blood meal/ leather meal 12-15% N. They are applied directly to the crops. • Urines from all species contain pure urea (up to 1% N)- It is not a stupid idea to urinate on the compost heap! • Poultry manure 8-20 kg N/t • Pig manure 3-5 kg N/t • Goat / sheep manure 2-4 kg N/t • Cattle manures 2-3 kg N/t • Compost * 1 kg N/t • Manure teas and plant teas provide easily available nitrogen and can be used as top dressing or follar feeds. 	<ul style="list-style-type: none"> • Rock Phosphate 20-33% • Bone meals 12-25% • Poultry manure 10-25 kg/t • Pig manure 3-6 kg/t • Goat/sheep 2.5-4 kg/t • Cattle manure 2-3 kg/t • Compost * 4kg/t 	<ul style="list-style-type: none"> • Wood ash 3-7% • Goat / sheep manure 12 kg/t • Cattle manure 5-12 kg/t • Poultry manure 5-12 kg/t • Compost * 6 kg/t • Pig manure 3-7 kg/t • Urines: 1-3 kg/t
<p>• Content of purely vegetative compost. If compost is prepared with livestock manures, rock phosphate and wood ash, the product will have higher nutrient contents.</p> <p>Nutrient contents of manures and composts are highly dependent on handling and storage and on feed quality!</p>		

carbonate)

- Momeche ketesi komenai anan kotomo ichigil ngungunyek, karara mising itenyoru chitab minutik as kuwororun abo noton

Keturek

Keturek ko omitwogikab minutik che kitounen kinun en kasrta nenin che mogitesi chemical, motinye weget en minutik, amoweche ngungunyek.

Kitounen nee keturek

- Ngetunonikab minutik, sogek, ak kitage tugul ne yamat ana ko nyali
- Matiboisien kou bendo, mwanik, chumoinik anan ko plastic

Ole kimumto

- Lewen ole miten uluwet
- Tugen soge kab itisio/chebebe
- Tumchin beek en kasartab kemeut
- Tekten en robta

Kosibet

- Agenge en somok (minutik che nyolilelen, susuwek, ingewek, logoek, sorowekatugal nego ngechinek)
- Agenge en somok sogek che tolilionen
- Agenge en somok ko sogekab ketik
- Ker ile neboisien tuguk cheyachen amun weche keturek
- Tugul anyun ki nto keringet orit amat igony amun kimogin koristo en orit

- Igoteb en kasarta nebo orowek asi iburuch tugul koik agenge
- Ye igas nguunet beo itesi sogek chenyolilen ak iburuchen
- Ye kainte tuguchuton tugul kou beek igotebi orowet 2-3 asi iib koba imbar

Miten kosibet ne kigochob temikab tist kou yeisibu

1. Lewen ole itounen keturet 4mx4m
2. Igot tililit yoton
3. Tem keringet 3-4m ak 1.5m orit
4. Iyumchin kayumanik tgugul yoton
5. Rongik kot koit 0.5m
6. Tesin orek che keburuch ak orek
7. Neisibu ites kot goit 30cm ngototokab tuga anan kobo ngororek
8. Tesin sogek kot korigta konyi
9. Nebo let anyun ite ngungunye kot konyi
10. Rutin keti ne tenten kuwenetab keringet kot kotiny kel
11. Igo munyo en kasarta betusiek 90
12. Tesin beekab orek 5 litres
13. Tesin sogek ak mobek (0.5m)
14. En kasariton iyumchi beek chon iboisien imweten ingoroik anan ko keun kot
15. Tumchin beek en betut angetugul yon kobit beek
16. Ye ibata betusiek 90 ko gorurio keturek boisien ketit asi koborun mat nemi orit, imuch iger kabusetab karisto nebunu keringat