

Moduli 3 - Sehemu ya 2: Mbinu za kukusanya mbegu na utunzaji wa mavuno baada ya mavuno



Welcome to part 2 of module 3 – seed collection methods and post harvest handling.

Karibu kwa sehemu ya 2 ya moduli 3 - mbinu za kukusanya mbegu na utunzaji wa mavuno ya baada.

Lengo la moduli



Moduli hii inalenga kuhakikisha ufahamu mkubwa wa:

- Mbinu tofauti za kukusanya mbegu
- Vifaa vinavyohusiana na vinavyopaswa kukusanywa pamoja na mbegu
- Aina tofauti za mbegu
- Utunzaji wa mavuno baada ya kuvuna

The aim of this module is to have a greater understanding of the following:

- Different seed collection methods
- Associated material that should be collected alongside seed
- Different types of seed
- Post harvesting handling

Lengo la moduli hii ni kuwa na ufahamu zaidi wa yafuatayo:

- Mbinu tofauti za kukusanya mbegu
- Vifaa vinavyohusiana na vinavyopaswa kukusanywa pamoja na mbegu
- Aina tofauti za mbegu
- Utunzaji baada ya kuvuna



The choice of seed collecting method depends on the shape and height of the tree, fruit characteristics, site conditions and the skills held within your team.

Uchaguzi wa njia ya kukusanya mbegu inategemea sura na urefu wa mti, sifa za matunda, hali ya tovuti na ujuzi uliofanyika ndani ya timu yako.

Mbinu za kukusanya mbegu



Available options are:

- A – Tree climbing
- B – Mesh bags
- C – Pruning
- D – Collecting seed

Chaguo zilizopo ni:

- A - kupanda miti
- B-Mifuko ya wavu
- C - kupogoa
- D - Kukusanya mbegu



Kupanda miti

- Unahitaji mafunzo sahihi na vifaa vya usalama
- Epuka kutumia spikes
- Inakuwezesha kukusanya mbegu zaidi ya kufikia zana za muda mrefu
- Inaruhusu uteuzi bora wa matunda na mbegu

Tree climbing

- Tree climbing should only be carried out by trained individuals, should never be carried out alone and always with somebody with first aid training.
- Try to avoid using spikes as they can damage the tree and reduce its protection to insects and other pests and pathogens.
- Tree climbing can allow for efficient collection of seeds that are beyond the reach of long-handled tools.
- This method also enables the collector to carefully select fruits and seed.

Kupanda miti

- Kupanda miti lazima tufanyike na watu wenye mafunzo, haipaswi kufanywa peke yake na daima na mtu mwenye mafunzo ya misaada ya kwanza.
- Jaribu kuepuka kutumia spikes kwa vile zinaweza kuharibu mti na kupunguza ulinzi wake kwa wadudu na wadudu wengine na vidude.
- Kupanda miti inaweza kuruhusu ufanisi wa kukusanya mbegu ambazo haziwezi kufikia zana za urefu.
- Njia hii pia inawezesha mtoza kuchagua matunda na mbegu kwa makini.

Kuunganisha mifuko ya mesh karibu vichwa vya mbegu

- Hupata mbegu kutoka kwa matunda ya dehiscent
- Muhimu wakati upatikanaji mara kwa mara kwa aina ya lengo hauwezekani
- Ondoka kwa muda mrefu kama itaongeza nafasi ya mashambulizi ya wadudu au kuoza



Typing mesh bags around seed heads is a useful technique for capturing seeds from dehiscent fruits that would otherwise split and disperse seed far from the mother tree. It is a useful technique when it is not possible to access the target species frequently, i.e. to ensure the seed collecting opportunity is not missed. However, seed should not be left within a mesh bag for a long period of time as this will increase the change of insect attack or rotting.

Kuchapisha mifuko ya wavu karibu na vichwa vya mbegu ni mbinu muhimu ya kukamata mbegu kutoka kwa matunda ya dehiscent ambayo yanaweza kupasuliwa na kueneza mbegu mbali na mti wa mama. Ni mbinu muhimu wakati haiwezekani kufikia aina ya lengo mara kwa mara, yaani kuhakikisha nafasi ya kukusanya mbegu haikosa. Hata hivyo, mbegu haipaswi kushoto ndani ya mfuko wa wavu kwa kipindi kirefu kama hii itaongeza mabadiliko ya wadudu au kuoza.

Mbinu za kukusanya mbegu



Kupogoa mbegu moja kwa moja kutoka kwa mti

- Mbinu ya ufanisi wakati mbegu zimeunganishwa mwishoni mwa matawi
- Unahitaji secateurs au pole pruners
- Unahitaji kuwa makini usiharibu matawi na majani

Pruning seed directly from the tree is an effective technique when seeds are clustered at the end of branches. It involves using secateurs or long handled pole pruners, attached to a rod of metal or bamboo. Pruning directing from the tree can cause damage to branches and foliage, so care should be taken not to damage branches and foliage especially for threatened species.

Kupogoa mbegu moja kwa moja kutoka kwa mti ni mbinu bora wakati mbegu zimeunganishwa mwisho ya matawi. Inatia ndani kutumia secateurs au pruners za muda mrefu zilizoingizwa, zimeunganishwa na fimbo ya chuma au mianzi. Kupogoa kuongoza kutoka kwenye mti kunaweza kusababisha uharibifu kwa matawi na majani, hivyo uangalie usipaswi kuharibu matawi na majani hasa aina za kutishiwa.

Mbinu za kukusanya mbegu



Kukusanya mbegu kutoka chini

- Ufanisi kwa matunda makubwa na nzito ambayo huanguka chini bila kufungua
- Epuka mbegu zilizochanganyikiwa za aina mbalimbali kwa kutetemeka mti na kukusanya mbegu katika ndoo au utulivu



Mbegu kutoka chini zinaweza kuharibiwa zaidi



Collecting seeds from the ground consists of searching areas under the target mother tree after the fruit or seed has fallen to the ground. It is most effective for species that produce large and heavy fruits that fall on the ground without opening. To avoid confusing seeds on the floor, it may be possible to shake the target tree and collect falling seed using a bucket or tarpaulin. Seeds collected from the ground are more likely to be damaged for example by rot or insect attack. Remember to perform a cut test to check the quality of the seed.

Kukusanya mbegu kutoka ardhi katika maeneo ya kutafuta chini ya mti wa mama baada ya matunda au mbegu kushuka chini. Ni bora zaidi kwa aina zinazozalisha matunda makubwa na nzito yanaanguka chini bila kufungua. Ili kuepuka mbegu zilizochanganyikiwa kwenye sakafu ya ardhi, inawezekana kuitingisha mti lengo na kukusanya mbegu kuanguka kwa kutumia ndoo au utulivu. Mbegu zilizokusanywa kutoka chini zinaweza kuharibiwa kwa mfano kwa mashambulizi ya kuoza au wadudu. Kumbuka kufanya mtihani wa kukata kuangalia ubora wa mbegu.

Mbinu za kukusanya mbegu



Wakati kukusanya mbegu kutoka kwa miti ni muhimu:

- Sio kuumiza miti binafsi
- Jihadharini kuharibu mbegu ili kuepuka hasara isiyohitajika ya nyenzo zinazofaa
- Kamwe usikusanye kupita kiwango

Benki ya Mazao ya Mabenki ya Botani ya Royal Botanic inashauri si kukusanya zaidi ya asilimia 20 ya mbegu zilizopatikana kutoka kila mmea au kila idadi ya watu siku ya kukusanya.

When collecting seed from tree it is important to:

- Not to harm individual trees.
- Take care not to damage the seeds to avoid unnecessary loss of viable material
- **Never over collect as it hinders natural regeneration of the species and decreases a source of food for animals**

Wakati kukusanya mbegu kutoka kwa mti ni muhimu kwa:

- Sio kuumiza miti ya mtu binafsi.
- Jihadharini kuharibu mbegu ili kuepuka hasara isiyohitajika ya nyenzo zinazofaa
- Kamwe kukusanya kama inalinda urejesho wa asili wa aina na hupunguza chanzo cha chakula kwa wanyama

Kusanya data zinazohusiana



- **Hati za Herbarium**
- Eneo na data ya makazi
- Picha



Je, ni chombo cha mimea gani?

- Kipimo cha mimea kilichojaa na kavu, kinachoonyesha sifa zake za kipekee

Kwa nini inahitajika?

- Imetumiwa kwa ajili ya utambulisho
- Inaruhusu kulinganisha na vikwazo vingine / viumbe hai vya aina

Collect associated data

When collecting your own material it is extremely important to collect associated information including, herbarium vouchers, location and habitat data and species photos. Herbarium vouchers are a pressed and dried plant specimen which is prepared to display its unique characteristics. It can be cross-checked by experts, with other vouchers or living species to confirm species ID.

Kusanya data zinazohusiana

Wakati wa kukusanya nyenzo zako mwenyewe ni muhimu sana kukusanya habari zinazohusishwa ikiwa ni pamoja na, vyeti za mimea, eneo la eneo na mazingira na picha za aina. Vocha za Herbarium ni specimen ya mimea iliyobaki na iliyo kavu ambayo imeandaa kuonyesha sifa zake za kipekee. Inaweza kukabiliwa na wataalam, na vyeti vingine au aina zenye hai ili kuthibitisha aina ya ID.

Kusanya data zinazohusiana

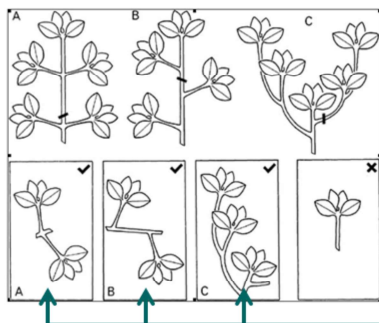


- **Hati za Herbarium**
- Eneo na data ya makazi
- Picha

Lazima uwe mwakilishi wa mmea

Makala muhimu ya kujumuisha:

- Hatua za mboga na uzazi
- Sehemu ya shina inayoonyesha mipango ya jani



It is essential that herbarium vouchers are representative of the plant particularly those in the original description. Therefore the following features should be captured:

- Vegetative and reproductive stages
- A section of the stem that shows the leaf arrangements.

Ni muhimu kwamba vyeti vya mimea ni mwakilishi wa mmea hasa wale walio katika maelezo ya awali. Kwa hiyo makala zifuatazo zinapaswa kufungwa:

- Hatua za mboga na uzazi
- Sehemu ya shina inayoonyesha mipango ya jani.

Kusanya data zinazohusiana



- **Hati za Herbarium**
- Eneo na data ya makazi
- Picha



Ni muhimu kwa:

- Andika vipengele visivyoonekana kwenye specimen
- Chukua kwa herbarium au mtaalam wa uthibitishaji
- Hifadhi kwa ajili ya kumbukumbu ya baadaye

It is important that:

- Visible features which are not visible on the specimen e.g. flower colour (which will likely fade over time) are written down.
- The voucher is taken to an expert in a botanic garden or herbarium to verify ID and compare with specimens in living and herbarium collections.
- Store for future reference. Ideally in a herbarium. If not herbarium is available, store the voucher in a dry place, as free of pests as possible.

Ni muhimu kwamba:

- Sehemu zisivyoonekana ambazo hazionekani kwenye mfano wa kielelezo, k.m. rangi ya maua (ambayo inawezekana kuharibika kwa muda) imeandikwa.
- Vikiti inachukuliwa kwa mtaalam kwenye bustani ya botani au mimea ili kuthibitisha ID na kulinganisha na vielelezo katika makusanyo ya kuishi na herbarium.
- Weka kwa kumbukumbu ya baadaye. Hasa katika mimea. Ikiwa si mboga inapatikana, duka vocha mahali pa kavu, kama bure ya wadudu iwezekanavyo.

Kusanya data zinazohusiana



- Hati za Herbarium
- Eneo na data ya makazi
- Picha



- **Rekodi kama taarifa nyingi iwezekanavyo:**
 - GPS
 - Aina zinazohusiana
 - Hali ya udongo na tovuti

Rekodi data wakati wa kukusanya
- usisubiri mpaka utakapokuwa nje ya shamba

It is also important when collecting material to record as much information about the collection site as possible. The data that should be collected includes:

- GPS
- Associated species present
- Soil and site conditions

Make sure that data is collected whilst in the field not back at the desk! Record information clearly and accurately so that other people can also understand and use the data.

Pia ni muhimu wakati kukusanya nyenzo kurekodi taarifa nyingi kuhusu tovuti ya kukusanya iwezekanavyo. Data ambayo inapaswa kukusanywa ni pamoja na:

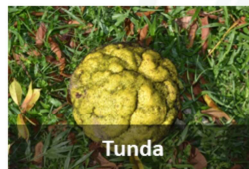
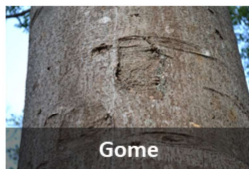
- GPS
- Aina zinazohusiana zilizopo
- Hali ya udongo na tovuti

Hakikisha kuwa data hukusanywa wakati kwenye shamba sio nyuma kwenye dawati! Rekodi habari kwa usahihi na kwa usahihi ili watu wengine wanaweza pia kuelewa na kutumia data.

Kusanya data zinazohusiana



- Hati za Herbarium
 - Eneo na data ya makazi
 - Picha
- Chukua picha za vipengele muhimu pamoja na mmea wote



Take photos of the key features of the plant such as the bark, fruit and flowers as well as the whole plant.

Kuchukua picha ya vipengele muhimu vya mmea kama vile gome, matunda na maua pamoja na mmea wote.



Post-harvest handling

Different species produce different seed types. Recalcitrant seeds lose viability quickly and cannot be dried. They must therefore be planted quickly. Many tropical climax trees and seeds surrounded by fleshy fruits are recalcitrant.

Orthodox seeds have a greater storage capacity but also may lose viability if not handled with care or stored in appropriate conditions. Many tropical pioneer species have orthodox seeds.

To find out whether a species is recalcitrant or orthodox, consult the Kew Seed Information Database and other published literature. Observations should also be made in the field. E.g. if the fruit is fleshy. You may also need to carry out storage experiments. Be sure to record the results for the future!

Utunzaji wa mavuno baada ya kuvuna

Aina tofauti huzalisha aina tofauti za mbegu. Mbegu za upasuaji hupoteza ufanisi haraka na haziwezi kukaushwa. Kwa hiyo wanapaswa kupandwa haraka. Miti ya mapigano mengi ya kitropiki na mbegu zikizungukwa na matunda ya nyama ni recalcitrant.

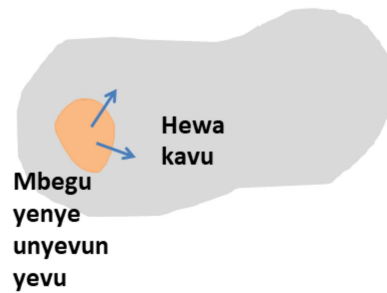
Mbegu za Orthodox zina uwezo mkubwa wa kuhifadhi lakini pia zinaweza kupoteza uwezekano ikiwa haziendeshwa kwa uangalifu au kuhifadhiwa katika hali zinazofaa. Aina nyingi za upainia wa kitropiki zina mbegu za orthodox.

Ili kujua kama aina ni recalcitrant au Orthodox, wasiliana na Hifadhi ya Taarifa ya Mbegu ya Kew na vitabu vingine vichapishwa. Uchunguzi lazima pia ufanywe katika shamba. E. ikiwa matunda ni mema. Unaweza pia haja ya kufanya majaribio ya kuhifadhi. Hakikisha kurekodi matokeo ya baadaye!

Utunzaji wa mavuno baada ya kuvuna



Mbegu ni hygroscopic - zinaweza kunyonya na kupoteza unyevu kutoka hewa inayozunguka.



- Unyevu unatoka kwenye mbegu nakuenda kwa hewa

Seeds are hygroscopic meaning that they absorb and lose moisture from the surrounding air.

Mbegu ya hygroscopic kumaanisha kwamba inachukua na kupoteza unyevu kutoka hewa inayozunguka.

Utunzaji wa mavuno baada ya kuvuna



Mbegu ya
Orthodox



Lazima zihifadhiwa mahali pa kavu ili kudumisha uwezekano

Mbegu kavu ni ufunguo wa kuhifadhi nzuri!



For orthodox seeds, drying will increase the storage ability. The seed must then be stored in a dry place to maintain its viability. For orthodox species, dry seed is the key to good storage.

Kwa mbegu za Orthodox, kukausha huongeza uwezo wa kuhifadhi. Mbegu lazima ihifadhiwe mahali pa kavu ili kudumisha uwezekano wake. Kwa aina ya Orthodox, mbegu kavu ni ufunguo wa hifadhi nzuri.

Utunzaji wa mavuno baada ya kuvuna



- Weka mbegu kutoka kwa aina mbalimbali tofauti
- Ikiwa aina ya kutishiwa - endelea mbegu kutoka kila mti wa mama tofauti
- Andika / namba mkusanyiko wako - nambari sawa kama karatasi yako ya data
- Tumia data yote kwenye kitalu



It is important to:

- Store seed from different species separately to avoid mix ups
- For threatened species make sure that seed from each mother tree is stored separately
- Label/number your collection
- Pass on all data on to the nursery as it will help the nursery team to replicate the natural growing conditions for the species and achieve the greatest chance of germination success

Ni muhimu kwa:

- Hifadhi mbegu kutoka kwa aina mbalimbali tofauti ili kuepuka mchanganyiko
- Kwa aina za kutishiwa hakikisha kwamba mbegu kutoka kila mti wa mama huhifadhiwa tofauti
- Lebo / nambari ya mkusanyiko wako
- Kupitisha data yote kwenye kitalu kama itasaidia timu ya kitalu kuiga mazingira ya asili ya kukua kwa aina na kufikia nafasi kubwa ya mafanikio ya kuota

Muhtasari



- ✓ Sample from multiple populations, large populations if available
- ✓ Sample randomly or in a grid
- ✓ Collect from a large number of individuals
- ✗ Do not preferentially choose straight / crooked trees – aim for high genetic diversity
- ✓ Collect seed at the time of natural seed dispersal
- ✓ Perform a cut test to check if seed is ready and check seed quality
- ✗ Do not over collect
- ✓ Capture as much supporting data as possible
- ✓ Keep seed from different species separately
- ✓ Good numbering / labelling of your collections is essential
- ✓ Research and experiment with post-harvest handling techniques and record results
- ✓ Establish seed orchards to enable large scale restoration projects



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