



MAZINGIRA BORA

June/July 2009 Newsletter



www.tist.org

ENGLISH VERSION

The International Small Group and Tree Planting Program (TIST)

An Environmental, Sustainable Development and Community Forestry Program.



Njuki-ini Cluster Meeting: Members of Small Groups and TIST officials in a Cluster Meeting.

TIST Values: We are Honest. We are Accurate. We are Mutually Accountable.
We are Transparent. We are servant to each other.

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Or

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- TSE Timau - 0725 - 527 831
- TSE Imenti North - 0726 - 319 539
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Maize growing under conservation farming.

How to Make Compost Manure

This compost manure is a natural fertilizer to help your crops grow. It is better than chemical fertilizer because it is natural and has no damaging effects for the crops and environment. There are lots of different methods, of which the following is just one that has been useful in some areas.

Preparation of compost

1. Choose an area for your compost pit. It should be 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. the leaves and stalks of maize, millet, beans). Cut these remains into small pieces.
5. Put these crops remains into the hole up to a depth of 0.5m.
6. Then add 5 litres of ash.
7. Next add about 30cm (or as much as

available) of animal dung (e.g. dung from pig, cow, goat or chicken).

8. Next put another layer of crop leaves and stalks (0.5m)
9. Add another 5 litres of ash.
10. Add the leaves and stalks again until the hole is almost filled.
11. Finally, add a layer of soil until the hole is filled.
12. Whilst filling the hole with soil, put a long stick in the middle of the hole so it reaches the bottom.
13. Leave the compost pit for 90 days (3 months).
14. During this period use your dirty water to water the compost pit. For example, after cleaning your house or clothes, empty the used water over the compost pit unless it has dangerous chemicals in the water. If you have animals you can also pour animal urine over the pit.
15. Try to water the compost pit in this way every day, or whenever water is available.
16. After the 90 days the manure will be ready. Use the stick as a thermometer – when the compost is ready it should be hot and you may even see steam coming from the stick after you have removed it.

Use of compost

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



United Women Group – Njuki-ini Cluster, Kirinyaga TSE.

We are a small group in Njukiiini location of Kirinyaga district.

When we joined TIST in 2008 we could hardly imagine the benefits of the program. We have had invaluable information on nursery preparation, seed harvesting.

Kilimo hai (conservation farming) that has got everybody talking. This is because despite the recent drought our members have been able to harvest a lot of maize which we have been able to sell to our neighbours. We have been able to plant around 2,000 seedlings and hundreds more are awaiting the rains.

A nearby school has even given us a big area to plant more trees from which we expect to receive payments. We have also managed to introduce new groups example KIRUNYUINI GROUP.

We always sent our representatives to the cluster meeting.

Recently we had visitors from other parts of the world and this gave us great morale to continue with our efforts. We are eagerly waiting for energy saving jiko education so that we can save on fuel and hence tree use. We want to plant more indigenous and fruit trees.

Mazingira Bora magazines are a must for us for we have been able to know what other Small Groups do as well as useful training articles that help us improve our work.

Long live trees. Long live TIST.

Economic Hard Times? Try Environment Conservation.

By Kimani Mwangi.

Let's first look into the Vision 2030 economic growth projections. This ambitious plan relies HEAVILY on use of natural resources through agriculture, tourism, manufacturing, energy among other sectors.

Kenya is endowed with some of the world's richest natural resources and ecosystems namely many rivers, forests among others. Unfortunately they are ALL under threat due to human interference.

Let's also reflect into last year economic growth rate which was low due to prolonged drought, conflicts among others. Due to interference with environment and consequent change in climate, there was little rain and the Government used lots of resources to feed its citizens that could have otherwise been used in more useful and profitable ways like tourism marketing. Thus we got the lesson. Proactive management of environment helps avoid serious calamities and occurrences such as drought, floods, global warming among others which consume lots of resources to mitigate or adapt against.

Economic growth and sustainable development requires integration and proper management of our environment. Simply put, environment is at the heart of economy.

Kimani is a TSE leader, Nyahururu TSE and a Quantifier, Narumoro Field Office.



Seed collection.

1. Which tree species should we grow in our area?

The best ones are those growing naturally in the area. Select ones that meet your needs. TIST particularly encourages fruit and indigenous trees, and others that will remain in the ground for 20 years or more.

2. Are all trees good?

Not necessarily! Some may be difficult to control, be poisonous to your animals or use too much water. Choose ones you know will benefit your area.

3. Do trees produce seeds every year?

Most trees do, but observe your local trees to be sure. Some may only produce good quality seeds every 2-3 years.

4. Which is a good mother tree to collect seeds from?

- Collect seeds from healthy trees that are good seed producers.
- Avoid isolated trees. In this case the seed is likely to have been self-pollinated which leads to poorer quality seeds.
- Avoid unproductive trees and ones with a bad shape.
- It is better to choose a tree in the middle of a healthy group of trees of the same species. Seeds will be higher quality from trees with flowers that are spread out rather than packed closely together.
- The exact type of tree depends on what you want to use the tree for. For example, good trees for timber are straight, few branches and fast growing. Good trees for fodder should be fast-growing, many branches with multiple stems, and fast growing leaves with the ability to recover after being pruned. Good fruit trees should obviously have good quantities of healthy fruit!
- Try to choose seeds from a tree growing at the same altitude and soil type as where you want to plant.
- Choose a mature tree, not a young one.

5. When do we collect the seeds?

- Learn the time of the year when the seeds are ripe.
- Ask other local people or observe the tree yourself.
- Sometimes seeds are ripe when the fruit or pods change color, become dry, or break easily from the branch.
- Most seeds are ready for collection when they fall from the tree naturally.

6. How do we collect the seeds?

- It is helpful to clear the area around the bottom of the tree first. Many seeds can be collected from the ground. Inspect the seeds for insect damage.
- The tree can be climbed to collect the seeds, but take care!
- Some fruit dry open and disperse their seeds

without falling to the ground. These are hard to collect if the seeds are small. Collect the fruit or pods after they are ripe but before they have split or fallen to the ground. Then dry the fruit or pod in a clean, sheltered place to obtain the seeds.

- Some seeds can be knocked from the tree with a long stick.
- Try putting a sheet under the tree and gently shaking the tree.
- For tall trees a simple tool can be made by attached one end of a pair of shears to a long, strong stick. The other handle can be attached to a rope.
- Note that some seed species cannot be collected from the ground and have to be collected as *wildlings*. These are newly germinated seedlings found growing under mature trees. These can be transplanted to pots in your nursery. This is often the best method for trees that are hard to grow in a nursery or whose seeds are hard to collect.
- All seeds must be removed from their fruit or pods. This can be done by hand, or putting the fruit/pod in the sun and waiting for it to dry and split.

7. How can we tell if the seed is good?

- Firstly look at the seed. Discard ones that are smaller, lighter or a different color than the others. Some may be damaged by insects.
- For some hard-coated species floating in water is a good test. Normally the good seed sinks and the bad seed floats.
- You can do a simple germination test. Take a small counted number of seeds (20-100). Do any pre-treatment needed. Put the seeds on a damp cloth in a bowl. Cover with another fold of the cloth, moisten it thoroughly and put in a warm (not hot) place. Check the seeds daily for signs of germination and keep the cloth moist. When germination begins keep a record of the day and number. The test usually lasts about two weeks depending on the species. Germination of over 50% means you have good seed. Small-seeded species having only 5% germination are still worth keeping.

8. Do we plant or store the seeds?

- Some seeds do not store and should be planted straight away (especially soft, fleshy seeds, fruit tree seeds or seeds with high oil content).
- For seeds with harder coats the basic rule is to keep the seed clean, dry and cool.
- Seeds should be removed from the fruit/cone and dried thoroughly. To dry the seeds put them in the sun for 2-3 days.
- Storing in a paper bag or metal container out of the sun is good (avoid plastic bags as this makes the seed sweat and rot). Make sure the container is clean and air-tight.
- Label the container with the name of the seeds and the collection date.
- Remember that the germination ability of the



seeds will decrease with time. If seeds have been stored for too long they may expire.

9. Do all seeds germinate?

The percentage of seeds which germinate varies greatly between species. Some seeds require some form of pre-treatment.

10. What kind of pre-treatment might be needed?

- If the seeds have a very small or thin coat often no treatment will be needed.
- Seeds that have thick coats will need some form of pre-treatment. Some need to have their seed coat cracked with a hammer or a stone. Seeds should be planted immediately after cracking.
- Some seeds just require a small cut in the seed coat to help water infiltrate (nicking). Do not cut the part that was attached to the pod or capsule as this part contains the baby plant.
- Others need to be soaked in mild acidic solutions for 5-20 mins before sowing.
- Another method for hard-coated seeds is to boil them in water for 5-10 minute. Then put the seeds in cool water. This weakens the coat and helps water to enter.
- Some seeds can be soaked in normal water for 12-24 hours.
- All seeds, once pre-treated, need to be planted straight away.

11. How do we plant the seeds?

- Some seeds that germinate readily can be sown directly into the field or into pots. Species that require special conditions to germinate are sown into a seedbed first.
- The time taken for germination depends on the seed type, the temperature, the amount of water available and the age of the seed.
- Generally sowing is done just before the rainy season starts.
- As a general guide, for direct sowing seeds should be planted at a depth two to three times their diameter and should be covered firmly with soil. The soil should then be kept moist.
- Details on seedbeds are to follow.

12. Do seedlings grow only from seeds?

Some tree species produce root suckers (young plants growing from the mother plant's roots). These can be cut and transplanted.

Cuttings can be taken of a young tree branch with at least three nodes or buds. Choose a long, healthy branch and make a clean, angled cut. Strip off the leaves. Plant the cutting into soil at least two nodal lengths deep, with at least one exposed. Keep it watered until sprouting occurs. Seedlings grown in this way will have the same characteristics as the parent tree and can be useful for making sure a productive fruit tree is grown.

- Some seeds that germinate readily can be sown directly into the field or into pots. Species that require special conditions to germinate are sown into a seedbed first.
- Remember that some seeds will require pre-treatment, as discussed last month.
- The time taken for germination depends on the seed type, the temperature, the amount of water available and the age of the seed.
- Generally sowing is done just before the rainy season starts.
- As a general guide, if seeds are being sowed directly into the field they should be planted at a depth two to three times their diameter and should be covered firmly with soil. The soil should then be kept moist.

Seedbeds**A. Use**

Seedbeds provide a carefully controlled environment for seeds needing special care in order to germinate successfully. They are rectangular areas of prepared soil that can be covered and watered according to the seed's requirements.

B. Preparation

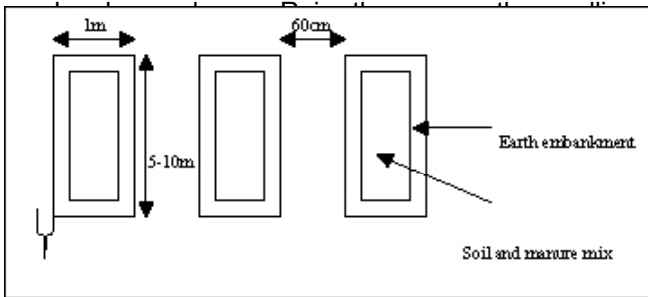
- Collect and sieve manure
- Prepare the soil that will go in the seedbeds. Mix the soil and manure together. Some people find a good soil mixture for nurseries is 3 parts of topsoil from forest areas, 2 parts of sand and 1 part of manure. You could use other natural fertilizers too (e.g. compost manure).
- If the soil is very sticky and heavy (clayey) add some more sand.
- Prepare the area for the seedbeds: each seedbed should be 1m wide (a good width for watering and weeding) and 5-10m long depending on how many seedlings will be grown. There should be 60cm paths between each bed.
- Mark out the seedbed with straight lines using string and break up the soil
- Make a low earth embankment around each seedbed to prevent water running off and causing erosion. The embankment can also be made of bricks or stones.
- Fill the bottom of the seedbed with a layer of stones about 5 cm thick (or put a layer of nylon material at the bottom). This is to prevent long roots from penetrating too deep.
- Fill the seedbed with the prepared soil, but make sure the height is less than that of the embankments so that water will not run off.
- Make sure the final seedbed is level.
- The distance between seed rows should be 15cm apart.
- The depth of sowing the seeds should be equal to the diameter of the seeds.
- The spacing between seeds along the row should be 5 cm.
- Cover the seeds with fine soil.
- The seedbed can be covered by mulching. In mulching, use litter that does not rot quickly to avoid

Seedbed Preparation**Seed sowing**



ants, termites and other pests.

- For seeds that need shading from the sun during germination, make a cover from local materials e.g.



manage if they are 1m wide and 5-10m long.

- Arrange the seedlings according to species so that it will be easier for Quantifiers to record data by species.

New best practice: Raised pot beds

In TIST nodes trainings, Small Groups are encouraged farmers to try raised pot beds. We encourage Small Groups to try the raised pot beds.



Pot-bed Preparation

Pot beds

A. Use

When the seeds have germinated (showing 3-4 leaves) they can be transplanted into plastic bags filled with soil (pots). The size of the pots vary according to the seed requirements and the resources you have.

B. Preparation

- Most seeds will use a 6"x4" or 8"x5" polythene bag. However, these can be expensive and so you can use:
 - Tin cans
 - Banana leaves
 - Plastic bags – cut the plastic to the size you require and seal using heat to melt the plastic to stick the sides together. Remember to punch holes in the bottom of the bag too.
 - Used plastic water bottles
- Cut the lengths of these pots to 5 or 6 inches and make sure there are some small holes in the bottom of the pot.
- Prepare the soil by mixing in the ratio of 5:2:1
 - 5 parts sieved forest topsoil
 - 2 parts sand
 - 1 part manure
- Sieve the topsoil soil to remove stones and coarse material. A sieve can be made by fitting mesh wire (1.5cm) to a 1m by 1m wooden frame.
- Mix the soil thoroughly.
- Moisten the soil to make it stick together.
- Fill the soil into the pot slowly, gently compacting at each stage to avoid air pockets. You can use a funnel to make filling easier.
- Leave a space at the top where the seedling will be put.
- Transplant seedlings into the pots by making a hole and inserting the seedling without twisting the roots. Fill the hole in with soil again.
- The pots can be arranged in rows to form beds for easy maintenance and placed either in the sun or shade according to the seed requirements.
- Arrange the pots in lots of 100 seedlings each. Similar to the seedbeds, the beds are easier to

Figure 1 represents the common way of arranging pots, as described above.

This traditional system of arranging pots on the ground can produce seedlings with weak roots. This is because the roots coil up inside the plastic pot. At transplanting, the roots can be weak and therefore not easily establish in the ground. To avoid this it is recommended to establish seedlings in open bottom tubes and place them on raised beds (Fig 2). A raised bed can easily be made from a wooden frame and wire mesh (see photo). These allow automatic root pruning because when the roots get to the container bottom they naturally drop off (called air root pruning). This means that roots do not get injured through normal root pruning methods. The roots then tend to strengthen without growing further. This produces a healthy root system and the seedling



Fig 2: Seedlings of various species arranged in stacks on a raised bed.

The raised beds might appear to raise the amount of water used in nurseries. However, nursery operators have devised innovations to deal with this constraint. A good innovation observed in Tanzania is digging a trench, placing planks of wood or wire mesh across it and placing the seedlings on the planks or wire mesh. The seedlings thus appear to be on the ground level but the trench under them provides the space which aids air root pruning. The water is trapped in the trench and



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Njuki-ini Cluster Meeting: Amemba a tukindi tunini hamwe na aruti wira a TIST mari mucemanio wa Cluster.

TIST Values: 1. Turi etikua. 2. Turi antu ba uuma bugwa.
3. Turi antu ba weru. 4. Turi atethaniria. 5. Turi amenyaniiri.

Ndene ya gazeti iji

- ✓ Riri ni igita ria kuanda-igita ria kuanda miti mingi!
- ✓ Gikundi kia united women- Ndene ya cluster ya Njuki-ini, TSE ya Kirinyaga
- ✓ Magita kajomi kimbeca? Geria umenyeeri bwa biria bikuthiurunkite Ni Kimani Mwangi
- ✓ Kuthuranira mbeu cia kumithia

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*Mugunda wa mbembe cia CF***URIA UMBA KUTHITHIA MBOREO**

Mboreo ni fertilizer yaku ya kwithithiria ya gukuria imera biaku. Iji niyo njega nkuruki ya iria ithithagua , yaku ni ya kawaida na iti na bia kuthukia imera biaku kana aria gututhiurukirite (environment) kuri na njira inyingi mono cia kumithithia indi iji ni njira imwe iria itumagira guntu kumwe.

NJIRA YA KUTHITHIA MBOREO

- ✓ Thuraira aria ukenja irinya. Rikethirwa riri ria 4mx4m.
- ✓ Theria au
- ✓ Inja irinya 3-4m na kworokera kwa 1.5m.
- ✓ Ooja mati jaria jatigaraga waketha (e.g. mabua ja mpempe, mwere kana mati ja mung'au) jagitange tucunci tuniini.
- ✓ Wajagitanga jekire irinyene mwanda 0.5m.
- ✓ Ongerera 5ltrs cia ruuji rwa muju.
- ✓ Ongeera mati jangi 30cm (kana uria

jakwonekana) na ntaka ya nyomoo(e.g. ntaka ya ng'ombe, ngurwe, mburi kana nguku.

- ✓ Cooka wikire mati jangi 0.5cm.
- ✓ Ongeera ruuji rungi rwa muju 5ltrs.
- ✓ Ongeera mati jangi mwanka jatigarie aniini irinya riujura.
- ✓ Muthiene, ongeera muthetu mwanka ujurie irinya.
- ✓ Riria ukujuria muthetu tonyithia muti jumuraja gatigati ka irinya mwanka jukinye nthi.
- ✓ Tigana na irinya ria mboreo ntuku 90 (mieri 3)
- ✓ Igitene riri geraga ruuji rwa ruko irinyene riri. Kwa mung'uanano, ruuji ruria uku-thambia naru nyomba, into kana waura naru nguu urugerage kirinyene giki indi ti ruria ruri na chemical inthuku.
- ✓ Geragia gwikagira irinya riri ruuji na njira iji ntuku cionthe kana riria ruuji rukwonora.
- ✓ Nyuma ya ntuku 90, mboreo ikethirwa ikubua. Tumira muti ta thermometer mboreo yabwa muti jukethirwa juri na mwanki na no wone kinya toogi ikiuma wajukuura.

UTUMIRI BWA MBOREO IJI.

Wenja marinya ja kwaanda mpempe, mwere kana imera bingi, ongeera nkundi imwe ya mboreo iji irinyene

Kilimo Hai: Ugatiira munda jwaku. Tumira mboreo. Okongera fertilizer. Woone maketha jamaingi.

**Gikundi kia united women- Ndene ya cluster ya Njuki-ini, TSE ya Kirinyaga**

Turi gakundi gakanini ndene ya location ya Njuki-ini,district ya Kirinyaga.

Riria twatonyere ndene ya TIST mwaka jwa 2008 tutingiumba kuthugania kethira kuri na faida tukoona kumania na program iji. Nituei umenyo butigurika na mbeba mantune jegie kuthuranira nursery na kuthuranira mbegu cia kuanda.

Uriri bubwega (Conservation Farming) buria bukuarirua ni muntu wonthe. Buriarirua ni-untu kinya kethira ngai niraurite,amemba betu nibarombire guketha mpempe inyingi iria tumbite kuenderia aturi betu. Nitumbite kuanda miti ja ngiri ijiri (2000) na Magana jangi nijeterete mbura.

Cukuru imwe akui na batwi nituete kinya munda jumunene jwakuanda miti ingi kuuma naria tweterete kwija kukaliwa mbeba. Nitumbite kinya gutonyithia ikundi bibieru ta gikundi kia KIRUNYUINI.

Nitutumaga antu ba guturungamira kiri micemano ya cluster yonthe.

Ntuku inyingi itithiri nitwari na ageni ba kuuma ntere ingi cia nthiguru na bubu nibwatwongerere wiru bwa gwita na mbele na ngugi yetu. Nitweterete na nainya witani bwegie riiko riria rinyiagia utumiri bwa nkuu nikenda tunyia utumiri bwa miti. Nitukwenda kuanda miti ingi ya kienyeji na mitunda.

Mazingira Bora ni gintu kia mwanka kiri batwi nontu nitumenyithagia uria ikundi bingi bibini bithithagia na kinya uritani buria butathagia mono kuthithia ngugi cietu bubwega nkuruki

Miti niture igita ririnene. TIST niture igita ririnene.

Magita kajomi kimbece? Geria umenyeeeri bwa biria bikuthiurukite Ni Kimani Mwangi

Mbele gatutegere kioneki kia 2030 kiri mantu ja witi nambele kimbece. Mubango juju jumunene jutegerete mono utumiri bwa into biria biturite o gukurukira urimi, utalii, kuthithia into,na jangi.

Kenya nitharimi na into bimwe biria biri bimwe bia biria bithongi buru ndene ya nthuguru yonthe na bingi ja nduuji na miitu. Kiria kithuuku ni ati bibi bionthe nibiene kuthira niuntu bwa utonyeeeri ni muntu.

Gatutege kinya rate ya kunenea yamantu jegie mbece mwaka muthiru iria yanyii mono niuntu bwa kuaga ngai, ndua na mantu jangi. Gukurukira gutonyeerwa kwa biria bituthiurukite ni muntu na kugaruka kwa rera kuria kuthingataga bubu, nikwari na mbura inini na thirikali yatumira into bibingi kunenkeru antu biria biringi gutumirwa bwega nkuruki kuthithia mantu jaria jaringileta maketha ta gukathiria utalii. Kwou twaewa kithomo. Kumenyera biria bituthiurukite nigutethagia kuebera mantu jamanene jamathukuta kunyia kwa ngai, ngai kwingia nkuruki, murutira jwa nthiguru na jangi jaria jatumaira into bibingi kgugeria kujanyiyia kana kugeria kumenyaniria najo.

Kunenea kwa mantu jegie mbece na witi nambele buri bukumbika nibwendaga kugwatana na kumenyera biria bituthiurukite bwega. Kuuga na njira inkui, biria bituthiurukite biri nkorone ya mantu ja kimbece.

Kimani ni mutongeeria wa TSE ya Nyahururu na mutari miti ndene ya Field Office ya Narumoru.

**KUTHURANIRA MBEU CIA KUMITHIA****1. Ni mbeu cia miti iriku injega cia kwaanda?**

Mbeu iria njega ni iria ciumaga ciongwa. Taara mbeu iria ikujuria ubatu bwaku. TIST mono niendaga mbeu cia matunda na miti ya kienyeji na cia miti iria ikaraga nthi miaka mirongo iri kana nkuruki.

2. Miti yonthe nimiega?

To mwanka! Imwe iri inya kumimenyeera, ingi ni sumu kiri ndithia cietu na ingi nitumagira ruuji rurwingi mono. Thuura miti iria ukumenya igatethia kwenu.

3. Miti niciaraga mbeu o mwaka?

Miti imiingi niu ithithagia, indi tega miti yenu yongwa kenda withirwa uri meene. Miti imwe iciaraga mbeu injega nyuma ya miaka iiri kana ithatu. (2-3 years)

4. Muti juria mwega jwa mbeu ijuriku?

i. Cwa mbeu kuuma mutine juri na inya juria jumaga mbeu bwega.

ii. Tigana na muti juria juri junka. Muti ta juu jwithagira juri jwa ruteere rumwe runka rwa kiurume kana ruu rungi na jutukuraga bwega.

iii. Tigana na mbeu ya miti iria iticiaraga bwega na mbeu iria itikwonekana ithongi.

iv. Ibwega gucwa mbeu ciaku gatigati ka miti iria yumite iri amwe ya muthemba jumwe na iri na inya. Mbeu cia miti iria iri na mauga jakunuki bwega iciithagirwa iri cia iguru nkuruki ya cia maua jaria jakunjari jagwatene.

v. Mbeu iria njega iriringana na gugwe gwengwa cia muti juria ukwenda. Kwa mung'uanano, miti imiega ya mbau ithagirua iri imitamburuku iri na mpan'gi inkai na ikuraga na mpwi. Miti imiega ya iiria ria ndithia ikuraga na mpwi, mpang'i inyingi, muti jumwe jukethirwa juri na itina bibingi, mabura jakuraga na mpwi na jukumba kworia ironda wajucaa. Muti jumwega jwa matunda naju ijuria juguciara matunda jamaingi jari na inya.

vi. Geria gucwa mbeu kuma kiri miti iria ibujaga kuria ukwenda kujuanda na muthetune juu.

vii. Thuura kuuma miti imikuru ti imianake

5. Tubwite gucwa mbeu ri?

- Thooma ni igita ria mwaka ririku mbeu ciithagirwa iri ingundu.

- Uria antu ba nao kana utegage gwengwa.

- Rimwe mbeu igundaga riria itunda riagaruka rangi, kana rioma kana riria rigukuka raisi kuuma rwang'ine.

- Mbeu iria nyingi ciithagirwa iri tayari riria ciagwa ciongwa.

6. Tubwite kwoja mbeu atia?

- Buri na bata kwamba kutheria gitina kia muti mbere. Mbeu iria nyingi womba gucioja nthi. Tega mbeu itikeeje kwithirwa irigi ni tunyomo.

- Womba gwitia muti ugacwa mbeu indi imeenyeere.

- Matunda jamwe jakuraga jagaatuka na mbeu ikauma ikarega kugwa nthi. Mbeu ta iji iri inya mono kwoja ikethirwa iri iniini. Mbeu ta iji itujagwa itunda riagunda mbere ya ritiroma

riatuka mbeu inyaaga kana igwa nthi. Ucoke uriumie antu atheru na athithitue bwega kenda wona mbeu.

- Mbeu imwenitujagwa mutine na muti jumuraja.

- Geria gwika kiandaruga gitina kia muti na kujwinainia mpaara.

- Miti iria miraaja womba kuthekeera muti jumwe jumuraaja na juri na inya ruteere rumwe rwa makasi na ruteere rungi ukatheekera murigi jumuraja.

- Menya mbeu imwe utiumba kwoja nthi indi neka ikuraga ciongwa. Iji ni miti imianake iria ithagirwa yumite ruungu rwa miti iria mikuru. No uithamirie tumibukone twa nursery yaku. Iji niyo njira iria njega ya miti iria utiumba kumithiria nurserine kana iria mbeu iri inya kwoja.

- Mbeu cionthe no mwanka iritwe kuuma matundene jacio. No urite na njara kana kwanika ugeteera ikooma na gwatuka.

7. Niatia tumba kumenya kethira mbeu ni injega?

- Mbere amba utege mbeu. Taara iria niini imputhu na iri na rangi iri na mwanya kiri ingi. Imwe ciomba kwithirwa iriigi ni tunyomoo.

- No wererie mbeu iria ciithagirwa iri na gikonde gikiumu rujine. Mono mono iria njega ikorokera na iria mbii cierere.

- No uthithie na njira imputhu experiment. Taara mbeu inkai (20-100) kethira kuriu ciendaga kuthithirua mbere withithirie. Ciikire gitambaene kiri na ruuji kana mpakurine . Kunikira na gitambaa kingi na wikundie ruuji bwega na wike antu ari na murugutira. (indi ti mwanki). Tegaga ntuku cionthe ikiambiria kuuma .Gitambaa kiithagirwe kiri na ruuji igita rionthe. Wona ciambiria kuuma aki, iika record yacio, ni ntuku iriku na ni ing'ana. Mono ikuraga na biomia biiri kuringana na muthemba jwa muri. Ikauma nkuruki ya 50% ikwonia uri na mbeu injega. Mbeu iria niini ikauma 5% kinya cio ni injega ciike.

8. Twaande kana twike mbeu?

- Mbeu imwe utibwite gwika nonga kwaanda orio. (Mono iria mbinyu, iria ciithagirwa iri flesh, mbeu cia miti ya matunda kana mbeu iri iti maguta jamaingi)

- Mbeu iria iri gikonde gikiumu ciendaga gwikwa antu atheru na ati na ruuji ari na karuugo gakeega.

- Mbeu no mwanka iritwe itundene na ciumwe bwega. Ciike riue ne ntuku ijiri kana ithatu (2-3 days)

- Guciika mubukone jwa karatasi kana mukebene jwa ibati bunka juti riue ne nibwega (indi ti mubukone jwa karatasi ka nylon tontu ijutumaga mbeu ithithina na ciora) Mukebe no mwanka jukunikwe uria ruugo rutigutonya,

- Andika riitwa ria muthemba jwa mbeu na ni tariki ing'ana waciojere.

- Rikana ikanyiyia uria ciumba kuuma na wingi. Ugaciika igiita riraaja igiita ria kuuma riomba



kuthira.

9. **Mbeu cionthe iciumaga?**

Mbeu iria nyingi ciumaga iringanaga na muthemba jwa muti. Mbeu imwe iciendaga kuthithirua na njira ya mwanya mbere.

10. **Ni atia ciendaga kuthithirua mbere?**

- Mbeu ikethirwa iri na gikonde gikiuthu, gutiu ciendaga kuthithirua.
- Mbeu iria iri gikonde gikiumu iciendaga kuthithirua mbere. Imwe iciendaga gukonyorwa gikonde kiu na nondo kana iiga. Ibwrite kwaanda orio ciakonyorwa.
- Ingi ciendaga gwaturwa aniini tu kenda ruuji rwonka kaanya. Ugakonyora aria kuri na kanana na meetho.
- Ingi ciendaga kurindwa rujine rwa acid iti na iinya ndagika 5-20.
- Njira ingi ya mbeu iria iri na gikonde gikiumu ni gwicamukia na ruuji ndagika 5-10. Ucoke uciikire rujine ruungi ruti na mwanki. Buu ibutumaga gikonde kiaga inya na ruuji rukomba gutonya.
- Mbeu ingi iciendaga kurindwa rujiine rwa kawaida mathaa 12-24.
- Mbeu cionthe ciathithirwa uju, ibwrite kwaandwa orio.

11. **Twaandaga mbeu atia?**

- Mbeu imwe iria ciumaga orio no ciandwe mundane orio. Mbeu iria ciendaga kuthithirua kenda cuma iciendaga ciumithirua nursarine.
- Igiita riria ijukagia ikiuma rikaringana na muthemba jwa muti, muruutira, ruuji uria rukwonekana na ukuru bwa mbeu.
- Withire, mbeu ciandagwa mbere ngai itirambiria.
- Njira ya withire ya kubutongerua, mbeu iria ciandagwa orimwe ibwrite kwaandwa irinyene riorokeru mainda jairi kana jathatu unene bwa mbeu na gukunikirwa na muthetu bwega. Muthetu jubwrite kwithagirwa juri na ruuji.
- Uria kiumithirio kithithagua gukathingata au gaiti:-

12. **Miti yumaga mbeune aaki?**

Mithemba imwe ya miti iri mbeu mirine(miti imianake ikauma mirine ya muti jungwa)lji n umigiite na umiande . Iingi nigitagwa mpang'ine iri na metho jairi kana jathatu. Thuura rwang'i rurungi buru na ruri na inya na urugite rimwe rwinuki. Riita mabuura. Injira muthetune utige rungi rumirite na rwikagirwe ruuji. Mbeu iria yaandagwa na muthemba juu ikuraga igakara ta ng'ina na maciara no ta muti mwene.

Kiumithirio kia mbeu

Kwaanda Mbeu

- Mbeu imwe iria ciumaga orio no ciandwa mundane orio. Mbeu iria ciendaga kuthithirua kenda cuma iciendaga ciumithirua nursarine.
- Igiita riria ijukagia ikiuma rikaringana na muthemba jwa muti, muruutira, ruuji uria rukwonekana na ukuru bwa mbeu.
- Withire, mbeu ciandagwa mbere ngai itirambiria.

- Njira ya withire ya kubutongerua, mbeu iria ciandagwa orimwe ibwrite kwaanda irinyene riorokeru mainda jairi kana jathatu unene bwa mbeu na gukunikirwa na muthetu bwega. Muthetu jubwrite kwithagirwa juri na ruuji.
- Uria kiumithirio kithithagua gukathingata au gaiti.

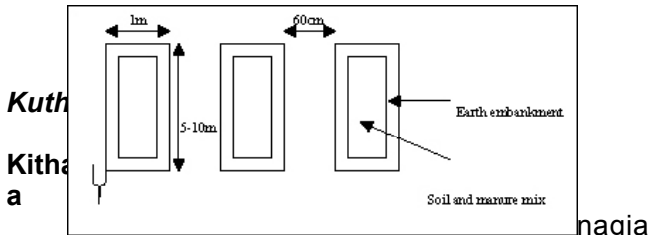
Biumithirio bia mbeu

a Ubatu

Biumithirio ibiejanaga kaanya ga kumba kumenyeera area mbeu ciumithiritue, mono mono iria ciendaga utungatiri bwa mwanya kenda cuma bwega. Biithagirwa biri bia corner muthetu juthithitue bwega na gwikirwa ruuji kuringana na ubatu bwa mbeu.

b Kuthuranira

- Uthurania mborea na umichunke.
- Thururania muthetu jwa gwikira kiumithirione. Ungania muthetu na mboreo. Antu bamwe bonaga muthetu jwa nursery jubwrite kunganua na ichunci 3 bia muthetu jwa iguru kuuma mwitune , ichunci 2 bia muthanga na gichunchi 1 kia mboreo. No utumire mboreo ingi.(ta mati jaria jooraga)
- Gukethirwa muthetu ni juria jwithagirwa jugwatene, junganie na muthanga
- Thururania antu amwe aria akaa kiumithirio. Oo kiumithirio kithirwe kiri na warii bwa 1m (warii bubwega bwa gukunda ruuji na kurimira) na 5-10m kurea kuringana na miti iria ukenda kumithia. Kwithirwa kuri na kajira ka 60cm kuuma nursery mwanka ingi. Thithia kiumithirio kierekeene utumirite murigi na utiire muthetu jwa iguru.
- Kiumithirio kithirwe kithiurukiri ni rugito rwa kurigiria muthetu jutigakamatwe ni ruuji.No kuthiurukirue maiga.
- Ikira maiga nthi ya kiumithirio 5cm gukiira (kana wikire karatasi ka nylon nthi) Guku ni kurigiria miiri itikenname nthiguru nkuruki.
- Ujuria kiumithirio giaku na muthetu juria uthuraniire, indi umenyeere kwithirue kuri nthiguru aniini ya rugito ruria wikiire maiga kenda ruuji rutikaure.
- Menyeera kiumithirio kithirwe kiri raini imwe.
- Kworokera kwa aria ukaanda mbeu kwithirwe kunang'anene na warii bwa mbeu
- Kuuma mbeu mwanka ingi kubwrite kwithirwa kuri 5 cm.
- Kunikira mbeu na muthetu jumwinyu.
- Tandikira kiumithirio. Tandikira na matandiko jaira jatoria na mpwi kurigiria muthwa na tunyomoo tungi .
- Mbeu iria ikwenda kurigirua riu wakire rutara na utandikire iguru na nyaki iria ikwonora au. Kunura matandiko ja mbeu kenda turutumo tuma bwega.
- Riria gukumbika, kundia ruuji rukiiri (6am -9am 0na ugoro (5pm-7pm.)



Kuthura
Kitha
a nagia mabuura 3-4) no ithamirue tumibukone twa nylon twikiri muthetu. Size ya tumibuko ibwirite kuringana na urea miti yendaga , kana inya yaku.

b Kuthuranira

- Mbeu iria nyingi itumagira mibuko ya nylon size 8"x5". Amwe na buu niithagirwa iri na uguri bunene na no utumire :-
- Mikebe
- Makonkoi
- Mibuko ya nylon-giita karatasi ka nylon size iria ukwenda na utumire mwanki kenda jukerura karatasi kagwarane nteere ciojiri. Rikana gutura turinya nthiguru ya tumibuko.
- Cuba cia ruuji cia mibiira iria itumiri
- Giita uraja bwa 5"-6" na kwithirwe kuri na marinya nthi.
- Thuraira muthetu unganie na kithimi kia 5:2:1
- Icunci 5 bia muthetu jwa mwitu jwa iguru jucunki
- Icunci 2 bia muthanga.
- Gicunci 1 kia mboreo.
- Cunka muthetu jwa iguru kenda urita maiga na biria bingi binene.
- No uthithie gicunki na wire ya gicunki (1.5 cm) igwatithanue rubau rwa 1mx1m.
- Ungania muthetu jwa iguru buru.
- Ikira muthetu tuuji kenda jukagwatana.
- Ikira muthetu mibukone mpaara ugikinyagiira tuniini tuniini utigatigie mariinya ja ruugo. No utumire funnel iria ikagira maguta kenda bumbikika na mpwi.
- Tigaria kaanya iguru aria kamuti gakaandwa.
- Thamiria mbeu yaku mibukone na uture karinya karia ugatonyithia muti utikugaragaria miri. Ujuria karinya kairi na muthetu.
- Tumibuko no tubangwe na mistari kenda munimenyeera kwithirwa kuri rahisi na gwike riene kana kirundune kuringanana uria muti jwendaga.
- Baanga miti oo muthemba mwanya kenda atari ba miti bomba gwika record na njira imputhu.



M... ite
 ni... iri
 ik... ve
 iti... vi.
 K... uri
 nthi na ikinyithue antu ookiritue. (Mbica 2)

Antu ookiritue oomba kuthithua na frame cia mbau na gichunki.(Tega mbica) lji nitumaga miri ituika yongwa yakuruka nthiguru ya aria mubuko jukinyite. Uju ikwonania miri ithukaga ikigitwa na njira iria tumenyeretie.

Miri niumbaga kugwata inya itigukura kairi. Njira iji mitumaga miri igwata inya na yumba kugwata muthetune na njira imputhu. Kinya ninyiagia ngugi ya kumicaa iria turagirua mono kana ikathithika igita rikuthira na miri ikathuka. Kurimira iriaa rungu rwa antu au ikwithagirwa kinya kuuthi



... ngara, na kamira mbeu ya m... gata na mbito ciiki igitenie kana gichunkine. Miti yonekanaga ta iri nthiguru no muguuru juu ijuretaga kaanya karia gatethagiria miri gwicaa yongwa. Ruuji urugwatagwa ni muguuru juu na rugatetheria mbeu mono riria rwitagia iguru magita jamaingi. Kirarasi kia nylon no kiarwe nthiguru ya muguuru kurigiria ruuji kunyua nthi.

Njira injeru injega-kiumithirio giukiritue

Kiri uritani bwa TIST naria tucemanagiria, tukundi tuniini itutaaragwa tuthithagia antu a gwikaga miti yaumithua kwithirwe gukiriitue. Ituberaga bagerie bone keethira njira iji yomba kureta kugaruka.



MAZINGIRA BORA

June/July 2009 Newsletter



www.tist.org

KIKUYU VERSION

The International Small Group and Tree Planting Program (TIST)

An Environmental, Sustainable Development and Community Forestry Program.



Njuki-ini Cluster Meeting: Amemba a tukindi tunini hamwe na aruti wira a TIST mari mucemaniao wa Cluster.

TIST Values: 1) Turi eehokeku .2) Ithui turi andu a uria kuri.
3) Turi andu autheri. 4) Turi atungataniri.5) Turi a and aigiririku.

Maria mari thiini wa gazeti ino

- ✓ **Uria unghondeka thumu waku.**
- ✓ **United Women Group-Njuki-ini Cluster, Kirinyaga TSE.**
- ✓ **Mahinda maritu ma Ki mbeca? Geria Economic Conservation**
- ✓ **Ungania wa Mbegu.**

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Mugunda wa mbembe cia CF

Uria ungithondeka thumu waku.

Thumu uyu nimwega na gutuma mumera waku ukure wega. Nimwega gukira bataraita ya ndukaini tondu nduthukagia mumera kana maria matuthiuruki-irire. Nikuri njira nyingi cia guthondeka thumu uyu, no ino no njira imwe ya guthondeka; -

Guthondeka Thumu waku.

1. Hariria handu ha guthondekera. Hagiri-ire gukorwo hari ha 4m by 4m.
2. Theria handu hau.
3. Enja irima ria githiururi kia 3 - 4m na uriku wa 1.5m .
4. Ungania matigari ma mimera yaku (Mabebe na makoni) na umatinangie tuchunji tunini.
5. Ikia tuchunji tutu nginya tukinyie uriku wa 0.5m
6. Ikira lita ithano cia muhu.

7. Ikira kioro kia mahiu (Kana Gichoro) maku, no akorwo mari makuma kuri ngurwe, Mhuri, Ngombe kana Nguku.
8. Ikira tuchinji tungi twa matigari macio ma mimera yaku handu ha 0.5m.
9. Ongerera lita 5 cia muhu.
10. Ongerera machunji macio utinangitie nginya hakuhi kuihuria irima.
11. Muthia ongerera tiri nginya irina riaku ri-ihure
12. Thutha wa kuihuria tiri, Ikira muti muraya gatagati nginya ukinye thi.
13. Reke Thumu waku uikare hau mieri itatu.
14. Gwakahinda gaka huthagira mai maku ma giko guitiriria thumu uyu. Kwa nger-ekano thutha wa guthambia nyumba kana nguo. Angikorwo ni uri mahiu, no wiritirire mathugumo macio thumuini uru.
15. Itagiriria thumu waku mai oromuthenya kana kuringana na uria wonamai.
16. Thutha wa matuku 90. Huthira muti ucio uri wa guthima. Riria thumu waku waharirika muti waku ukoragwo uri muhiu na no wone ugitoga.

Mahuthiro ma Thumu uyu.

Thutha wa kwenja marima ma kuhandira ikira ngundi imwe ya thumu uyu.

Kilimo Hai: Ndugachimburie Mugunda . Huthira thumu. Ndukahuthire Fertilizer. Niukwona Machiaro Maingi.

**United Women Group-Njuki-ini Cluster, Kirinyaga TSE.**

Turi gikundi kinini location ya Njuki-ini thiini wa Kirinyaga District

Twaingirire TIST mwaka-ini wa 2008 tutietikagia mawega maria makoragwo kuo. Twari na ndumiriri itari nginyaniru uhohorini wigii gukomereria miti na kugetha mbegu. Kilimo Hai(Conservation Farming) urario ni mundu wothe tondu ona kuri na kimera kia riuu a memba aitu nimarahotire kugetha mbembe nyingi iria turahotire kwenderia nginya andu angi. Nituhotete kuhanda mimera 2,000 na Magana mangi maingi metereire mbura yure.

Cukuru uri haha hakuhi ni utuhete gichunji kinene kia mugunda kuria tukuhanda miti ingi miingi ohamwe na kuamukira marihi. Nituhotete kuingiria ikundi ingi, kwa muhiano KIRUNYUI-NI GROUP.

Ohindi ni tutumaga aturugamiriri micamano-ini minene.

Ihinda ikuhi niturakoretwo na ageni kuma miena ingi ya thi undu uria watuheire hinya wa guthii na mbere na wira witu. Nitwetereire na hinya muno githomo kia riko ria kuhuthira hinya munini nigetha tuhote kuhonokia maguta na miti. Niturenda kuhanda miti ya nduire na ya matunda.

Ngathiti ya Mazingira Bora ni kindu kia o muhaka kuri ithui tondu ni ituhotithagia kumenya uria ikundi ingi nini iratwarithia wira wao na mbere ohamwe na icunji cia ithomo ngurani iria ituteithagiriria kwagirithia wira witu

Miti ingirotura, TIST ingirotura.

Mahinda maritu ma Ki mbeca? Geria kigitira maria maturigiciirie

Mwandiki ni Kimani Mwangi

Reke twambe turore kioneki gia 2030 hari gukura kwa kigina kia bururi. Mubango uyu wa kwirigirirwo wihocagia muno hari indo iria turi nacio kuhitukira urimi, uceeri, uthondeki wa indo, hinya wa thitima na mangi maingi.

Kenya ni irathimitwo na utonga muingi wa indo na maria maturigiciirie ta njuui, mititu, hamwe na ingi nyingi. Kwa mutino niati maundu maya mari ugwati-ini niudu wa guthumburwo ni andu.

Reke tucokie meciria na thutha mwaka ucio urahitukire twone utonga wa bururi urakurire na gicunji giathi niundu wa kimera kia riuu kuneneha, ngahiha cia githurano na mangi maingin. Niundu wa guthinio kwa maria maturigiciirie na gucenjia kwa riera nikwagiire na mbura nini na kwa uguo thirikari igitumira mbeca nyingi kuhe andu irio iria ingiahuthikire njiraini ciri na umithio ta kugathiriria uceeri bururini. Kwoguo turi na githomo, umenyereire mwega wa maria maturigiciirie ni ututeithagiriria gwithema kumana na maundu maria marehagwo ni kwaga kwa mbura kwa ihinda iraihu, miihuro ya maai, gucenjia kwa riera na mangi maingi.

Gukura kwa bururi na uthii wa na mbere wa gutura ubataraga kwagirithio kwa umenyereire wa maria maturigiciirie. Ota uria tuui. Maria maturigiciirie mari gatagati ka utonga wa bururi.

Kimani ni Mutongoria wa TSE Nyahururu na Quantifier

**UNGANIA WA MBEGU.****1. Muthemba wa muti uria wagiri-ire gukurio gicigo kina?**

Iria miega ni iria irekuria icigoini ici. Chagura umwe uria urina urahingia mabataro maku. TIST yendaga makiria miti ya unduire naya matunda na iria ingi-kara makiria ma miaka 20

2. Miti yothe ni miega?

To nginya! Imwe no ikorwo na hinya kumime-nyerera, no ikorwo itari miagiriru kuri nyamu ciaku kana ihuthagire mai maingi. Chagura uria urina uguni kuri itura riaku.

3. Miti ni irutaga mbegu oromwaka?

Miti miingi ni irutaga mbegu. No utwirie miti ya gicigo giaku nigetha umenye. Miti imwe no irutire mbegu njega kahindaini ka miaka 2-3

4. Muti mwega wakuruta mbegu ni uriku?

- Ungania akuma kuri muti uri na ugima mwega..
 - Thenga makiria miti iria irihandu hamwe. Miti ino noikorwo itari na mbegu njega.
 - Ndugachagure miti iria itaciaraga kana iria itaikaire wega.
 - Niwega guchagura mbegu kuma kuri gi-kundi kia miti yamuthemba umwe. Mbegu igukorwo iri njega makiria kuma kuri miti iria ina mahua mataganu gukura maria manyitanu
 - Muthemba wa muti kuringanana na uria urenda kuhuthira muti waku. Ta nger-ekano, miti miega ya mbau ni mirungaru, honge nini na ikuraga na ihenya. No miti ya kurio ni mahiu yagiriire gukorwo na mahonge maingi, ikure naihenya na hamwe na mathamburi maingi. Muti wa matunda wagiriie gukorwo na matunda mena hinya na maingi.
 - Geria guchagura mbegu kuma kuri muti tirini ta uria urathie kuhanda.
 - Chagura muti mukuru no ti muchachana.

5. Niri tunganagia mbegu?

- Menya riria mbegu ciri njiru.
- Oria andu a itura kana wirorere wee mwene.
- Mahinda mamwe mbegu ikoragwo irinjega riria makoni machenjia rangi, moma kana magatwika naihenya.
- Mbegu nyingi ikoragro cirri nginyu cia kunganio riria cieguithia cionyene.

6. Tunganagia mbegu atia?

- Theria haria mbegu iri. Mbegu nyingi no ciunganio kuma thi. Rora kana cirri an tugu-nyu..
 - No uhaibe muti gucharia mbegu, no wime-nyerere.
 - Matunda mamwe momaga, na magath-anduka magaitanga mbegu mo mene matekugua kuma muti-ini. Mbegu ici ciri hinyamuno kuoeka angikorwo ni nini ma-

kiria. Tuaga matunda mbere ya momite uchoke umomithie handu hatheru.

- No utue matunda ukihuthira muti muraya.
- No ware kiandarua na uinai-nie muti waku.
- No woherere kahiu kana magathi muti-ini na uhuthire gutua mbegu ciaku. Muthia ucio ungi no woherere mukanda.
- Ririkana ati mbegu imwe itingiunganio thi no – no cioyo ta tumimera tunini turia twinyiragirira mutiini nathutha ucio ututhamie nginya haria urahanda. Inoni njira njegamuno ya kuhanda miti iria ikoragwo na hinya muno gukura tutaini oronakana mbegu iria ikoragro hinya muho kungania.
- Mbegu ciothe no nginya cirutwo kuma kuri itundaini. No wike uu na njira ya kumithia itunda riaku riuu-ini.

7. Tungimenya atia ati mbegu ni njega?

- Wambere roar mbegu ciaku. Chagura iria nini, huthu orona kana iria cirri na rangi mutiganu na iria ingi.
- Mbegu iria ikoragwo na ngothi nyumu no cimeneke na kurera mai-ini mbegu njega yagiriire gutonyerera mai-ini nayo iria irari njega irere.
- No ugerie gukuria mbegu ciaku. Oya tubegu tunini ta kuma 20-100 uci-ikire gitambayaini kihehu thi-inie wa kamukebe. Humbira na gatambaya kangi kahehu na uige kamukebekau handu hari na urugari munini. Roraga mbegu ciaku oro muth-nya umenye kana nociramera. Orouria iramera, andikaga muthenya hamwe na mbegu iria iramera muthenya ucio. Igeria rir rioyaga kahinda ka wiki igiri kuringana na mithemba ya mbegu. Ungiona mbegu makiria ma 50% ikurite, nitakuga ati mbegu icio ni njega. Mbegu iria ikoragroiri nini makiria no cikorwo na 5% na nikuga ati oronacio ni njega.

8. Tuhande kana tuige mbegu icio?

- Mbegu imwe itihandagwo na ciagiri-ire kuhandwo orokahinda kau (makiria mbegu iria huthu , mbegu cia miti ya matunda nambegu iria cirri mai maingi.)
- Mbegu iria iri gikothi kiumu, undu uria mwega ni kumithia mbegu icio na guciga wega.
- Mbegu ciagiri-ire kurutwo hari itunda na ciumithio muno. Iga mbegu ciaku riaini thiku 2-3 nigetha ciume.
- Kuiga karatathini kana mukebe wa chuma no ukorwo haraya na riuu nowega. (ndukaige mukebeini wa “plastic” tondu nigitu-maga mbegu cione). Thingata ati mukebe waku ni muniaru wega.
- Andika mukebe waku ritwa riambegu na riria wonganirie.



- Ririkana ati umeru wa mbegu ciaku ukuringana na kahinda katria ukuiga mbegu ciaku. Kuiga mbegu kahinda karaya no gutume mbegu ciaku ithuke.

9. Mbegu ciothe nicikuraga?

Kumera kwa mbegu kuringanaga na muthemba wacio. Nikuri mbegu ciendaga kuhariririo na njira mithemba na mithemba nigetha cimere.

10. Ni kuhariririo kuriku kubatarikanaga?

- Angilkrwo mbegu iri na ngothi huthu gutiri uharirira urabatarikana.
- Mbegu iria iri na gikothi kiumu no cibatare kuharirio wega mbere ya kuhanda. Imwe cibataraga cibaturwo na nyundo kana ihiga. Wagiri-ire kukanda mbegu ici thutha wa guchibatura.
- Mbegu imwe cibataraga kamwatuka kanini gakuingiria mai. Ndugatinie kamukiha karia kameraga.
- Imwe cibataraga kurikio mutukanio-ini wa "mild acidic" kahinda ka ndagika 5-20 mbere ya kuhanda.
- Mbegu iria cirri na gikothi kiumu no uchith-erukue ta ndagika 5-10 na thutha ucige mai-ini mahehe. Gwika uu kuhuthagia ngithi na gugatuma mai mone gwakuin-girira.
- Imwe no cirikio mai-ini mathaa 12-24.
- Handa mbegu ciaku thutha wa guchihariria.

11. Tuhandaga mbegu atia?

- Begu iria ci-imeragia cio nyene cihandagwo orio. Iria ibataraga umenyereeri makiria ciambaga kuhando tutaini.
- Kumera kwa mbegu kuringanaga na muthemba wa tiri, urugari, mai, na ukuru wa mbegu
- Maita maingi kuhandagwo mbere ya mbura yurite.
- Mbegu ciagiri-ire kuhandwo uriku wa maita matatu mayo na uchoke uchithike na tiri munini na uitiririe mai.
- Ndeto makiria ma tuta nicio ici.

12. Tumimera tukuraga kuma oro mbegu-ini?

Mithemba ime ya miti ikuraga ta honge iria ingitinio na cihandwo
No utinie kahonge kamwe kari na tumabiri twiri. Charia kihionge kiria kiri na hinya na kiri na ugima mwega utinie kuma hau na utinie mathango.thika kahonge gaku ugithika tomabiri twiri na utige kamwe karungii. Itagiriria mai nginya kahethuke.miti iria ihandagwo na njira ino ikoragwo na muhiano taw a nyina nano ukorwo na matund mega orota hari awarutitwo.

Uhariria wa Mbegu. Kuhanda.

- Mbegu iria cimeraga naihenya no cihandwo marimaini orio na iria ciendaga utungata wa mwanya ciambagwo kuhandwo tutaini. Riri-

kana mbegu imwe ni ciendaga gutungatwo na ndawa mbere ya kuhanda ta uria twaririr-irie ngathetini ya mwaka muthiru.

- Mahinda maria mbegu cioyaga nigetha cimere, kuringanaga na muthemba wa mbegu, urugari, mai hamwe na ukuru wa mbegu. Maita maingi uhandi wikagwo mbere ya mura yurite.
- Angikorwo mbegu irahandwo orio, ciagiriire cihandwo uriku wa maita matatu wa uria cigana na cithikwo wega na tiri na uitagiririe mai.

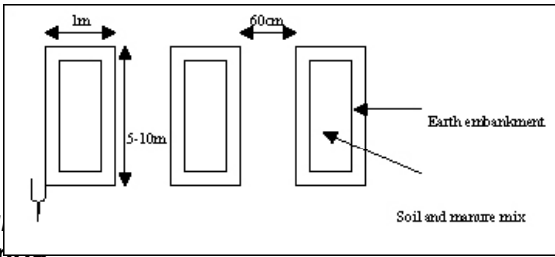
Tuta.

A. Tuta Ihuthika nakii

Tuta ciheaga mumera handu hega ha gukurira. Tuta nihandu hathondeketwo wega haria mbegu citagwo, igatungatwo na igaitirio mai kuringana na bata wacio.

B. Uhaririria.

- Ungania na uchunge thumu.
- Haririria tiri uria ugwikira tutaini iyo. Tukania tiri na thumu wega. Andu amwe monaga tiri mwega ichigo ithatu. Ichunji 3 kuma mititu-ini,2 kuma muthangaini na 1 kuma thumuini. No uhuthire fertilizer oronayo.
- Angikorwo tiri nimunyitanu muno, ongerera kamuthanga kanini.
- Hariria hari urenda guthondeka tuta yaku. Tuta yagiri-ire gukorwo iriya warii wa mita imwe nigetha kuhe kamweke ga kuhe mai. Na uraihu kuringana na mbegu iria urenda kuhanda. No nginya hakorwo na gachira uraya wa 60cm.
- Menya haria urahanda na uthime na karurigi na umumuthure mathui.
- Thondeka tiri mienanini undu ukugiri-ria mai kura. No urigiriri-rie nginya na mahiga.
- Thi wa tuta io, ikira mahiga kana karatathi ka munyore nigetha kugiriria miri miraihu ndikain-gire nathi muno.
- Ikira tiri uria ukuhariri-irie hau thi-inii no ndugakirie haria ugwikirite mahiga ma kugiriria mai. Ona na kinyi ati niwahiriria wega.
- Utiganu wa rumikaro cia mbeguukorwo ari 15cm .
- Handa mbegu warie wigana mbegu iyo.
- Utiganu wa mbegu kuma hariimwe nginya iria ingi akoro ari 5cm
- Thika mbegu ciaku na gatiri kanini kahuthu.
- No uigirire mahuti maria matatuikangaga na ihenya niguo kugiriria muthua na tutambi tungi. Niundu wa miti iria yendaga kiruru thutha wa kumera, gitira kuma kuri mahuti ma mithemba na mithemba. Ikaraga ikuraihagia gitara kiu giaku nigetha ndugathukie mumera waku.
- Kungihotekeka ikagira mumera waku mai kiroko na hwaini.



Ku
Itanda.

A. Uhuthikaga atia.

Riria mbegu ciaku ciakinyia makiria ma mathangu matatu, ninginyu cia kuhandwo turatathini turi natiri. Karatathi gkna karinganaga na mbegu ciaku hamwe na uhoti waku.

B. Kuhaririria.

- Mbegu nyingi ihuthagira turatathi twa 6"x4" kana 8"x5". No tukorwo turi na goro muno na kogwo no uhuthire;
 - Mikebe
 - Ngoto cia Marigu.
 - Kurenga turatathi na utuchine na mwaki nigetha tunyitane. Na uririkane gutura tumarima na thi.
 - Huthira tumikebe twa mai twa plastic.
- Renga uraihu wa inji 5 kana 6 na wone ati hari na tumarima rungu rwa karatathi kau. Tukania tiri na ichunji ici 5:2:1
 - 5 kuma githaka.
 - 2 muthanga
 - 1 thumu
- Chunga tiri ucio nigetha urute mahiga. No uhuthire wire ya utiganu wa 105cm guchungu tiri waku.
- Tukania tiriwaku wega.
- Ikira mai ugitukania nigetha unyitane.
- Ikira tiri ucio turatathini turia uthondekire na wikire wega nigetha ndugatigie mianya ya riera.
- Tigia kamwanya iguru haria ukuhanda mumera waku.
- Thamia kamumera gaku hau thutha wa gutura karima hau iguru na umenyere ndu gathiore mumera waku. Ihuria karatathi gaku na tiri.
- Banga turatathi tuu na raini niundu wa guitiriria mai na raithi na utuige riuni kana kiruini kuringana na mthemba wa mumera waku.
- Banga turatathi twa mimera 100 handu hamwe. Oro undu umwe na tuta, itanda ici cia mimera cirri raithi gutungata angikorwo uhandite uraya wa 5 -10m na warie wa mita imwe.
- **Banga miti yaku kuringa na mithemba nigetha akorwo ari raithi gutara na kuiga uhoro iguru riayo.**

Njira Njeru Njega: Itanda nyambatie.

Hari urutani wa TIST. Arimi anini nimoragio mahuthire itanda iria nyambatie hanini. Nituragia arimi

machigerie na thutha moke matwire uria mona.

Mbicha ino ironania njira mithemba cia kubanga itanda ciaku ta uria twaririria haha iguru.



Njira ya tene ya kubanga miti yaku itandaini no ithukie miri ya mumera. Nigukorwo miri ni ikunjaga muno karatathini. Hindi ya guthamia miri ni ikorwo iitari na hinya na kogwo ikaga gukura wega. Nigetha kurigiriria uu, niwega mundu kuhanda mimera yake tuchubaini tukunure nathu na thutha utuige itandaini icio ciambatitio. (Mbicha ya Keri). Gitanda giki no githondekwo na mbao hamwe na wire. Uu niwega-tondu thutha wa miri gukinya rungu rwa mumera in kugua iguaga na kogwo miri ndi tihagio. Miri ino ni igiaga na hinya hatari gukura makiria. Mumera waku ukoragwo uri na hinya na kogwo orona gukura mugundaini noguo ari raithi. Orohamwe ni ihuthagia wira wa gucheha miri namumera ndutihagio. Gucheha miri ino nikuriganagirwo maita maingi na kana gugekwo thutha makiria. Kurimira oronakuo no kwa raithi.



Kuhanda miti uu nokwoneke ta kuhuthagira mai maingi. No aria matwiranagia na maundu megie itanda na tuta ni moete njira ya kunyihia thina uyu. Maroya mbao na wire magaciara makaigirira mimera yao hau iguru. Mimera ironeka ta iri rungu ria tiri no mbau iria iri iguru riachio irateithia gucheha miri. Maimategagwo hau na makaigaga tiri uri na mai na kogwo hatiri bata munene wa guitiriria mai kaingi. No uige karatathi ka munyore hau thi nigetha kugiriria mai guthii tirini.