

Mazingira Bora



TIST

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

English Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Kilia TIST Cluster in Mbeere during their monthly meeting last month.

Inside:

Clear cutting of TIST tree groves is a serious violation of TIST Values and the Green House Gas contract. It hurts positive actions of thousands of TIST farmers. *Page 2*

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

Last month, we discussed about clear tree cutting during the Cluster Leaders seminar held at Gitoro conference center, Meru.

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

The above rule is necessary for continued participation in carbon program. Carbon buyers want to be assured that the trees from which they buy carbon credits are kept alive. Where the farmers cut their trees, carbon buyers always decline to buy credits from such entities because

they are considered high risk. This is why an action of few farmers who violate this rule could make carbon buyers shun from buying other TIST farmers carbon credits.

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

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

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

TIST: Intercropping.

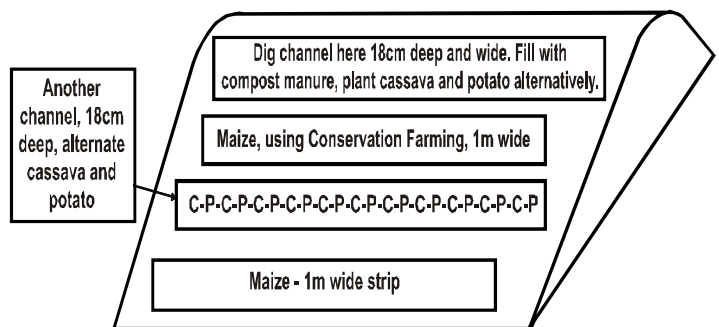
Multi-cropping is where two or more crops are grown together during a single season. With the right combinations this can help increase biodiversity on the land, increase soil fertility and reduce risk of pests and diseases.

Intercropping describes the practice where different crops are grown at the same time, in the same field. It can also include growing crops with trees, such as alley cropping.

Some TIST groups have tried the following technique, which is especially good for slopes:

1. For the first row dig a trench 18cm deep and 18cm wide
2. Fill this trench with compost manure
3. Plant cassava and potato alternatively
4. For the next row, plant a one-meter strip of maize using conservation farming holes
5. Another row of cassava and potato
6. Another row of maize, etc.

This technique uses much of what we have learned in the training: it involves using intercropping, it uses compost manure and also conservation farming.



- Try alternating rows of maize with rows of trees. Small Groups have tried alternating a 3m strip of maize with a row of moringa / yellow cassia / leucaenia / bead tree trees.
- Rows of sorghum can be planted between rows of moringa or leucaenia.
- Try combinations of calliandra and bananas, calliandra and beans, calliandra and maize, maize and beans, beans and leucaenia, beans and bananas, beans and coffee (while young).
- Try intercropping cowpea with maize / sorghum or millet.

Experiment with the spacing to see what works best and let TIST know the results.



Crop rotation ideas.

Crop rotation is where farmers cycle through planting different crops over time on the same land. There is a particular order of crops followed, where the next crop chosen is from a different family than the previous one. Crop rotation can be beneficial for soil fertility as different crops have different depths of root systems, meaning the same layer of soil nutrients is not depleted year after year. This method also helps to break up the soil at different levels, which improves soil structure, and can attract different types of beneficial soil organisms.

To get the benefits of crop rotation a different type of crop must be planted in turn. This is because crops of the same type may attract similar pests and diseases and rotating the types can reduce the risk of certain pests and diseases taking hold in the soil.

The following list categorizes crops according to groups. Crops from the same group should not be planted one after the other. Be sure to mix the groups in your rotation plan!

- Group 1: Cucumber, gourds, pumpkin, squashes, watermelon (Gourd family)
- Group 2: Broccoli, brussels sprouts, cabbage, cauliflower, collards, kale, radish, turnip, mustard, watercress (Crucifer/Brassica family)
- Group 3: Eggplant, pepper, tomato, potato (Solanaceous family)
- Group 4: Lettuce, artichoke (Aster family)
- Group 5: Maize, rice, sorghum, wheat, oat, barley, millet (Grains and Cereals family)
- Group 6: Beans and peas (Legume family)
- Group 7: Garlic, leek, onions, chives (Allium family)
- Group 8: Carrot, celery, dill, parsnip, parsley (Carrot family)
- Group 9: Cassava, sweet potato, taro, yam, water chestnut (Root Crop family)
- Group 10: Cotton, okra (Mallow family)

If the above system is overly complicated, many farmers simplify crops to five groups to rotate between (information taken from Infonet-Biovision website):

- a) Leaf crops (broccoli, cabbages, cauliflowers, kales, spinach, etc.). They need more nutrients than other vegetables.
- b) Fruit crops (chilies, eggplants, peppers, tomatoes, etc.). They need a considerable amount of nutrients but not as many as 'leaf' crops.
- c) Root crops (carrots, beetroots, potatoes, onions, radishes, turnips, etc.). They need fewer nutrients compared with leaf and fruit crops.
- d) Legumes (beans, chickpeas, cowpeas, grams, peas, pigeon peas, etc.). Their additional benefit is fixing atmospheric nitrogen into the soil.
- e) Cereals (maize, millets, sorghum etc.)

Ideas to consider:

Try planting maize and groundnuts together in year one and in year two, plant sorghum. Try planting groundnuts in year one and then a mixture of legumes, sunflower and/or potatoes in year two.

Another idea is to try planting maize, followed by a legume such as soybeans or groundnuts. Then in the following season try a cash crop such as cotton.

Try leaving the land fallow for a whole year, then plant crops again for 3-5 years before leaving it to fallows again. This will give the land a chance to replenish its soil nutrients. Consider Napier grass for fodder if you have livestock.

In general, plant legumes before cereals. Planting crops from the Brassica family (e.g. cabbage) before and after crops from the Solanaceous family (e.g. tomatoes) can help prevent build-up of root-knot nematodes and bacterial wilt.





The following is a crop rotation idea taken from Infonet-Biovision. This takes an example of a farm with four plots covering four seasons, with each season approximately four months.

First season:

- Plot 1: Maize / garlic / onions / or leeks
- Plot 2: Eggplant / chilies / potato / or tomato
- Plot 3: Broccoli / cabbage / cauliflower / or kale
- Plot 4: Beans / cowpeas / grams / or peas

Second season:

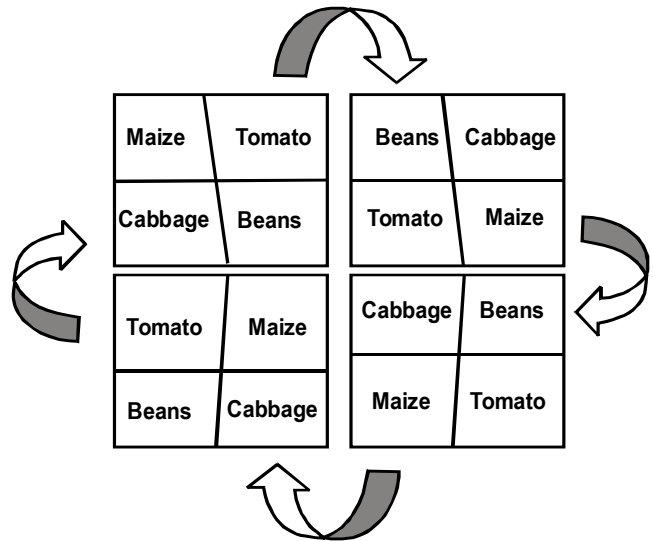
- Plot 1: Beans / cowpeas / grams or peas
- Plot 2: Broccoli / cabbage / cauliflower / or kale
- Plot 3: Eggplant / chilies / potato / or tomato
- Plot 4: Maize / garlic / onions / or leeks

Third season:

- Plot 1: Broccoli / cabbage / cauliflower / or kale
- Plot 2: Beans / cowpeas / grams / or peas
- Plot 3: Maize / garlic / onions / or leeks
- Plot 4: Eggplant / chilies / potato / or tomato

Fourth season:

- Plot 1: Eggplant / chilies / potato / or tomato
- Plot 2: Maize / garlic / onions / or leeks
- Plot 3: Beans / cowpeas / grams / or peas
- Plot 4: Broccoli / cabbage / cauliflower / or kale



Alley cropping

TIST: Avocados can give you good income.

As extracted from *The Organic Farmer* (<http://www.theorganicfarmer.org/profile/2>) and Jürgen Griesbach, 2005: *Avocado growing in Kenya*. ICRAF (World Agroforestry Centre), Nairobi, Kenya.

Avocado is an important commercial fruit in Kenya both for local and export markets.

There are three main types of avocado trees, which are suitable for different altitudes. Check which avocado varieties do best under your specific local conditions. Using seeds or grafted trees from healthy and vigorous local trees and from local nurseries is recommended, as such trees will be more likely to do well at your site.

Seedling production

Seeds are collected from healthy mother trees and healthy, mature fruits. The extracted and cleaned seeds can be dipped into a fungicide solution and are then planted into seedbeds or into perforated polythene bags. Shade is important for germination. When seedbed seedlings are 20 cm high and have two pairs of well-developed leaves, they are uprooted, culled and transplanted into containers. Grafting can be done after about six months. Grafted trees remain smaller and start flowering earlier (at three to four years after planting into the field) than ungrafted seedlings. The small trees will be ready to be transplanted into the field about three to four months after they have been grafted.

Tree planting and establishment

Soils should be deep, fertile and well aerated. Avocados do not like poorly drained, heavy soils and flooding or high water tables, and they will also not tolerate salty or very acidic conditions. The most favorable planting time is at the beginning of the rainy season. Spacing between trees lies between 6 and 10 m, depending on soil fertility, climate, and variety. Planting holes are usually dug two feet wide and two feet deep, making sure to break hard pans and to allow good drainage and undisturbed root development. The excavated soil can be mixed with manure, compost and rock phosphate if available. Plant the seedlings carefully without damaging the roots at the same depth as it was in the container. Build a basin from soil around the tree for better irrigation and water harvesting. After planting, seedlings must be irrigated immediately. Use 5 to 20 liters of water depending on the size of the seedling. Mulching can be very beneficial as it reduces moisture loss and controls weed growth. Irrigation will be necessary for some time. Another important measure is to protect each seedling against livestock and wild animals.

Irrigation of fruit trees

Irrigation is important during several stages of tree development and the fruiting cycle. During the first months of establishment, but also later during their first years of growth, trees must be checked frequently and irrigated when they show symptoms of water requirement. Avocados develop long tap roots, but depending on the climate, they may need some additional irrigation, especially during prolonged dry spells. During flowering, fruit set, and fruit development sufficient moisture is critical for good fruit development.

Fertilization

For good productivity, it is beneficial to support avocado trees with manure regularly. Between 5 and 20 kg of fertilizer can be given per tree and per year. Be careful with nitrogen – it promotes leaf growth, but not flowering, and avocado roots are sensitive to high salt concentrations in the soil. Phosphorous is usually also necessary, and potassium is important for mature trees that bear fruit.

Pests and diseases

Preventive measures are central, so choose an appropriate and fertile site, plant at reasonable distances, choose healthy varieties, control weeds, use mulch, do not over fertilize, and irrigate when necessary. Pests are usually not a problem in avocado production in Kenya. Use neem products, pyrethrum preparations, or tephrosia extracts etc. against insect pests such as fruit moths, thrips or scales if the damage is severe.

The following diseases can be serious:

Avocado root rot: (a Phytophthora fungus disease) Trees produce sparsely, and they have fewer leaves, which are pale and wilted. Branches are sunburnt and die back. Roots decay and the whole trees die prematurely. Affected trees should be uprooted and destroyed. Hot water treatment and fungicide treatment of seeds for seedling production are generally recommended as a preventive measure. There are two chemicals registered against this disease - Ridomil and Aliette.



Anthracnose: Fruits develop dark brown, dry spots. Young fruits may drop, but in more mature fruits, the infection remains hidden until the fruit is harvested and ripens. Usually, copper-based fungicides are used against Anthracnose.

Cercospora fruit spot: Small, pale yellowish spots appear on the fruits and leaves. Later, they turn brown and crack, making it easy for other organisms to attack the fruits. This disease is also controlled with copper-based fungicides.

Fruit drop: Fruit drop is not a disease and is common for many fruit species. Trees drop excess fruits that they will not be able to nourish until maturity. Avocados drop excess fruits when they are pea-sized, and a second time when they have reached the size of an egg.

Harvesting avocados

Grafted trees usually start to flourish and bear fruit three to four years after they have been planted in the field.

There are some indicators of approaching maturity:

- In dark varieties, there is a change in color from green to black or purple.
- On green varieties, the fruit stems turn yellow, the skin may appear less shiny, or the end develops rust-like spots.
- Some varieties develop a whitish appearance.
- Fruits that float on the surface when immersed into water are usually mature.

Markets

Handle all avocados with great care! Export markets, especially the European market, have very strict quality requirements which smallholders may find difficult to meet. Local markets are less complicated but also tricky, because avocados tend to mature all at the same time, making it unprofitable for farmers to sell them. It is almost impossible for farmers to store or process avocados. Commercial avocado growers must therefore be linked closely to a good market.

Common avocado varieties:

1. **Hass and Fuertes:** These two varieties are used as scions (upper parts of grafted fruits). They are popular because of their high oil content.
2. **Puebla:** Used as rootstock by many farmers, as it has no fiber and is resistant to diseases.
3. **Singapore:** This is a new variety that is fast growing and reaches maturity in 14 to 15 months. It grows to a height of 2 ft.
4. **G5 and G6:** These two varieties are popular, as they can do well in both highlands and lowlands. They can be grafted with all the other varieties to improve fruit quality.

Farmers are advised to buy seedlings from certified seedling producers.

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Kimereu Version

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Kilia TIST Cluster ya Mbeere wakat mkutano wao wa kila mwezi, mwezi uliopita.

Inside:

TIST: Ugiti bwa miti yonthe ndene ya miunda ya TIST ni kuuna na njira inene jaria TIST ikirite na kinya kandarasi ya GhG. Nikugitaragia mantu jameega jaria jakuthithua ni arimi ba TIST ngiri nyingi. Page 2

TIST: Kuanda imera mwanya amwe. Page 2

TIST: Mabukandu nojalete mbecha inyingi. Page 4



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

Mwari muthiru, nitwaariririe ugiti miti yonthe ndene ya semina ya Cluster Leaders i orio tukurikia kiatho gia kugwirirua uritaniri ngugi bwa TIST na USAID miaka itano buria buumbene.

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

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

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

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

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

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

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

TIST: Kuanda imera mwanya amwe.

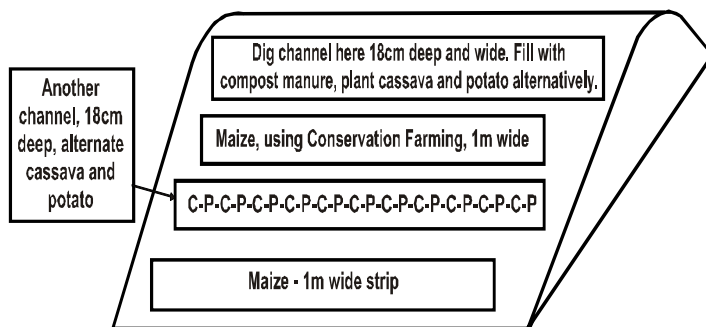
Multi-cropping ni Uandi bwa imera biiri kana bithatu mwanya amwe igitene rimwe. Uungenie bwega bubu nibuongagira gukaraniria kwa mithemba mwanya ya imera na nyomoo, kwongerera unoru bwa muthetu na kunyiyia kanya ga kugwatwa ni tunyomoo na mirimo.

Intercropping nayo niaria imera mwanya igita rimwe na muundene jumwe. No ithirwe kinya iri kuanda imera bia irio amwe na miti ja kuanda miti iri lainine muundene jwa imera bia irio.

Ikundi bimwe bia TIST nibigeretie njira iji, injega mono naria kurina ibari

1. Mulainine jwa mbeleinja mutaro jurina uraja bwa 18cm na warie bwa 18cm.
2. Ujurie mutaro juju na mboleo ya mati
3. Aanda mianga na ikwaci bithingatene.
4. Mulainine jou jungi anda mpempe mita imwe ugutumagira marinya jwa urim bubwega.
5. Aanda laini ingi ya mianga na ikwaci
6. Aanda laini ingi ya mpempe na wite na mbele o ou

Mwitire juju nijutumagira jamaingi ja jaria tuthomete kuumania na uritani: nijwegie kuandaniria imera mithemba mwanya amwe, njwegie mboleo ya mati na kinya urimi bubwega



- Geria kuthingatania milaini ya mpempe na milaini ya miti. Ikundi bibinini bimwe nibigeretie kuanda mpempe mwanka warie bwa mita inya ithingati ni laini ya moringa / yellow cassia / leucaenia / bead tree.
- Milaini ya mwere no iandwe gati gati ka milaini ya moringa kana leucaenia.



- Geria kuanda calliandra na marigu, calliandra na mung'au, calliandra na mpempe, mpempe na mung'au, mung'au na leucaenia, mung'au na marigu, mung'au na kauwa (kari kanini).
- Geria kuanda ncugu na mpempe / mwere kana muya.

Geria gutarania mwanya mwanya nikenda umenya ni mwanya jwiku juri jumwega nkuruki na wire TIST jaria ukoona.

Mathuganio jegie kuthiurukia imera

Kugarurania imera ni aria arimi bathiurukanagia bakiandaga imera mwanya o igita muundene jumwe. Guti uria imera bibati kuthingatana, aria kimera kiria kithingatite nigitaragwa kuumania na nja mwanya na iu iraandi. Kuthiurukania imera kuri baita kiri unoru bwa muthetu niuntu imera mwanya biri miri irina uraja mwanya, kwou irio biria biri amwe aria miiri igukinyira bititumirwa o mwaka nyuma ya mwaka. Njira iji kinya nitethagia kuunanga muthetu guntu mwanya mwanya, untu buria buthongomagia uria muthetu jubangi na buria bumba kinya gukucia tunyomoo twa mithetu mwanya mwanya turina baita.

Nikenda wona baita cia kuthiurukania imera, kimera mwanya nikibati kuandwa o igita. Bubu niuntu imera bia muthemba jumwe nobikucie tunyomoo na mbajua mwanya mwanya na kuthiurukania imera nikunyiagia kwithirikua kwa tunyomoo tutu na mbajua muthetune.

Aja nthiguru ni imera biiki kiri ikundi. Imera kuumania na gikundi kimwe biti bati kuandwa kimwe nyuma ya kingi. Menyeera ati ukuungania ikundi bibi riria ukugarurania!

Group 1: Cucumber, tukiri, malenge, squashes, watermelon (nja ya malenge)

Group 2: Broccoli, brussel sprouts, cabbage, cauliflower, collards, kale, radish, turnip, mustard, watercress (Nja ya mpoka)

Group 3: Eggplant, nchini, nyanya, ikwaci (Nja ya Solanaceous)

Group 4: Lettuce, artichoke (Nja ya Aster)

Group 5: Mpempe, muchele, mwere, nkano, oat, barley, muya (Nja ya mpindi)

Group 6: Mung'au na nono (Nja ya ming'au)

Group 7: Garlic, leek, matunguru, chives (nja Nja ya karati)

Group 9: Mianga, mukuo, taro, ikwa, water chestnut (Nja ya miri)

Group 10: Cotton, okra (Nja ya Mallow)

Kethira njira iji iri au iguru ni injumu, amemba babangi nibekagira imera kiri ikundi bitano riu bakagarurania kuuma o kiri kimwe gwita kingi (umenyo buumenie na website igwitwa Infonet-Biovision):

- a) Imera bia mathangu (broccoli, cabbages, cauliflowers, kales, spinach, etc.). Nibiendaga irio bibingi nkuruki ya imera bingi
- b) Imera bia matunda (chilies, eggplants, peppers, tomatoes, etc.). Nibiendaga irio bibingi indi ti ta imera bia mathangu
- c) Imera bia miri (carrots, beetroots, potatoes, onions, radishes, turnips, etc.). Nibiendaga irio bibikai nkuruki ya imera bia mathangu na bia matunda.
- d) Ming'au (beans, chickpeas, cowpeas, grams, peas, pigeon peas, etc.). Baita ya kwongera ni gutonyithia nitrogen muthetune kuuma ruugone.
- e) Mpindi (maize, millets, sorghum etc.)

Mathuganio ja kugeria:

Geria kuanda mpempe na njugu amwe mwakwa jwa mbele na mwaka jwa iiri uande mwere. Geria kuanda njugu mwaka jwa mbele riu muunganio jwa ming'au, sunflower na/kana ikwaci mwaka jwa iiri





Ithuganio ringi ni kuanda mpempe riu ithingati ni mung'au jumwe ja soya kana njugu karanga. Riu mbura iu ingi geria kimera kia mbeca ta cotton.

Geria gutiga munda jutiandi gitu mwaka junthe, riu uande imera kairi miaka ithatu gwita itano riu ujutige jutiandi kairi. Bubu bukaa munda kanya ga gucokia iri biria bikwendeka. Thugania kuanda thaara kethira urina ndithia.

Kijumla anda ming'au mbele ya kuanda mpindi ingi. Kuanda imera kuumania na nja ya Brassica (ja mpoka) mbele na nyuma ya kuanda kuumania na nja ya Solanaceous (ja Nyanya) nogutethie kurua na kwingia kwa kwimba kwa miiri na kunyara kuumania na bakteria

Aja ni ithuganio ria kuthiurukia imera kuumania na Infonet-Biovision. Mung'uanano juju ni munda jurina tumiunda tuna, ndene ya mbura inya aria o mbura ikujukia mieri inna

Mbura ya mbele:

- Plot 1: Mpempe / saumu/ matunguru/ kana leeks
- Plot 2: Eggplant /nchini / ikwaci / kana nyanya
- Plot 3: Broccoli /mpoka / cauliflower / kana sukuma
- Plot 4: Mung'au/ ncugu / ndengu / kana nono

Mbura ya ijiri:

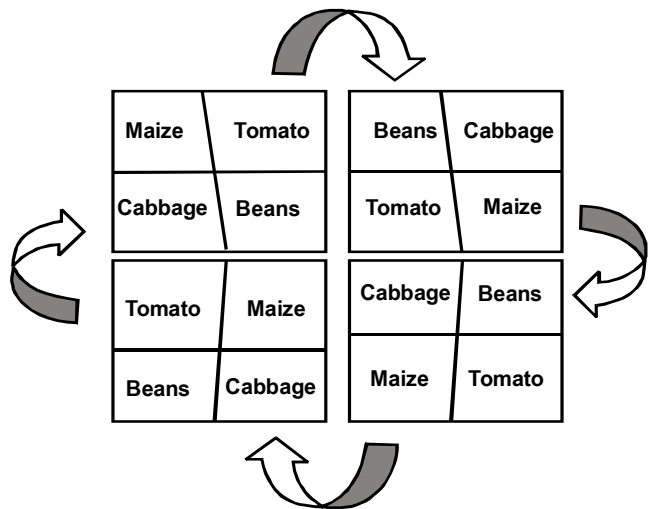
- Plot 1: Mung'au/ ncugu / ndengu / kana nono
- Plot 2: Broccoli /mpoka / cauliflower / kana sukuma
- Plot 3: Eggplant /nchini / ikwaci / kana nyanya
- Plot 4: Mpempe / saumu/ matunguru/ kana leeks

Mbura ya ithatu:

- Plot 1: Broccoli /mpoka / cauliflower / kana sukuma
- Plot 2: Mung'au/ ncugu / ndengu / kana nono
- Plot 3: Mpempe / saumu/ matunguru/ kana leeks
- Plot 4: Eggplant /nchini / ikwaci / kana nyanya

Mbura ya inya:

- Plot 1: Eggplant /nchini / ikwaci / kana nyanya
- Plot 2: Mpempe / saumu/ matunguru/ kana leeks
- Plot 3: Mung'au/ ncugu / ndengu / kana nono
- Plot 4: Broccoli /mpoka / cauliflower / kana sukuma



TIST: Mabukandu nojalete mbeca inyingi.

Mantu jaja jajukitue kuuma *The Organic Farmer* (<http://www.theorganicfarmer.org/profile/2>) and Jürgen Griesbach, 2005: *Avocado growing in Kenya*. ICRAF (World Agroforestry Centre), Nairobi, Kenya.

Mbukandu ni itunda ria thoko ria bata mono kiri Kenya na kiri thoko cietu na kinya cia oome.

Kurina mithemba ithatu iria minene buru ya mibukandu, iria ibujaga guntu mwanya mwanya. Menya ni mibukandu ya mithemba iriku ithithagia bwega nkuruki iandi kiri rera na mantu ja ntuura yaku. Gutumira mpindi kana mbeu kuuma kugita miti irina thiria na iminene na minandene iria iri akui niku kwega, miti iji niu yumba kuthithia bwega nkuruki au gwaku.

Kuumithia mibukandu

Mpindi niciritagwa mitine iria irina thiria na kuuma kiri matunda jarina thiria na jakuri. Mbeu iu ijukitue na yatherua no ikirwe kiri ndawa ya kurigiria tunyomoo tutikamirie na riu ikaandwa mibukone ya kuumithia kana maratasine ja nailoni jaturi makutho. Kirundu kiri na bata mono kiri kuuma kwa mbeu iji. Mibukandu iji yakinya centimita mirongo iiri na yagia tuthangu tuna tuumite bwega, nikuragwa, igakamatwa na gwikua mikebene. Kurita mbeu kuumania na muti nikujukia mieri u itantatu. Miti ikurite kuumania na kugitwa kuuma kiri ingi nithagirwa iri imikui nkuruki na yambagiria guciara maua kurio (miti ithatu gwita inna yarikia

kuandwa muundene) nkuruki ya iu ingi. Miti iminini ikethirwa iri tayari kuthamirua muundene nyuma ya mieri iiri gwita ithatu yarikia kugitwa.

Kuanda miti na kumirikia

Mithetu nibati kwithirwa iri imiarie, iminoru na irina ruugo rung'ani. Mibukandu itibujaga mithetune igwika ruuji na iritui mono na ikwigara kana aria kuri na ruuji rwanthi ruri akui mono, na kwou itiumagiria kinya nduji cia chumbi na cia acidi. Igita riria riega buru ria kuanda ni mwambirio jwa mbura. Kanya kuuma muti gwita kiri jungi ni mita ithanthatu gwita ikumi, kulingana na unoru, rera na muthemba jwa muthatu. Marinya jakuanda nijenjagwa jaria maingi jarina warie bwa fiti ijiri na uraja bwa fiti ijiri, ukimenyagiira ati ukuunanga mang'enyua jamanene na kumenyeera ati ruuji rutiigara na miiri igukura itikugitarua. Muthetu jou juriti kirinyene nijubati kuunganua na mboleo, mati na rock phosphate kethira irio. Anda imera biu utikugitaria miiri ukimenyaira ati uandite uraja o buria biraandi mukebene. Thithia karai kuumania na muthetu kathiurukite muti nikenda irio na ruuji rugwatua bwega.

Warikia kuanda, miti iu nibati gwikirwa ruuji orio. Tumira lita ithano gwita mirongo iri cia ruuji kulingana na uraja bwa kimera. Gukunikira muthetu kwaomba kwaithirwa kurina baita nontu nikunyiagia kuura kwa ruuji na kunyiyia kuuma kwa iria. Gwikira ruuji gukendeka igita ririkai. Untu bungi bwa bata ni kumenyeera o kimera kuumania na ndithia na nyomoo cia kithaka.

Gwikira mitunda ruuji.


Ruuji ruri bata mono igita ria gukura na guciara kwa mutunda. Mieri yambele iiri ya kuuma, na kinya miaka yiayo ya mbele ya gukura, miti nibati gutegerwa o igita nyuma ya igita na igekirwa ruuji riria yonania nikwenda. Mibukando niuмага miri

imiraja, indi kulingana na rera no yende gwikirwa ruuji rung'i, mono igitene ria uumo. Igita ria gwita maua, guciara matunda, na gukura kwa matunda ruuji rung'ani ruirbata mono niuntu bia gukura gukwega kwa matunda.

Mboleo.

Niuntu bwa guciara bwega, kuri baita gwikira mibukandu mboleo o igita nyuma ya igita. Kilo ithano gwita mirongo iiri cia fertilizer no ciikirwe o muti o mwaka. Menyeera riria ugutumira nitrogen – niongagira gukura kwa mathangu indi ti kuuma kwa maua na miiri ya mibukando itiendaga muthetu jurina chumbi inyingi. Phosphorus jaria maingi niendekaga, na potassium iri bata kiri miti iria ikuri ya guciara matunda.

Tunyomoo na mirimo.

 Njira cia kwebera tunyomoo na mirimo ni untu bwa bata mono kwou taara antu aega na anoru a kuanda, anda itarenie bwega, taara mithemba irina thiria, nyinyia maria, kunikira muthetu, ukanoria mono, na wikiire ruuji riria rwendeka. Tunyomoo jaria maingi ti thina kiri uandi bwa mabukandu Kenya. Tumira into bia muarubaine, bia pyrethrum kana bia tephrosia kurua na tunyomoo ta moths, thrips kana scales kethira muti nijugitaritue mono.

Mirimo iji no ithirwe iri hatari:

Avocado root rot: (murimo jwa Phytophthora fungus) Miti niciaraga maciara jamakai na irina mathangu jamakai na ikari jaka yajitue ikiendaga kunyara. Biang'i nibiithagua ni riuu na bigakua. Miri no yore na muti junthe jugakua jutikuri. Miti yajitue nibati gukurwa na ikaithua. Ruuji rwa mwanki na utumiri bwa ndawa cia tunyomoo kiri mbeu iria ikaumithua niyo njira iria ikairwa inya ya kuebera murimo juju. Kurina ndawa ijiri cia kurua murimo juju - Ridomil na Aliette.



Anthracnose: Matunda nijagijaga macunci ja rangi ya brown jamoomu. Matunda jamaanake nojagwe, indi kiri jaria jagukura kura, murimo juju nijwicithaga mwaka gitunda gigakura na gikagunda. Jaria maingi, ndawa cithithitue na copper nitumagirwa kurua na Anthracnose.

Cercospora fruit spot: Macunci ja yellow jamanini nijonekaga matundene na mathangune. Kanyuma, nijagaruraga rangi ikaa brown riu jakaunikanga, na kwou gutuma tunyomoo tungi twija na uuthu. Murimo juju kinyaju nijuthiragua na ndawa cithithitue na copper

Kugua kwa matunda.

Kugua kwa mathangu ti murimo na nikwonekanaga mono kiri mitunda ya mithemba imingi. Miti nigwithagia matunda iria jaingia na jaria jutiumba kurera bwega mwanka jakura. Mibukando nigwithagia matunda jaja janyii ja nono, na kairi riria jang'ana ta nkara.

Gutua mabukandu.

Miti iria ithithiritue grafting niambagiria kurita maua na guciara matunda nyuma ya miaka ithatu gwita inna yarikia kuandwa muundene.

Kuri mantu joonanagia ati gukura kuri akui:

- Kiri mithemba imiiru, nikwithagirwa kurina kugaruka kwa rangi kuuma green gwita black kana purple.
- Kiri mithemba ya green, kiang'l kia gitunda nikiejaga yellow, ngozi no yonekane igitiga kumeta meta, kana gitina gikauma icunci bigukara jaka gukurota.
- Mithemba imwe niambagiria gukara jaka ikwerua.
- Matunda jaria jakaraga iguru riria jekirwa ruujine nijethagirwa jakuri.

Thoko.

Tonga mabukandu jonthe na umenyeeeri bubwingi! Thoko cia oome, mono cia Europe, ciri mantu na mawatho jamoomo jaria arimi babanini boomba kwona jarina uumo gukinyira. Thoko cia aja citi uumo bubwingi ou indi kinyacio ciri mantu, niuntu mbokandu nicikuraga cionthe igita rimwe, na kwou gutuma arimi baaga baita kumania na kujendia. Gwika kana kuthithia into bia mabukandu ni akui burema kuumbika. Arimi ba Mabukandu jwa kwendia kwou no mwanka bagwatane na ukui mono nikenda boona thoko injega.

Mithemba iria yonekanaga mono ya mibukandu:

1. **Hass na Fuertes:** Mithemba iji nitumagirwa kuthithia mbeu injeru (gicunci kia iguru kia mitunda ithithiritue grafting). Niendagwa mono niuntu bwa maguta jamaingi.
2. **Puebla:** Muthemba juju nijutumagirwa ni arimi babaingi kuandiraingi nontu itina mirri ndene na itigwatagwa ni mirimo
3. **Singapore:** Juju ni muthemba jumweru juria jukurangaga na juumba guciara jwakinya mieri ikumi na inna gwita ikumi na itano. Nijukinyaga uraja bwa fiti ijiri.
4. **G5 na G6:** Mithemba iji iri niendi mono nontu nithithagia bwega guntu kuri iguru na kinya kuria kuri nthi. No iumithirue kiri mithemba ingi yonthe kenda matunda jathongomua.

Arimi nibakuurua bagure miti ya kuanda kumania na aumithia baria baijikenena bena baruga.

Mazingira Bora



TIST

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Kikuyu Version

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Kilia TIST Cluster ya Mbeere wakat mkutano wao wa kila mwezi, mwezi uliopita.

Inside:

TIST: Gutema miti ya TIST ni kuna watho wa TIST values na Greenhouse Gas Contract. Nigutumaga miturire ya arimi angi a TIST ithuke. Page 2

TIST: Kuhanda mithemba miingi ya irio. Page 2

TIST: Makorobia nomakuhe mbecha makiria. Page 4



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

Mwari muhetuku, nitwaririe uhoro wa utemi wa miti thiini wa Cluster Leaders semina iria ya Gitoro.

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

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

Mawatho maya nimathiite na mbere nakuhuthika thiinwa tabaarira ya carbon. Aguri a

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

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

Ta kiririkania uhoro wigii maundu maria Cluster Leaders yaugire niikurumirira, araniria na Charles (0720474209) uhoro wigii:

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

TIST: Kuhanda mithemba miingi ya irio.

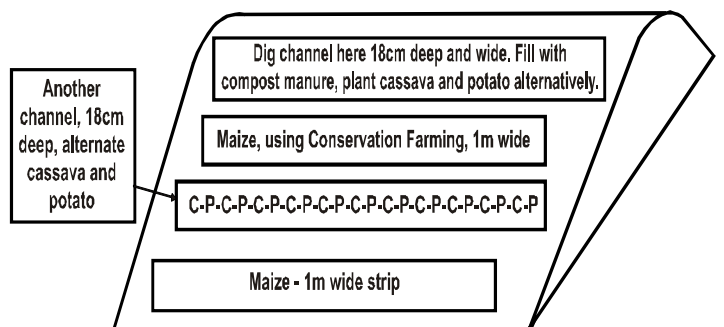
Murimi noahande irio mithemba miingi kimera kimwe. Ririawacagura mithemba iria ingitwarana wega nouteithiririe kwagirithia biodiversity migundaini, kwngerera unoru wa tiiri na kunyihia ugwati wa tutambi na mirimu.

Intercropping yonanagia kuhanda na gukuraniria iri mithemba miingi mugunda-ini umwe. Ona ningi kuhanda irio na miti hamwe.

Imwe cia ikundi cia TIST nicigeretie njira ta ici, iria ninjega na kuria kuinamu na kuri na iharuruka.

1. Muhari-ini wa mbere enja mutaro wa uriku wa 18cm na warii wa 18cm.
2. Ihuria mutaro na thumu.
3. Handa mianga na waru.
4. Huhari-ini ucio ungi, handa mbembe 1m ukihuthira Kilimo Hai.
5. Cokera mianga na waru
6. Cokera membe.

Njira ino ihuthagira makiria maundu maria tukoretwo tugithoma. Ni kuhandaniria na gukuraniria irio mithemba miingi mugunda-ini umwe, ihuthagira thumu na Kilimo Hai.



- Geria gucenjania mihari ya mbembe na miti. Ikundi nicigeretie kuhanda mihari itatu ya mbembe na muhari umwe wa mringa/yellow cassia/leucaenia/bead tree.
- Mihari ya muhia noihandwo gatagati ja mihari ya moringa na leucaenia.



- Geria mutukanio wa calliandra na mboco na marigu, mboco na kahuwa (riria kari kanini).
- Geria kuhandaniria njugu na mbembe/muhia na mwere.
- Geria na utaganu niguo wone ruia mwege na uheane maciaro kuri TIST.

Gucenjanja uhandi wa irio mugunda-ini.

Crop rotation ni kuria arimi macenjanagia uhandi wa irio na imera mugunda-ini umwe. Nikuri mutarata uria urumagirirwo kuria riria uracagura muthemba uria ukurumirira wagiriirwo ni kuya kuma family ingi. Gucwnjanja guku niguteithagia kwngerera unoru wa tiiri tondu mimera ngurani ikoragwo na miri ya uraihu ngurani kuuga ati unoru niuthiaga ugityonyaga tiiri-ini kuringana na muthemba wa irio.

Niguo kugia na mawega ma gucenjanja irio, ninginya ucenjanje wega. uu

Nitonde mimera ya muthemba umwe noiguciririe muthemba umwe wa tutambi na mirimu na riria wacenjanja niunyahagia ugwati wa tutambi na mirimu gutherema na guikara tiiri-ini.

Group 1: Cucumber, gourds, pumpkin, squashes, watermelon (Gourd family)

Group 2: Broccoli, brussel sprouts, cabbage, cauliflower, collards, kale, radish, turnip, mustard, watercress (Crucifer/Brassica family)

Group 3: Eggplant, pepper, tomato, potato (Solanaceous family)

Group 4: Lettuce, artichoke (Aster family)

Group 5: Maize, rice, sorghum, wheat, oat, barley, millet (Grains and cereals family)

Group 6: Beans and peas (Legume family)

Group 7: Garlic, leek, onions, chives (Allium family)

Group 8: Carrot, celery, dill, parsnip, parsley (Carrot family)

Group 9: Cassava, sweet potato, taro, yam, water chestnut (root crop family)

Group 10: Cotton, okra (Mallow family)

Angikorwo njira ino ninditu, arimi aingi nimahuthagia na gukorwo na ikundi 5 ci gucenjanja.

a) Mathangu(broccoli, mboga, cauliflower, kales, spinach etc) nicifataraga unoru muingi gukira mboga.

b) Matunda (chilies, eggplants, peppers, tomatoes, etc.).nicibataraga thumu muingi no ti ta irio cia mathangu.

c) Irio cia miri crops (carrots, beetroots, potatoes, onions, radishes, turnips, etc).citibataraga humu muingi ta mathangu na miri.

d) Legumes (beans, chickpeas, cowpeas, grams, peas, pigeon peas, etc.).maundu mangi ma bata macio ni guthondekanitrogen tiiri-ini.

e) Cereals(mbembe, muhia, mwere)

Maundu ma kurora mbere.

Geria kuhandana mbembe na njugu hamwe mwaka wa mbere na mwaka wa keeri uhande muhia. Handa njugu mwaka wa mbere na utukanie na legumes, sunflower na/kana waru mwaka wa keeri.

Njira ingi ni kuhnada mbembe irumiriirwo ni legumes na soybeans kana njugu na kimera kiu kirumiriire ugerie kindu ta cotton.

Geria gutiga mugunda utarimite gwa kahinda ka mwaka umwe ucoke uhande ringi gwa kahinda ka miaka 3-5 utautigite ringi. Njira ino niikuhe





mugunda kamweke ga gukorwo na unoru. Geeria thaara na nyeki ya ngombe.

Na muno makiriahanda legumes mbere ya kuhanda cereals. Riria wahanda mimera ya Brassica(ta mboga) mbere na thutha wa Solanaceous(ta nyanya) noguteithie kugitira mirimu ya tiiri na miri.

Ino ni njira ya gucenjaniai muhandire wa irio mugundaini kuma kuri Infonet-Biovision. Iroya muhiano wa mugunda uri na plot 4 hari imera 4 na o kimera kiri na mieri 4.

Kimera 1:

- Plot 1: Maize / garlic / onions / or leeks
- Plot 2: Eggplant / chilies / potato / or tomato
- Plot 3: Broccoli / cabbage / cauliflower / or kale
- Plot 4: Beans / cowpeas / grams / or peas

Kimera 2:

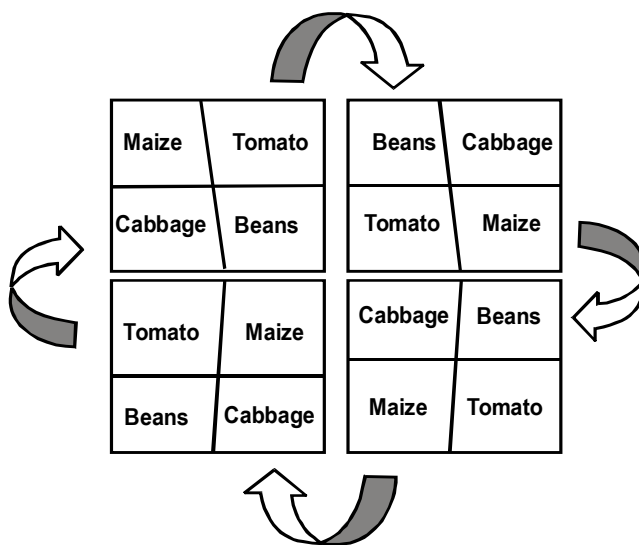
- Plot 1: Beans / cowpeas / grams or peas
- Plot 2: Broccoli / cabbage / cauliflower / or kale
- Plot 3: Eggplant / chilies / potato / or tomato
- Plot 4: Maize / garlic / onions / or leeks

Kimera 3:

- Plot 1: Broccoli / cabbage / cauliflower / or kale
- Plot 2: Beans / cowpeas / grams / or peas
- Plot 3: Maize / garlic / onions / or leeks
- Plot 4: Eggplant / chilies / potato / or tomato

Kimera 4:

- Plot 1: Eggplant / chilies / potato / or tomato
- Plot 2: Maize / garlic / onions / or leeks
- Plot 3: Beans / cowpeas / grams / or peas
- Plot 4: Broccoli / cabbage / cauliflower / or kale



TIST: Makorobia nomakuhe mbeca makiria.

Ta uria turutite from *The Organic Farmer*(<http://www.theorganicfarmer.org/profile/2>) and Jürgen Griesbach, 2005: *Avocado growing in Kenya*. ICRAF (World Agroforestry Centre), Nairobi, Kenya.

Makorobia ni matunda ma bata Kenya ma kwedio guku bururini ona nja ya bururi.

Kuri mithemba iria minene itatu ya makorobia, iria ikuraga miena ngurani. Roar ni muthemba uriku wa makorobia ungikura kwanyu. Ukihuthira mbegu kana muciarithanio na kuma nathariini cia kwanyu nikuo kwegu makiria, miti ta iyo noikure wega kwanyu.

Guthondeka mbegu.

Mbegu ciunganagio kuma kuri miti iria miega na mikuru. Mbegu iria ciarutwo nociikio dawaini ya kuninafungi na cicoke cihandwo tuta-ini kana maratathi-ini. Kiiruru nikiega niguo cimere wega. Riria mbegu ciakinyia 20cm uraihu na ciri na mahuti mana niguo cimunyagwo na cihakandwo mikebe-ini.

Guciarithania nogwikwo thuha wa kahinda ta ka mieri 6. Miti iria miciarihanie niikaraga iri minini na ikambiriria kuruta kiro tene(ta 3-4 years thetha wa kuhanda mugunda-ini) gukira iria cihanditwo mugunda-ini. Miti iyo minini niikoragwo ikinyite ya

kuhandwo mugunda-ini thutha wa 3-4 months thutha wa guciarithanio.

Uhandi wa miti.

Tiiri wagiriirwo nigukorw uri muriku , munoru na muhinyu. Makorobia matiendaga tiri utatemeirwo maai wega, tiiri mumu, miaraho ya maai kana ugunyu muingi, na ningi ndwendaga tiiri uri na cumbi kana acid. Kahinda karia keega muno ga kuhanda ni kimera kia mbura .utaganu wa miti wagiriirwo nigukorwo uri wa 6-10m, kuringana na unoru wa tiiri, riera na maundu mangi. Marima magiriirwo nikwenjwo mari na utaganu wa 2ft na uriku wa 2ft, ukgitigagirira tiiri nimuhinyu na maai makaunithio wega na miri ndirathuburwo. Tiiri uria wenjwo noutukanio na thumu na phosphate ya mahiga angikorwo iri ho. Handa mimera umenyereire utaguthmbura na guthukia miri na uriku ota uria irari nagui iri mikebe-ini. Thondeka handu hahana basin guthiururukiria muti niguo ukorwo na maai. Thutha wa kuhanda, mimera yagiriirwo kuheo maai orio. Huthira 5-20 lt cia maai kuringana na muigana wa mumera. Humbira na mahuti niguo ugunyu wa tiiri uikare na ikure wega. Guitiriria maai nigukoragwo kuri kwa bata makiria. Gitira miti kumanana mahiu.

Kuhe maai kwa miti ya matunda.

Kuhe maai ni kwa bata muno hingo ya ikiro ngurani riria muti urakura. Hingo ya mweri wa mbere, na ningi mwaka wa mbere wa gukura, miti niyagiriirwo ni guikara ikiroragwo na kuheo maai riria yonania

ta ing'ariirwo. Mikorobia niikoragwo na miri minene kuringana na riera niibataraga mai maingi na muno kimera kia riuu. Riria iraruta kiro, matunda niwega ithondekwo niguo irute matunda mega.

Kuhe fertilizer.

Niguo ukorwo na maciaro maingi, niwega na undu wa bata gwikira mikorobia thumu maita maingi. Gatagati ka 5-20 kg cia fertilizer nociikirwo muti-ini umwe o mwaka – niitumaga mahuti makorwo mari mega na ti kuruta kiro, na miri ya makorobia ndiiguanaga na cumbi muingi tiiri-ini. Phosphorus niya bata ohamwe na potassium niya bata niguo mimera igie na maciaro maingi.

Tutambi na mirimu.



Njira cia kwigitira ni cia bata kwa uguo caria handu hari na tiiri mwega, tagania miti yaku, cagura miti iria miega, gitira kumana na tutambi, humbira na mahuti, ndugekire fertilizer nyingi makiria na uhe maai riria kwagiriire. Tutambi ti thina munene hari urimi wa avocado thiini wa Kenya. Huthira indo cia neem, kuhariria pyrethrum, kana tephrosia. Niundu wa tutambi ta fruit moths, thrips kana scales angikorwo nimaritwo muno.

Mirimu ino noikorwo na ugwati munene:

Avocado Root Rot: (**a Phytophthora fungus disease**) miti iciaraga matunda matari maingi na ikoragwo namahuti manini, maria makoragwo mari na rangi ungi na makahoha. Hongi cikoragwo ciumagariti na cikoma thutha wa kahinda kanini.



Miri niibuthaga na muti wothe ukoma. Miti iria inyititwo ni murimu uyu yagiriirwo ni kumunywo na iteo. Kuhonia na maai mahiu na kuuraga tutambi nikwega niguu muti ugie na maciaro maingi. Kuri na dawa mithemba 2 iria niya murimu uyu. Ridomil na Aliette.

Anthraxnose: matunda magatuika ma brown, makagia na maroro, matutnda matari makuru makagua thi. Murimu uyu wihithaga nginya riria matunda makagethwo. Muno dawa ciri na copper nichithagirwo.

Cercospora fruit spot: maroro manini ma rangi wa yellow nimonekaga matunda-ini, thtuha, nimacokaga magatuika ma brown n Mtunda magatukanga njira iria ihotithagia titambi guthukangia. Murimu uyu onaguo uninagwo na dawa cia copper.

Friut Drop: murimu uyu niwonekanaga muno kuri mithemba miingi ya matunda. Miti iguithagia matunda maingi makiria. Makorobia iguithagia matunda maigi riria matakinyite ma kugethwo na riria makinya muigana wa itumbi.

Kugetha makorobia.

Matunda maria maciarithanie mambagiriria guciara thutha wa 3-4 miaka thtutha wa kuhandwo mugunda-ini
Ici ni dalili ati mutu niukinyite wa guciara.

- Gucenja rangi na kuiiririra.
- Matunda kuhana yellow, ngothi guthenga.
- Kuhana ta maeruha.
- Matunda maria maraareramaai-ini nimo makuru.

Thoko.

Menyerera makorobia na umenyereeri munene!
Thoko cia nja na makiria Europe nicikoragwo na mawatho manene maria arimi anini mangiremwo ni gukinyiria. Thoko cia guku nicikoragwo ciri nditu tondu makobia makuranagira hamwe. Arimi nimaremagwo ni kuiga na guthondeka makorobia. Kwa uguo arimi nimagiirwo kunyitithanio na thoko njega cia makorobia.

Mithemba iria yonekanaga ya makorobia.

1. **Hass and Fuertes:** mithemba ino ihuthagiwo guciarithania makorobia maria mangi. Nimakoragwo na maguta maingi muno.
2. **Puebla:** mahuthikaga guciarithania mwena wan a-thi na matikoragwo na fibre na matinyitagwo ni mirimu.
3. **Singerpore:** uyu ni muthemba mwega na ukuraga thutha wa 14-15 months ukuraga na uraihu wa 2ft.
4. **G5 na G6** mithemba ino niyo ikuraga kundu kuingi na noiciarithanio na mithemba ino ingi yothe niguu kumiagirithia.

Arimi nimarahinyiririo magure mbegu kuma kuri aria metikiritio.

Mazingira Bora



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Kilia TIST Cluster ya Mbeere wakat mkutano wao wa kila mwezi, mwezi uliopita.

Inside:

Kukata miti yote katika mashamba ya TIST ni kukiuka maadili ya TIST na mkataba wa GhG wenye athari kubwa sana. Unadhuru matendo mazuri ya maelfu ya wakulima katika TIST. Page 2

TIST: Mseto wa mimea. Page 2

TIST: Avocado zaweza kukupa mapato mazuri. Page 4



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

Mwezi uliopita, tulijadili kuhusu ukataji miti yote katika semina ya Cluster Leaders iliyofanyika Gitoro.

Mwezi huu, tunabeba kumbusho la makala mwezi uliopita tukiitisha taarifa na fikira kutoka kwa wakulima wa TIST kuhusu mawazo bora zaidi yatayosaidia kumaliza kabisa ukataji miti yote. Chama cha Uongozi wa TIST kilimchagua Charles Ibeere (0720 474209) kufanya kazi ya karibu na viongozi katika cluster, wawakilishi katika Cluster Leaders na wakulima katika TIST kushughulikia suala hili.

Ni muhimu kujua kuwa kandarasi ya GhG ambayo wakulima wote wa TIST walitia saini, ina mkataba wa wakulima wa kuweka miti kwa muda mrefu. Inaruhusu tu wakulima kupunguza miti (ikiwa imekaribiana sana), kukata matawi ili kupata kuni, na kukata miti hadi asili mia tano ya miti iliyo katika kikundi kila mwaka miti inapfikisha miaka kumi au zaidi.

Kanuni hii ni muhimu ili kuendelea kuhusika katika mradi wa kaboni. Wanunuzi wa kaboni huhitaji uhakika kwamba miti ambayo wananunulia

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

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

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

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

TIST: Mseto wa mimea.

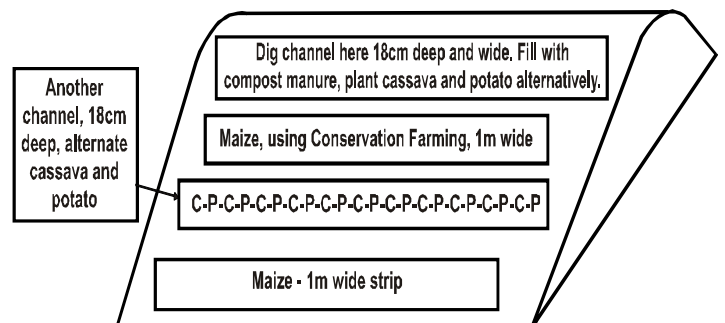
Upandaji wa mimea mingi ni ambapo mimea miwili au mitatu hukuzwa pamoja katika msimu mmoja. Kwa mchanganyiko unaofaa, hili laweza kuongeza bionuwai katika ardhi, kuongeza rutuba na kupunguza uwepo wa vijidudu na magonjwa.

Mseto hueleza zoezi la kupanda mimea tofauti wakati mmoja katika shamba moja. Pia yaweza kuhusisha kukuza mimea pamoja na miti kwa mfano kilimo mseto.

Baadhi ya vikundi wamejaribu mbinu zifuatazo, nzuri hasa kwenye miteremko

- Kwa mstari wa kwanza, chimba mtaro wenye urefu wa centimita kumi na nane na upana wa centimita kumi na nane
- Jaza mtaro huu na mbolea ya mimea
- Panda mihogo na viazi vikifuatana
- Kwa safu ya pili panda ukanda wa mahindi mita moja ukitumia mashimo ya kilimo hai
- Mstari mwingine wa mihogo na viazi
- Mstari mwingine wa mahindi na kadhalika

Mbinu hii hutumia mengi ya tuliyosoma katika mafunzo: ina kilimo mseto, ina mbolea ya mimea na pia kilimo hai.



- Jaribu kufuatanisha mistari ya mahindi nay a miti. Vikundi vidogo vimejaribu kufuatanisha ukanda wa mita nane wa mahindi na msatri wa miti ya moringa / yellow cassia / leucaenia / bead tree
- Mistari ya mtama yaweza kupandwa kati kati ya mistari ya moringa au leucaenia.



- Jaribu mchanganyiko wa calliandra na migomba ya ndizi, calliandra na mahagwe, calliandra na mahindi, mahindi na maharagwe, maharagwe na leucaenia, maharagwe na ndizi, maharagwe na kahawa (ilipo changa).
- Jaribu kuchanganya kunde na mahindi / mtama au uwele.

Jaribu nafasi mbali mbali ili uone ni gani bora zaidi, na ujulishe TIST matokeo.

Mawazo kuhusu mzunguko wa mazao

Mzunguko wa mazao ni ambapo wakulima huzunguka huku wakipanda mimea mbali mbali katika ardhi moja. Kuna utaratibu maalum wa upanzi wa mimea, ambapo zao litakalofuata hutoka familia tofauti na iliyopandwa kabla. Mzunguko wa mimea waweza kuwa wenye faida kwa rutuba ya udongo kwani mimea tofauti huwa na urefu tofauti wa mifumo ya mizizi, kumaanisha si safu moja ya virutubisho vya udongo humalizwa mwaka baada ya mwaka. Mbinu hii pia husaidia kuvunja udongo katika safu tofauti, jambo ambalo huboresha mfumo wa udongo, na laweza kuvuta aina tofauti za viumbe hai wenye faida katika udongo.

Ili kupata faida za kuzungusha mimea, lazima aina tofauti ya mimea ipandwe kila wakati. Hili ni kwa sababu mimea ya aina moja huvuta vijidudu na magonjwa sawa, na kuzungusha aina kwaweza kupunguza uwezekano wa baadhi ya vijidudu na magonjwa kuchukua umiliki kwatika udongo.

Orodha ifuatayo inaweka mimea kulingana na vikundi. Mimea kutoka kikundi kimoja haifai kupandwa moja baada ya nyingine. Hakikisha umechanganya vikundi vyako katika mpango wako wa mzunguko!

- Kundi la kwanza: Tango, vibuyu, malenge, squashes, tikiti maji (Familia ya mtango)
- Kundi la pili: Broccoli, Brussel sprouts, kabichi, cauliflower, collards, sukuma, radish, turnip, haradali, water- cress (Jamii ya crucifer / Brassica)
- Kundi la tatu: Mbilingani, pilipili, nyanya, viazi (Jamii ya solanaceous)
- Kundi la nne: Lettuce, artichoke (Jamii ya Aster)

- Kundi la tano: Mahindi, mchele, mtama, ngano, oat, shayiri, mtama (Jamii ya nafaka)
- Kundi la sita: Beans na mbaazi (jamii ya kunde)
- Kundi la saba: Vitunguu, leek, vitunguu saumu, chives (Jamii ya Allium)
- Kundi la nane: karoti, celery, dill, parsnip, parsley (Jamii ya karoti)
- Kundi la tisa: Muhogo, viazi vitamu, taro, viazi vikuu, water chestnut (Jamii ya mizizi)
- Kundi la kumi: Pamba, okra (Jamii ya Mallow)

Iwapo mfumo ulio hapo juu ni mgumu sana, wakulima wengi hurahisisha kazi hii kwa kuweka mimea katika vikundi vitano na kuzunguka kati ya vyenyewe (taarifa imetoka katika tovuti ya Infonet-Biovision):

- Mimea ya majani (broccoli, kabichi, cauliflow- ers, sukuma, mchicha na kadhalika). Huhitaji virutubisho zaidi ya zinginezo
- Mimea ya matunda (Pilipili, mbilingani, pilipili kali, nyanya na kadhalika.). Huhitaji kiwango kikubwa kiasi cha virutubisho lakini si kama mimea ya majani.
- Mimea ya mizizi (Karoti, beetroots, viazi, vitunguu, radishes, turnips, na kadhalika). Huhitaji virutubisho chache ukilinganisha na mimea ya majani na ya matunda.
- Jamii ya kunde (maharagwe, chickpeas, kunde, ndengu, mbaazi, na kadhalika.). faida yao nyongeza ni kutia naitrogeni iliyo katika hewa udongoni.
- Nafaka (Mahindi, mtama, uwele na kadhalika)

Mawazo ya kuzingatia:

Jaribu kupanda mahindi na njugu pamoja mwaka wa kwanza na mwaka wa pili upande mtama. Jaribu kupanda njugu mwaka wa kwanza halafu upande mchanganyiko wa jamii ya kunde, alizeti na/ au viazi katika mwaka wa pili

Wazo linguine ni kujaribu kupanda mahindi halafu jamii ya kunde ifuate kama vile soya au njugu. Halafu msimu utakaofuata jaribu kupanda mimea utakaoleta pesa kama pamba.





Jaribu kuacha shamba bila chochote mwaka mzima, halafu upande mimea tena miaka mitatu hadi mitano kabla ya kuliwacha tena bila chochote. Hili litaipa ardhi nafasi ya kurudisha virutubisho udongoni. Fikiria kupanda nyasi iwapo una mifugo.

Kwa jumla, panda jamii ya kunde kabla ya nafaka. Kupanda mimea kutoka jamii ya Brassica (kama Kabichi) kabla na baada ya mimea kutoka jamii ya Solanaceous (kama nyanya) kwaweza kuzuia mjengo wa mafundo ya viwavi na kukauka kunaoletwa na bakteria.

Lifuatalo ni wazo la kuzungusha mimea lililochukuliwa kutoka Infonet-Biovision. Linachukua mfano wa shamba lenye viwanja vinne huku kila msimu hukiwa takriban miezi minne.

Msimu wa kwanza:

Kiwanja cha kwanza: Mahindi / saumu / vitunguu / au iliki

Kiwanja cha pili : Mbilingani/ pilipili /viazi / au nyanya

Kiwanja cha tatu : Broccoli /kabichi / cauliflower / au sukuma

Kiwanja cha nne :maharagwe / kunde /ndengu / au mbaazi

Second season:

Kiwanja cha kwanza: maharagwe / kunde /ndengu / au mbaazi

Kiwanja cha pili: Broccoli /kabichi / cauliflower / au sukuma

Kiwanja cha tatu: Mbilingani/ pilipili /viazi / au nyanya

Kiwanja cha nne: Mahindi / saumu / vitunguu / au iliki

Third season:

Kiwanja cha kwanza: Broccoli /kabichi / cauliflower / au sukuma

Kiwanja cha pili: maharagwe / kunde /ndengu / au mbaazi

Kiwanja cha tatu: Mahindi / saumu / vitunguu / au iliki

Kiwanja cha nne: Mbilingani/ pilipili /viazi / au nyanya

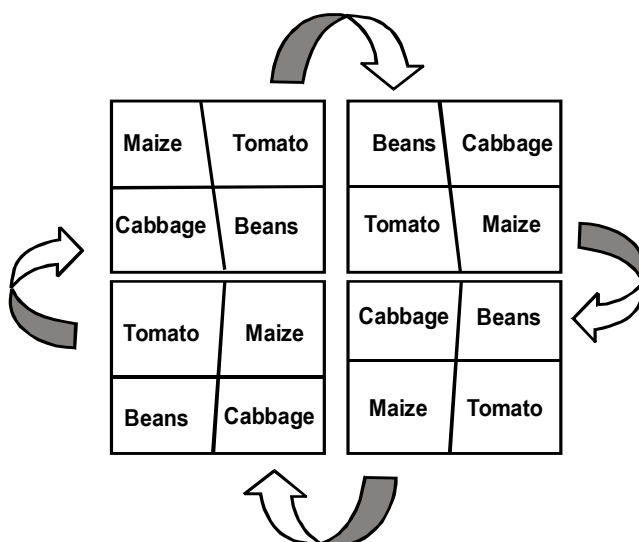
Fourth season:

Kiwanja cha kwanza: Mbilingani/ pilipili /viazi / au nyanya

Kiwanja cha pili: Mahindi / saumu / vitunguu / au iliki

Kiwanja cha tatu: maharagwe / kunde /ndengu / au mbaazi

Kiwanja cha nne: Broccoli /kabichi / cauliflower / au sukuma



TIST: Avocado zaweza kukupa mapato mazuri.

Kama ilivyotolewa katika The Organic Farmer(<http://www.theorganicfarmer.org/profile/2>) na Jürgen Griesbach, 2005: Avocado growing in Kenya. ICRAF (World Agroforestry Centre), Nairobi, Kenya.

Avocado ni tunda lenye umuhimu la biashara Kenya katika masoko ya hapa na pia ya nje.

Kuna aina tatu za miti ya avocado ambayo hufaa katika miinuko tofauti. Angalia ni aina zipi za avocado hufanya vizuri zaidi katika hali maalum za kwako. Kutumia mbegu au miti ya kupandikizwa kutoka kwa miti iliyopo tulipo na pia kutoka katika

vitalu vilivyopo katika maeneo tulipo yenye afya na mikubwa hupendekezwa, kwani miti hii itakuwa na uwezekano mkubwa wa kufanya vizuri katika eneo hilo.

Uzlishaji wa miche.

Mbegu hutolewa kwa miti iliyo na afya na kwa matunda yaliyo na afya na yaliyokomaa. Mbegu zilizochukuliwa na kusafishwa zaweza kuloweshwa katika maji yenye dawa ya kukabili vimelea halafu zipandwe katika matandiko ya vitalu au katika mifuko ya nailoni iliyotobolewa. Kivuli ni muhimu

kwa ukuaji. Miche iliyo katika vitalu inapofikisha urefu wa centimita ishirini na kuwa na jozi mbili za majani yaliyokomaa vizuri, hung'olewa, kubebwa na kupandwa katika mikebe.

Upandikizi waweza kupandwa baada ya miezi sita. Miti iliyopandikizwa huwa mifupi zaidi na huanza huzalisha maua mapema zaidi (miaka mitatu au mine baada ya kupandwa shambani) ya miche iliyopandikizwa. Miti hiyo midogo itakuwa tayari kuhamishiwa shambani miezi mitatu au mine baada ya kupandikizwa.

Upanzi wa miti.


Udongo wafaa kuwa wenye kina kirefu, rutuba na hewa tosha. Miti ya avocado haipendelei udongo usio lowa haraka na wenye uzito. Wakati mwafaka zaidi wa kupanda ni mwanzoni mwa msimu wa mvua. Nafasi kati ya miti yafaa kuwa mita sita kufika kumi, kulingana na rutuba ya udongo, hali ya hewa, na aina. Mashimo ya kupanda huchimbwa sana sana yakiwa na upana wa fiti mbili na kina cha fiti mbili, hakikisha umevunja udongo ulioshikamana na kuwa mgumu ili kuruhusu maji kulowa vizuri na kuruhusu mizizi kukua bila ya usumbufu. Udongo uliotolewa waweza kuchanganywa na mbolea, mbolea ya mimea au madini ya phosphate ikiwa yapo. Panda miche kwa utaratibu bila ya kuumiza mizizi katika kina kimoja kama ilivyokuwa katika mikebe. Jenga bonde kutokana na udongo likizunguka mti ili kupata maji zaidi na kushika maji.

Baada ya kupanda, miche yafaa kutiliwa maji papo hapo. Tumia lita tano hadi ishirini za maji kulingana na ukubwa wa mche. Waweza kufunikia udongo kwani ni faida kwa sababu hupunguza upotevu wa maji na kudhibiti ukuzi wa magugu. Kutia maji kutatakikana mara kwa mara. Jambo linguine lenye umuhimu ni kulinda kila mche kutokana na mifugo na wanyama pori.

Kutilia mitunda maji.

Kunyunyuzia maji ni muhimu katika hatua nyingi za ukuzi wa mti na uzalishaji wa matunda. Katika miezi ya kwanza ya kujishikilia, na pia katika miaka ya kwanza ya ukuzi, miti lazima iangaliwe kila baada ya wakati mfupi na itiliwe maji inapoonyesha alama za kuhitaji maji. Miti ya avocado huwa na mizizi mirefu, lakini kulingana na hali ya hewa yaweza kuhitaji kuongezwa maji sana sana wakati wa kiangazi ukiongezeka. Wakati wa kupata maua, matunda kuanza kutokeza na matunda kukomaa, maji tosha ni muhimu ili matunda yakomae vizuri.

Mbolea.

Ili upate uzalishaji mzuri, ina faida kusaidia miti ya avocado kwa kutia mbolea kila baada ya wakati mfupi. Kilo kati ya tano hadi ishirini zaweza kuwekewa kila mti kila mwaka. Kuwa mwangalifu na naitrojeni – huwa inaongeza ukuzi wa majani  bali si wa maua, na mizizi ya avocado huharibiwa na chumvi nyingi katika udongo. Phosphorus sana sana huhitajika pia, na potassium ni muhimu katika miti iliyokomaa inayozaa matunda.

Wadudu na magonjwa.

Hatua za kuzuia ni muhimu kwa hivyo chagua mahali panapofaa na palipo na rutuba, panda ukinafasisha vizuri, chagua aina zilizo na afya zaidi, dhibiti magugu, funikia udongo, usirutubishe zaidi ya inavyohitajika, wekea maji yanapotakikana. Wadudu si shida kwa uzalishaji wa avocado Kenya. Tumia vitu vinavyotokana na Muarobaini, bidhaa za pareto na maji ya yephrosia na kadhalika dhidi ya wadudu kama nondo, chiriku na magamba ikiwa uharibifu ni kali.

Magonjwa yafuatayo yanaweza kuwa hatari: Avocado kuoza kwa mizizi: (a Phytophthora fungus disease) Miti huzalisha kwa uhaba, na ina majani chache zaidi, yaliyogeuka rangi na kuanza



kukauka. Matawi huchmwa na jua na kufa, mizizi huoza na miti yote inakufa bila kukomaa. Miti iliyoahirika yafaa kung'olewa na kuharibiwa. Maji ya moto na dawa ya wadudu ikitumika kwa mbegu zinazokuza miche hupendekezwa kama njia ya kuzuia. Kuna kemikali mbili zilizothibitishwa dhidi ya ugonjwa huu - Ridomil na Aliette.

Anthracnose: Matunda huwa na madoa ya hudhurungi yaliyokakuka. Matunda machanga yaweza kuanguka lakini katika yaliyokomaa zaidi, ugonjwa hujificha hadi tunda linapovunwa na kuiva. Sanasana, madawa ya wadudu yenye copper hutumika dhidi ya Anthracnose.

Cercospora fruit spot: Madoa madogo yenye rangi ya njano hutokeza kwa matunda na majani. Baadaye hugeuka na kuwa hudhufungi na kuanza kuvunjika, hivyo basi kurahisishia viumbe hai kazi ya kushambulia matunda hayo. Ugonjwa huu pia hudhibitiwa na dawa za wadudu za copper.

Kuanguka kwa matunda: Kuanguka kwa matunda si ugonjwa na huonekana sana katika matunda ya aina nyingi. Miti huanguka matunda yaliyozidisha na ambayo haitawezi kulisha hadi yafike ukomavu. Miti ya avocado huanguka matunda yaliyozidi yakiwa na ukubwa wa kunde na mara ya pili yakifikisha ukubwa wa yai.

Kuvuna avocado.

Miti iliyopandikizwa huanza kupata maua na kuzaa matunda miaka mitatu au mine baada ya kupandwa shambani.

Vifuatavyo ni viashiria vya ukomavu unaokaribia:

- Katika aina zilizo na rangi nzito, kuna mabadiliko katika rangi kutoka kijani kuenda nyeusi au zambarau

- Katika aina za kijani, mashina ya matunda hugeuka njano, ngozi yaweza onekana ikimeta meta kidogo zaidi, au madoa yanayofanana na kutu kuonekana katika mwisho wa matunda.
- Aina zingine huchukua rangi nyeupe.
- Matunda yanayoelea juu yanapoingizwa majini sana sana huwa yamekomaa.

Soko.

Shughulikia avocado zote kwa utaratibu mkubwa! Masoko ya nje, sana sana ya uropa, yana mahitaji magumu sana ambayo wakulima wadogo huona yakiwa magumu sana kutimiza. Masoko ndani ya nchi hayana ugumu huo mwingi lakini pia yana ni magumu kiasi. Kuweka au kutibu avocado zilizovunwa ni jambo lililo karibu kushindwa kuwezekana. Wakulima wa avocado za kuuza hivyobasi, lazima wawe na ushirikiano wa karibu sana na soko.

Aina za avocado:

1. **Hass na Fuertes:** Aina hizi mbili hutumiwa kama sehemu ya juu ya matunda yaliyopandikizwa. Zinajulikana sana kwa sababu ya mafuta mengi.
2. **Puebla:** Hutumika kama vipandikizi na wakulima wengi kwani hayana ufumwele na ni sugu kwa magonjwa.
3. **Singapore:** Hii ni aina mpya inayokua haraka na kufika ukomavu katika miezi kumi na nne au kumi na tano. Hupanda hadi urefu wa fiti mbili.
4. **G5 na G6:** Aina hizi mbili hupendwa sana kwani zaweza kufanya vizuri katika nyanda za juu na za chini. Zaweza kupandikizwa na aina zingine zote ili kuboresha tunda.

Wakulima wanashauriwa kununua miche kwa wazalishaji wa miche waliothibitishwa

Mazingira Bora



TIST

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

Kikamba Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Kilia TIST Cluster ya Mbeere wakat mkutano wao wa kila mwezi, mwezi uliopita.

Inside:

TIST: Kutema miti ngulutu yoothe ila nitalikite nthini wa TIST ni ikosa inene nundu nuuvitya kwialana wiw'ano na walany'o wa TIST na nyumba sya ngilini sya nzeve. Ni iumiasya memoko maseo ma makili ma aimi ma TIST. Page 2

TIST: Kuvulany'a na kuvandanisya mimea/maliu. Page 2

TIST: Mavokoto/Makolovea nimatonya ukunenga ueti museo. Page 4



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

Mwai muthelu nitwa neenanisye iulu wa miti kutemwa yonthe yila twai na semina ya Cluster Leaders twi Gitoro.

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

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

Mwiao uyu ni wavata nundu kuendeeza kwithiwa nthini wa soko wa nzeve itavisaa. Aui ma nzeve ino nimekwenda kuikiithw'a kana miti ila mekuuia nzeve itavisaa yivo. Vala aimi matemanga

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

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

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

uyithia niwamanenga ngalama iteyoo.

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

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

TIST: Kuvulany'a na kuvandanisya mimea/maliu.

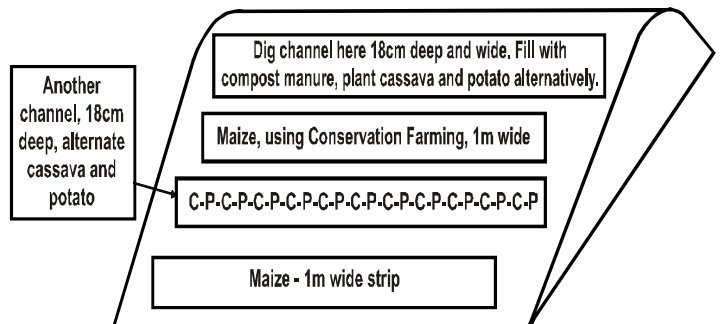
Kuvandanisya nivala mithemba ili kana mingaingi ivanditwe vamwe ivulene mbuani imwe. Kwa mithemba ila yaile ivokanyw'a nitonya kuete useo kwa muthanga, kwongela ngetha ona kuaa mitutu na mowau ula ukwataa mimea yi muundani.

Nima ya kuvandanisya/kivulany'o ni nzia ya kuvata mithemba kivathukany'o vamwe savali umwe ikethiwa na mbua imwe na no yithiwe yiya kuvandanisya miti na mimea/liu.

Ikundi imwe sya aimi ma TIST nitatite nzia ino yivaa nthi ila ninzeo kwa miunda ila mivauuku (yina itheeo).

1. Mukululo /laini wa mbee ni kwisa levu/mutau wina uliku wa 18cm na uthathau wa 18cm.
2. Ususya levu/mutau uyu na vuu wa yiima.
3. Vanda manga na maluu ivulene.
4. Mukululo/laini ula uatiie vanda kasio kena uthathau wa itambya mbemba uitumia nima ya kusuvia vala wisaa maima mauvanda.
5. Laini ungi wa manga na maluu.
6. Laini ungi wa mbemba.

Nzia ino itumiaa nzia imwe kati wa ila twimanyiitwye sya nima ya kivulany'o na itumiaa vuu wa yiima na nimaya kusuvia



- Tata nzia ingi ya kuvanda mbemba na laini sya miti. Ikundi imwe nitatite kwa kuvanda mbemba na miti ta Moringa/Yello cassia/Leuvaenia/Bead tree.
- Laingi sya muvya muvandwa katikati wa miti ya Moringa kana Leucaenia



- Tata uvulany'a maiu na Calliandra, Calliandra na mboso, calliandra na mbemba, mbemba na mboso, mboso na leucaenia, mboso na maiu, mboso na kaawa kekanini.
- Tata kuvulany'a nthooko na mbembakana muvya kana mwee.

Tatithya na myanya wone nikiva kiika nesa na uitavwa tist kila woona na wamanya.

Kuvanda uivinduan'y'a mivai kivathukany'o kisioni kimwe

Kuvanda uivinduan'y'a ni undu ukuanasya vala wiivandite ithiwa unavandite mbemba mbua mbitu kisioni kii mbua ino uivanda mboso. Ve nzia ila iatiiawa ukethia niwavanda mimea kuma mivaini kivathukany'o ya mimea. Kii nikitethasya muthanga muno ona muimi nundu muthanga nukwataa unou na vaita kivathukany'o kuma mimeani kivathukany'o ya mivai kivathukany'o nundu mii ya mimea kivathukany'o nitumaa mimea yosa liu kuma muthangani kwa uliku kivathakany'o. Kii ingi nikitumaa muthanga ulekany'a nundu mii yithiawa na uliku kivathikany'o na kuete utethyo kwa tusamu tula twikalaa muthangani na kutuma ona twongeleka.

Kukwata vaita wa nima ino ya kuvinduan'y'a kwa mithamba na mivai kivathukany'o nonginya kila ivinda uuvanda. Kitumi nundu muvai umwe niwendeeasya kiinyu na mitutu imwe na uwau umwe ndi wavinduan'y'a mivai ethiwa ve uwau kana mitutu inai inambiia kulika muvaini ula unavandite nuvikiiiaa na kuthela nakulea kwikinyia muthangani.

Vaa ve mithemba ya mivai kivathukany'o ya mimea. Mimea ya muvai umwe ndyaile uvandwa vandu vamwe mbua siatianie. Lilkana uvulkany'e na uikuany'a. Ikundi sya mivai kithukany'o nita:-

- Kikundi 1. Cucumber, Ikuu, malenge, Mongu, matikitiki (gourd Family).
- Kikundi 2. Broccoli, Brussel Sprouts, Makavisi, Coulliflower, collards, sukuma, radish, turnip, mustartd, watercress (Crucifer/ Brassica family).
- Kikundi 3. Eggplant, matulu, manyanya, maluu (Solanaceous family)

- Kikundi 4. Lettuce, artichoke (Aster family)
- Kikundi 5. Mbemba, musele, muvya, ngani, museleku, barley, wimbi (grains and cereals family)
- Kikundi 6. Mboso, mivai ya mbiisi, nzuu, (legume family)
- kikundi 7. Saumu, Leek, kitunguu, chives (Allium family)
- Kikundi 8. Kalati, celery, dill, parsnip, parsley (carrot family)
- Kikundi 9. Manga, makwasi, ikwa, water chestnut, taro (root crop family)
- Kikundi 10. Vamba okra (Mallow family)

Ethiwa walany'o uu wivaa iulu winavinya kuuulewa nusyokete ukailwa ukoka ikundi sya mithemba itano vandu va ikumi ila ni waile ukuany'a kila mbua kwianana na walany'o wa (kisomo kya Infor-net-biovision Website)

- Mivai ya matu (sukuma, sivinakyi, broccoli, makovisi etc) Nundu niyendaa liu mwingi kwi mivai ingi.
- Mimea mithemba ya mitunda (matulu, eggplant, ndulu, manyanya naingi mbingi) nisyendaa unou wa muthanga o kiasi lakini ti mwingi ta wa mimea ya matu.
- Mimea ya mii (kalati, betroots, maluu, kitunguu, radishes, turnips, makwasi, manga) nimendaa liu munini kuma muthangani masianiw'a na mimea ya matu.
- Mimea muthemba wa mavoso (mboso, mbiisi, ndengu, thooko, nzuu na ingi mbingi. nisyithiawa na useo ungi nundu nisyongelaa muthanga unou wa nitrogen.
- Mimea muthemba wa cerials (mbemba, uimbi, mweee, muvya, uimbi na ingi mbingi).

Kya usisya ni:-

Tata uvandanisye mbemba na nzuukaranga mbua ya mbee na mbua iatiie uivanda muvya. Tata uvande nzuu karanga mbua na uivulanya ni muvai muthemba wa mavoso ta ilaa(sunflower) na kana maluumbua ya keli.





Kingi kiseo kya utata ni kuvanda mbemba iatiwe ni muthemba wa mavoso ta soybeans kana nzuu kalanga. Na mbua ila iatiie uivanda muvai ungi wa uete mbesa ta vamba.

Tata ingi kwa kueka muunda uteuima kana kuithya vandu va ilungu ya mwaka na indi uisyoka uvande myaka ta 3 - 5 mbee wa kueka ingi kwa ivinda o yamwaka. Kii nikiunenga muthanga ivinda ya kwitungiana na kutunga unoi. No wikie kitwethya vau utekuima ethiwa wina indo.

Kwavamwe nikana niwaile uvanda muthemba wa mavosvo mbee wa kuvanda mbemba kuvanda mumea kuma muvaini wa Brassica kana makovisi mbee na itina wa kumya muvai wa solanaceous(eg manyanya) ni usiia uwau ula withiawa makovisini na miini witawa nematodes na mbaa.

Vaa itheo ve kieleelo kya undu wa ukuanya mivai kivathukany'o kuma kwa infornet-Biovision. Vaa vosetwe ngelekany'o ya muunda wina vuloti inya kana levu inya ila ikukua ivinda ya mbua inya kila mbua yina myai ina.

Mbua yambee

- Levu 1: Bemba/kitunguu saumu/kitunguu/kana leeks
- Levu 2. Eggplant/chilies/maluu/na manyanya
- Levu 3. Broccoli/lkovisi/Cuuliflower / na sukuma
- Levu 4. Mboso/Nzuu/Ndengu/ mbiisi

Mbua ya keli

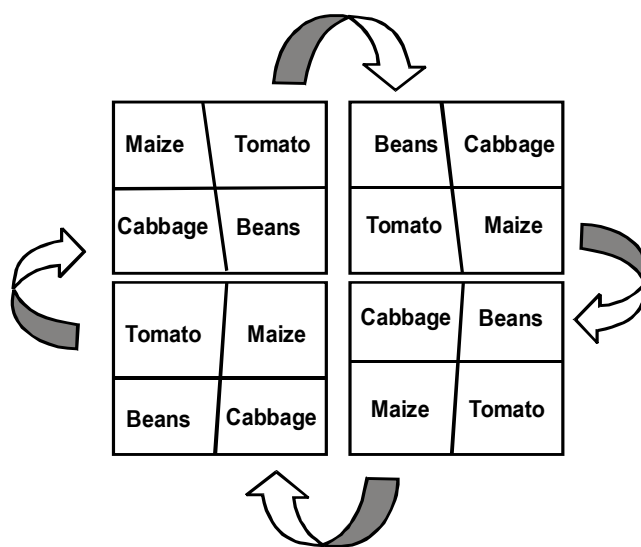
- Levu 1: Mboso/Nzuu/Ndengu/ mbiisi
- Levu 2. Broccoli/lkovisi/Cuuliflower / na sukuma
- Levu 3. Eggplant/chilies/maluu/na manyanya
- Levu 4. Mbemba/kitunguu saumu/kitunguu/kana leeks

Mbua ya katatu

- Levu 1: Broccoli/lkovisi/Cuuliflower / na sukuma
- Levu 2. Mboso/Nzuu/Ndengu/ mbiisi
- Levu 3. mbemba/kitunguu saumu/kitunguu/kana leeks
- Levu 4. Eggplant/chilies/maluu/na manyanya

Mbua ya kana

- Levu 1. Eggplant/chilies/maluu/na manyanya
- Levu 2. mbemba/kitunguu saumu/kitunguu/kana leeks
- Levu 3. Mboso/Nzuu/Ndengu/ mbiisi
- Levu 4. Broccoli/lkovisi/Cuuliflower / na sukuma



TIST: Mavokoto/Makolovea nimatonya ukunenga ueti museo.

Uvoo uuni kuma kwa *The Organic Farmer* ([www.theorganicfarmer.org/profile 2](http://www.theorganicfarmer.org/profile/2)) na Jurgen griesbach, 2005:

Mavakato ala mameaa Kenya . ICREF (World Agroforestry Centre), Nairobi, Kenya.

Makolovea ni Itutnda yivata muno Kenya kwa utandithya wa kenya na nthi sya nza.

Ve mithemba itatu ya makolovea ila yikaa nesa isioni kivathukany'o. Sisy ni muthemba wiva wikaa

nesa kisionikyaku. Uitumia mbindi kana miti misikany'e kuma ikoloveani sya kisio kiu na ingi kuma vandu vangi syikwika nesanga nundu miti ila imeteete kisioni kiu niyikaa nesa muno kwi muti wa kuete.

Undu wa useuvya mbeu.

Mbindi nikolanaw'a kuma itini ila itena uwau na nzeo. Mbindi ithi no siindwe ndawani kuola fungi na ivaandwa kivuioni kana mikeveni ona kana

mathanguni ma nailoni mena maima. Muunyi niwavata kwa kumea. Mamina umea mena uasa wa 20cm kana mena matu eli meanu nesa niw'o makuawa na kutwawa kuvandwa vala maile. ingi kusingawa nikwikawa itinia wa myai thathatu. Makolovea ma usingany'a nimasyaa tene (itina wa myaka 3-4 itina wa kuvanda kithekani vala yaile) kwi ala mataasinganw'a. Itina wa kusinganya nutwaa muundani itina wa myai itatu kana ina.


Kuvanda miti na kwikinya kwayo.

Muthanga nonginya withiwe wi muliku, munou na wina nzeve nesa/ulekanitye. Makolovea manyendete muthanga uteutwaa kiw'u na mayumiasya munyu kana kiw'u kina asiti. Ivinda iseo ya uvanda mikolovea ni mbua iyambiia na uyiikiithyya yina utaaniu wa matambya 6 kana ikumi kwinana na unou wa muthnga, nzeve na muthemba. Maima ma kuvanda nimethiawa na uliku wa viti ili na uthathau o wa viti ili. Ethiwa yiima niyooma isanga muthanga ulekany'e nikana kiw'u kitonye uthi. Muthanga ula waumya uyisa maima aya no utumie kuvulanya na vuu uvanda miti ino. vanda ute kwana nga mii ya miti ino na uliku oula wiinaw'o kivuioni. seuvya katindio ungu wa kamuti utumia muthanga nikana withie ona wangithye kiw'u nikiutumana. Itina wa kuvanda ngithya. tumia lita 5-20 kwianana na undu muti wiana. Nouwike ungu wa muti uyyu na mavuti kiw'u kieke uny'aa na mituki. ethiwa kuna mbua nonginya ungithye kwa ivinda na uisuvia indo kana nyamu sya kitheka kwanga miti ino.

Kungithya Miti ya matunda

Kungithye ni kuseo kwia nana na muti undu wianite. mbee mwai yambee wavanda, na itina mwaka wambee mbee wa muti uyuu utanamba kwikinya. Miti niyaile usiw'a kaingi na kungithw'a na kusiw'a kana niyithiwa na wonany'o wa kwenda kiw'u. Ikolovea nisyithiawa na mwii muasa wa kiw'u kwinana na nzeve ya kisio munamuno yila kwina munyao niwaile ungithya. Yila miti yina malaa, matunda kwikika na kwina miti ino niyendaa kiw'u kianu.

Mbolea /Vuu

Muti wa kikolovea niwendaa kwikala uyikiwa vuu ta wa kilo 5 kuvika 20 kwa kila muti kila mwaka. Syisya nitrogen yongelaa matu no ti matunda na ingi mii ya kivokoto nimenanite na munyu. Phosphorus  na potassium nisyavata kwa muti kuima ula ukusyaa matunda.

Mitutu na mowau al;a makwataa ikolovea

Kusiia kwithiawa kwa vata muno. Ni useo kusisya vandu vanou, ikiithya utaniu mwailu wivo, vanda mivai ila miseo na kisio kyaku, ndukaeke yiia (imia) ndukekie vuu mwingi. Na ingi mitutu I thina munene kwa makolovea nthini wa Kenya. tumia syindu sya neem kuiita matunda maku na kuaa tumitutu.

Mowau aya nomethiwe muisyo kwa mikolovea yaku Kwoa kwa mii (Phytophthora fungus disease) Miti yithiawa na usyao munini na matu mate maingi na mauluku mavovu. Ngava nisyumaa. mii niyoaa na muti uyuma. miti ila yina uwau uyu niyaile ukuwa na kwanangwa. Kiw'u kivyu niw'o muiito na ndawa sya fungicide kuiita mbeu



kwoondu wa kusiiia uwau uyu. Ve ndawa ili undu wa uwau uyu ila ni:- Ridomil na Aliette

Anthracnose: Matunda/Makolovea kumesya ikonde ya muthanga, kuma, kwitika matunda memanini na kwa itunda iviku ona uwau withiawa wivithite two nekaa muvaka yikew'e niw'o uwonaa. Ingi vaa ndawa ya uwau uu ni Cooper based fungicides nitumiawa kuiita Anthracnose.

Cercospora Fruit Sport. Kaa ni kasio kaniini ka yelo kakwataa itunda kana matu utethia no matonatone. itina nimekalaa muthanga na mayatuka na makatuma mowau angi makwata itunda yiu. Uwau uyu onaw'o uitawa na Copper based fungicide.

Kuvaluka kwa matunda: uu ti uwa na niundu withiawa na mithemba ingi ya miiti ya mitunda. Miti nivalukasya matunda ala ikwiw;a itetonya kuea mavike memanii na meananga weethia meana itumbi.

Kuketha makolovea

Miti ya usikanya yambiia usya yina myaka 3 kana 4 itina wa kuvandwa.

Ve mawonany'o muti uyu kana makolovea ni maviku na nimekwenda kwiw'a

- Ala maiu nimavinduaa langu kuma ngilini makaia kana makekala puple
- Ala ma ngilini tukome tula tumakwatiie twikalaa yelo na ikonye yiieka umetameta kana muthya ikekala ta wina nganga.
- Mithemba ingi niyikalaa ta yeeuva

- Matunda ala mathambalalaa maindwa kiw'uni methiawa me maviku.

Ndunyu/Soko

Kwata makolovea nesa usuviite! Soko sya nza ta European market syithiawa na ulumu muvyu undu wa useo wa itunda yila mekwenda. ula ni vinya kwa aimi anini kuvikia. Soko sya vaa kenya iithina muno nundu makolovea kaingi makothaa uvika othe iimwe kwoou aimi uyithia maina kwata vaita nesa mata. Ni undu muto kwa imi kwia makolovea kwa ivinda iasa. Kwoou ala maimaa na kuvanda makato/ makolovea kwa undu wa utandithya nimaile ukwatanw'a na aimi anini kwoondu wa soko wina vaita kwa muimi.

Mithemba ya mikolovea ila yi kenya

1. **Hass and Fuertes.** Mithemba ino ili nitumikaa kwa kusikany'a nundu yithiawa na mauta maingi.
2. **Puebla:** Niyendekente nbi aimi aingi nundu ndiwaangaa na ndithiawa na ndii
3. **Singapore:** Kikolovea muthemba uu wianaa mituki na uvikiaa kusyaa wina myai 14 kana 15 na withiwa na uasa wa viti ili
4. **G5 na G6:** Mithemba ino ili nimiseo nundu niyikaa nesa isioni syothe na niyendekete ni aimi nundu ona nisinganaw'a na mivai ingi na ikeka nesa.

Aimi mekulw'a maue mbeu kwa nduka ila mbitikilya.

Mazingira Bora



TIST

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

Kipsigis Version

An Environmental, Sustainable
Development and Community Forestry
Program.



Kilia TIST Cluster ya Mbeere wakat mkutano wao wa kila mwezi, mwezi uliopita.

Inside:

TIST tiletab ketik en imbarekab TIST ko moiboru kit negararan amun mogitegis tolochigab TIST ak koyonchinet ne kigeyai oak ghg. Page 2

TIST: Koyometab minet chebo minutik. Page 2

TIST: Konu avacado melekwek. Page 4



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

Kingalalen biik chegimiten tuiyetab Cluster Leaders at Gitoro.

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

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

ketit ne sobe amun bose koristo, agot komogirib niton kogochin temik chechang asent amun monyuru melekwa.

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

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

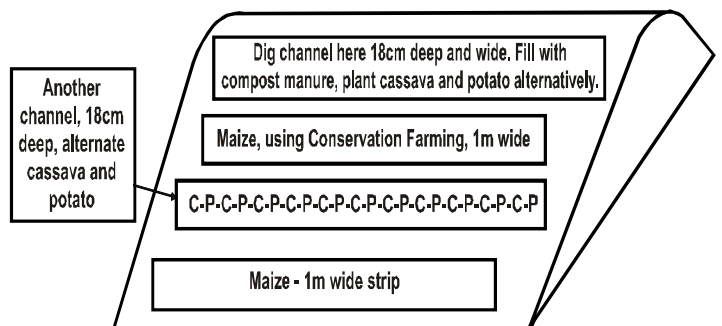
TIST: Koyometab minet chebo minutik.

Koyometab minutik chesire oeng en imbaranan kochechang en kasarta agenge niton kotoreti kotes timuwek kotesin ngungunyek kisich okwointo ak kongem suswe ak miyonuek.

Koyometab minutik komoe kole minetab rurutik chebesiotin en kasarta nenin kobo menetab ketik kou alley cropping miten anyun temik chebo TIST chekigoyom en tulonok.

1. En lainit netai kebole 18cm orit ak tebesinto
2. Kinte keturek
3. Kemin mogoak biasinik kosibngei
4. Lainit nebo oeng komin bandek 1m
5. Lainit ne isibu keminchi mogo ak biasinik
6. Lainit neisibu kemin bandek . E.t.c

Kigeboisien oraniton mising amun kigenyuru konetisiet kou koyometab minutik koboisien keturek imbaret ne makibat



- Yumten bandek ak ketik en lainitab kiyomta kurubisiek alak 3m chebo bandekak moringa /yellowcassia /eucaenia/bead tree.
- Lainitab mosoniking ak moringa ak leucaenia.



- Koyometab calliandra ak indisinik ,calliandra ak ngatek calliandra ak bandek, bandek ak ngeutek, ngeudek ak leucaenia ngendek ak indisinik ngedek ak kawek [komege chen]
- Koyometab cowpea ak bandek /songhum /bek. Yomten tuguchu asi inyoru wolutik ak imwochi TIST.

Kibwate nebo waletab minutik.

Noton anyun kometab minutik cheter chin en imbaret ne agenge en kasarta neter kararan mising noton amun igochin imbaret kouyon okwoiyet amun minutik alak kotinye tigitik.

Chebenti kwony mising konyoru omitwogik Chemoten kwony, nyorunen kotik che miten ngungunyek kotesak amun bosbus ngungunyek Miten cuyun keiunet neo yon kagimin rurutik che besiolin en imbar amun agotkemin minutiet ne agege ko nyunmnyum kenyor susutik ak miyonuek ek minutik.

Che isibu ko minutik chemonyolu kemin kosibgel en kasarta egege

1. Cucumber,gourd,pumpkin,sguashes,watermelon,gurd famliy,
2. Broccoli, brussel sprouts, cabbage, couliflowers, collard, kale radish, turnip mustard, watereress (brassica family)
3. Eggplant, pepper, tommatoes, potatoi (solanaceus)
4. Lettuce, artichoke (aster family)

5. Maize, rice, sorghum, wheat, cat, barley, millet, (grain and cereals family)
6. Beans, and peas (legume family)
7. garlic, leak, onion, clive (allium family)
8. Carrot, celery, dill, parsnip, parsley (carrot family).
9. Cassava, sweet potato, taro, yam, water chest nut(root crop family).
10. Cotton, okra (mallow family).

- A) Sogegab (broccoli, cabbage, cauliflowers, kale, spinach atc) komoche missing omtuwokik chechang kosir nkewe alak.
- B) Logoek (chillies, eggplant, pepper, tomatoes) komoche omituwoki chechang ago mogou, che tinye sogek.
- C) Minutikab tigitik (carrot, beetroots, potatoes onion, radishes, turnips etc) moche ichek omituwogik che ngerin omoguu chebo logoek anan chebo sogek.
- D) Minutik kou (beans, chiek peas, cow peas, gram, peas, pigeon peas etc) toreti koyomti omituwogik en koristo ak kotesi ngungunyek
- E) Minutik (bandaek, mosogik, ak beek).

Okibwat kabwatani

Yomten imin bandaek ak ichuguk en kenyit agenge nebo imin mosonik min ichuguk kenyit anenge nebo oeng imin legum, sunflower, potatoes yomten bndaek agosib, legume kou soybeans or groundnuts ne isibu imin kou cotton.





Yomten ibagach imbaret kenyit agenge komagitem, yeisibu imin kenyisiek 3-5, niton kogochin koret konyor omituwogik, kol napar agot intinye tuguka.

Entugul isib imin minutik chebo tai kou ngendek asi igote bandek, min minutik kou cabbage (brassica family kou ye isibu imin family solanaceous) kou nyanyik.

Che isibu ko minutik che kigole kosibgei yeibata age.

Minet netai:

- Plot 1. Maize/garlic/onion/leeks
- Plot 2. Eggplant/chillies/potato/tomato
- Plot 3. Broccoli/cabbage/couflower/kale
- Plot 4. Beans/cowpeans/gram/peas

Koletab oeng:

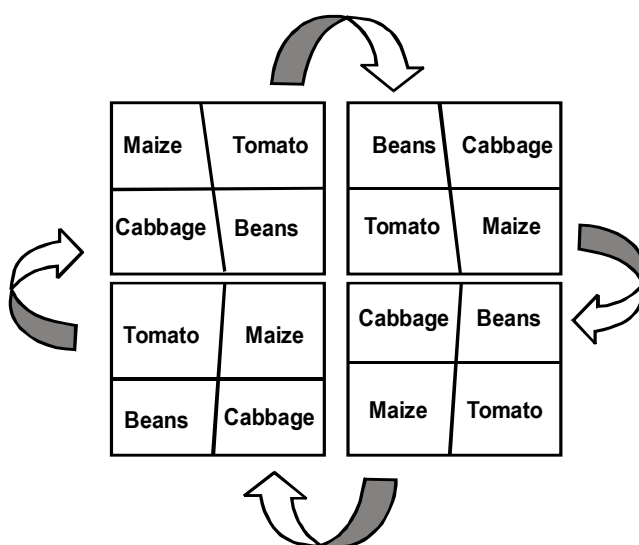
- Plot 1. Beans/cowpeans/gram/peas
- Plot 2. Broccoli/cabbage/couliflower
- Plot 3. Eggplant/chillies/potatos/tomatoes
- Plot 4. Maize/garlic/onion/leeks

Koletab somok:

- Plot 1. Broccoli/cabbage/caouliflower
- Plot 2. Beans.cowpeans/gram/peans
- Plot 3. Maize/garlic/onion/leeks
- Plot 4. Eggplant/chillies/potomatos/tomatoes

Koletab angwan:

- Plot 1. eggplant/chillies/potato/tomatoes
- Plot 2. Maize/garlic/onion/leeks
- Plot 3. Beans/cowpees/gram/pees
- Plot 4. Braccoli/cabbage/couliflower



TIST: Konu avacado melekwek.

As extracted from *The Organic Farmer* (<http://www.theorganicfarmer.org/profile/2>) and Jürgen Griesbach, 2005: *Avocado growing in Kenya*. ICRAF (World Agroforestry Centre), Nairobi, Kenya.

Bokomut avacado en kenya kipoisien en kaa ago kararan en mungaret kiyokto koba bitonin.

Miten anyun ketik smogu chegororon che nomege ak ole menet .boisien tenterek anan ko avacado ne kiginamsi koyop ketik che kororon ana ko inyorunen kabetisiek chenegiten en inye. Ole kinyor chin tenterek. Kinyorunen ketik chekororon ogo che kigogongio.

Logoek.kiiume ak kubit en betit anan ko en muturaisiek ak keur en roboruo asi kogochi kobityo. Yon kagibit en kwony kegonye ye kait kointab 20cm kitut ak kinte mutura kotinye itik oeng.robet kerobe kobo orowek 100. Tebiye kenyisiek [3-4] asi kosich tobtok yekagemin kotagomi kabeti kotore orowek somok kot koit angwan.

Minetab ketik ak ribet.

Nyolchin ole miten ngungunyek che kororon che tinye okwoindo.momoche ole menet neu mising,ole tononen beek che tinye munyek chechang.kararan ingemin en kasarta nebo kanametab robta.en kokwoutik komoche 6cm ak 10cm kotiyenge oleu emet [soin anan embwen] .keringet koibe 2ft ak 2ft kwo kwony,ker ile keiste mugugulik asi kochomchi tigitik koba orit ketesin keture asi komuchi ketit konyor omitwogik en oret ne nyumnyum.

Ye kaimin ingonyor beek. Ingonyor 5-20 litres chebo beek kotiny e gei kiit neten ketit.ye kemin ketit iur kel asi kour tigitik ak kogochi beek koteben keringet nebo let ko ngerib komaus tuga anan ko tiony.

Ka nagetab beek.

Bogomonut mising en keti beek en kasarta ne eetu ak kasarta ne tegose ketit . Rigin anyun ketit asi iguye sobenyin ak kinemoche en kasarta nenin.

Kotontoleiwek.

Ketit nebo avocado komoche mising konyor kotontoleiwek en abagora. En kenyit komuche konyor ketit agenge 5-20kg . Nitrogen kogochin koet ketit ak sogek .Tigitik anyun kotinye kolewen igochang munyuk en ngugunyek.



Susurik ak mionuek.

En teretab susurik komoche imbaret ne akwai igochin kokowoutik cheyome, rib komanam timto imbar amat in de keturek chechang kosir ,ak konyor beek .motinye ketitab avocado emenyon kewelnatet.

Mionuek che isubi ko chayach.

Nunetatab tigitik ;inyoru kotinye ketit sogek che tuten che motinye iton .temenik kololiotin,ye testai koyome en let koyam ketit ne tinye miondo kengusu en imbar .miten anyun kerichek che



iyonotin che kimuche keriben miondo-ridomil anan ko alietler

Anthracnose; inom e soge k kotuwegitun ak konyor chen igosenik. logoitat ne m ingin komuche kotormosgei ko yon koet logoyat kotebie agoi korur ,kitere anyun copper base fungicide.

Cercospora fruit spot; mongui kotolelionit logoiyyat ak sogek en kosernonit ak koter niton koyochin susurikn kochut lo goiyat kiteren kora copper based fungicide .

Fruit drop; niton ko momiondo baten bitu en logoek chechang amun moyome omitwogik koriben miten .

Keset ;avocado ne kiginam si kosib korure en kasartab kenysisiek 3-4 yon kagemin.

- Miten koborunoik cheiboru yon koet; miten walet en logoek magotet konyalit kot tuiit
- Nyone komegotinye logoiyyat iton
- Inge torchi bek logoiyyat ko moinisi

Ndonyo; temik che mengechen komoitin amun tinye olik cheole mogutik chechang mising, moitintos kururiyo tugul en kasarta ne agenge; ko moitin temik konyor anan kowal koik tuguk alak

Ketik che nootin.

1. Hass ak fuartes- togunotin anan nootin amun tinye muwanik che chang
2. Duebla; keti komotinye usisiek ago monomin mindo
3. Singapore; kararan amun chogu en etune konge kotinye orowek 14-15
4. G5 ak g6; keti kochang en ole miten robta ak ole momiten kinomchitos ak ketik alak, asi kenyor logoek chegororon

Temik ocheng ole omuche onyorunen ketik cheyomokse.