

# Mazingira Bora



# TIST

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

English Version

*TIST is an innovative, time -  
tested, afforestation program led  
by the participants.*



**Kwajebi TIST Cluster members at their monthly meeting.**

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## Kenneth Mutuma: My story with TIST.

*By Mary Gitonga, TIST Cluster Servant.*

**M**y Name is Kenneth Mutuma, a TIST farmer from Tharu Cluster, Meru County. I heard about TIST in 2008. After learning about the program, I eventually joined in 2009. My Small Group name is Kinguru- 2009KEI53.

One of the things that attracted me to TIST is encouragement to plant fruit trees. I realized I could get multiple benefits from fruits trees more than any other tree.

In 2015, I embarked on avocado tree planting. Over the years, I have planted over 400 trees. I am proud of my efforts. I get paid carbon stipends from my avocado trees. Importantly, my avocado trees are now fetching me good income from sale of fruits. When I need to prune my avocado trees, I feed my animals with leaves and use stems for firewood.

In my avocado garden, my wife plants kale vegetables, which she sells in nearby market.

We feel strong financially today. We pay school fees for our children without difficulty. We are sufficiently able to meet our household budget from the avocado income, kale sales and carbon revenue.

In TIST, we have benefited much from the trainings. We learnt about trees that can help to break wind. We planted Gravellia trees along the farm boundary. This has helped us in reducing too heavy wind into our farm. During drought, we prune Gravellia trees to feed our animals with the leaves. Equally, we get firewood from the branches.

We would like to encourage TIST farmers not to miss Cluster meetings. Cluster meetings are the place of knowledge and empowerment.

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## Kwajebi TIST Cluster: Phenomenal Achievements.

*By David Thuku, TIST Desk Auditor.*

**W**e, Kwajebi TIST Cluster is one of the Clusters in Laikipia West. We joined TIST in 2008. To this day, we have 54 Small Groups, with 366 farmers participating.

We are proud of our achievements with TIST. Our participation has led to planting of over 90,000 trees which we have kept alive. We are sure, without TIST trainings, we couldn't have planted these trees. Our area being semi-arid, it was hard to keep trees alive before TIST. We had many challenges including high mortality rates of our trees occasioned by drought and grazing. When TIST came to our area we learnt Best Practices to overcome these challenges. We are today confident to set new goals in adding new trees.

We also take this opportunity to thank TIST program for honouring their promise in regard to carbon revenue payments. Out of 54 Small Groups in our Cluster, 51 have received their Profit share payments. This is a huge celebration to us. We are grateful and also applaud our Cluster Servant, David Thuku, for attending to all Small Groups and making

sure they meet both pre-payment and profit share eligibilities.

We can now firmly say, TIST is our program. Our members have responded positively to TIST Trainings. For instance, Mr. John Kinga of 2008KE2718 is a champion in tree nurseries. Today, he has established a nursery with over 5,000 seedlings of mixed tree species. We also have fruit tree champions like Regina Njoki and Rahab Mumbi. They have planted plenty of orange trees, which they are now selling in local markets. Ndirangu Githogori of 2008KE474 is a beehive champion. He has established 100 beehives in his TIST Groves.

At Kwajebi, we continue to adhere to TIST Best Practice of rotational and servant leadership. Our current Leaders are Francis Kahoi 0726273161 (Cluster Leader); Mary Maina 0729452202 (Co-Leader) and the newly elected Accountability Personis Michael Maina 0711343723.

If you would like to join us, kindly contact our leaders. We are happy to serve you, share with you things we have learned in TIST.



## Francis Musembi: A Proud TIST Volunteer.

*By Josephine Muasya, TIST Cluster Servant.*

**M**y name is Francis Musembi from TIST Mamba cluster, Machakos County. I belong to Mwendu Use Small Group.

I am a pioneer member of TIST in our region. When we heard and learned about TIST in 2016, we immediately volunteered to talk about TIST in our village meetings, churches and in other forums where we got an opportunity. Many farmers got interested and we began recruiting and registering them in TIST.

To encourage farmers to plant trees immediately after they join, we used the slogan, "Plant trees from the word "GO"". Because our area is a bit arid, we wanted farmers not to miss any rainy season to plant trees.

TIST encouraged us during Cluster Trainings to plant mixed tree species. In my own farm, I have gravellier, casuarinas and mangoes just to mention

a few. But the most important thing I learn about tree planting is spacing. Before TIST, I was planting tightly spaced hoping that those that will die will give space to others. But in reality, trees that died were in same space and those who survived were in another same space. This caused those that survived to compete for space, nutrients, sunlight etc. and therefore became very weak. In TIST, I learnt tree spacing is very important. It allows your tree to enjoy maximum sunlight for photosynthesis, reduce competition of water and nutrients and hence your tree grow strong and healthy. TIST encourages 2m by 2m for conventional trees and 3-4m spacing for fruit and nut trees.

In my 7<sup>th</sup> year with TIST, I can't regret or look back. This is the program we have been waiting for. I am sure we will grow and become successful with TIST.

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## Julius Mbaya: Planning my retirement with TIST.

*By Mary Gitonga, TIST Cluster Servant.*

**W**hen TIST came to my village in 2015 in partnership with our major tea buyers Taylors, I learned what was not taught in the meetings - that one can plan for retirement with trees.

I realized that very soon, I will need to give my tea bushes to my children as they settle with their families. Secondly, I realized with age, I may not be very productive with farming and other intense farm activities.

The only thing that can save me and allow me to bequeath my assets to children is planting of trees. With small lands we have today, all of us can benefit if we can plan well.

TIST has offered that opportunity. And it's working. My children now earn from the tea bushes and my wife, and I get income from the trees. From the same piece of land!

TIST trained us about the benefits of planting mixed tree species. In my farm, you will find fruit trees, nut trees, medicinal trees, fodder trees, and trees to prune for firewood.

Fruits and nuts trees give us enough income for our daily household needs.

Because TIST pays for all trees in our farm, we receive good income from carbon revenues. Today, we feel empowered and strong as family. We can face the future with confidence.



## TIST: Planting Trees in Dry Areas.

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

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

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

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

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

## TIST: Greenhouse Gas Business.

TIST helps farmers participate in the carbon credit business. Farmers receive a share of 70% of profits from the sales. Profits are created through participating in the carbon business, which involves planting trees and keeping them alive for long term.

Growing trees absorb carbon dioxide through photosynthesis. Carbon dioxide is one of the 'greenhouse gases', which captures the sun's radiant heat inside the Earth's atmosphere, helping to maintain the temperature of the Earth's surface. The Earth is getting hotter and hotter which can be very damaging. This is called the Greenhouse Effect, which causes some areas of the world to experience more flooding, more drought or desertification.

The burning of fossil fuels like oil, coal, and natural gas and the cutting down of trees produces carbon dioxide. Because growing trees absorb carbon dioxide, they help reduce the Greenhouse Effect. Governments and large industries in many countries want to reduce their emission of carbon dioxide, so that the Earth does not heat up as much. They have signed many different agreements, including the Paris Accords, which have every government in the world involved.

TIST Quantifiers count and measure the trees we plant, so that CAAC can work out how much carbon dioxide the trees absorb. The unit of measurement is equal to one tonne of carbon dioxide absorbed and sequestered in the living tree. In order to make a 'carbon credit', the TIST program must be "Validated" by an outside third party to assure that all international requirements are met. Then the amount of CO2 sequestered by the TIST trees is "Verified", to be accurate. Companies and Governments can then buy those 'carbon credits', meaning they can pay for TIST trees to reduce their carbon dioxide emissions for them.

We must have honest and accurate data on trees to sell these credits to a buyer. The carbon credit money can help groups to be even more productive, effective and start new projects. TIST groups get paid an advance of \$20 for each 1000 trees each year (roughly 2.00 Kshs per live tree per year). When the carbon is sold, the TIST farmers will receive 70% of the profits. In addition to the greenhouse gas payments, the TIST farmers also benefit from other TIST activities that the Verifiers have determined are worth over 40 times as much as the prepayments to date.

**TIST Farmers - Lets plant more trees!  
Together we achieve greater benefits.**



# TIST Farmers Combat Global Warming and Climate Change.

**T**IST farmers have responded to a global call to combat global warming and climate change. Many farmers have sought understanding through TIST seminars/trainings and at Cluster meetings, to learn and understand more about global warming, its effect on the climate, and mitigation approaches. We see many impacts of climate change today. Just to illustrate a few instances of impacts - floods, droughts and typhoons are more intense. Other notable illustrations are the gradual wearing off the glaciers at the peak of Mt. Kenya, unpredictable weather patterns that have resulted in crop failures in many areas, drying of water springs and water catchments areas, among many others.

This month's newsletter will share training notes from seminars, so that we all can understand global warming and climate change better. We will begin by defining each term and explaining it further and then learn how your trees play a significant role in mitigating the effects of global warming.

## What is Global Warming?

Global warming refers to an average increase in the Earth's temperature, which in turn causes changes in climate. A warmer Earth will lead to changes in rainfall patterns, stronger storms, a rise in sea level, crop failures, and a wide range of impacts on plants, wildlife, and humans. When scientists talk about the issue of climate change, their concern is about global warming caused by human activities and the extremes of climate and weather variability this brings about.

## Is the Earth getting warmer?

Yes! The Earth has warmed by about 1°C over the past 100 years. Over 95% of the world's leading climate scientists say that things people do are making the Earth warmer, such as burning of fossil fuels including coal, petrol, and natural gas, and cutting forest and managing land poorly.

## What is the Greenhouse Effect?

The greenhouse effect is the rise in temperature that the Earth experiences because certain gases in the atmosphere, called greenhouse gases - like carbon dioxide, nitrous oxide, sulfur dioxide, and methane - trap energy from the sun. Major sources of carbon are deforestation, gases emitted from industries, gases emitted from motor vehicles, gases emitted from burn of wood fuel or charcoal and burning of forests.

## What are the dangers of Global Warming?

- Severe water stress in the arid and semiarid land areas would result in more areas becoming desert.
- Increased spread of diseases like malaria. As areas become warmer, they become suitable breeding grounds for mosquitoes, and increasing risks of malaria infection. Many families and health institutions can be impacted, average life spans decline, and infant mortality rates rise.
- Decreased agricultural production in many tropical and subtropical countries, especially countries in East Africa. Due to decreased rainfall and increased breeding of pests, due to increased warming, the production of food crops may decrease, and this results in poverty and hunger among many families and communities.
- Higher worldwide food prices. As more farmers get less yields and food supplies become scarce, the prices increase because the demand is high, and supply is low.
- Major changes in the productivity and composition of critical ecological systems, particularly forests. Water catchment areas in the mountains and forests continue to dry up. This will affect the ability to irrigate crops and will reduce stream flows necessary to keep dams and reservoirs replenished. This will reduce generation of hydroelectric power. Our industries, hospitals and other institutions that heavily rely on electricity will be severely affected. The supply of piped water to urban areas, as well as rural homes, will also be affected.
- Tens of millions of people at risk from flooding and landslides, driven by projected increases in rainfall intensity and in coastal areas, rising sea levels.

## How can I prevent Global Warming?

"I'm a farmer. I can grow crops and I can absorb carbon. I can sell my crops and I can sell my carbon."

## Plant and care for trees!

As mentioned above, carbon dioxide is the major cause of global warming. Trees absorb carbon dioxide from the air during photosynthesis and store it in the wood, roots, and soil as cellulose carbon. However, when trees are cut and burned, they release most of the carbon they had stored back to the air.



**Did you know each tree could create a microclimate?**

Trees and their cover cool the surface of the earth. Feel the comfort of the shade of a tree. Notice that the soil below is moister than where the sun bakes it with no shade. When the ground stays cooler, the ground holds more moisture longer. This means that trees on your land will help improve the amount of water in your soil and help retain it for a longer time. This will help your crops and also even help the water users in your area.

**What are carbon credits?**

To make a TIST carbon credit requires three things:

- 1) A real and additional reduction in the carbon dioxide (CO<sub>2</sub>) in the air;
- 2) A promise to keep the carbon out of the air for many years (usually 30);
- 3) A Verification by an independent third party that certifies that the actions have taken place according to all the rules, and the amounts of tonnes sequestered are accurate.

Trees absorb carbon dioxide from the air during photosynthesis and store it in the wood, roots, and soil. The amount of carbon taken from the air and stored can be measured and calculated, and then, when verified as accurate, this absorption of carbon dioxide can be sold on the world market as carbon credits. Buyers can purchase these credits to offset their carbon dioxide emissions.

TIST is able to sell the carbon absorbed in trees, just like producers sell sugar and milk. With carbon, however, you don't ship the tree to the market. Instead, the value is from the carbon taken out of the air, kept in the tree on your farm or forest, measured and reported. The trading of carbon credits can be done through electronic exchanges, or it can be arranged between people or companies directly. We have to meet the market rules and requirements. We cannot clear forest, or cut trees to plant trees, since this is bad for the environment. We have to commit to keep trees in a grove growing for the long-term, 30 years or more. We have to report data accurately. Once trees are planted, some measurements and calculations are made to measure the amount of carbon TIST farmers trees have absorbed. Note again, trees are never actually taken to the markets. They remain in the shambas and the longer they stay alive, the longer the period of receiving payments. So, the farmer keeps the trees, the fodder, the firewood, and the fruits and the nuts. The money that TIST makes selling carbon offsets creates a new source of income and is then shared with TIST Small Groups and used to support the costs of TIST, including training, quantification, and management.

**Do all trees absorb the same amount of carbon?**

No. Trees with wider circumference (more biomass) store more carbon than trees that are thin. Taller trees also absorb more carbon than short trees. Therefore, trees that are thick will bring more income from carbon credits. This means trees planted with good spacing have a chance of growing big and tall and earn more carbon income. They do not compete for soil nutrients and water as much as trees that are closely spaced.

Therefore, in order to receive good payments out of our trees, it is important to plant them in a good enough spacing that will allow them to grow healthy, tall, and big. Thinning some of the trees to harvest firewood and keep the other trees growing well is usually the best way to manage your trees.

**Where/who are the buyers of carbon credits?**

Currently, carbon credits are sold on voluntary markets and in compliance markets. They may be certified in different ways, just as there are different brands and certifications for other products you buy and sell (like coffee, and organic coffee under different labels). TIST could market its carbon credits on the compliance or the voluntary market because they are of high quality.

There are many different standards in these markets with different and ever-changing rules about tree planting, monitoring, and reporting that we must meet to sell carbon offsets. We use the highest quality standards for the Validation and Verification — the Verified Carbon Standard (VCS) and the Climate, Community, and Biodiversity Alliance Standards (CCBA).

**TIST has two basic types of buyers:**

The first is made up of people willing to give money to encourage people to plant trees. Examples include paying for tree planting projects to make a wedding, or a conference, carbon neutral. The second type is made up of companies in the US, Europe, Canada, and other industrial countries that are making voluntary commitments to reduce their GhG emissions, either because they are good stewards of the environment, or they are preparing for future regulatory requirements.

TIST is very happy to have good quality carbon credits, and to be able to supply many different customers.

# Mazingira Bora



# TIST

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**Kimereu Version**

*TIST is an innovative, time -  
tested, afforestation program led  
by the participants.*



**Wanachama wa Nguzo ya Kwajebi TIST wakiwa kwenye mkutano wao wa kila mwezi.**

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## **Kenneth Mutuma: Rugano rwakwa na TIST.**

*Mwandiki ni Mary Gitonga ,mutari miti wa TIST.*

**R**itwa rikwa ni Kenneth Mutuma murimi wa TIST kuuma clasta ya Tharu kaunti ya Meru. Ndamenyire Tist mwaka jwa 2008. Nkurikia kuthoma mantu jegie TIST nkithungira muradi mwaka jwa 2009. Gakundi gakwa ka nini Ni Kinguru-2009KE153.

Kimwe Kia mantu jaria jankuciririe Kiri TIST ni gwikirwa inya kuanda miti ya matunda. Nindombire kumenya ati nkagwata baita maita ja maingi Kiri miti ya matunda gukira miti ingi yonthe.

Mwaka jwa 2015, nirio ndambiririe uandi wa miti ya mabokando. Mwanka nandi ndina mabokando nkuruki ya miti 400. Ndina gikeno kuumania na ngugi iji. Ningwataga marihi ja carbon kuumania na mabokando iji. Untu bwa gitumi nkuruki, miti iji ya mabokando ni ikundetera mbeba injega muno kuumania na wendia wa matunda. Riria kwagia gitumi Kia gucaa mpang'i imwe nimbonaga iria ria nyomoo kuuma Kiri mathangu na nkinya nku.

Ndeene Munda jwakwa jwa mabokando, mwekuru nihandaga maboga na ageta kwendia thokone.

Narua iji nitukwigua turi na inya ya ki mbeba. Niturihaga mbeba jia cukuru tuti na thina. Nitukuumba nandi gukinyiira bangeti ya mucii kuumania na wendia wa mabokando, maboga na baita kuuma Kiri carbon.

Kiri TIST, nitwonete baita l nene kuumania na ithomo. Nitwathomire mantu ja miti ya kurigiria rugo. Nituandite mikima na mikumbu ya Munda. Guku nigutumbithitie kunyihia urito wa rukingi muundene jwetu. Riria kuri na thiina ya iria, nitucaaga mikima iji na kunenkeri ndithia ja iria. Mpang'i jia mikima najio tukoona nku.

Nitukwenda gwikira inya arimi ba TIST beete mbere na micemanio ya TIST. Micemanio iji ya TIST nio twonaga uugi na gwikirwa inya.

## **Kwajebi Clasta ya TIST: Umbani Kiri ngugi.**

*Mwandiki ni David Thuku, Desk auditor wa TIST.*

**C**lasta ya Kwajebi ni imwe ya Clasta ingi ndeene ya Laikipia West na twathungiire TIST mwaka jwa 2008. Mwanka nandi turi na ikundi 54 na amemba 366.

Nitugukenera Umbani wetu na TIST. Gwitithania ngugi na TIST nigututhetie kuumba kuanda na kumenyeera miti nkuruki ya 90,000. Turi na uuma ati kethira ti ithomo jia TIST tutingiumba kuanda miti iji. Ntuura yetu iri injumu, kwari na inya gwika miti moyo mbere ya TIST ija. Twari na mathina ja maingi amwe na miti kuuma Ni riuga na kurithua ni arithi ba nyomoo. TIST niatumbithirie kumenya njira imbega jia kurua na mathina jaja. Narua iji turi na inya ya kubanga uria tukaanda miti ingi l miero.

Nitukujukia kaanya gaka gucokeria muradi wa TIST nkatho nikwiga wirane wa kuria mbeba jia carbon. Kiri ikundi 54 ndeene ya Clasta yetu, ikundi 51 niigwatite baita yao ya carbon. Giki Ni gikeno ki nene muno Kiri batwi. Turi na kugwirua na gwitiira mutari miti wetu David Thuku niuntu bwa gutungata ikundi cionthe na gutigiira nibakuingia mantu jonthe jaria jendekaga nikenda boona mbeba jia o mwaka na mbeba cia baita ya carbon.

Nandi no tuugebturi na inya ati, TIST Ni muradi jwetu. Amemba nibajukagia ithomo na kugwirua muno. Kwangerekano, Mr. John Kinga wa gakundi ga 2008KE2718 ni nchamba kiri kuthithia nasari ya miti. Narua iji ari na nasari ya miti mithemba l mingi nkuruki ya 5,000. Turi na nkinya nchamba ingi ya miti ya matunda ja Regina Njoki na Rahab Mumbi. Nibaandite miti imingi ya machungwa iria nandi bendagia thokone. Ndirangu Githogori wa 2008KE474 Ni nchamba ya urithi bwa njuki. Ari na maugu 100 ma njuki Kiri muunda jwawe.

Kiri Clasta ya Kwajebi, nitugwita mbere na kuthingatira mantu ja meega ja utongereria bwa muthiuruko na gutungatanira. Atongereria ba nandi Ni: Francis Kahoi 0726273161 (Mutongereria); Mary Maina 0729452202 (munini wa Mutongereria); na mwiki mathabu umweru Ni Michael Maina 0711343723.

Ukethira niukwenda kugwatanira na bautwi, ringira atongereria betu thimu. Turi na gikeno kugutungata na gukumenyithia jaria tuthomete kuuma kiri TIST.





## **Francis Musembi: Mwirutiri wa TIST uri na gikeno.**

*Mwandiki ni Josephine Muasya, mutari miti wa TIST.*

**R**itwa rikwa ni Francis Musembi kuuma kiri Clasta ya TIST ya Mamba ndeene ya kaunti ya Machakos. Gakundi gakwa kanini ni Mwendu Useo.

Machakos ndari wa mbere kuambiria TIST. Riria twamenyire TIST na twathoma mantu jegie TIST mwaka wa 2016, nitwerutiire kwira ntumiiri ya TIST Kiri micemanio ya matuura, makanicene, na antu onthe twonaga kaanya. Arimi baingi nibakenerere muradi uju na tukiambiria kubaandikithia.

Iri njira ya kubekira inya baanda miti kuuma bathungira Tist,twatomagira mugambo” Anda miti o thaa iji” Niuntu gwetu ni gukumu,nitwendaga arimi batigakurukirwe ni kagita no kariku ka mbura. TIST niatwikire inya kuanda miti yunganitue kagita ka micemanio. Ndeene ya munda jwakwa ndina-mikima, vasuarina na miembe amwe na ingi. Untu

bwa gitumi buria ndathomire kiri uandi miti ni utiganu wa muti na ungi. Mbere ya kumenya TIST nda andaga miti igwatene nikenda iria ikauma itige ingi. No narua inji nindombire kwona ati iria yaumaga yari amwe na iria yakuraga yari o amwe. Bubu nibwatomaga iria yaumba gukura igakura ihinyikene na gucindanira ruuji,riuga na mboleo na igakura itina inya. Kiri TIST nindamenyire utiganu wa miti ni wa gitumi muno. Utiganu uu niumbithagia muti kwona riuga,ruuji na mboleo itugucindana na igakura na hinya. TIST Kiri miti yakinduire na migeni utiganu wa 2M×2M na ya matunda na mikandamia 3M×4M.

Kiri mwaka jwakwa jwa 7th na TIST, gutima kwirira kana gucoka nyuma. Uju niu muradi uria tureterete. Ndina witikio ati tugakura na twone mpumi imbega na TIST.

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## **Julius Mbaya: Kuabangira retire yakwa na TIST.**

*Mwandiki ni Mary Gitonga, mutari miti wa TIST.*

**R**iria TIST yakinyire ntuura yakwa 2015 bagwatene na aguri ba majani jabo Taylor’s,nirio ndathomire mantu jari tutathomithua ringi micemanione- kibanga kuthondeka retirement na njira ya kuanda miti.

Nindombire kuona ati, ngatigira jiana jikwa majani nigwo bebange na family jiao na ndona miaka yakwa nayo no igwita na ntumba gwita ngugi muno miundene.

Njira yonka Ni kuanda miti. Miunda nonka ikunyahia. No uandi miti uri na baita Kiri muntu wonthe.

TIST ni iejene kaanya gaka na nikagwita

ngugi. Jiana ni ikwona baita kuuma majanine na mwekuru na uni nkona mbeba kuuma kiri baita ya carbon kuuma kamundene o kamwe.

TIST niyatuthomithirie baita wa kuanda miti yungene mundene. Ndeene ya muunda jwakwa kuri na miti ya matunda, makandamia, miti ya ndawa, miti ya iria na miti ya gwita nku.

Miti ya matunda na makandamia ni ituejaga mbeba jia matumiri ma o ntuku.

Niuntu TIST ni irihaga miti yonthe,nitwonaga mbeba l mbega kuuma Kiri wendia wa carbon.

Narua iji,nitukwigua twikiri inya ja family. Tukoona ruuju turi na gwi itikia.



## TIST: Uandi miti ndene ya ntuura injumu.

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

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

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

kinya ku no kulete baita guntune kuria kurina maiga jamaingi.

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

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

## TIST: Biashara ya ruugo ruruthuku.

**M**urandi wa TIST ni utethagirira arimi gutonya kiri biashara ya Carbon Credit.

Arimi nibagwataga baita ya kiwango gia 70 kiri 100 kuumania na wendia wa Carbon. Baita iji yonekaga kukurukira kurita ngugi ya Carbon jayo kuanda miti na kumiika moyo kagiita gakanene.

Kuithia kwa into bimwe ta beteroi, makara na bingi nigwitaga ruugo rwa carbon dioxide. Niuntu miti nijukagia carbon dioxide, niitethagia kunyiyia untu bubu bugwitwa "greenhouse effect". Thirikari na kambuni inene ndene ya nthiguru inyingi nicikwenda kunyiyia kuthithua kwa carbon dioxide nikenda nthiguru itagie mwanki jumwingi.

Atarimiti ba cluster nibataraga na kuthima miti iria tuandaga nikenda TIST yumba gutara ni ruugo rung'ana rwa Carbon miti iu ikujukia. Carbon iu ithimagwa na gintu gigitwa "carbon credits", nan i umwe na kilo ngiri imwe cia ruugo rwa carbon ruria

rujukitue. Kambuni na thirikari riu nocigure carbon credits iji kuuga no iririire miti nikenda inyie uriti bwa ruugo rwa carbon.

No mwanka twithirwe tujukitie mantu jamma na jario jegie miti nikenda tuumba kwendie credit iji cia carbon kiri muguri. Mbeca kuumania na kwendia guku no itethie ikundi kuumba kuthithia mantu jamaingi nkuruki, kurita ngugi uria bibati na kwambiria miradi imieru. Ikundi bia TIST nibiriagwa mirongo iiri kiri o miti igana o mwaka (ni akui umwe na shilingi 1.8 kiri o muti juria juri mwoyo o mwaka). Mbeca iji cia ruugo ti baita yonka iria ikundi bibinini bionaga nontu miti iri na baita maita ikumi gwita mirongo inna nkuruki ya mbeca iria ciumanagia na biashara iji ya kwendia ruugo.

**Arimi ba TIST – tuandeni miti ingi! Amwe tukinyire baita inene nkuruki.**



## Arimi ba TIST nibakurua na Kwongeraka kwa murutira jwa nthi na kugaruka kwa rera.

**A**rimi ba TIST nibaigitue na bacokia kiriro kia nthiguru gia kurua na murutira jwa nthi na kugaruka kwa rera. Arimi babaingi nibacuite kuelewa kukurukira semina na moritani ja TIST nan dene ya micemano ya cluster nikenda bathoma na belewa kwegie murutira juju, jaria jwijanagia najo, na jaria tuumba kuthithia nikenda tujwebera. Nitwonaga mantu jamaingi jaria jaumanitie na kugaruka kwa rera narua. Kwonania ming'uanano imikai, ngai ya Elnino ya mwaka jwa 1998 iria yathukiria akui nthiguru yonthe na mpara iria yathingatire, na kiurutani kia mwaka jwa 2004 kiria kiongerere murutira juju nainya. Ming'uanano ingi iria ubati kumenya ni kunyia kwa nkamia iria iri mulima Kenya kuria kwonekete, rera itikuumba kubangirwa iria itumite imera bithuuka ndene ya ntuura inyingi, kunyara kwa ithima nan aria kugwatagia ruuji, amwe na mantu jangi jamaingi.

Gatheti ya mweri juju nikugaana moritani kuumania na semina nikenda tuumba kuelewa murutira jwa nthiguru na kugaruka kwa rera bwega nkuruki. Tukaambiria na kumenya o riiwa ririuga atia na kueleza nkuruki na riu tuthome uria miti yaku iritaga ngugi ikwoneka kiri kunyiyia magitari jaria jaumanagia na kurutira kwa nthiguru.

### Kurutira kwa nthiguru nimbi?

Kurutira kwa nthiguru ni kwongereka kwa mwanki ndene ya nthiguru, kuria kuretaga kugaruka kwa rera. Nthiguru irina murutira nkuruki no irete kugaruka kwa mbura, biurutani birina inya nkuruki, kwongereka kwa ruuji iriene, kuthuka kwa imera, na magitaria jamaingi kiri imera, nyomoo cia kithaka na kinya kiri antu. Riria athomi barairia kugaruka kwa rera, wasiwasi yao ni mono kwegie kurutira kwa nthi kuria kuumanagia na mantu jaria jathithagua ni antu na kugaruka kukunene kwa rera kuria kuumanagia na bubu.

### Ka Nthiguru igwita na mbele kurutira nkuruki?

Ii! Nthiguru niongerokete kimwanki nauu 1°C ndene ya miaka igana iu ikurukite. Babaingi ba Athomi ba science baria batongeretie ndene ya nthiguru nibathuganagia ati mantu jaria antu bathithagia nijatethagia kurutiria nthiguru, ja kuithia into ja makara ja maguta, beteroli, ngasi na kugiita miitu na kumenyeera muunda bubuthuku.

### Greenhouse effect nimbi?

Iji ni kwongereka kwa mwanki juria nthiguru igagua niuntu ruugo rumwe, ruria rwitagwa ruugo rwa greenhouse, ja carbon dioxide, nitrous oxide,

sulphur dioxide, na methane nirugwatagia mwanki jumwe kuumania na riuu. Biumo biria binene bia carboni ni ugiti miitu, ruugo ruria rurekagua kuuma viwandene, ruugo kuumania na ngari, ruugo kuumania na kuithua gwa nkuu kana makara na kuumania na kuithia miitu.

### Kurutira kwa nthi kuretaga magitari jariku?

- ♦ Kwaga ruuji ndene ya ntuura injumu (ndwanda) kuria kuumba gutuma ntuura inyingi nkuruki ikaa rwanda.
- ♦ Kwongereka kwa gutamba kwa mirimo ja rwagi. O uria ntuura cirutagira, nou ciejaga injega cia guciarana kwa rwagi na kwongerwa kwa kuumbika gwa kuajua ni rwagi. Nja na cibitari inyingi no citongwe ni jaja, miaka ya gutuura ninyiaga na gukua kwa aana babanini gukungereka.
- ♦ Kunyia kwa maketha kuumania na kulima ndene ya nthiguru iria ciri guntu kurina riuu riringi, mono nthiguru iria ciri East Africa. Niuntu bwa kunyia kwa ngai na kwongereka kwa tunyomoo turia tuthukagia imera niuntu bwa kurutira, maketha kuumania na imera bia irio no janyie na bubu bukareta ukia na mpara ndene ya nja na ntuura inyingi.
- ♦ Irio kwongerra goro ndene ya nthiguru yonthe. O uria armi babaingi baguketha maketha jamanini na irio bekanyia, nou ngarama ya irio ikongereka na irio ndene ya thoko bikaa bibikai.
- ♦ Nikugijaga kugaruka kukunene kiri maketha na gukarania kwa imera na nyomoo mono ndene ya miitu. Naria kugwatagia ruuji ndene ya irima na miitu nigwitaga na mbele kunyara. Bubu bukareta thina ya kurima na ruuji na bukanyia ruuji ndene ya miuro ruria rwendekanaga nikenda naria gwaki gwa kugwatia ruuji kuumba kung'ania ruuji. Untu bubu bukanyia kuthithua kwa sitima. Kambuni, cibitari iria citumagira stima na wingi ikagitarua. Ruuji rwa paipu rwa tauni na rwa risabu kinyaru rukagitara.
- ♦ Antu makumi ja mamiloni bakarugurirwa thina cia kuigara kwa ruuji na kugua kwa nthi, kuria gucukumagwa ni kwongereka kwa mbura na nterene cia iria, kwongereka kwa ruuji iriene.

### Natia mpumba kueberia kurutira kwa nthi? Anda na umenyeere miti!

Ja ou tuugite au iguru, ruugo rwa carbon dioxide ni rumwe rwa iria iretaga kurutira kwa nthi. Miti nijukagia carbon dioxide kuuma ruugone riria ikuthithia iria na ikamiika ndene ya rubau, miri na muthetune ja kaboni ya cellulose. Indi-ri, riria miti



yagitwa na yaithua, kaboni iu ireki nirekagua ruugone kairi.

### **Nwiji o muti nojuthithie rera ya antu au gukuiritie?**

Miti na kithiiki kiayo niioragia nthi. Nwiji kuganirwa kuria kuri kithiikine kia muti. Ona ati muthetu juria juri rungu jurina ruuji nkuruki ya juria juri aria kurina riu na gutina kithiiki. Riria nthi ikaraga na gapio, nthiguru niikaga ruuji igita riraja nkuruki. Guku nita kuugamiti iria iri muundene jwaku nitethagia kwongera ruuji ruria ruri muthetune jwaku, na igatethia kuruika ku igita riraja nkuruki. Bubu bugatethia imera biaku na kinya butethie baria batumagira ruuji ndene ya ntuura yaku.

### **Krediti cia kaboni nibicio?**

Kenda uthithia krediti ya kaboni ya TIST nigwitagia into bithatu:

- 1) Gutaurwa kwa mma na kwongerekete gwa carbon dioxide iria igutonyithua ruugone;
- 2) Ahadi ya gwika kaboni iu kuraja na ruugo ndene ya igita ria miaka imingi;
- 3) Gutegerwa ngugi na gukurukithiua ni kiana gitina uthoni na TIST kiria kibati kwona ati mantu nijathithikite kuringana na mawatho jonthe.

Miti nijukagia ruugo rwa kaboni riria ikuthithia irio na kumiika ndene ya rubau, miiri na muthetune. Kaboni iria ijukagua kuuma ruugone na gwikwa noithimwe na igatarwa, na riu, yarikia gukurukithua ati ni yam ma, kujukua guku kwa ruugo rwa kaboni no kwendue ndene ya thoko ya nthiguru yonthe ja krediti cia kaboni. Aguri nobagure krediti iji nikenda bathiria ruugo rwa kaboni ruria bagutonyithia ruugone.

TIST niumbaga kwendia kaboni iria iri kiri miti iji o uria antu bendagia sukari na iria. Indi-ri kiri kaboni, utikagia muti thokone. Antu au, uguri ni kuumania na kaboni iria irititwe ruugone, na yekwa mitine ndene ya munda kana mwitu jwaku, ithimwi na ripoti yaikua. Kwendia na kugurwa kwa krediti iji nikuthithikaga, New York, Chicago, London na tauni ingi ndene ya nthiguru kana gukabangwa gatigati ka antu kana kambuni. No mwanka tukinyire mawatho na jaria jakwendeka ndeme ya thoko. tutiumba kugiita mwitu junthe kana tugiita miti tuanda ingi nontu bobu butibui kiri mazingira. no mwanka tucititwe gwika miti ndene ya miunda moyo ndene ya igita riraja, miaka mirongo ithatu kana nkuruki. No mwanka tuuge mantu jongwa jaria jario. Riria miti yaandwa, ithimi na mathabu jamwe nijathithagua kuthima ni kaboni ing'ana miti ya arimi ba TIST ijukitie. Rikana kairi, miti itikagua thokone. Ikaraga miundene na ouria ikaraga igita ririraja iri

moyo, nou igita ria kuriwa riongerekaga. Kwou, murimi neekaga muti, irio bia nithia, nkuu na matunda na nkandi. Mbega iria TIST ithithagia kuumania na kwendia kaboni ni kiumo gikieru kia mbega na riu ikagaanwa na ikundi bibinini bia TIST na igatumirwa kutirima ngarama cia TIST, iria ciri amwe na moritani, utari miti na urungamiri.

### **Miti yonthe nijukagia ruugo rung'anene?**

Aari, miti iria iri imiarie nkuruki niikaga kaboni inyingi nkuruki ya miti imiceke. Miti imiraja kinyayo nijukagia kaboni inyingi kiri miti imikui. Kwou, miti iria imati niretaga mbega inyingi kuuma kiri krediti cia kaboni. Guku ni kuuga miti iandi itarenie bwega irina kanya ga kunenea na kurea na kwona mbega inyingi nkuruki kuumania na kaboni. Iticindanagira irio na ruuji ja miti iria iandi ikuianiritie.

Kwou, nikenda twona mbega injega kuumania miti yetu, burina bata kumianda itarenie bwega nikenda yumba gukura irina thiria, ia imiraja na imiarie. Gutaura miti imwe nikenda twona nku riu tugeeke iu ingi igikuraga bwega jaria maingi niyo njira iria njega buru ya kumenyeera miti yaku.

### **Ninaa/Ni bau baguraga krediti cia kaboni?**

Nandi, kaboni yendagua thoko cia kwiritira nandene ya thoko cia lazima. Thoko iji citikurukanagia umwe, ojauria kurina mianya na gukurukua kwa into bingi biria uguraga na kwendia. TIST noyendie krediti cia kaboni kiri thoko imwe ya iji nontu krediti iji ni injega mono.

Kurina ithimi mwanya ndene ya thoko iji birina mawatho mwanya na jakaraga jakigarukaga kwegie uandi miti, kumenyeera na kureta ripoti jaria tubati kuujuria nikenda tuumba kwendia ruugo rwa kaboni ruria twitite. Nitutumagira ithimi biria biega buru kiri gutegerwa ngugi na gukurukithua — the Verified Carbon Standard (VCS) na Climate, Community, and Biodiversity Alliance Standards (CCBA).

### **TIST irina mithemba iiri ya aguri:**

Muthemba jwa mbele ni jwa antu baria bakwenda kunenkanira mbega nikenda bekira antu motisha ya kuanda miti. Ming'uananona ni amwe na kuririra miradi ya uandi miti nikenda batuma muranu kana mucemano jutikongere kaboni ruugone. Muthemba jwa iiri jurina kambuni ndene ya US, Europe, Canada na nthiguru ingi iria ciri mbele mantune ja ibanda baria bakwiritira bongwa kunyiyia kuongerwa kwa ruugo ruruthuku (ruugo ruria ruretaga murutira) nontu bari akaria babega ba mazingira kana niuntu nibakwithuranira niuntu bwa gutirimana na mahitaji manna jaria jakwendeka.

TIST nigwiritue mono kwithirua irina krediti cia kaboni cia iguru, na kuumba kuenderia aguri babaingi mwanya.

# Mazingira Bora



# TIST

The International Small Group & Tree Planting Program  
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**Kikuyu Version**

**TIST is an innovative, time -  
tested, afforestation program led  
by the participants.**



**Wanachama wa Nguzo ya Kwajebi TIST wakiwa kwenye mkutano wao wa kila mwezi.**

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## **Kenneth Mutuma: Rugano rwaka na TIST.**

*Mwandiki ni Mary Gitonga, TIST Cluster Servant.*

**N**jitago Kenneth Mutuma, murimi wa TIST kuuma Tharu Cluster, Meru County. Ndaigwiire uhoru wa TIST mwaka wa 2008. Thutha wa guthomithio maundu ma murandi, ngiyandikithia mwaka wa 2009. Ritwa ria gakundi gakwa I Kinguru- 2009KE153.

Undu uria wanguciriirie muno kuingira TIST niundu wa uhandi wa miti ya matunda. Nindathomithirio ngimenya ati no ngie na faida nyingi kuuma kuri miti ya matunda gukira miti ingi yoothe.

Kuri mwak wa 2015, ni ndambiriirie kuhand miti ya Avacado. Kuuma hindi iyo, nihandite makiria ya miti 400. Ningeneire wira wakwa. Nindihagwo mbeca cia carbon. Na muno makiria, miti ino ya Avado ni iraha mbeca kumanagia na wendi wa makondobia. Hindi iria ndirahurura miti yake, mahuti mayo niheaga mahiu makwa na ngahuthira hong

icio ta ngu.

Thiinie wa muganda wakwa wa makondobia, mutumia wakwa ni ahandite thukuma iria endagia thoko-ini cia guuku gukuhi.

Umuthi uyu nituraigua twina uhoti Munene wa mbaca. Niturahota guthomithia ciana ciitu wega tutari na uritu. Ona niturahota gukorwo na mbeca njega cia mahuthiro ma mucii kumanagia na mbeca cia makondobia, cia thukuma na cia carbon.

Oo turi TIST, nituthomete miti iria ingihoota kugiriria huho. Nituhandite miti ya mibariti mihakaini ya mugunda witi. Miti ino niututeithitie kunyihia ruhuho runene. Hindi ya riu, nituhururaga miti ya gravellia na tukahe mahuti mahiu maitu. Ona tugacooka tukagia ngu.

Nitukwendethia arimi a TIST matikagage guthii micemanio ya Cluster. Micemanio ino nikuo tukugia na ugi na twiyake.

## **Kwajebi TIST Cluster: Kugaciira kunene.**

*Mwandiki ni David Thuku, TIST Desk Auditor.*

**I**thui, Kwajebi TIST Cluster, tukoragwo Laikipia West. Twaingirire TIST mwaka wa 2008. Gukinyagia umuthi, twina ikundi 54 na arimi 366.

Twina gikeno ni maundu maria tukinyaniirie twi TIST. Gukorwo twi TIST nituhandite makiria ya miti 90,000 iria iri muoya nginya riu. Twin ana ma, tig ani urutani mwega wa TIST, tutingihandite miti ino yoothe. Itura riitu ni kundu kwaraga, na mbere TIST yukite, twari na kahinda karitu kuhonokia miti twahanda. Twari na mathina maingi maria matumaga miti itu ikue hamwe na kuriithio. Hindi iria TIST yokire, nitwathomire njira njega ciakuhurana na mathina maya. Umuthi uyu twina umiriru ati no tukorwo na itanya ria kuhinga ria kuhanda miti.

Nitukwenda kuuoya kamweke gaka gucokeria murandi wa TIST ngatho ni kuhingia kiriganirwo hari marihi ma carbon. Hari ikundi ciitu 54, ikundi 51 niamukirite marihi ma faida ya carbon. Uyu ni ukunguiri Munene hari ithui. Nitugucokiria Cluster Servant witi David Thuku niundu wa gutarira ikundi ciitu miti kahinda karia kagiriire na gutigirira ikundi ciitu niciasingia maundu maria

marendekana hari urihi wa faida ya carbon kana warubanja.

Riu no tuge na kinyi, TIST ni mradi witu. Amemba ni mayukitie ithomo cia TIST na njira njega. Kwa ngerekano, Muthuri ti John Kinga wa 2008KE2718 ni njorua ya nathari ya miti. Umuthi yuyu ena miti ngurani makiria ya 5,000 nathari-ini yake. Twina njorua cia miti ya matunda natio Regina Njoki na Rahab Mumbi. Mahanditi miiti miingi ya macungwa iia riu marendia matunda thoko. Ndirangu Githogori wa 2008KE474 ni njorua ya miatu. Ena miatu makiria ya 100.

Turi Kwajebi, nituthiite na mbere ya kurumirira utongoria wa utungata na muthiururukano. Atongoria aia twina ao ihinda-ini riri ni Francis Kahoi 0726273161 (Cluster Leader); Mary Maina 0729452202 (Co-Leader) na elected Accountability Person is Michael Maina 0711343723.

Angikirwo niukwenda kunyitanira na ithui, araniria na atongoria aitu. Twina gikeno gugutungata na guguthomithia maria tuthomete twi TIST



## Francis Musembi: Gukunguira Kwirutira ndi TIST (TIST Volunteer).

*Mwandiki ni Josephine Muasya, TIST Cluster Servant.*

**R**itwa riakwa ni Francis Musembi kuuma Cluster ya Mamba, Machakos County. Ndi wa gakundi ka Mwendi Useo Small Group.

Ndi mwambiriria wa TIST ituraini riitu. Hindi iria ndaiguire na ngithoma uhoro wa TIST mwaka wa 2016, nitwambiririe kwirutira gutheremia uhoro wa TIST maturaini maitu kihitukira micemanio ya matura, makanithaini na micemanio ngurani kuri twagiaga na kamweke. Arimi aingi ni maguciriirio na tukiambiriria kumandikithia murandi-ini wa TIST. Nigetha kuhe hinya arimi nigetha mambiririe kuhanda miti oo hindi iyo maingira TIST, twahuthagira ciuogo ici. “Handa miti kuuma kiugo “Ambiriria”. Tondw gwitu ni kundu kwaraga, nitwendaga arimi mahandage miti hindi yothe kwina mbura.

TIST niyatuthomithirie tuhanda miti

mithemba ngurani. Nii mugunda-ini wakwa nihandite miti ya mibariti, casurina, maembe na ingi mingi. Undu uria wa bata thomete ni utigithania wa miti hindi ya kuhanda. Mbere ya TIST, ndahandaga miti ikuhaniriirie muno ngiihoka ati iria itakagwata ni ikahee iria ya gwata spacing ya kuigana. Na undu uria uhanikaga ni ati miti igwataga handu hamwe nah aria handi igakua. Iria ya gwata, igagikorwo inyitanite muno na igakorwo itakwona riu ria kuigana, igatharana maai na irio na koguwo ikaga gukura wega. TIST niyathomithirie spacing ya 2m na 2m hari miti ya ng una 3-4 m kwa miti ya matunda na makandamia.

Riu yuyu ni mwaka wa mugwanja ndi TIST. Ndingirira kana kurora thutha. TIST ni murandi uria twatuire twetereire. Ndina mwihoko ni tuguthii na mbere na gukura na kugacira twi TIST.

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## Julius Mbaya: Kubanga matuku makwa ma thutha-ini na TIST (retirement with TIST).

*Mwandiki ni Mary Gitonga, TIST Cluster Servant.*

**H**indi iria TIST yokire ituraini riitu mwaka wa 2015 inyitaniire na aguri a chai Taylors, ni ndathomire maundu maria tutathomithirio micemanio-ini – ati mundu no abange retire yake na miti.

Ni ndakuukiirwo ati no hote kuhee ciana ciakwa machani negethe mahote kwambiriria family ciao. Oo hau ngimenya ati, kuringana na miaka, matuku meguuka, nongorwo itari na hinya wa mawira maritu wa mugunda.

Undu uria ungingeithia na hoote kugaira ciana ciakwa indo ciakwa ni kuhanda miti. Ona twina tumigunda tunini, notuhote guteithika tungibanga wega.

TIST ni ituhete kamweke kau. Na

niturarutithia wira. Ciana ciakwa riu nimaragia na mbeca kuuma wendia wa chai, nan ii na mutumia wakwa tukagia na mbeca kumanagia na miti. Oo kuuma mugunda umwe!

TIST niituthomithitie uguni wa kuhanda miti ya mithemba ngurani. Mugunda-ini wakwa ni ugukora miti ya matunda, ya dawa, ya kuhe mahiu, ya ngu.

Miti ya matunda na mbugu niratuhe mbeca cia kuigana cia matumiro ma omuthenya.

Tondw TIST irihaga miti yothe iria tuhandite mugunda-ini witu, nitwamukiraga mbeca cia kuigana kumanagia na wonjoria wa carbon.

Umuthi turaigua twina hinya na uhiti twi nyumba iitu. Twina umiririru wa matuku meguka.



## TIST: Uhandi wa miti kundu kumu.

**O**TIST igithiaga na-mbere na gukura miena yothe iria yaraga na yumaga, nitukoragwo na mathina ma gukuria miti. Thiini wa TIST tukuragia na tugatwarithia mitaratara miega, na njira ino niituteithitie thiini wa TIST kugia na maciaro mega.

Ino ni imwe ya mitaratara ya kurumirira gukuria miti kundu kumu:

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

tiiri-ini.

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

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

## TIST: Biashara ya Greenhouse Gas.

Murandi wa TIST ni uteithagiriria arimi gutonya kuri biashara ya Carbon Credit. Arimi ni magiaga na bairia ya kiwango kia 70 kuri 100 mumanagia na wendia wa Carbon. Baita ino yonekanagia kumanagia na kuruta wira wa Carbon ino kuhanda miti na kumiiga muoyo ihinda inene.

Gucina indo ta maguta, coal na gas ingi niguthondekaga carbon dioxide. Na tondu miti niigucagia carbon dioxide niguo thi ndikahiue muno.

Atari a miti a TIST mataraga na magathima miti iria wahanda niguo TIST ihote guteithiriria kugucia carbon dioxide.. githimi kia carbon iria igucitio gitagwo carbon credits, na kiiganaine na tonne imwe ya carbon dioxide iria igucitio. Kambuni na thirikari nocigure carbon credits na uu nikuga nocirihe miti

iria irahuthika kugucia.

Nomuhaka tukorwo na wihokeku na ukinyaniru hari mathabu ma miti kuri aria turenderia carbon credits. Mbica cia carbon credits niciteithagia ikundi gukorwo na maciaro maingi na kwambiriria itaratara ingi. Ikundi cia TIST nicirihagwo \$20 kuri mit 1000 iria iri muoyo(kindu 1.8ksh hari o muti). Marihi ma greenhouse gas to mo marihi moiki ikundi ciamukagira tondu miti iri na mbica maita 10-40 makiria ma mbica ici.

Arimi a TIST - reke tuhande miti miingi! Turi hamwe nitwigiagira maciaro maingi

**Amemba a cluster ya Karaba kuma County ya Laikipia mari mecemanio mweri ucio urathirire.**



## Arimi a TIST kuhurana na ugaruruku wa riera.

**A**memba a TIST nimakoretwo makihurana na ugaruruku wa riera uria ukoretwo kuo thi yothe na arimi aingi nimoritie mataaririo wega thiini wa semina na micemanio niguo mataukwo wega uhoro uyu wigii ugaruruku uyu wa riera, maundu maria ungirehe na uria mangihota kuhurana naguo.

Nitwonaga maundu maria ugaruruku wa riera urehete umuthi. Na kuheana mamwe ma maundu maria marehetwo niguo, mbura iria yari nene muno ya Elnino ya mwaka wa 1998 iria yathukirie bururi na gukigia na ng'aragu nene muno hamwe na muiyuro wa maai iriaini wa mwaka wa 2004 muno ciarehetwo ni ugaruruku uyu wa riera. Maundu mangi ni ta guthira kwa barafu iria ikoragwo kirima-ini kia Mt. Kenya na imera citarathimika na cigatwarana wega iria citumite magetha mathuke na manyihe, kuhua kwa njuui na ihumo cia maai na mangi maingi.

Mwero uyu ngathiti niikwonania maundu maria maririirio thiini wa semina maria mangituthia gutaukwo wega ugaruruku wa riera nikii. Tukwambiriria na kumenya wega ciugo icio naningi tuthii na mbere na guthoma uria miti yaku inyitaga itemi kunyihia ugwati uria umanaga na ugaruruku wa riera.

### Ugaruruku wa riera ni kii?

Ugaruruku wa riera ni kwongerereka kwa urugari uria uri thi uria ucokaga ugatuma riera ricenje. Thi riria yagia na urugari muingi niitumaga imera cia mbura cicenje na gukagia na ihuhakanio nene na maai ma iria makambatira, mimera igathuka na miti ikaninwo ohamwe na nyamu cia githaka. Riria ataalamu makwaria maundu megii ugaruruku wa riera, nimaroraga muno global warming iria irahagwo ni maundu mariu mundu ekaga na mogwati maria marehagwo ni maundu maya.

### Thi niirahuha makiria?

Ii! Thii niyongereire urugari na muigana wa 1°C kwa makiria ma miaka 100. Aingi a ataalamu a uhoro wa riera monaga ati andu nio matumite thi yongerereke urugari na njira ya gutema miti na gucina indo cia tiiri, coal petrol na riera itheru na kwaga gutungata migunda yao.

### Maundu maria marehagwo ni Greenhouse.

Maundu maria marehagwo ni greenhouse nit

a kwongerereka kwa urugari wa thi nitondu riera guku iguru riria ritagwo greenhouse ta carbon dioxide, nitrous oxide, sulphur dioxide na methane nichotaga kunyita hinya wa riuu. Carbon nyingi yumanaga na gutema miti, ndogo ya iganda, ndogo ya ngari na ndogo ya makara na miti.

### Mogwati ma Global Warming ni mariku?

- Kwaga kwa maai na kuuma kwa migunda.
- Gutherema kwa mirimu ta malaria. Kugia na urugari muingi na kuhotithia rwagi guciarana na kwongerera ugwati wa malaria. Micii miingi na mathibitari nomakorwo ni ugwati uyu na mituurire ya andu ikanyiha na ikuu cikongerereka.
- Kunyihia kwa magetha ma urimi na makiria mabururi-ini maria mari East Africa. Na niundu wa kunyihia kwa mbura na kwongerereka kwa guciarana kwa tutambi niundu wa ungi wa urugari, magetha nimanyihaga na uthoni ugathii nambere na kuongerereka miciiini iitu.
- Kwongerereka kwa mathogora ma irio nitondu arimi aingi nimanyihitie magetha na irio cikanyihia, mathogora nimathiaga iguru nitondu andu nimarabatara irio na ni nini.
- Mogaruruku manene ma magetha na riera na muno mititu. Ihumo cia maai cikahua. Maundu maya nimagutuma uhei wa maai wa irio unyihie. Maundu maya ningi nimakunyihia uthondeki wa thitima ya maai. Iganda ciitu, mathibitari na kundu kungi kuria gutumagirwo thitima nigukuhutio na njira nene ma. Utambia wa maai mataown-ini na miciiini nigukuhutio ona kuo.
- Mamilioni ma andu mari ugwati-ini wa muiyuro wa maai uria urehagwo ni mbura nene na maai ma iria kwambatira.

### Niatia tungigitira Global Warming?

#### Handa na utungate miti!

Ta urui twona haha iguru, carbon dioxide ni imwe ya riera riria rirehaga global warming. Miti niigucagia carbon dioxide kuma riera-ini riria ireka photosynthesis na ikamiiga thiini wayo mutiini na miriirni hamwe na tiiri ta cellulose carbon. Na ningi, riria miti yatemwo na yacinwo niirekagiriria carbon iria ikoretwo iigite rieraini.

**Niui ati o muti nouthondeke riera riaguo?**

Miti na mahuti maguo niuhumbagira tgi. Niitumaga kugie na riera riega na kiiruru gikaagira. Niukuona ati tiiri uria uri miti-ini iria iri na kiiruru niukoragwo uri mugunyu gukira uria uri riua-ini. Riria thi yaikara iri hehu, tiiri niuhotaga gkuiga ugungu gwa kahinda karaihu. Uu nikuga ati miti iria iri mugunda-ini gwaku niiteithagia tiiri kugia na maai na igateithia kuiga maai macio gwa kahinda karaihu. Njira ino niiguteithiriria mimeru yaku hamwe na aria mahuthagira maai.

**Carbo Credits ni kii?**

Niguo uthondeke carbon credits cia TIST urabatara indo 3;

- 1) Kwongerereka kwa kunyihia kwa carbon riera-ini
- 2) Kwiranira kunina carbon riera-ini gwa kahinda karaihu.
- 3) Kuhitukio ni honge ciirugamiriire ati makinya nimoetwo kuringana na watho.

Miti niigucagi carbon dioxide kuuma riera-ini riria ireka photosynthesis na ikamiiga thiini wayo , miri-ini ohamwe na tiiri-ini. Muigana wa carbon uria woyagwo kuuma riera-ini na ukaigwo nouthimike na uthuthurio na uhitukio na njira nginyaniru na kugucio kuu kwa carbon rieraini nokwendio kuri thoko ya carbon credits. Aguri nomagure carbon credits ici niguo kunyihia carbon dioxide.

TIST iri na uhoti wa kwendia carbon iriaigucitio miti-ini ota uria arimi mendagia igwa kana iria. No riria urendia carbon ndurabatara kuneana muti. No urabatara kugucia carbon dioxide kuma riera-ini mugunda-ini waku kana mutitu-ini na utarirwo. Wendi wa carbon nouhanikire New York, Chicago kana London ona kana micii mingi bururi-ini wothe, kana uiguithanirio ni andu kiumbe na makambuni imwe kwa imwe. Nonginya tukinyirie ikiro na mawatho ma thoko. Tutingitema mititu kana miti iria iri migunda-ini gwitu tondu undu uyu niuthukagia maria maturigiciirie. Nonginya twitikire kuiga miti iri muoyo gwa kahinda ka miaka 30 na makiria. Nonginya tuheane uhoro mukinyaniru. Riria miti yahandwo, ithimi na uteri nichihuthikaga guthima muigana wa carbon iria igucitio ni miti ya arimi a TIST. Ririkana o ringi, miti nditwaragwo thoko. likaraga migunda-ini na o uria iriakara kuo noguo marihi maguthii nambere na kuingiha. Kwa uguo murimi athiaga nambere na kuiga miti iri muoyo na ikamuhe irio cia mahiu ohamwe na ngu na matunda. Mbeca iria TIST ithondekaga kumana na wendia wa

carbon cithondekaga kihumo kia marihi maria magayanagwo ni arimi a TIST na igatumika gutheremia TIST, hamwe na githomo, uteri wa miti na utungati wa TIST

**Miti yothe igucagi carbon iiganaine ?**

Aca, miti iria ikoragwo na utungu munene niuhotaga kuiga carbon nyingi gukira iria miceke. Miti miraihu noayo niigugagia carbon nyingi gukira iria mikuhi. Kwa uguo, miti mitungu niirehage marihi maingi kumana na carbon credits. Uu nikuga ati miti iria ihanditwo na utaganu mwega iri na mweke wa gukura iri minene na irehe marihi maingi. Ndigayanaga unoru wa tiiri na maai ta miti iria ikuhaniriirie.

Kwa uguo, niguo kwamukira marihi maingi kumana na miti, ni hari na bata kuhanda miti na utaganu muiganu uria ukumiteithia gukura iri mitungu na miraihu. Kuhurura miti niguo wone ngu na niguo ikure wega ni njira njega ya gutungata miti.

**Aguri a carbon credits mari ku na ni ariku?**

Gwa kahinda gaka carbon credits yendagio na njira ya kwirutira kuhitukira gukinyiria mawatho ma thoko. Mawatho maya nomakorwo mari ngurani ota uria gukoragwo na mithemba ngurani ya indo thoko-ini ingi iria wendagia na ukagura (ta kahuwa). TIST noyendie carbon credits kuhitukira mawatho maya kana kuhitukira thoko ya kwiendera tondu ikoragwo iri na ukinyaniru mwega.

Kuri na ikiro ngurani cia thoko na mawatho ngurani maria macenjagia ma uhandi wa miti, urori na uramati na nomuhaka tukinyanirie maundu maya niguo tuhote kwendia carbon. Tuhuthagira uthuthuria uria niwa kirathi kia iguru muno –Verified Carbon Standard (VCS) na Climate, Community and Biodiversity Alliance Standards (CCBA).

**TIST ikoragwo na aguri mithemba iiri.**

Wa mbere ni andu aria merutiire kuheana mbeca ciao niguo kuhinyiriria andu kuhanda mit. Muhiano nit a kuriha mitarataru ya uhandi wa miti niguo gutua uhiki na micemanio iri na riera itheru. Wa keeri ni kambuni thiini wa US, Europe, Canada na mabururi maria mangi makoragwo na iganda maria marihaga na kwiendera uhnyihia wa carbon nitondu nomakorwo mari na wendi mwega kana makihariria niundu wa ,awatho maria mangiuka thutha-ini.

TIST niikenetio nigukorwo na carbon credits ya kirathi kia iguru na ikahota kuhe aguri aao.



# Mazingira Bora



## TIST

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

**Kiswahili Version**

*TIST is an innovative, time -  
tested, afforestation program led  
by the participants.*



**Wanachama wa Nguzo ya Kwajebi TIST wakiwa kwenye mkutano wao wa kila mwezi.**

### ***Ndani ya gazetti***

**Kenneth Mutuma: Hadithi yangu na TIST. Uku. 2**

**Nguzo ya TIST ya Kwajebi: Mafanikio ya Kubwa. Uku. 2**

**Francis Musembi: Mjitolea wa kujitolea wa TIST. Uku. 3**

**Julius Mbaya: Kupanga kustaafu kwangu na TIST. Uku. 3**

**TIST: Kupanda miti katika maeneo kavu. Uku. 4**

**TIST: Biashara ya hewa chafu. Uku. 4**

**Wakulima katika TIST wapambana na ongezeko la joto ulimwenguni na mabadiliko ya tabia nchi. Uku. 5**



## **Kenneth Mutuma: Hadithi yangu na TIST.**

*Na Mary Gitonga, Mtumishi wa Nguzo ya TIST.*

**J**ina langu ni Kenneth Mutuma, mkulima wa TIST kutoka Nguzo ya Tharu, Kaunti ya Meru. Nilisikia kuhusu TIST mwaka wa 2008. Baada ya kujifunza kuhusu programu, hatimaye nilijiunga mwaka wa 2009. Jina la Kikundi Changu Kidogo ni Kinguru-2009KE153.

Moja ya mambo yalivyovutia kwa TIST ni kuhimizwa kupanda miti ya matunda. Niligundua ningeweza kupata faida nyingi kutoka kwa miti ya matunda kuliko mti mwingine wowote.

Mnamo 2015, nilianza kupanda miti ya parachichi. Kwa miaka mingi, nimepanda zaidi ya miti 400. Ninajivunia juhudi zangu. Ninalipwa posho za kaboni kutoka kwa miti yangu ya parachichi. Muhimu zaidi, miti yangu ya parachichi sasa inanitea mapato mazuri kutokana na mauzo ya matunda. Ninapohitaji kupogoa miti yangu ya parachichi, mimi hulisha wanyama wangu kwa majani na kutumia mashina kwa kuni.

Katika bustani yangu ya parachichi, mke wangu hupanda mboga za kale, ambazo yeye huuzwa katika soko la karibu.

Tunajisikia nguvu za kifedha leo. Tunalipa ada za shule kwa watoto wetu bila shida. Tuna uwezo wa kutosha wa kukidhi bajeti ya kaya yetu kutoka kwa mapato ya parachichi, mauzo ya kale na mapato ya kaboni.

Katika TIST, tumefaidika sana kutokana na mafunzo. Tulijifunza kuhusu miti ambayo inaweza kusaidia kuvunja upepo. Tulipanda miti ya *Gravellia* kwenye mpaka wa shamba. Hii imetusaidia katika kupunguza upepo mkali kwenye shamba letu. Wakati wa ukame, tunakata miti ya *Gravellia* ili kulisha wanyama wetu kwa majani. Kwa usawa, tunapata kuni kutoka kwa matawi.

Tungependa kuwahimiza wakulima wa TIST wasikose mikutano ya Nguzo. Mikutano ya vikundi ni mahali pa maarifa na uwezesaji.

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## **Nguzo ya TIST ya Kwajebi: Mafanikio ya Kubwa.**

*Na David Thuku, Mkaguzi wa Dawati la TIST.*

**S**isi, Kundi la TIST la Kwajebi ni mojawapo ya Nguzo huko Laikipia Magharibi. Tulijiunga na TIST mwaka wa 2008. Hadi leo, tuna Vikundi Vidogo 54, huku wakulima 366 wakishiriki.

Tunajivunia mafanikio yetu na TIST. Ushiriki wetu umepelekea kupanda miti zaidi ya 90,000 ambayo tumeihifadhi hai. Tuna uhakika, bila mafunzo ya TIST, hatukuweza kupanda miti hii. Eneo letu likiwa nusu kame, ilikuwa vigumu kuweka miti hai kabla ya TIST. Tulikuwa na changamoto nyingi ikiwa ni pamoja na viwango vya juu vya vifo vya miti yetu vilivyosababishwa na ukame na malisho. TIST ilipokuja katika eneo letu tulijifunza Mbinu Bora za kushinda changamoto hizi. Leo tuna uhakika wa kuweka malengo mapya katika kuongeza miti mipya.

Pia tunachukua fursa hii kuushukuru mpango wa TIST kwa kutimiza ahadi yao kuhusu malipo ya mapato ya kaboni. Kati ya Vikundi Vidogo 54 katika Kundi letu, 51 vimepokea malipo yao ya hisa za Faida. Hii ni sherehe kubwa kwetu. Tunashukuru na pia tunampongeza Mtumishi wetu wa Kundi, David Thuku, kwa kuhudhuria Vikundi vyote Vidogo na kuhakikisha vinatimiza masharti ya malipo ya awali

na ugavi wa faida.

Sasa tunaweza kusema kwa uthabiti, TIST ni programu yetu. Wanachama wetu wameitikia vyema Mafunzo ya TIST. Kwa mfano, Bw. John Kinga wa 2008KE2718 ni bingwa katika vitalu vya miti. Leo, ameanzisha kitalu chenye miche zaidi ya 5,000 ya aina za miti mchanganyiko. Pia tuna mabingwa wa miti ya matunda kama Regina Njoki na Rahab Mumbi. Wamepanda miti mingi ya michungwa, ambayo sasa wanaiuzwa katika masoko ya ndani. Ndirangu Githogori wa 2008KE474 ni bingwa wa mizinga ya nyuki. Ameanzisha mizinga 100 ya nyuki katika TIST Groves yake.

Kwajebi, tunaendelea kuzingatia Mbinu Bora ya TIST ya uongozi wa mzunguko na watumishi. Viongozi wetu wa sasa ni Francis Kahoi 0726273161 (Cluster Leader); Mary Maina 0729452202 (Kiongozi Mwenza) na Mhusika mpya wa Uwajibikaji Michael Maina 0711343723.

Ikiwa ungependa kujiunga nasi, tafadhali wasiliana na viongozi wetu. Tunafurahi kukuhudumia, kushiriki nawe mambo ambayo tumejifunza katika TIST.



## **Francis Musembi: Mjitolea wa kujitolea wa TIST.**

*Na Josephine Muasya, Mtumishi wa Nguzo ya TIST.*

**J**ina langu ni Francis Musembi kutoka kundi la TIST Mamba, Kaunti ya Machakos. Mimi ni wa Mwendu Use Small Group.

Mimi ni mwanzilishi wa TIST katika eneo letu. Tuliposikia na kujifunza kuhusu TIST mwaka wa 2016, tulijitolea mara moja kuzungumza kuhusu TIST katika mikutano yetu ya kijiji, makanisa na katika vikao vingine ambapo tulipata fursa. Wakulima wengi walipendezwa na tukaanza kuwasajili na kuwasajili katika TIST.

Ili kuwahimiza wakulima kupanda miti mara tu baada ya kujiunga, tulitumia kauli mbiu, "Panda miti kutokana na neno "NENDA". Kwa sababu eneo letu ni kame kidogo, tulitaka wakulima wasikose msimu wowote wa mvua kupanda miti.

TIST ilituhimiza wakati wa Mafunzo ya Nguzo kupanda miti mchanganyiko. Katika shamba langu mwenyewe, nina changarawe, casuarina na maembe kwa kutaja machache tu. Lakini jambo

muhimu zaidi ninalojifunza kuhusu upandaji miti ni nafasi. Kabla ya TIST, nilikuwa nikipanda kwa nafasi nikitumaini kwamba wale watakaokufa watatoa nafasi kwa wengine. Lakini kwa kweli, miti iliyokufa ilikuwa katika nafasi moja na wale walionusurika walikuwa katika nafasi nyingine. Hii ilisababisha wale walionusurika kushindana kwa nafasi, virutubisho, mwanga wa jua n.k na hivyo kuwa dhaifu sana. Katika TIST, nilijifunza kutenganisha miti ni muhimu sana. Huruhusu mti wako kufurahia mwanga wa jua zaidi kwa usanisinuru, kupunguza ushindani wa maji na virutubisho na hivyo mti wako kukua na kuwa na nguvu na afya. TIST inahimiza 2m kwa 2m kwa miti ya kawaida na umbali wa 3-4m kwa miti ya matunda na kokwa.

Katika mwaka wangu wa 7 na TIST, siwezi kujutia au kuangalia nyuma. Huu ndio mpango ambao tumekuwa tuingojea. Nina hakika tutakua na kufanikiwa na TIST.

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## **Julius Mbaya: Kupanga kustaafu kwangu na TIST.**

*Na Mary Gitonga, Mtumishi wa Nguzo ya TIST.*

**T**IST ilipokuja kijijini kwangu mwaka wa 2015 kwa ushirikiano na wanunuzi wetu wakuu wa chai Taylors, nilijifunza kile ambacho hakikufundishwa kwenye mikutano - kwamba mtu anaweza kupanga kustaafu na miti.

Niligundua kuwa hivi karibuni, nitahitaji kuwapa watoto wangu vichaka vya chai wakati wanatulia na familia zao. Pili, nilitambua kwa umri, huenda nisiwe na tija sana katika kilimo na shughuli nyingine kali za kilimo.

Kitu pekee ambacho kinaweza kuniokoa na kuniruhusu kuwarithisha watoto mali zangu ni kupanda miti. Kwa ardhi ndogo tuliyo nayo leo, sote tunaweza kufaidika ikiwa tunaweza kupanga vizuri. TIST imetoa fursa hiyo. Na inafanya kazi. Watoto wangu sasa wanapata mapato kutokana na vichaka

vya chai na mke wangu, na mimi hupata mapato kutokana na miti. Kutoka kwa kipande hicho cha ardhi!

TIST ilitufunza kuhusu faida za kupanda miti mchanganyiko. Katika shamba langu, utapata miti ya matunda, miti ya kokwa, miti ya dawa, miti ya malisho na miti ya kukatia kuni.

Miti ya matunda na karanga hutupatia mapato ya kutosha kwa mahitaji yetu ya kila siku ya kaya.

Kwa sababu TIST hulipia miti yote katika shamba letu, tunapokea mapato mazuri kutokana na mapato ya kaboni.

Leo, tunahisi kuwezesha kuwa na nguvu kama familia. Tunaweza kukabiliana na wakati ujao kwa ujasiri.



## TIST: Kupanda miti katika maeneo kavu.

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

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

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

lakini kufunika kwa mawe pia kwaweza kuleta faida zingine katika maeneo yenye mawe.

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

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

## TIST: Biashara ya hewa chafu.

Miti inayokua hunyonya gesi ya kaboni kwa njia ya kutengeneza chakula. Kaboni dioksidi ni mojawapo ya 'gesi chafu' (greenhouse gases) ambazo huteka joto la jua lililopo katika anga ya dunia na kusaidi kudumisha hali ya joto katika uso wa dunia. Wanasayansi wengine wanafikiri kuwa dunia inazidi kuwa na joto zaidi na zaidi, joto ambalo lweza kuwa lenye kudhuru sana. Jambo hili huitwa athari ya hewa chafu (greenhouse effect), ambayo hufanya maeneo mengine kupanda mafuriko zaidi, ukame zaidi au kuenea kwa janga.

Kuchomwa kwa ngataa kama mafuta, makaa yam awe na gesi ya kiasili hutoa kaboni dioksidi. Kwa sababu miti huchukua kaboni dioksidi kutoka hewani, inasaidia kupunguza athari za gesi chafu. Serikali na viwanda vikubwa katika nchi nyingi wanataka kupunguza utoaji wa kaboni dioksidi ili dunia isizidishe joto sana.

Maqwantifaya wa TIST huhesabu na kupima miti tunayopanda ili TIST ifanye kazi ya kuhesabu ni kiasi

kipi cha kaboni dioksidi kinachonyonywa na miti. Kipimo chake huitwa 'carbon credit' (kadi za kaboni) na ni sawa na kunyonya kilo elfu moja za kaboni dioksidi. Makampuni na serikali zaweza kununua kadi hizi kumaanisha wanaweza kulipia miti ili ipunguze utoaji wa kaboni dioksidi.

Lazima tuwe na data yenye kuaminika na sahihi kuhusu miti ili kuuza kadi hizi za kaboni kwa mnunujaji. Pesa kutokana na kuuza kaboni hii zaweza kusaidia vikundi kuzalisha zaidi, kufanya kazi zaidi na kuanza miradi mipya. Vikundi vya TIST hulipwa dolla ishirini kwa kila miti elfu moja iliyo hai kila mwaka (takriban shilingi 1.8 kwa kila mti hulio hai kila mwaka). Malipo ya gesi chafu si faida ya kipekee kikundi kidogo hupata kwa sababu miti ina thamani mara kumi hadi arobaini kuliko pesa inayopata kutokana na biashara ya kaboni.

**Wakulima wa TIST – tupandeni miti zaidi! Pamoja tufikie faida kubwa zaidi.**



## Wakulima katika TIST wapambana na ongezeko la joto ulimwenguni na mabadiliko ya tabia nchi.

**W**wakulima katika TIST wameitikia mwito wa ulimwengu wa kupambana na ongezeko la joto na mabadiliko ya tabia nchi. Wakulima wengi wametafuta kuelewa kupitia semina/mafunzo ya TIST na katika mikutano ya cluster ili kusoma na kuelewa mengi zaidi kuhusu kuongezeka kwa joto, athari zake kwa tabianchi na mbinu za kukabiliana nalo. Tunaona athari za mabadiliko ya tabianchi leo. Ili kuonyesha matukio kadhaa ya athari hizi, mafuriko ya Elnino ya mwaka 1998 yaliyovuruga karibu nchi yote na ukame mrefu uliofuatilia, na upepo mkali wa mwaka 2004 sana sana uliongezewa na ongezeko la joto duniani. Viashiria vingine mashuhuri ni kupunguzika kwa barafu katika kilele cha mlima Kenya, hali ya anga isiyo na utaratibu na ambayo imesababisha kuharibika kwa mazao katika maeneo mengi, kukauka kwa chemichemi na vyanzo vya maji, pamoja na mengine mengi.

Jarida la mwezi huu linaangazia mafunzo kutoka semina ili sote tuelewe ongezeko la joto duniani na mabadiliko ya tabianchi. Tutaanza kwa kuelezea kila neon na kulieleza zaidi na pia tujue jinsi miti yako ina jukumu kubwa katika kukabiliana na athari za ongezeko la joto duniani.

### Ongezeko la joto duniani ni nini?

Ongezeko la joto duniani ni ongezeko wastani la joto duniani, ambalo huleta mabadiliko katika tabianchi. Dunia yenye joto zaidi yaweza kusababisha mabadiliko katika mvua, dhoruba kali zaidi, kuongezeka kwa maji baharini, kuharibika kwa mimea, na athari kadhaa kwa mimea, wanyama pori na wanadamu. Wanasayansi wanapongea kuhusu suara la mabadiliko ya tabianchi na katika hali ya anga, wasi wasi yao huelekezwa kwa ongezeko la joto linalotokana na kazi za binadamu na utofauti katika tabianchi na hali ya anga unaoletwa na jambo hili.

### Je, joto katika dunia linaongezeka?

Ndio! Dunia imeongezeka joto zaidi ya digrii moja katika miaka mia moja iliyopita. Wengi wa wanasayansi wanaoongoza katika dunia hufikiri kuwa shughuli za binadamu hufanyanya dunia kuongezeka joto, kama kuchoma makaa yam awe, petrol na gesi ya kiasilia na kukata misitu na usimamizi mbaya wa ardhi.

### Greenhouse Effect ni nini?

Athari hii ni kuongezeka kwa joto duniani kutakotokana na uwepo wa gesi Fulani katika hewa, zinazoitwa gesi chafu, kama, carbon dioxide, nitrous oxide, sulphur dioxide, na methane ambazo hutega

nishati kutokana na jua. Vyanzo vikuu vya kaboni ni ukataji wa misitu, gesi kutokana na viwanda, gesi kutokana na magari, gesi kutokana na kuchoma miti au makaa na kuchoma misitu.

### Hatari za ongezeko la joto duniani ni zipi?

- Uhaba wa maji mkali katika maeneo kame au yanayopakana na maeneo kame waweza kusababisha maeneo zaidi kuwa na jangwa.
- Ongezeko la kuenea kwa magonjwa kama malaria. Jinsi maeneo yanavokuwa yenye joto zaidi, yanakuwa mwafaka zaidi kama maeneo ya kuzalisha ya mbu, na kuongeza uwezekano wa kupata malaria. Familia na hospitali nyingi zaweza kuathirika, wastani ya miaka ya kuishi kupungua, na ongezeko la vifo vya watoto wadogo.
- Kupunguka kwa uzalishaji katika nchi za kitropiki na kisub-tropiki, hasa nchi katika Afrika Mashariki. Kwa sababu ya mvua iliyopunguka na ongezeko la uzalishaji wa wadudu kwa sababu ya joto, uzalishaji wa chakula waweza kupungua na ili husababisha umaskini na njaa katika familia na jamii nyingi.
- Gharama zilizoongezeka za chakula katika ulimwengu mzima. Jinsi wakulima wengi watakavyopata mazao chache na chakula kuwa adimu, ndivyo bei ya chakula itakavyoongezeka kwa sababu mahitaji ni mengi na usambazaji ni kidogo.
- Mabadiliko makubwa katika uzalishaji na muundo wa mifumo muhimu ya mazingira hasa misitu. Maeneo ya vyanzo vya maji katika milima na misitu huendelea kukauka. Hili litaathiri uwezo wa kumwagilia mazao maji na kupunguza maji katika mikondo ya maji yanayohitajika kujaza mabwawa na hifadhi za maji. Hili litapunguza kutengenezwa kwa umeme. Viwanda, mahospitali na taasisi zinginezo zetu ambazo kwa kiwango kikubwa hutegemea umeme zitaathirika sana. Usambazaji wa maji ya paipu katika maeneo ya mijini nay ale ya vijijini pia utaathirika.
- Makumi ya mamilioni ya watu watawekwa katika hatari ya mafuriko na maporomoko ya ardhi, yanayoletwa na makadirio ya ongezeko la uzito wa mvua na katika maeneo ya bahari, ongezeko la viwango vya maji.

### Nawezaje kuzuia ongezeko la joto ulimwenguni?

"Mimi ni mkulima. Ninaweza kulima mazao na ninaweza kunyonya kaboni. Ninaweza kuuza mazao yangu na ninaweza kuuza kaboni yangu."



**Panda na uichunge miti!**

Kama ilivyotajwa hapo juu, carbon dioxide ni moja ya gesi zinazoleta ongezeko la joto ulimwenguni. Miti hunyonya gesi hii kutoka kwa hewa inapotengeneza chakula na kuiweka katika mbao, mizizi na udongo kama kaboni selulosi. Hata hivyo, miti inapokatwa na kuchomwa, huachilia kaboni iliyokuwa imeweka.

**Unajua kuwa ila mti waweza kutengeneza tabianchi ndogo mahali ulipo?**

Miti na bima yake hupunguza joto lililo katika uso wa dunia. Hisi faraja ya kivuli cha mti. Tambua kwamba udongo ulio chini yake huwa na maji zaidi kulika ya udongo ulio palipo na jua pasipo na kivuli. Udongo unapokaa ukiwa baridi, huwa unaweka maji muda mrefu zaidi. Ili lamaanisha kuwa miti katika ardhi yako itasaidia kuongeza kiasi cha maji katika udongo wako na pia itasaidia kuweka maji udongoni kwa muda mrefu zaidi. Hili litasaidia mimea yako na pia kusaidia watu wanaotumia maji katika eneo lako.

**Kadi za kaboni ni nini?**

Ili kutengeneza kadi ya kaboni wahitaji vitu vitatu:

- 1) Punguzo la kweli na la kuongeza la kaboni dioksidi iliyo katika hewa;
- 2) Ahadi ya kuweka kaboni hiyo mbali na hewa kwa muda mrefu;
- 3) Ukaguzi unaofanywa na chama tofauti kinachothibitisha kwamba shughuli zimefanyika kulingana na mujibu wa sheria.

Miti hunyonya kaboni dioksidi kutoka kwa hewa wakati inapotengeneza chakula na kuiweka katika mbao, mizizi na udongo. Kiasi cha kaboni kilichochukuliwa kutoka kwa hewa hupimwa na kuhesabiwa, halafu, kinapothibitishwa kuwa sahihi, kaboni hii iliyonyonywa yaweza kuuzwa katika soko la ulimwengu kama kadi za kaboni. Wanunuzi waweza kununua kadi hizi kukabiliana na kaboni wanayoachilia kwa hewa.

TIST huweza kuuza kaboni iliyonyonywa na miti kama wazalishaji wanavyouza sukari na maziwa. Hata hivyo, katika kaboni, hauhitaji kutuma mti sokoni. Badalake, thamani ya kaboni iliyotolewa katika hewa na kuwekwa katika miti iliyo shambani au katika msitu wako, hupimwa na kuripotwa. Biashara ya kadi za kaboni yaweza kufanyika New York, Chicago, London na mijiji mingineyo ulimwenguni, ama pia kupangwa kati ya watu au kampuni mbili moja kwa moja. Lazima tutimize sheria na mahitaji ya soko. Hatuwezi kukata msitu wote au kukata miti ili kupanda miti kwani hili ni baya kwa mazingira. Lazima tujitoe kuweka miti hii katika shamba kwa muda mrefu, thelathini au zaidi. Lazima turipot data sahihi. Miti inapopandwa, vipimo na hesabu hufanyika ili kupima kiasi cha kaboni iliyonyonywa na miti ya mkulima katika TIST.

Kumbuka tena, miti haipelekwi sokoni. Hukaa shambani na jinsi inavyokaa hai, ndivyo malipo yanavyoongezeka. Kwa hivyo, mkulima hukaa na miti, lishe ya mifugo, kuni, matunda na pia karanga. Pesa zinazotengenezwa na TIST katika kuuza kadi za kaboni hujenga chanzo kipya cha mapato na hugawanywa kati ya vikundi vidogo katika TIST na hutumika kusaidia kukidhi gharama za TIST, ambazo ni pamoja na mafunzo, uhesabu miti na usimamizi.

**Je, Miti yote hunyonya kiasi saw ach kaboni?**

La, miti iliyo na mzingo mpana huweka kaboni zaidi ya miti iliyo myembamba. Miti mirefu pia hunyonya kaboni zaidi ya miti mifupi. Hivyo basi, miti iliyo mipana huleta mapato zaidi kutokana na kadi za kaboni. Haishindani kupata virutubisho katika udongo na maji kama miti iliyokaribiana.

Hivyo basi, ili kupata mapato mazuri kutokana na miti yetu, ni muhimu kuipanda kwa nafasi tosha itakayoirusu kukua kiafya, kwa urefu na upana. Kupunguza miti ili kupata kuni na kuiacha miti mingine ikue vizuri huwa njia nzuri zaidi ya kusimamia miti yako.

**Ni wapi/nani hununua kadi za kaboni?**

Hivi sasa, kadi za kaboni huuzwa katika masoko ya hiari na katika masoko ya kuhitimu mahitaji. Zaweza kuthibitishwa kwa njia tofauti, kama kulivyo na bidhaa mbalimbali na kuthibitishwa kwa bidhaa zingine unazonunua na kuuza (kama kahawa, kahawa aina mbalimbali). TIST yaweza kuuza kadi zake za kaboni katika masoko ya hiari au katika masoko ya kuhitimu mahitaji kwa sababu kadi zake ni za hali ya juu.

Kuna viwango mbali mbali katika masoko haya vilivyo na sheria mbali mbali na zinazobadilika kila baada ya muda zinazohusu upandaji wa miti, ufuatiliaji, na kuripoti ambazo tunahitajika kuhitimu ili kuuza kadi hizi za kaboni. Tunatumia viwango vya hali ya juu zaidi katika ukaguzi na kuthibitishwa — the Verified Carbon Standard (VCS) na the Climate, Community, and Biodiversity Alliance Standards (CCBA).

**TIST ina wanunuzi wa aina mbili msingi:**

Aina ya kwanza ni ya watu wanaojitolea kupeana pesa ili kuwapa watu motisha ya kupanda miti. Kwa mfano kulipia miradi ya upandaji wa miti kufanya harusi au semina kuwa kuwa isiyoongeza kaboni katika hewa. Aina ya pili ni ya makampuni yaliyo Amerika, Uropa, Canada na katika nchi zingine zilizokua viwanda zinazojitolea kupunguza gesi chafu zinazotoa kwa sababu mawakala wema wa mazingira au wanajitayarisha kuhitimu mahitaji Fulani ya baadaye.

TIST ina furaha sana kuwa na kadi za kaboni za hali ya juu, na kuweza kusambaza kwa wateja mbalimbali.

# Mazingira Bora



# TIST

The International Small Group & Tree Planting Program  
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**Kikamba Version**

*TIST is an innovative, time -  
tested, afforestation program led  
by the participants.*



**Wanachama wa Nguzo ya Kwajebi TIST wakiwa kwenye mkutano wao wa kila mwezi.**

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## **Kenneth Mutuma: Ngewa yakwa na TIST.**

*Na Mary Gitonga, muthukumi wa ngwatanio ya TIST.*

I syitwa yakwa ni Kenneth Mutuma, muimi wa TIST kuma ngwatanio ya TIST Tharu, Mery county. nineew'ie iulu wa TIST mwaka wa 2008. Itina wa kuelew'a iulu wa muvango woo ninalikile mwaka wa 2009. Kakundi kakwa kanini ni Kinguru - 2009KE153.

Kindu kimwe kila kyambendeisye nthini wa TIST ni uthuthio wa kuvanda miti ya matunda. Ninoonie nongwate vaita mala kauta kuma mitini ya matunda kute kuma miti ila ingi.

Kwi mwaka wa 2015, ninambiie uvandi wa ivakato/ikolovea. Nthini wa myaka isu nibandite miti mbee wa 400. Nina ngathiio nundu wa vitii yakwa. niniivawa kwa uta nzeve itavisaa kuma ivakatonni syakwa. Kyavata ikolovea syakwa nindeteete mbesa kumana na uta matunda masyo. yila ngusea ikolovea matu nininengae indi talii na mithamba ngatumia ta ngu.

Nthini wa muunda wakwa wa ikolovea muka wakwa nivandaa sukuma na aithoosya sokoni ula wivaa vakuvi.

Tiw'aa twi alumu ki ukwati umuthi. Nituivaa syana viisi vate thina, nituvikiaa mbangyeti yitu ya utumii wa kila muthenya vatena uito kuma kila twakwata kuma kuthoosya makoloveani, kuta sukuma na nzeve itavisaa.

Nthini wa TIST, nitutethekete muno kuma momanyisyoni. Nitumanyiitw'e iulu wa miti ila itonya kuola kiseve. Nituvandaa Gravellia utee wa miunda ta muvaka. Kii kitutethetye kuola mbua mbingi miundani. ivindani ya sua nituseaa miti ino na kunenge indo matu, na tusyoka tuikwata ngu kuma ngavani ila twasea.

Twienda uthuthya aimi ma TIST maikaselewe kuvika mbumbanoni sya ngwatanio nundu nikw'o tumasya umanyi na utonyi.

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## **Ngwatanio ya TIST Kwajebi: Maundu me mwanya ala mavikiite.**

*Na David Thuku, Mesa ya mwiki wa masavu TIST.*

Ithyi, ngwatanio ya TIST Kwajebi ni ngwatanio imwe yi Laikipia West. Twalikile nthini wa TIST mwaka wa 2008. Kuvika umuthi twina tukundi tunini 54 twina aimi 366.

Nitukwikathiia nundu wa maundu ala twikite na TIST. Kuthukuma kwitu na TIST nikutumite tuvanda miti mbee wa 90,000 ila yivo yu. Nitwisi nesa kana vate momanyisyo ma TIST, tuyai tutonya uvanda miti ino. Kisio kitu nikyai ing'alata, wai undu wivnya kumesya miti yikale mbee wa TIST kutuvikia. Twai na mawosu maingi ta kwasya miti itanamba kwiana nundu wa thano, munyao na ndithya. Yila TIST ya thokie kisioni kitu na twamanyiw'a mawiko maso na mawalanio ma tist nitwasindie mawosu maitu vinya. Umunthi twina utanu na muikiio wa kwia mwolooto mweu wa kwongela miti.

Nitukwosa ingi ivuso yii tungungia walanio wa TIST muvea nundu wa kuikiithya kila mathana iulu wa ndivi ya nzeve itavisa nikivikaa. Kati wa tukuni 54 tula twi ngwatanioni yitu tukuni 51 nitukwatite kilungu kyoo kya aui wa ndivi sya nzeve itavisaa. Uu ni undu munene kwitu kutania.

Nitutonya kuikiithya na kwasya, Walany'o

wa TIST niwitu. A memba maitu ni monanitye wendi wa movundisyo ma TIST. Kwa ngelekanio. Mr. John Kinga of 2008KE2718 niwe mukuli wa luvio sya miti. umunthi, ena kivuio kina miti mbee wa 5,000 ila ni mithemba kivathukanio. Ingi twina akuli ma miti ya matunda ala ni Regina Njoki na Rahab Mumbi. Nimavanditi miti mingi ya masungwa masungwa ala yu meuta sokoni sya kuu kwoo. Ndirangu Githogori of 2008KE474 ni mukuli wa kwanika myatu na ndithya ya nzuki. Yu ena myatu mbee wa 100 ila wanikite mitini yake.

Nthini wa Kwajebi nituatiaa walanio museo wa Tist na nzia nzeo sya utongoi wa kithyululu na uthukumi wa umwe kwa ula ungi. Atangoi maitu yu ala twinamo ni Francis Kahoi 0726273161 (Mutongoi wa ngwatanio), Mary Maina 0729 452202 (Munini wake) na mundu ula twila unyuva mwii wa kinandu ni Michael Maina 0711343723.

Ethiwa nukwenda ukwatana naitu no ukunie atongoi maitu simu nambani isu syivaa iulu. Twina utanu kuuthukuma na kuaaana naku kula twimanyiitye kuma kwa TIST.



## **Francis Musembi: Muthulumi wa kwiyumya wa TIST.**

*Na Josephine Muasya, muthukumi wa ngwatanio ya TIST.*

**I**syitwa yakwa ni Francis Musembi kuma ngwatanio ya Mamba, Machakos county, ni wa kakundi kanini ka Mwendi.

Ni umwe kati wa ambiliilya ma TIST thini wa kisio kii kitu. Yila tweew'i na twamanya iulu wa TIST wai mwaka wa 2016, nineeyumisye kuneenea iulu wa TIST mbumbanoni sya utui, Mekanisani na kula kw'othe kwaina mawumbano na natwanengawe ivuso ya uneena. Aimi aingi nimendeeiw'e na twambiia kumaandikithya nthini wa TIST.

Nikana kumathuthya aimi aingi kulika nthini wa TIST niwa tumiaa "Kwambiia vanda miti", nundu kisio kitu ni ing'alata tuyendaa aimi mavitukwe ni ivinda ona yimwe ya mbua matavandite miti.

TIST nimatuthuthisya yila twina momanyisyo ma ngwatanio kuvanda mithemba ivulene ya miti. Muundani wakwa mwene nimbandite gravellier, casuarinas, miembe okuweta imwe kati wa ila mbingi mbandite. Kindu kila kyavata muno kwakwa

nakwatie ni kutaanisya miti. mbee wa TIST, navandaa miti ithengeanie muno ngikwatya kana ila ikuma nikunenge ila ingi mwanya. Ni kwaw'o miti ila yoomaa yeethiawa vamwe na ila ya vitaa weethiaa ni ingi yi mwanyani ungi vamwe. Kii kyatuma miti ino ilea kwiana nesa nundu ndiukwata liu, kyeni, kiw'u kianu na kwoou ona yeana uyithia nimyonzu. Thini wa TIST, ninamanyie kana utaaniu wa miti niwavata muno. Nitumaa muti utania nesa kyeni kya sua kwiseuvisya liu, ikakwata kiw'u nesa na liu kuma muthangani na kwoou muti kwiana nesa yina ulumu. TIST ithuthasya utaaniu wa matambya eli kwa eli (2m X 2m) kwa miti ya kawaita na matambya atatu kuvika ana (3-4m) kwa miti ya matunda na ngii.

Uyu wi mwaka wakwa wa muonza nthini wa TIST, ndina mililo kana kusyisya itina. Walany'o uyu niw'o tweeketele na nina muikiio nitukwiana na kwithiwa na ukilyo twina TIST.

## **Julius Mbaya: Muvango wa kuthumuia wia na TIST.**

*Na Mary Giotonga, muthukumi wa ngwatanio ya TIST.*

**Y**ila TIST yookie utuini witu mwaka wa 2015 vamwe na anyanyae maiitu ma kuua mainani Taylors, ninamanyiiie undu utavundiw'a mbumbanini kana mundu no eyiie muvawo wake wa kuthukua wial na miti.

Ninamanyie kana miti yakwa ya maiani nivakuvi kunenga syana syakwa syambiia misyi yasyo. Kyakeli ninamanyie na myaka, nindonya ithwa tatonya nima na wia muto wa muundani.

Kindu kila kitonya undethya na kumbitikilithya nganenga syana syakwa utiwa woo ni kuvanda miti. Na itheka nini ila tinasyo umunthi, ithyoothe no tutetheke tweekia mivango miseo.

TIST nitunengete ivuso yiu. na niithukumite, syana syakwa yu ninatetheka kuma maianini na kivet

kyakwa nakwa tuikwata ukwati witu kuma mitini. Kuma kisioni kimwe kya muthanga.

TIST nimatuvundiisye iulu wa vaita wa kuvanda mithemba kivathukanio ya miti. Muundani/kithekani kwkaa nukwathiwa miti ya matunda, mbindi, miti ya ndawa, liu wa indo na ngu twasea miti.

Matunda na mbindi nitunengae vaita mwianu kwiania mavata maitu ma musyi ma kila muthenya.

Nundu TIST niivala miti yoothe ila yi muundani/kithekani kwitu nitukwataa ukwati museo kuma nzeveni itavisaa. Umunthi, tweew'a twi ekie vinya na twi alumi ta musyi nitutonya usisya uni twina muikiio.



## Kuvanda miti isioni ila nyumu.

**O**undu TIST iendee kwiana isioni ila itembunu na ila mbumu, now'o kuendee kwithiwa na uito wa miti kwikala. Nthini wa TIST nitwianasya na kumanyianya iulu wa nzia nzeo, na uu nututethetye ta musyi wa TIST kukwata ueti museo.

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

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

vai matu ona ivia noyitumike kuvwika muthanga.

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

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

## TIST: Viasala wa Greenhouse Gas.

**K**uvanda miti nikumasya nzeve itavisaa mawithyululukoni. Carbon Dioxide ni nzeve imwe kati wa ila syithiawa nthini wa Greenhouse Gases. ila syosaa uvyuvu wa sua na kuutunga kwithiwa na uvyuvu wa nthi. Asomi amwe ma saianzi mesilasya kana nthi niyiendee na uvyuva muthenya kuthi ula ungi undu ula utonya kuete wanangiko. Uyu niw'o witawa usyao Greenhouse kila kitumaa kundu kumwe kwithiwa na mavuliko kana yua na maweu/mang'alata kunyaiika.

Kuvivya kwa syindu ta mavia ma mwaki (Coal), mauta na nzeve kumasya nzeve itavisaa (Carbon dioxide, Nimatetheesya kuola uthuku ula uetetwe ni Greenhouse. silikali na indasituli nthini wa nthi yingi nikwenda kuola undu ikumya nzeve itavisaa nikana nthi ieke uvyuva muno. Avitukithya/ Athiani ma TIST nimatalaa nakuthima miti ila twavanda nikana TIST makeka masavu ma undu miti yosete nzeve itavisaa kuma mawithyululukoni.

Kithimi kila kitumiawa kuthima kitawa Carbon Credit kila kithiawa kianenen na tani imwe ya Carbonk withiwa yumitw'e mawithyululukoni. Kwoou kambuni na silikali nitonya kuaa "Carbon Credits" kwasya nomaivie miti kuola nzeve itavisaa ile methiitwe mayumya na kumilekya mawithyululukoni.

Nitwaile ithiwa na uw'o na kunengane uvoo wa uw'o nikana tukwate athooi ma Credits. Mbesa sya Carbon Credit nitonya utetheesya ikundi kwithiwa syina projects na kwithiwa na ukethi munene na maendeeo. Ikundi sya TIST nikwataa ndivi ya \$20 kwa kila miti ngili imwe (1000) kila mwaka. Ndivi ya Greenhouse gas tiw'o vaita w'oka ikundi na aimi makwataa nundu miti yoo yina vaita kundu 10-40 kwi undu ndivi ya Greenhouse gas yiana.

**Aimi ma TIST tuvande miti kwa wingi! Kwa vamwe no tuvikie vaita munene.**





# Aimi ma TIST kuola uvyuvu wa nthi na uvinduku wa nzeve.

**A**imi ma TIST nimeetikie wito wa kumatha undu tukuola uvyuvu wa nthi na uvinduku wa nzeve. Aimi

angi nimamathie undu matonya kuelewa nzia ii kwisila kwa momanyisyo na semina sya TIST na ingi kwa mbumbano sya ngwatanio sya kila mwai nimaendeeie na kuelew'a undu wa uvyuvu wa nthi na uvinduku wa nzeve na niata matonya kwika kuola mothuku ala maetawe ni uvyuvu na uvinduku. Kwa ngelekany'o ta El-Nino ya 1998 ila yaetie wasyo munene na itina yaatiwa ni yua inene nthini wa nthi yitu Kenya, Ingi kiseve kinenen kya hurricane mwakani wa 2003 ila tukwo nitasyaetiwe ni uvyuvu na uvinduku wa nzeve. Ngelekany'o ingi ni kuthela kwa ia kiimani kya Mt. Kenya, mbua kwithiwa iteumanyika yiu indii na kusesya ivinda yila yauaa na kwoou kundu kwingi ithima, nthongo kungala vamwe na mbusi na mikao ila itany'aa.

Ithangu ya mwai uyu ni kukwony'a momanyisyo amwe ma semina ala meutuma ueeangwa mbee undu wa uvyuvu wa nthi na uvinduku wa nzeve mbeange. Mbee twianmbiia kwa kumanya kila ndeto na tuyona undu miti ithukumaa kuete ualyuku nthini wa uvyuvu wa nthi.

## Uvyuvu wa nthi nikyau?

Uu ni wongeleku muutia kuma muthangani ula uetae uvinduku wa nzeve. Uvyuvu/muutia mwingi kuma nthi utumaa undu mbua yuaa isesya, kukethiwa na iutani, kiw'u kya ukanga kwambata, mimea kulea usyaa, nyamu sya kithekani kukosa liu, miti vamwe na andu. Yila asomi ma saensi mekwasya uvyuvu wa nthi niwongelekete nundu wa mawiko ma mundu na kuete mauvinduku manene ma nzeve na uvyuvu wa nthi.

## Ikonyo inya sya nthi niendee na uvyuva?

Ii!, nthi yi\u tui niyongelete uvyuvu kwa ndikilii imwe 10C ivindani ya myaka iana (100years). Asomi aingi meisilya kana mawiko ma mundu ala uendee na kwika nimo matumaa muiitia wa nthi uendee na kwongeleka amwe nita:- kuvivya syindu ila sumasya syuki ithuku muno ta mavia ma coal, mauta ma petrol na nzeve ila syi ungu wa muthanga vamwe na kutema miti na kulea usuvua itheka.

## Nyumba ya Ngilini yithiawa na uthuku mwau?

Nyumba ino ya ngilini niyongelaa uvyuvu wa nthi nundu nzeve ila yumasya na kulekya nthini wa mawithyululuko nzeve nthuku ta Carbon Dioxide,

Nitrous Dioxide, Sulphur Dioxide na Methane Trap kuma suani.

Nzeve ithi nthuku sumaa ona kambunini na industries syosawa ni miti na kwoou yila miti itevo iyiete uvyuvu kwa kwosa na kusiiia vinya kuma suani. nzeve ithi nisumaa nthini wa mitokaa, ngu syavivya na mititu yakana.

## Mothuku ma uvyuvu wa nthi mni mau?

- Kiw'u kwaa isioni ila sya weu na kutuma iso ingi itwika weu kana mangalata.
- Kwongeleka kwa mowau ta malaria. nundu undu kundu kwavyuva niw'o kwithiawa kwaseuvya isio nzeo sya umuu kusiyaia na niw'o ukuaa tulinyu twa uwau wa malaria. Kwoou yila uu weeethiwa uwau wa malaria uiyaiika na kwongela ikw'u sya tuukenge na kutuma masivitali mausua.
- Kuoleka kwa ngetha ta undu kwithiitwe nthini wa nthi sya umiloni wa sua. Yila mbua yuaa nini na tusamu tula twanangaa liu twongeleka nundu wa uvyuvu liu kuma miundani naw'o nunyivaa nundu wa ukosa mbua na kulika ni tusamu tuu nakii kiyiete wongeleku wa ukya misyini kuthi mbaini na nthi kwa vamwe.
- Nthooa wa maliu niwongelekaa nundu yila liu munini na ayi ini aingi na vai liu ungi nonginya vei wambate nikana uiwe nala mena mbesa sya kuuthooa.
- Ingi usyai na mititu iivinduka nundu ethiwa kuna kiw'u na liu nyamu nikuoleka kwa kukw'a na kukosa liu na mititu iyuma nundu miti ndikala vate kiw'u. kii nakyo ingi kiituma liu ulea ukethwa nesa nundu vai kiw'u kya kungithya miunda. Ingi sitima uioleka kwa industries, sivitali na kunduni kungi kwa vata kwa mundu. Ingi kiw'u kya miveleki kwa andu ma mataoni na kula kungi kiyioleka onakyo.
- Mamilioni ma andu nimekwithiwa na ivuso ithuku nundu wa muthanga kutuuka, nundu mbua yuaa nakw'o kula kwi ukanga na maia kiw'u kiyongeleka na uyithia mawikaloo nimeethiwa matevo.

## Nata tutonya ysiia Uvyuvu wa Nthi? Vanda an Kusuvia miti!

Oundu tuwetete vaa iulu nzeve itavisaa (Carbon dioxide) ni imwe ya nzeve ila ietae uvyuvu nthini wa nthi yonthe. Miti niyosaa nzeve ino kuma kwa mawithyululuko yila ikuseuvya liu na kwia nthini wa mithamba, mii, matu na muthanga. Onakau yila



twatema miti na twavivya isyokaa ikaumya nzeve isu itavisaa na kumilekya ingi mawithyululukoni.

### **Ni wisi kana kila muti nusevasya kauvinduku ka nzeve?**

Miti na matu mayo nimavwikaa muthaka wa nthi. Nutaniaa muunyi wa muti. Sisyu ungu wa muti nukwona muthanga ula wivo ni mwiu na ti undu umwe na ula uathitwe ni sua. yila ungu wa muti vena

muunyi nivathithu na vena kimeu kwa ivinda iasa kwi vala vaathitwe ni sua. kii kionany'a kana miti ila yi muundani kwaku nitetheesya muthanga kwia kimeu na kiw'u kwa ivinda iasa kwi vala vate miti. Kiw'u kii kikatethya mimea yaku ni kikatumika maundu ni angi kisioni kyaku.

### **Carbon Credits nimyau?**

Kusevuya Carbon Credit sya TIST wienda syindu itatu

1. Nzeve itavisaa kwithiwa iyioleka na kwingeleka nzeveni (mawithyululukoni)
2. Kwiyiava kuola nzeve itavisaa kuma mawithyululukoni
3. Muthiani / muvitukithya kuikiithya kana mawiko othe mekitwe undu vaile.

Miti niyosaa nzeve itavisaa kuma mawithyululukoni na kutumia kusevuya liu wayo vala iwiaa ta ngu mithambani, miini na muthangani. Nzeve itavisaa ila yumitw'e mawithyululukoni ithimawa na undu muti utonya kwia yiana naindi niw'o yikawa isavu na kuvitukithw'a kana ni yawo na indi nzeve ino yumitw'e mawithyululukoni na kwiwa mutini niyo itesawa sokoni ta Carbon Credits. Athooi ala mauaa mauaa ta nzia imwe ya kuola nzeve ino nthuku methiitwe mailekya mawithyululukoni.

TIST nitonya uta nzeve ino itavisaa oundu mundu utesaa sukali kana yiia. Onakau kuta nzeve ino mundu ndalisasya muti melini/isiwani. Indi vaita ni kuma nzeve ila muti uyu wuwity'e mawithyululukoni na kwithiwa muti wivo uendee na unyw'a nzeve itavisaa. Nzeve ino itavisaa itesawa sokoni sya New York, Chicago, London na misyi ingi minene nthi yotho nitesawa kwa mivango kati wa andu kana kambuni. Nonginya tuvikie miao ya soko nikana tute nthini wa isoko. Mwiao umwe nikana miti ndyaile utemwe ngulutu kana mititu kwengwa nundu uu ni uthuku kwa mawithyululukoni. Nitwaile kwiyumya kuvanda miti yikale kwa ivinda iasa ta myaka miongo itatu. Na ingi nitwaile unengane uvoo waw'o. Miti yamina uvandwa masavu amwe nimaile kwikwa ta undu nzeve itavisaa ikwoswa ni miti ivanditwe ni aimi ma TIST. Manya

ingi kana miti nditwaawa sokoni itiawa o muundani kwaku vala yaile ikala kwa ivinda iasa nikana ukaendee ukwata ndivi na kuunenge liu wa indo, ngu, matunda na mbindi/ngii. Mbesa ila TIST ikwataa kuma kutani kwa nzeve itavisaa nikuaaniw'a tukundi tunini twa TIST na ingi utumika kukwatiia ndivi sya kumanyisya, kuvitukithya na kuungamia.

### **Miti yoothe inyusaa nzeve itavisaa yianene?**

Anye'ee, Miti ila mithathau noyo yiaa nzeve mbiki kwi miti mitheke. Miti miasa niyosaa nzeve mbingi kwi miti mikuvi. Kwoou uthathau wa muti netae mbesa mbingi nthini wa soko wa carbon credits. Kii nikwasya utaaniu wa miti niwaile nikana unenge miti nzeve na kwithiwa itonya uthathaa na kuasava nikana yithiwe na ueti museo. Ingi yimitaaniu nesa ndiithiwa iyuaania unou wa muthanga, kiw'u kana sua. Kwoou nikana ukwate ndivi nzeo kuma mitini manya kana utaaniu wa miti niwaile nikana yiane nesa yimithathau na miasa. Ingi kuola miti ni kuseo ni kutumaa ukwata ngu na kutuma miti ila yatiwa yiana nesa.

### **Niva kana ni aau mauaa nzeve itavisaa (Carbon Credits)?**

Kwayu nzeve ino itesawa sokoni sya kwiyumy'a. Nitonya kwithiwa ivitukithitw'e kivathukany'o kwa ivinda na mivai kivathukany'o otondu soko syithiawa kivathukany'o sya kaawa na kaawa ka kwisevisya ungu wa masyitwa kivathukany'o. TIST nitonya uta carbon credits syayo nundu niatiie mawalany'o na nisyu kilasi kiyiulu. Ve kilasi kivathukany'o na miao iulu wa uvandi wa miti yikalaa isesya na kusyaiiw'a na livoti ila taile uvikia nikana tute nzeve yitu sokoni ithi yiya kilasi kya yiulu. Nitutumiaa nzia sya yiulu muno kuvitukithya, kukunikila, kuthiana n akwona nisyuile - verified carbon standard (VCS) kwa nzeve, mawithyululukoni, mbai na uvathukanu wa syithio situ (Climate, Community na Biodiversity Alliance Standards).

### **TIST yithiawa na aui mithemba ili:**

Mbee ni andu ma ngoo sya wendi museo ala mauaa kwa kwenda matuthuthe kuendee na kuvanda miti. Ngelekany'o Kuiva andu mande miti kwa alusi kana conference ya kwikala tuoete nzeve itavisa.

Keli ni kambuni ila syi US, Europe, Canada na nthi ingi ila syina industries nimeyumasya kuola GhG ilasyumite nikwithiwa mena wendi museo kwa mawithyululukoni kana meenda wambiia kuete walany'o wa kuola nzeve itavisaa.

TIST yina utanu kwithiwa nzeve yayo yi imwe ya kilasi kya iulu na itonya uteea athooi aingi kivathukany'o.

# Mazingira Bora



# TIST

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

**Kipsigis Version**

*TIST is an innovative, time -  
tested, afforestation program led  
by the participants.*



**Wanachama wa Nguzo ya Kwajebi TIST wakiwa kwenye mkutano wao wa kila mwezi.**

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## **Kenneth Mutuma: Otindoniondenyun en TIST.**

*Koyob Mary Gitonga, Kiboitiotab TIST .*

**K**ainenyun ko Kenneth Mutuma, temindetab TIST koyob Kilastaitab Tharu, Meru County. Kiakass akobo TIST en 2008. Kiinanai akobo tetutoni, achut en 2009. Kurupinyun ne Ming'in ko Kinguru - 2009KE153.

Agenge en tuguk che licheeran kot achut TIST ko minsetab ketik che logoek. Kianai ale amuche anyorchigee kelchin missing en ketik che logoek kosir ketik alak tugul.

En keniytab 2015, ko katokigee minsetab avocado. En kenysiek che chang' kp kiamin ketik 400. Abaiabai en kogilenyun bo gee. En ketikyuk chebo avocado, anyorchinigee lipanetab koristo. Nebo komonut missing' ko rabisiek che anyorchinigee en aldaetab avocado. Yon amache atil ketikyuk chebo avocado, abaen sogek kiyagik ak aboisien temeik koik kweni.

En mbarenyun nebo avocado ko mine chepyosenyun sukumawiki che kioldo en ndonyo ne mo loo.

Kikose ko kikimmen missing en komostab chepkondook en kasari kimii. Kimuche kenyorun tuguk rugul che kakiteet ne ko koyob aldaetab avocado, sukumawiki ak aldaetab koristo.

Kikenyoru boroteet neo en kanetisietab TIST. Kikinetgee akobo ketik cheimuche koteer koristo. Kikemin sebeseb en kiwotosiekab mbar. Kikotoretech ni koteer koristo neo komait mbarenyun. en kemosiek kichoru sebeseb kebaen kiyagik. Koram kenyoru kwenik kobun temenik.

Kichere mebaekab TIST komatkosir tuyosiekab Kilasta. Tuyosiekab Kilasta ko konu naet ak kimnatet.

## **Kilastaitab TIST nebo Kwajebi: Kelchinoik chebo kwong'utik.**

*Koyob David Thuku, Chigilindetab ole kiboisioto rabisiekab TIST.*

**E**chek ne Kilastairab Kwajebi ko kii agenge ne kilastaisiek chemii Laikipia Cherongo. Kikichute TIST en 2008. Akoi raini ketindoi Kurupisiek che Mangenchen 54 ak temik 366.

Kiboiboi en tuguk che kikenyoru en TIST. Kinkechutu TIST ko kikemiin ketik 90,000 ako che sobtos. Kingen kele, nda mo en konetisietab TIST, ko tos tomo kemiin ketichu. amun emenyon ko moche ko meleweet ko kiuui olekeripto ketichoton. Kikitindoi koimutik che chang' amun kimeyo ketik che chang' en kasartab kemeusiek ak koyogietab kiyagik. kinkomyo TIST emenyon, kenai ortinwek che miach chebo boisionik asikimuch kegirinden kewelinwek che chang'. Kimang'uu kele en kasari kebendi kenyoru tokinenyun en ketik che lelach che kitresem.

Kiibe kora kasarta kemwochin kongoi TIST amun kimwa chebo iman en libanetab melekweekab koristo. En kurupisiek che mengechen 54, ko kokonyor kurupisiek 51 lipanetab melwekeekab koristo. Inoni ko boiboiyet neo en echeek. Kimwachini kongoi ak kilosu kiboityondenyon nebo Kilasta, David Thuku amun ityin kurupisiek che mengechen tugul ak kogeer kole konyor lipanet

netai ak koityi makutikab lipanetab melekweekab koristo.

Kimuche kemwa nguni kele TIST ko tetutienyon. Kikonyor walutikab kanetisiet membaekiok akobo kanetutikab TIST. En karogut, ko Mr. John Kinga nebo 2008KE2718 ko kobelindetab kapetitieki. En raini, ko kikotoo betisiek che tindo ketik 5,000 chebo kipгаа ak che mobo kipгаа. Kitindoi kora kabelikab logoek cheu Regina Njoki ak Rahab Mumbi. Kiokominn icheek logoek machungwek che chang' che aldo en ndonyosiek che negiten. Ndirangu Githogori nebo 2008KE474 ko kobelindeb moingonikab segemik en komostonyon nebo TIST.

En Kwajebi, ketesetai kisibii Ortinwek che Miach chebo boisiet chebo TIST chebo kandoinatet ne kiwalchinge. Kandoikyok nguni ko Francis Kahoi 0726273161 (Kandoindetab Kilasta); Mary Maina 0729452202 (Kandoindetab nebo oeng' ako kandoindetab ne leel nenomu rabisiek ko Michael Maina 0711343723.

Angot imache ichutu kilastainyon inyoru kandoichonito. Kiboiboi keboisiewok, kepjei tugul tugul che kikinetgee en TIST.



## **Francis Musembi: Chito ne kikogee koboisiechi biik nebo TIST.**

*Koyob Josephine Muasya, Kiboitioab Kilasta nebo TIST.*

**K**ainenyun ko Francis Musembi kobun Kilastaitab TIST nebo Mamba, en Mahakos County. Aboo Kurupit ne Ming'in nebo Mwendu Useo

Aa membayat ne tai nebo TIST en emenyon. Kinkekass ak jenai akobo TIST en kenyitab 2016, kinaam keng'alaleen TIST en tuyosiekab kokwet, kanisosiek, ak tuyosiek alak olon kokinyoru kasatrta kikass komach temik che chang' ako kikinaam kesir biik en TIST.

Asi komuch temik kominn ketik ingochute kurupit ko kikiboisien ng'oliot ne lelen, "Minn ketik kong'teen 'baani'". Amun emenyon ko moche ko meleweet, ko kimakemoche kosir ropta temik en minnsetab ketik an kasarta ne mii ropta.

Kichereech TIST kemiin ketik che terterchinen tuiyiekab kanetisiet. En mbarenyn, atindoi ketik cheu sebesebe, maembe, *casuarinas*, ak laka che chang'. Kiit nebo komonutiet akobo

minnsetab ketik ne kianetgee ko olekikwochindo loindab ketik kong'eteen ketit akoi ketit, amun en taa ko kiaminne kochilgww aleleen asi ndabegu alak kong'et alak. Kobateen en iman, ko ketik che kimeyo ko kimii komosto agenge ko che kisobcho ko kimii komosta age akichek. Che kisobcho ko kiit kochilgee en elekiiten ak komoiyo amitwok, asista ak tuguk alak, ako kinyolulyo ketichoton. En TIST ko kikinnetgee kele kikwochi ketik kobo komonutiet missing'. Ikochin ketik konyor asista ak komuch kochobchige amitwakik, ako momii moyetab beek ak amitwakik ak kou noton korutu ketit en kimnatet ak chametabgee. TIST ko mwoe kole moche ketik komi loindab keldo oeng' en oeng' en ketik ak keldo 3 en 4 en logoek.

En kenyisiyekyuk 7 en TIST, ko molilone ako mogere let (makusekong'). Inoni ko tetutiet ne kikekany keny. Angen ale kitesetaa en TIST ako kbendi ketunenii.

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## **Julius Mbaya: Atete Aatu boisiet en TIST.**

*Koyob Mary Gitonga, Kiboitiotab Kilasta nebo TIST .*

**K**iin koit TIST kokwenyun en kenyitab 2015, en kibagenge ak alikab chaik chebo aylors, anetgee kiit ne kimakinete en tuyosiekab TIST – noton ko imuche ituu boisiet ak boisietab minnsetab ketik.

Kianai en komo loo ale, en ko mo loo akachini lagokyuk chaik yon kainam komeng'is ak lagokwak. Nebo oeng' ko kianai ale ngobendi kenyisiek, ko imuche komamuch ayai boisietab mbar missing' ak boisionik alak chebo mbar.

Kiit ne imuche kotoretton ak kochomuon okochi lagokyuk mokornotenynun ko minnsetab ketik. Amun en mbarenik che mangenchen en betusiechu, ko kiit ne imuche kokonech kelchinoik ko keyai tetutik che miachen.

Kikokoneech TIST boroindo en yoton. Ako boisie. Lakogyuk nguni ko toche rabisiek en chaik ko ane ak chepyosenyun ketoche rabisiek koyob ketik. Ako chu ko yobu mabret agenge!

Kiinnetech TIST akobo keminn ketik che terterchin. En mabrenyun, inyoru ketikab logoek, chebo ndendereek, kerichek, che amitwakikab kiyagik, ako kitile kora koik kwenik.

Ketikab logoek ak ndenderek ko koneech rabisiek che chang' che kiboisien en betusiek tugul en gaa.

Amun lipani TIST ketik tugl en mbarenyn, kenyoru rabisiek che chang' missing' koboto lipanetab koristo.

Raini, kekose ketindoi kimnatet ko kii kapchii. Kigeere betusiekab taa en nyiganatet.





## Minet AB'ketik en emet ne ya'mat.

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

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

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

5. Agro forestry: ongeyom kinetge , ak keyai agro forestry . Ketik che kagimin en imbarenik kotinye nafasi newon koechegitun kosir che minotin en ole miten osnoshek ak suswek angamun riboksek komye ago nyoru ng'ung'unyek che kororon.
6. Chaguan species cherutu en korotinwek che yomyotin. Sanasan ketik chebo komosoton che indeginous ko choton che yechegitun kosir igo. Ketik cheu Melia, *Acacia seyal*, ak *Muuuku (Terminalia brownii)*.
7. Rib ketik che miten en inguni ak itoret icheget koregenereten . Ketichuton kogimen , ago ichek komuche kosobcho ogot en betushek che momiten robwek. Konu ichek seeds che kimuche kenyor en oret ne nyumnyum ak uronok.
8. Raised seedbeds anan ko sunken seedbeds komuche kotoret. Yon kogichob seedbed ne kitogos , kenyoru seedlings che kimen , so ingunon kosobtos. Kora kotoreti seedlings koyechegitun en petit agoik che kimen . lakini seedbed ne sunken komuche kora kogararan angamun tere asista komabar seedlings . En komosoton ibwaat iwisowisi seedlings asi mochut tigitik ngweny, tun kowe chok yon kisibto.

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

## TIST koristab mugaret.

**Y**enkimin ketik konyoru koboisien koristo noton yaa (CO2) korisiton ko agenge en chekiguren (greenhouse gases), en niton kotere burgeyeta nguwotut en soet asi konyor burgeyeta neo ng'uwotut, mwoe ng'omutik kole kigoet burgeyeta en emet ako magariaran weche emet en niton koweche emet, eniton koweche emet amun emotinwek alak komuche koet robta mising, bitu kameusiek anan ko melewet, bitu koristo neyaa yon koboisien karisiek mwanik, kou makaa (nesak) amun ketik koboisien koristo kobose chongitab korisuwek chemi soet, moche anyun seregali ak emotinuwek cheboisein (industries) kobos koristo neyaa asi nguwotut borgeiyet neyomegei.

En koitikab ketik chebo TIST koiti ak kobimoni toltolitab ketik asi komuch konai kole tiana koristo negobosien ketit, kobunisiek ak seregali kwole koristo neya ak koliban ketik ak kobos korisoton.

Nyolche ko kibo imanit ak chelilit en koitetab ketik asi kimuch kiyanten, ye ka kenyoru rabisiek komuche kurubit koboisien komnye ak konam koyai tuguk alak che komagotinye, kurubisiek kelibochin \$20 chebo ketik 1000 en kenyit (kogerge ak 1.80ksh.) En ketit ne sobe, nyorunen kelchil temik kosir olik amun chechuak ketik.

**Membraekab karaba kilasta en laikipia county komiten tuiyet en arawanik konye.**



# Temikab TIST kotinye naet agobo burgeiyetab nguony ak waletab itondab emet.

**N**gen che chang en temikab TIST agobo niton. Kigechil niton temik en konetisiosiek ak seminars ak en tuiyosiekab kilasta koguiyo agobo burgeiyetab emet, ak nee nebitu agobo niton ne oret negimuche keposen. Kitinye ak kenyoru koimutik en betusiek tugul. Koborunet netai ko kirobon robta El Nino en 1998 ne kibut emet ak let konyo kemeut, kibitz kora koristo neo missing en 2004 nito ko koborunetab waletab emet. Kibit en emet; kosib kochotio koikab beek en Mt. Kenya amun en burgeiyet ne kibitz en emet; kosib ko kobetio anan rorunetab amitwogik ene emet, kotenyo beek en kondametusiekab beek ak anagei chechang chegitok.

En arawani ketinye asi komuch koguiyo biik agobo burgeiyetab emet ak walletab emet komie. Kitinye ororunetab chuton tugul asi iguiye ile tos imuch kotoret.

## Ne anyun burgeiyetab emet?

Burgeiyab emet kogochin nguwendet koet missing burgeiyet, niton kogochin emet konyor wallet. Ye eet mat en emet komuch kowal orowekab robta, koriswek che gimen, kotesak beek en nyanchosiek, lo mabit omitwogik, koseretio ketik, tiongik ak biik. Ye ngalal ngomotik agopo niton bo waletab emet kotinygei ak burgeiyetab emet; niton kotinyegei ak boisionikab biik missing ko agobo itondab emet ko bitumen niton.

## Tos tesosei mat en emet?

Ee amun en kenysisiek 100 chegogopata kogitesak 1<sup>o</sup>c. Tinye ngomotik kole eng bosionikab biik che

yoe kogochin ngwoindut koet mat. Niton kounetab mwanik chegitom kepoishen, petro, koristo nemiten ak koluletab keti, ribetab emet ne mayamat.

## Tos tinye koriswek alak?

Niton keguren kotab kurwek amun miten en nguony koriswek che terotin kou carbon dioxide nitrous oxide, sulphur dioxide, mitane trap energy koyob asista. Olepitunen korisi ya (carbon ) kotiletab timwek, koristo ne yopu factorisiek karisiek, nesek ak beletab osnosiek.

## Ne ngoiyondit ne konu burgeiyetab emet?

- ◆ Konu kotesak ongatet en ye mamiten beek.
- ◆ Konu kotesak mionwek kuo eset.
- ◆ Amun igochin kalyangik che ibu eset kochanga, komuchi kebek biik che chang.
- ◆ Konu koet bananda en biik amun ye kaet mat, komuchi komabiit omitwogik missing ko korotinwek chemiten oretab asista.
- ◆ Konu kobit oliet ab omitwogik. Kwo barak missing amun rorunet.
- ◆ Ye tiny timwek ak osnosiek kobitu kobetio beek en tulonok, komagenyoru beek che kimuchi keboisien en imbarenik, kobetio omituokik, komagenyoru stimet ak beek en korik ak en townisiek.
- ◆ Biik che chang komosiche mengotosiek en maranetab neek.

**Omuche oter burgeiyetab emeti?****Min ketik ak irib!**

Kou en mwaetab koristo noton ya (Carbon) ko konu burgeiyetab emet. Ketik anyun koboishen koristo (carbon dioxide) en yaetab omitwogik, konori en temenik, tigitik ak ngunyek, yegitil ketik any ko kagichunda korisoton kwo soet, kotes burgeiyetab emet.

**Tos imuch inai ile ketik kotinye waletab emet?**

Ketit ak orwet gotuche emet. kaitit urwet kosir olemiten asista.ole kaitit kogochin yoto kokoitit en abogora niton koboru kole ye imin ketik konyoru ngungunyek chemiten imbarengung kotityet en kila ak kila ,agotrurutik tugul.

**Mungaretab koristo konee?**

Mungaret kotinye tuguk somok:

1. Komiten keretab bosetab koristo noto yaa (CO<sub>2</sub>) en koristo.
2. Kebos carbon en kenysisiek chechang.
3. Miten biik che tononchingei asi korib agoib kokwout kole kogisib mogutik tugul che tinya.

Ketik koboisien carbon ak kogonor en ketik, tigitik ak en ngungunyek. Kimuch kenai koristo ne yaa nemiten barak ak nekogiboisien ak keyai esabu. Ko bit anyun chemungarainik che ole ak kwoldoi.

Itin anyun TIST koalda koristo ne kogiboisien en ketik kou temik che tinya sugaruk ak chego. Mogimuchi keib ketit kwo ndonyo kobaten kibimoni toltolindab ketit ak kiyokto. Mungarani kotesetai en New York , Chigaco, London ak emotinwek alak. Miten ngotutik che bo mungaret ak tononywan. Biik alak komuche kotil ketik en osnet asi kogol alak,

maiyanat niton amun ketesi carbon kotes burgeiyet. Kimokinigei kemin ketik chebo kasarta ne goi choton ko kipkaa. Ye testai temik koribe ketik konyorunen kelunoik chetoretegei en kaa kou-rabisiek, kwenik ak logoek.

**Tos ketik tugul koboisien koristo ne kergei?**

Acha, ketik chetebesen ak chegoen kotinye koristo neo kosir ketik chemengechen. Ketik chetebesen kotinye raninik che chang amun konori koristo neo. Noton anyun ye kigole ketik kigochi kokwoutik che yome asi koet ak konyor beek. Rib ketingung ak kechororchi asi koegitun ak inyorunen kwenik ak omitwogikab tuga.

**Ano/ng'o che ole koristo?**

En nguni kochang olig ago miten boroindo en ole imoche. Amun tinya boroindo olik ak oldoik (kou kawek kotinye keruti).

Miten kobesosiek en indonyo amun tinya agetugul ngotutikyik kou ole kimindo ketik, ole kiribto ak ole kiyumdo report. Kiboisien biik che miten barak ( validation and verification, V.C.S) ak Climate Community and Biodiversity Alliance Standard (CCBA).

**TIST kotinye olik oeng**

Netai miten biik che tinya kapuatet ne mie ko kon rabisiek, kogochi che kimin ketik. Nipo oeng komiten kombunisie en US, Europe, Canadaa ak emotinwek alak chegitestai kotinye maget kepos koristo ne yaa.

TIST kotinye boiboiyet en amun tinya koristo ne kararan netinye mungaret, en olik che chang.