

# Mazingira Bora

Not for sale

Newsletter March 2024

**tist** Growing Trees  
Growing Leaders

1. We are Honest
2. We are Accurate
3. We are Transparent
4. We are Servant to each other
5. We are Mutually Accountable to each other

www.tist.org

English Version

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



**Muhonia Cluster meeting held on 14<sup>th</sup> February 2024.**

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## Preparing Compost Manure - a natural fertilizer.

**C**ompost manure is a natural fertilizer that helps your crops grow. It is better than chemical fertilizer because it is natural, free, and will not damage crops and the environment as some chemical fertilizers can. There are many ways to make compost manure, but the following method has been useful in some areas. Ask your neighbors in your Cluster what has worked well for them.

### Preparation of compost:

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

Use the stick as a thermometer. When the compost is ready it should be hot and you may even see steam coming from the stick after you have removed it. Then stir all of the compost together so it is mixed well.

### Use of compost:

When you have dug your holes for planting maize, millet or other crops, add one handful of your compost manure to each hole. Watch for the results!



## Nursery Care.

### A. Pest control.

Organisms like fungi, bacteria, viruses, nematodes and insects (e.g. ants, termites, aphids) can damage seedlings.

A common nursery disease is called damping off and is caused by fungi. It causes seeds to rot before germination, roots to decay before the shoot appears and the shoot to become thin and collapse.

The typical symptoms are:

- The thinning and death of the stem at ground level.
- The subsequent wilting and falling over of the seedling.
- The leaves turn yellow.
- The seedling eventually dies.

Control damping off by:

- Changing seedbed soil every 1-2 years. Loosening the soil also helps.
- Immediately removing affected seedlings and burning them.
- Avoiding excessive watering.
- Ensuring good drainage.
- Providing better aeration.
- Weeding effectively and on time.
- The soil should not be overly fertile. The proper ratios of the soil should be followed. Reduce nitrogen content by applying less manure.
- There should be enough spacing between seedlings to avoid overcrowding.
- Make sure that the nursery is clean at all times.

Diseases can also be managed by the proper use of chemicals and insecticides. It is best to use natural insecticides as chemical ones can be expensive and may damage the environment e.g.

- Application of ash.
- Ensure the seedbed is clean to avoid encouraging pests.

### B. Root pruning.

Move the seedlings around once a week so that the taproots do not sink into the ground and need to be cut. A healthy taproot helps the trees get water after transplanting.

When the seedlings are growing in the pots after 3-4 months (depending on species and climate) their roots start to grow out of the bottom of the pots. These roots should be cut every 1-2 months with knives. Note that care must be taken when lifting the pots so as not to damage the young roots.

Alternatively, try the raised nursery beds (see Unit 4) which reduce the need for root pruning as the roots drop off naturally.

### C. Watering, weeding and shading.

- Sprinklers should be attached to the watering cans so as not to cause soil erosion.
- You can also use a pierced tin.
- Avoid too much or too little watering, roughly 20 litres for 1000 seedlings. Too much water can weaken the seedlings and attract pests and fungus. One sign of over-watering is a thin film of algae or green moss on the soil surface.
- Water every morning and evening when possible.
- Sandy soils will need more watering than clay soils.
- Direct the water to the soil, not to the leaves.
- Water slowly to ensure it penetrates the soil.
- Be careful not to damage roots when weeding.
- Do not leave the weeding too late. Weeding is necessary as the weeds increase competition for light, soil water and nutrients.
- Some seeds require shading – make sure simple shades are constructed.
- During the rainy season, cover the seedlings using dry grasses or hay. Seedlings should be moved away from under trees so water does not drip onto the seedlings and cause damage.
- Fence off the nursery to protect from cattle and playing children.
- Let the seedlings grow to about 30 cm before transplanting. This may take from 1 month to 6 months. See transplanting notes. Also remove the shade during this time.



# TIST: Trees make the environment better for us all.

In TIST, we plant trees to take part in the carbon market and earn income from carbon-offset sales. However, the other benefits of trees are enormous!

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

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



# Conservation Farming: Time to prepare your shamba.

**T**IST Small Group members who have practiced CF have testified it produces a greater harvest more reliably than traditional farming, especially when the rain is scarce. The holes help catch whatever rainfalls and make it available to the crop. This article will help you understand better how to practice kilimohai. Following these best practices can help you get better yields this coming season.

## Preparing the land.

- Prepare your land at least one month before the rains.
- Clear your plot of weeds and bushes, but do not plough.
- Prepare your holes oblong (rectangle) shape. They should each be 15 cm wide, 35 cm long and 15 cm deep. Space holes at least 75 cm apart.
- Take some manure or compost manure and good topsoil and mix it together. Fill the hole with the mixture up to five cm below the surface.

## Planting.

- When you plant maize seeds (1-2 days before rains start), plant four seeds in the soil across the hole.
- If you are planting sorghum, plant 5-6 seeds at each end of the planting hole, after a good shower of rain.
- Cover the seeds with 2.5 cm of the rich soil and manure mixture. After this the soil in the hole should be about 2.5 cm below the surface of the field.

- The space at the top of the hole enables water to get to the plants when the rains come.
- You do not need to use chemical fertilizer on the Conservation Farming plot. Your crops will still do better without chemical fertilizer, if you put enough manure.

## Weeding.

- Weed around the holes regularly.
- Do not weed the entire plot completely. Outside the holes, plants can cover the soil, keeping it cooler and keeping it from eroding in rain and wind. Just weed in and near the holes. Use a panga to clear weeds between the lines or spaces from one hole to the other. Weed frequently to keep weeds from going to seed and spreading in the holes.
- Leave the weed residue in the plot to rot. This will help add soil fertility.

## Post harvest practices.

- Do not burn off the remains on the plot. Leave the residue on the ground so that they make the soil more fertile. Crop remainders can also be used for compost manure.
- Do not graze cattle in the plot.

We will be glad to celebrate your successful harvest and learn from best practices in your area through this newsletter as well during your cluster meeting. Take pictures as you prepare the holes, and then every two weeks take a picture of your CF as it grows. Send all of the pictures to us. Start working now!



## TIST: Guidelines on Clear Cut and How Your Small Group and get back lost Tonnes.

One of the biggest risk in carbon sequestration projects that involves tree planting is clear cut of significant number of trees. In TIST, clear cutting hurts all Small Groups in the program. When one TIST Grove is harvested, it harms all of TIST! For instance, when we are audited by outside Verifiers, and they find a Grove has been clear cut, the verifiers conclude that this could be the case everywhere else. This means we will be allowed to sell less tonnes hence less sales for the rest of the farmers.

### What to do when a member of your Small Group decide to cut down TIST Trees.

1. Talk to them about the dangers of Clear-cut. Remind them if they are in need of money from sale of firewood or timber, TIST allow farmers to sustainably thin their trees or prune branches for firewood.
2. If they insist of clear cut, kindly notify your Cluster servants and Cluster leaders.
3. At the Cluster meeting, please have a discussion with other farmers about the issue.

4. Convene a meeting of rest of our Groups members and discuss how you are going to replace lost tonnes. You can do this by planting additional trees in your farms. If you do not have a space to plant more trees, you can invite new members to join your Small Group. New members can only be invited when your Small has less than 12 members.
5. Immediately after there is clear-cut, please invite your Cluster Servant to come and re-quantify your Small Group.
6. It is important to record, how the harvested trees were treated up to the final product. For instance, if they were used to building materials etc. If you can find out how much the person received for the trees, it will help to compare with the annual profit share they would have recieved.

We should all remember that our trees are only paid for carbon, because they act like a store for carbon they sequester from the atmosphere. When we cut down TIST trees, we destroy the “store.” It is because of the “storage services that hold the carbon tonnes” trees get paid for that role.



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**Kimereu Version**

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**Mkutano wa Muhonia Cluster uliofanyika tarehe 14 / 02 / 2024.**

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## **Kuthithia mboleo yaku gwengwa – fertilizer itiongeri into bia kuthithua ni muntu.**

**M**boleo ya kuthithia na imera ni fertilizer ya kuumania na into bitina ugwati ya gutethia imera biaku bikura bwega. Ni injega nkuruki ya fertilizer cia nduka niuntu icithithitie yongwa na itina ugwati kiri imera na kiri naria kuthiurukite. Kurina njira inyingi cia kuthithia mboleo, indi njira iji ithingatite nitethetie ndene ya guntu kumwe. Uria muturi waku ndene ya cluster yaku jaria jabatethetie nkuruki.

### **Kuthithia mboleo:**

- 1) Taara antu aria ukeenja kirinya giaku kia warie bwa mita inya na uraja bwa mita inya.
- 2) Theria antu au.
- 3) Inja kirinya kirina warie bwa mita ithatu gwita inya na mita imwe na nusu kwinama.
- 4) Uthurania matigari ja imera biaku jaria urinajo na ugitange tue tunini. (mung'uanano mathangu na mati ja mpempe, miere na ming'au).
- 5) Ikira matigari jaja kirinyene mwanka gitigare nusu mita.
- 6) Ongeera lita ithano cia muju.
- 7) Riu wongere centimita mirongo ithatu (kana o iria ikwoneka) cia mburi kana nguku).
- 8) Ongera matigari ja imera nusu mita.
- 9) Ikira lita ingi ithano cia muju.

- 10) Ongera matigari ja imera kairi mwanka kirinya kiende kuujura.
- 11) Muthia, ikira muthetu mwanka kirinya kiujure.
- 12) Ukiujuria kirinya na muthetu, tonyithia muti jumuraja gatigati ga kirinya mwanka jukinye nthiguru buru.
- 13) Tigana na kirinya giki ntuku mirongo kenda (mieri ithatu).
- 14) Igitene riri tumira ruuji rwaku rwa ruko gwikira boleo. Mung'uanano, warikia kuthambia nyomba kana nguo ciaku, ituura ruuji ruru ugutumagira kirinyene. Kethira urina ndithia ituura maumago jacio iguru ria kirinya.
- 15) Untu bubu nibwongagira nitrogen kiri mboleo yaku.
- 16) Geria wikagire kirinya kiu ruuji na njira iji ntuku cionthe kana oriria ruuji rurio.
- 17) Ntuku mirongo kenda ciathira, mboleo ikethira iri tayari.

Tumira muti kuthima mwanki – mboleo yayia no mwanka ithirwe irina mwanki mwanka toi yoneke ikiumaga mutine wajurita ku.

### **Utumiri bwa mboleo:**

Warikia kwinja marinya jaku ja kuanda mpempe, muya na imera bingi, ongera nkundi ya mboleo yaku kiri o kirinya. Etera wone uria gugakara!





## Kumenyeera minanda.

### A. Kuniyia tunyomoo.

Tunyomoo notuthukie miti iria ikuuma. Kurina murimo jumwe juria jwonekaga mono kiri minanda juria juretagwa ni fungi. Nijutumaga mbeu ikaumma mbele ya iuma, miri ikoora mbere ya kimera kiumira na ringi kimera kiu gikuuma gigaceng'a na gikagwa. Murimo juju jwonekaga aria:

- Kimera kiu gikuuma gigaceng'a na gigakua mbele ya kiumira iguru ria muthetu.
- Kimera kiu gikuuma kinyaraga na kugua.
- Mathangu nijagarukaga jakaa yellow.
- Muti nijukuujaga nyuma ya kagita.

Murimo juju nojuthirwe na njira ya:

- Kugarura muthetu jwa munanda o mwaka kana o miaka iiri. Kuunanga muthetu kinyaku nigutethagia.
- Gwita kimera kiria kiajitue orio na ugakiithiria.
- Kwebera gwikira ruuji rurwingi nkuruki ya ruria rukwendeka.
- Kumenyeera ati ruuji rutikwigara.
- Kumenyeera ati kurina ruugo bwega.
- Gukurira iria bwega na kurio.
- Muthetu jukethira junori mono. Uungania muthetu na mboleo uria kubati. Nyiyia nitrogen iria ugwikira na njira ya kunyiyia mboleo.
- Nikubati kwithirwa kurina kanya gakeega gatigati ka miti nikenda itainyane.
- Menyeera ati munanda nijutheri magitene jonthe.

Mirimo no inyiwe na njira ya utumiri bubwega bwa dawa cia tunyomoo. Ni bwega nkuruki gutumira dawa iti cia nduka niuntu cia nduka ciri goro na nocithukie naria gututhiurukite. Mung'uanano;

- Utumiri bwa muju.
- Kumenyeera ati munanda nijutheri nikenda jutigakucie tunyomoo.

### B. Kuniyia miiri.

Garurira aria o muti juri rimwe o kiumia nikenda miri imiraja itigatonye muthetune mono iija gwitia kugitwa. Muri jumwega nijutethagia miti gucua ruuji jwarikia kuthamirua muundene.

Riria muti juandi mukebene jwakinya mieri ithatu gwita inna (kuringana na muthemba na rera) miiri yaju niambagiria kuumira nthiguru ya mukebe. Miri iiji nibati kugitwa o mweri jumwe gwitaiiri na gaciu. Menyeera riria ugukiiria mukebe utikagitarie miri iu niuntu itikuri.

Antu a kuthithia ou, geria guukiria munanda untu buria bunyagia bata ya kugita miri niundu miri nigujaga iri yongwa.

### C. Gwikira ruuji, gukuura iria na kirundu.

- Tuminyi nitubati kwithirwa turina mikebe ya kuminya nikenda tutigatume muthetu jukamatwa.
- No utumire kinya mukebe jurina makutho
- Ebera gwikira ruuji rurukai kana rurwingi mono, ikira miti ngiri ruuji lita mirongo iiri. Ruuji rurwingi niruthiragia imera inya na rugakucia tunyomoo. Gintu kimwe kiria kionanagia ruuji rurwingi ni kuuma kwa imera bibinini bikari ja kimira muthetune.
- Ikira ruuji o ruukiri na ugoro kwombika.
- Muthetu jwa muthanga jukenda ruuji nkuruki ya muthetu jwa clay.
- Ikira ruuji muthetune ti mathangune.
- Ikira ruuji mpaari nikenda rutonya muthetune.
- Menyeera utikagitarie miiri riria ugukurira iria.
- Ugeteera mono mbele ya ukuurira iria. Gukurira iria kurina bata niuntu iria karicindanagira weru, ruuji na irio.
- Mbeu imwe niciendaga kirundu – menyeera ati irundu nibithithitue.
- Mburene, kunikira mbeu na nyaki injumu. miti iu ikuuma nibati kuthamua kuuma ruungu rwa miti nikenda ruuji rutikagwire mbeu rugitaria imera.
- Irigira munanda nikenda ujumenyeera kuumania na ndithia na twana tuguchetha Reka miti iume mwanka uraja bwa centimita mirongo ithatu mbele ya kuthamiria muundene. Bubu no bujukie kuuma mweri jumwe gwita mieri itantatu. Thoma kwegie kuthamia. Rita kirundu riria ukwenda kuthamia.



## **Miti nitumaga naria gututhiurukite gukethira kuthongi nkuruki kiri batwi twinthe.**

**N**dene ya TIST, nituandaga miti nikenda tuumba gutonya thokone ya ruugo na twona mbeca kuumania na kwendia ruugo. Indi-ri, baita ingi cia miti ni inene!

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

- ❑ Miti ni gikaro kia mithemba imingi ya imera na nyomoo. Niiejanaga antu a gucioga kuumania na bangi na gicitho kiri nyomoo cia kithaka iria cigucua gikaro mitine na kucia irio. Gukaria mithemba imingi ya nyomoo na imera nigutumaga miunda yetu na nthiguru yetu ikagia maciara jamaingi nkuruki na ikaregana na kugaruka kwa rera na magitaria jangi.
- ❑ Miti nithongomagia ruugo na ikanyiyia kuthukua gukuthuku kwa naria gututhiurukite. Miti niritaga ruugo ruruthuku rwaingia na bingi biria bithukagia ruugo ta sulfur dioxide, ozone na nitrogen oxide. Gucokia, nituejaga ruugo rurwega ruria rendekaga kiri utuuro.
- ❑ Uthongi kiri metho bwa miunda nibuthongomagua ni kuanda miti, naku gukathongomia miturire. Rangi ya miti niongagira miunda rangi na kuthongomia uthongi bwa kimbicha bwa naria gututhiurukite.
- ❑ Miti nigaruraga rera na njira ya kunyiyia jaria jaumanagia na riuu, ruugo na mbura. Miti noitethie kurigiria kuigara kwa ruuji, kwaruka kwa nthi na magitaria ja ruugo. Miti ninyiagia mathukia ja mbura inyingi na njira ya kureka ruuji rwa ngai rutonya muthetune antu a guitira iguru ruri muguo.
- ❑ Miti ninyiagia gukamatwa kwa muthetu. Miri yayo nigwataga muthetu juria antune angi juringi gukamatwa mburene. Miti kinya nitethagia kunoria muthetu. Muthetu jumunoru nijuikagira irio nutrient na kwou bikathongomia thiria ya miri.
- ❑ Miti nijukagia gituma na njira inene. Kuthukia kwa naria gututhiurukite ni gituma kwomba kunywua na njira inene na njira ya kuanda miti ingi na ingi.
- ❑ Kwendeka kwa ruuji rurutheru rwa kunyua kwomba gutetheka na njira ya kuanda miti ya gintwire. Miitu na imera nibinyiagia kumatuka kwa ruuji rwa ngai na kurukemba mbele ya rutonya muthetune. Kumatuka kwaru kwanyiwua, ruuji rwa ngai nirutonyaga nthi kuujuria marinya jaria jari ndene muthetune na jaria jari bata mono kiritwi. Miti kairi nikunikagira nduuji, ruuji rugakara rurina mpio na mpaari ikanyiyia kuura kwa ruuji gukurukira kujukua ni riuu.



## Ni igita ria kuthuranira munda jwaku niuntu bwa urimi bubwega.

**A**memba ba ikunbi bibinini bia TIST baria bageretie kurima na urimi bubwega nibaritite ukuji ati nibuciaraga iciara ririnene na riumba gweterwa guti na uguaa kiri urimi bwa kawaida, mono mono ririangai itikung'ana.

Marinya nijatethagia kugwatia ngai iria ikagua na gutuma ruuji ruru rwithirwa rurio kiri kimera.

Mantu jaja jagagutethia kwelewa bwega nkuruki uria ubati gutumira njira ya urimi bubwega. Kuthingatira miitire iji iria miega buru gugagutethia kwona iketha ririega nkuruki mbura iji ijite.

### Kuthuranira muunda

Thuranira munda jwaku no mweri jumwe kabele ka mbura.

- Rita maria na ithaka muundene jwaku. Ukarima.
- Thuranira marinya jaku. Nijabati kwithirwa jari na warie bwa sentimeta ikumi na ithano, uraja bwa sentimeta mirongo ithatu na ithano na kwinama sentimeta ikumi na ithano. Taarania marinya jaku na sentimeta mirongo mugwanja na ithano kana nkuruki.
- Jukia mboleo inkai na muthetu jumwega jwa iguru na uunganie. Ujuria kirinya na muunganio juju mwanka gikinye sentimeta ithano nthiguru ya nthiguru itirimi.

### Kuanda

- Waanda mbeu cia mpempe (ntuku imwe gwita ijiri mbele ya mbura kwambiria), anda mpindi inya kiri muthetu kugitania kirinya.
- Kethira ni ugimbi ukuanda, anda mpindi ithano gwita ithanthatu o muthiene jwa o kirinya gia kuanda nyuma ya mbura injega mma yaura.
- Kunikira mbeu na sentimeta 2.5 cia

muunganio juria jwa muthetu jumunoru na mboleo. Nyuma ya kwongera muunganio juju kirinya kibai kwithirwa kiri senimeta 2.5 nthiguru ya naria nthiguru itirimi.

- Kanya karia gagutigwa kirinyene iguru nigatethagia ruuji gukinyira imera riria mbura iijaga.
- Gutina aja ya gutumira fertilizer cia kuguura kiri muunda jwaurimi jumwega. Imera biaku bikathithia bwega kinya warega gutumira fertilizer, wekira mboleo ing'ani.

### Gukuurira iria

- Kuurira iria akui na irinya o igita o igita.
- Ugakurira munda junthe iria rionthe. Oome ya marinya, imera nobikunikire muthetu, bikajuika jurina gapio na bigatuma jutakamatwe ni mbura kana ruugo. Kuurira iria aki marinyene na akui na marinya. Tuumira kibanga gukurira iria gati gati kalaini kana itigatinekuuma kirinya gwita kingi. Kurira iria o igita o igita nikenda maria jatiraciare mbeu na jatamba marinyene.
- Tiga matigari jam aria muundene kenda joorera ku. Bubu bugatethia kuongera unoru bwa muthetu. aria ubati kuthithia warikia guketha
- Ukaithia matigari ja muunda. Jatige nthiguru nikenda jomba gutuma muthetu junora nkuruki. Matigari ja imera no jatumirwe kinya kuthithia mboleo.
- Ukarithia ndithia muundene. Itu rikana, tukagwirua mono gukeneera iketha riaku ririnene na kuthoma kuumania na miitire imiega buru ntuurene yaku gukurukira gazeti iji amwe na igitene ria mucemanio jwaku jwa cluster.

Ambiria kurita ngugi thaa iji!



## TIST: Mutaratara jwegie gutema miti yonthe na uria gakundi koomba gucokia tonne iria ciurite.

**T**hina imwe iria nene ndeene ya biashara ya kaboni kiri muradi ijagiira riria miti imingi igutemwa. Kiri TIST, utemi wa miti wa muthemba uju utongithagia ikundi jionthe ndeene ya muradi. Riria muunda jumwe jwa TIST jwatemwa miti yonthe, juretagira thina amemba boonthe ba TIST. Na njira ya kioneria, Riria ngugi yategerwe ni ategi kuuma oome ya TIST jabo verifiers, na boone kuri muunda miti itemi yonthe, Nonka bathuganagia ati nibu miunda yonthe itemi miti. Guku ni kuuga tugetikirwa kwendia tonnes inkai muno na twone mbeba inkai kiri arimi bau bangi bonthe.

*Uria bukathithia riria mumemba wa gakundi gaku abanga gutema miti ya TIST.*

1. Araniria nabo uboonie thina ya gutema miti yonthe. Baririkanie ati kethira bari na ubatu wa mbeba na njira ya kwendia nku kana mbao ati TIST ni itikagiria gutema mpang’i jia miti na gutemi imwe nikenda kua ingi nafasi imbega ya gukura.
2. Bakabanga nonkinya bateme, tigiira ukumenyithia clasta servant na nkinya atongerira ba clasta.
3. Kiri mucemano jwa clasta, araniriani na amemba bangi mantu jaja ja utemi wa miti.

4. Cemanina na amemba bangi ba gakundi bwoone uria bugacokia tonne iria ciurite. No buthithie uuna njira ya kwongeeera miti ingi miundene yenu. Bukethira butina miunda ya kwongeeera miti, nobwongeeere amemba bangi kiri gakundi kenu. Amemba ba beeru benkiongerwe aki riria buri na amemba ba nini nthiguru ya ikumi na bairi.
5. Riria miti ya temwa, tigiira clasta servant akwija na atara miti ringi ya gakundi kenu.
6. Nibwega kwiga rekodi ya uria miti iria yakethirwe yatumikire na nimbi yathithirie. kwa ngerekano, kethira ga yatumikiri gwaka na ingi. Gukombika menya ni mbeba jiigana onire endia miti nikenda tukoona kiri kaboni ejaga kwona mbeba jiigana.

Ibwega turirikane ati miti yetu iriagwa aki niuntu bwa kaboni, niuntu iritaga ngugi ja store ya kaboni iria irutitwe rerani. Riria twatema miti ya TIST, nika tuthukagia “ikumbi” Niuntu bwa “nkugwatiira kaboni” nikio miti iriagwa.

# Mazingira Bora

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Newsletter March 2024

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**Kikuyu Version**

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



**Mucemanio wa Muhonia Cluster uria wahanikire mweri 14 / 02 / 2024.**

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## Kuhariria thumu wa mborera – bataraita ya kimerera.

**T**humu wa mborera ni bataraita ya kimerera iria iteithagia mimera gukura wega. Bataraita ino ni njega gukira ya nduka tondu I ya kimerera, ndiri thogora, ndithukagia mimera hamwe na maria maturigiciirie ta uria bataraita imwe cia nduka ciikaga. Kuri njira ngurani uria unghota gwithondekera thumu waku wa mborera. Hari njira imwe iria tuguthomithia iria ikoretwo igitumirwo ni andu aiangi. Niwega urie arimi aria angi muri mucemano wa cluster ni njira iria matumagira.

### Kuhariria guthondeka thumu:

1. Chagura handu haria ikwenja irima riaku ria mita inya kwa inya.
2. Theria handu hau.
3. Haririria kana uchimbe irima ria warie wa mita ithatu nginya inya na iriku wa mita imwe na nuthu.
4. Cokereria hamwe maragara maku moth eta mahuti, mabebe , maboco kana muhia na umatinangie tuchunji tunini.
5. Iki maragara macio irima-ini riaku kwa uriku wa nuthu mita.
6. Ongerera lita ithano cia muhu.
7. Thutha ucio, ongerera thumu wa ng'ombe kana mburi kana nguku kana nguruwe kwa uriku ta fiti imwe.
8. Ongerera maragara mangi inguru ta nuthu mita.
9. Ongerera lita ithano cia muhu.
10. Ongerera maragara maku nginya irima riaku rikirie kuiyura.
11. Wa muthia, humbura na tiiri nginya iria riiyure.
12. Hindi iria urahumbira na tiri, handa kamuti nginya kahutie irimariaku gitina.
13. Eterera gwa kahinda ka thiku 90 kana mieri itatu.
14. Gwa kahida gaaka korwo ugitiriria thumu waku maai maku ma giiko. Ungikorwo ni ukuhota ona mathugumo ma mahiu maku uitiririe.
15. Mathugumo ni mateithagia kuongera nitrogen.
16. Geria gutagiriria maai na muthugomo kwa mahinda makuhi.
17. Thutha wa thiku mirongo kenda, thumu waku ugakorwo uri muhiu.

Tumira kamuti karia uhandire ta githimi giaku. Hindi iria thumu waku wahia, wagiririrwo gukorwo wi muhiu na wacomora kamuti niwagirirwo ni kurata ndogo ya urugari.

### Uhuthiri wa thumu waku wa mborera:

Warikia kuhariria marima maku ma mbembe kana muhia kana o mimera iria ingi urahanda, ikira thumu muigana wa m oko maku o hari o irima. Eterera wone maciaro!





## Umenyereri wa Nursery.

### A. Kugitira tutambi.

Indo ta fungi, bacteria, viruses, nematodes na tutambi(muthua, thuthi na ingi) nocithukie mimera.

Murimu uria uikaine muno wa nathari ni damping off na urehagwo ni fungi. Utumaga mbegu cieme mbere ya kumera, miri ibuthe mbere ya kumera na mimeru ikorwo iri miceke na ikoma.

Dalili ni;

- Gucekeha na gukua kwa mumera.
- Kuhoha na kugua kwa mumera.
- Mahuti gucunjia rangi.
- Mimeru gukua.

Kugiririra murimu uyu.

- Gucunjia tiiri wa nathari thutha wa miaka 1-2. Kuhuthia tiiri noguteithie.
- Kwehutia mimeru iria ihotetwo na kumicina.
- Ndukahe mimeru maai maingi makiria.
- Tigirira maai nimarathertera.
- Gutigirira riera ni riingi.
- Kurimira maita maingi.
- Tiiri ndwagiriirwo gukorwo uri na unoru makiria. Uigananau wa tiiri na unoru niwagiriirwo ni kurumirirwo. Nyihia nitrogen na gwikira thumu.
- Tigirira utaganu ni muiganu mugundaini.
- Tigirira nathari ni theru hingo ciothe.

Mirimu noihotwo na kuhuthira dawa iria ciagiriire nadawa cia tutambi. Niwega kuhuthira dawa cia kiimereracia tutambi tondu cia duka cirri goro na nocithukie maria maturigicirre.

### B. Guceeha miri.

Garura mimeru rimwe hari wiki niguu muri wa itimu ndukaingire muno thin a niyagiriirwo ni gutinio. Muri mwega wa itimu uteithagia kugucia maai.

Riria mimeru irakura thutha wa mieri 3-4 9kuringana na muthemba wa miti na riera) miri yayo yambagirira gukura kuma nathi ya nathari.

Miri ino yagiriirwo nigutinio o thutha wa mieri 1-2 na kahu. Ririkana umenyereeri niwa bata riria uroya mikebe ya miti niguu ndugathukie miri.

Njira ingi, oya nathari na igurunjira iria igiragirira miri gutontya tiiriini na kumitina gugakorwo kuri kuhuthu.

### C. Kuhe maai, kurimira na kuhe kiiruru

- Tunyamu twa kuhe maai twagiriirwo ni kunyitithanio na ndoo ya kuhe maai niguu tiiri ndugakuu ni maai.
- Nouhuthire mukebe muture marima.
- Menyerera ndukahe maai maingi kana manini, makiria 20lts har mimeru 1000. Ungihe maai maingi niukunina mimeru hinya na ugucirire tutambi na fungus. Dalili imwe ya gukwonia ati niurahe maai maingi ni mareru.
- He maai o rucini na hwaiini kungihoteka.
- Tiiri uri na muthanga muingi wagiriirwo niguitiririo maai maingi.
- Ikira maai mumeraini na ti mahutiini.
- Itirira maai kahora niguu maingire tiiriini wega.
- Menyerera ndugathukie miri riria urarimira.
- Ndukarimire riria mahinda mathire muno, kurimira k=ni kwa bata tondu riria niricindanagira maai na riuu na mimeru yaku.
- Mimeru ingi niibataraga kiiruru – tigirira niwegera kiiruru na mahuti.
- Hingo ya mbura, humberu mimeru na mahuti ma miti kana nyeki. Mimeru niyagiriirwo kwehutio kuma rungu rwa miti niguu miti ya kuma mahutiini ma miti ndigathukie mimeru yaku.
- Irigira nathari yaku niguu mimeru ndigathukio ni mahiu kana ciana cigithaka.
- Reke mimeru ikure nginya 30cm mbere ya guthamia. Njira ino noyoe kuma mieri 1-6. Thoma ugoro wa guthamia mimeru. Na ningi wehutie kiiruru kahiondaini gaka.



## Miti niyagirithagia maria maturigiciirie.

**T**hiini wa TIST, tuhandaga miti niguu tukorwo thoko-ini ya carbon na tugie na marihi

kumana na wendia wa carbon. Na ningi, mawega mangi ma miti nimaingi!

Maya ni mamwe ma mawega.

Miti niituteithagia kwagirithia maundu ma ki-nduire. Niituheaga kwiikaria na kuhe nyamu wihitho na micii ohamwe na irio ciacio. kugitira biodiversity migunda-ini iito na gutuma thi yothe yongerere umithio na kwagirithia riera.

Miti niyagirithagia riera na kunyihia uthukangia wario. Miti niyehutagia carbon hawe na indo ingi ta Sulfur dioxide, ozonena nitrogen oxide. Naithui tukagia na oxygen njega niundu wa miturire miega.

Uria migunda iitu iikarite niwagirithagio ni miti iitu na miturire igathakara. Uthaka

wa iti niukoragwo uri mwega na tukagia na mbica njega ya migunda iitu.

Miti niiroraga riera na kunyihia riuu, ruhuhona mbura. Miti noigitire kumana na muiyuro wa maai, ituika, na ugwati wa ruhuho. Miti niitumaga gutikagie na ng'aragu nitondu nihotithagia maai gutonya tiiri-ini wega handu ha umaruta.

Miti niitumaga tiiri ndugakuu ni maai. Miri yayo niyumagiriria tiiri na kuhe unoru. Tiiri munoru niutumaga irio cikure na njira njega.

Miti niinyihagia inegene. Inegene norinyihe na njira nene unghanda miti.

Kugia na maai matheru nogukinyirike riria twahanda miti ya ki-nduire. Mititu na miti ingi niitheragia maai na kumacunga. Riria uteng'eru wa maai wanyiha maai nimatheraga. Kiiruru kia miti nigiteithagia njuui kumana na kuhua.



# Mahinda ma kuhariria mugunda waku niundu wa Kilimo Hai.

**A**rimi aria marimite na Kilimo Hai mari na uira ati magetha ni maingi gukira urimi wa ki-nduire na makiria riria mbura iri nini.

Marima nimateithagia maai ma mbura kuigika na guteithia mimera na njira iria njega.

Uhorro uyu niuguguteithia gutaukuo wega uria ungiteithika na Kilimo Hai. Kurumirira mitaratara miega niguguguteithia kugia na magetha mega.

## Kuhariria mugunda waku.

- Hariria mugunda waku mweri umwe mbere ya mbura yurite.
- Tuguta mahuti maria mari mugunda-ini, ndukarime.
- Enja marima ma rectangle. Magiriirwo nigukorwo na warii wa 15cm na uraihu wa 35cm na uriku wa 15cm na umataganie na utaganu wa 75cm.
- Ikira thumu na tiiri wa iguru na utukanie. Ikira mutukanio ucio na utigie 5cm.

## Kuhanda

- riria wahanda mbembe(matuku 1-2 mbere ya mbura yurite), handa mbegu 4 irimaini.
- Wahanda muhia, handa 5-6 irima-ini thutha wa mbura kuura.

- Humbira mbegu na tiiri muigana wa 2.5cm.
- Haria irima ritaiyurite hateithagiriria kuiga maai.

Ndurabatara gutumira fertilizer ukihuthira Kilimo Hai. Mimera yaku no igukura wega ona hatari fertilizer ungikira thumu muiganu.

## Kurimira.

- Rirmira irimaini maita maingi.
- Ndukarimir mugunda wothe. Nja ya irima, mimera no ihumbiretiiri, niguo kuuiga uri mugunyu. Rimira hakuhi na irima. Huthira ruhiu kwehuthia riia riria riri gatagati-ini ka mimera. Rimira maita maingi niguo riia ritikaingihe irima-ini.
- Mahuti ma riia riria watuguta matige mugunda-ini. Njira ino niyongagirira unoru tiiri-ini.

## Maundu ma thutha wa kugetha.

- Ndugacine mahuti mugunda thutha wa magetha. Tiga mahuti macio mugunfa-ini niguo manorie tiiri. Matigari ma mimera nomathondeke thumu.
- Ndukariithie mahiu mugunda-ini, ririkana nitugakena tugikunguira magetha maku na guthoma kuma kuri wee.

Ambiriria wira riu.



## TIST: Maundu gutheria miti kwegga na uria ngurubu yanyu nini ingicokia tani iria ciurite.

**M**aundu mamwe maria mathukagia mutaburuko wa carbon ni gutheria miti ya muthemba umwe. Ithui ta TIST, gutheria miti ni guthukagia program cia ngurubu nini. Thindi iria gikundi gia TIST kiagetha miti, ithukagia TIST yothe! Kwa muhiano, hindi iria gwatarwo ni andu anja, na makore gikundi kimwe ni githeretie miti, atari meciragia ati guothe kuhana oro ugwo. Kwa uguwo tugetikirio kwendia carbon nini na macungiriirio arimi aria angi othe magakorwo na wendia munini.

### Uria ungika riria mumemba wa ngurubu nini eciria gutema miti ya TIST.

1. Araniria nao mathina ma gutema miti kumina. Maririkanie kana mari na bata na mbecha iria mendetie ngu kana mbau, TIST ni metikiritie kuhurura miti niundu wa ngu.
2. Manguuga ati no nginya matherie githaka, menyithia aruti wira a clasta na atongoria a clasta.
3. Mucemano-ini wa clasta, araniriai na arimi aria angi ugoro-ini ucio.

4. Haririai mucemano na amemba a ngurubu na kwaririria uria mungihota kwongerera tani icio ciurite. No mwike uguo na kwongerera uhandi wa miti migunda-ini yanyu. Angikorwo mutiri na handu ha kuhanda miti, aririai arimi angi niguo matuika a ngurubu yanyu nini. Amemba eru ni mokire angikorwo ngurubu yanyu nini iri na thi ya amemba 12.

5. Oro hau thutha wa gutheria githaka, ita muruti wira wa clasta oke atare miti ya ngurubu nini yanyu.

6. Ni wega kwandika, wira uria miti yagethwo irekwo nginya ndagika ya muico. Kwa muhiano, kana irarutwo mbau cia gwaka etc. Ungihota kumenya kiria mundu aramukira kumanagia hari miti, niguteithia kuringithania na fainda ya oro mwaka iria mangiramukirire.

Ni tubatie kuririkana at miti itu irihagwo niundu wa carbon, tondu irutaga wira ta thitoo ya carbon iria igucagia kuma kuri riera. Hindi iria twatema miti ya TIST, tuthukagia “thitoo”. Ni tondu wa “thitoo niyo igaga carbon tones” miti irihagwo niundu wa gitumi giki.

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**Kiswahili Version**

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**Mkutano wa Muhonia Cluster uliofanyika tarehe 14 / 02 / 2024.**

- Ndani ya Gazetti**
- ✓ Kutengeneza mbolea kutokana na mimea – mbolea ya kiasili. Uku. 2
  - ✓ Utunzaji wa vitalu. Uku. 3
  - ✓ Miti huboresha mazingira kwa ajili yetu sote. Uku. 4
  - ✓ Ni wakati wa kutayarisha shamba lako la Kilimo hai. Uku. 5
  - ✓ TIST: Mwongozo wa Kata Wazi na Jinsi Kikundi chako Kidogo na upate Tani zilizopotea. Uku. 6



## **Kutengeneza mbolea kutokana na mimea – mbolea ya kiasili.**

**M**boleo ya majani ni mbolea ya kiasilia ya kusaidia mimea yako kukua. Ni bora zaidi ya mbolea za viwanda kwani ni ya kiasili na haina athari za kuumiza mimea na mazingira. Kuna njia nyingi za kutengeneza mbolea, lakini njia ifuatayo imekuwa saidifu katika baadhi ya maeneo. Uliza majirani zako katika cluster yako ni gani imewaonekana.

### **Utayarishaji wa mbolea:**

- 1) Chagua eneo lenye upana wa mita nne na urefu wa mita nne la kuchimba shimo lako la taka.
- 2) Fagia sehemu hiyo.
- 3) Chimba shimo la mduara lenye upana wa mita tatu au nne na mita moja na nusu kina.
- 4) Kusanya masala yote ya mimea uliyo nayo na uyakate kuwa sehemu ndogo ndogo ( kwa mfano majani na mashina ya mahindi, mtama, maharagwe).
- 5) Weka masala haya ya mimea katika shimo ilo hadi kina cha nusu mita.
- 6) Halafu ongeza lita tano za jivu
- 7) Halafu uongeze centimita thelathini (ama kiwango kilichopo) za kinyesi cha mifugo (kwa mfano kinyesi cha nguruwe, ng'ombe, mbuzi au kuku).
- 8) Ongeza safu nyingine ya majani ya mimea na mashina (nusu mita).
- 9) Ongeza lita zingine tano za jivu.

- 10) Ongeza majani na mashina tena hadi shimo likaribie kujaa.
- 11) Hatimaye, ongeza safu ya udongo hadi shimo lijae.
- 12) Unapokuwa ukiweka udongo shimoni, ingiza fimbo ndefu katikati mwa shimo hadi ifike chini ya shimo.
- 13) Liache shimo la taka kwa miezi mitatu (siku tisini).
- 14) Katika kipindi hiki tumia maji yako machafu kuweka katika shimo hili. Kwa mfano, baada ya kuosha nguo au nyumba, yamwage maji uliyotumia juu ya shimo. Ikiwa una mifugo waweza pia kumwaga mikojo ya mifugo juu ya shimo.
- 15) Jambo hili litaongeza naitrojeni kwa mboleo yako.
- 16) Jaribu kuweka maji kila siku kwa njia hii, ama wakati maji yapo.
- 17) Baada ya siku tisini mbolea itakuwa tayari.

Tumia fimbo kama kipima joto – mbolea inapokuwa tayari lazima iwe na joto na waweza kuona mvuke ukitoka kwa fimbo hiyo baada ya kuitoa.

### **Matumizi ya mbolea hii:**

Ukishachimba mashimo yako ya kupanda mahindi, mtama au mimea mingine, ongeza mboleo kiwango kinachotoshea katika kiganja chako katika kila shimo. Angalia ili kujua matokeo!





## Utunzaji wa vitalu.

### A. Kudhibiti wadudu.

Viumbe hai kama fungi, bakteria, virusi, minyoo na wadudu (kwa mfano mchwa, vikugu) waweza kudhuru miche.

Ugonjwa aina moja unaopatikana sana katika vitalu huitwa 'damping off' na husababishwa na fungi. Ugonjwa huu husababisha mbegu kuoza kabla ya kuota, mizizi kuoza kabla ya mche kutokezea na mche kuwa mwembambe na kuvunjika.

Dalili za kawaida za ugonjwa huu ni:

- Shina hupunguza ukubwa wake na kufa linapofikia ardhi.
- Mche kunyauka nakuanguka.
- Majani yanageuka manjano.
- Mche unakufa mwishowe.

Dhibiti ugonjwa huu kwa:

- Kubadilisha udongo ulio kitaluni kila mwaka au miaka miwili. Kutenganisha udongo pia husaidi.
- Kutoa miche iliyoathirika na kuchoma mara moja.
- Kuepuka kumwagia maji zaidi ya yanayotakikana.
- Kuhakikisha maji hayafuriki.
- Kuhakikisha hewa inafikia miti vizuri.
- Kutoa magugu vizuri na kwa wakati mzuri.
- Udongo usiwe na rutuba nyingi sana. Fuatilia viwango vya kuchanganya vinavyofaa. Punguza kiwango cha naitorjeni kwa kupunguza mbolea.
- Kunafaa kuwa na nafasi tosha kati ya miche ili kuepuka mfinyano.
- Hakikisha kitalu kipo safi kila wakati.

Magonjwa yaweza kudhibitiwa kwa utumizi unaofaa wa kemikali na dawa za wadudu. Ni bora zaidi kutumia dawa zilizo za kiasili kwani za kemikali ni ghali na zaweza kudhuru mazingira kwa mfano;

- Matumizi ya jivu
- Kuhakikisha kitalu kipo safi ili kuzuia kuwahimiza wadudu kuja.

### B. Kupogoa mizizi.

Hamisha miche mara moja kila wiki ili mizizi mirefu isije ikaingia ardhini na kuhitaji kukatwa. Mizizi mirefu husaidia miti kutafuta maji baada ya kuihamishia shambani.

Miche inapoanza kumea katika mikebe baada ya miezi mitatu au mine (kulingana na aina na tabia nchi) mizizi huanza kukua na kutokea chini ya mikebe. Mizizi hii yafaa kukatwa kila miezi miwili au mmoja kwa kisu. Kumbuka kuwa mwangalifu unapoinua mikebe usije ukadhuru mizizi iliyo change.

Badala ya haya waweza kujaribu kitalu kilichoinuliwa ambacho hupunguza haja ya kupogoa mizizi kwani mizizi hujikata yenyewe.

### C. Kunyunyizia maji, kutoa magugu na kivuli.

- Kinyunyizi lazima kishikanishwa na mikebe ya kunyunyizia maji ili kisije kikasababisha mmomonyoko wa udongo.
- Waweza kutumia mkebe ulio na mashimo.
- Jiepushe na kunyunyizia maji mengi au kidogo, nyunyiza lita ishirini kwa miche elfu moja. Maji zaidi ya yanayohitajika hufanya miche kuwa nyoofu na kuvuta wadudu na fungi. Dalili moja ya maji zaidi ya yanayohitajika ni kuwepo kwa safu nyembamba ya mwani jua ya udongo.
- Nyunyizia kila asubuhi na jioni iwezekanapo.
- Udongo wenye mchanga utahitaji maji zaidi ya udongo unaoshikana.
- Mwaga maji udongoni, si kwa majani
- Nyunyizia pole pole ili maji yaingie udongoni.
- Kuwa mwangalifu usidhuru mizizi unapotoa magugu.
- Usiache magugu kwa muda mrefu. Kutoa magugu ni muhimu kwani magugu humea na kushindania mwangaza, maji na virutubisho.
- Baadhi ya mbegu huhitaji kivuli – hakikisha umetengeneza kivuli.
- Wakati wa mvua, funikia miche ukitumia nyasi kavu. Miche yafaa kutolewa chini ya miti ili maji yasiangukie miche na kuidhuru.
- Tengeneza ua ukizunguka kitalu ili kulinda kutokana na mifugo na watoto wanaocheza.
- Lache miche imee hadi centimita thelathini kabla ya kuihamisha shambani. Hili laweza kuchukua mwezi mmoja au ata hadi miezi sita. Angalia maelezo kuhusu kuhamisha miche. Pia toa kivuli wakati huu.



## **Miti huboresha mazingira kwa ajili yetu sote.**

**K**atika TIST, sisi hupanda miti ili kujiingiza katika soko la hewa na kupata mapato kutokana na kuuza hewa hii. Hata hivyo, faida zingine za miti ni kubwa!

Zifuatazo ni faida chache ambazo sisi (pamoja na dunia yote) hufurahia:

- Miti hutumika kama makazi asili ya kusaidia aina nyingi za mimea na wanyama. Hupeana faragha na usalama kwa wanyama wa pori wanaotafuta makazi mitini na huwapa chakula. Kulinda bionuwai au viumbe hai hufanya mashamba yetu na sayari yetu kuwa yenye uzalishaji zaidi na pingamizi dhidi ya mabadiliko ya tabianchi (hali ya anga ya muda mrefu) na changamoto nyinginezo.
- Miti huboresha hewa na hupunguza uchafuzi wa hatari. Miti hutoa hewa ya kaboni ya ziada na vichafuzi vya hewa kama dioksidi sulfuri, ozoni na naitrojini yenye oksidi. Kurudisha, hutupa oksijeni inayohitajika kuishi.
- Ubora unaoonekana wa ardhi pia unaboreka kwa kupanda miti ambayo, inaboresha maisha. Rangi ya kijani ya miti huongeza rangi kwa ardhi na kuongeza urembo wa kipicha wa mazingira.
- Miti hudhibiti tabianchi kwa njia ya kupunguza athari za jua, upepo na mvua. Yaweza kusaidia kuzuia mafuriko kali, miporomoka ya ardhi, uharibifu wa upepo. Miti hupunguza madhara ya mafuriko kwa kuruhusu maji ya mvua kuingia udongoni badala ya kupita juu yake.
- Miti hupunguza mmomonyoko wa udongo. Mizizi yake hushika udongo ambao badalayake hungebebwa wakati wa dhoruba za mvua na mafuriko. Miti pia husaidia kuboresha rotuba ya udongo. Udongo wenye rotuba huhamisha virutubisho hadi kwa chakula, jambo ambalo huchangia kwa afya ya binadamu.
- Miti ni mizuri katika kunyonya sauti. Uchafuzi wa kelele waweza kupunguzwa sana kwa kupanda miti mingine na mingine.
- Mahitaji ya maji safi ya kunywa yaweza kukamilishwa kwa njia ya kupanda miti ya kiasili. Misitu na mimea hupunguza kasi ya maji ya mvua na huyachuja yanapoingia udongoni. Yanapopunguzwa kasi, maji ya mvua huingia ardhini kujaza vyanzo vya maji vilivyo chini ya maji na ambavyo tunategemea ili kuishi. Miti pia huipa mito kivuli, na kuyaacha maji kukaa baridi na kwa hivyo kupunguza kasi ya kupotea kwa maji kwa njia ya uvukizi.



# Ni wakati wa kutayarisha shamba lako la Kilimo hai.

**W**ana TIST katika vikundi vidogo ambao wamelima kwa kutumia njia ya Kilimo hai wameshuhudia kuwa ukulima bora una vuno bora na la kuaminika kuliko ukulima wa kawaida, san asana wakati mvua haitoshi.

Mashimo husaidia kushika mvua wowote unaonyesha na kuyawezesha haya maji kupatikana kwa mmea.

Makala haya yatakusaidia kuelewa zaidi kuhusu jinsi ya kujaribu kilimo hai. Kufuatilia mienendo bora ifuatayo kutakusaidia kupata mavuno bora zaidi msimu unaokuja.

## **Kutayarisha shamba.**

Tayarisha shamba lako angalau mwezi mmoja kabla ya mvua.

- Ondoa magugu na vichaka kutoka shamba lako. Usilime.
- Tayarisha mashimo yako ya umbo la mstatili. Yapaswa kuwa na upana wa sentimeta kumi na tano, urefu wa sentimeta thelathini na tano na kina cha sentimeta kumi na tano. Nafasi kutoka shimo hadi lingine iwe sentimeta sabini na tano.
- Chukua mbolea na udongo wa juu na uchanganyishe. Jaza shimo kwa huu mchanganyiko hadi sentimeta tano chini ya ardhi ya kawaida.

## **Kupanda.**

- Unapopanda mbegu ya mahindi (Siku moja au mbili kabla ya mvua), panda mbegu nne kuvuka shimo.
- Kama unapanda wimbi, panda mbegu tano au sita katika kila mwisho wa shimo la kupanda baada ya mvua tosha.

- Funika mbegu kwakutumia mchanganyiko wa udongo na mbolea. Baada ya haya udongo katika shimo uwe sentimeta mbili na nusu chini ya ardhi ya kawaida.
- Nafasi iliyopo juu ya shimo itasaidia maji kufikia mimea mvua ijapo.
- Hauhitaji kutumia mbolea za viwandani katika shamba lako la kilimo hai. Mimea yako itafanya vizuri hata bila ya mbolea za viwandani.

## **Kuondoa magugu.**

- Ondoa magugu kuzunguka mashimo mara kwa mara.
- Usipalilie shamba lote. Nje ya mashimo, mimea yaweza kufunika udongo, huku ikiuweka baridi na kuuzuia kumomonyeshwa na mvua au upepo. Tumia panga kutoa magugu katikati ya mistari au katika nafasi iliyopo kati ya mashimo. Palilia mara kwa mara kuzuia magugu kuzaa na kuenea mashimoni.
- Yawache mabaki ya magugu shambani ili yaoze. Haya yatasaidia kuongeza rutuba ya udongo.

## **Unayofaa kufanya baada ya kuvuna.**

- Usiyachome mabaki ya shamba lako. Yawache udongoni ili yaongeze rutuba ya udongo. Mabaki ya mimea yaweza pia kutumiwa kutengeneza mbolea.
- Usiwalishe ng'ombe shambani lako. Tafadhali kumbuka, tutafurahi kusherehekea vuno lako kubwa na kuijua mienendo bora katika eneo lako kupitia jarida hili pamoja na katika mkutano wako wa cluster.

Anza kufanya kazi sasa!



## **TIST: Mwongozo wa Kata Wazi na Jinsi Kikundi chako Kidogo na upate Tani zilizopotea.**

**M**ojawapo ya hatari kubwa katika miradi ya uondoaji kaboni ambayo inahusisha upandaji miti ni ukatwaji wa idadi kubwa ya miti. Katika TIST, kukata wazi kunaumiza Vikundi vyote Vidogo kwenye programu. Wakati TIST Grove moja inapovunwa, inadhuru TIST yote! Kwa mfano, tunapokaguliwa na Wathibitishaji wa nje, na wakapata Grove imekatwa wazi, wathibitishaji huhitimisha kuwa hii inaweza kuwa hivyo kila mahali. Hii ina maana kwamba tutaruhusiwa kuuza tani kidogo na hivyo kupunguza mauzo kwa wakulima wengine.

### **Nini cha kufanya wakati mwanachama wa Kikundi chako Kidogo anaamua kukata Miti ya TIST.**

1. Zungumza nao kuhusu hatari ya Kukata-Wazi. Wakumbushe kama wanahitaji pesa kutokana na uuzaji wa kuni au mbao, TIST inawaruhusu wakulima kupunguza miti yao kwa uendelevu au kukatia matawi kwa ajili ya kuni.
2. Iwapo watasisitiza kukata kata wazi, wajulishe watumishi wako wa Nguzo na viongozi wa Nguzo.
3. Katika mkutano wa Nguzo, tafadhali fanya majadiliano na wakulima wengine kuhusu suala hilo
4. Itisha mkutano wa wanachama wengine wa Vikundi vyetu na mjadili jinsi mtakavyobadilisha tani zilizopotea. Unaweza kufanya hivyo kwa kupanda miti ya ziada katika mashamba yako. Ikiwa huna nafasi ya kupanda miti zaidi, unaweza kuwaalika wanachama wapya kujiunga na Kikundi chako Kidogo. Wanachama wapya wanaweza tu kualikwa wakati Small yako ina chini ya wanachama 12.
5. Mara tu baada ya kuweka wazi, tafadhali alika Mtumishi wako wa Kundi aje kuhesabu tena Kikundi chako Kidogo.
6. Ni muhimu kurekodi jinsi miti iliyovunwa ilitibiwa hadi bidhaa ya mwisho. Kwa mfano, kama walizoea vifaa vya ujenzi nk. Ukiweza kujua ni kiasi gani mtu huyo alipokea kwa miti, itasaidia kulinganisha na faida ya kila mwaka ambayo angepokea.

Sote tunapaswa kukumbuka kwamba miti yetu hulipwa tu kwa ajili ya kaboni, kwa sababu hufanya kama duka la kaboni ambayo inachukua kutoka kwenye anga. Tunapokata miti ya TIST, tunaharibu “duka” hilo. Ni kwa sababu ya “huduma za uhifadhi zinazoshikilia tani za kaboni” miti hulipwa kwa jukumu hilo.

# Mazingira Bora

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Newsletter March 2024

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www.tist.org

**Kikamba Version**

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



**Mkutano wa Muhonia Cluster uliofanyika tarehe 14 / 02 / 2024.**

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## **Kuseuvya vuu wa yiima - Vuu ute na kemikoo.**

**V**uu wa yiima ni vuu useuvitw'e vate ndawa na mimea kuma muundani na nutumaa mimea yiana nesa. Ni museo kwi vuu wa kuua ula wina kemikoo nundu niwakuma mniemani na niwamana ti wakuuu na nwanangaa liu kana mawithyululuko ta vuu / vatalisa wa kuua. Ve nzia mbingi sya useuvya vuu uyu, lakini ve nzia imwe nzeango kwi syothe isioni imwe. Kulya mutui waku wa ngwatanio yenyu kila kithukumite nesa kwoo.

### **useuvya vuu wa yiima.**

- 1) Kusakua kisio kya matambya 4 x 4m na kwisa yiima.
- 2) Enga kisio.
- 3) Inza yiima uthathau wa 3 - 4m na 1.5uliku.
- 4) Kolany'a matialyo ma mavemba, muvya, mavoso na uutilanga tulungu tuniini.
- 5) Ikia yiimani itumie uliku wa 0.5m.
- 6) Ikia muu wa lita itano.
- 7) Ongela kyaa kya indo ethiwa kivo kya uliku wa 30cm ethiwa vaii oundu kiana (uyu ni vuu wa nguluwe, ng'ombe, mbui kana nguku).
- 8) Ongela matu na makusa uliku ungi wa 0.5m.
- 9) Ikia muu ungi wa lita itano.

- 10) Ongela matu na makusa withie yiima notayausua.
- 11) Ususya yiima na muthanga.
- 12) Uyususya yiima ikia muti muasa kati withie utinite yiimani ungu.
- 13) Eka yiima yiu yiyiue vandu va myai itatu kana mithenya miongo kenda.
- 14) Ivindani yii yonthe osaa kiw'u kila kina kiko uketa vo ngelekany'o kila wavua nakyo kana kuthambya miio. Ethiwa wina maumao ma indo no wite vo.
- 15) Kii nikyongelaanzeve ya Nitrogen nthini wa vuu.
- 16) Tata navinya ungithye yima yii kila muthenya kwa nzia ila utonya.
- 17) Itina wa mithenya miongo keenda vuu wiithiwa wi tayali.

Tumia muti uyu wikati ta kithimi kya uvyuvu. Vuu wasuva ukeethiwa wimuvyu na nowone muti uuyu waumya uitoa.

### **Utumii wa Vuu wa yiima.**

wenza maima ma uvanda mbemba, muvya kana o mimea ingi ikia ngundi imwe ya vuu kila yiimani.

Syaiisya wone kila ukwata kuma vo!





## **Kusuvia Kivuoio.**

### **A. Kusuvia uwau na miimu.**

Tusamu ta fungi, bacterial, virus, mithowe na tusamu ta (Nduti, Muthwa, syingolondo) nitonya kwananga tumime.

Mowau amwe makwataa mbeu yi kivuioni nita uthithu wina uundu ula uetae fungi. li nitumaa mimea yoa mbee wa itanama kana mii ikoa mbee wa munguthe kumila na ethiwa mumea wii unambiia umea uimosi na ukw'a.

Mawonany'o amwe ma mowau aya nita:

- Kwosa kwa muthamba vaaya muthangani.
- Kuvova na kuvaluka kwa kamumea.
- Matu kutwika yelo.
- Kukwa kwa kamumea.

Undu utonya usiia uundu:-

- Kusesya muthanga wa kivuoio kila itina wa mwaka kana miaka ili kila kietae kulekana kwa muthanga.
- Kuvetanga tumime tula twakwatwa ni uwau uyu na kutuvivya.
- Kunginya na kithimo vate kuvitukya kiw'u uingithya.
- Ikiithya kiw'u nikiuthi kinatumana.
- Eka muthanga withiwe ulekanitye nzeve ivite nesa.
- Ima nesa na ivindani yila yaile.
- Muthanga ndukethiwe wi munou kuvita kiasi. Kithimo kya muthanga kwavuu nikyaile uatiwa.
- Nivaile ithiwa na utaanu waile katikati wa mimea.
- Ikiithya kivuoio nikitheu ivinda yonthe.

Mowau ingi mnomasiwe kwa kutumi ndawa nesa. Ni useo kutumia nzia sya kikamba kwi kutumia ndawa ikwananga mawithyululuko ngelekany'o

- Tumia Muu.
- Ikiithya kivuoio ni kiime kiina yia nikana withie mututu ndina liu kwoou ndikuka kuete uwau.

### **B. Kusea mii.**

Sokya tumime twaku kwa kyumwa imwe nikana mwii wa kuthi na nthi ndukangwate uendete na nthi na indi nikana usee mii ila yaasava muno . kii kitetheeasya miti kukwata kiw'u yathamwa kuma kivuioni na kutwawa muundani.

Yila tumime tuu tuendee kumea itina wa myai 3-4 (kulingana na muvai) mii yatwo niyambiia kumea na kumila ungu mathanguni ala ivanditwe. Mii ino niyaile utilwa kila mwai kuvika myai ili na kavyu. Manya kana niwaile usuvia yila ukukiklya mathangu aya kana mikeve/mbisu ila uviiite nthini ndukanange tumiti na mii. Ethywa ti uu tata utumie kivuoio kya kitanda (Sisya uniti 4) kila nikiolaa vata wa kusea mii nundu ikitaa uniina.

### **C. Kungithya, Kuimia na Kwikia muunyi.**

- Kikonyo kina mavuthi nikuyalie utumiwa mkungithyani nikana muthanga ndukakuwe.
- Ethywa ti uu no utumie mukeve wina maima kungithya kivuoio.
- Ndukendeew'e ni kungithya na kiw'u kingi kuvituka kana kungithya na kiw'u kinini muno, tumia ta lita 20 kungithya tumime ta 1000. Kiw'u kingi nikietae undu ula uetae Fungus na kwongela tusamu tula twanangaa mimea. Wonany'o umwe wa kungithya kuvita kiasi ni kindiiu muthangani.
- Ngithya kila kwakya na mawioo vatonyeka.
- Muthanga wa thanganthi niwendaa kiw'u kingi kwi ilivi.
- Oneleelya kiw'u muthangani no ti matuni.
- Ngithya mbola nikana kiw'u kinywe muthangani.
- Sisya ndukanange mii yila ukuimia.
- Ndukeseumia yia yikalite, imia oundu yongelekete ute kuekeea yikambiie uania kiw'u kyeni, na unou wa muthanga.
- Mbeu imwe nisyendaa kwikiwa muunyi - kwoo ikia matambya makusyikiia muunyi ethwa ve vata
- Yila kwina munyao vwika muthanga wa kivuoio na nyeki na ethywa ni meu ikia kitaalu kuete muunyi. Ethywa syi matanguni kana mbisuni/mikeve kua utwa ungu wa muti.
- Ili kivuoio mbee wa kukua kuthamya tumime. nitonya ukua mwai kana myai ili kivuioni. wavikiia uthamya ingi vata muunyi ivindani yii.



## Miti niseuvasya mawithyululuko kwitu ithyoothe.

**T**hini wa TIST nituvanaa miti nikana twithiwe sokoni wa nzeve itavisaa na kuta na kuseuvya mbesa. onakau moseo ma miti ikwitu nimaingi. Vaa ve amwe kati wa moseo asu tukwataa kuma miti ino onakau tumivandaa ta ya uta nzeve itavisaa (carbon market).

Moseo aa nitutaniaa vamwe na nthi yonthe:

- Miti yithiawa yi mawikalo ma wanake, na useo mbee nundu niyithiawa yi wikalo wa nyamu na kuinenge liu. Kusuvia uvathukanu nikutumaa miunda yitu na ilembeta yitu yithiwa yi inou na kutune liu na kwailya movinduku ma nzeve.
- Miti niseuvasya nzeve ila tuvevaa kwa kuola kiko kila kilikaa nzeveni, kaingi miti niyumasya nzeve ila itavisaa kuma nzeveni na nzeve ingi thuku ta Nitrogen Oxide, Sulfur dioxide na Ozone. itina wa miti kutumia nzeve ithi thuku nitunengae nzeve nzeo ya kuveva (Oxygen) ila yendekaa kwikala thayu.
- Miti nitumaa vandu voneka vevailu na ve vavata na kwailya mathayu ala mevo

na niyongelaa langi kwa nthi na kumyanakavya.

- Miti nietae movinduku ma nzeve na kuola uvyuvu kana uthithu ta sua, mbua, nzeve. Nitetheeasya kusuvia kiw'u kingi kukua, na nzeve kwananga.
- Miti ni iolaa kukuwa kwa muthanga nundu mii yaw'o nitumaa muthanga na kuukwatany'a, kiw'u ukethia nikyaolwa uthangaau ula kiiendete naw'o. Kuete unou wa muthanga yila yita matu na moa na kunenge tusamu/tulinyu tula twikalaa muthangani kukwata liu na kwoou mundu nake akwata liu umwianie yila waima muthanga usu.
- Miti niolaa kineene.
- Miti niseuvasya kiw'u kwa kukithesya. mititu na miti ya kiene yavandwa niseuvasya kiw'u kwa kusiiia muthanga na kiko kukuiwa kula kiw'u kitwiikene kya kutumia. miti niyikiaa muunyi na kusiiia kiw'u kukuwa ni nzeve kwoou uynthia kivakuvi kwa mundu kwisa na kukitjumia.



## Ni ivinda ya kuseuvya miunda kwa nima ya kusuvia.

**T**ukundi tunini twa TIST tula twithiitwe tuitumia nzia ino ya nima ya kusuvia (CF) nimaendee na kukwata ngetha mbingi na nzeo kwi yila mana tumiaa nzia sya kitene sya nima ona yila mbua nini. Maima nimatetheeasya kutumaninia kiw'u yila mbua yaua kwoou uyithia kivakuvi kwa mimema. Ithanguu niyiukutwetheesya kuelewa na kumanya mbee iulu wa Kilimo hai. Kuatiia nzia ithi nikuukutetheesya kukwata ngetha nzeo mbua ino yukite.

### **Kuseuvya muunda.**

Seuvya muunda waku vainyiva mwai umwe mbee wa mbua kwambiia.

- Thesya kisio withie kiina yiia kana ikuthu. Ndukaime.
- Seuvya maima maku mema kona inya. Kila yimwe yaile ithiwa yina uthathau wa 15cm, uasa wa 35cm and uliku wa 15cm. Utaaniu wa maima waile ithiwa wi 75cm.
- Osa vuu na muthanga wa iulu uvulany'e na uyususya yiima yii ta 5cm na muvulany'o usu.

### **Kuvanda.**

- Yila ukuvanda mbemba (mithenya ili ka umwe mbee wa mbua kwambiia) vanda matonya ana muthangani usu ikelene ma mbemba.
- Ethiwa wi vanda muvya vanda matonya 5-6 kithyululu mwisoni wa yiima itina wa mbua kua nesa.
- Vwika mbeu na muthanga muvulanye na vuu uliku wa 2.5cm itina wa uu yiima yitiwa yina mwanya wa 2.5cm.

- Mwanja uyu watiwa niw'o utetheeasya kiw'u kuvikia mbeu/ngii yila mbua yaua.
- Tilasima utumie mbolea ya kuaa (fertilizer) yila ukwika uimi wa kusuvia muundani waku. mime yaku noikwika nesa watumia vuu wa yiima.

### **Kuimia.**

- ima uthyululukite maima kaingi
- Ndukaime kisio kiu kyothe savali umwe vuu. Nza wa maima, mimea noivwike muthanga na kutetheesya kuuthithya na kusiiia kukuwa kwa muthanga ni nzeve kana mbua. Ima tu vakuvi na yiima na yimani. Tumia kilovoo/kivanga kwenga yiia yila yi mwanjani ula uanitye maima. Ima kaingi kusiiia yiia kuvikia mimea .
- Tia mavuti aya na yiia moee kisioni kiu, nundu moa meendee na kuete unou wa muthanga.

### **Kuvutha Itina wa ngetha.**

- Ndukavivye matialyo/mavuti muundani. Ekana namo nundu ni unou wa muthanga, kana ukue ukamainde yiimani useuvya vuu/ mbolea.
- lilikana ndukaingiie indo muundani wamina ngetha.
- Kwa ndaia lilikana kana tukatana naku weethiwa na ngetha nzeo itina wa kwimanyisya na kuatiia nzia nzeo sya uimi wa kusuvia kwisila ithanguni yii na mbumbanoni sya ngwatanio yaku sya kila mwai.

Ambiia uthukuma oyu!



## **TIST: Mawalany'o iulu wa nguthu ya miti myenge/ mitemange na undu kakundi kenyu katonya ukwata ingi tani sya nzeve itavisaa ila mbau.**

Ivuso yimwe ithuku na yiumiasya mwolooto uu wa uta nzeve itavisaa ni miti kutemangwa kana kwengwa. Nthini wa TIST, kwenga miti nikuumiasya tukundi tunini tula twi walanioni uyu. Yila nguthu imwe ya miti yeengwa na kutemwa, ni iumiasya kakundi kala ke nthini wa TIST. Ingi yila nguthu ya miti ila iminite ulika nthini wa walanio wa TIST yeengwa kana yakethwa, kii nikiumiasya TIST!. Kwa ngelekanio, yila muthiani/muvitukithya kuma nza wooka na eethia vena nguthu ya miti myenge osaa undu uu ta uendee kila kisioni. Kii nikwasya yila twathi ndunyu uta tani sya nzeve itavisaa tutesaa tani nini na kwoou thooa uioleka kwa aimi onthe.

### **Nata tutonya kwika yila muimi umwe wa kakundi kanini weenga miti ya TIST.**

1. Kuneena na aimi iulu wa muisyo wa kwenga miti yonthe. Kumalilikania ethiwa ni mbesa mekwenda undu matonya uta ngi, ta aimi ma TIST mena mwanya wa kusea ngava sya miti kukwata ngu sya uta na undu matonya kwikalya miti yoo iimane vaita ona wa kuma kwa TIST.
2. Ethiwa amemba aya maikwenda kwiw'a meenda kwenga miti tavya muthukumi wenyu wa ngwatanio na atongoi mayo.
3. Yila kwina umwano wa ngwatanio, neenania na aimi ala ngi iulu wa undu uu.
4. Itai wumbano wa memba ala angi na ikundi na kuneenania undu mutonya kususya yanya yila yaetwe ni tani isu mwaasya. Nimutonya uvanda miti ingi kwongeleela ila mwinayo miundani kwenyu. Ethiwa muina vandu movanda miti ingi nomuete amemba eu kulinga kakundini kenyu. Amemba eu matonya ulika ethiwa kakundi kenyu kaina memba mavikite 12.
5. Omituki yila mwamanya kana ve umwe wenyu wengi kana ukethie miti ila yake itai muthukumi wa ngwatanio na muthuimi moke mavitukithye ingi nguthu ya miti ila itialile.
6. Ni undu wa vata kuandika undu miti ila ikethiwe itumikie kuvikka muthya. Kwa negelekanio, ethiwa itumikie kwa mwako etc. Ethiwa nimutonya umanya memba usu mbesa ila ukwatie kuta miti isu ni useo kusyaanisya na vaita wa kuaana ukwisaa ukwata kwa mwaka.

Nitwaile ulilikana kana miti yitu iivaaa nundu wa nzeve itavisaa(carbon) Nundu yithiawa ta ikumbi ya nzeve ino ila ikolanasya kuma mawithyululukoni. Yila twatema miti ya TIST, twithiawa twaananga makumbi, nundu vau nivo nzeve itavisaa itonya kwikala ta tanni na nikyo muivakwa kwikalya muti.

# Mazingira Bora

Not for sale

Newsletter March 2024

**tist** Growing Trees  
Growing Leaders

1. We are Honest
2. We are Accurate
3. We are Transparent
4. We are Servant to each other
5. We are Mutually Accountable to each other

www.tist.org

**Kipsigis Version**

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



**Mkutano wa Muhonia Cluster uliofanyika tarehe 14 / 02 / 2024.**

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## **Ketoo keturrek chebo minutik.**

**K**eturek ko toreti mising minutik kochok en ngungunyek. Ago kororonen amun motinye ngemet en rurutik ago nyumnyum kenyor ago motiye oliyet neo mising, motiye ngemet en agobo ltondab emet.

Miten anyun orinuwek chechang che kimuchi ketounen keturek en koborunet ne isibu ko kigoyomnda biik chechang temik. Otebenge en Kilasta ole kiboisioto biik alak.

### **Tounet ketoo kechob keturek.**

1. Lewen ole imuchi ichoben keturek (4m by 4m).
2. Itilil yoton.
3. Bal keringet netinye kokwoutik 3m - 4m - 1.5m kochut orit.
4. Iyum anyun ngetunanikab imbar tugul ak itonaton komengegitun ak itorchi keringet chon ko kou (sogegab ketik mobekkab bandek , ngendek) ak alakau.
5. Torchi keringt koit 0.5m.
6. Tesin beekab 5ls chebo orek.
7. Tesin sorowekab tuga, neng, lgogenik kot koit 30cm.

8. Tesin ngetunanaik kot koit 0.5m.
9. Tesin beek 5ls chebo orek.
10. Testai itesi ngetunanik got konyi keringet.
11. Tesin baragut ngungunyek.
12. Ye itestai icheng bitoiyot ne koi ak ilumchi kwenutab keringet kot kotiny kwony.
13. Igomuny keringet kotar betusiek 90(orowek somok).
14. En kasariton tugul itestai itumchi beek chon kiunen tuguk en kaa. Ingot itinye tuga imuchi iyum sogororek asi itesi keringet.
15. Niton kotesin nitrogen.
16. Yai kouniton en betusiek tugul.
17. Ye kagobata orowek 3 ko koruriyo keturek.

Togunen burgeyet ne mi keringet.

### **Boisietab keturek:**

Ye kagoit ichob imbaret inam ibal keringonik kosibgei ak minutik cheimoche igol. Keringet angenge koibe keturekab rubeito, rib anyun wolutik che bitunen imbarengu.





## Ribetab kabeti.

### A. Teretab susurik.

Susurik kutik ak alak kou toik chepkimoik ak somunyk komuche kowech en kabeti

Miondo ne korom missing en kabeti ko koristo ikochin niiton nunet keswek. Kotomo korut

Tinye koborunet kouni:

- ✓ Sokite keswek ak koyam.
- ✓ Chorirendos sokek ak kobutyo.
- ✓ Tolelyokitu sokek.
- ✓ Nebo le komeyo.

Teret ne nyolu

- ✓ Wal kabeti yeibata kenysisiek (1-2).
- ✓ Ketit ne kang'emak itutu.
- ✓ Mat inde beek che chang.
- ✓ Ker ile kosich ole mondoen beek.
- ✓ Ingonyor koristo.
- ✓ Sember en abogora.
- ✓ Mat konyor ng'ung'unyek anan okwoindo neo.
- ✓ Mat kochilge ketik en kabeti.
- ✓ Ingotililit betit en abogora.

Mionwek kimuchi keboisien kerichek , missing ko chebo kipkaa amun motinye kowech. Boisien kou orek Rib kabeti asi maimuch kobwa susurik.

### B. Toretetab tigitik.

Rib missing kabeti asi maimuch koba tigitik kokoegitun ketile asi konyor ketit itondo

Ne kararan. En kasarta nebo orowek (3-4) konam anyun tigitik komong'unen teret . Kimuchi ketil en kila en arowek (1-2) ak rotwet .

Kou noto itech betit ne kanaptaat asi komawechok tigitik. .

### C. Tumchin beek, sember ak iur

- ✓ Boisien watering can asi mowech kabeti.
- ✓ Matinde beek che chang anan ko chetutikin , beek chechang koweche keswek.
- ✓ Tumchin en koron ak koskolen.
- ✓ Emet netinye ng'ainet komoche beek en abogora kosir menets.
- ✓ Matinkotiny beek sokek .
- ✓ Rib tigitik ye isemberi.
- ✓ Sember abogora amun timdo kokochin keik amoegekitun amub moche beek ak asista.
- ✓ Keswek alak komoche urwet.
- ✓ en kasartab robta ituch keswek ak suswek cheomotin asi moib beek.
- ✓ Rib en tuguk alak tugul kou tuga amun imuch kowech.
- ✓ Ingonyo ketit agoi 30 cm kotomo iwe imin imuchi kotar arawek (1-6) en kasari iiste urwet en kabeti asi kokochi ketik konyor asista ak kogimegitun.



## Ketik kokororonite emet nyon komyeit.

**E**n TIST, kemine ketik asi ketestch en carbon markets akityo kesich chebkondo chebo carbon sales . lakini manufaachebo ketik kochang ochei!

Ichochu ko alak en manufaa che kinyoru en keitik;

- Ketik ko ole menye tyongik che chang' chebo flora ak fauna. Ikochin tyongik ole urenke ak ole unyen ke asi makibar . ribet 'ab osnoshek ko toreti minutik chok komosib komeyo yon miten climate change.
- Ketik kokonu koristo ne kararan ak koisto koriswek che yachen en emet. Ketik koisto carbon di oxide chechng' an emet ak koriswek che yachen cheu sulfur dioxide, ozone ak nitrogen oxide. Akityo kokonech oxygen nekimokchinike .
- Kororonindab emet ketesen minet 'ab ketik , ne en let kotese kororonindab sobet . yon nyalil emet kokararan.
- Ketik kocontroleni ateptab emet kou asista, koristo ,ak robta. Imuch koter floods, landslides, ak koriswek che yachen . ketik kotere floods yon kochomchi bek koba ngweny, ne katarwae en barak .
- Ketik kobose ibet 'ab ng'ung'nyek yon korobon . tikitik kwai koyoe ng'ung'nyek konamke ne katarwoe ak bek. Ketik kora koimproveni fertility nebo ng'ung'nyek. Ng'ung'nyek che kororon kokochin minutik omitwokik asitya en let koik ehek chesiche health nekararan.
- Isto bolet . Noise pollution kimuche kebos yon kakimin ketik .
- Maket 'ab bek che tililen kimuche kenyor yon kokimin ketik che indegenous.. ketik kokochin uronok bek 'ab oinoshek , agityo koyai kokoititekitun akityo kobos evaporation nebo bek.



## **Kasarta nepo, chopet ‘tap imbaret kokany.**

**G**roupishek chepoTIST che kikonetke akopo CF, kokobaoryan kole chang’ ruutik kosir yon kakiminso keboishen oratinwek chepbo kenya, sanasana yon wo robta.

Toreti kering’oik chhoton bek koma rwai en imbar, ak ko’kochi minutik bek che yomotin. Ng’alek chuton kotoretin inai kilimo hai komye ak ole kiboishoten. Ang’ kot isib oratinwek che choton kochong’oite ruru.

### **Ole kitayorishondo imbarenik.**

l’ngol imbaret arawet ageng’e kotomo kobwa robwek.

- l’tilil imbaret koisto ke chema’si . Amati ng’ol.
- Bal kering’oik che rectang’ular . Nyolunot ko 15 cm en boroindo , 35 cm koindo and 15 cm loindab kering’et. Lochindap kering’oik keyoche ko 75 cm.
- inde mbolea safi che ing’olotin ak mbolea chebo duka, ng’ung’unyat ‘ab barak. Inyit kering’et ak kong’olanik choton agoi 5 cm.

### **Minet.**

- Yon imine keswek ‘ab andek (betushek 1-2 kotomo konam robta), Min kewek 4 kong’et kering’et.
- Ang’ot imine , min 5-6 keswek en mwisho nebo keringoik yon kokorobon.
- Tuch keswek ak ng’ung’unyek ak mbolea 2.5 cm. Koboch yuton konyolunot koloidab ng’weny ko 2.5 cm kong’eten barak.

- Nafasi nemiten barak ko’kochin.
- Molazima iboishen mbolea chebo fertilizer en Conservation Farming plot. Keswek kuk korurtos ogot ang’o meboishen mbolea chebo fertilizes .

### **Istoet ‘ab saratik en imbar.**

- Isten saratik en kering’et kila weekit.
- Mati’iste saratik en imbaret tugul. Tobonwokik ab kering’oik ,Minutik kotuche ng’ung’unyek, koko’koite ng’ung’unyek agityo koter komoib robta ana ko koristo. Isten saratik chemi yebo kering’et kityo. Boishen panget ltilil imbaret koistoke saratik. Isten saratik kila mara asi maibista kochut kering’et.
- Bakaten saratik che’ketutu en imbar asi konuno. Tese bombonindab imbaret.

### **Tuguk che kiyoe yon kakebutis.**

- Matibel saratik che kong’et en imbar. Bakagten saratik choton en imbar asi kotes mbolea en imbar. Kimuche kora keboishen ke chobe manure .
- Amati bokokchi tuga koaget en imbaret. Kaikai ibwat ile, Tun kiboiboienchini tugul tun koruryo minutik kuk ak inetke en youtik che miten en erea neng’unget ak tuyoshek ‘ab cluster asi kotesak rurutik.

Inam ing’unon!



## TIST: Ng'olion akobo Pioret ak Ole Imugto Kayumetabgee ne Mingin neng'uong' koweek tanisiek che kikakobetyo.

**A**genge ne tuguk che ng'oen missing en aldaetab koristo ne tinye gee ak minsetab ketik ko ne tinyegee ak pioretab ketik en koitet neo. En TIST, ko pioret kogochin koimutik che chang Kayunosiek che Mengechen en tetutiet. Ingetil ketik en Kayumetab TIST egenge kokochin koimutik TIST katugul. En korogut, olon kokichileech chigilik chebo sang, ak konyor timto ne kiketil kepior, koite chigilichoton kole imuche kou noton mabrenik tugul en olon tugul. Inoni kobouru kele togor kechomwech kialden tannisiek che mi ng'wony koitet ak kenyoru rapsiek che tutigin missing' koityi temik tugul.

### Kit ne kiyoe olon katil membayatab Kayumet ne Ming'in ketikab TIST.

1. Ong'ololchin ichek akobo koimutik chebo pioretab timwek. Iwatin ilenchi angot komoche rapsiekab ketik che kilile ak koalda, komuche kokoon chomchinet TIST kichoor ketik koik kwenik anan ketil chon kirikyigee missing'.
2. Angot kotestai kokiik akobo pioretab timwek tugul, kemwochin Kiboityotab Isadsamet ak Kandoinatetab Isasamet.
3. Ong'alalen chuiton en tuiyetab Isasamet koboto temik tugul.
4. Kuur tuiyetab Kyumosiek tugul ak ong'alalen oret ne kimuche keboisien asi keweek tanisiek che kikobetyo. Omuche oyai niton yon omiin ketik alak che chang' en mbarenikwok. Angot ko motindoi mbarenik alak che ominchini ketik, ko omuche oguur membaek che lelach kobwa kotesak en Kayumeng'wong' ne Ming'in. membaek che lelach ko kimuche keguur kityo oloon membaek che otimdoi ko mo sire 12.
5. Olon kogeer ole kakoyaak pioret, oguur Kiboityotab Isasamet konyon koyai koitet ne leel en kayumeng'wong'.
6. Bo komonut kesir ole kibendita ketik che kiketil ak kit ne kikiyaen en let. En korogut, angot ko kikiboisien en tegseet, ak alak. Angot imuche inai ile kinyorchigee rapsiek che tiana teminde ko kararn asi kekeerchin ak rapsiek che kitanyoru en pjeutikab melekweek en aldaetab koristo en kenytit inda kikakialda.