

JICA CUP2 Project

IMFASHANYIGISHO GUTUNGANYA KAWA

Imfashanyigisho y'uruganda
rutunganya kawa



Ibirimo

Iyi Nyandiko isobanura:

**Kawa itonoye
ihugutishirijwe ahatagera
umwuka ikanikwa itogeje**

Ubusobanuro bw'inyito

Gukurikirana inkomoko:

Uburyo bwo gukurikirana urugendo rwa kawa kuva mu murima kugeza kumuguzi wanyuma, harimo n'ibyiciro byo kuyitunganya no kuyitaho

Ihugutisha murubuto:

Uburyo bwo gutunganya kawa aho ihuguta idakuweho igishishwa, bigafasha utunyabuzima gukora mu rubuto rwose.

Ihugutisha ntamazi:

Uburyo bwo gutunganya kawa aho ihugutishwa itari mu mazi, bigafasha utunyabuzima karemano gutunganyiriza umurenda ahantu hadatose cyangwa hadahehereye cyane.

Ihugutisha ntamwuka:

Ahatagera umwukam wa ogisijeni.

Ihugutisha ahari umwuka:

Ahari ogisijeni.

Akabaho k'ibitumbwe(Cherry paddle):

Igikoresheo kifashishwa mu kugenzura igipimo cyo guhisha cyangwa kureremba kw'ibitumbwe bya kawa.

Kubabuka:

Kwanika ku zuba ry'igikatu bigatuma kawa yuma igice cy'inyuma imburagihe. .

Brix:

Igipimo cy'ingano y'isukari iri mubisukika, kibarwa nk'ijanisha kuburemere.

pH:

Igipimo kigaragaza ubusharire bw'igisukika, kibarwa hagati ya 0 (igishaririye) na 14 (ikidashaririye).

Azoti (N):

Intungagihingwa y'ingenzi mubuhinzi bwa kawa ifasha igihingwa gukura neza no gutanga umusaruro

P (Phosphorus):

Intungagihingwa y'ingenzi mubuhinzi bwa kawa ifasha imizi gukura neza ndetse n'uruyange rukiyongera bityo umusaruro ukaba mwiza.

K (Potassium):

Intungagihingwa y'ingenzi mubuhinzi bwa kawa ituma ibiti bigira imbaraga, bikihanganira izuba, kandi bikera kawa nziza.

Kohereza umwuka:

Iyinjira n'isohoka ry'umwuka ahantu runaka hagamijwe kwinjiza umwuka mushya kugira ngo ubushyuhe, ubuhehere cyangwa ibyahumanya bisohoke.

Urutonde rw'ibikoresho n'imashini

Cherry paddle:

Igikoresho cyoroshye gikoreshwa mu kugenzura uko imbuto za kawa zeze cyangwa uburemere bwazo, akenshi hakoreshejwe kuzikorogoshora mu mazi kugira ngo harebwe izireremba mu gihe cyo gutoranya.



Brix meter:

Igikoresho gipima ingano y'isukari (°Brix) iri mu mbuto za kawa, umutobe cyangwa mucilage, gikoreshwa mu kumenya uko imbuto zeze n'ubushobozi bwazo bwo guhugutishwa.



Moisture meter:

Igikoresho gipima ubushuhe buri muri kawa iri mu ikawa y'amaganda (Parchment) cyangwa ikawa itonoye (green coffee), gifasha kumenya niba yumye neza kandi ishobora kubikwa neza.



pH meter:

Igikoresho gifatwa mu ntoki gipima ubukana bwa (pH) by'amazi y'umurenda, ibishishwa bya kawa cyangwa umurenda mu gihe cyo kuyitunganya.



Air-tight tank:

Ikigega gifunze neza kitinjiramo umwuka, gikoreshwa mu guhugutisha kawa mu buryo bwa butageramo umwuka (Anaerobic).



GrainPro bag:

Umufuka udacengerwa n'umwuka ukoreshe mu guhugutisha kawa (Ibitumbwe cyangwa ikawa yatonowe) mu buryo bugabanya umwuka/oxygen kugira ngo uburyo bwa anaerobic bukore neza.



Uko n'Impamvu Dukoresha Ibi Bikoresho n'Imashini

Gukoresha ibikoresho bikwiye kuri buri cyiciro cyo gutunganya kawa bituma ubwiza bwa kawa buguma buhoraho, bigafasha gufata ibyemezo byiza kandi bikagabanya inenge. Ibikoresho bikurikira bikoreshwa mu gusuzuma neza ubuziranenge bw'imbutu za kawa (cherries), kugenzura ihugutisha (fermentation), no kurinda kawa mu gihe cyo kuyanika no kuyibika.

Cherry paddle:

IMPAMVU: Gikoreshwa mu kugenzura ubwiza bw'imbutu za kawa mu gihe cyo gutoranya.

INTAMBWE 1: Fata imbuto za kawa 100 udatoranyije mu mufuka uzishyire kurubaho (cherry paddle).

INTAMBWE 2: Hitamo ibara ry'imbutu zeze neza zemewe.

INTAMBWE 3: Bara umubare w'imbutu zeze muri izo 100 hanyuma ubone ijanisha.

INTAMBWE 4: Ijanisha ry'imbutu zeze zigomba kuba nibura riri hejuru ya 70%.

INTAMBWE 1



INTAMBWE 2



INTAMBWE 3&4



Brix meter:

IMPAMVU: Gikoreshwa mu kumenya uko imbuto zeze no kumenya ubushobozi bwo guhugutishwa hifashishijwe ingano y'isukari.

INTAMBWE 1: Fata imbuto za kawa 3 udatoranyije (Randomly).

INTAMBWE 2: Shyira umutobe uva mugitumbwe cya kawa kuri hagati kuri Brix meter.

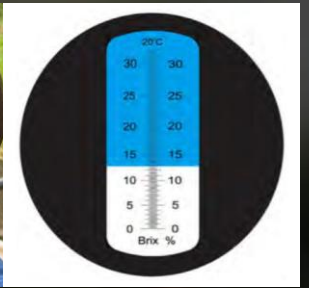
INTAMBWE 3: Soma igipimo kigaragara °Brix hanyuma ucyandike.

INTAMBWE 4: Koresha impuzandengo uhitamo uburyo bwo gutunganya n'igihe cyo guhugutisha.

INTAMBWE 1&2



INTAMBWE 3&4



Uko n'Impamvu Dukoresha Ibi Bikoresho n'Imashini

Gukoresha ibikoresho bikwiye kuri buri cyiciro cyo gutunganya kawa bituma ubwiza bwa kawa buguma buhoraho, bigafasha gufata ibyemezo byiza kandi bikagabanya inenge. Ibikoresho bikurikira bikoreshwa mu gusuzuma neza ubuziranenge bw'imbuta za kawa (cherries), kugenzura Ihugutisha, no kurinda kawa mu gihe cyo kuyanika no kuyibika.

Moisture meter:

IMPAMVU: Gikoreshwa mu kumenya ubuhehere bwa kawa kugira ngo hamenyekane niba yumye neza kandi ishobora kubikwa neza

INTAMBWE 1: Hitamo uburyo bwo gupima bitewe n'icyo uri gupima (parchment, dried cherry cyangwa green coffee).

INTAMBWE 2: Fata ingano nke ya kawa.

INTAMBWE 3: Pima ubuhehere ukoresheje moisture meter.

INTAMBWE 4: Soma ijanisha ry'ubuhehere hanyuma ucyandike.

INTAMBWE 5: Niba ubuhehere buri hejuru, komeza kuyanika.

Niba buri mu rwego rwemewe, jya kuyibika.

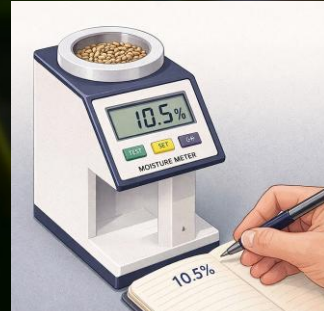
INTAMBWE 1



INTAMBWE 2



INTAMBWE 3&4&5



pH meter:

IMPAMVU: Gikoreshwa mu kugenzura aside (pH) mu gihe cyo guhugutisha.

INTAMBWE 1: Reba niba igikoresho kiri kukigero kimwe n'amazi (kigomba kwerekana hafi ya pH 7.0).

INTAMBWE 2: Fata urugero rw'amazi ya ava mugihe cyo guhugutisha cyangwa umurenda.

INTAMBWE 3: Shyira umutwe wa pH meter muri ayo mazi.

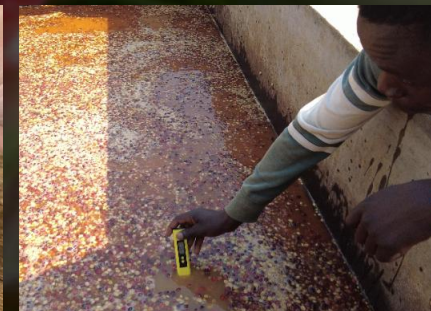
INTAMBWE 4: Soma pH hanyuma uyandike.

INTAMBWE 5: Niba pH igabanutse cyane cyangwa vuba cyane, uhagarike cyangwa uhindure ihugutisha.

INTAMBWE 1



INTAMBWE 2&3



INTAMBWE 4&5



Uko n'Impamvu Dukoresha Ibi Bikoresho n'Imashini

Gukoresha ibikoresho bikwiye kuri buri cyiciro cyo gutunganya kawa bituma ubwiza bwa kawa buguma buhoraho, bigafasha gufata ibyemezo byiza kandi bikagabanya inenge. Ibikoresho bikurikira bikoreshwa mu gusuzuma neza ubuziranenge bw'imbuta za kawa (cherries), kugenzura ihigutishwa, no kurinda kawa mu gihe cyo kuyanika no kuyibika.

Air-tight tank:

IMPAMVU: Gikoreshwa mu kugenzura fermentation hagabanywa umwuka winjira kugira ngo habeho (anaerobic fermentation).

INTAMBWE 1: Sukura ikigega neza kugira ngo wirinde umwanda cyangwa ubwandu.

INTAMBWE 2: Shyira imbuto za kawa cyangwa ikawa y'amaganda mu kigega.

INTAMBWE 3: Funga ikigega neza kugira ngo umwuka utinjira.

INTAMBWE 4: Koresha S-hook urebe niba ihugutishwa ritageramo umwuka/anaerobic iri kuba.

INTAMBWE 5: Reka kawa ihugutishwe mu gihe cyateganyijwe.

INTAMBWE 6: Fungura ikigega ugenzure pH urebe niba ihugutishwa ryaragenze neza.

INTAMBWE 1



INTAMBWE 2



INTAMBWE 3&4&5



INTAMBWE 6



GrainPro bag:

IMPAMVU: Gikoreshwa mu kugenzura ihugutisha no kurinda ubwiza bwa kawa hagabanywa umwuka.

INTAMBWE 1: Shyira imbuto za kawa cyangwa ikawa yamaganda mu mufuka wa GrainPro.

INTAMBWE 2: Kuramo umwuka uri mu mufuka hanyuma uwufunge neza.

INTAMBWE 3: Bika uwo mufuka ahantu hasukuye kandi hari igicucu.

INTAMBWE 4: Reka kawa ihugutishwe mu gihe cyateganyijwe.

INTAMBWE 5: Fungura umufuka ukomeze gutunganya cyangwa ugenzure ubwiza bwa kawa (impumuro, pH n'imiterere).

INTAMBWE 1



INTAMBWE 2



INTAMBWE 3&4



INTAMBWE 5



Ibyitabwaho points

Gufata neza ubutaka

Igipima pH



Igipima ubushyuhe & ubuhehere



Amazi / isuku



Gukurikirana kawa



Ibipimo

- **pH:** Igipimo intungagihingwa zifatirwaho (5.0-6.0)
- **N:** Ngombwa kuri fotosenteze
- **P:** Imizi n'uruyange bizima
- **K:** Gukura kw'intete no kongera uburyohe muri rusange

- **Ibara:** atanduye kandi abonerana
- **pH:** iyo atanduye, pH yakagombye kuba hafi ya 7.0
- **Incuro zo gusukura:** Burimunsi imashini igomba kozwa mbere yo gukoreshwa

- Gukoresha igitabo n'udupapuro twerekana inkomoko
 - Aho ibitumbwe byaturutse
 - Uburyo bwo kubitunganya
 - icyiciro n'uburemere
 - Tarike yakiriweho
 - Igihe guhugutisha no kwanika bimara

Impamvu



Ubutaka bwiza
↓
Ibitumbwe byiza
↓
Impumuro nziza

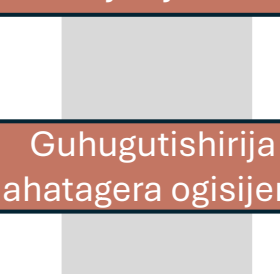


Amazi mabi
↓
Kawa yanduye n'impumuro mbi



Nta gukurikirana
↓
Uburyo butanoze mu gutunganya no kwamamaza kawa

Uburyo butandukanye bwo gutunganya kawa

Izina	1 Kawa Yogeje neza (Ihugutisha ntamazi)	2 Kawa Yogeje neza (ihugutisha idatonoye)	3 Itunganyije Ntamazi ahagera umwuka	4 Itunganyije ntamazi ahatagera umwuka	5 Yanitswe je idatonoye	6 Ihugutishijwe idatonoye ahatagera umwuka
Ifoto						
Imiterer e	• Niyo imenyewe • Biroroshye kuyikurikirana • Uburyohe bwumvikana	• Birororshye kuyikurikirana • Uburyohe bwumvikana	• Iryohereye biringaniye • Impumuro y'imbutu	• Ahatagera ogisijeni • Impumuro y'umuzabibu w'umweru	• Nta guhera bikenewe • Iryohereye, impumuro zitandukanye • Impumuro ya divayi	• Nta ogisijeni • Impumuro y'imbutu z'ahashyuha
Ibyiciro	Gusarura	Gusarura	Gusarura	Gusarura	Gusarura	Gusarura
	Kujonjora	Kujonjora	Kujonjora	Kujonjora	Kujonjora	Kijonjora
	Guhera	Guhugutisha ibitumbwe	Guhera	Guhera		
	Guhugutisha ntamazi	Guhera	Guhugutisha ahatagera ogisijeni			
	Koza no gushyira mubyiciro	Kozaa no gushyira mubyiciro				
	Kumutsa mbere yo kwanika	Kumutsa mbere yo kwanika		Kumisha	Kumisha	Guhugutishirija ahatagera ogisijeni
	Kwanika	Kwanika	 Kwanika	 Kwanika	 Kwanika	 Kwanika
	Kubika	Kubika	Kubika	Kubika	Kubika	Kubika

4. Kawa itunganyije ntamazi igahugutishwa ahatagera umwuka

Ibyiza by'ubu buryo

- Guhanga uburyohe n'impumuro byihariye kandi binyuranye, harimo icyanga cyumvikana n'impumuro z'imbutu.
- Kubyara uburyohe buhebuje budahinduka.

Ibisabwa byiza

- Igipimo cy'isukari hejuru ya 20.0
- Bisaba ahatagera umwuka wa ogisijeni kugira ngo utunyabuzima dukanguke nko mu itanki cg imifuka ya GrainPro

Ibyiciro

1	2	3	4	5	6	7
Gusarura	Kujonjora	Guhera	Guhugutisha ahatagera umwuka	Kumutsa	Kwanika	Kubika
UMUNSI 1			UMUNSI 1-9 (Amasaha 192)	UMUNSI 10-12	UMUNSI 12	-
						

4. Kawa itunganyije ntamazi igahugutishwa ahatagera umwuka

Intambwe ya 1: Gusarura

Intego: Ikawa ihishije ifite isukari nyinshi n'icyanga bitanga impumuro

Ibikoresho bikenewe



Koresha
igisarurirwamo
mugihe cyo gusarura
kawa



Sasa **shitingi**
munsi y'igiti
itangire ikawa
yaguye hasi



Koresha **imifuka**
isa neza
mugukusanya
umusaruro

Ingingo nyamukuru

① Gusarura **ibitumbwe bihishije neza gusa**



Kuberako....



70kg



100kg

Uburemere

Igiciro ku
muhanzi

700rwf/kg

700rwf/kg

Igiciro

49,000rwf

70,000rwf



② Tangira gusarura
mugitondo.



③ Geza kawa
kuruganda **mugihe**
cy'amasha 8 nyuma
yo gusarura



④ Ntutore kawa yaguye
kubutaka, Kumira
ubwandu



⑤ Shyira umusaruro
wa kawa **ahatagera**
izuba uyirinde ihuguta
ryihuse

4. Kawa itunganyije ntamazi igahugutishwa ahatagera umwuka

Intambwe ya 2: Kujonjora – Kujonjora hagendewe ku ibara

Intego: Gushyira kawa mubyiciro – Izihishije/ izidahishije/ izarengeranye

Ibyitabwaho ①

95% ya kawa **ihishije neza**

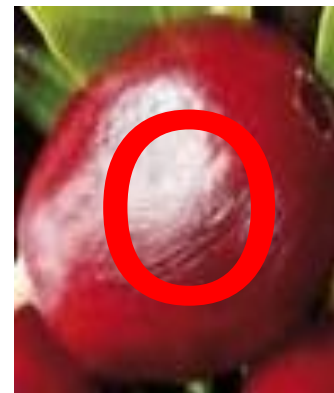


Ibyitabwaho ②

Isukari: Hejuru ya 20.0



10.0



20.0

Intambwe ya 3: Guhera

Intego: Gukuraho igishishwa hadakuweho umurenda

Ibikoresho

Gukoresha **imashini ihera**
(ikoresha amazi macye)



Ingingo nyamukuru

① Imashini ihera
yakabaye **ikoresha**
amazi macye
idakuraho umurenda



② **Kuregera**
imashini, ingano
y'ibitumbwe
n'umuvuduko
hirindwa ko kawa
yangirika.



③ **Koza imashini**
burimunsi hirindwa
kwanduza kawa



Ibyitabwaho

Fata intete za kawa 100 ugenzure
niba izangiritse ziri munsi ya 10%
kandi niba imbuto zitatonowe neza
ziri munsi ya 10%.

+

Genzura kawa nyuma yo gusatura
kugira ngo urebe ko umurenda
utatakaye cyane.



4. Kawa itunganyije ntamazi igahugutishwa ahatagera umwuka

Intambwe ya 4: Guhugutisha ntamwuka wa oxigene

Intego: Kugera ku ihuguta ntamwuka kugira ngo haboneke kumpumuro zigamijwe

Ibikoresho



Tanki ifunze neza kugirango umwuka utinjira imbere

Cyangwa



Isashe ya GrainPro

Ingingo nyamukuru

① **Ahatagera umwuka:** Tanki ifunze neza cg umufuka wa GrainPro **bigomba kuba bifunze neza** hirindwa ko umwuka winjiramo.



② **kugenzura ubushyuhe n'ubuhehere:** Tereka ahatwikiriye aho ubushyuhe n'ubuhehere bidahindagurika.



③ **Igihe guhuguta bimara:** Byakagombye kugenzurwa. Igihe cyagenywe ni amasaha 192 (iminsi 8)



Ibyitabwaho

① **Impumuro:** kwirinda impumuro y'umushari/ vinegre.



② **Ibara:** Kureba ko kawa yahinduye ibara



③ **pH:** yagombye kuba hagati ya **4.0 – 5.0** nyumya yo guhuguta



4. Kawa itunganyije ntamazi igahugutishwa ahatagera umwuka

Intambwe 5: Kumutsa (Amasaha 36-48)

Intego: Gutora kawa zifite inenge

Ibikoresho

Ibitanda bya kawa biri ahatwikiriye



Ingingo nyamukuru

- ① Gushyira kawa ahatwikiriye igatorwa mbere yo kumutswa.
- ② Gutora no gutegereza **amasaha 36-48** nyuma nyuma yo guhugutisha kawa igomba kuruhuka mbere yo kujyanwa kuzuba.
- ③ Ubunini bwa kawa kugitanda bugomba kuba buri hagati **3-5cm** ahatwikiriye.



Ibyitabwaho

Gukuramo ikawa zifite inenge

100%



4. Kawa itunganyije ntamazi igahugutishwa ahatagera umwuka

Intambwe ya 6: Kwanika

Intego: Kugabanya ubuhehere hadakuweho umurenda utanga uburyohe

Ibikoresho



shadineti n'isashe hirindwa ubushyuhe bwinshi, imvura n'urume



Rato y'igiti muguhindura kawa hadakuweho umurenda



Igipima ubuhehere (moisture meter)

Ingingo z'ingenzi

- ① **Gucunga ubushyuhe bwa kawa:** koresha **shadineti** mugutwikira hirindwa ubushyuhe saa tanu kugera saa cyenda
- ② **Gucunga ubuhehere:** Pfuka parchment ukoresheje pulasitiki kugira ngo irindwe imvura n'ikime.
- ③ **Kuruhuka:** Umunsi umwe mu cyumweru, pfuka parchment neza yose
- ④ **Kumira rimwe:** Korogosha kawa inshuro 4 ku munsi kugira ngo yumishwe neza. Ubunini bw'urutonde rwa kawa: 3-5 cm (icyumweru cya mbere) → 5-7 cm nyuma.



Ibyitabwaho

- ① **Ubushyuhe:** Hagamijwe **11.0%** mubihe byiza. Pima ubuhehere 2 kumunsi.
- ② **Igihe:** Byibuze **iminsi 30**. kwanika bigomba gukurikirana hirindwa kuma vuba kandi insigane.
- ③ **Ubuhehere bwa kawa:** Ubushyuhe bwakagombye guhora **munsi ya 35 °C** hirindwa kwangiza kawa.



4. Kawa itunganyije ntamazi igahugutishwa ahatagera umwuka

Intambwe 7: Kubika

Ikigenderewe: Kugumisha kawa kukigero kimwe nyuma yo kwanika hagamijwe gucuruza no Gutonora

Ibikoresho

Paleta hirindwa kwangirika



Ingingo nyamukuru

- ① **Kugenzura ubuhehere:** Kugumisha kawa kubwume bwa **10-12%**



- ② **Kohereza umwuka/guhungiza:** Kugenzura umwuka winjira n'usohoka hirindwa urume n'ubuhehere bwo hejuru



Ibyitabwaho

- ① **Ubushyuhe:** Gukomeza ubushyuhe bwa **15-23°C** hirindwa kwangirika



- ② **Ubuhehere:** Gukomeza ubuhehere kuri **50-70%** hirindwa uruhumbu



- ③ **Kuruhuka:** Kawa igomba kubikwa hafi **amezi 2** kugira ngo ubushuhe bwayo bugume ku gipimo gihamye.



Inyongera A: Urugero rw'ifishi ikoresheha mu gucunga lot ya kawa

Lot management sheet

CWS: _____ Name: _____

-Receiving date: dd/mm/yyyy

-Process method: FW / HN / NR / Other (____)

-Certificate: _____

-Lot name: _____

-Main area: _____

-Fermentation: _____ hours (From ____:____ to ____:____)

-Soaking: _____ hours (From ____:____ to ____:____)

-Grade: A1 / A2 / A3 / Triage

-Drying start date: dd/mm/yyyy

-Drying end date: dd/mm/yyyy

-Moisture content: _____%

-Final weight: _____ kg

Weight

kg

CWS: izina rya Coffee Washing Station yakiriye kandi itunganya iyo lot ya kawa.

Receiving date: itariki nyayo imbuto za kawa zagejwe kuri Coffee Washing Station.

Process method: uburyo bwo gutunganya bwakoreshejwe kuri iyo lot ya kawa (nka Fully Washed, Honey, Natural cyangwa ubundi buryo bwagenwe).

Certificate: icyemezo cy'ubuziranenge iyo lot ya kawa ifite niba gihari (nka Organic, Fairtrade, cyangwa Rainforest Alliance).

Lot name: izina cyangwa kode yihariye ihabwa lot ya kawa kugira ngo ikurikiranwe neza.

Main area: aho imbuto za kawa zaturutse cyane, nko mu murenge, akagari cyangwa umudugudu zasaruwemo.

Fermentation: igihe cyose kawa yamaze iboragizwa (mu masaha), harimo igihe yatangiriye n'igihe yarangiriye.

Soaking: igihe kawa yamaze mu mazi meza nyuma ya fermentation, harimo igihe yatangiriye n'igihe yarangiriye.

Drying start/end date: itariki kumisha byatangiriye n'itariki byarangiyeye, bigaragaza igihe cyose cyo kumisha.

Moisture content: igipimo cy'ubushyuhe (%) bwa nyuma bwa kawa nyuma yo kumishwa, gipimwa mbere yo kuyibika cyangwa kuyitonora.