



AGASURIRA KURI KAWA YA ARABICA MURI AFURIKA Y'IBURASIRAZUBA

Agasurira ka kawa ni agakoko kangiza cyane muri kawa ya Arabica, cyane cyane muri Afrika y'iburasirazuba. Kuva ku dusurira tukiri duto kugeza ku dusurira dukuze, intambwe zose zo gukura kw'agasurira zigaburirwa n'ibice byinshi by'ikawa. Udusurira twangiza cyane cyane indabyo za kawa, amashami, amababi, n'imbuto z'icyatsi, ariko uko kangiza bigenda itandukana bitewe n'iterambere ryigihe n'ibihe.

Agasurira gatuma umusaruro ugabanuka kugera kuri 40%.

Muri rusange

- Udukoko tugaragara muri Werurwe ndetse no muri Gicurasi / Kamena.
- Udukoko dushobora kuboneka twihishe munsu y'ikibabi cyangwa mu ndabyo mu masaha ashyushye y'umunsi kugira ngo twirinde izuba ryinshi.
- Udukoko tugaragara cyane mugitondo na nimugoroba, kimwe no mu minsi y'ibicu.
- Igihe cyambere cyo kwangiza kiri hagati ya 10h - 12h00 na 7h00 - 8h00.
- Udukoko twimuka mu matsinda manini kugirango tubone igiti cyiza cyo guteramo amagi, mu busanzwe bibaho mu masaha ashyushye y'umunsi.

Igishushanyo cya 1 kirerekana icyiciro cy'udukoko dukuze twa "Antestiopsis thunbergia". Tugira uburebure bwa mm 7,5 kugeza kuri 9,5 - hamwe n'udukoko twigitsina gore tunini kuruta utw'igitsina gabo - kandi bizwi n'uburyo butangaje, buhindagurika hamwe n'umukara (cyangwa umukara wijimye), orange, n'amabara yera. Nyamara, imiterere n'amabara birahindagurika hagati mu matsinda y'udusurira.



Igishushanyo 1: *Antestiopsis thunbergii*

Icyiciro cy'udusurira tukiri duto

Icyiciro cy'udusurira tukiri duto: Amagi ashyirwa munsu y'amababi y'ikawa mu migozi ya 12, kandi ni gake amagi ashobora kuboneka ku mbuto cyangwa ku giti (**reba Ishusho 2**). Gusohoka mu gikono bibaho nyuma y'iminsi 4 kugeza 15 hanyuma bigakurikirwa n'ibyiciro bitanu by'imikurire y'agasurira. Udukurira tukiri duto dusa n'udukuze mu mabara ariko dufite imiterere iringaniye kandi tubura amababa yo kuguruka. Udukurira tukiri duto dukunze kwangiza ibitumbwe kandi utwo dukoko turanuka (iyo utwiciye ku rutoki). **Imbonerahamwe ya 1** ibipimo by'ubushyuhe (bwo kubaho) kuri *A. thunbergii* mu gihe cy'udusurira duto kugeza dukuze biri ku rutonde. urutonde..

Imipaka y'ikirere ya *A. thunbergii*

Ubushyuhe bwo hasi ntareng- 12,1°C
wa (Tmin)

Ubushyuhe bwo hejuru (Tmax) 33,9°C

Ubushyuhe bwiza 22,4–24,7°C

Imbonerahamwe 1: Imipaka y'ikirere ya *A. thunbergii* yerekeye imikurire kuva ku magi kugeza ku dusurira dukuze; nk'uko Azrag n'abandi babivugaga (2017).



Igishushanyo 2: Amagi y'udusurira twa kawa

Ikirere n' ikwirakwizwa ry'ubwoko butandukanye bwa *Antestiopsis* byasobanuwe mu mbonerahamwe ya 2

Ubwoko	Uturere	ubutumburuke	ikirere
<i>A. thunbergii</i>	Amajyepfo igice cy'intara ya Cape Town muri Afrika y'epfo kugera mu misozi ya Kenya na Etiyopiya	1000–2100 m asl; <i>A. thunbergii</i> ghesquiette mu turere twose	Ikirere gikonje gikunzwe; Mu biterwa by'igicucu mu gihe bihari mu rwego rwo hasi. Uturere dufite imvura nkeya
<i>A. intricata</i>	Ikwirakwizwa ry'iburengerazuba-uburasirazuba kuva ku nkombe y'iburengerazuba kugera ku ihembe ry'iburasirazuba bw'umugabane (amoko gusa muri Afrika y'uburengerazuba)	1000–1600 m asl; ikawa ikurira ahantu hari ubutumburuke bwo hasi n'ubwo hagati	Ikirere gishyushye cy'amashyamba; Mu bihingwa bitagira igicucu iyo bihari mu rwego rwo hejuru
<i>A. facetoides</i>	Iburasirazuba bwa Kenya na Tanzaniya y'iburasirazuba, harimo na Zanzibari	1000–1600 m asl; Ahantu hahanamye, havanze na <i>A. thunbergii</i> bechuana mu rwego rwo hejuru	Ikirere gishyushye; Uturere dufite imvura nkeya
<i>A. clymeneis</i>	Madagasikari (kuri kawa ya Arabica na Rubiaceae yo mu gasozi)	Ahantu hahanamye	Ikirere gishyushye
<i>A. cruciata</i>	Pakisitani, Ubuhinde, Miyanimari, Sri Lanka, Ubushinwa bw'Amajyepfo, SE Aziya; kuri kawa arabica & jasmine	<i>Nta makuru arambuye yabonetse</i>	<i>Nta makuru arambuye yabonetse</i>

Imbonerahamwe 2: Incamake y'ikirere n'akarere cyangwa ubwoko butandukanye bwa bw'udusurira ukurikije Azrag n'abandi. (2017, 2018), Babin (2018) na Greathead (1966)

UKO UTWO DUSIMBA TWANGIZA

Kuba hari agakoko kamwe cyangwa tubiri mu murima wa kawa, bifatwa nk'imbogamizi ikomeye ku bukungu kandi ibyo bisaba ingamba zo kwirinda igihombo giturutse kuri Kawa.

Ibikurikira ni bimwe mu bihombi biterwa n'agasurira iyokangiza kawa::

- **Kubuza indabyo kurabya = kunanirwa kwera imbuto:** Agakoko gatera ku ndabyo kazibuza kumera, biganisha ku kunanirwa kwera imbuto.
- **Guhunguka kw'imbuto zitarera no kuba ibihuhwe:** Udusurira twangiza imbuto zikiri mbisi bigatuma habaho guhubuka kw'ibitumbwe biteze. Udukoko twonona kawa dushinga umugobora watwo mu ruteja rukiri igitumbwe maze tukanyunyuzwa amazi bityo ntirushobore gukomera neza ahubwo ruba igihuhwe.
- **Inzira ku binyabuzima byangiza ni ukuvu-ga, ibishyimbo bya kawa ya Brown zebra:** Imyobo igaurira amoko ya Antestiopsis ishobora gukora nk'irembo ry'ibindi binyabuzima byangiza. Urugero, ibihumyo nka Eremothecium coryli na Ashbya (= Eremothecium gossypii) bitera kubora mu mbuto zari zigeze igihe cyo kwera. Ibi biganisha ku ibara ry'ikijugu cyangwa umukara mu rubuto rudatonoye - nanone byitwa "Brown zebra coffee beans" - kandi bigaragara gusa nyuma yo koza kawa.

called „Brown zebra coffee beans“ - and is only visible after washing.

- **„Potato Taste Defect“ (PTD):** “Ikirayi cyangiritse uburyohe” (PTD): Impumuro imeze nk'ibirayi n'uburyohe bumeze nka kawa mbisi kandi rimwe na rimwe ikaranze. Ubusembwa bw'ibijumba bushobora kuba bwinshi kuburyo n'igice gito cy'ibishyimbo bya PTD bishobora kwangiza ikawa yose. Ibi bibaye byatuma abatuma kawa mu mahanga n'amasosiyete y'ikawa batiyazera ikawa yo muri Afurika y'Iburasirazuba.



Ifoto ya 3 Agasurira ka kawa ku giti cya kawa
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INGAMBA ZO KUGENZURA

Gutoragura

Imwe mu ngamba zihari kandi zishoboka mu kurwanya umubare muto w'udusurira ni ugutora udusurira tukiri dutoya tutaragira amababa yo kuguruka. Ibi bisaba abakozi no guhozaho ariko bishobora gutanga umusaruro mwiza mugihe bikozwe mu gihe runaka cy'umunsi iyo udusurira tujya ku zuba. Urugero, mu gitondo iyo ubwoko bw'udusurira bukunda ubushyuye bukoresha imirasiye ya mbere y'izuba. Muri iki gihe, ushobora kudasanga hejuru y'amababi y'ikawa, kandi biroroshye kutubona no kudukusanya.

Gukata

Gukata ni bumwe mu buryo bwo kurwanya udukoko bukoreshwa cyane mu kurwanya ubwoko bw'udusurira (Antestiopsis spp.) kuko bushobora kugabanya umubare w'uduko kandi nk'uko byagaragajwe n'ubushakashatsi, ikawa idakoreye; irimo ibihuru bikingira udusurira twinshi. Abahanga berekanye ko urwego rw'igicucu muri kawa rutagira ingaruka ku dukoko, ahubwo ko ari ikirere gito twibera. Kubw'ibyo, imikoranire hagati y'ubushyuye n'ubuherehere ni ngombwa.

Umwanzuro ni uko gukata kawa ari igipimo cy'ingenzi mu bikorwa byiza by'ubuhinzi bwa kawa, ariko kurwanya udusurira ntibigomba gushingira gusa kuri ibyo.

Kongera udukoko karemano twiza dukoresheje urusobe rwibinyabuzima bitandukanye

Igisubizo kirambye ku guhanana no gukwirakwira k'udusurira (*Antestiopsis* spp.) ni ugukoresha imikoranire karemano n'ibinyabuzima mukuzamura abanzi karemano bahanganye kandi bahiga udusurira.

Kwinjiza urusobe rw'ibinyabuzima bitandukanye bikurura inyamaswa nyinshi zangiza udusurira, aho guhinga ikawa imwe, n'udusurira natwo dushobora kororoka byoroshye kandi tukabaho igihe kirekire. Bimwe mu binyabuzima bihiga udusurira harimo nk'inyoni, mantise, igitagangurirwa, urunyaruvu, n'udukoko dutandukanye, bituye hafi y'ibihuru by'ikawa kandi birya udukoko tw'agasurira, urunyo rw'agasurira n'amagi yatwo. Andi moko menshi y'ibinyabuzima yangiza udusurira nayo agenda aboneka bitewe no kuvanga kawa n'ibiti bivangwa n'imyaka (agroforestry). Urugero:

- Agakoko ko mu muryango wa *Aridelus* kibasiye Udusurira tukiri duto n'udukuze, kagabanya amagi y'udusurira kugera

kuri 50%. Inyo zo mu cyiciro cya kabiri mu kubaho kw'udusurira zibasirwa n'abanzi karemano (natural enemies) kandi buri gihe

- Udukoko dufite amababa afite ikibuno kigufi kandi kibabaza. Yubaka icyari cy'im-papuro zivuye mu biti kandi dutera amagi aho twariye inyo z'udusurira two mu muryango wa *Telenomus seychellensis* ni ubwoko busanzwe kandi bw'ingenzi mu kwangiza udusurira. Utu dukoko dutera amagi yatwo mu magi y'udusurira kandi iyo inyo zatwo zibasiye amagi y'udusurira ahinduka umukara.
- Akandi gakoko kangiza udusurira ni isazi yo mu bwoko bwa tachinide isanzwe nk'iyitwa *Bogosia rubens*, itungwa n'udusurira dukuze.
- Ibitoki bikurura *Corioxenos antestiae*, umwanzi karemano w'udusurira. Utu dukoko karemano duhiga udusurira dukuze two mu bwoko bw'ingenzi bw'udusurira

Uburyo bumwe bwo gucunga neza umurima wa kawa ni ukuvanga ikawa n'ibihingwa bimwe na bimwe. Ibihingwa bibyara amafaranga, nk'urutoki, cyangwa ubundi bwoko bw'ibimera, bishobora gukoreshwa. Ubundi buryo bw'igihe kirekire bwo gucunga neza umurima wa kawa ni ugushyira mu bikorwa gahunda y'ibiti bivangwa n'imyaka mu buhinzi.

Urugero rufatika

Muri sisitemu yo gucunga neza ibiti bivangwa mu myaka (agroforestry), abashakashatsi bita cyane ku mibare mike y'udukoko n'ibyangirika. Ni biba ngombwa, gutera imiti ya neem igira umumaro cyane mu mezi yo gukwirakwira cyane (Mata + Kamena) Nyamara, imiterere yihariye y'ubuhinzi, nk'ubutumburuke, na cyane cyane imicungire myiza y'igihingwa nko gukata amashami atari ngombwa kuri kawa n'ibiti bitanga igicucu, bigomba kwitabwaho.

Ku bindi bisobanuro ku mabwiriza ya Naturland e.V. ku buhinzi bw'ibiti bivangwa mu myaka (agroforestry), mwareba [Agroforestry - Naturland](https://www.naturland.de/en/agroforestry) cyagwa mukatwandikira kuri membersupport@naturland.de

Gukoresha Imiti y'ibimera yica udukoko

Ubundi buryo bwo kurwanya udusurira ni ugukoresha udukoko twica udukoko. Neem na pyrethrum birakwiriye gukoreshwa mu buhinzi bw'umimerere. Ibyiza byo gukoresha iyo miti ni uko bishobora guhingwa no kubyazwa umusaruro mu gace ubuhinzi bukorerwamo; bigatuma bihenduka kandi byoroshye kuruta udukoko twica udukoko. Byongeye kandi, ntabwo byangiza ibidukikije cyangwa umuhinzi ukoresha udukoko twica udukoko. Ubushakashatsi bumwe bwerekanye imbaraga nyinshi ziva muri pyrethrum hamwe no kwangirika k'udusurira tukiri duto n'udukuzwe kugera kuri 80%. Igipimo cyo gutera imiti ni ngombwa ko cyitabwaho mu gihe udukoko dushobora kwiremamo ubudahangarwa kuri iyi miti.

Pyrethrum/Pyrethrine

- o Uburozi ku dukoko twose kimwe no ku banzi karemano b'udusurira
- o By'umwihariko bigira akamaro hamwe no gukata amshami atari ngombwa kuri kawa

Neem (*Azadirachta indica*)

- o Amoko arenga 300 y'udukoko arashobora kugenzurwa no gukoresha neem. Ibice byose by'igiti bikora mu buryo bwa kamere.

- o Ibice bikora bya neem, azadirachtin, bikora nk'umuti wica udukoko hamwe no "gukumira" n'ibirwanya imyororokere. Ni byinshi biboneka mu mbuto za neem. Uburyo butandukanye bwo gukoresha neem burashoboka
- Ibikomoka ku mbuto cyangwa ibikomoka ku gice cy'imbuta zitanga ibisubizo bisa ugereranije n'umusaruro wa neem ushingiyeye gusa kuri azadirachtin. Byongeye kandi, ikeneye ubuhanga bwa tekiniye kugira ngo itange umusaruro mwinshi wa azadirachtin

Uburyo bwinshi bwo gukoresha kuri neem burashoboka:

- Koresha imbuto nshya / yumye mu murima wa kawa.
- Gukoresha ifu ya neem (ishobora kuvangwa n'amazi kugira ngo uyitere ku biti, atari ku butaka gusa).
- Banza usembure imbuto, hanyuma uzanike unazisye. Ibi birakorwa mu gihugu cy'u Burundi.
- Kuvanga neem n'ifumbire ikomoka ku matungo.

Ikigo cy'ubushakashatsi kuri kawa kirasaba gukoresha neem ahagaragara udukoko turanga 3 ku gihuru cy'ikawa muri Tanzaniya. Muri Kenya, nk'agakoko 1 kuri buri giti cy'ikawa ahantu h'ubukonje n'udukoko 2 kuri buri giti cy'ikawa ahantu humye; ni cyo gihe ntarengwa cyo gutangira gutera neem.

INGAMBA ZO KUGENZURA Z'EJO HAZAZA

- Abashakashatsi barimo gukora ku ngamba zo kugenzura z'ejo hazaza kurubu zitashoboka. Ibi birimo kwiga ku bihingwa byinshi bya gakondo kugira ngo bikurwemo amavuta yica udukoko.
- Ubushakashatsi bwa Njihia (2018) bwibanze ku gukoresha imbuto za kawa zeze (ahanini zidakunda guterwa n'ubwoko bumwe na bumwe bw'udusurira) kugira ngo zikurwemo imiti yo gutera kugira ngo

yirukana udukoko.

- Gukoresha ibihumyo bya "entomopatogene Beauveria bassiana" mu kwanduza no kwica udusurira ni ubushakashatsi butanga ikizere. Nyamara, ubu buryo bukeneye irindi cukumbura ku miterere y'imirima no kuboneka kwabyo muri Afrika y'Iburasirazuba (Abate, Wakgari, lity in East Africa (Abate, Wakgari, & Gobena, 2021).

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Aho amafoto yaturutse: https://commons.wikimedia.org/wiki/File:Antestia_eggs.jpg & <https://flickr.com/photos/counterculturecoffee/5829284813/sizes/l/in/photostream>

Naturland is implementing the "Partner Afrika" Project in partnership with ROAM (Rwanda Organic Agriculture Movement), with a particular focus on the women's group Ejo Heza in the KOPAKAMA cooperative (Karongi district, Rwanda).