

REPUBULIKA Y’U RWANDA



MINISITERI Y’UBUHINZI N’UBWOROZI

AJENDA Y’UBUHINZI 2018

Iyi Ajenda y’Ubuhinzi yateguwe na Minisiteri y’Ubuhinzi n’Ubworozi, ku bufatanye na FAO.

2018

MUTARAMA - JANUARY - JANVIER

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

GASHYANTARE - FEBRUARY - FEVRIER

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

WERURWE - MARCH - MARS

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

MATA - APRIL - AVRIL

M	T	W	T	F	S	S
						1
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

GICURASI - MAY - MAI

M	T	W	T	F	S	S
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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

KAMENA - JUNE - JUIN

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

NYAKANGA - JULY - JUILLET

M	T	W	T	F	S	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

KANAMA - AUGUST - AOUT

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

NZERI - SEPTEMBER - SEPTEMBRE

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

UKWAKIRA - OCTOBER - OCTOBRE

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

UGUSHYINGO - NOVEMBER - NOVEMBRE

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

UKUBOZA - DECEMBER - DECEMBRE

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

UMWIRONDORO WA NYIRAYO

Amazina.....

Umudugudu:.....

Akagari:.....

Umurenge:.....

Akarere:.....

Intara:

Serivisi:.....

Aderesi:.....

Telefoni (mu biro):.....

Telefoni (Mu rugo):.....

Telefoni (Igendanwa):.....

E-mail:

Inomero y'Indangamuntu:.....

Ubwoko bw'amaraso:.....

Inomero y'ubwiteganyirize bw'abakozi.....

.....
Inomero y'uruhushya rwo gutwara ibinyabiziga

.....

IRIBURIRO

Minisiteri y'Ubuhinzi n'Ubworozi inejejeje no kugeza Ajenda y'ubuhinzi y'umwaka wa 2018 ku bakozi bayo, abafatanyabikorwa mu buhinzi n'ubworozi no ku bandi bakozi bitangira guteza imbere ubuhinzi n'ubworozi ndetse no kuri ba rwiyemezamirimo mu buhinzi n'ubworozi.

Iyi ajenda y'umwaka wa 2018, ikubiyemo ingingo zikurikira:

1. Igice cya mbere:

* Ingingo z'ingenzi zigaragaza ishusho ya Minisiteri y'Ubuhinzi n'Ubworozi, amashami na Porogaramu ziyigize, ibigo n'imishinga biyigize.

2. Igice cya kabiri: aha, nyiri Ajenda azandikamo buri munsu ibyo yakoze cyangwa se ateganya gukora ahereye muri Mutarama kugeza mu Kuboza 2018.

3. Igice cya gatatu: cyagenewe amafishi anyuranye y'ubuhinzi n'ubworozi ndetse n'uburyo bugezweho mu guhunika umusaruro.

Minisiteri y'Ubuhinzi n'Ubworozi (MINAGRI) ifite mu nshingano yo kongera umusaruro w'ubuhinzi, ubworozi n'ibikomoka ku matungo hagamiywe kurwanya ubukene. Kugira ngo bigerweho, hifashishwa ikoranabuhanga mu kongera umusaruro rigafasha abahinzi n'aborozi guhinduka abanyamwuga kandi bakabungabunga ibidukikije. Kugira ngo Minisiteri y'Ubuhinzi n'Ubworozi igere ku nshingano zayo, igendera kuri politiki zinyuranye. Muri zo twavugaga:

- Politiki y'Ubuhinzi n'Ubworozi;
- Ingamba yo kuvugurura ubuhinzi n'ubworozi (PSTA IV);
- Impinduramatwara mu bukungu (EDPRS).

Izi Politiki zishyirwa mu bikorwa binyuze mu bigo bishamikiye kuri Minisiteri y'Ubuhinzi n'Ubworozi arii byo:

- Ikigo gishinzwe iterambere ry'Ubuhinzi n'Ubworozi mu Rwanda (RAB)
- Ikigo gishinzwe iterambere ry'ibyoherezwa mu mahanga bikomoka ku buhinzi n'ubworozi (NAEB).

Ukeneye ibindi bisobanuro wahamagara telefoni itishyurwa numero 4127.

**IGICE CYA MBERE:
POLITIKI NA GAHUNDA ZA MINISITERI**

1. INAMA MBONEZAMIRIRE

Imirire myiza ni ingirakamaro. Umuryango ukurikiza neza inama z'imbenezamirire utuma abagize umuryango bagira ubuzima bwiza, bagatera imbere, n'igihugu kigera ku majyambere arambye. Aho bidakurikizwa, bidindiza imibereho myiza n'amajyambere.

Indyo yuzuye igizwe n'ibiki?

Indyo yuzuye igomba kuba igizwe n'ibi bikurikira:

- *Ibiribwa bitera umubiri imbaraga*: imyumbati, ibijumba, ibirayi, ibitoke, amateke, ibigori, umuceri, ingano, amasaka, n'ibindi.
- *Ibiribwa byubaka umubiri*: ibishyimbo, soya, amashaza, ubunyobwa n'ibikomoka ku nyamaswa.
- *Ibiribwa birinda indwara bigatera n'ubuhere bw'uruhu*: imbuto n'imboga

Buri gihe mu ndyo yawe wibuke kongeremo imbuto n'imboga biribwa bitabanje gutekwa kugirango ugire ubuzima bwiza, kandi ukabifata mbere yo gufata ifunguro risanzwe, nibura iminota cumi nitanu.

Ibihingwa dufite mu Rwanda byafasha mu mbenezamirire n'ibihe?

Dufite ibihingwa byinshi bigira akamaro kandi byoroshye guhingwa hafi y'ingo zacu birimo ibi bikurikira:

- *Imboga rwatsi*: dodo, amababi y'ibijumba, amababi y'ibihaza, isombe, umushogoro, n'amateke.
- *Imbuto*: igihaza, marakuja/amatunda, ibinyomoro
- *Ibiti by'imbuto*: avoka, indimu, ipera, moringa, ipapayi

2. UBURINGANIRE N’UBWUZUZANYE MU BUHINZI N’UBWOROZI

Impanvu uburinganire n’ubwuzuzanye aringombwa mu buhinzi n’Ubworozi

- Kugirango duhuze ubushobozi bw’abagabo n’abagore
- Kugirango buriwese abone inyungu mu byo akora
- Kugirango iterambere ry’abahinzi rigerweho byihuse kandi mu buryoburambye.

Abagabo n’abagore bose, bafite ubushobozi bwo kugira uruhare runini mu kurandura ihohoterwa mu miryango yacu, mu midugudu no mu isi hose, kubera ko rigira ingaruka mbi ku muntu urikorera, umuryango, n’iterambere muri rusange.

Babigeraho bate?

- Babigizemo ubushake, bagatera intambwe, bakiyemeza guharanira uburinganire, n’ubwuzuzanye,
- Bahuye n’abandi bagabo cyangwa abagore bakababwira ibyababayeho byaba ari ihohoterwa cyangwa ibyiza bahabwa n’umuco, impande zose zikabona imbaraga zo gufatanyana mu kurandura ihohoterwa n’ikandamiza.

Uburinganire bw’umugabo n’umugore ni iki?

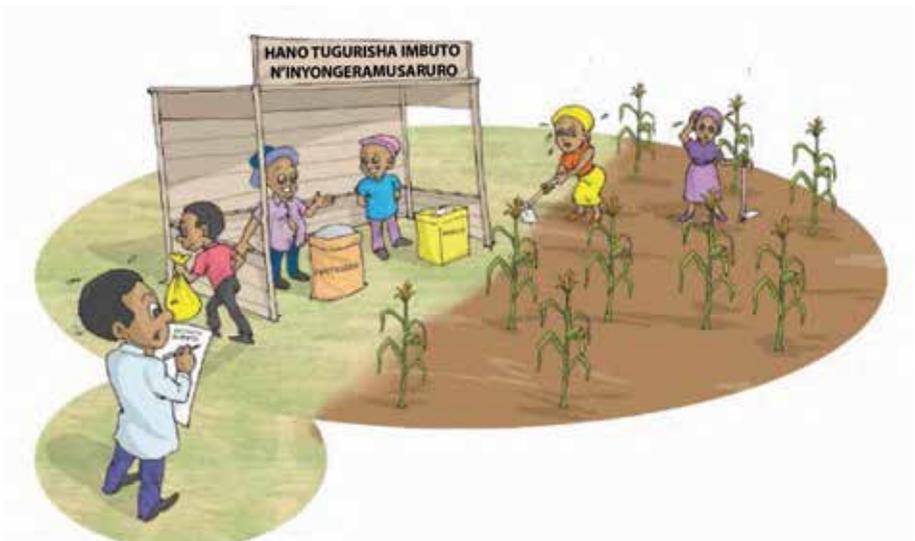
- Ni ukugira uburenganzira n’amahirwe bingana hagati y’abagabo n’abagore imbere y’amategeko.
- Ni uburyo bwo kubaho no kubaho neza, hatitaweho ko ari umukobwa cyangwa umuhungu.

Ubwuzuzanye hagati y’umugore n’umugabo ni iki?

- Ni uburyo bwo gushyira ubutabera hagati y’abagabo n’abagore, buri wese agahabwa ibyo akeneye hagendewe kubyo buriwese ashoboye.
- Ni uburyo abashakanye bafatanyana kubaka urugo rwabo, buriwese akagira icyo amara kumirimo y’urugo rwabo bikurikije uburyo, amikoro n’ubushobozi bwe.
- Ni uburyo umwe mu bashakanye yunganira undi, akamurinda imvune, hagamijwe iterambere ry’urugo rwabo.

Uburanganire n'Ubwuzuzanye byagerwaho mu zihe nzira?

- Kugabana inshingano mu mirimo y'ubuhinzi n'imirimo yo mu rugo hitawe ku bushobozi bw'umugore n'umugabo (nta kirazira mu gukora umurimo uyu n'uyu igihe uwushoboye. Urugero: Hari abagore burira urwego bubaka, bakorera amakawa, hari abagabo batangiyeye kwimenyereza guteka, gutera intabire, kubagara...)
- Gutanga no guhabwa amahirwe angana umugabo n'umugore, umuhungu n'umukobwa. Urugero: niba umugore cyangwa umugabo ari we ushoboye ubushabitsi mu bucuruzi, nabyemererwe abikore nta mananiza bizane iterambere mu rugo)
- Kwubaha ihame ryo kureshya imbere y'amategeko. Urugero: umuntu wese afite uburenganzira bwo kubaho mu bwisanzure. Umugabo wahohoteye umugore ahanwa kimwe n'umugore wahohoteye umugabo
- Kugira ijamba ringana muri gahunda z'urugo no guha agaciro ibitekerezo by'uwo mwashakanye. Imvugo zipfobya umugore zijyanye n'imyumvire ishaje zigomba kurandurwa urugero: "Ingabo y'Umugore iragushora ntigukura"...
- Kugira uruhare rungana ku mutungo. Umugore agomba kugira uruhare rungana n'urw'Umugabo mu gufata icyemezo ku musaruro uva mu buhinzi, n'umutungo w'urugo muri rusange.





ICYITONDERWA

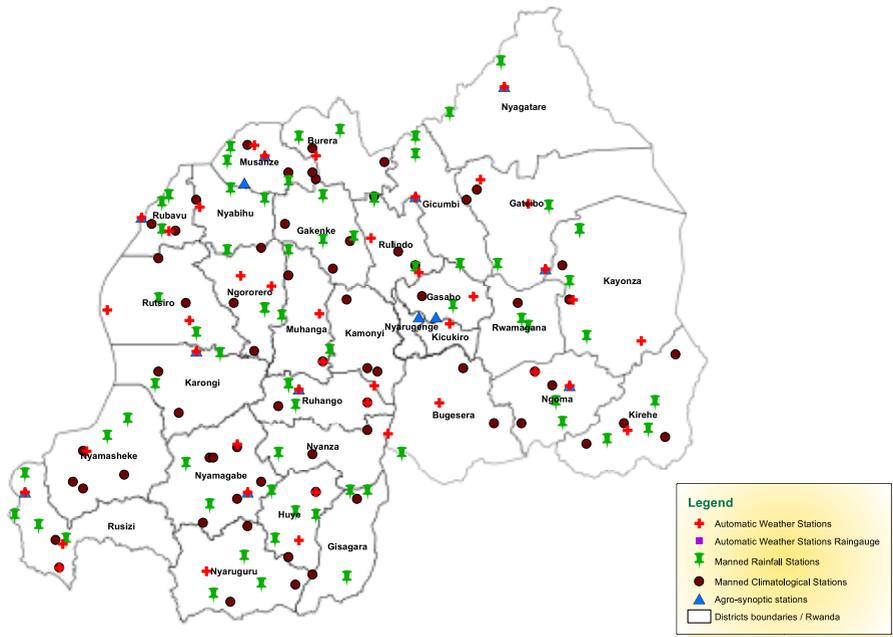
1. Umugabo areshya n'umugore kandi banganya uburenganzira
2. Uburinganire si ukwishyira hejuru k'umugore cyangwa gutera ipfunwe umugabo. Ni gahunda iha umugore n'umugabo, umukobwa n'umuhungu amahirwe angana mu iterambere nko kwiga, kugira akazi, kugira uruhare mu igenamigambi no ku mutungo w'urugo ku buryo bungana hagati y'umugore n'umugabo.
3. Iyo uburinganire n'ubwuzuzanye bibuze, haba hari ihohoterwa; kandi ihohoterwa rihanwa n'amategeko.

3. IKORESHA RY'AMAKURU Y'UBUMENYI BW'IKIRERE MU BUHINZI N'UBWOROZI

Muri ibi bihe u Rwanda ndetse n'isi yose muri rusange duhangayikishijwe n'ikibazo cy'imihindagurikire y'ibihe, ni ngombwa ko abanyarwanda n'abatutarwanda muri rusange basobanukirwa ikoresha ry'amakuru n'ubumenyi bujanye n'ihindagurika ry'ikirere, kugirango habeho guhangana n'ingaruka zikomoka ku mihindagurikire y'ibihe, bikwiye .

Muri rusange, u Rwanda rurangwa no kugendera ku bihe by'imvura. Iyo imvura itaguye neza, bituma habaho ibibazo byo kubona umusaruro udashimishije mu duce tumwe na tumwe tw'igihugu ari nayo mpamvu kumenya no gukurikirana imiterere y'ibihe ari ingenzi mu buhinzi n'ubworozi.

Hifashishijwe ubupimiro bw'ibinyabihe buba hirya no hino mu gihugu burenga 300 bwashyizwe mu Turere no ku Mirenge bijyanye n'ahakwiriye gufatirwa ibipimo, buri muni ku isaha yabugenewe, bijyanye n'amabwiriza mpuzamahanga y'ibijyanye n'ifatwa ry'ibipimo by'ikirere, Ikigo cy'Igihugu gishinzwe Ubumenyi bw'Ikirere (Meteo Rwanda) gikusanya ibipimo by'ibinyabihe bitandukanye birimo: ubushyuhe, ubuhehere, ubutsikamire bw'umwuka, ingano y'imvura, ubukana bw'imirasire y'izuba, icyerecyezo cy'umuyaga n'ingano yawo n'ibindi, kuburyo ku muni hafatwa ibipimo habazwe kimwe kimwe birenga ibihumbi icyenda (9 000).



Ibi bipimo birasesengurwa hagamijwe kureba ko byujuje ubuziranenge nyuma yaho bikabikwa ku buryo ubishatse wese yabihabwa kandi ntakiguzi. Ibi bipimo kandi ni nabyo byifashishwa hakorwa iteganyagihe ry'igihe kigufi, kiringaniye n'iry'igihe kirekire byifashishwa cyane mu igenamigambi ritandukanye mu buhinzi n'ubworozi.

Amakuru y'ubumenyi bw'ikirere agezwa ku bahinzi n'aborozi binyuze mu buryo butandukanye, urugero; mu bitangazamakuru, ubutumwa bugufi, imbuga nkoranyambaga, umurongo utishyurwa ku muntu wese ushatse guhamagara akoresheje itumanaho rya MTN, kandi ashobora guhamagarwa igihe icyo aricyo cyose. Uwo murongo utishyurwa ni **6080**.

4. AMAKURU Y'UBUMENYI BW'IKIRERE AGENEWE ABAHINZI N'ABOROZI

a. Ibipimo by'ibinyabihe

Iyo tuvuze amakuru y'ubumenyi bw'ikirere, duhera ku bipimo by'ibinyabihe kuko byifashishwa hakorwa iteganyagihe ry'ibyiciro bitandukanye turi busobanure mu bika bikurikira.

Nkuko twabivuze hejuru, Meteo Rwanda ifata ibipimo by'ibinyabihe birimo imvura, ubushyuhe, umuyaga, ubuhehere, ubutsikamire bw'umwuka n'ibindi. Ibi bipimo bifatwa hakoreshejwe ubupimiro buba hirya no hino mu gihugu busaga 300.

Ibi bipimo by'ibinyabihe, nibyo bishingirwaho mu gutegura iteganyagihe ry'igihe kigufi, ikiringaniye ndetse n'igihe kirekire. Byifashishwa mu bushakashatsi butandukanye mu buhinzi n'ubworozi cyane nko mu gihe cyo gutegura imishinga minini yo kuvomerera.

b. Iteganyagihe ry'igihe gito gishoboka

Iteganyagihe ry'uwo mwanya n'iry'igihe kigufi rifasha umuhinzi n'umworozi kumenya uko ikirere giteye mu gihe gito kiri imbere, rinyuzwa ku bitangaza makuru binyuranye bikurikiranwa n'abanyarwanda barenga miliyoni eshatu (3 000 000), rinyura ndetse no ku mbuga nkoranyambuga, urugero nko kuri "whatsapp" rikurikiranwa n'abayobozi barenga Magana atandatu mirongo itanu (650).

c. Iteganyagihe ry'umunsi umwe

Muri iri teganyagihe, hagaragazwa uko ikirere kiri bube kimeze mu masaha 24. Hagaragaramo niba se ikirere kiri burangwe n'izuba cyangwa imvura.

Iri teganyagihe, ryafasha umuhinzi n'umworozi:

- kumenya niba umuhinzi ari buvomerere ibihingwa
- kumenya uko ari bukorere ubuhunikiro
- kumenya uko atunganya umusaruro (kwanika cyangwa kwanura)
- kumenya ikigero cy'ubushyuhe bw'uwo munsi
- kumenya ibikoresho umuhinzi ari bukoresha,
- kumenya uburyo butandukanye bw'ubwikorezi umuhinzi agomba guteganya, kugirango ageze umusaruro we kw'isoko

d. Iteganyagihe ry'iminsi 5

Iri teganyagihe rifasha umuhinzi n'umworozi:

- Kumenya igihe cyiza cyo gutera umuti wica udukoko;
- Kumenya igihe cyiza cyo gusarura imyaka;
- Kumenya igihe cyiza cyo gushyira ifumbire mu mirima
- Kumenya igihe cyo kuvomerera ibihingwa

e. Iteganyagihe ry'igihe kiringaniye n'iry'igihe kirekire

Iri teganyagihe rifasha abahinzi n'aborozi:

- Guhitamo igihingwa;
- Kumenya igihe imvura y'igihembwe izatangirira kugwa n'igihe izacika
- Gutegura umurima;
- Guhitamo imbuto nziza igendanye n'ingano y'imvura iteganyijwe;
- Gufata ingamba mu guhangana n'ibiza mu gihe hateganyijwe imvura nyinshi;
- Gufata ingamba mu guhangana n'izuba ryinshi mu gihe hateganyijwe imvura nkeya;
- Gufata ingamba mu guhunika ubwatsi bw'amatungo mu gihe hateganyijwe imvura nkeya;

5. IMFASHAMYUMVIRE KURI GAHUNDA YA TWIGIRE MUHINZI MU RWANDA

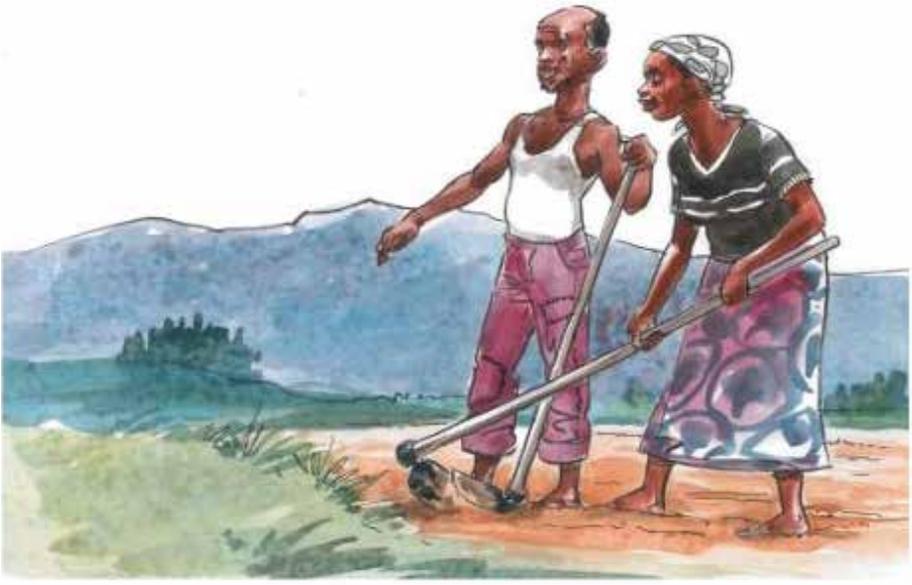


1. INTANGIRIRO:

KUKI GAHUNDA YA TWIGIRE MUHINZI YASHYIZWEHO?

Ubuhinzi mu Rwanda ni umurimo w'ingenzi mu kuzamura ubukungu n'imibereho myiza y'umuryango (cyane abagore) akaba ari bwo buwinjiriza cyane.

Kugeza uyu muni wa none, ubuhinzi n'ubworozi butunze 68% by' abaturage mu Rwanda; kandi bwongera 33% by'umusaruro rusange w'igihungu (GDP). Byongeye kandi, ubuhinzi n'ubworozi mu Rwanda bitanga 90% by'ibiribwa bikenewe mu gihugu kandi nanone bigafata 70% y'ibyoherezwa mu mahanga.



Nubwo bwose ubutaka buhingwaho n'ingo nyinshi buri muni ya hegitari, kububyaza birashoboka.

Uti gute? Hakoreshwa inyongeramusaruro nk'imbuta z'indobanure n'amafumbire ndetse abahinzi bagahinga neza (kijyambere).

Ariko se nanone nigute byagerwaho igihe mu mudugudu ntamuntu numwe uhari cyangwa abantu bake bazi guhinga kijyambere?

Birashoboka ese ko ba agronome mu nzego z’ibanze cyangwa abakozi ba RAB bakora iyamamazabuhinzi bakagera ku bahinzi (imiryango ibihumbi byinshi) ngo babafashe kongera umusaruro? Ikiyongeyeho ni uko akamenyero k’abahunzi ntikahita gahinduka ako kanya. Bisaba igihe, kubegera, no kubaha umwanya wo kwirebera uko ubuhinzi bw’umwuga bukorwa mu buryo butandukanye.

Niyo mpamvu, Leta y’u Rwanda yatangije gahunda ya TWIGIRE MUHINZI muri 2014 nk’igisubizo cyo kongera umusaruro w’ubuhinzi no gushyira hamwe mu kwiteza imbere umuhinzi abigizemo uruhare.

2. GAHUNDA YA TWIGIRE MUHINZI N’IKI?

Ni uburyo bushya bw’iyamamazabuhinzi umuhinzi abigizemo uruhare. Ubu buryo ni umwimerere w’u Rwanda (bwashyizweho na Leta y’u Rwanda), bugamije kwegera serivisi z’iyamamazabuhinzi ku bahinzi bose mu Rwanda.



Ni uburyo bw’iyamamazabuhinzi ryegerejwe abahunzi, bushyirwa mu bikorwa n’ibigo/inzego bya minisiteri ebyiri arizo: Minisiteri y’ubutegetsi bw’igihugu (MINALOC) na Minisiteri y’ubuhinzi n’ubworozi (MINAGRI): Uturere (Inzego z’ibanze) n’Ikigo cy’igihugu gishyizwe iterambere ry’ubuhinzi n’ubworozi RAB.

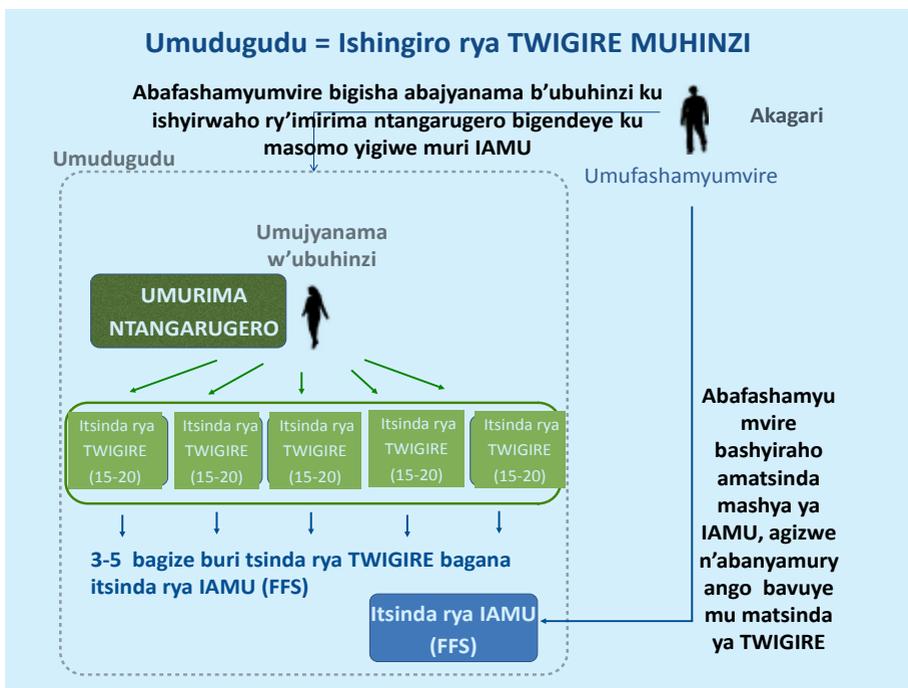
Gahunda ya TWIGIRE MUHINZI ni uburyo bw'iyamamazabuhinzi bushyirwa mu bikorwa n'abafatanyabikorwa batandukanye barimo: (1) Imiryango itangengwa na Leta y'imbere mu gihugu na mpuzamahanga, Abikorera harimo abacuruzi b'inyongera musaruro, ibigo by'imari, indi miryango na za kaminuza.

Gahunda ya TWIGIRE MUHINZI ishingiyeye ku buryo bubiri bwuzuzanya bw'iyamamazabuhinzi bukorwa n'abahinzi: Uburyo bw'abajyanama b'ubuhinzi "Kora ndebe iruta vuga numve" n'uburyo bw'ishuri ry'abahinzi mu mirima (IAMU) igihingwa ni mwarimu naho "umurima ni ishuri"

3. UBURYO TWIGIRE MUHINZI IKORA KU RWEGO RW'IBANZE

TWIGIRE MUHINZI – Iyamamazabuhinzi kuri bose, igamiye kugera ku bahinzi bose mu buryo bubiri bw'ingezi bukurikira:

- (1) Kugeza ku bahinzi bose serivisi z'ibanze z'iyamamazabuhinzi k'uburyo bwihuse binyuze mu bukangurambaga n'ishyirwaho ry'imirima ntangarugero ku midugudu.
- (2) Gahoro gahoro, kugeza ku bahinzi ubumenyi bwimbitse ubaha amahirwe yo kwigira mu Ishuri ry'Abahinzi mu Murima (IAMU)



**IGICE CYA KABIRI:
KALINDARI Y'UMWAKA WA 2018**

MUTARAMA 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi ni iyi ikurikira:

- Gusarura ibihingwa byatewe mu gihembwe cy'ihinga cya A nk'ibishyimbo, Soya, Ibigori, Ingano, Umuceri, Ibirayi, Imyumbati n'urutoki
- Gutunganya umusaruro w'ibishyimbo, Soya, Ibigori, Ingano, Umuceri, Ibirayi, Imyumbati n'urutoki
- Guhunika ibishyimbo, Soya, Ibigori, Ingano, Umuceri, Ibirayi, Imyumbati n'urutoki

GASHYANTARE 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi ni :

- Gutegura imirima (kurima) izaterwamo Ibigori, ibishyimbo, Soya, Ingano, Umuceri n'ibirayi.
- Gutegura amafumbire azakoresha batera Ibigori, ibishyimbo, Soya, Ingano, Umuceri n'ibirayi.
- Gutera imbuto y' Ibigori, ibishyimbo, Soya, Ingano, Umuceri n'ibirayi.

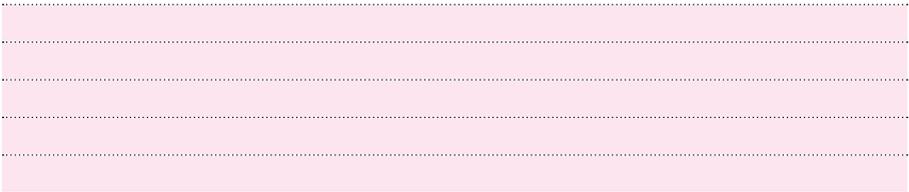
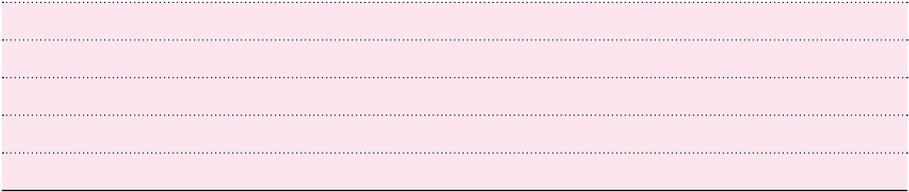
WERURWE 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi ni :

- Gutabira no gutera Ibigori, ibishyimbo, Soya, Ingano, Umuceri n'ibirayi.
- Kubagara bwa mbere Ibigori, ibishyimbo, Soya, Ingano, Umuceri n'ibirayi.

WERURWE 2018

Ku wa Gatandatu, Taliki ya 31 Werurwe 2018:



MATA 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi ni:

- Kubagara bwa kabiri Ibigori, Ibishyimbo, Soya, Ingano, Umuceri, Ibirayi
- Gusukira no gushyiraho ifumbire mvaruganga ku Ibigori, Ibishyimbo, Soya, Ingano, Umuceri, Ibirayi
- Kurwanya indwara n'ibyonnyi by' Ibigori, Ibishyimbo, Soya, Ingano, Umuceri, Ibirayi

MATA 2018

Ku wa Gatandatu, Taliki ya 7 Mata 2018: 7-Kwibuka Genocide yakore we Abatutsi 1994

Ku Cyumweru, Taliki ya 8 Mata 2018:

GICURASI 2018

Muri uku kwezi, imirimo y’ingenzi ikorwa mu buhinzi ni:

- **Gutegura imirima yo mu bishanga no gutera imboga**
- **Kufira imboga**
- **Kurwanya indwara n’ibyonnyi byo mu mboga**
- **Gutegura aho gusarura no guhunika umusaruro w’ Ibigori, ibishyimbo, Soya, Ingano, Umuceri n’ibirayi**

GICURASI 2018

Ku wa Gatandatu, Taliki ya 19 Gicurasi 2018:

Ku Cyumweru, Taliki ya 20 Gicurasi 2018:

KAMENA 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi ni:

- Gusarura Ibigori, ibishyimbo, Soya, Ingano, Umuceri n'ibirayi
- Gutunganya umusaruro w' Ibigori, ibishyimbo, Soya, Ingano, Umuceri n'ibirayi
- Guhunika umusaruro w' Ibigori, ibishyimbo, Soya, Ingano, Umuceri n'ibirayi

NYAKANGA 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi ni:

- Kurwanya indwara n'ibyonnyi mu mboga

KANAMA 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi ni:

- Gusarura imboga

NZELI 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi n'ubworozi ni:

- Gutegura imirima (kurima) izahingwamo ibigori, ibishyimbo, soya, ingano, umuceri, ibirayi, imyumba n'urutoki
- Gutegura amafumbire azakoreshwa batera ibigori, ibishyimbo, soya, ingano, umuceri, ibirayi, imyumba n'urutoki
- Gutegura imbuto y' ibigori, ibishyimbo, soya, ingano, umuceri, ibirayi, imyumba n'urutoki

UKWAKIRA 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi ni :

- Gutabira no gutera ibigori, ibishyimbo, soya, ingano, umuceri, ibirayi, imyumba n'urutoki
- Kubagara bwa mbere ibigori, ibishyimbo, soya, ingano, umuceri, ibirayi, imyumba n'urutoki

UGUSHYINGO 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi ni:

- Kubagara bwa kabiri ibigori, ibishyimbo, soya, ingano, umuceri, ibirayi, imyumba n'urutoki
- Gusukira no gushyiraho ifumbire mvaruganda ku ibigori, ingano, umuceri, ibirayi, imyumba n'urutoki
- Kurwanya indwara n'ibyonnyi by' ibigori, ibishyimbo, soya, ingano, umuceri, ibirayi, imyumba n'urutoki

UKUBOZA 2018

Muri uku kwezi, imirimo y'ingenzi ikorwa mu buhinzi ni:

- Gutegura imirima yo mu bishanga no gutera imboga
- Kufira imboga
- Kurwanya indwara n'ibyonnyi mu mboga
- Gutegura aho gusarurira no guhunika umusaruro

IGICE CYA GATATU : AMAFISHI Y'UBUHINZI N'UBWOROZI

1. KUBUNGABUNGA UBUTAKA

1. Kubungabunga ubutaka ni iki?

Iyo tuvuga kubungabunga ubutaka, mu buhinzi, ni ukuburinda icyo ari cyo cyose gishobora gutuma butakaza ubushobozi bwo kugaburira igihingwa. Muri ibyo byose ikiza ku isonga ni isuri, akaba ari na yo tugiye kwibandaho mu gice gikurikira.

2. Isuri ni iki ?

Isuri ni ugutwarwa k'ubutaka. Butwarwa n'amazi cyangwa n'umuyaga. Ubutaka bwose budakingiwe bushobora gutwarwa. Isuri ni mbi cyane kuko ituma ubutaka butakaza imiterere, ubushobozi n'ibyangombwa byose nkenerwa mu gutunga ibihingwa. Bityo umuhinzi wese akaba agomba gusobanukirwa na yo, aho ituruka, ubwoko bwayo ariko cyane cyane uburyo bwo kuyirwanya.

3. Amoko y'isuri

Amoko y'isuri agabanyijemo ibice bitatu bitewe n'inkomoko yayo. Isuri y'umuyaga, isuri y'imigezi n'isuri y'imvura

3.1 Isuri y'umuyaga

Ikunda kuba ahantu h'ubutayu cyangwa ahantu hari ubutaka bwumagaye, butumuka. Mu butayu, umuyaga utwara ubutaka n'umucanga ku buryo usanga imisozi y'umucanga yimuka. Mu bihugu byacu iyo suri igaragara mu mpeshyi. Ubutaka bwumagaye buhinduka ivumbi bugatwarwa n'umuyaga usanzwe cyangwa serwakira. Umwuka duhumeka wuzura ivumbi bikangiza ubuzima bw'abantu n'ibidukikije.

3.2. Isuri y'imigezi

Ni isuri iterwa n'imigezi yuzura, ikarengerwa, ingufu z'amazi zigacukura kurushaho zigakukumba ubutaka bwose bwo mu nzira. Iyo suri ni mbi cyane.

3.3. Isuri y'imvura n'inkomoko yayo

Iyi ni yo suri ikabije duhura na yo hano mu Rwanda. Ni mbi ku buryo bwose bushoboka.

Mbere na mbere itangira ari igitonyanga cy'imvura cyituye ku butaka. Iyo ubwo butaka bworoshye cyangwa budakingiye, ingufu zacyo zirabushwanyaguza bugatarukira impande zose. Aho igitonyanga kiguye hasigara hacukutse. Uko ibitonyanga bikurikirana kimwe ku kindi ni ko ha handi hacukuka kurushaho, utuvungukira tw'ubutaka natwo tugwa impande n'impande ari nako tugenda twimurwa n'ibindi bitonyanga buhoro buhoro. Amaherezo ubutaka burashegeshwa, bukivanga n'amazi atashoboye gucengera, haba hahanamyeye bugatembana nayo. Uko amazi atemba ni ko amanukana n'ubutaka bwashwanyaguje n'ibitonyanga. Ni na ko kandi agenda ahura n'andi n'ubundi butaka. Bityo ingufu zikagenda ziyongera. Uko ziyongera ni ko ubutaka n'amazi bigenda bikundukana binacukura kurushaho kugera aho byiroheye mu bibaya bikabitwikira cyangwa bikaruhukira mu nzuzi. Bityo ku misozi hagasigara hambaye ubusa, ubutaka buhingwa bwashizeho, amabuye yanamyeye. Mu bibaya naho ubutaka bwiza busigara bwarengewe n'uruvange rw'ubutaka bubi n'amabuye byo ku musozi. Ibyo bigatuma ubutaka, ibihingwa, amazi byo mu bibaya byangirika. Mu gihe gito ubutaka bwo ku musozi no mu kibaya busigara butagishoboye guhingwaho, n'amasoko y'amazi agakama. Muri make isuri yangiza aho ivuye n'aho igiye kandi ibyo yangijye ntibigaruka. Igabanyijemo ubwoko bw'inshi bitewe n'ibyangizwa nayo.

3.3.1. Amoko y'isuri y'imvura

Isuri y'imvura igira nayo amoko menshi bitewe n'ubukana bwayo, ibyo yangiza n'uko igaragara ku jisho.

3.3.2. Isuri rukukumbashingwe

Iyi suri yibasira agace gato k'ubutaka buhingwa bwo hejuru. Hagenda agataka gake cyane ku buryo bidahita bigaragara. Gusa nyuma y'igihe kirekire usanga imizi y'ibiti cyangwa amabuye byatangiyeye kwanama ahantu utatekerezaga isuri. Ni cyo gihe uzumva bavuze ngo ibuye ryarakuze. Nyamara si ryo riba ryakuze ahubwo ni uko ubutaka buritwikiriye buba bwaragiye buvaho buhoro buhoro. Ubu butaka bushobora kujyanwa mu kabande n'imvura cyangwa utumanyu duto duto tutagaragara n'amaso tukamanukira buhoro buhoro

mu twenge tw'ubutaka kugera hasi aho imizi y'ibihingwa itagera. Iyi suri ni mbi cyane bikabije kuko n'ubwo itagaragara ku maso itwara ubutaka bwiza n'imyunyu nkenerwa ku bihingwa, bityo ubutaka bugasigara bwaragundutse bikabije

3.3.3. Isuri iharatura ubutaka

Amazi atwara ubutaka bwo hejuru agasiga aciye utugende duto aho anyuze. Utwo tugende tuba ari duto ariko tugaragara n'amaso. Abahinzi bamwe babona ari ibisanzwe ariko haba hagiye byinshi kandi bitagaruka

3.3.4. Isuri y'imigende

Amazi n'ubutaka bimanukanywe n'isuri bigenda bihura bikikusanyiriza mu migende minini. Uko ingufu z'isuri ziyongera, iyo migende na yo igenda yaguka mu bugari no mu bujyakuzimu kugera muri sentimetero hagati ya 30 na 40 z'ubujyakuzimu. icyo gihe isuri iba imaze gufata intera ndende.

Bene iyo suri ishobora kugaragara ku gice cyo hepfo y'imiringoti idapimye neza iyo amazi yayirengeye bikaba ngombwa ko yishakira inzira mu murima. Iyi suri yangiza ibintu bitagira ingano.

3.3.5. Imikokwe

Ibyarwa n'imigende na yo igenda ihura ikusanyiriza hamwe. Ingufu z'amazi avanze n'ubutaka ziracukura hakavuka imikokwe minini cyane, ishobora kurenza metero makumyabiri z'ubujyakuzimu. Za ruhurura mu butaka buhingwa ziri muri uru urwego rw'isuri. Ubu bwoko bw'isuri kandi bushobora guterwa n'inzira z'amazi yo mu mihanda zidatunganyijwe neza aho amazi ayoborwa mu nsi y'umuhanda hatitaweho ubutaka buhingwaho.

3.3.6. Inkangu

Ubu bwoko bw'isuri buterwa n'amazi yibumbira mu butaka ntasohoke kugeza aburushije ingufu bukariduka. Igaragara ku nkombe z'imihanda, cyangwa amaterasi, cyangwa imiringoti bikoze nabi. Ishobora guterwa kandi n'amazi yaretse hagati mu butaka agatangirwa n'urutare Iyi suri ni mbi, cyane cyane ko ishobora kwangiza ibintu byinshi, ibihingwa, amatungo n'ubuzima bw'abantu.

4. Kurwanya isuri

Uburyo bwo kurwanya isuri bushingiye ahanini ku kugabanya ingufu z’umuyaga cg amazi bitwara ubutaka. Bushingiye kandi ku guha ingufu imiterere y’ubutaka ubwabwo ku buryo bushobora kwihanganira isuri. Iyo ushaka kurwanya isuri nyabyo ukoresha ubu buryo bwombi.



4.1. Kurwanya isuri y’umuyaga

N’ubwo mu Rwanda idafite intera nk’iyo mu bihugu birimo ubutayu ntibibujije ko ihari.

Bayirwanya batera ibiti bikora uruzitiro rugabanya umuvuduko w’umuyaga. Ibizwi cyane ni ibiti n’uduti ndumburabutaka bivangwa n’imyaka ndetse n’ubwoko bumwe na bumwe bw’imbingo. Kugirango igiti gikoreshwe nk’uruzitiro rurinda umuyaga kigomba kuba kiri mu bwoko bw’ibiti bifite ibibabi bikomeye, bikura vuba cyane, bitagira amashami agaye cyane yatwikira ubutaka kandi kikaba gifite imizi itonona ibindi bihingwa.

Uburyo bwa kabiri bwo kuyirwanya ni ugutwikira ubutaka. Ubutaka bushobora gutwikirizwa n’isaso y’ibyatsi cyangwa se n’ibisigazwa by’ibihingwa bigumishwa mu murima. Mu mpeshyi aho bishoboka ubutaka butwikirwa n’ibimera biterwa muri icyo gihe mu murima.

Ubutaka burimo ifumbire y’imborera ihagije bwihanganira isuri y’umuyaga kuko buba bwegeranye. Ni cyo gituma gufumbiza iyo fumbire na bwo ari bumwe mu buryo bwo kurwanya isuri. Amasinde na yo yihagararaho cyane kuri ubu bwoko bw’umuyaga. Ni ngombwa rero gufatanya uburyo bwose bwavuzwe haruguru kugirango iyi suri ikumirwe.

4.2. Kurwanya isuri y’imvura

Uburyo bwo kurwanya isuri y’imvura bushingiye ku kurinda ubutaka ingufu z’amazi aho gutwarwa na yo ahubwo bukayafata, kubuha ingufu zo kwirengera, kugabanya ubuhaname bw’ubutaka.

4.2.1. Gutwikira ubutaka

Kubera ko isuri itangira ari igitonyanga gishwanyaguza ubutaka, kurwanya isuri na byo byagombye guhera ku kurinda ubutaka ingufu z’ibitonyanga. Iyo butwikiriye ibitonyanga bigera ku butaka nta ngufu bigifite. Bityo ubutaka ntibushwanyagurike. Rero gutwikira ubutaka ni uburyo bukomeye bwo kuburinda. Ubutaka bushobora gutwikirwa n’imyaka iteyemo, amashyamba, urwuri, ibyatsi by’isaso byumye cyangwa bibisi.

a. Gusasira

Ni uburyo bwo kurinda isuri ku buhaname ubwo ari bwo bwose. Ubutaka busasiye ntibushwanyaguzwa n’ibitonyanga by’imvura, bityo ntibutembane n’amazi kuko nayo aguma mu isaso. N’iyo atembye kandi agenda yonyine nta ngufu afite. Gusasira ni byiza, bituma ubutaka buhora buhehereye, bwegeranye. Isaso iyo imaze igihe irabora ikavamo ifumbire y’imborera igaburira ubutaka, ikabukomeza, ikaburinda kumanyagurika no gutwarwa n’amazi ku buryo bworoshye. Ifumbire y’imborera kandi ivuye mu isaso yaboze ituma ubutaka bufata amazi menshi aho gutwarwa nayo.

b. Kuvanga imyaka

Kuvanga imyaka idasarurirwa rimwe ni uburyo bwiza bwo kurinda ubutaka kuko buhora butwikiriye bityo ibitonyanga ntibibugereho ngo bibwangize uko byishakiye. Ni byiza kuvanga ibihingwa birebire n'ibigufi kugirango ibitonyanga bibanze kugwa ku mababi y'ibirebire bigere hasi byagabanyije umurego. Iyo imyaka ivanze n'ibiti, bita amababi yabyo na yo agatwikira ubutaka. Uko binatandukana ku burebure bw'imizi kandi ni na ko bigenda birushaho gufata ubutaka. Gusa ibiti bivangwa n'imyaka ni ibitayonona haba ku bigendanye no kuyicura imyunyu imwe n'imwe y'ubutaka cyangwa kuyibuza urumuri rukenewe.

c. Kuraza

Kuraza na bwo ni bumwe mu buryo bwo kurinda isuri kuko ibihingwa biba bitwikiriye ubutaka bityo ntibube bwashwanyaguzwa n'imvura. Amababi y'ibihingwa agabanya umuvuduko w'ibitonyanga ku buryo bigwa hasi nta ngufu bigifite. Ikindi kandi amazi acengera mu butaka iyo burimo ibihingwa aho kwitembera.

4.2.2. Gufumbira

Ifumbire y'imborera uretse kugaburira ibihingwa, ivugurura imiterere y'ubutaka, igatuma bunywa amazi aho gutwarwa nayo. Ni ingenzi cyane mu kurinda ubutaka isuri ikomoka ku mvura no ku muyaga.

4.2.3. Imirongo y'ibyatsi, ibiti n'uduti bivangwa n'imyaka.

Biterwa ku mirongo ndinganizabuhaname. Ibikoreshwa ni ibiti n'uduti ndumburabutaka tuvangwa n'imyaka, ni ukuvuga ibitangiza imyaka. Ubwoko bukorehwa butandukana bitewe n'imiterere y'ubutaka, n'ibipimo by'imvura n'ubushyuye.

Hagati y'agati n'akandi hasigaramo sentimetero 30. Ibyiza ni ukubusanya imirongo 2 y'uduti ku murongo ndinganizabuhaname umwe.

Hagati y'uduti haterwamo ibyatsi bikura vuba nka *setaria*, *vetiveri*, *tiripusakumu* n'*urubingo* kugirango uruzitiro rutarakomera rushobore gufata ubutaka.

Ubu buryo buri mu buryo bworoshye bwo kurwanya isuri. Ku bantu batamenyereye bukoreshwa bwonyine ahantu hari ubuhaname butarengeje 12%. Ubushakashatsi bwa vuba bwerekanye ko ubu buryo bushobora gukoreshwa ahantu hari ubuhaname kugera kuri 30%. Bisaba ariko kubyitondera no gukurikirana bihagije. Hagati y'imirongo ndinganizabuhaname, haterwamo imyaka. Uburyo bwo guhinga, ni ukwitambika.

4.2.4. Imiringoti

Imiringoti ikorwa ahantu hafite ubuhaname buri hagati kuva kuri 5% kugera kuri 12%. Ubushakashatsi bwa vuba bwerekanye ko ishobora gukorwa kugeza ku buhaname bwa 30%. Imiringoti ijyana n'ibiti n'uduti ndumburabutaka ku ruhande rwo haruguru aho bajugunya igitaka baba bacukuye. Imiringoti ibamo ubwoko bubiri: ikomeje n'idakomeje. Ikomeje si myiza na gato kuko ishobora kuzura amazi agasandarira mu murima akahaca inkangu. Imiringoti idakomeje ni yo myiza. Igomba kuba ifite uburebure bwa metero 4 kugera kuri 6 z'uburebure, sentimetero 40 z'ubugari na sentimetero 50 z'ubujyakuzimu. Imiringoti kandi igomba gutandukanywa n'agace gato kadacukuwe kazwi ku ntebe ya agaronome gafite sentimetero mirongo itanu z'uburebure. Imiringoti yo ku mirongo ndinganizabuhaname yegeranye igomba kubusana ku buryo intebe ya agaronome y'uwo hepfo iba iteganye no mu cya kabiri cy'umiringoti wo haruguru. Umwanya hagati y'imiringoti utandukana bitewe n'ubuhaname n'ubwoko bw'ubutaka. Imbonerahamwe yo hepfo ni byo itwerekana.

Ubuhaname (%)	Umwanya hagati y'imiringoti (metero)
2	20* – 40**
5	15 – 22
10	10 – 16
15	9 – 14
20	8 – 13
25	6 – 10
30	5 – 9
35	4 – 8
40- 100	3 – 7

(*) Umubare utegetswe mu butaka butwarwa cyane n'isuri

(**) Umubare utegetswe mu butaka budatwarwa cyane n'isuri

4.2.5. Amaterasi y'indinganire.

Acibwa ahari ubuhaname buri hagati ya 30% na 55%. Ashobora no gucibwa ahari ubuhaname buri hagati ya 12% na 30% ariko si ngombwa cyane mu gihe imiringoti n'uduti n'ibyatsi bifata ubutaka bihagije.

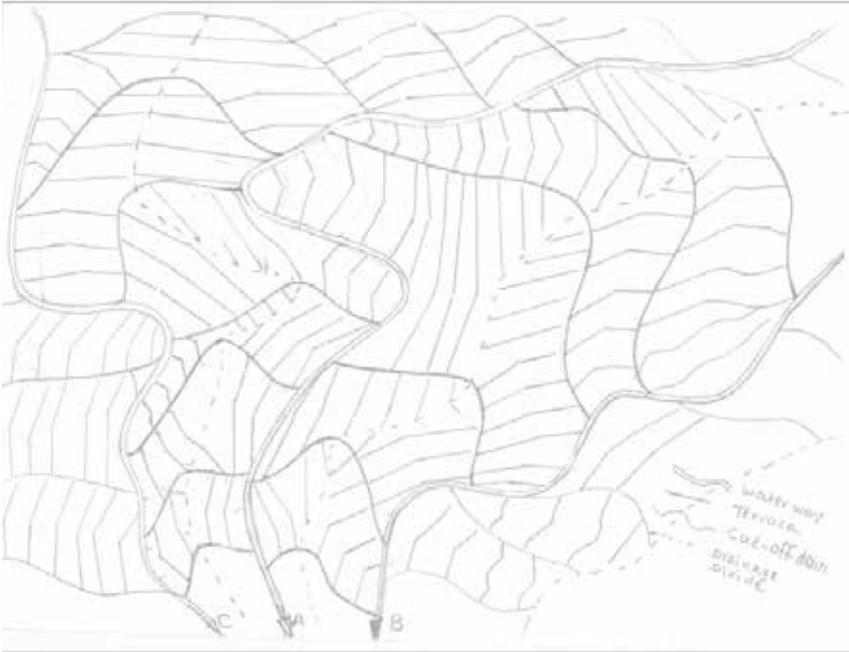
Amaterasi y'indinganire ntacibwa ahabonetse hose. Birabujijwe rwose gukora amaterasi ku butaka bworoshye, buseseka nk'ubw'amakoro, ibumba rifatira, mu butaka bw'amabuye menshi, ubutanywa amazi, ubw'amaninda n'ubutaka bugufi. Ntakorwa kandi igihe kibonetse cyose. Ntakorwa mu itumba igihe cy'imvura nyinshi cyangwa mu mpeshyi mu gihe cy'izuba ryinshi. Igihe kiboneye ni umuhindo. Ibyangombwa bigomba kwitabwaho mu gukora amaterasi ni ubuhaname bw'ubutaka, ubwoko bwabwo n'igipimo cy'imvura igwa aho.

Mu gukora amaterasi igitaka cyo hejuru kugeza muri sentimetero 10 gikurwaho kikarundwa ukwacyo, kuva kuri sentimetero 10 kugera kuri 20 bikaba uko no kuva kuri sentimetero 20 kugera kuri 30 bikaba uko. Mu gihe cyo gusubiranya, igitaka cyavanyweho mbere gisubizwaho nyuma. Hakurikiraho igikorwa cyo gusiza, ariko ku buryo babaho guhinduriza ubuhaname. Kugirango bishoboke igice cyo hepfo batindaho igitaka cyinshi. Ku mirongo ndinganizubuhaname batindaho ibisinde byubitse bikaba ari byo byubaka umugunguzi. Kuri uwo mugunguzi haterwa ibiti, uduti n'ibyatsi bifata ubutaka, bikagaburirwa amatungo, bikabyazwa ifumbire bikanakoreshwa mu mirimo itandukanye. Amaterasi y'indinganire agomba kwitabwaho mu gufumbirwa by'umwihariko kuko ubutaka buba bwatakaje imiterere yabwo y'ingenzi. Ifumbire y'imborera ni yo iba ikenewe cyane kugirango hakosorwe imiterere y'ubutaka iba yangiritse. Nibura toni 20 kuri hegitari ziba zikenewe kugirango ibyo bishoboke.

Amaterasi adakoze neza cyangwa akozwe mu gihe kidakwiriye cyangwa adafumbiye arangirika, akagunduka bityo umusaruro ntube mwiza nk'uko biba byitezwe. Gusa n'ubundi umusaruro wa mbere w'amaterasi ntuba mwiza cyane. Bisaba gutegereza umusaruro wa kabiri n'uwa gatatu kugirango ube mwinshi koko, kandi haboneke inyungu ku mirimo iba yarakozweho. Ni byiza rero gufatanya imirimo yo gutunganya amaterasi no kuyarumbura no guhingamo ibihingwa bifite umusaruro munini n'agaciro karemereye kugirango inyungu iboneke vuba.

4.2.5.1 Gutegura igishushanyo cy'uburyo amaterasi azakorwa

Kugira ngo igikorwa cyo gukora amaterasi y'indinganire kigende neza hari ibintu by'ingenzi bigomba kwitabwaho cyane cyane hagakorwa igishushanyo kigaragaza imigende iyobora amazi cyangwa ifata amazi mu materasi yubatse.



Urugero rw'igishushanyo kigaragaza uburyo amaterasi azubakwa ndetse n'uburyo imigende iyobora amazi izashyirwamo



Ifoto igaragaza urugero rw'umugende uyobora amazi (waterway) ifite aho abantu bashobora kunyura



Ifoto igaragaza iterasi ryamaze gukorwa hatarajyaho akagende kayobora amazi ndetse hataraterwaho n'ibyatsi bifata umukingo



Ifoto igaragaza iterasi yateweho ibyatsi kumukingo kandi byafashe

4.2.5.2 Igihe cyo gukora amaterasi y'indinganire

Ni ngombwa guhitamo igihe kiboneye kugira ngo :

- imirima ikorwa ku buryo bubangutse kandi butavunanye
- imikingo idatenguka
- ibyatsi byatewe ku mukingo bibone igihe gihagije cyo gufata

Mu gihe cy'impeshyi cyangwa imvura myinshi (itumba) gukora amaterasi si byiza. Umuhindo nicyo gihe cyiza.

Ubutaka

Amaterasi y'indinganire ntakorwa mu butaka:

o bworoshye cyane, mbese buseseka. Twavuga nk'ubw'amakoro cyangwa bw'umusenyi

o bw'ibumba rimatira

o bufite amabuye menshi kubera ko bitwara imirimo myinshi yo kuyakuramo n'ubwo ashobora gukoreshwa mu kubaka umukingo

o butanywa amazi kuko ayo mazi atemba ashobora guca inkangu

o bufite amaninda.

Imbonerahamwe ikurikira irerekana igereranya ry'igikorwa cy'amaterasi yikora buhoro buhoro n'amaterasi y'indinganire.

Ingingo zigereranywa	Amaterasi yikora buhoro buhoro	Amaterasi y'indinganire
Gukora imirimo ya mbere y'ibanze	Biroroha	Biravuna
Gukora imirimo ikurikiraho	Bikorwa buri gihe	Nta mirimo iba isigaye
Kurwanya isuri	Bigomba igihe kugira ngo ube uyirwanyije burundu	Uba uyirwanyije uwo mwanya ukirangiza gukora amaterasi
Imikoreshereze y'ubutaka	Ntibukoreshwa bwose kuko ahacukuwe imiringoti hadahingwa	Hakoreshwa hose
Aho bikorwa	Ushobora kubikora hose	Ntabwo ari hose kuko biterwa n'igihe, ubutaka n'ubuhaname bw'ubutaka
Gukoresha neza amafumbire mu iterasi	Si cyane	Cyane
Umusaruro mu iterasi: - amajyaruguru - amajyepfo	Muke Mwiza	Mwiza Mwiza
Imihingikire	Iraruhije	Biroroshye cyane

4.2.6 Kurwanya imikokwe (imikoki)

Mu mirima barwanyijemo isuri, bakoresheje uburyo bwiza bwo guhinga n'uburyo bwiza bwo kurwanya isuri nta ngorane zo kugira imikoki. Ariko hari ubwo imirima barwanyijemo isuri yononekara kubera ko ku musozi hejuru imirima yaho iba itarwanyijeho isuri.

Ubwo rero, umuhinzi agomba gucukura umurwanyasuri ku rubibi rw'umurima arwanyamo isuri ahagana haruguru. Rimwe na rimwe kandi, nubwo haba harwanyije isuri bwose, mu gihe cy'imvura nyinshi amazi atemba aba menshi. Umuhinzi rero ashobora gutunganya inzira amazi atemba anyuramo. Ayikoramo udusumo kugira ngo agabanye umuvuduko wayo. Atera ibyatsi ku mpande zombi z'inzira.

2. KURUMBURA UBUTAKA

Kurumbura ubutaka bivuga kubuha ibyangombwa byose bituma bushobora gutunga igihingwa. Rero uretse kurindwa isuri, ubutaka bugomba kuvugururwa, bukagaburirwa. Hagakosorwa amakosa amwe n’amwe nk’ubusharire n’andi yaba atuma imyunyu imwe n’imwe idashobora kuvomwa neza n’ibihingwa. Kuri ibyo hakiyongeraho kubuha iyo myunyu ari byo bita gufumbira. Kubera ko iyo myunyu ijyanwa n’amazi ni ngombwa buha amazi akenewe, ari byo kukivomerera.

1. Ifumbire y’imborera.

Ifumbire y’imborera ni ifumbire ituruka ku binyabuzima byose biboze. Igabanyijemo ibice bibiri: ifumbire y’ibishanguka n’ifumbire y’amatungo. Ni nziza cyane kuko:

- ituma ubutaka bworoha bityo ntibugore guhinga;
- irinda isuri ubutaka kuko ituma bubika amazi aho gutwarwa nayo kandi bugahora buhehereye;
- ituma umwuka utembera neza mu butaka;
- igaburira ubutaka itanga imyunyu igihingwa kiba gikeneye
- ivugurura imiterere y’ubutaka kuko ituma utunonkononko dukoze ubutaka twegerana;
- ni intungamubiri z’udukoko tumwe na tumwe twa ngombwa mu kugaburira ubutaka n’ibihingwa;
- igabanya ubusharire bw’ubutaka;
- igabanya uburozi bumwe na bumwe mu butaka kandi ikaba yifitemo ubushobozi bwo gufasha igihingwa guhangana n’indwara.

1.1. Gukora ifumbire y’imborera

Gukora ifumbire y’imborera ni ukurundira hamwe ibyatsi, ibibabi, uduti, ibisigazwa by’ibiribwa, iby’imbuto cyangwa se imboga kugirango bibore neza. Ifumbire y’imborera iboze neza ivugurura imiterere y’ubutaka rwose kandi igatanga imyunyu y’ubutaka.

Hari uburyo bwinshi bwo gukora iyo fumbire. Twavuga nko gucukura ingarane n’ubwo gukora kirundo cy’ifumbire ku butaka. Ubu buryo bwa mbere bwo gukoresha ingarane ni bwiza ariko bufite ingaruka y’uko ifumbire itabora vuba, rimwe na rimwe imyunyu yo mu ifumbire ikaba yacengera mu mu ngarane

bityo iyo ukuyemo ugiye kuyifumbiza ikaba ikennye. Uburyo bw'ikirundo ni bwo tugiye kwibandaho kuko ari bwo bwiza kurushaho n'ubwo butamenyerewe. Ubu buryo ntibusaba gucukura ingarane. Gusa ibyatsi n'ibisigazwa bihagije bizavamo ifumbire bigomba kubonerwa rimwe, bikarundwa ahantu hari igicucu mu nsi y'ibiti cyangwa mu rutoki. Ikirundo kiba gifite nibura metero 1 mu bugari na metero 1 na sentimetero 20 z'ubuhagarike kandi gifite ishusho y'umutemeri.

Nyuma yo gusiza ahazakorerwa ifumbire, hakurikiraho gusasa ibisigazwa by'umusaruro, ibyatsi bibi, utwatsi, amababi y'ibiti n'ibihuru kugeza kuri sentimetero 15-20 z'ubuhagarike. Ibyo byose bibanza gucagagurwamo uduce duto duto kugirango bizabore vuba, kandi si byiza kubanza kubyanika. Hejuru hagerekwaho nibura sentimetero 5 z'ibibora neza nk'ifumbire y'amatungo, ibishishwa bya kawa cyangwa agataka karimo ifumire keza gatose. Bituma n'ibindi byose bibora. Hejuru hongerekwaho sentimetero 20 z'ibindi byatsi, amababi y'ibiti.... bicagaguye. Harenzwaho na none ibibora sentimetero 5. Bigenda bigerekeranywa gutyo gutyo kugeza ikirundo cyuzuye. Nyuma ikirundo kiratwikirwa kugirango kitumagara, bityo mikorobe ziboza ntizibone amazi yo kuzitunga ngo zikore akazi kazo. Si byiza kandi kurenzaho igitaka cyinshi cyangwa gutsindagira cyane kugirango izo mikorobe zitabura umwuka zihumeka.

Ni ngombwa kugenzura ubushyuhe kuko ari bwo bwerekana ko mikorobe ziri gukora akazi kazo ko guhinduramo ibyatsi ifumbire. Iyo ubushyuhe bugabanutse haba hari ikibazo cy'amazi make cyangwa menshi cyangwa umwuka. Ni cyo gituma ari ngombwa guhindura ikirundo ibyari hasi bikajya hejuru kugirango biborere rimwe.

Guhindura ikirundo ni igikorwa cyo gukwirakwiza umwuka kikagendana no kuvomerera kugirango mikorobe zitabura amazi. Kuvomerera kandi ni ngombwa iyo hakoreshejwe ibyatsi byumye. Twibutse ko amazi atagomba kuba menshi. Nayo ni ukuyagenzura.

Ifumbire y'imborera ikorwa neza ku buryo bworoshye mu gihe cy'imvura, kurushaho mu gihe cy'umuhindo. Ifumbire irushaho kuba nziza iyo yongewemo ivu ryo mu gikoni cyangwa ishwaraga cyangwa ifumbire mvaruganda nke. Gusa ibi si ngombwa cyane. Ifumbire nziza yumutse ivamo iba ipima hafi 1/5 cy'uburemere bw'ibyahereweho kugirango iboneke.

1.2. Gukoresha neza ifumbire y'imborera

Ifumbire y'imborera ishyirwa mu murima igihe cy'ihinga. Ntigomba kwanikwa kugirango idatakaza imyunyu imwe n'imwe nka azote. Nyuma yo gutabira inyanyagizwa mu murima igaherako itabwa ikavangwa n'igitaka igihe cy'isanza. Hakenerwa toni kuva kuri 20 kugera kuri 30 kuri hegitari kandi ishobora kumara mu murima ibihembwe 3 iyo ari nziza, yakoreshejwe neza, ku gipimo gikwiye kandi itatakajwe n'ubutaka. Iyo ari nkeya ibyiza ni ugufumbira igice gikwiranye n'uko ingana nyuma igice gisigaye kikazafumbirwa nyuma.

2. Kuraza umurima

Kuraza umurima bituma ubutaka buruhuka. Ibyatsi birimeza. Ibiti n'amababi yabyo byumye bigwa ku butaka bikabora. Mu gihe cyo guhinga byose biratabwa, ubutaka bukahabonera ifumbire y'imborera ihagije n'imyunyu myinshi bityo bukisubiza.

3. Gusasira umurima

Uretse kurwanya isuri, gusasira ubutaka ni kimwe mu biburumbura Isaso ituma ubutaka buhora buhehereye bityo nko mu gihe cy'impeshyi ibihingwa bimwe na bimwe bikabasha kwihanganira izuba. Iyo iboze ibyara ifumbire ituma ubutaka bubasha kwiyubaka. Ibuza kandi ibyatsi bibi kwiyongera. Mu gusasira, hagati y'ibihingwa batwikiriza ubutaka ibigorigori, ibikenyeri, ibishwangara, ishinge cyangwa ibindi byatsi byumye bidashibuka. Bigera kuri cm 10 kugera kuri 20 mu buhagarike. Isaso ntigomba gukora ku gihingwa gisasirwa kugirango kirindwe umuswa, mikorobi cyangwa uduhumyo twacyangiza.

4. Gutaba ibyatsi cyangwa ibisigazwa by'imyaka

Gutaba ibyatsi cyangwa ibisigazwa by'imyaka na byo birumbura ubutaka kuko iyo biboze bisubizamo igice kinini cy'imyunyu yari ibirimo. Ibyatsi bitabwa ni ibiba byatewe ku materasi, ku miringoti, ibiba byarajwe mu murima cyangwa se ibisigazwa by'imyaka.

Aho byaturuka hose bibanza gutemwa hanyuma bigahingirwaho.

Ni ngombwa kwitondera gutaba ibigorigori n'ibikenyeri byinshi kuko mu gihe cyabyo cyo kubora bitwara azote nyinshi y'ubutaka. Ibyiza ni ugutaba bike bishoboka, ibindi bigakorwamo ifumbire y'imborera hejuru y'ubutaka.

5. Guhinga ibihingwa-fumbire

Ibihingwa-fumbire ni ibihingwa bihingirwa kuzatabwa. Ibyo ni ibihingwa biri mu muryango w'ibinyamisogwe nka *Mucuna*, *desmodium*, *luzerne* n'ibindi. Bifata azote iri mu mwuka ari na yo ituma ibihingwa bikura, bikayishyira mu butaka bikoresheje uduheri two ku mizi yabyo. Iyo batabye igihingwa-fumbire bari barateye kirabora kigatanga imborera.

6. Uburyo bwo gukoresha iminyorogoto (Vermicomposting)

Ubu ni ubundi buryo bukoreshwa mu kubona ifumbire y'imborera. Iyi fumbire ikorwa n'iminyorogoto ishangura imyanda yaba iyo mu gikoni mu mirima mu bimpoteri mu nganda n'ahandi mu buryo bwihuse. Iyi minyorogoto ikurira neza ahantu hatumagaye /hadakakaye ariko nanone hatajandamyeye, hatari ibiryo bihiye n'inyama, hatari n'urumuri rwinshi.

Ubu buryo bwo gukora ifumbire nibwiza cyane kuko usanga aho ikorerwa nta munuko changwa amasazi ahari. Ikindi ni uko iyo minyorogoto idashobora kugira ahandi ijya uretse muri icyo gisanduku. Iyi fumbire usanga imeze nk'itaka yarashangutse neza.



Amoko y'ifumbire ikomoka k'uminyorogoto

- Ifumbire ikomeye (worm casting)
- Ifumbire y'amazi worm tea

Ibikenewe

- Igisanduku gihitisha umwuka
- Ibasirwa bibika ubuhehere
- Iminyorogoto
- Imyanda ibora uretse ibiryo bitetse
- Ishashi y'mukara yo gutwikira
- Ijerikani yo kureza amazi avamo

Uko bikorwa

- Hakoreshwa igisanduku gihagaze ku maguru ane.
- Indiba yacyo ni ibati (kureza amazi ava mu ifumbire nayo agakoreshwa nk'ifumbire y'amazi).
- Gushyiraho umureko wo kuyobora umushongi mu ijerikani.
- Gushyiramo isaso (ibikarito,impapuro,...)
- Kuzana iminyorogoto ikiri mw'ifumbire yayo ukayinyanyagiza kuri ya saso.
- Kongeraho ibigaburirwa (ibikonko,ibishishwa byo mu gikoni,...) Bigomba kuba bihehereye.
- Gutwikira na shitingi y'umukara.



Igihe isarurirwa/ikoreshezwa

Nyuma y'ukwezi umaze gushyira ibikenewe byose mu gisanduku cyabugenewe, ifumbire iba imaze kuboneka ukajya usarura rimwe mu kwezi. Ifumbire isarurwa hifashishijwe urumuri kuko rwirukana iminyorogoto. Iyo upfunduye/

ukuyeho ishashi iminyorogoto yose yibira mu ifumbire ukayora ifumbire yo hejuru. Ugenda uyigaburirira iruhande rumwe iminyorogoto ikajya yimukira ahari ibiryo ugakura ifumbire aho yavuye.

Ibyiza by'ifumbire ikomoka ku minyorogoto

- Iva mu byitwa umwanda bitagikenewe mu bindi
- Yongerera ubutaka gufata amazi vuba (improve soil water retention)
- Yihutisha igihingwa gukura (enhance plant growth)
- Yongera ubudahangarwa bw'igihingwa
- Ifasha utunyabuzima two mu butaka kwororoka (soil microbes)
- Yongera guhumeka ku mizi (increase soil porosity)
- Ivugurura ubutaka (soil amendment)
- Iy'amazi (tea manure) yongerera amazi n'ifumbire icyarimwe mu butaka
- Iyipimo bikoreshwa bingana n'ibyifumbire isanzwe y'imborera

7. Imikoreshereze y'ifumbire y'imborera

- Ifumbire yo mu ngarani cyangwa y'ikirundo ikoreshwa iyo yahoze bivuga igihe udashobora kumenya ishusho y'ibyo uba wayikozemo ;
- Mu kuyikoresha dore ibipimo mbonera :
 - * Ku bihingwa ngandura-rugo : nibura kg 100 kuri ari 1
 - * Ku mboga ni hagati ya kg 300 na kg 400 kuri ari 1
 - * Ku bihingwa biterwa mu myobo (ibiti byera imbuto ziribwa, insina, ..., hakoreshwa kg 50 buri mwobo.

Icyitonderwa : ifumbire iyo igeze mu mirima iranyanyagizwa kandi igahita itabwa ikavangwa n'ubutaka.

8. Ifumbire mvaruganda

Ifumbire mvaruganda ni ifumbire ikorerwa mu ruganda iba irimo imyunyu y'ubutaka. Iyo myunyu iba mu mafumbire ishongeshwa vuba n'amazi bikivanga. Bityo uko igihingwa kivoma amazi kikayivomamo. Iyo amazi acengera kure mu butaka ajyana n'iyoyunyu. Ibihingwa ntibishobore kuyikoresha. Ni cyo bita "kurigita kw'imyunyu y'ubutaka". Iyo ibumba n'imborera bihagije mu butaka bifata amazi avanze n'iyoyunyu. Bityo iyo myunyu ikaguma hafi y'ubutaka.

Rero ifumbire mvaruganda igira akamaro iyo ikoreshejwe ku butaka bufite imiterere myiza, bukize ku mborera.

Iyo ikoreshejwe yonyine ari nyinshi, cyane cyane ikize mu myunyu nka azote, ituma mikorobi z’ubutaka ziyongera vuba vuba. Bityo zikanyunyuzwa imborera yose kandi ari yo ituma ubutaka bwegerana. Iyo irangiye, za mikorobi zirapfa n’ubutaka bugasigara bumeze nk’ivumbi ku buryo n’imizi ishobora kubura aho ifata. icyo gihe ubutaka bubura ubuzima bukagunduka. Isuri na yo ishobora kuririraho kuko ubutaka buba butagifatanye. Ni ngombwa rero kwirinda kurenza urugero rw’ifumbire mvaruganda yo gukoresha no kwirinda kuyikoresha yonyine.

Amafumbire mvaruganda abamo amoko atandukanye. hari arimo umunyu 1 w’ubutaka, andi avanze mo imyunyu 2 andi 3. Imenyerewe cyane ni NPK irimo imyunyu itatu :azote, fosifore na potasiyumu.

Ishobora gushongeshwa mu mazi nyuma agasukwa mu ifumbire y’imborera igiye guterwa mu murima. Gusa kubera ko ihenda, ibyiza ni ukuyishyira hafi y’imizi y’igihingwa mu murongo hanyuma hakarenzwaho agataka. Ku butaka buhanamye ifumbire ishikirwa haruguru gato y’umwobo ujyamo igihingwa. Ku bihingwa bimwe na bimwe nk’imbuto y’ibirayi, ifumbire ishikirirwa rimwe mu mwobo n’imbuto. Ku biti by’imbuto, ikawa, insina ifumbire bayizengurutsaho.

9. Inkosorabutaka

Ni inyongeramusaruro, zikoreshwa mu gukosora imiterere y’ubutaka nk’ubusharire n’imyunyu nka aluminiyumu. Urugero ni nk’ishwagara y’ubuhinzi ikoreshejwe mu kugabanya ubusharire bw’ubutaka.

Urugero rw’ishwagara yo gushyira mu butaka ruterwa n’urugero rw’ubusharire bwabwo ndetse n’igihingwa. Ubutaka burimo ifumbire y’imborera ihagije busaba ishwagara nkeya. Ibiro hagati ya 20 na 30 by’ishwagara kuri ari 1 biba bihagije. Ishwagara ivangwa neza n’ubutaka iterwa ibyumweru 2 mbere yo gutera imyaka. Guterana n’imyaka bishobora gutuma ibabuka.

10. Kuvomerera ubutaka

Amazi ni ingenzi ku butaka no ku bihingwa byose iyo biva bikagera. Ubutaka budafite amazi ntibwabaho. Imyunyu yose ibihingwa bikenera itembera mu mazi y’ubutaka. icyo wakorera cyose ibihingwa bidafite amazi nta cyo byabimarira. Ni ngombwa rero gushakira ubutaka n’ibihingwa amazi akenewe ku rugero, ni ukuvuga kugabanywa mu gihe abaye menshi no kuvomerera mu gihe abaye make.

3. KUHIRA IMYAKA

U Rwanda rwatunganiye ibyanya byinshi byuhirwa mu gihugu hose, aho usanga hari uburyo bwo kuhira butatu bwiganje mu gihugu, ari bwo kuhira ku buso bunini mu mabanga y'imisozi, gutunganya ibishanga no kuhira ku buso buto. Igishushanyo mbonera cyo kuhira cyakozwe mu 2010 kigaragaza ko u Rwanda rufite hegitari 600,000 zakorerwaho ibikorwa byo kuhira. Leta y'u Rwanda ifatanyije n'abafatanyabikorwa hamaze gutunganywa ubuso bungana na hegitari 48,500 ibishanga bikaba byihariye 76%.

a. Gutunganya igishanga

Amazi akurwa mu migezi, ibiyaga cyangwa ibidendezi by'amazi agashyirwa mu miyoboro iyegereza imirima aho umuhinzi abasha kuyafatira ayerekeza mu mu murima we. Inyubako dusanga mu gishanga harimo izigabanya umuvuduko w'amazi, ibiraro, inyubako zifata amazi ku muyoboro munini ziyashyira mu muyoboro muto, iziyafata ziyashyira mumurima n'imihanda. Ibyitabwaho cyane mu gihe hubakwa imiyoboro ajyana amazi mu gishanga. Amazi abasha kwijyana mu miyoboro hagendewe ku buhaname bw'umuyoboro. Mu gihe umuhinzi ariho yuhira ndetse no mu rwego rwo kubungabunga umuyoboro, umuhinzi asabwa ibi bikurikira:

- Umuhinzi asabwa gusibura imiyoboro itwara amazi byibuze kabiri mu gihembwe cy'ihinga
- Ibyondo bivanwa mu nyubako zibika amazi byibuze rimwe mu gihembwe cy'ihinga
- Gusana ibikorwa byangiritse bikoreshwa mu kuhira no gutwara amazi igihe cyose bibaye ngombwa
- Gusibura umugende munini uvana amazi mu gishanga
- Gukurikiza ingengabihe yo kuhira hagendewe ku mazi akenewe kuri buri gihingwa mu cyanya cyuhirwa
- Gusaranganya amazi kuburyo bunoze mu bahinzi
- Gusana imiyoboro yangiritse kugira ngo amazi akomeze agere aho yajyaga.



b. Kuhira ku mabanga y'imusozi

Kuhira mu mabanga y'imusozi bisaba ingufu zitangwa n'imashini izamura amazi mu matiyo agenda akagera mu mirima iri i musozi, izo mashini zizamura amazi zikoresha umuriro w'amashanyarazi, risansi cyangwa mazutu ari byo bitanga imbaraga ziba zikenewe mu kuzamura amazi imusozi. Kuhira imusozi tubisangamo uburyo butatu bukoreshwa mu Rwanda ari bwo kuhira amazi agwa nk'imvura hifashishijwe utumashini tumisha amazi (sprinkler), kuhira hakoreshejwe imashini zizenguruka nazo zimisha amazi nk'imvura (center pivot) no kuhira amazi atonyanga ku muzi w'igihingwa aturuka mu dutiyo duto tuba turambitse mu mirima. Usanga abahinzi bibumbiye mu miryango ikoresha mazi aho iyi miryango yifashishwa mu gukusanya amafaranga yo gusana no gukoresha ibikorwa remezo bishinzwe kuhira imyaka.

Hagendewe ku buryo bwo kuhira bukoreshwa mu murima, umuhinzi aba asabwa kumenya imikorere n'imikoreshereze y'ibikoresho bijyana na bwo

• **Ku mashini yuhira yizengurukaho (Center pivot)**, umuhinzi asabwa kureba ibi bikurikira

Kugenzura niba aho imashini inyura hameze neza(atari mu isayo) .

- o Kugenzura ko amapine arimo umwuka
- o Kugenzura niba iminwa y'amatiyo ikora neza (itazibye)kandi nta yibuzemo
- o Kureba niba insinga zose z'amashanyarazi n'udutiyo tw'amazi bitayangiritse
- o Kugenzura ko akayunguruzo k'amazi gasukuye
- o Kureba ko akuma gafungura amazi kerekeye mu cyerekezo ushaka ko ukoreramo
- o Kureba niba amashanyarazi ari mu mashini yuhira urebeye ku kuma k'umukara kari muni gacana itara ry'icyatsi kibisi
- o Kureba uko amashanyarazi ari mu mashini angana

- o Gushyira amashanyarazi mu kigereranyo kiberanye n'imikoreshereze y'imashini yuhira
- o Gushyira ingano y'amazi mu kigereranyo ukurikije ingengabihe yo kuhira
- o Kugenzura niba amapine y'imashini yuhira aringaniye kandi ari ku murongo umwe no kumenya kuyagorora
- o Gucana imashini yuhira ukurikije icyerekezo yari irimo cyangwa kugihindura bitewe n'aho ushaka kuhira
- o Kumenya no gusobanukirwa ikintu cyose gishobora gutuma imashini yuhira idakora
- o Kuzimya imashini yuhira igihe kuhira atari ngombwa.

- **Utwuma twuhira tumisha amazi nk'imvura**

- o Kureba ibikoresho byuhira byose niba biri mu mwanya wabyo
- o Kureba ko ntaho inzira z'amazi ziva bityo bigasaba gusana aho amatiyo yapfumutse
- o Kureba ko ingufu zikenewe zihari kugira ngo zibashe kuvomerera neza
- o Kubahiriza ingengabihe yo kuhira mbere yo kwimura amatiyo
- o Kureba ko ingano y'amazi akenewe abasha kugera mu murima
- o Kuzibura iminwa y'utwuma twuhira tumisha amazi mu gihe yazibye
- o Kugenzura ko akayunguruzo k'amazi gasukuye.

- **Uburyo bwo kuhira amazi atonyanga ku mizi y'igihingwa**

- o Kugenzura ko inzira z'amazi zimeze neza
- o Kureba ko ntaho amazi ava bityo bigasaba gusana aho amatiyo yapfumutse
- o Kureba ko ingufu zikenewe zihari kugira ngo zibashe kuvomerera neza
- o Kubahiriza ingengabihe yo kuhira mbere mbere yo gufunga no gufungura ahandi
- o Kureba ko ingano y'amazi asabwa abasha kugera mu murima
- o Kuzibura udukoresho dusohora amazi (emitters) mu gihe twazibye
- o Kugenzura ko akayunguruzo k'amazi gasukuye.



c. Kuhira kubuso buto

Leta y'u Rwanda yashyizeho gahunda yo kunganira abahinzi ku bikoresho byo kuhira ku buso buto inyuze mu kigo cy'igihugu gishinzwe guteza imbere ubuhinzi n'ubworozi (RAB). Iyo nkunganire igizwe no kwishyurira umuhinzi 50% y'ikiguzi cyose gisabwa umuhinzi mu kubona ibikoresho byo kuhira n'ibikoresho byo gufata amazi ku buso butarenze hegitari 10. Iyi porogaramu ishyingira mu bikorwa n'umuhinzi usaba ibyo bikoresho, abatanga serivisi zo gutanga ibikoresho ku muhinzi ndetse na RAB yishyura 50%. Muri iki gihe, hariho harigwa uburyo byamanurwa bikegerezwa umuhinzi no kwinjiza ibigo by'imari muri iyi gahunda.

- o Umuhinzi ubishaka abisaba ku karere cyangwa kuri RAB yuzura ifishi isaba kubona ibyo bikoresho kuri nkunganire
- o Abatekinisiye bagenzura umurima niba wujije ibya ngombwa bisabwa bakanemeza niba umuhinzi yabona ibyo bikoresho
- o Umuhinzi agura ibikoresho byemejwe n'umutekenisiye ku muntu utanga serivisi zo gutanga ibyo bikoresho byo kuhira akishyura 50% y'ikiguzi cyose
- o Ibyo bikoresho bisanwa n'umuntu utanga serivisi zo kugeza ibikoresho byo kuhira ku bahinzi mu gihe cyingana n'umwaka atishyurwa.
- o Abahinzi bashobora gukoresha neza ibyo bikoresho byo kuhira byatanze kuri nkunganire bakora ibi bikurikira
- o Kugenzura neza ahantu washyira icyobo cyakwifashishwa hakururwa amazi hakoreshejwe pompe
- o Kureba ko amatiyo atwara amazi afatanye neza ntaho ava
- o Kureba neza niba ingufu zifashishwa zihari kandi zihagije (mazutu n'amashanyarazi)
- o Kureba ko amatiyo arambuye neza, atizinze cyangwa yikubye byose bica intege za moteri
- o Gushyira mumirima neza ibyuma byuhira birimo imashini zuhira ukagenzura amaguru zihagararaho ko ahagaze neza kandi akomeye.
- o Kurambura umupira wuhira ukawugeza ku murima mugihe ariwo wifashishwa umisha amazi kubihingwa

- o Kubahiriza gahunda yo kuhira himurirwa kugihe ibikoresho bishyirwa muwundi murima ukurikiraho mu gihe hakoreshwa uburyo bwo kwimura uva hamwe ujya ahandi.



4. GAHUNDA YO GUKOresha IMASHINI MU MIRIMO ITANDUKANYE Y'UBUHINZI N'UBWOROZI (AGRICULTURE MECHANIZATION)

1. Iriburiro

Umubare munini w'abanyarwanda utunzwe n'imirimo itandukanye y'ubuhinzi n'ubworozi, gusa ubuhinzi buracyakorwa mu buryo bwa gakondo bigatuma umusaruro ubikomokaho ukomeza kuba muke ntibinakorwe kinyamwuga. Minisiteri y'ubuhinzi n'ubworozi mu rwego rwo kongera umusaruro ukomoka ku ubuhinzi n'ubworozi yatangije gahunda zitandukanye z'ikorabungu mu buhinzi n'ubworozi harimo n'ikoresha ry'imashini mumirimo itandukanye y'ubuhinzi n'ubworozi, iyi gahunda ikaba yaratangijwe muri 2010 ku rwego rw'igihugu. Aho imashini zitandukanye zegerejwe abahinzi ku rwego rw'akarere binyuze muri gahunda yo gukodesha no kugurisha imashini ku bahinzi. Gukoresha imashini mu mirimo itandukanye y'ubuhinzi n'ubworozi byongera umusaruro, bikagabanya amafaranga akoreshwa mu buhinzi ugereranije no gukoresha amaboko, byihutisha akazi, bikagabanyiriza n'invune abahinzi. Iyi akaba ari imwe mumirimo itandukanye y'ubuhinzi n'ubworozi ikorwa n'imashini: kurima, gusanza, gutera imbuto, gutera umuti wica udukoko, gusarura, gutwara umusaruro, gutunganya umusaruro, kuzinga ubwatsi n'ibindi.

2. Ibyiza byo gukoresha imashini mu mirimo itandukanye y'ubuhinzi n'ubworozi

Imirimo y'ubuhinzi n'ubworozi isaba ingufu yaba izabantu, inyamaswa cyangwa izamoteri. Mu rwego rwo gukora ubuhinzi n'ubworozi kinyamwuga ingufu za moteri nizo zikenerwa mu gukora imirimo itandukanye y'ubuhinzi n'ubworozi kugirango bigabanye umubare munini w'abahinzi ugaragara mu gihe cyo gukora imirimo itandukanye y'ubuhinzi, kwihutisha igihe no kongerera ubwiza umusaruro. Iyi akaba ari imirimo y'ubuhinzi n'ubworozi ikorwa n'imashini:

➤ Gutunganya ubutaka

Igihingwa gikenera ubutaka butunganyije neza kugirango gikure neza kandi gitange umusaruro; akaba ariyo mpanvu mbere yo gutera imyaka ubutaka bubanza gutunganywa. Iki gikorwa kigenda neza iyo gikoreshajwe imashini kuko yihuta kandi igahinga neza kurusha abantu.

- **Kurima**

Ni igikorwa cyo kurima amasinde bwambere utegura umurima, imashini yambaye isuka irima yifashishwa mu kurima amasinde; gukoresha imashini bikaba byihutisha akazi bigatuma umuhinzi agendana n’igihe, bigabanya amafaranga yakoreshwaga mu kurima, bitanga amasinde meza ku buryo igihingwa kibasha gukura neza, bigabanyiriza invune umuhinzi bikanagabanya umubare w’abahinzi bari gukora iki gikorwa. Imashini irima hagati ya hegitari 2-3 ku munsu, ahantu hasaba abantu barenga 200 kuharima ku munsu.



Imashini irimo kurima amasinde



Imashini irimo gusanza

- **Gusanza**

Ni igikorwa cyo gusanza amasinde hategurwa intabire yo gutera. Imashini yambaye isuka isanza ikaba yifashishwa mugusanza amasinde, ikaba yihutisha akazi isanza neza kurusha abantu kandi ikagabanya n’umubare w’abantu bakora iki gikorwa. Ubutaka bwasanjijwe n’imashini buba bumeze neza kuburyo ikimera cyibasha gushora imizi yacyo neza bikagifasha gukura neza.

- **Gutera imbuto n’ifumbire**

Ni igikorwa cyo gutera imbuto, imashini yambaye isuka yifashishwa mugutera imbuto zitandukanye, yihutisha igikorwa, igatera ku murongo hakurikijwe umwanya usabwa hagati y’ibihingwa, igabanya igihombo giterwa no gusesagura imbuto n’ifumbire mu gihe cy’itera kandi ikagabanya umubare w’abantu bari gutera igatuma n’imyaka ikurira rimwe.



Imashini nini yambaye isuka itera imbuto imashini nto yambaye isuka itera

➤ **Gutera imiti yica udukoko**

Ni igikowa cyo gutera imiti hagamijwe kurinda ibihingwa indwara cg kwica udukoko tuba turi ku bihingwa. Imashini yambaye ipompo itera umuti, yifashishwa mu gutera imiti itandukanye yica udukoko; yihutisha akazi, ikagabanya iyangizwa ry'umuti mu gihe cyo kuwutera igabanya umubare w'abantu bari gutera umuti n'amafaranga yari gukoreshwa mu gutera imiti.



Imashini yambaye ipompo itera imiti yica udukoko:

Imashini yambaye rumoroki itwara umusaruro n'inyongeramusaruro

➤ **Gutwara umusaruro n'inyongera musaruro**

Ni igikorwa cyo kugeza inyongeramusaruro (ifumbire, imbuto..) ku murima no gutwara umusaruro uva kumurima uya guhunika cyangwa ku isoko. Imashini yambaye rumoroki yifashishwa mugutwara umusaruro n'inyongera musaruro; ikaba igabanya amafaranga yari gukoreshwa muri iki gikorwa, yihutisha akazi kandi umusaruro ntiwononekare.

➤ **Gusarura**

Ni igikorwa cyo gusarura imyaka imaze kwera, imashini zitandukanye zifashishwa mu gusarura, zikaba zihutisha akazi, zituma umusaruro utangirika, cyangwa ngo utakare mu gihe cyo gusarura.



Imashini nini isarura



Imashini ntoya isarura

➤ **Gutunganya umusaruro**

Ni igikorwa cyo gutunganya umusaruro haba kugosora, guhungura cyangwa gutonora. Imashini zitandukanye zifashishwa mu gutunganya umusaruro; zihutisha akazi zigakora neza zitangiza umusaruro bityo zikawongerera agaciro.



Imashini zitandukanye zifashishwa mu gutunganya umusaruro

➤ **Kuzinga ubwatsi**

Ni igikorwa cyo kuzinga ubwatsi bugaburirwa amatungo kugira ngo byorohe kubutwara kandi buhunikwe ku buso buto. Imashini yambaye imashini yifashishwa mu kuzinga ubwatsi bugaburirwa amatungo cyangwa buzakoreshwa mu gukora ibikoresho by'ubwubatsi ; izinga ubwatsi neza kandi vuba ituma ubwatsi bworoha kubutwara kandi buhunikwa ku buso buto.



Imashini izihanga ubwatsi

Muri rusange imashini zikora imirimo itandukanye mu buhinzi n'ubworozi ari nako zihutisha akazi, zigabanya amafaranga yashorwaga mu gukora iyo mirimo, kongerera umusaruro agaciro, kugabanya umubare w'abantu bakoraga imirimo itandukanye y'ubuhinzi n'ubworozi. Ubu imashini zikaba ziboneka mu Rwanda binyuze mu buryo bwo gukodesha cyangwa kugura.

5. UBUHINZI BWA KIJYAMBERE KU BIHINGWA NGANDURARUGO.

A. IBIGORI



1. Aho bikunda : Ibigori bihingwa hafi ya hose mu gihugu kugeza ku butumburuke bwa metero 2200.

2. Ubutaka : bufumbiye, bw'isi ndende, bubika amazi kandi bworoshye.

3. Amoko yamamazwa :

3.1. Hybrid

Mu misozi miremire : H 628, H 629, PAN 691, SC 719, SC 637

Mu misozi migufi n'iciritse : PAN 4M21, PAN 53, PAN 67, SC 403, SC 513, SC 529, WH 505, WH 507, WH 403, H 513, RHM 104, RHM 1407, RHM 1402.

3.1. OPVs

Mu misozi miremire : Tamira (Pool 9A) na Mamesa (Pool 8A).

Mu misozi migufi n'iciritse : Kigega (ZM 607), M 101, M 103.

4. Uko bategura umurima

* Kurwanya isuri, kurima bwa mbere bavanamo urwiri iyo ruri mu murima, no gutabira bagiye gutera imbuto.

5. Gufumbira :

* Gushyira mu murima toni 10 z'ifumbire y'imborera iboze neza mu gihe cy'itabira ; gushyiramo DAP Kg 100 kuri Ha mu gihe cyo gutera. Iyo igihingwa kigize hagati y'amababi 6-8, hongerwamo Kg 50 za ire (urea).

Mu butaka busharira, babanza gushyiramo hagati ya toni 2,5 na toni 5 z'ishwagara kuri Ha bakazongeramo indi hashize ibihe by'ihinga 4 (4 seasons).

Mu butaka busharira, babanza gushyiramo hagati ya toni 2,5 na toni 5 z'ishwagara kuri Ha ikamaramo imyaka 2.

6. Igerambuto:

Batera hagati ya kg 25 na kg 30 z'imbuto kuri Ha. Batera kuri cm 75 hagati y'imirongo na cm 40 ku murongo, bashyira intete 2 mu mwobo wa cm 10 z'ubujyakuzimu.

Ibihe by'itera biterwa n'uturere:

Mu misozi migufi: batera mu minsi 15 ya mbere ya Nzeli cyangwa mu minsi 15 ya mbere ya Gashyantare.

Mu gishanga: Gicurasi mu gihembwe cy'ihinga cya C.

Mu misozi miremire: Ukuboza na Mata

7. Gutera imbuto:

Haterwa kg 25-30 z'imbuto kuri Ha

Imbuto iterwa ku ntera ya cm 75 hagati y'imirongo na cm 40 hagati y'imyobo iri ku murongo umwe, hagaterwa intete ebyiri z'ibigori muri buri mwobo

8. Kubikenura

Hakorwa imirimo yo kubibagara no kubyicira, ibigori bifite cm 10 z'uburebure, bigasukirwa bifite cm 30

9. INDWARA N'IBYONNYI BY'IGIHINGWA CY'IBIGORI

a. KIRABIRANYA Y'IKIGORI

Indwara ya Kirabiranya (Cyumya) y' ikigori ni indwara iterwa n'uruhurirane rwa virusi ebyiri ariko iyi ingenzi ni *Maize chlorotic mottle virus (MCMV)*. Iyi virusi iyo ihuye nimwe muri izi zikurikira: *Sugarcane mosaic virus (SCMV)*, *Wheat Streak Mosaic Virus (WSMV)* cyangwa *Maize Dwarf Mosaic Virus (MDM V)* nibyo bitera indwara ya Kirabiranya y'ibigori. Kirabiranya y'ikigori igira ubukana bwinshi kurusha izindi ndwara zose z'ikigori kandi igabanya umusaruro kugeza ku gipimo cy'100% iyo itarwanyijwe.

Ibimenyetso biranga indwara ya Kirabiranya

- Amababi y'ikigori cyafashwe ahinduka umuhondo, akuma ahereye ku mpande agana imbere cyangwa ahereye ku mutwe.
- Umuheko w'ikigori cyafashwe n'uburwayi ugaragara nk'aho ikigori cyeze, nyamara iyo uwuvanyeho ibishishwa usanga imbere impeke zidakuze kandi ari nkeya cyane. Impeke ziza ku kigori ziba ari nto cyane kandi rimwe na rimwe ugasanga ikigori kimeze nk'icyaboze.



Ibikwirakwiza indwara

Kirabiranya y'ikigori ikwirakwizwa:

- Imbutu zirwaye
- Ibisigazwa by'ibigori cyangwa ibigori byasaruwe ahagaragaye uburwayi iyo bijanywe mu gace katagaragayemo indwara.
- Udukoko dushakira ibidutunga ku bigori tuva ku kigori kirwaye tujya ku kizima.



- Ibikoresho byifashishwa mu buhinzi nk'amasuka, imihoro iyo bikoreshejwe mu murima urwaye, hanyuma bigakoreshwa mu murima utarwaye.

Uburyo bwo kuyirinda no kuyirwanya

Indwara ya Kirabiranya y'ibigori ifata amoko yose y'ibigori.

- o Guhinga imbuto y'indobanure yaguzwe mu bacuruzi b'inyongeramusaruro babifitiye uburenganzira,
- o Guhinduranya ikigori n'ibindi bihingwa bitari ibinyampeke nk'ibirayi, ibishyimbo, bituma iyo virusi igabanuka mu murima,
- o Guhingira igihe no guterera rimwe,
- o Gusura umurima byibura kabiri mu cyumweru maze ukareba ko nta bigori bifite ibimenyetso by'uburwayi,
- o Kurandura no kuvana mu murima ibigori bigaragaza ibimenyetso maze bigatabwa mu cyobo kirekire gifite byibuze metero imwe y'ubujyakuzimu,
- o Kwirinda gutwara ibigori cyangwa ibikomoka ku bigori byasaruwe mu murima wagaragaje uburwayi ubivana mu gace kamwe ubijyana mu kandi haba mu gihugu cyangwa hanze yacyo,
- o Ibisigazwa byahasaruwe ibigori mu murima wagaragayemo uburwayi birundwa hamwe bikazakoreshwa nk'ifumbire bimaze kubora neza,
- o Imiti ikurikira yafasha gukumira uburwayi kuko yica udukoko dukwirakwiza indwara:

- **Imidachlopid** ku rugero rwa 6-10ml/20litiroz’amazi.
- **Lambda-cyhalothrin** ku rugero rwa 10ml/20 litiro z’amazi.

b. INGENGE Z’AMABARA (Maize streak virus)

Ingenge z’amabara (indwara y’imirongo) n’indwara yo mu bwoko bw’amavirusi iterwa n’agakoko kitwa *cicadulina mbila*. Ikgori cyafashwe kirangwa n’imirongo y’amabara yegeranye kandi iteganye.

Uburyo bwo kuyirinda

- Gutera imbuto yihanganira iyo ndwara, hanyuma ibigori byafashwe birandurwa bikaba byagaburirwa amatungo.



Ingenge z’amabara ku bigori

c. KUBABUKA KW’AMABABI (Turcicum leaf blight)

Iyi ndwara iterwa n’agahumyo kitwa *Exserohilum turcicum* ikaba irangwa n’utudomo tuza ku mababi, tugenda dukura tugafata igice kinini cy’ikibabi. Amababi yo hasi ni yo abanza gufatwa hanyuma ibimenyetso by’uburwayi bikagenda birushaho kugaragara uko ikigori gikura. Iyi ndwara igabanya umusaruro cyane kuko ishobora gutuma amababi yose yuma. Uburyo bwo kuyirwanya ni ugutera imbuto yihanganira iyi ndwara.



d. RWONA (Striga)

Rwona/ kurisuka/ bariye ntaraza ni icyatsi gifite uburebure bwa cm 25 kugeza kuri cm 30, gikunda kwibasira ikigori n'ibindi binyamampeke. Striga ifata igihingwa mu byiciro bibiri by'ingenzi.

- ✓ Ifata ihereye mu butaka aho imera ifatiye ku muzi w'igihingwa hanyuma ikanyunyuzwa ibigitunga.
- ✓ Ifata ihereye hejuru y'ubutaka aho yitunga ikoresheje imirasire y'izuba (photosynthese) cyangwa ikavoma ibiyitunga ku gihingwa.



Icyatsi cya rwona

Uburyo bwo kuyirwanya:

1. Kurandura striga itarazana indabyo
2. Gusimburanya ibinyampeke n'ibinyamisogwe
3. Gutera ikigori ukoresheje ifumbire y'imborera ndetse n'imvaruganda
4. Gufasha imbuto za Rwona kumera mu bwinshi haterwa ku bwinshi ibindi bimera biyitunga (Crotalaria,), hanyuma zikarandurwa.
5. Kwirinda kunyuza amatungo mu murima wagaragayemo striga ajya mu yindi mirima.

e. NKONGWA (Maize stalk borer)

Nkongwa ni agasimba kangiza igihingwa cy'ikigori. Gatobagura amababi nyuma kakinjira mu ruti/umusigati. Ku gihingwa cy'ikigori cyafashwe, hagaragara ifu aho agasimba kaciye imyenge nk'uko bigaragara ku ifoto. Amababi ahinduka umuhondo, ikigori cyafashwe gishobora kuma, ibikuze bikavunwa n'umuyaga ku buryo bworoshye cyangwa kigakura nabi. Amababi mato y'ikigori iyo yafashwe avaho ku buryo bworoshye. Iyo usatuye uruti rw'ikigori cyafashwe, nkongwa uyisangamo imeze nk'urungo nk'uko bigaragara ku mafoto akurikira.



Uburyo bwo kuyirwanya

- Gusimburanya imyaka mu murima: Gusimburanya ibigori n'ibinyamisogwe n'ibinyabijumba bigabanya ikwirakwira rya nkongwa. Ibinyamisogwe byongerera azote m'ubutaka bigafasha ibihingwa gukura neza.
- Guterera igihe
- Gufumbira ubutaka hakoreshejwe ifumbire y'imborera
- Isuku y'umurima: Gutaba ikigorigori nyuma yo gusarura cyangwa bikagaburirwa amatungo
- Mu gihe ibigori byafashwe birenze 10%, ushobora kurwanya

nkongwa ukoresheje imiti nka Lambdacyhalothrin,
Cypermethrin+profenofos (Roket) ku rugero rwa 15ml/ litiro 15
z'amazi.

f. NKONGWA IDASANZWE (Fall armyworm)

Nkongwa idasanzwe (Fall Armyworm: Spodoptera frugiperda) ni icyonnyi kidasanzwe cyibasira cyane cyane ibigori ndetse n'ibindi bihingwa nk'amasaka, umuceri, ingano, ibisheke n'imboga. Ako gakoko kagaragaye bwa mbere mu Rwanda muri Werurwe 2017.

Ibimenyetso biranga nkongwa idasanzwe

Iyi nkongwa idasanzwe irangwa n'ibi bikurikira: ku mutwe hagaragara ishusho y' inyuguti ya "Y", utwoya twirabura tugaragara ku mubiri wayo, umurongo mugari ubengerana uri ku mugongo uvuye ku mutwe ugana inyuma ukikijwe n'uturongo twirabura kumpande zawo n'ibidomo bine bikoze ishusho ya "mpande enye ndinganire" ahagana inyuma.



Inyuguti ya "y" ku mutwe



Ibidomo bine ku mugongo

Ibimenyetso ku kigori cyafashwe

Nkongwa itangira yangiza amababi akiri mato iharura inyuma ikajya mu mwumba. Iyo ikuze ica imyenge ku mababi igakata n'umwumba, ari nako igenda isiga umwanda wayo ku mababi umeze nk'ifu itose. Iyo umwumba wariwe cyane byangiza imikurire y'igihingwa n'umusaruro ukagabanuka.



Ibimenyetso ku mababi

Uburyo bwo kwirinda no kurwanya nkongwa idasanzwe

- o Guhinga ugeza isuka hasi ugamije kugaragaza, kuvanamo cyangwa gutaba nkongwa n'ibikonoshwa byayo.
- o Kubagara umurima igihe cyose hagaragayemo ibyatsi no kugira isuku mu nkengeri zawo.
- o Gukura mu murima ibisigazwa by'ibihingwa nyuma yo gusarura.
- o Kongerera ibihingwa ubudahangarwa hakoreshwa ifumbire y'imborera iboze neza n'imvaruganda ku bipimo nyabyo hamwe no kuhira.
- o Gusimburanya mu murima ibinyampeke n'ibinyamisogwe (ibishyimbo, soya,...) cyangwa n'ibinyabijumba (ibirayi, ibijumba).
- o Gusura umurima byibuze inshuro eshatu mu cyumweru, ureba niba nta bimenyetso by'iki cyonnyi birimo. Igihe ubisanzemo ihutire gutanga amakuru ku babashinzwe (Abajyanama b'ubuhinzi, abafashamyumvire, n'abashinzwe ubuhinzi mu Kagari, Umurenge, Akarere, RAB...).
- o Guturagura nkongwa mu murima no kuzica
- o Gukoresha umuti wica udukoko kandi ugaterwa cyane cyane mu mwumba w'igihingwa:
 - * Cypermethrin 4%+profenofos 40% (urugero: roket, target, cypro, jaket,) ku rugero rwa 1-2 ml z'umuti muri 1l y'amazi.
 - * Lambda-Cyhalothrin 50g/l, ku rugero rwa 1-2 ml z'umuti muri 1l y'amazi.
 - * Pyrethrum 5% EWC, ku rugero rwa 8ml muri 1l y'amazi.
 - * Acetamidrid 20g/l + Lambda-Cyhalothrin 16g/l, 4-6ml muri 1l y'amazi,
 - * Imidacloprid 200g/l ku rugero rwa 1ml muri 1l y'amazi.

10. GUSARURA

a. Kwera kw'ibigori

Ibigori bigeze igihe cyo gusarurwa birangwa n'ibi bikurikira:

- o Biba bimaze hagati y'amezi 4 na 7 bitewe n'ubutumburuke
- o Ibishishwa byabyo bihindura ibara bigasa n'ibara rya kaki
- o Amahundo y'ibigori atangira gucurama
- o Impeke ziba zikomeye zidashobora gupfumurwa n'urwara



b. Uburyo bwo gusarura

Mu gusarura, amahundo avanwa ku bigorigori akagumishwaho ibishishwa cyangwa bikavanwaho bitewe n'ubwanikiro buzakoreshwa, kandi bigomba gusarurirwa mu bikoresho bifite isuku kandi hirindwa ko byahura n'ubutaka.

✓ Uburyo bwo gutwara ibigori biva mu murima

Mu gutwara ibigori biva mu murima, hakoreshwa uburyo butandukanye, ariko ni ngombwa kwitwararika kugira ngo impeke zitangirika, kubitwara mu bikoresho bifite isuku kandi bidashaje, ikindi ni ngombwa kwirinda ko ibigori bitanyagirwa cyangwa ngo bihure n'igitaka.

✓ Kwanika

Kubera ko ibigori biba byasaruwe bitumye neza, ni ngombwa kubyanika kugira ngo byume neza; ushobora kwifashisha ibikoresho bitandukanye nk'igisharagati, imbuga yabugenewe, ku mabaraza y' inzu, ku birago, shitingi.

ICYITONDERWA: 1) Kirazira kwanika ibigori ku rusenge kubera ko byangiza ubwiza bw' umusaruro

2) Ibigori bigomba kwanikwa ku bikoresho bifite isuku kandi hakirindwa ko byahura n' ubutaka



Hari n'ubundi bwoko bwa shitingi bwanikwaho ibigori bwitwa Collapsible Dryer. Iyi shitingi iba ifite ibara ry'umukara, iryo bara nkuko tubizi rikurura izuba cyane iyo wanitseho rero byuma vuba cyane. Ikindi iyi shitingi iba ifite ibice bibiri bihuzwa n'imashini ku buryo iyo wanitse imvura ikagwa uhita utwikira ugafunga ukaza kubyanura nyuma imvura ihise. Ikindi iyi shitingi yanikwaho ibigori byinshi ugereranyije n'izingizi zisanzwe.



Solar dryer

Guhungura

Mugihe cyo guhungura ibigori bigomba gukoranwa ubushishozi hirindwa ko intente zimeneka, ushobora gukoresha intoki cyangwa imashini zabugenewe ni ngombwa ko mbere yo kugura imashini ihungura ugomba kubanza kumenya ko ifite ubuziranenge bityo bikakurinda kwangiza umusaruro.

ICYITONDERWA: Kirazira guhurira ibigori mu mifuka kubera ko byangiza cyane umusaruro kubera kumenagura intete



✓ **Gutoranya umusaruro**

Hashobora gukorwa ibi bikurikira:

- o Gukuramo imyanda yose, umukungugu, amabuye, igitaka, ibyatsi n'ibindi
- o Gukuramo izindi mbuto zitari ibigori
- o Gukuramo imbuto zangiritse: izangirikiye imbere cyangwa zahinduye ibara
- o Gukuramo izakomeretse inyuma
- o Gukuramo intete zihinyagaye
- o Gukuramo intete zangijwe n'imungu cyangwa utundi dukoko



✓ **Guhunika_**

Guhunika ibigori bikorwa mu buryo bwitondewe hitabwa ku bintu by'ingenzi bikurikira

- Guhitamo aho guhunika:
 - Hagomba kuba hatanyagirwa cyangwa ngo harekemo amazi
 - Kuba hatari ubuhehere bwinshi
 - Hashobora kwinjiza umwuka
 - Kuba hatari ibyonnyi nk'imbeba, imiswa n'ibindi
- Gusukura aho guhunika no kuhatera imiti
- Guhitamo uburyo bwo gupanga imifuka
- Gusukura imyaka no kureba niba yumye neza ikaba ifite ubuhehere bwa 13%
- Gusukura imifuka
- Gutandukanya sitoki y'imyaka ishaje n'imishya
- Kutarambika imifuka hasi hagakoreshwa imbaho cyangwa amabuye

Ibintu by'ingenzi bigira uruhare runini mu kwangirika kw'imyaka

- Kuba imyaka itumye neza mu gihe cyo kuyihunika
- Kuba ahahunikwa hari ubuhehere bwinshi
- Ubushyuhe bwinshi mu buhunikiro
- Uburyo wapanze imifuka mu buhunikiro
- Isuku nke mu buhunikiro
- Kudahungira imyaka ku gihe

Uburyo bunyuranye bwo guhunika

-



B. INGANO



1. Aho ingano zihingwa : zihingwa cyane mu turere tw'amakoro, ububeruka no mu karere k'isunzu rya Kongo Nil ku ubutumburuke buri hagati ya metero 1500 na metero 2500.

2. Ubutaka : igihingwa gikunda ubutaka bw'isi ndende bufite ifumbire y'imborera ihagije kandi buhitisha amazi.

3. Amoko yamamazwa :hari Nyaruka (Eagle 10), Kibatsi (EN 161), Nyangufi (EN 48), Majyambere, Mizero, Cyumba, Rengerabana, Gihundo, Reberaho, Keza, Musama, Njoro BW II, KS Mwamba.

4. Gutegura umurima

Imirimo isabwa :kurwanya isuri, kurima bwa mbere no kurima bwa kabiri ari byo gutabira no kuringaniza umurima bagiye gutera imbuto.

5. Gufumbira :

- Bakoresha toni 10 z'ifumbire y'imborera iboze neza mbere yo kubiba.
- Bongeramo ifumbire mvaruganda kg 100 za DAP kuri Hegitari. Iyo fumbire ivangwa n'imbuto mbere yo gutera.
- Nyuma y'ibyumweru 6, bongeramo 50 kg za urea kuri Ha.

- Mu butaka busharira babanza gushyiramo hagati ya toni 2.5 kugeza kuri toni 5 z’ishwagara kuri Ha ikamaramo ibihe by’ihinga bine (4 seasons).

6. Igerambuto

Umuhinzi akoresha Kg 100 z’imbuto y’ingano kuri Ha. Atera amisha ku murongo kuri cm 20 hagati y’imirongo, kandi agatera hagati muri Nzeli mu gihembwe cy’ihinga cya A no hagati muri Werurwe mu gihembwe cy’ihinga cya B.

7. Gufata neza ingano mu mirima

Mu mirimo y’ingenzi twavuga kumenera, kubagara no gusukira buhoro. Ibi bikorwa mu minsi 15 nyuma y’ibiba, ntugomba kwibagirwa kurwanya indwara n’ibyonnyi hakoreshejwe amoko yihanganira indwara no gutera imiti.

8. Ibyonnyi n’indwara by’ingenzi byangiza ingano

a. Umugese w’umuhondo (Yellow Wheat Rust)

Ibimenyetso

Igaragazwa n’utudomagure tw’ifu tw’amabara atandukanye munsu y’amababi. Amababi yafashwe cyane aruma.

Iyi ndwara ikunze kuboneka mu gihe cy’ubuhehere buri hejuru buvanze n’ubushyuye buri hagati ya dogere 16-22 kandi ingano ziyirwaye zigira ibihuhwe byinshi.



Uko indwara ikwirakwira

Aka gahumyo gashobora gutwarwa n'umuyaga, ukakageza ku ntera ndende aho gashobora gutera uburwayi ku zindi ngemwe. Gashobora kandi gukwirakwizwa n'imyenda, intoki n'inkweto by'abagendagenda mu murima w'ingano. Imvura cyangwa ikime byihutisha ikwirakwiza ry'iyonyandwara.

Uburyo bwo kuyirinda no kuyirwanya:

- Gutera ingano zihanganira iyi indwara kandi kare
- Kurandura ingano za kimeza ziboneka hagati y'ibihembwe by'ihinga
- Gusimburanya ingano n'ibindi bihingwa
- Gutera umwe mu miti ikurikira :
- ✓ Tebuconazole nka Orius: 30ml/L 20 z'amazi
- ✓ Copper Oxychloride (Nordox, Funguran): g 30/L 20 z'amazi.

b. Imungu

Ibimenyetso:

Imungu zitobagura intete zigateramo amagi, zigaturagiramo kandi zigatungwa n'ibirimo imbere. Zimwe muri izi mungu n'ibyana byazo birya intete zamenaguritse n'izangiritse.



Imungu mu ntete z'ingano

Uburyo bwo kuyirinda no kuyirwanya:

- Kugirira isuku ubuhunikiro,
- Gukoresha imifuka irinda imungu: PICS
- Guhungira intete n'umuti urimo Malathion + Permethrin (nka Super Skana). Vanga g 2.5 z'umuti (Malathion+Permethrin) mu kg 1 cy'imbuto.

9. Igihe yerera : ingano zera hagati y'iminsi 120 cyangwa 140 bitewe n'ubwoko bwazo.

10. Gusarura (igihe n’uko bikorwa)

ibintu bikurikira bikwiye kwitabwaho mu gikorwa cyo gusarura:

Ingano zigomba gusarurwa iyo intete zimaze gukomera bihagije. Gutinda gusarura bituma impeke zimenagurika zikanatakara kubera kwivana mu bishishwa, ikindi kandi ni ukuziteza inyoni, n’ibindi byonyi bitandukanye.

Ingano zisaruwe zigomba kubikwa zitandukanyijwe hakurikijwe amoko yazo.



Uburyo bwo gusarura ingano

Muri rusange ingano zisaruzwa intoki hifashishijwe najoro/akayuya. Basarura batema uduti twazo bagasiga nka santimetero 10 uvuye ku butaka. Hari n’ imashini zabugenewe mu gusarura ingano. Ingano zisaruwe zihambirwamo imiba mitoya zigatwarwa aho zateguriwe gukorerwa indi mirimo nko guhura no kugosora.

Guhura ingano

Igikorwa cyo gutandukanya impeke n’ibishishwa gikorwa mu buryo butandukanye: guhura n’ikibando cyangwa gukoresha imashini.

Kwanika ingano

Ikintu cy'ingenzi kigomba kwitabwaho mbere na mbere ni ukumenya igihe nyacyo cyo gusarurira. Iyo habayeho gucyererwa mu gusarura, impeke zirumagara cyane bikazitera kumenagurika mu gihe cyo guhura. Gusarura mbere y'igihe na byo bituma kwanika bifata igihe kirekire.

- Muri rusange ingano zumira mu murima mbere yo kuzisarura
- Nyuma yo kuzisarura zijyanwa aho zihurirwa. Iyo zimaze guhurwa zongera kwanikwa ku mashitingi asukuye cyangwa ku mbuga zabigenewe.
- Ni ngombwa kwirinda kwanika ingano ku butaka kugira ngo zitandura.
- Igihe imyaka yanitse, hagomba umuntu uba hafi akajya asanza akanatwikira cyangwa akanura igihe imvura iguye. Aba ashinzwe no kujya yirukana ibyonnyi.

Guhunika ingano

Ubuhehere bwemewe mu mpeke z'ingano ni 13.5%, naho ubw'umwuka ukikije aho zihunitse bukaba ku kigero cya 70 ku ijana. Iyo ingano zibikwa igihe gito ubuhehere bw'impeke bwa 13-14% ntacyo buba butwaye. Iyo ari uguhunika igihe kirekire, impeke zigomba kumishwa kugeza kuri 11-12%.

Kugira ngo wizere ko wahunitse neza genzura ibi bikurikira:

- Impeke zigomba kuba zisukuye neza kandi zitoranije
- Zigomba kuba zumye ku kigero gikenewe (12-14%)
- Imyaka ihunitse igomba kurundwa neza n'aho iri hakaba hatewe imiti
- Imyaka ihunitse irindwa kwinjirwamo n'umuyaga ukonje.
- Imyaka igomba guhunikwa ahantu humutse neza

C. UMUCERI



1. Aho igihingwa gikunda : Umuceri ukunda mu bishanga by’uturere dushyuha (tw’imirambi n’imisozi iringaniye) kugeza ku butumburuke bwa metero 1500, ubushakashatsi burakorwa ku moko yahingwa imusozi.

2. Ubutaka : Umuceri tuza kuvuga ni uhingwa mu butaka bw’ibumba n’ubundi bwose budahitisha amazi.

3. Amoko yamamazwa : *Zhong Geng, Yun Keng, Yun yin, Yun erthian, Basmati, Facagro, Intsinzi, Gakire, Buryohe, Muturage, Tebuka (Wat 1276 –22-2), Intsingirabigega (B 24-2), Rumbuka, Nemeyubutaka, Ndamirabahinzi, Mpembuke.*

4. Uko bategura ingemwe

- * Haterwa hagati ya Gr 150 na Gr 200 kuri ari 1 ya pepiniyeri bitewe n’ubwoko.
- * Bagemura umuceri bawutera ku mirongo itandukanyijwe na cm 25 hagati y’akobo n’akandi na cm 25 hagati y’imirongo;
- * Mu kobo bateramo utugemwe 2 tw’imbuto z’umuceri.

Igihe cyo gutera : Ukuboza-Mutarama (Saison A) na Kamena-Nyakanga (Saison B). Ariko mu Bugarama ho ni Nyakanga-Kanama (Saison A) no muri Gashyantare (saison B).

5. Uko bategura umurima

Imirimo y’ingenzi twavuga harimo kurwanya isuri cyane ku misozi iteganye n’igishanga, kurima ubwa mbere gutegura pepiniyeri, gucoca no gukora puddling (kuvuruga) umunsi umwe mbere yo gutera.

6. Gufumbira :

Kuri Ha 1 bashyiramo kg 200 za NPK 17.17.17 mu gihe cyo gutera na Kg 100 za uree aho kg 50 za uree bazishyiramo nyuma y’ibyumweru 3 bamaze gutera ifumbire ya NPK; izindi kg 50 za uree bazongeramo umuceri utangiye guhagika.

Icyitonderwa: Mbere yo gushyiramo ifumbire, ni ngombwa kubanza kuvana amazi mu mirima.

7. Gufata neza umuceri mu mirima

Mu mirimo y’ingenzi harimo kubagara inshuro 2 cyangwa 3, gutera umuti wica udukoko n’uwo kurwanya indwara, kuhira no gukamura amazi igihe ari ngombwa.

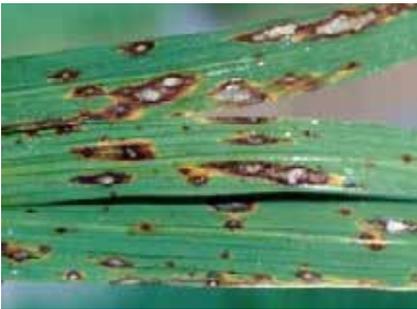
8. Ibyonyi by'ingenzi n'uburyo bwo kubirwanya

1.1 UBURIMA (Rice blast)

Iyi ndwara iterwa n'agahumyo bita "*Pyricularia Oryzae*" igafata ingingo zose harimo ibibabi, uruti, indabo n'impeke. Ikunda gukara cyane mu buhumbikiro (pépinière), umuceri ugeze igihe cyo guhagika, guterera n'igihe cyo kurabya. Gukoresha azote nyinshi mu murima, ubushyuye bwinshi buvanze n'ubutohe bituma iyi ndwara yiyongera.

Ibimenyetso

- Mu buhumbikiro, ingemwe zirashya zikababuka zose,
- Amababi azaho amabara y'ikigina cyijimye ajya kuba maremare, asongoye, y'ikijuju hagati,
- Utudomo tw'icyatsi cyenda kuba ikijuju dusa nkaho turimo amazi dufite ishusho y'uruziga cyangwa imeze nk'igi ku mababi,
- Ku mababi ugasangaho ibisebe by'amabara y'ikigina binini, ku mpande hasa n'umuhondo. Iyo amababi yafashwe cyane aruma,
- Iyo indabo zifashwe, ntizera, ntizana n'imbutu. Iyo imbutu zije, zigira utubara tw'ikigina, kandi zigahinamirana.



Uburima bwo ku mababi



Amahundo arwaye

Uburyo bwo kuyirinda no kuyirwanya

- Gutera imbutu nzima cyangwa zihanganira indwara,
- Gutera imbutu umuti mbere yo guhumbika (enrobage),
- Kubahiriza ibihe by'ihinga,
- Isuku mu murima n'ahawegereye, gutwika ibikenyeri by'umuceri nyuma yo gusarura,

- Kuyobora amazi ahagije mu murima,
- Gutera ifumbire nyayo ku rugero nyarwo,
- Gukoresha umuti nka Tricyclazole, Tebuconazole, Benomyl.

1.2 KUBABUKA K'UMUCERI

Iyi ndwara iterwa n'agahumyo bita "*Helminthosporium oryzae*", igafata ingingo zose z'umuceri.

Ibimenyetso

- Ibiyoboro by' ikijuju ku mababi , byoroshye cyane kubwiriranywa n'ibiza kubera uburima ariko aha utudomo tuba ari duta;
- Iboneka cyane ahantu hari ubutaka buba buretsemo amazi kandi hatakoreshajwe imvaruganda ihagije;
- Uduhumyo dukwirakwirizwa n'umuyaga cyangwa no kuba igihingwa cyafashwe cyakora ku kindi;
- Ubu burwayi bufata igihingwa igihe icyo ari cyo cyose.



Amababi yababutse

Imbutu zarwaye kubabuka

Uburyo bwo kuyirinda no kuyirwanya

- Gutera imbutu umuti mbere yo guhumbika (enrobage),
- Gutera imbutu nzima (zitarwaye),
- Kugira isuku mu murima n'ahawegereye,
- Gufumbira neza (gukoresha ifumbire y'imborera n'imvaruganda ku rugero nyarwo),

- Kuyobora neza amazi mu murima,
- Imiti ikoreshwa mu kurwanya uburima bw'umuceri ni nayo ikoreshwa mu kurwanya indwara yo kubabuka k'umuceri.

1.3 IKIVEJURU (Rice Yellow Mottle Virus)

Ikivejuru ni imwe mu ndwara z'amavirusi izahaza igihingwa cy'umuceri. Iyi ndwara ishobora gutera igabanuka ry'umugaruro riri hagati ya 25-97% iyo itarwanijwe.

Ibimenyetso



Umuceri urwaye ikivejuru

- Umuceri wafashwe n'ikivejuru urangwa n'amababi afite ibara ry'umuhondo werurutse kandi iyo witegereje neza ubonamo uturongo tugorotse dufite akabara k'icyatsi kibisi cyangwa se kabonerana;
- Ubushobozi bwo kubyara buragabanuka ugereranije n'umuceri muzima;
- Umuceri wafashwe n'indwara y'ikivejuru ukiri muto, ntuzana amahundo n'iyi kandi amahundo aramutse aje arangwamo ibihuhwe byinshi.

Uko indwara y'ikivejuru yandura n'uburyo ikwirakwizwa

Ubushakashatsi bwerekanye ko indwara y'ikivejuru iterwa n'udukoko turuma ku muceli ufite iyo ndwara hanyuma tukaza no kuruma ku muceli utaragerwaho n'ubwandu. Ibyonyi (imbeba, amafuku) kimwe n'amatungo bishobora gukwirakwiza iyo ndwara mu gihe birimo kugenda birya k'umuceri

uri muri pepiniyeli cyangwa mu murima. Mu murima kandi amababi y’umuceri ashobora gukubanaho bitewe n’umuyaga hakabaho kwanduzanya. Ibikoresho byifashishwa mu buhinzi bw’umuceri (amasuka, nanjoro, imihoro) na byo bikwirakwiza iyi ndwara.

1.4 ISAZI Y’UMUCERI

Ni agakoko ko mu bwoko bw’isazi bita ***Diopsis Thoracica*** gafite ibara ry’umukara ahagana ku mutwe naho ahandi ni ikigina. Iyi sazi ifata amababi ndetse n’intimatima z’umuceri

Ibimenyetso

Isazi itera amagi akavamo inyo ari nazo zangiza cyane. Isazi n’inyo byombi birya amababi, bikanyunyuzamo amazi. Izi nyo zangiza nka nkongwa zizamuka mu ntimatima zihereye mu mizi noneho zikarya umutima w’igikenyeri. Umuceri wafashwe utarabumbura uhinduka umuhondo. Iyo umuceri ufashwe umaze guhagika cyangwa mbere yo kuraba, amahundo ntiyirema neza, nta n’impeke zizamo.



Isazi y’umuceri

Uburyo bwo kuyirinda no kuyirwanya

- ◆ Gusukura umurima no kubagara uko bikwiye,
- ◆ Kuzamura urugero rw’amazi mu mirima mu gihe hari ibimenyetso
- ◆ Gutwika ibikenyeri nyuma yo gusarura,
- ◆ Gukoresha imiti yo kurwanya isazi nka Deltamethrine, Cypermethrine, Imidachloprid ku rugero rwa 1ml z’umuti kuri 1L y’amazi.

1.5 INYONI

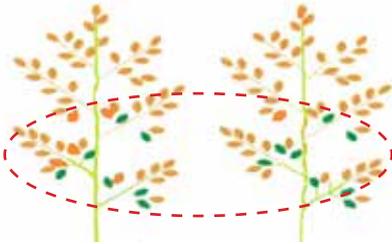
Inyoni z'amoko atandukanye zona umuceri zigatera igihombo ku musaruro gishobora kugera ku rugero rwa 25%-30%. Uburyo bwo kuzirwanya ni ukurinda umuceri mu mirima hakoreshejwe abantu, kadahumeka cyangwa se gushyiramo izindi nyoni zirya izona umuceri.



Inyoni ku muceri

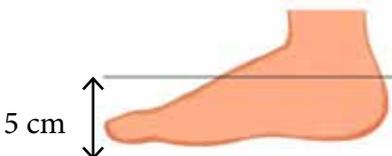
9. GUSARURA

Igihe kiboneye cyo gusarura ni icyo hafi ya 10% ry'intete ziri ku ihundo zikiri icyatsi kibisi nyuma y'iminsi 40-50 umuceri umaze gusambura (bitewe n'ubwoko n'igipimo cy'ubushyuhe mu gihe umuceri uri kwera).



9.1 UBURYO BWO KWANIKA UMUCERI

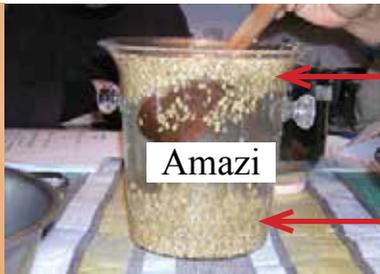
Guhura umuceri ukiwusarura (kutawurekera mu murima igihe kirekire) hifashishijwe imashini zabugenewe kandi ukirinda kuwangiza. Umuceri wahuwe wanikwa ku mbuga yabugenewe yubakishije beto cyangwa ku mukeka, shitingi. Mu gihe wanitse umuceri ubucucike bw'intete ntibugomba kurenza cm 5 kandi ni ngombwa kuwukorakora byibuze inshuro 2 mu isaha kugira ngo wume neza wose. Kugira ngo umenye ko umuceri wumye neza, uwushyira ku ryinyo ukaruma ukumva ko ukocoka.





9.2 UBURYO BWO GUSUKURA UMUCERI

Hari uburyo bunyuranye bwo gusukura umuceri harimo kuwusukura ukoresheje amazi (intete nzima zinjira mu mazi hanyuma ibihuhwe bikareremba hejuru); kuwugosora ukoresheje intoki cyangwa imashini.



Ibihuhwe

Amazi

Intete nzima

9.3 UBURYO BWO GUHUNIKA UMUCERI UDATONUYE

Guhunika bikorwa kugira ngo hagabanywe ibyangirikira mu bubiko (sitoki). Umuceri wumye neza (ku gipimo cy'ubuherehe 14.0–15.0%), ugomba gushyirwa mu buhunikiro busukuye neza, butavirwa, bufite uburyo bwo kwinjiza umwuka kandi bworoshya igenzura, ihungira, gushyiramo indi myaka

cyangwa kuyikuramo. Imifuka ishyyirwa ku butanda bwabugenewe (palette) kugira ngo umuceri urindwe guhura n'ubukonje.



9.4 UBURYO BWO KURWANYA IBYONNYI MU BUHUNIKIRO

Mu buhunikiro hakunze kuboneka udusimba/ udukoko twangiza imbuto/ umusaruro kandi bigatera igihombo mu bwiza n'ubwinshi bw'umusaruro ndetse no gutakaza ubushobozi bwo kumera. Tumwe muri utwo dukoko twangiza harimo imbeba, imungu n'utundi dukoko two mu bwoko bw'ibinyugunyugu. Kwirinda ibi byonnyi ni ukugirira isuku ubuhunikiro.

9.4.1 IMBEBA

Imbeba zirya impeke izo ari zo zose zaba inzima, izamenaguritse cyangwa izabaye ifu. Zangiza cyane impeke/umusaruro kuko zizandurisha ubwoya bwazo, inkari ndetse n'amahurunguru.



Uburyo bwo kuzirwanya

Mu rwego rwo kwirinda imbeba mu buhunikiro hakoreshwa imitego (rwagakoco) cyangwa se bakazitegesha imiti (ibinini) yo kuzica.

D. IBISHYIMBO



1. Aho ibishyimbo bihingwa : bihingwa hose mu Rwanda. Ibishyimbo bigufi bikunze guhingwa mu misozi migufi n'iciriritse kugeza ku butumburuke bwa metero 1800. Ibishyimbo bishingirirwa bihingwa mu gihugu, hose ariko cyane cyane mu misozi miremire.

2. Ubutaka : Ibishyimbo bihingwa mu butaka bufite ifumbire ihagije, buseseka, bw'isi ndende kandi butuma umwuka ubutemberamo.

3. Amoko yamazwa :

- Ibishyimbo bishingirirwa : CAB 2, MAC 44, RWV 1129, RWV 3316, RWV 3317, RWV 2887, RWV 3006, Gasilida, RWV 2070.

- Ibishyimbo bigufi : RWR 2245, RWR 2154, RWR 1668, RWK 10.

4. Gutegura umurima

Imirimo isabwa:

- kurwanya isuri, kurima bwa mbere no kurima bwa kabiri ari byo gutabira bagiye gutera imbuto.

- Gusekera ibyumweru bibiri mbere y'uko imvura igwa ku nshuro ya mbere no gusanza mu gihe cy'itera.

5. Gufumbira :

● Bashyiramo toni 10 z'ifumbire y'imborera iboze neza kuri Ha mu gihe cy'itabira ;

● Bakongeramo ifumbire mvaruganda kg 100 za DAP mu itera kuri Ha ;

- Mu butaka busharira bashyiramo toni 2.5 kugeza kuri toni 5 z’ishwagara byibura ibyumweru bibiri mbere yo gutera. Iyo shwagara iba igomba kumaramo ibihembwe by’ihinga 4 (4 seasons).

6. Gutera imbuto

- Batera Kg 40 kugeza kuri Kg 70 z’imbuto kuri Ha bitewe n’ubunini bw’intete.
- Gutera ni kuri cm 40 hagati y’imirongo na cm 20 ku mirongo bashyira intete ebyili mu kobo.
- Igihe cyiza cy’itera: ni muri Nzeli- Ukwakira mu gihembwe cy’ihinga A no mu ntangiriro za Gashyantare mu gihembwe cyihinga B. Mu bishanga, ni muri Gicurasi – Kamena mu gihembwe cy’ihinga C.

7. Gufata neza Ibishyimbo mu mirima

Mu mirimo y’ingenzi: twavuga kubagara ibishyimbo no gusukira ibishyimbo bifite amababi ane. Gushingirira nyuma y’isukira(imishingiriro igomba kugira uburebure bwa m2.5 byibuze). Umuhinzi agomba kandi kurwanya indwara n’ibyonnyi hakoreshejwe amoko yihanganira indwara, aterera igihe ndetse n’imiti.

8. Kubikenura

Kubagara igihe cyose urwiri rwaje mu murima.

9. INDWARA N’IBYONYI BY’IGIHINGWA CY’IBISHYIMBO

a. Akaribata

Iyi ndwara iterwa n’agahumyo bita **“Colletotrim lindemuthianum.”** Iyi ndwara ifata imisogwe, amababi, imbuto n’imiteja.

Ibimenyetso

- o Amabara maremare asa n’umutuku ku mababi,
- o Amabara y’umukara y’uruziga asa n’ikigina kivanze n’ikijuju ku misogwe.



Imisogwe igaragaza uburwayi

Uburyo bwo kuyirinda no kuyirwanya

- o Gutera amoko yihanganira indwara,
- o Gutera imbuto itarwaye (yasaruwe ku misogwe itarwaye),
- o Gusimburanya ibihingwa mu mirima.
- o Guhungira imbuto mbere yo kuyitera hakoreshejwe imiti nka Benomyl (gr 2 ku kilo cy'imbuto).

b. KUBEMBA (bean mosaic virus)

Iyi ndwara iterwa na virusi, igafata cyane cyane ku mababi.

Ibimenyetso:

Amababi ata ireme, akaba mato, akihina mu mpande hareba hasi. Ibishyimbo byafashwe ntibikura neza, bisa n'ibucikiranye kandi umusaruro ukaba mucye. Amabara atandukanye aza ku mababi asa n'icyatsi cyererutse kivanze n'icyatsi kibisi.



Uburyo bwo Kuyirwanya:

- o Kurandura ibihingwa birwaye bigatwikwa,
- o Guhinduranya ibihingwa: Kwirenta igihembwe mbere yo gutera ibishyimbo mbere yuko uburwayi buboneka n'ibihembwe 3 nyuma yuko uburwayi bugaragara;
- o Gutera imbuto zihangania indwara;
- o Gutera imiti nka cypermethrin, lambda-cyhalothrin kugira ngo urwanye udusimba tuyikwirakwiza.

c. AMABARA AKORA INGUNI (Angular leaf spot)

Iyi ndwara ifata amababi, rimwe na rimwe igafata n’imiteja.

Ibimenyetso

Amabara y’ikigina afite inguni zigenda zikurikira imitsi y’amababi.



Amababi agaragaza indwara y’amabara akora inguni

Uburyo bwo kuyirinda no kuyirwanya

- o Gutera imbuto ihungiyeye hakoreshejwe imiti nka Benomyl no gukoresha amoko yihanganira indwara.
- o Mu gihe umuhinzi abagara akoresheje isuka yirinda gukomeretsa imizi kuko byatuma igihingwa gifatwa n’ ubu burwayi
- o Kwirinda gutembera mu murima igihe hatose
- o Koresha isaso kugira ngo itaka ridatarukira ku bihingwa
- o Sukura ibikoresho mbere yo kubikoresha mu mirima y’ibishyimbo itandukanye
- o Twika ibisigazwa by’ ibihingwa birwaye nyuma yo gusarura.(bigaburire amatungo cyangwa ubitwike)
- o Cukura utwobo duto mu murima dukamure amazi. Sukura ubutaka ku gihingwa ku girango imizi y’ igihingwa ikure neza
- o Tera imbuto mu butaka kuburyo utazitaba kure
- o Indwara ibaye ikabije, tera umuti wa Benomyl (Benlate).

d. ASIKOSHITOZI

Iyi ndwara iterwa na “Ascochyta phaseoli, ifata amababi n’imisogwe.

Ibimenyetso: amabara y’ikigina yeruruka agiye akora inziga nyinshi zicucitse.



Ibimenyetso bya Asikoshitozi ku mababi y'ibishyimbo

Uburyo bwo kuyirinda no kuyirwanya:

- o Gutera amoko yihanganira iyo ndwara, guhungira imbuto hakoreshejwe imiti nka Benomyl (bakoresheje gr 2 za buri bwoko mu kilo 1 cy'imbuto).

e. INDWARA Z' IMIZI

Ibimenyetso

Kubora kw'imizi, kuma ibishyimbo bikiri bito cyangwa amababi akaba umuhondo cyangwa se bikuma bigeze mu rurabo. Umusarururo uragabanuka cyane cyangwa ukaba nta n'icyo wasarura.



Ibimenyetso by'Indwara y'imizi ku bishyimbo

Uburyo bwo kuzirwanya:

- o Guterera igihe, guhinduranya ibihingwa, kwirinda amazi areka mu murima w'ibishyimbo abuze imizi guhumeka neza, gukoresha imbuto zihanganira izo ndwara ariko cyane cyane ibishyimbo bya mushingiriro kuko byihanganira izo ndwara kurusha ibishyimbo bigufi.

f. ISAZI Y'IBISHYIMBO (Malanagromyza phaseoli)

Iyi sazi ifata igice cy'igihimba cyegereye ubutaka (umunigo). Ituma ibishyimbo bikura nabi n'amababi agahinduka umuhondo.



Uburyo bwo kuyirwanya

- o Gufumbira uko bikwiye.
- o Gusukira hakiri kare, bituma imizi ikura neza ikanakomera.
- o Gusimburanya neza imyaka mu murima: ibishyimbo ntibisimburwa mu murima na soya, amashaza, inkori, imikunde cyangwa ibindi bishyimbo.
- o Gutera umuti nka "imidacloprid" ku rugero rwa ml1 muri l1 y'amazi.

g. UBUHUNDUGURU (Aphis fabae)

Utu dukoko dufata igice cyose cyo hejuru. Utu dukoko akenshi dusa n'umukara twibumbira hamwe munsu y' amababi y' ibishyimbo cyangwa ku ruti. Iyo ari twinshi mu gihe cy'uruyange utu dukoko bishobora kugabaya umusaruro.

Ibimenyetso:

Ibishyimbo byafashwe bikura nabi, amababi agahinduka umuhondo. Igishyimbo gishobora no kuba gitwikiriwe n'ibintu bifata nk'ubujeni agahunduguru gakora agahumyo kirabura kagakuriramo.



Ubuhunduguru bwirabura ku bishyimbo

Uburyo bwo kuyirinda no kuyirwanya

- o Mbere na mbere tera piripiri n' ivu, amazi y' isabune, n' amazi avanze n' amaganga / inkari ;
- o Bubaye budapfuye tera umuti wa Cypermethrin cyangwa Imidacloprid: 1 ½ cy' agafuniko ka fanta muri litiro 10 z' amazi kuri are 1 (m10 x m10)
- o Ntabwo aringombwa gutera kubihingwa byose , tera gusa hari uburwayi bukabije cyane

10. GUSARURA

Igihe cyiza cyo gusarura

- o Isarura ry'ibishyimbo riba nyuma y'amezi 3 cyangwa 4 bitewe n'ubwoko bwahinzwe, akarere ndetse n'ikirere, Amababi amaze guhindura ibara akaba umuhondo agatangira guhunguka.
- o Akenshi bitewe n'ubwoko, imisogwe ihindura ibara igasa na kaki
- o Iyo ibishyimbo byeze neza biba bifite igipimo cy' ubuherere buri hagati ya 15 na 18%.



Ibyo umuntu agomba kwitwararika mw'isarura:

- Kwirinda gusarura imisogwe y'ibishyimbo yafashe ku butaka kuko ishobora kwandura uburwayi buturutse ku dukoko dutera indwara tuboneka mu butaka
- Kwirinda ko ibishyimbo biguma ku zuba igihe kirekire cyangwa kunyagirwa n'imvura kuko bishobora kwangirika mu gihe cyo kubihura
- Isarurwa rikorwa mu gitondo kare izuba ritaraba ryinshi

Uburyo bwo gusarura

Mu gusarura ibishyimbo hifashishijwe intoki, ibishyimbo bigufi birandurwa naho ibyo ku mishingiriro bigatotorwa. Ku bakoresha imashini, ibishyimbo bikatirwa kuri sentimetero 2 kugeza kuri 5 uturutse hasi ku butaka.

Kwanika ibishyimbo

- Ku mbuga: ibishyimbo byanikanwa n'amababi yabyo, bikanikwa ku mbuga isukuye neza (hakubuye), bikaba byiza habaye hashasheho shitingi cyangwa imbuga yubakiye na sima.
- Ku mabaraza y'inzu cyangwa ku rusenge: iyo imbuga idahagije hashobora kwifashishwa urubaraza cyangwa urusenge



Guhura ibishyimbo

Guhura ni igikorwa cyo kuvana imisogwe mu bishishwa. Ahenshi haracyakoreshwa uburyo bwo kubihurisha amaboko hifashishijwe ibibando. Guhura ntacyo witayeho bishobora kugabanya ubwiza bw'umusaruro, bigateza igihombo bikanatuma udusimba ndetse n'indwara biboneraho kwangiza umusaruro.



Kugosora

- Gosora ibishyimbo ukuramo umukungugu, amabuye, ibitaka
- Jonjora izindi mbuto n'ibindi byivanze bitari ibishyimbo.



Guhunika

Intete zihunikwa ni izimaze kuma neza zifite igipimo cy'ubuhehere buri hagati ya 12% na 14%. Mbere yo kubika cyangwa guhunika, ibishyimbo byongera kwanikwa nibura iminsi ibiri kugira ngo bishiremo ubukonje ndetse hagakoreshwa n'imiti ituma bibikwa igihe kirekire bitamunzwe. Ku ntete zizahunikwa igihe kirekire ntizigomba kujya hejuru ya 11%. Guhunika ibishyimbo bikorwa mu buryo bwitondewe hitabwa ku bintu by'ingenzi bikurikira:

- Intete zifungwa mu mifuka isukuye
- Iyo mifuka igashyirwa mu buhunikiro busukuye, butarimo ibyonnyi nk'imbeba n'imiswa, hinjiramo umwuka, hatari ubuhehere bwinshi, hatagera amazi cyangwa imvura.



E. SOYA



1. Aho Soya ihingwa :ihingwa mu misozi migufi n’imisozi iringaniye kugeza ku butumburuke bwa metero 1800.

2. Ubutaka : Soya ikunda ubutaka bw’isi ndende, bufite ifumbire ihagije kandi butuma umwuka ubutemberamo.

3. Amoko yamazwa : Peka 6, SB 24, Sequel, Squire, Safari na Saga.

4. Gutegura umurima

Kurwanya isuri, kurima bwa mbere, gutabira bavanamo urwiri n’ibindi byatsi bibi nk’intēja no gusanza bagiye gutera imbuto.

5. Gufumbira :

- Bashyiramo toni 10 z’ifumbire y’imborera iboze neza mu gihe cy’itabira ;
- Bongeramo ifumbire mvaruganda ku rugero rwa Kg 100 za DAP kuri Ha mu gutera ;
- Kuvanga Rhizobiyumu n’imbuto mbere yo gutera bakoresheje agapfunyika ka Gr 80 kakavangwa n’ibiro 10 by’imbuto ya Soya bituma Soya ibasha gukoresha azote yo mu mwuka.

6. Gutera imbuto

Umuhinzi akoresha Kg 70 kugeza kuri Kg 100 z'imbuto kuri Ha bitewe n'ubunini bw'intete. Atera ku ntera ya cm 40 hagati y'imirongo na cm 10 ku murongo, ashira intete imwe mu kobo.

Igihe cyiza cy'itera ni muri Nzeli mu gihembwe cy'ihinga A no mu ntangiriro za Gashyantare mu gihembwe cyihinga B.

7. Gufata neza igihingwa cya Soya mu mirima

- Kumenera cyangwa kubagara bwa mbere bikorwa nyuma y'ibyumweru bibiri Soya imaze guterwa.
- Bongera kubagara bwa kabiri no gusukira (kuhira) Soya imaze ukwezi n'igice.
- Umuhinzi agomba kandi kurwanya indwara n'ibyonnyi akoresheje amoko yihanganira indwara, baterera igihe ndetse atera n'imiti yo kurwanya indwara n'ibyonnyi.

8. IBYONNYI N'INDWARA BY'INGENZI BYANGIZA SOYA

8.1. UMUGESE

Iyi ndwara iterwa n'agahumyo ko mu bwoko bwa *Phakospora pachyrhizi*. ubu burwayi buhera ku mababi yo hasi bikagenda bizamuka hejuru.

Ibimenyetso

- Amababi yafashwe agaragazwa n'ifu y'ikigina gishyira umutuku igaragara ku ruhande rwo muni y'amababi.
- Amababi yafashwe agira amabara y'umuhondo ku ruhande rwo hejuru nyuma agacikagurika.



Umugese ku mababi

Uburyo bwo kuyirinda no kuyirwanya

- Kubahiriza gahunda yo gusimburanya ibihingwa mu murima;
- Gutera imbuto nziza yujuje ubuziranenge bwemewe;
- Gukoresha imbuto zihanganira iyo ndwara;
- Gutera imbuto ihungije umuti wica uduhumyo dutera iyo ndwara nka Carbendazim ku rugero rwa: gr 800 muri kg 1 y'imbuto;
Mu gihe soya yafashwe, batera umuti nka Azoxystrobin(Azoxystrobin: gr10/L20 z'amazi) cyangwa Benomyl (Benomyl: gr 20 / L 20 z'amazi);

1.2. KUBEMBA/MOZAYIKE (Mosaic Virus)

Kubemba biterwa n'agakoko ko mu bwoko bwa virus.

Ibimenyetso:

Amababi yafashwe arapfunyarara imitwe yayo igasa nk'ishinze, hanyuma igihingwa kikagwingira ntigikure.



Amababi ya soya yabembye

Uburyo bwo kuyirinda no kuyirwanya

- Kubahiriza gahunda yo gusimburanya ibihingwa mu murima (soya ntisimburana n'ibindi binyamisogwe);
- Gutera imbuto nziza yujuje ubuziranenge bwemewe, yasaruwe mu murima utaragaragayemo indwara yo kubemba;
- Kurandura soya yabembye;
- Gutera umuti wica udusimba dukwirakwiza indwara.

1.3. NYAMWIHINA

Nyamwihina ni agakoko ko mu bwoko bw'ibinyugunyugu kitwa *Lamprosema indicata*.

Ibimenyetso:

Igihingwa cyafashwe kigaragazwa n'amababi azingiye hamwe nk'azirikishije utudodo Nyamwihina yihishemo imbere. Nyamwihina yangiza ikibabi ihereye mu nsi kandi itagipfumuye. Igaragara cyane cyane mu gihe hari izuba.



Uburyo bwo Kuyirinda no Kuyirwanya

- Guhingira igihe;
- Gutera imiti nka:
 - Cypermethrin: 20 ml / 20 L amzi
 - Lamda-Cyhalothrin: 20 ml/20 L y'amazi
 - Azadirachtin: 20 ml/20 L y'amazi
 - Acetamiprid: 10ml/ 20L z'amazi.

9. IGIHE YERERA N'UMUSARURO

Soya yera hagati y'iminsi 90 kugeza ku minsi 150 bitewe n'ubwoko bwayo. Mu gihe hakoreshejwe inyongeramusaruro zikenewe, hashobora kuboneka umusaruro uri hagati ya Kg 1,250 na Kg 3,000 hakurikijwe ubwoko (variety).

10. GUSARURA

- Gusarura igihe amababi yahindutse kaki;
- Gukatira soya ahagana hasi ku ruti kugira ngo umunyu wa azote uri mu duheri turi ku mizi ya Soya ugume mu butaka ;
- Gusarura igihe cy'amafu, kare mu gitondo mu buryo bwo kwirinda ko Soya

isatagurikira mu murima.

11. KWANIKA

Kwanika soya bikorwa iminsi 3 kugeza ku minsi 5 ahantu hasukuye hatari ku butaka. Soya yanikwa ku mbuga ya sima, imbariro cyangwa shitingi. Soya yanurwa izuba ritararenga kugira ngo zidahura n’ubukonje.

12. GUHURA

Guhura Soya bishobora gukorwa mu buryo bwa gakondo hakoreshejwe ikibando, ariko muri iki gihe byaba byiza hakoreshejwe imashini yabugenewe.

13. KUGOSORA

Soya igosorwa hakoreshejwe uburyo bwa gakondo hifashishijwe urutaro cyangwa se bishobotse hagakoreshwa imashini yabugenewe.

14. GUHUNIKA

Soya ihunikwa igomba kuba yumye neza ku buryo igipimo cy’amazi mu ntete kitajya hejuru ya 11%. Soya ihunikwa ahantu hari umwuka, humutse kandi hatagera ibyonnyi. Imifuka igomba gupangwa ku dutanda tw’imbaho (palettes), ntigire aho ihurira n’ubukonje bwa sima.

F. URUTOKI



1. Aho urutoki ruhingwa : urutoki ruhingwa mu turere dufite ubutumburuke buri muni ya metero 1800. Ubukonje buba ahari ubutumburuke burenze m1800 butuma urutoki rutinda kwera.

2. Ubutaka : urutoki rwishimira ubutaka bw'isi ndende, bwumutse, bworoshye, bufite ubusharire buri hagati ya 5 na 6.5. kandi bufite ifumbire ihagije.

3. Amoko yamamazwa : Hari amoko menshi ariko atangwa n'ubushakashatsi ni aya akurikira:

* **Mu bitoki biribwa:** Inganji, Mbwaziruma, Mporogoma, Cyerwa.

* **Mu bitoki by'imineke:** Poyo, Kamaramasenge, Fhia 17 & 25, Gros michel, Ikiyangurube, Igisukari.

4. Gutegura umurima

Kurwanya isuri no guhinga umurima neza no gucukura imyobo izajyamo insina. Iyo myobo igomba kuba ifite cm 60 z'ubujyakuzimu na cm 90 z'umurambararo. Ubutaka bwavuye hejuru bugasubizwa mu mwobo bukavangwa n'ifumbire.

5. Gufumbira :

- Bakoresha kg 25 z'ifumbire y'imborera iboze neza mu mwobo umwe; bakongeramo g 100 za NPK 17.17.17 cyangwa 100 g za ire mu gihe cy'itera.

- Nyuma insina zimaze gukura, ifumbire ishyirwa ku muzenguruko w’insina (kuri cm 60) mu gaferege katari karekare kugira ngo imizi y’insina itangirika. Ifumbire ishyirwa ku nsina rimwe cyangwa kabiri mu mwaka mu gihe cy’imvura.

6. Gutera imibyare

Haterwa imibyare ingana na 1100 kuri Ha, kuko intera isigara hagati y’imironko ari m 3 na metero 3 hagati y’umwobo n’undi.

Batera imibyare ivuye mu rutoki rutarwaye kandi rwera neza, isongoye hejuru, ifite inguri nini; imizi n’ibitaka byavanyweho kandi ifite uburebure buri hagati ya cm 30 kugeza kuri cm 50.

Mu mwobo bashyiramo umubyare umwe. Ni byiza kandi ko urutoki ruterwa mu mvura y’umuhindo ni ukuvuga hagati ya Nzeli n’Ukwakira.

7. Gufata neza urutoki mu mirima

Mu mirimo y’ingenzi: twavuga gusasira, gushangurura, kuzicira, gukata imyanana, kuzitega inzego, kurimbura inguri zishaje, gusimbura urutoki rushaje no kurwanya indwara n’ibyonnyi.

8. Ibyonnyi n’indwara by’ingenzi byangiza urutoki

a. KIRABIRANYA (Banana Xanthomonas Wilt)

Ni indwara iterwa na bagiteri igakwirakwizwa n’inzuki zitara ubuki ku nsina zirwaye nyuma zikajya ku nsina nzima, imibyare irwaye n’ibikoresho bidasukuye na byo bikwirakwiza iyi ndwara.

Ibimenyetso

- Insina yafashwe, amakoma yayo ararabirana,
- Umutumba wayo ukavamo amashyira y’umuhondo,
- Amabere atangira kuneka atarakura; iyo umanyuye ibere imbere usangamo ibara ry’ikigina;
- Umwanana urabora kandi ukuma.



Ibimenyetso by'urutoki rurwaye kirabiranya

Uburyo bwo kuyirinda no kuyirwanya

- Guca umwanana ukoresheje isando amabere ya nyuma akimara gusohoka mu mwanana,
- Gutera imibyare myiza nk'ivuye muri laburatwari,
- Gusukura ibikoresho hifashishijwe umuriro,
- Kwirinda kugendagenda mu murima urimo uburwayi haba abantu ndetse n'amatungo,
- Gutema no gutaba insina zirwaye.

b. KABORE (*Fusarium wilt*)

Iyi ndwara iterwa n'agahumyo kaba mu butaka bita "*Fusarium oxysporum f.sp. cubensae.*" Ifata insina yose amakoma ndetse n' umutumba.

Ibimenyetso

Amakoma akuze agenda aba umuhondo. Uko hashira iminsi ni ko amakoma mato na yo afatwa yose akaba umuhondo, akaraba, akuma, agatendera ku mutumba asa n'akoze ijipo, mu nyuma insina yose ikuma,

- Hari igihe umutumba w'insina irwaye wisatura,
- Imbere mu nguri y'insina irwaye kabore hagaragaza ibara ritukura.



Ibimenyetso bya kabore ku makoma no ku mutumba

Uburyo bwo kuyirwanya

- Gutera imibyare itarwaye,
- Kurandura insina zagaragayeho ubwo burwayi, n'imizi bikumishwa bigatwikwa; cyangwa bikagaburirwa amatungo,
- Birabujijwe gukoresha isaso mu murima insina zagaragayeho uburwayi,
- Kugirira isuku inkweto n'ibikoresho bikoreshwa mu murima hakoreshejwe umuriro cyangwa imiti (urugero: JIK) mbere yo kubikoresha mu wundi murima,
- Kudatera imibyare yavuye mu murima wagaragayemo uburwayi,
- Gutera ubwoko bw'insina bwihanganira kabore, harimo FHIA 17, FHIA 25.

c. TSINDIKA

- Iyi ndwara iterwa na virusi. Ikwirakwizwa n'agakoko kitwa ***Pentalonia nigronervosa***. Ifata amoko yose y'nsina. Mu Rwanda iboneka mu Burengerazuba, cyane cyane mu kibaya cya Bugarama ariko imaze no kugaragara mu bice bya Rusizi na Nyamasheke.

Ibimenyetso

- Umubyare cyangwa insina ifashwe ikiri nto ntikura nk'isanzwe izana amakoma menshi cyane insina ikamera nk'indabyo,
- Rimwe na rimwe ku muzenguruko w'amababi hagira ibara ry'umweru
- Ibimenyetso bigaragara hasi ku mutumba no ku makoma hazaho utudomo tw'icyatsi cyererutse kivanze n'icyatsi cyijimye dukoze ishusho y'urukiramende.



9. Igihe rwerera: urutoki rwerera hagati y'amezi 12-15 ku bitoki by'inzoga n'ibiribwa, naho ku bitoki by'imineke ni hagati y'amezi 18-20.

10. Gusarura no guhunika:

- Ibitoki bicibwa igihe bikomeye, bagahita babiteka cyangwa babitara.
- Umusaruro ushobora kuboneka ni hagati ya toni 8 na toni 35 kuri Ha 1.

G. IMYUMBATI



1. Aho imyumbati ihingwa kandi yera neza : imyumbati itanga umusaruro mwiza mu Mayaga, mu mirambi no mu mukenke by'iburasirazuba. Ihingwa ku butumburuke kuva kuri metero 900 kugeza kuri metero 1500. Imyumbati ikunda ikirere kirangwa n'imvura nyinshi n'ubushyuhe, ariko yihanganira n'uturere dufite imvura nkeya.

2. Ubutaka: imyumbati ni igihingwa gikunda ubutaka buseseka, bw'isi ndende kandi buhitisha amazi.

3. Amoko yamazwa: hari amoko menshi ariko atangwa n'ubushakashatsi ni aya:

* **Mu miribwa:** Ndamirabana (TME 14), Mbakungahaze (95/NA/00063), Cyizere (192/0057), Mbagarumbise, etc.

* **Mu bwoko bwa gitamisi:** Gitaminsini na Gakiza.

4. Gutegura umurima

- Kurima bwa mbere bavanamo urwiri n'ibyatsi bibi.
- Gukora amabimba ahantu hashobora kureka amazi cyangwa imitabo ahantu hashobora gutwarwa n'isuri.

5. Gufumbira :

- Kuri Ha 1 bashyiramo toni 10-20 z'ifumbire y'imborera iboze neza,

bakongeramo Kg 300 za NPK 17.17.17 igashyirwa muri Cm 10 ku muzenguruko wa buri giti cy'umwumbati umaze gufata nyuma y'iminsi 20-30.

6. Igera mbutu

Haterwa ingeri 10 000 kuri Hegitari zavuye mu murima w'imyumbati itarwaye. Batera ingeri kuri m 1 hagati y'imirongo no kuri m 1 hagati y'ingeri n'iyindi kandi hagashyirwa ingeri imwe mu mwobo. Ingeri igomba kuba ifite Cm 20-25 z'uburebure n'amaso 5 kugeza ku 8. Ingeri igomba kuva ku biti bikuze bifite hagati y'amezi 8 na 18.

Igihe cyiza cy'itera: ni hagati y'Ukwakira n'Ugushyingo

7. Gufata neza imyumbati mu mirima

Nyuma y'ukwezi bamaze gutera, imyumbati igomba kubagarwa buri kwezi kugeza ku mezi ane (4), bakayisukira imaze kugira cm 60 z'uburebure cyangwa se igize amezi abiri (2) kugeza kuri atatu (3), ariko basukira imyumbati itaratewe ku mabimba cyangwa mu mitabo. Bongera kubagara iyo bibaye ngombwa imyumbati ifite amezi atatu.

Kurikirana igihingwa mu murima ukora isura rihagije (byibura inshuro imwe mu byumweru bibiri (2)).

8. INDWARA N'IBYONNYI BY'IGIHINGWA CY'IMYUMBATI

a. UBUBEMBE BW'IMYUMBATI (cassava mosaic virus)

Indwara y'ububembe bw'imyumbati iterwa na virusi



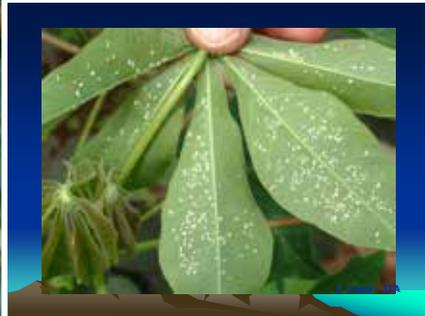
Indwara y'ububembe ku mababi

IBIMENYETSO

- Indwara igitangira ikibabi kigaragaza amabara y' umuhondo avanze n' icyatsi kibisi.
- Uko indwara irushaho gukara, amababi ata ireme akihinahina, kandi akaba matoya cyane;
- Iyo indwara ikabije umwumbati ukura nabi, ukagwingira, amababi ntabe akigaragara uherye ku mutwe w'umwumbati.
- Iyo uteye ingeri irwaye ntabwo ishora. Iyo ifashwe yarashoye ntabwo yera neza; umusaruro ugabanuka bitewe n' ikigero yari igezemo n'ubukana bw'indwara.

Uburyo ikwirakwira

- Gutera ingeri z'imyumbati zivuye ku giti kirwaye
- Uduzazi tw'umweru turuma umwumbati urwaye tukavanamo virusi; twakongera kuruma umwumbati muzima tukawanduza.
- Ibikoresho byifashishwa mu gutegura imbuto no gusarura.



Uduzazi tw'umweru dukwirakwiza indwara y'ububembe bw'imyumbati

Uburyo bwo kuyirinda no kuyirwanya

- Gutera ubwoko bw'imyumbati bwihanganira indwara y'ububembe;
- Gutera ingeri zitarwaye zavuye mu mirima yakurikiranywe n' inzego zibishinzwe;
- Gusura umurima w'imyumbati kenshi nibura rimwe mu kwezi cyangwa mu mezi atatu, iyabembye ikarandurwa;
- Kurandura imyumbati yose irwaye;
- Gukoresha ibikoresho bitakoreshejwe mu mirima irwaye cyangwa

byacishijwe ku muriro mu gihe cy'iminota 2 cyangwa byogejwe n'umuti wa JIK (750ml muri 15l z'amazi).

b. KABORE (Cassava brown streak disease)

Indwara ya kabore iterwa na virusi

Ibimenyetso ku mababi

Ku mababi, ibimenyetso bya Kabore bigaragara mu buryo butandukanye:

- Amabara y'umuhondo agenda akurikiye udutsi duto
- Ibara ry'umuhondo rikwiriye ikibabi cyose hagati y' udutsi, ariko tugasigara ari icyatsi kibisi
- Amabara y' umuhondo atatanye hagati y'udutsi
- Uruhurirane rw' ibimenyetso byose byavuzwe haruguru ku kibabi kimwe
- Amababi agumana imiterere yayo ntabwo apfunyarara nk'ayo ku burwayi bw'ububembe



Ibimenyetso bya Kabore ku mababi

Ibimenyetso ku giti

- Ku gice cy'igihimba kikiri gito, hazaho amabara ari hagati y'umukara n'ikigina.
- Ku gice gikomeye hazaho ibibara by' ikigina (amagaragamba)
- Iyo indwara ifite ubukana bwinshi igiti cy'umwumbati kiruma.



Ibimenyetso bya Kabore ku giti

Ibimenyetso ku myumbati

- Bitangirana n'ububore bumeze nk'akadomo k' ikigina kagenda gakura kava ku muzenguruko ahegereye ku gishishwa kinjira imbere ahagana ku muzi, ububore bukamanuka bukurikiye uburebure bw' ikijumba
- Kabore itandukanye n' ububore busanzwe bita gahuzu kuko ubwa Kabore bukomera nk'urubaho
- Imyumbati ita ireme ikagira ubuniga



Imyumbati mizima

Imyumbati irwaye Kabore

Imyumbati ifite ubuniga

Uburyo iyi ndwara ikwirakwira

- Gutera ingeri z'imyumbati zivuye ku giti kirwaye;
- Udusazi tw'umweru tunyunyuzwa amatembabuzi ku myumbati irwaye twaruma imizima tukayanduza;
- Ibikoresho byakoreshejwe mu murima urwaye bigakoreshwa no mu murima muzima bidakorewe isuku yabugenewe.

Uburyo bwo kuyirinda no kuyirwanya

- Gutera ubwoko bw'imyumbati bwihanganira indwara ya Kabore.
- Gutera ingeri zitarwaye zavuye mu mirima yakurikiranywe n' inzego zibishinzwe;
- Gusura umurima w'imyumbati kenshi nibura rimwe mu kwezi cyangwa mu mezi atatu;
- Gushyiraho akato kabuza abantu kwinjira imyumbati ivuye mu duce twagaragayemo Kabore;
- Gukoresha ibikoresho bitakoreshejwe mu mirima irwaye cyangwa byacishijwe ku muriro mu gihe cy'iminota 2 cyangwa byogejwe muri JIK (750ml muri 15l z'amazi).

c. AKAMATIRIZI

Iki cyonnyi cyagaragaye bwa mbere mu Rwanda muri Kanama 1984.

Imiterere y' akamatirizi

- Ni agakoko gafite ibara rijya gusa n'iroza ritwikiriwe n'agafu k'umweru, gafite mm 2-3 z'uburebure
- Akamatirizi gakara cyane mu gihe cy'izuba.

Uko dukwirakwira

- Akamatirizi gakwirakwizwa n'umuyaga no gutera ingeri zivuye mu murima urwaye.



Utumatirizi ku giti cy'umwumbati

IBIMENYETSO

- Udusimba dukunda kwirundaniriza hamwe ku mababi akiri mato no ku mitwe yoroshye;
- Ibiti byafashwe biba bifite amababi ameze nk'ibihuru, bigakura gahoro, ingingo zikaba ngufi kandi igiti kikagorama gihereye ahafashwe.
- Utumatirizi tugabanya umusarururo kugeza kuri 80% bitewe n'ikigero imyumbati yari igezemo.



Ibimenyetso ku mababi

Uburyo bwo kurwanya utumaturizi

- Guterera igihe;
- Gutera ingeri zitavuye mu murima urimo icyo cyonnyi.
- Kwinika ingeri mu mazi ashyushye ku kigero cya dogere 60 mu gihe cy'iminota 20;
- Kurandura ibiti by'imyumbati byarwaye.

Gusarura

A. Kwera kw'imyumbati

- imyumbati yera hagati y'amezi 18-24 kuri gitaminsini. Naho ku myumbati y'imiribwa ni hagati y'amezi 10 kugeza kuri 15. Imyumbati igeze igihe cyo gusarurwa igomba kuba imaze amezi 10 kugeza ku mezi 18 bitewe n'ubwoko bwayo.

Icyitonderwa: Imyumbati yagaragayeho Kabore isarurwa itarengeje amezi 12

- Igomba kutamara igihe kirekire mu murima
- Igomba kudakurwaho ibiti mbere y'uko isarurwa.
- Mu gusarura, wirinda gukomeretsa ikijumba: uturuka kure y'igiti ugakuraho itaka witonze userura neza ukawukuramo wose
- Uyishyira mu kintu kitayikomeretsa (ibitebo, imifuka...)
- Gusarura amababi(isombe) bishobora kwangiza umusaruro ku gipimo cyo hejuru, ni yo mpamvu mu gihe cyo gusarura imyumbati ari na bwo hasarurwa amababi.
- Mu gusarura, ushobora kwifashisha imashini cyangwa se amaboko, gusa amaboko cyangwa se imashini, ugomba kwirinda kuyikomeretsa, kuko ari ho ibyonnyi byinjirira bikaba byateza igihombo.

- Uburyo bwiza bwo gukura imyumbati, byibura ugabanya igiti cy'umwumbati kugeza kuri (cm30-cm50) uvuye ku butaka nyuma ugashikuzwa buhoro buhoro kugira ngo hirindwe kuyikomereza, ariyo ntandaro yo kubora. Gukoresha ibindi bikoresho nk'isuka cyangwa se umuhoro bigomba kwitonderwa cyane cyane ko ari byo byangiza umusaruro. Ni muri urwo rwego biba byiza gusarura imyumbati mu gihe ubutaka buhehereye(mu gihe cy'imvura).

Uburyo bwo gutwara imyumbati iva mu murima

- Mu gutwara imyumbati iva mu murima, hakoreshwa uburyo butandukanye, ariko ni ngombwa kwitwararika kugira ngo imyumbati itangirika hakagira ikobagurika.

Gutonora: hari uburyo bunyuranye bwo gutonora imyumbati.

Ni byiza ko imyumbati itonorwa ikiva mu murima.

Uburyo bukoreshwa mu gutonora imyumbati ni intoki hifashishwa ibyuma ndetse hari n'abateye imbere bakoresha imashini(mu nganda zikora ifu y'imyumbati)

- Abakoresha intoki rero hari abakuraho ibishishwa byose,
- Abandi bagakuraho agahu k'inyuma gusa.

Kwinika:

Hari abatonora imyumbati bakayinika mu mazi abandi bagahita banika.

Nyamara ni byiza kwinika imyumbati ukimara kuyitonora ndetse ukayicagaguramo uduce duto ukayinika mu mifuka kugira ngo idahera mu mazi.

- Igomba kwinikwa mu mazi meza kandi isukuye neza.
- Ugomba gufunga imifuka neza
- Imara iminsi itatu (3) mu rwinikiro
- Utagamije gukora imivunde ushobora gushyira imyumbati mu ngunguru y'amazi cyangwa se indobo. Ibi ariko bikorwa igihe gito, ikindi ni uko kwinika imyumbati bigabanya ubusharire (Acide cyanudrique)

Kwinura:

- Winura imyumbati uyishyira ahantu heza, ukareka amazi agashiramo (gukamura)
- Imaze gushiramo amazi uyishyira kuri shitingi isa neza, ukayivunguriraho
- Uyikura kuri shitingi ukayanika mu rwanikiro.

Kwanika:

Ubwaniro buri amoko menshi:

- Kwanika ku zuba (shitingi,ibirago..)
- Udutara
- Ubwanikiro bwa kizungu (séchoir)

Kwanika ku zuba cyangwa ku dutara bituma imyumbati yuma bitewe n'uko izuba rihari, ariko muri séchoir ho imaramo iminsi itatu gusa ikaba yumye. Iyo imyumbati rero yumye neza ishobora gukorwamo ifu cyangwa ikabikwa ari imivunde.

Guhunika

Guhunika imyumbati hasaba kwitonda cyane cyane iyo izarenza icyumweru, aha ngaha hari uburyo bumwe na bumwe bwa kwifashishwa.

Gukata igihimba cy' umwumbati maze ibijumba by'umwumbati bigasigara mu butaka. Ibi byagufasha, kwirinda ko imyumbati yawe yabora mu gihe yakuwe.

Uko bikorwa:

- Gukata igihimba cyo hejuru maze ku giti ugasigaza (cm2-cm5).
- Irinde gukura imyumbati mu gihe cy'imvura mu rwego rwo kuyirinda kubora;
- Tandukanya imyumbati yaba iyangiritse cyangwa igaragaraza ibimenyetso, iyakomeretse igomba guhita ikoresheya naho imizima igahunikwa.
- Irinde, kuvanga imyumbati mizima n'iyangiritse kuko iyaboze iboza n'indi isigaye.

H. IBIRAYI



1. Aho bikunda : Ibirayi bikunda cyane mu turere tw'amakoro no mu misozi miremire ifite ubutumburuke kuva kuri m 1800 kugeza kuri m 2300.

2. Ubutaka : bihingwa mu butaka bwiza, bufite isi ndende, buseseka, bufite ubusharire buke, bukiri bushya kandi butuma umwuka ubutemberamo.

3. Amoko yamamazwa : Sangema, Cruza, Mabondo, Victoria, Kirundo, Mizero Kigega, ngunda, Nderera, Gikungu, Kinigi na CIP 393077-58.

4. Uko bategura umurima

Habanza kurwanya isuri, kurima bwa mbere bavanamo urwiri iyo ruri mu murima, nyuma bagatabira bagiye gutera imbuto, Kuringaniza umurima.

5. Gufumbira :

a) Bashyiramo toni 30 z'ifumbire y'imborera iboze neza mu gihe cy'itabira, bongeramo kg 300 za NPK 17.17.17 kuri Ha mu myobo mu gihe cy'itera.

b) Mu butaka busharira babanza gushyiramo hagati ya Toni 2,5 na Toni 5 z'ishwagara ikamaramo ibihe by'ihinga bine.

6. Igerambuto :

- * kuri Ha 1 hakoreshwa imbuto zingana na Toni 2 cyangwa 2,5
- * Batera kuri cm 80 hagati y'imirongo na cm 30 ku murongo.
- * Bashyira ikirayi 1 mu kobo, muri cm 8-10 z'ibujyakuzimu.
- * Batera hagati muri Nzeri mu gihemwe cy'ihinga A cyangwa muri Gashyantare – Werurwe mu gihembwe cy'ihinga B.

7. Kubikenura/Gufata neza igihingwa cy'ibirayi mu murima

- * Kubibagara nyuma y'iminsi 15 kugeza kuri 21 bimaze kumera, gusukira nyuma yo kubagara no kurwanya indwara n'ibyonnyi ukoreshaje amoko yihanganira indwara utereye igihe cyangwa ukoreshaje imiti ya Dithani M 45 ;
- * Milraz 76 WP cyangwa Cupro-Antracol 54,5 WP n'indi,

8. Kurwanya indwara n'ibyonnyi by'ingenzi

a. INDWARA Y'IMVURA / Mildew

Ni indwara iterwa n'agahumyo bita "*Phytophthora infestans*". Ifata amababi, imigozi n'ibirayi. Indwara ikururwa n'imvura nyinshi. Igihingwa cyafashwe kizana urubobi ku mababi no ku migozi; nyuma akaba umukara. Iyo bikabije ugira ngo umurima wababutse.



Indwara y'imvura ku birayi

Uburyo bwo kuyirinda no kuyirwanya:

- Gutera imbuto nziza ifite ubuziranenge bwemewe;
- Guhinga ibirayi mu murima umaze nibura ibihembwe by'ihinga bibiri udahinzemo ibirayi (rotation);

- Kurandura ibirayi byimeza kuko bishobora kuba bibitse iyo ndwara bikanduza ibindi;
- Gutera umuti wa Ridomili (Ridomil) ku mababi hose (gr 50 muri litiro 20 z’amazi) inshuro imwe ibirayi bikimara kumera; nyuma y’ibyumweru bibiri bagatera umuti wa Ditane (Dithane) cg Mancozebe ku mababi hose (gr 50 muri litiro 20 z’amazi) nibura inshuro 1 buri cyumweru kugeza ururabo rurimo guhunguka bigiye kwera.

b. KIRABIRANYA

Iterwa na Bagiteri bita « *Pseudomonas solanacearum* ». Ishobora guterwa no guhinga ibirayi mu murima urimo bagiteri zitera iyo ndwara cyangwa se izo bagiteri zibitse mu mbuto y’ibirayi yatewe.

IBIMENYETSO

- Kurabirana kw’imigozi nyuma ikuma amababi agahinduka icyatsi kibisi cyeruruka,
- Ku maso y’ibirayi haturukamo amatembabuzi y’umweru anuka ameze nk’amashyira; iyo ugitemye usanga imbere hari uruziga rw’umuhondo ushyira ibihogo.



Indwara ya kirabiranya ku birayi

Uburyo bwo kuyirinda no kuyirwanya:

- Gutera imbuto nziza y’ibirayi byasaruwe mu murima utaragaragayemo iyo ndwara;
- Guhinga ibirayi mu murima umaze nibura ibihembwe by’ihinga bibili udahinzemo ibirayi (rotation);
- Kurandura ibirayi byafwashwe n’iyo ndwara bigatabwa mu cyobo kure y’umurima;

- Kuvana ibirayi bigaragaza ibimenyetso by'uburwayi mu bindi mbere yo guhunika.

c. IMFUNYARAZI

Ni indwara iterwa na Virusi.

IBIMENYETSO

- Amababi areruruka nyuma agapfunyarara, imitwe y'amababi ikamera nk'amahembe;
- Imigozi ntikura neza, iba migufi, ishora nabi kandi igashora uturayi duto kandi duke.



Imfunyarazi ku birayi

Uburyo bwo kuyirinda no kuyirwanya:

- Gutera imbuto nzima zasaruwe mu murima utaragaragayemo iyo ndwara;
- Kurandura ibirayi birwaye ndetse n'ibyimejeje kuko bishobora kubika iyo ndwara;
- Gutera umuti wica udusimba (aphids) dukwirakwiza iyo virusi batera imiti nka Imidachloprid cg Lambdacyhalothrin: 10ml/20L z'amazi.

d. URUNYO RW'IBIRAYI

Urunyo rw'ibirayi ruva mu magi aterwa n'agakoko ko mu bwoko bw'isazi yitwa **Liriomyza sp.** Iyo sazi ica utwenge mu mababi igateramo amagi. Ayo magi asohokamo inyo zikurira mu mababi zikanayarya.

IBIMENYETSO

Urunyo rw'ibirayi ruba mu mababi imbere, rukarya amababi rucamo inzira uko rugenda rwimuka. Izo nzira zigaragara inyuma ku mababi mu ibara ryenda gusa n'ikijuju.



Inzira zakozwe n'urunyo ku mababi

Uburyo bwo kurwirinda no kururwanya:

- Gutera umuti wica urunyo nka Imidachloprid cg Lambdacyhalothrin: 10ml/20L z'amazi;
- Kurima no gutabira byibuze icyumweru mbere yo gutera ibirayi mu murima kugira ngo udusimba twicwe n'imirasire y'izuba ;

e. INANDA (Cutworm): Urunyo rusa n' umukara cg ikigina



Ibimenyetso

- Inanda ikata igihingwa ahagana hasi ku ruti cyangwa ikagikatira mu butaka
- Iyo inanda zikomeje kubaho, zitangira kurya n'ibirayi.

Uburyo bwo kuyirwanya

- Gukata ibyatsi ku nkengero z’umurima aho zishobora kwihisha mbere yo gutera;
- Kubagara uko bikwiye no kugenzura umurima kare mugitondo ugatoragura inanda ukazica.

9. GUSARURA IBIRAYI

KUNYOMORA

Mu buhinzi bw’ibirayi, imigozi y’ibirayi irandurwa mu minsi 15 mbere y’uko bisarurwa kugira ngo bikamukemo amazi kandi uruhu rwabyo rukomere bikabirinda kwangirika mu kubihunika. Ikindi kandi, ibyo bituma indwara ziri mu mababi no mu migozi zidakomeza kwitsindagira mu birayi.

UBURYO BWO GUSARURA IBIRAYI

Mu gusarura, umuhinzi asarura ibirayi byeze neza akabibwirwa n’uko amababi yumye yatangiye kuba umuhondo. umuhinzi yitondera uruhu rw’ibirayi kuko iyo rukomeretse, ikirayi gitakaza amazi vuba, kigakanyarara, mikorobi n’udukoko bikinjiramo, kikabora cyangwa kigafatwa n’indwara. Ibirayi bikomeretse cyane bigomba kuribwa vuba.

Gusarura bikorwa mu gihe ubutaka bwumutse nta mvura ihari.

KWANIKA NO GUHUNIKA IBIRAYI

- Ihutire kwanika ibirayi bigisarurwa kugira ngo bizabikwe cyangwa bihunikwe byumutse neza ;
- Ni byiza kwanika ibirayi ahantu hatwikiriye kuko kubyanika ku zuba bituma ibirayi bihinduka icyatsi

GUTORANYA

Ibirayi bifite ubusembwa/ibikomere cyangwa ibigaragaza ibimenyetso by’indwara bigomba kvanwa mu bindi. Ibirayi byahinduye ibara (icyatsi), ibyakomeretse cyangwa se byangiritse, ibirayi bito bito bikabije bigomba kvanwa mu bindi ako kanya ntibihunikwe nk’imbuto.



GUPFUNYIKA

Ibirayi bipfunyikwa kugira ngo bibungabungwe, bihunikwe cyangwa bijyanwe ku isoko. Ibikunda kwifashishwa mu gupfunyika ni Nettlon bags (sac a mailles) n'udutete.



Guhunika

Mu guhunika ibirayi hifashishwa uburyo bwinshi nko kubihunika mu butaka, mu birundo, mu byobo, mu nzu y'imbaho, mu bukonje, n'ahandi.

Ikigega cyiza cyo guhunika imbutu kigomba:

- Kuba gisakaye neza (kitava) ;
- Kuba kinjiramo kandi gisohora umwuka n’umuyaga, ubushyuhe n’imyuka mibi iva mu birayi ;
- Kuba kinjirwamo umucy cyo kugira ngo imimeru itaba imyeru ahubwo ibe icyatsi, migufi, ibyibushye kandi minini. Ibyo bituma idahunguka mu gihe cy’itera kandi ikamera vuba ;
- Kuba cyumutse, nta mazi menshi atuma hazamo agahumbu cyangwa bigatuma ibirayi bibora.

Igigeza cy’ibirayi byo kurya ntikigomba kwinjirwamo urumuri rw’izuba kuko ibirayi biba icyatsi kibisi bigasharira (bikarura).

V.1 UKO UBWOKO BW’AMAFUMBIRE MVARUGANDA AKORESHWA KU BIHINGWA BY’INGENZI (PRIORITY CROPS) MU RWANDA

Igihingwa	Ifumbire	Kg zijya kuri ari 1	Igihe baterera ifumbire	Uburyo ifumbire iterwa	Umusaruro kuri ari 1 idateye ifumbire Kg/ari	Umusaruro kuri ari 1 wakoresheje ifumbire Kg/ari
01. Ibirayi	NPK 17.17.17	3 Kg	Igihe babitera	Mu kobo bateramo ikirayi	Kg 60 –150	Kg 150 – Kg 350
02. Imyumbati	NPK 17.17.17	3 Kg	Iyo ingeri zima-ze gushibuka	Mu kaziga kazengurutse ingeri y’umwumbati	Kg 50 – 150	Kg 200- Kg 500
03. Ingano	DAP+Urea	1 Kg + 0.5Kg	Guterana (ibiba) na 1 Kg ya DAP ; Kubagaza 0.5 Kg za Urea mu minsi 45 nyuma y’itera	Mu gaferege baca iruhande rw’umurongo w’ingano	Kg 8 –12	Kg 25 – Kg 35
04. Ibigori:	DAP+Urea	1 Kg + 0.5Kg	Guterana (ibiba) na 1 Kg ya DAP ; Kubagaza 0.5 Kg za Urea mu minsi 45 nyuma y’itera	Mu gaferege baca iruhande rw’umurongo w’ibigori	Kg 10- 18	Kg 30 – Kg 50

Igihingwa	Ifumbire	Kg zijya kuri ari 1	Igihe baterera ifumbire	Uburyo ifumbire iterwa	Umusaruro kuri ari 1 idateye ifumbire kg/ ari	Umusaruro kuri ari 1 wakoreshije ifumbire kg/ ari
05. Umuceri	NPK 17.17.17 + Urea	2Kg + 1Kg	Guterana (kugeme-ka) na 2 Kg za NPK 17.17.17 ; Kubagaza 0.5 Kg za Urea mu minsi 30 nyuma y'itera ; Kubagaza bwa kabili 0.5 Kg za Urea	Kumisha bakavanga n'itaka	Kg 25 – Kg 50	Kg 50- Kg 90
06. Ibishyimo bigufi	DAP	1 Kg	Mu itera	Mu karongo bateramo	Kg 7 – Kg 12	Kg 12 – Kg 16
07. Ibishyimo bishingirirwa	DAP	1 Kg	Mu itera	Mu karongo bateramo	Kg 8 – Kg 15	Kg 18 – Kg 30
8. Soya wavanze na Rizobiyumu (80gr/10Kg z'imbuto)	DAP	1 kg	Mu itera	Mu karongo bateramo	Kg 7 – Kg 14	Kg 15 – Kg 25
9. Insina	Urea+KCL cg K ₂ SO ₄ cg NPK 17.17.17 cg Urea	200 gr/ins + KCL cg K ₂ SO ₄ gr 400/insina 125gr/insina 125gr/insina	½ cy'imvange mu itera ½ cy'imvange mu mezi 3 nyuma y'itera	Mu kaziga kazengurutse insina	Kg 13 – Kg 15	Kg 50 - Kg 120
10. Ikawa	NPK 22.6.12+S	Gr 100 ku giti.	kabiri mu mwaka, mu kwezi kwa 3 no mu kwezi kwa 10 imvura itangiye kugwa	Bazengurutsa igitsinsi cy'ikawa	kg 1.5 - kg 5/ha	Kg 6 – kg 10/ha
11. Icyayi	NPK 25.5.5	kg 600 /ha/ mwaka ni ukuvuga kg 6 kuri ari ku mwaka	kabiri mu mwaka, mu kwezi kwa 3 no mu kwezi kwa 10 imvura itangiye kugwa	Bazengurutsa igiti cy'icyayi cg bagatera ku mirongo iyo ibiti byafatanye	Kg 15– kg 26 ku mwaka z'ibibabi bibisi	Kg 75-130 ku mwaka z'ibibabi bibisi.

Ucyitonderwa: Umusaruro uvugwa muri iyi mbonerahamwe uboneka iyo wakoreshije mbere na mbere ifumbire isanzwe cyangwa imborera cyangwa iy'amatungo, kandi ukaba wararwanyije ubusharire mu butaka bubufite (sols acides).

6. UBUHINZI BW'IMBUTO N'IMBOGA

A. UBUHINZI BW'AVOKA

1. Aho avoka ikunda kwera

Avoka ikunda ahantu hagwa imvura iringaniye (1250-1750mm) mu mwaka, ubutaka butarekamo amazi menshi kuko atuma imizi ibora bityo igiti kikuma. Avoka yera hose mu Rwanda ku butumburuke buri hagati ya metero 900 na metero 1800, ahantu hari ubusharire bwa PH iri hagati ya 5.5-6 ariko hari n'amoko yera neza hejuru ya metero 2000.

2. Umuryango w'imbutu y'avoka

Avoka Ibarirwa mu muryango w'ibihingwa byitwa lauracees, mu bwoko bwa persea Americana, yakomotse muri Amerika yo hagati. Avoka ni urubuto ruribwa rukungahaye cyane ku muvuta na vitamini. Avoka ni igiti gikura kikagera ku burebure bwa metero 8 kugera kuri 20. Amoko yatsindirirwe akunze kuba magufi kuruta amahumbikano.



3. Akamaro k'Avoka

Avoka zikungahaye mu mavuta kurusha izindi mbuto ziribwa ari mbisi (7.8-40.7) bityo zigatanga imbaraga, zikungahaye kuri vitamini A, B,C,Ena K. Inombe y'Avoka ikorwamo amavuta yo guteka, umutobe wo kunywa. Avoka kandi zikoreshwa mu nganda zikora imiti, amavuta yo kwisiga n'amasabune, ibishishwa n'ibisigazwa by'inganda bikorwamo ibyo kurya by'amatungo.

4. Amoko y'Avoka

-Amoko y'Avoka y'ingenzi yakozweho ubushakashatsi akagaragaza ko yera neza mu Rwanda ni Hass, fuerte, Ettinger, Booth8, Choquette na collisson. Hariho andi yera mu rugero kandi akera hejuru ya metero 2000. Ayo ni nka Zutano, puelba, Dickison, simpson, Bacon, Booth7.

5. Gutegura Ingemwe/ingeli:

Umuhinzi ashobora guhita atera ikibuto cy'avoka mu murima cyangwa mu buhumbukiro, cyangwa agatsindira (guhindura) atera igiti mu kindi. Ingeli umuhinzi atera mu rugemwe ni agace k'ishami cyangwa k'umutwe w'ishami ry'avoka isanzwe yera. Iyo ngeri igomba kuba ifite amaso make. Iba ireshya na cm 6-8 naho umutwe w'urugemwe ugomba kuba ufite agatutu kanini kabyibushye.

5.1Guhumbika

Guhumbika bikorerwa mu butaka bwiza butavuye mu gishanga. Bubaka ubuhumbikiro bakabusakara, bagatera ibibuto mu mirongo byegeranye, imitwe ikarenga ubutaka buhoro, bigatwikirizwa utwatsi duke hanyuma bikavomererwa buri munsu.

-Iyo ibibuto bizanye umumero bigemurirwa mu bihoho bya plastiki bipfomaguye byuzuye gitaka kivanze n'ifumbire. icyo gihe umumero uba ureshya na cm 1-2 kandi uba ugifashe ku bibuto, zikabangurirwa hanyuma zikazaterwa mu mirima zifite cm15-20.

-Mu gutera ingemwe z'avoka mu murima ni ngombwa gushwanyuza igihoho hagasigara gitaka gikikije imizi kugirango zizafate neza.

5.2 Guherako batera ibibuto (semis direct):

Mu gutera ibibuto mu murima, umuhinzi acukura imyobo ya metero 1 buri ruhande na metero 1 z'ubujyakuzimu akuzuzamo gitaka cyiza cyivanze n'ifumbire:

- Umuhinzi abanza itaka mu mwobo kugeza kuri cm 30 agakurikizaho ifumbire kugeza kuri cm60 akongera agashyiraho itaka ryo hejuru bityo bityo kugeza umwobo wuzuye.
- Cyakora biba byiza iyo ifumbire ivanzwe n'itaka mbere yo gusubiza itaka mu mwobo
- Ibibuto biterwa iyo imvura imaze gutsindagira cya gitaka. Haterwa ibibuto 2-3 umuhinzi asiga cm 15-20 hagati y'ikibuto n'ikindi.

5.3 Gutsindira/Kubangurira (Gutera igiti mu kindi):

Iyo ingemwe zagemuriwe mu bihoho zimaze amezi ari hagati y'atatu n'ane ni ukuvuga urugemwe rufite umubyimba ungana n'ikaramu ruba rureshya na cm 20-30, umuhinzi atera ingeri hagati y'amaso ari muri cm10-15 uturutse kubutaka.

-Ibihoho bigemurirwamo ingemwe z'avoka biba bifite cm 40 z'uburebure na

cm 20 z’ubugari. Nyuma y’ibyumweru 2-3 ingeri ishikutse, ukuraho amaso yose aza ku rugemwe kandi akibuka guhambura umugozi urugemwe rumaze kuzana amababi n’igishishwa cy’aho ingeri yaterewe kimaze gufatana neza. -Ingemwe ziterwa mu murima zireshya na cm hagati ya 30-50, zigatwikirwa mu byumweru bya mbere.

5.4 Gutera Ingeri mu rugemwe:

Mbere yo gutera ingeri mu rugemwe cyangwa kubangurira ni ngombwa kubanza gutegura ingeri izakoreshwa ndetse n’urugemwe rubangurirwa.

6. Gutera ingemwe mu murima:

-Avoka ziterwa mu gihe cy’imvura muri Werurwe na Nzeri. Ingemwe zibanguriye ziterwa zimaze igihe cyiri hagati y’amezi 7 na 10 muri pepiniyeri. Icyo gihe ziba zimaze gufata neza. Iyo avoka zimaze guterwa ni ngombwa kuzifata neza, uzibagarira, biba byiza iyo zihinzwemo ibihingwa bitwikira ubutaka nka desmodium. Ni ngombwa kuvomerera avoka nibura kabiri mu cyumweru igihe ibiti bikiri bito.

-Gucukura imyobo ya cm 60-100 impande na cm 60-100 ibujyakuzimu,

-Gushyira ifumbire n’itaka mu mwobo ku buryo bukurikira: habanza ifumbire mu mwobo kugeza kuri cm 30 z’ubuhagarike, hagakurikiraho itaka izindi cm 30 z’ubuhagarike, hakongerwamo ifumbire kuri cm 20 z’ubuhagarike, hagasozo itaka ryiza kuri cm zisigaye 20.

7. Gukata Avoka

7.1. Ikata ryo gutereka igiti

Iyo igice cyo hejuru ni ukuvuga ingeri yakoreshejwe mu kubangurira imaze gukura ku buryo ireshya na cm 40 umuhinzi ayica umutwe. Icyo gihe ya ngeri ishikuka amashami 3-5 yageza kuri cm 40 nayo agacibwa imitwe kugirango ashubuke andi mato nayo yamara kureshya na cm 40 akongera agacibwa imitwe.

Ibyo birakomeza kugeza avoka imaze kureshya na metero 2 aho amashami agenda ashubuka ubwayo.

7.2. Ikata ryo gufata neza igiti

Mu rwego rwo gufata neza igiti cy’avoka kibanguriye umuhinzi akuraho ibisambo, amashami agoramye n’ayumye.

8. Ifumbire

Mu gihe cyo gutera umuhinzi ashyira mu mwobo ibiro 50 z'ifumbire y'imborera ivanze na garama 200 za superphosphate. Nyuma buri mwaka batera garama 400-500 za NPK 20-10-10.

9. Umurumbuko

Avoka yabanguriwe itangira kwera nyuma y'imyaka 3-4; Avoka ni itabanguriye itangira kwera nyuma y'imyaka 6-8.

Umusaruro w'avoka uterwa n'ubwoko bw'Avoka n'akarere ibiti biteyemo. Igiti gikuru gishobora kwera imbuto 100-500 cyangwa ibiro 200-300 bingana na toni 15-20 ku mwaka.

10. Indwara n'ibyonnyi:

a)Antarakinose/Akaribata



Imiterere n'uko zangiza

- Iyi ndwara iterwa n'agahumyo kitwa ***Colletotricum gloeosporioides***. Aka gahumyo gatera gakunze gufata ku ruti rukiri ruto n'amashami mato, ku mababi no kumbuto.
- Amababi niyo akunze kugaragaza ibimenyetso aho usanga hazaho ibibara by'ibihogo, nyuma agahunguka, igiti kigasigara kimeze nk'icyakokotse.
- Iyi ndwara ikwirakwira cyane mu gihe cy'imvura,
- gutera imbuto ifite agahumyo gatera iyi ndwara,
- Kubangurira avoka bakoresheje udushami dufite iyi ndwara.

UKO IRWANYWA

- Kugabanya amashami ku giti kugirango urumuri rwinjiremo neza,
- Gukoresha ingemwe zibanguriye kandi zitarwaye,
- Gutera imiti irwanya uduhumyo nka Copper oxychloride/hydroxide, carbendazim cyangwa chlorothalonil.

b) Ibiromo Bya Serikosporiose



Iimiterere n'uko zangiza

Iyi ndwara iterwa n'agahumyo kitwa *sphaceloma purpurae*. Aka gahumyo gatera gakunze gufata ku mbutu ndetse n'amababi, imbutu zafashwe zigira ibibara bisa n'umuhondo cyangwa ibihogo k'uruho rw'imbutu no kumababi ya Avoka.

Uko ikwirakwira:

-Iyi ndwara ikwirakwira cyane mu gihe cy'imvura cyangwa hariho ubuhehere bwinshi mu murima uteyemo avoka. Agahumyo gakwirakwizwa n'imvura cyangwa amazi mu gihe cyo kuhira.

UKO IRWANYWA

-Gutera umuti nka nka Copper oxychloride/hydroxide, carbendazim cyangwa chlorothalonil mu gihe cy'irabya, mugihe cyo kuzana imbutu na nyuma y'isarura,

-Gukura mu murima avoka zigushije kugirango zitaboreramo.

c) Tiripusi



Imiterere n'uko zangiza

- Tiripusi zigira amoko menshi atandukanye kandi ziba ari ntoya cyane kandi zikagira amabara atandukanye aho zimwe ushobora gusanga ari umweru, umukara cyangwa ikigina (brown).
- Iyo ibihe ari byiza tiripusi ishobora gutera amagi inshuro zirenga 15 mu mwaka. Amagi ari ku mababi avamo ibishorobwa nyuma y'iminsi itatu, nyuma y'icyumweru bigahinduka tiripusi.
- Izi tiripusi zikwirakwizwa n'ibikoresho by'umuhinzi ndetse n'imyambaro.
- Tiripusi ishobora gukwirakwiza virus yitwa tospovirus ituma amababi yeruruka hanyuma akuma.
- Tiripusi zikunze kugaragara ku imitwe y'udushami (buds) kandi ugasanga amabara y'umukara ku duteja tw'urusenda no mururabo.

Uburyo bwo kuzirinda no kuzirwanya

- Kugenzura umurima ku buryo buhoraho,
 - Kubagara umurima hakurwamo ibyatsi bibi,
 - Gusiga intera ihagije hagati y'ibihingwa,
 - Gukoresha imiti ikomoka ku bihingwa
- Urugero: Urusenda, itabi, pyrethrum, ...
- Gutera imiti nka: UMEME (Lambdacyhalothrin, Imidachloprid (confidor), Aster extrim, cypermethrin, Rocket, Cypermethrin...);

B. IGIHINGWA CYA MARAKUJA (INTABABARA/AMATUNDA)



1. Aho amatunda ahingwa: Amatunda ahingwa mu gihugu hose.

2. Ubutaka: Amatunda ni igihingwa gikunda ubutaka buseseka, bufite ifumbire kandi butarimo amazi menshi.

3. Amoko y'amatunda yamamazwa: Mu Rwanda, amoko y'amatunda yamamazwa ni abiri: hari *Passiflora edulis* (isine) na *Passiflora flavocarpa* (umuhondo).

4. Uburyo bwo gutubura ingemwe z'amatunda: hari uburyo 4 bwo kubona ingemwe:

* Kwinaza mu buhumbikiro

* Kubiba utubuto mu murima

* Gukoresha ingeri

* Kubyarura: bataba mu butaka igipande cy'igiti cy'intababara.

5. Gutegura umurima

* Kurwanya isuri.

* Guhinga neza umurima no gutunganya ahazajya ingemwe,

6. Gufumbira :

- Bashyira kg 30 z'ifumbire y'imborera iboze neza mu mwobo uzaterwamo intababara
- Bakongeramo g 500 za NPK 17.17.17, kandi bigakorwa buri mwaka iyo yatangiye kwera imbuto.

7. Igerambuto

Batera kuri metero 2 hagati y'imirongo/inzitiro marakuja zuririraho, no kuri metero 3 hagati y'urugemwe n'urundi. Batera ingemwe 1 660 kuri Ha. Igihe cyo gutera: ingemwe cyangwa ingeri zitegurwa muri Kamena; kuzitera bigakorwa muri Nzeri n'Ukwakira imvura imaze gusomya ubutaka.

8. Gufata neza amatunda mu mirima

- * Kuyubakira ingazi, hakoreshwa ingiga z'ibiti bifite m 2,70 z'uburebure, cm 15 z'umurambararo; cm bagataba 60.
- * Ni ngombwa gufasha urugemwe kurira rukagera kuri twa tugozi, ushyira hagati y'urugemwe n'utugozi umuhembezo;
- * Kubagara no gusasira;
- * Gukata Marakuja;
- * Ikata ritereka igiti: hatoranywa ibishibu 2 bitarangwaho indwara, ibindi bigakatwa;
- * Ikata rituma igiti cyera neza: bakata imitwe hejuru y'utujisho tuzabyara andi mashami, bituma igiti gikura vuba;
- * Gukata udushami tutagifite imbuto cyangwa twangiritse;
- * Ikata risazura igiti: gukatira igiti kuri cm 30 uvuye ku butaka iyo umusaruro utangiyeye kugabanuka;
- * Kurwanya indwara n'ibyonyi hakoreshajwe amoko yihanganira indwara no gutera imiti.

8. 1. Indwara z'ingenzi z'intababara



Ibimenyetso:

Uruhu rw'intababara rukomeye nk'ibuye rimwe na rimwe rubyimbye; amatunda aba mato cyane kandi ntagire umutobe, amababi agaragaza ububembe butewe na virus. Amababi arapfunyarara, agafatwa n'irungu,

Kuyikumira no kuyirwanya:

- gukoresha imbuto zitarwaye,
- kurandura no gutwika ibiti byose byafashwe,
- kurinda umurima inda n'utundi dukoko dushobora kuyikwirakwiza,

- Kubangurira ingemwe.
- Gusimburanya ibihingwa mu murima,
- Gufumbira no guha amazi ahagije igihingwa



c) Ibidomo by'ibijuju: iterwa n'agahumyo bita *Alternaria passiflorae*.

Ibimenyetso:

Igaragazwa n'ibice bya marakuja byafashwe hazaho ububabuke bw'uruziga bufite ibara ry'ikijuju kandi ku matunda ibidomo byinjiramo maze yakara igatuma amatunda abora.

Uko bayirwanya:

- Kutegeranya ingemwe mu gihe cy'itera,
- Gukata ibisambo no kugabanya amashami.amababi hakinjira urumuri mu murima,
- Gukoresha imiti irimo cuivre nka copper oxychloride/hydroxide.

Indwara ya Kabore ku matunda/ intababara (*Fusarium wilt (Fusarium oxysporum f.sp. passiflorae)*)



Imiterere nuko yangiza:

Iyi ndwara ikunze kugaragazwa no guhinduka umuhondo ku mababi, kubora k'uruti rwo hasi agereye ubutaka bitaguma igihingwa cyose kiraba ndetse nyuma kikabora iyo usatuye uruti usanga imbere hasa n'ikigina. Iyi ndwara iterwa n'agakoko kangiza ingemwe zikiri ntoya kuruti aho gatuma uduhumyo tubona umwanya wo gutangira kwangiza uruti kuko butaba bubonye aho kwinjirira.

Uko bayirwanya:

- Igiti cyamaze gufatwa kirarandurwa kigatwikwa/gutabwa,
- Gukoresha neza neza sekateri mugukuraho ibyafashwe hirindwa kwanduza ibindi,
- Kwirinda ibyatsi cyangwa isaso yeregereye ku ruti,
- Gukoresha ingemwe zibanguriye kuko zihanganira iki kibazo,
- Gukoresha imiti yica ubusimba mu gihe cyo gutegura ingemwe n'imiti irimo cuivre mu mbuto ziteye mu murima.

9. Igihe byerera:

* Marakuja itangira kwera nyuma y'amezi 7-9 itewe, ishobora kumara imyaka 4 cyangwa irengaho gato itanga umusaruro bitewe n'umurumbuko mwiza w'ubutaka.

10. Gusarura no guhunika:

- Nkuko byavuzwe haruguru, Marakuja zitangira gusarurwa nyuma y'amezi 7 zitewe, igiti kimwe kigatanga 12 kg z'imbutu buri mwaka. Marakuja zifashwe neza zitanga 20 toni z'umusaruro kuri Ha.
- Imbutu zeze neza zibikwa mu gihe kitari kirekire kuri 20°C n'ubuherehere bwa 80-90%. Umutobe n'umushongi bikabikika neza kurusha.

C. IGIHINGWA CYA MACADAMIA (MAKADAMIYA)



1. Aho Macadamia yera mu Rwanda :

Ubushakashatsi bwakorewe mu Rwanda bwerekanye ko ishobora kwera ahantu hose hera kawa hafite imvura ya mm 800 kugeza 1900 n'ubutumburuke bw'imisozi migufi kugera ku miremire ya m 750-2250, Makadamiya yihanganira imvura nke kurusha kawa, iri hagati ya mm 750-1000.

2. Uturere tuberanye na Makadamiya:

Uturere tuberanye na Makadamiya cyane mu Rwanda: Umurambi wo hagati mu Rwanda n'uturere tw'urusekabuye (Intara y'Amajyepfo n'iy'Iburasirazuba, n'Amajyepfo y'Intara y'Amajyaruguru), umurambi w'Iburasirazuba, Inkengero z'ikiyaga cya Kivu n'Impala.

Uturere tuberanye na Makadamiya mu rugero: Bugesera, Mayaga, Umukenke w'Iburasirazuba, Isunzu rya Kongo Nili ryose.

Uturere tuberanye na Makadamiya buhoro: Akarere k'amakoro, imisozi miremire y'Ububeruka.

3. Amoko:

Makadamiya ni igiti cyera imbuto zikungahaye mu mavuta aribwa n'intungamubiri bikoreshwa mu ngo no mu nganda zitunganya ibyo kurya n'imiti binyuranye. Makadamiya ifite amoko abiri : hari ubwoko bufite igishishwa cyoroshye n'amavuta menshi (73-78% aribwo *Macadamia Integrifolia*) ari

na yo yamamazwa mu Rwanda, muri Afrika no ku isi yose, n'ubwoko bufite igishishwa gikomeye n'amavuta make (*Makadamia tetraphyllia*).

4. Ingengabihe no gutunganya imbuto n'ingemwe

* Igiti cya Makadamia kirakura kikageza ku burebure bwa m 10-15. gisaba ubushyuye bwa 15-28°C.

Imbuto z'indobanure zikwiranye n'uturere ni zo batera, ingero ni nka KRG 15, EMB-1, MRG-20 na KMB z'ikigo cy'ubushakashatsi mu buhinzi cya Kenya (KARI) zamamazwa mu Rwanda.

Imbuto zinikwa mu mazi amasaha 72 (iminsi 3), bahindura amazi buri muni kugira ngo zidahuguta, ziterwa mu buhumbikiro bufite imitabo ya m 1 y'ubugari na m 8-10 z'uburebure irimo umusenyi wa cm 20 z'ubujyakuzimu. Batera mu mirongo ya cm 8 hagati y'umurongo 1 hagati y'urubuto n'urundi na cm 3 z'ubujyakuzimu. Zimera nyuma y'iminsi 21-45, ni ngombwa kuzivomera buri muni.

* Nyuma y'amezi abiri bazigemurira mu bihoho bya cm 15 z'umurambararo kuri cm 18 z'uburebure zifite ibibabi 4 bikomeye. Bazishyira muri pepiniyeri isakaye ku buryo itanga urumuri rwa 40-50% zikamaramo amezi 2 kugeza kuri 3. ingemwe bazibangurira zimaze amezi 6 kugera kuri 12 bazigemuye ziba zifite uburebure bwa cm 10-15 zifite ibibabi 8 cyangwa 10. Nyuma yo kubangurira zimurirwa muri pepiniyeri aho kuzitera mu murima zimenyerezwa izuba andi mezi 2-3. ingemwe ziterwa mu murima ziteguwe amezi 18.

* Mu gushyira igitaka mu bihoho, ntibuzuzwa umwobo kugira ngo haboneke ahazashyirwa amazi avomerera igihingwa: bavomerera 3 mu cyumweru mu mezi 3 ya mbere.

5. Uko batera Makadamiya n'imirimo ikorerwa ingemwe ziterwa:

- Umurima utunganywa neza mu gihe cy'izuba (icyi): barima inshuro 2 mbere yo gutera. Bacukura imyobo ya cm 60 z'umurambararo na cm 60 z'ubujyakuzimu, bagashyiramo udutebo 2 tw'ifumbire y'imborera ivanze n'igitaka cyo hejuru na g 60 za NPK 20.10.10.
- Batera makadamiya mu gihe cy'imvura kuri m 7.5 hagati y'imirongo na m 7.5 hagati y'igiti n'ikindi (ibiti 178 muri Ha) mu murima wihariye cyangwa m 10 na m 10 hagati y'imirongo n'igiti n'ikindi mu murima.
- Bashingirira ingemwe kugira ngo zitazunguzwa n'umuyaga mwinshi kandi basasira muri cm 10-15 uvuye ku giti. Makadamiya ntikunda gukatwa cyane, bakuraho amashami yavunitse cyangwa ayumye agakatwa yegerejwe igihimba kugira ngo igiti gihagarare neza.

6. Umusaruro n'ikoreshya rya makadamiya

- * Igiti cya makadamiya kibanguriye gitangira kwera nyuma y'imyaka 4-5, umusaruro ukagenda wiyongera uko kigenda gikura. Igiti kimwe gitanga umusaruro wa kg 50-75 buri mwaka gifite imyaka 10-15. Igiti cya Makadamiya kiraramba cyane kandi cyera neza kugeza ku myaka 80-100. Imbuto za makadamiya zeze zirigusha, zigatoragurwa nyuma y'iminsi 1-2. Ntibyemewe gusarura imbuto zikiri ku giti kuko utamenya izeze n'iziteze. Imbuto za makadamiya zanjira ku kidasesa gitobaguwe gifite imyenge ya mm 6-7 ahantu hari igicucu kugira ngo zidaturagurika hakinjiramo udukoko twazangiriza. Zihunikwa ahantu humutse kandi hari ubukonje n'ubushyuye buringaniye, kure y'ibintu binuka byazitera nazo kunuka, hatagera udukoko.
- * Ziribwa zumye cyangwa zikaranze. Mu nganda bakoramo ibisuguti, gato, shokola, umushongi uryohera witwa ICE CREAM, n'ibindi. Imbuto za Makadamiya zikungahaye ku mavuta meza atekwa kandi mu nganda z'imiti akorwamo amavuta yo kwisiga, ibikatsi bikorwamo ibiribwa by'amatungo, ibishishwa bakabicana.

7. Intungamubiri, agaciro n'inyungu makadamiya izanira abahinzi bayo:

- Imbuto za makadamiya zitanga ibivumbikisho bihanitse (Kcal 7350 kuri kg 1), zifite amavuta menshi aruta ibindi bihingwa (73-78%) by'ibinyamavuta (ubunyobwa 44.8%, soya 15.7%) kandi ntifite ibinure bitera indwara. Zikungahaye kuri vitamini (A,B na C) n'imyungungu nka kalisiyumu, fosifori na Feri).
- Makadamiya irakenewe cyane ku isoko mpuzamahanga aho igura amadolari 10-20 kuri kg 1. Umusaruro uboneka ku isi ni 45% k'ukeneye.

INDWARA N'IBYONNYI

1. Udusurira (Stink bugs)



Imiterere nuko twangiza:

- Ubu busimba bubamo amoko agera kuri 20, icyo duhuriyeho nuko tugira igikono gikomeye kumugongo, nakanwa gasongoye nk'agashinge n'uduhembe tubiri,
- zitobora igihingwa zikanyunyuzamo amatembagiti (sap), kumababi zishyiraho umushongi bigatuma hazaho udhumyo ugasanga amababi yabaye umukara ndetse agahunguka,
- Ku mbuto hahinduka ikigina cyangwa umukara zikagira ishusho idasanzwe,
- Mugihe cy'irabya zangiza indabo ndetse zigahunguka,

Uko baturwanya:

- Kugenzura umurima kuburyo buhoraho no gutera umuti hakiri kare igihe twagaragaye,
- Kwirinda ibihuru ku murima n'impande zawo,
- Kudutora no kutwica,
- Gukoresha umuti wica udusimba nka pyrethrin, Imidachloprid,

3. Agasimba gatobora imbuto za Macadamia (Macadamia Nut borer)**Imiterere nuko twangiza:**

- Ni agakoko ko mubwoko bw'ibinyugunyugu gisa n'umutuku w'ikigina gitera amagi ku mbuto; Urunyo rugakurira imbere mu rubuto cyangwa mu gishishwa kikazasohokamo kimaze gukura.
- Urubuto rwangiritse rugaragazwa n'utwenge duto turihi imyanda kandi urunyo rwangiza cyane imbuto zikiri nyota cyane.

Uko bayirwanya:

- Gukata ibiti no kwirinda ibihuru mu murima,
- Gukoresha imiti nka Imidachloprid, bifenthrin cyane cyane mu gihe cy'irabya.

D. URUSENDA

1. Aho urusenda ruhingwa: zihingwa mu gihugu (u Rwanda) hose.

2. Ubutaka: Urusenda rushobora kwera mu butaka bwose, ariko bukaba butarimo amazi menshi kandi bufite imyunyu ngugu ya ngombwa, bukize no ku ifumbire y'imboreza. Ubusharire (pH) bw'ubutaka bugomba kuba buri hagati ya 6.1 – 7.6

3. Amoko yamamazwa: Hari amoko menshi y'urusenda ariko ayo dukunze guhinga mu Rwanda kandi akunzwe ku masoko mpuzamahanga ni aya akurikira: Anaheyimu (Anaheim), Anaheyimu selegeti (Anaheim Select), Feresino (Fresno), Jalapeno (Jalapeno), Longe Redi Kayene (Long Red Cayenne cyangwa Cayenne Long Slim), Jiwala (Jwala), Bedi aye (Bird eye).

4. Uburyo bwo gutubura ingemwe z'urusenda: Ubona ingemwe winajije mu buhumbikiro cyangwa ugatera utubuto nibura tubiri mu kobo kamwe.

5. Gutegura umurima

Umurima ugomba gutegurwa neza nta rwiri rubonekamo, uhinze neza kugeza nibura muri 30 cm. Ugashyirwamo ifumbire hakurikijwe ingero z'ifumbire zatanzwe.

6. Gufumbira :

Urusenda rukenera ifumbire y'imboreza iboze neza ingana na toni 10 kugera kuri toni 15 kuri hegitari imwe (10T-15T/ha). Ifumbire mvaruganda ukoreshwa 250 kg/ha TSP (Triple super phosphate) bagitera iyo urusenda rumaze kugira 15 cm; rukenera ibiro 100kg/ha bya CAN (Calcium Ammonia Nitrate) nyuma y'ukwezi rugakenera ibiro 200 kg/ha bya CAN. Mu gihe cyo kugemura, ifumbire ya fosufate nka TSP (Tripple Super Phosphate), urusenda rukenera hagati y'ibiro 60 na 115 kuri hegitari. Ifumbire ya kabiri iterwa nyuma y'ukwezi cyangwa amezi abiri nyuma yo gutera iya mbere. Urusenda rukaba rukenera CAN (Calcium Ammonium Nitrate). NK'ahantu hari ubutaka busharira iyi fumbire hakenerwa ibiro 100 kuri hegitari. Ahari ubutaka budashaririye hakenerwa ibiro 100 kuri hegitari by'ifumbire ya ASN (Ammonium Sulphate Nitrate).

7. Igerambuto

Iyo uteye utanyujije mu buhumbikiro bakoresha 1kg/ha

Iyo unyujije mu buhumbikiro ukenera hagati ya 0.3 na 0.5kg/ha

8. Gufata neza urusenda mu mirima

Urusenda ruterwa mu buryo bukurikira:

- 40 cm hagati y'ingeri n'indi cyangwa hagati y'igiti cy'urusenda n'ikindi.
- Iyo uteye utanyujije mu buhumbikiro ni 30 cm hagati y'intete n'indi.
- Ruterwa kuri 60 cm hagati y'umurongo n'undi iyo uteye kijyambere.

9.KURWANYA INDWARA N'IBYONNYI

a)Tiripusi (Thrips)



Imiterere n'uko zangiza

- Zigira amabara atandukanye aho zimwe ushobora gusanga ari umweru, umukara cyangwa ikigina (brown).
- Akenshi tiripusi zangiza igihingwa mu gihe cy'izuba aho zitera amagi ku mababi,
- Ibishorobwa birya amababi agasigara abonerana.
- Tiripusi zikunze kugaragara ku imitwe y'udushami (buds) kandi ugasanga amabara y'umukara ku duteja tw'urusenda no mururabo.

Uburyo bwo kuzirinda no kuzirwanya

- Kubagara umurima hakurwamo ibyatsi bibi,
- Kwica ibishorobwa na tiripusi biri mubutaka no ku mababi,
- Gutera imiti nka: UMEME (Lambdacyhalothrin, Imidachloprid (confidor), Aster extrim, cypermethrin, Rocket, Cypermethrin...); itabi, pyrethrum,...

b)Urunyo rwangiza urusenda



Imiterere n'uko zangiza

- Urunyo rukuze ruhinduka ikinyugunyugu.
- Imiteja yangiritse ihunguka itarageza igihe cyo kwera.
- Imiteja idahungutse igaragara nk'iyeye ariko itarera, iyindi igafatwa n'izindi ndwara bitewe nuko yakomerekejwe.
- Iyo usatuye umuteja w'urusenda usangamo imbere utwo dukoko cyangwa imyanda twasizemo.

Uburyo bwo kuzirinda no kuzirwanya_

- Gusukura umurima hakurwamo ibihuru/ibyatsi,
- Gutera umuti wica udukoko nka Pyrethrin , Cypermethrin, Deltamethrin,cypermethrin,....,
- Gukoresha imitego yabugenewe ishobora gufata urunyo rwamaze kuba ikinyugunyugu.

c)AKARIBATA (Anthracnose)



Imiterere n'uko zangiza

- Iterwa n'agahumyo gafata ibice byose by'urusenda kandi kinjirira ahakomeretse cyane kangiza imiteja cyangwa urusenda rweze
- Igice cyakomeretse kiruma, kikabonekamo utudomo twinshi dufite ibara ry'umukara,
- Gakwirakwizwa no gutera imbuto zakomotse ku giti cy'urusenda kikirwaye,
- Igaragara cyane igihe hari ubuhehere bwinshi no kuba urumuri rutinjira hagati y'ibihingwa.
- Igaragazwa n'ibibara by'umukara cyangwa ikigina bigaragara inyuma n'imbere ku gice cyangiritse.

Uburyo bwo kuzirinda no kuzirwanya

- Gutegura umurima mbere ukabanza ugahora mbere yo gutera kandi hakuwemo imyanda (debris after harvest),
- Gukoresha imbuto nziza(zitarwaye),
- Kutegeranya cyane ibihingwa mu gihe cyo gutera,
- Gusimburanya ibihingwa mu murima,
- Gutera umuti nka Mancozeb, Ridomil,Copper oxychloride, Carbendazin,chlorothalonil.

d)VIRUSI ZIFATA URUSENDA



Imiterere n'uko yangiza

- Urusenda rufatwa na Virus zitandukanye,zikaba zikwirakwizwa n'inda z'ibihingwa zikunze kuboneka ku mababi,
- Izi Virusi zigaragazwa n'ibibara by'umuhondo, guhinamirana kw'amababi, guhagarara kwikura rw'igihingwa, kugabanuka k'umusaruro.

Uburyo bwo kuyirinda no kuyirwanya

- Gutera imbuto zihanganira uburwayi,
- Gusukura umurima muri gahunda yo kugabanya inda ku bihingwa,
- Guhinga ibihingwa bikumira ikwirakwira rya Virus (barrier crops),
- Gutera imiti yica udukoko nka Cypermethrin, Lambacyhalothrin,...

e).UBUBORE BWO KU MUTWE W'URUBUTO (Blossom-end rot of Pepper)



Imiterere n'uko yangiza

- Iyi ndwara iterwa n'ibura ry'amazi cyangwa umunyu wa Kalisiyumu,
- Urubuto rubora ku mutwe hari n'igihe usanga rwacitsemo umwobo ruhereye ku mutwe.

Uburyo bwo kuyirinda no kuyirwanya

- Gushyira ishwaraga mu murima ubuzemo kalisiyumu(20kg kugera 30 kg kuri ari imwe),
- Gukoresha ifumbire,
- Gusasira ibihingwa,
- Kuvomera igihe bibaye ngombwa.

10. Igihe byerera:

Imiteja y'ibishyimbo itangira gusarurwa hagati y'iminsi 42 n'iminsi 56 igakomeza gusarurwa kugeza hagati y'ukwezi kumwe n'igice kugeza ku mezi abiri.

E. IMITEJA Y'IBISHYIMBO



1. Aho imiteja ihingwa: ihingwa mu gihugu (u Rwanda) hose.

2. Ubutaka:

Imiteja y'ibishyimbo ihingwa mu butaka butarimo amazi menshi kandi bufite ifumbire y'imborera ihagije n'ubusharire bw'ubutaka buri hagati ya 6.5- 7.5pH

3. Amoko yamamazwa: Hari amako menshi y'imateja y'ibishyimbo: iranda n'imigufi

Ariko amoko akenerwa ku masoko mpuzamahanga n'aya akurikira: *monel, vernadon, gloria, claudia supper monel, espadia, Morgan, vanilla*. Irandaranda hari nka *Kentucky wonder*.

4. Uburyo bwo gutubura ingemwe z’imiteja: Utera mu murima utiriwe unyuza mu buhumbikiro. Nyuma y’iminsi 6 kugeza ku icumi ibishyimbo by’imiteja biba byameze

5. Gutegura umurima

Umurima ugomba gutegurwa neza nta rwiri rubonekamo, uhinze neza kugeza nibura muri 30 cm. Ugashyirwamo ifumbire hakurikijwe ingero z’ifumbire zatanzwe.

6. Gufumbira :

Imiteja y’ibishyimbo ikenera ifumbire y’imborera iboze neza ingana na toni icumi kuri hegitare imwe (10/ha).Iyo ifumbire iterwa ivangwa n’ubutaka neza mbere yo gutera.

Mu gihe k’itera ry’imbuto hakerwa kandi ifumbire mvaruganda igera ku biro 200 bya DAP kuri hegitare imwe, ikavangwa neza n’ubutaka mbere yo gushyira imbuto mu butaka. Igihe ibishyimbo by’imiteja bitangiye kuzana amababi ya mbere hakoreshwa ifumbire ya CAN ingana n’ibiro 100 kuri hegitare imwe, ikaba kandi yatangira gukoreshwa igihe ibishyimbo by’imiteja bitangiye kuzana ururabo

7. Igerambuto

Iyo utera ibishyimbo by’imiteja ukenera imbuto ingana n’ibiro 50 kugeza ku biro 60 kuri hegitari Imwe. Ku miteja yera irandaranda hakenerwa ibiro 25 kugeza kuri 30 kuri hegitare Imwe.

8. Gufata neza imiteja y’ibishyimbo mu mirima

Imiteja y’ibishyimbo ibagarwa bwa mbere nyuma y’ibyumweru 2 kugeza kuri 3 itewe. Mu kubagara witondera kudahungabanya imizi y’igihingwa. Kubagara bwa kabiri bishobora gukorwa nyuma y’ibindi by’umweru 2 kugeza kuri 3, ibagarwa rya mbere ribaye.

Wirinda kubagara igihe imiteja y’ibishyimbo itangiye kuzana indabyo.

9. Indwara n’ibyonnyi.

a) Akaribata



Ikiyitera: Colletotrichum lindemuthianum (agahumyo)

Aho ifata: imisogwe, amababi, imbuto n'igihimba

Ibimenyetso: Ku mababi hagaragara amabara maremare asa n'umutuku n'amabara y'uruziga asa n'ikigina bivanze n'ikijuju, ku mpande hatukura (ku misogwe)

Kuyirwanya :

- Gutera amoko yihanganira indwara
- Gutera imbuto itarwaye (yavuye ku misogwe itarwaye)
- Gusimburanya ibihingwa mu murima
- Guhungira imbuto mbere yo kuyitera hakoreshejwe Bénomyl g 2 mu kilo kimwe cy'imbuto
- Gutera imiti nka Chlorothalonil, carbendazim,

b) Ubuhunduguru bwirabura

Irindi zina: Aphis fabae

Aho ifata: igice cyose cyo hejuru

Ibimenyetso: ibishyimbo by'imiteja byafashwe bikura nabi, amababi agahinduka umuhondo. Imiteja ishobora no kuba itwikiriwe n'ibintu bifata nk'ubujeni ubuhunduguru bukora, agahumyo kirabura gakuriramo.

Kuyirwanya :

- guhinga kijyambere ku buryo imiteja ikura neza
- gutera imiti nka pyrethrin, Lambdacyhalothrin cyangwa Aster Extrim,

c) Bagiteriyoze:



Ikiyitera: Bagiteri yitwa *Pseudomonas Syringae* p.v phaseolicola

Aho ifata: Amababi, ku misogwe no ku duti

Ibimenyetso: ku mababi haza utudomo dutu tw’umuhondo tuzengurutswe n’uruziga rweruruka rufite cm1 y’umurambararo. Amababi akiri mato aba mato cyane, agata isura yayo akaba kandi umuhondo ubengerana rimwe na rimwe. Ku misogwe hazaho ibidomo by’icyatsi kibisi gikabije, kimeze nk’igisize amavuta, hamwe hagira ibara ry’ikijuju gitukura. Utwo tudomo tuba ari uruziga cyangwa tugakurikira imitsi y’ikibabi.

Kuyirwanya

- gukoresha imbuto zitarwaye n’izihanganira iyo ndwara
- gushyira mu ngarani ibishogoshogo byarwaye bigatabwa
- gusimburanya neza ibihingwa
- gutera umuti urimo kwivure nka copper hydroxide/ oxychloride.,
- Gusimburanya ibihingwa mu murima.



d) Kiribiranya y’Ibishyimbo

Ikiyitera: Xanthomonas phaseoli

Aho ifata : ku mababi, ku misogwe noku duti

Ibimenyetso:- munsu y'amababi hazaho utubara duto tubonerana, tutangana, ariko cyane cyane ku mpande z'amababi.hagati muri ayo mabara ari mu mababi hagati haruma,hagakikizwa n'umuhondo ugaragara cyane. Amababi yafashwe arahunguka.Ku misogwe no ku duti hazaho amabara y'ikigina atangana

Uko bayirwanya:

- Gutera imbuto zitarwaye n'izihanganira iyo ndwara
- Gusimburanya ibihingwa neza mu murima kurandura ibyafashwe no kubitwikira mu mwobo gutera u m u t i wa Dacobre: garama imwe muri litiro 10 z'amazi ugakoreshwa kuri ari imwe cyangwa imwe n'igice.

10. Igihe byerera:

Imiteja y'ibishyimbo itangira gusarurwa hagati y'iminsi 42 n'iminsi 56 igakomeza gusarurwa kugeza hagati y'ukwezi kumwe n'igice kugeza ku mezi abiri.

F. INTORYI

1. Aho intoryi zihingwa: ihingwa mu gihugu (u Rwanda) hose.

2. Ubutaka:

Intoryi zihingwa mu butaka bworoshye , bufata amazi, bufumbiye kandi burimo ifumbire.

Ubusharire (pH) bw'ubutaka bugomba kuba buri hagati ya 5 kugeza kuri 7.5

3. Amoko yamamazwa:

Hari amako menshi y'intoryi ariko akunze kuboneka mu Rwanda ni:

- Intoryi z'i nyafrika dusanzwe tuzi ku izina ry'intoryi (African Eggplant)
- Oberijine (Ingero hano ni nk'ibibiringanya)

4. Uburyo bwo gutubura ingemwe z'intoryi: Utera mu murima utiriwe unyuza mu buhumbikiro. Nyuma y'iminsi 6 kugeza ku icumi ibishyimbo by'imateja biba byameze.

5. Gutegura umurima

Umurima ugomba gutegurwa neza nta rwiri rubonekamo, uhinze neza kugeza nibura muri 30 cm. Ugashyirwamo ifumbire hakurikijwe ingero z'ifumbire zatanze.

6. Gufumbira :

Intoryi zikenera ibitunga ikimera bihagije, kugira ngo rero ubone umusaruro uhagije, gushyiramo ifumbire ni ngombwa cyane. Kongeramo ifumbire mvaruganda nka NPK 17-17-17 bigomba gukorwa mu byiciro 2 kugira ngo wirinde kwangiza ibitunga ikimera. Ni byiza kuyishyira aho imizi ishikire kugira ngo ikoreshe neza. Kongeramo ifumbire bwa mbere: Nyuma y'ibyumweru 3 umaze gutera (kugemura). Hakoreshwa nk'agapfunsi ka NPK 17-17-17 (garama 10) ishikirwa ku muzenguruko aho imizi igarukira, ukarenzaho agataka. Garama 10 za NPK-17-17-17 ni agapfundikizo kuzuye k'icupa ry'amazi ya Nil cg Inyange. Kongeramo ifumbire bwa 2: Mu byumweru 6 umaze gutera (kugemura). Udupfunsi 2 twa NPK 17-17-17 (amagarama 20) dushyirwa mu kobo hagati y'ibihingwa 2 mu murongo ugatwikiriza n'agataka

7. Igerambuto

Iyo uteye utanyujije mu buhumbikiro bakoresha 1kg/ha;
Iyo unyujije mu buhumbikiro ukenera hagati ya 0.3 na 0.5kg/ha

8. Gufata neza intoryi mu mirima

Gusasira no gukora imitabo, kuvomerera, kubagara nibyo bikorwa by'ibanze mu kwita ku ntoryi

9. Indwara n'ibyonnyi

a) Akaribata (Anthracnose)

- Iyi ndwara iterwa n'agahumyo kitwa Colletothricum melongena. Aka gahumyo gakunda gufata intoryi zifashwe nabi. Iyo ndwara yiyongera cyane mu gihe cy'imvura cyangwa cy'ubuherehere bukabije.
- Ku mababi haboneka ibibara bijya gusa n'ikigina kijimye,
- Ku mbuto usangaho ibara ry'ikigina rizengurutse n'ibara ry'umukara,
- Rimwe na rimwe imbuto zafashwe ziruma zikaba umukara.

Uko bayirwanya:

- Gusimburanya ibihingwa mu murima,
- Gutera imbuto z'indobanure,
- Gusukura umurima hakurwamo ibiti by'intoryi mu murima harimo ubukonje /urume,
- Gukura ibisiganzwa by'ibiti by'intoryi mu murima no gutwitwa ibyarwaye.

b) Tiripusi (Thrips)

- Tiripusi igira amoko menshi atandukanye, iyo ibihe ari byiza ishobora gutera

amagi inshuro zirenga 15 mu mwaka,

- Tiripusi yangiza intoryi mu gihe cy'izuba aho usanga zitera amagi ku mababi, aho usanga amababi adakura neza ndetse agasigara abonerana,
- Tiripusi ikwirakwiza Virus yitwa Tospovirus ituma amababi yeruruka hanyuma akuma.

Uko bayirwanya:

- Gusukura umurima hakurwamo ibyatsi bibi,
- Gusiga intera ihagije hagati y'ibihingwa,
- Gukoresha imbuto nziza,
- Gukoresha imiti yica udusimba nka pyrethrin, Lambdacyhalothrin,,,

c) Ingonokera (fruit worm)

- Ingonokera ni ibyana by'ibinyugunyugu bita Helicoverpa armigera. Ni ibinyugunyugu biguruka nijoro kandi byangiza imyaka myinshi,
- Ibinyugunyugu n'ingonokera bigira amabara anyuranye : ikigina, icyatsi, umuhondo. Ikinugunyugu kibaho mu gihe cy'ibyumweru bitatu. Ingonokera ikuze igwa hasi ku butaka akaba ariho yibera kugeza ibaye ikinyugunyugu.
- Zikunze kuba zihishe mu ndabo aho usanga zangiza imbuto zigata ubwiza, zishobora kubora no guhunguka.

Uko bazirwanya :

- Gusukura umurima n'inkengero zawo mu kwirinda ko haboneka indiri y'ingonokera,
- Gukoresha imitego ifata ibinyugunyugu,
- Gusimburanya ibihingwa mu murima.

10. Igihe zerera:

Basarura bwa mbere intoryi nyuma y'iminsi iri hagati ya 90 na 110 bagemuye ingemwe zigaterwa.

Bakomeza gusarura intoryi zeze kandi igihe bamara basarura giterwa n'uburyo intoryi zafashwe ziri mu murima.

11. Gusarura no guhunika:

Imirimo yo gusarura ishobora gukorwa mu gihe cya amezi ane kugeza kuri atandatu. intoryi zisarurwa hakoreshejwe amaboko, usarura agomba kwitonda kugirango zitangirika, zigashyirwa mu kintu gitunganyijwe neza ; iyo bibaye byiza ushyira umusaruro mu gikoresho cya palasitike.

7. UBUHINZI BW'IBIHINGWA NGENGABUKUNGU

A. IBIRETI



1. Aho ibireti bihingwa: bihingwa cyane mu turere tw'amakoro, turangwa n'ubutumburuke bwo hejuru ndetse n'ubukonje n'imvura ihoraho.

2. Ubutaka: igihingwa gikunda ubutaka buhitisha amazi kandi budacuramyeye cyane.

3. Amoko yamamazwa: hari Nyiragahini, Capita chef, Kinigi, Bonde, Susa na HAT 1-8.

4. Gutegura umurima : Umurima uhingwamo ibireti ugomba kuba wararwanyijweho isuri kandi uhinze neza.

5. Gufumbira: Kuri hegitari imwe (1Ha), bashyiramo toni 10 (10T) z'ifumbire y'imborera iboze neza mbere yo gutera n'ibiro maganabiri (200 Kg) by'ifumbire mvaruganda (TSP) mu gihe cyo gutera.

6. Igerambuto : Umuhinzi ashobora gutera ingemwe zateguriwe muri pepiniyeri cg agatera ibishyitsi bidashaje bivuye ku mbuto zitarwaye cg zitabaye ibigumba bitewe n'icyo afite, ariko ibyiza ni ugutera ingemwe kuko byagaragaye ko zongera umusaruro ku buryo bugaragara ugereraniye no gukoresha ibishyitsi.

Ibireti biterwa ku ntera ingana na cm 30 hagati y'imirongo ibiri na cm 30 hagati y'imyobo (30cm*30cm).

Igihe cy'itera: ni ukuva mu ntangiro za Werurwe kugeza mu mpera za Gicurasi.

7. Gufata neza ibireti mu mirima

Imirimo y’ingenzi igomba gukorwa:

- gusimbura ingemwe zitafashe;
- kubagira igihe cyose hagaragaye ibyatsi bibi;
- gukata amashari (amashami yumye);
- kurwanya indwara n’ibyonnyi hakoreshejwe amoko yihanganira indwara no gutera imiti.

8. Ibyonnyi n’indwara by’ingenzi byangiza ibireti

Ibyonnyi:

a) Utuyoka duto tw’ibireti: utwo tuyoka batwita *Meloidogyne* spp. Tugira mm 1 kugeza kuri mm 2 kandi tuba mu butaka.

Ibimenyetso

Iyo utwo dukoko tumaze kwinjira mu mizi, imizi irabyimba cyangwa hakaza uduheri. Iyo bikabije imizi ihagarara gukura bityo igihingwa kikagwingira.

Uburyo bwo kukarwanya no kugakumira:

Mu kurwanya izo nzoka, umuhinzi atera imbuto nzima no kubisikanya ibihingwa cyane cyane akoresha ibinyampeke (ibigori, ingano, ...).

Indwara

b) Ramulariyoze: iyo ndwara ifata indabyo n’amababi iterwa n’agahumyo bita *Ramularia bellunensis*.

Ikimenyetso:

Iyo ndwara igaragazwa n’uko indabyo zibora.

Uko barwanya iyo indwara: umuhinzi atera amoko y’ibireti yihanganira iyo ndwara, guhinga neza bagirira isuku igihingwa, kubisikanya ibireti n’ikindi gihingwa (ibirayi); gutera ingemwe neza ahantu h’ubutaka buhitisha amazi.

9. Igihe byerera:

- ibireti bitangira gusarurwa nyuma y’amezi atatu bitewe naho muri rusange indabo zigarurwa rimwe mu byumweru bibiri ;
- ibireti bishobora gusazurwa inshuro imwe mu mwaka. icyo gihe, bakata amashami yumye yose bakoresheje najoro bakirinda gukora ku mababi.
- gusazura ibireti bikorwa mu mpera za Kanama (impeshyi irangira).

10. Gusarura no kwanika:

- Nk'uko byavuzwe haruguru, batangira gusarura nyuma y'amezi 3 ibireti bitewe naho indabo zeze zigasoromwa buri byumweru bibiri;
- Ni byiza kwanika mu bwanikiro bwa kijyambere indabyo zikimara gusoromwa, ariko igihe umuhinzi adashoboye kububona, ashobora kwanika indabyo ku zuba risanzwe hakoreshejwe shitingi (sheeting).
- Umusaruro munini uboneka ku mwaka ni toni 1.5 z'indabyo zumye kuri Ha.

11. Guhunika indabyo zumye:

- Indabyo zumye neza zishyirwa mu mifuka y'imigwegwe, bigakorana ubwitonzi kugirango zidashwanyagurikiramo igihe bazitwara;
- Mu mufuka umwe hajyamo hagati y'ibiro 25 na 30 by'indabyo zumye neza;
- Indabyo zimaze gushyirwa mu mifuka, nibyiza guhita zigemurwa mu ruganda;
- Iyo bibaye ngombwa ko indabyo zihunikwa, imifuka igomba gushyirwa ahantu humutse, hadakonje, hafite umwuka uhagije kandi bakirinda kuzitereka hasi;
- Iyo indabyo zimaze kuma, bazibika ahantu humutse kandi hagerwa n'umwuka uhagije.

B. UBUHINZI BW'IBOBERI N'UBWOROZI BW'AMAGWEJA (Sericulture)



1. Aho iboberi yera: Iboberi ni igiti gihingwa kimara imyaka igera kuri 20 kikaba kiba ahantu hafite ubushyuhe buri hagati ya dogere 25-30, ubuhehere mu butaka bungana na 70-80%, imvura ku mwaka ingana na mm 1000-2500, ubutumburuke buri hagati ya m 1000-2300, mu butaka bwera bufite PH iri hagati ya 6.2-6.8.

2. Igiti cy'iboberi (*Morus sp.*) ni igiti gikura vuba kikageza ku burebure bwa m 3-4, kikagira amoko arenga 20. Impamvu icyo giti gihingwa ni ukubona ibibabi byacyo byinshi kandi byiza kugira ngo bigaburirwe amagweja maze ashobore gucira ubudodo bw'imyenda afite agaciro mpuzamahanga ko hejuru kurusha ubundi budodo.

3. Gutegura pepeniyere : batera ingeri z'ibobere zifite uburebure buri hagati ya cm 15-20, hagati y'igiti n'ikindi harimo cm 15 naho umurongo n'undi harimo cm 30. Ibobere imara muri pepeniyere amazi 4 kugera kuri 6 hanyuma ikabona kujya guterwa mu murima. Aho pepeniyeri iri hagomba kuba hari amazi kuburyo yuhirwa, ugomba gushyiramo ifumbire y'imborera hamwe n'imvaruganda ya urea mu mezi abiri ya mbere. Ikindi gikorwa ni ukubagara buri gihe ukuramo ibyatsi bibi muri pepeniyere

4. Igerambuto: batera ingeri zifite uburebure bwa cm 25 zatemwe ku giti cy'ubwoko buzwiho gutanga ibibabi byiza, byinshi kandi binini, ingeri zifite amaso 5 mu mwobo wa cm 4-5. Batera muri cm 15 z'ubujyakuzimu hejuru hasigara cm 10 zifite amaso 2.

5. Uburyo bwo gutegura iboberi: Hari uburyo bwinshi bwo gutera ariko ubugezweho ni ugutera imirongo 2 itandukanyijwe na cm 150 hagati y'umurongo n'undi na cm 50 hagati y'igiti n'ikindi, kuri hegitari Ha hajyamo ibiti biri hagati ya 10.000-13.000.

6. Gufata neza umurima: iboberi itangira kwerekana ibibabi nyuma y'iminsi 15. Ikata rya mbere ritangira nyuma y'amezi 2 kugira ngo iboberi izane amashami menshi: basiga amashami 3-4 azasoromwaho ibibabi. Bafumbiza ifumbire y'imborera: toni 20 kuri Ha na NPK 20.10.10 cyangwa kg 400-500za NPK 25.5 kuri Ha. Ni byiza gusasiza ibyatsi kugira ngo ubutaka bugumane ubuhehere no kugabanya imirimo yo kubagara.

7. Igihe iboberi yerera n'umugaruro: iboberi ishobora gutangira gusoromwa ibibabi nyuma y'amazi 8 ikagaburirwa amagweja buri minsi 3. Nyuma y'amezi 2 irakatwa ikongera igatoha mu mezi 1-2 ku buryo nko mu Rwanda amagweja ashobora kororwa inshuro 8 mu mwaka.

8. Umugaruro w'ibibabi uboneka ku moko atandukanye y'ibobere ungana toni 20 kuri hegitare 1 ushobora kugaburirwa amabogisi 30 y'amagweja kandi buri bogisi imwe y'amagweja yagaburiwe neza amababi y'ibobere ishobora gutanga umugaruro w'ubudodo(cocoon) upima hagati y'ibiro 25 na 40.

UBWOROZI BW'AMAGWEJA (vers à soies/silkworm)



1. Uburyo bwo korora amagweja : Hari ibintu bitatu shingiro umuntu worora amagweja agomba kwitaho ari byo : Kugaburira amagweja amababi meza, kugenzura imihindagurikire y'ibihe mu cyumba cyororerwamo amagweja no kwirinda no kurwanya indwara cyane cyane ukora isuku mu cyumba cyororerwamo amagweja.

2. Amagweja aturagwa mu magi y'ikinyugunyugu (BOMBIX MORI L.) : Nyuma y'iminsi 6-10 aturazwe, amagweja agaburirwa 4 ku munsu ku manywa na n'ijoro. Amagweja yororerwa mu nzu yabugenewe ifite ubushyuhe buri hagati ya 23-28 dogere serisiyusi, ubuhehere buri hagati ya 70-90%, idashobora kwinjirwamo n'imbeba, umuswa, ibintu binuka nk'umwotsi, imiti yica udukoko n'amavuta ahumura yo kwisiga.

3. Amagweja agaburirwa mu byiciro bikurikira:

Amagweja agira ibyiciro bitanu. Akivuka, agaburirwa mu minsi 3 hanyuma agasinzira, akiyuburura ariko yiyongera mu bunini. Bongera kuyagaburira mu minsi 3, hanyuma agasinzira, akiyuburura yiyongera ubunini. Bongera kuyagaburira iminsi 4, agasinzira, hanyuma akiyuburura yiyongera ubunini. Bongera kugaburira iminsi 5, agasinzira akiyuburura yiyongera ubunini. Ubwa nyuma bayagaburira iminsi 8, agasinzira akiyuburura yiyongereye ubunini.

Nyuma y'iminsi 25-28 ntiyongera kurya, ashirwa ku matajari afite ibinogo bimeze nk'igisoro, agatangira gucira urudodo rw'umweru akarwizingiraho ku buryo nyuma y'iminsi 8 aba atakigaragara, amaze gukora ikidongi gishobora kuzingururwamo urudodo rw'ihariri ruhesha na m 600-1500. Ni ngombwa gukurikiranira hafi amagweja muri iyo minsi, kugira ngo ku munsu wa 8 cyangwa uwa 9 adapfumura urudodo hakagurukamo ibinyugunyugu, akangiza n'urudodo.

4. **Umusaruro w'ubudodo bwa cocoon** : Ubudodo busarurwa nyuma y'iminsi 7-10 amagweja maze gucira hanyuma bugahita bwumishwa kugira ngo igisimba (pupa) gipfe kugira ngo kidasohokamo kigahinduka ikinyugunyugu kikaba cyakwangiza urudodo

ZIMWE MU NDWARA ZIFATA AMAGWEJA

1. Indwara ya Pebrine : iterwa n'udukoko duto bita Microsporodiam, Variomorpha, Pleistopha na Thelophania. Amagweja yafashwe n'iyi ndwara azana ibidomo by'ikigina kandi ntashobora gukora ubudodo. Iyi ndwara irwanywa hakorwa isuku cyane mu nzu yo kororeramo amagweja, gukoresha amagi adafite ubwo burwayi bwa pebrine, koza magi muri formaline ifie 2% akamaramo iminota 10 mbere yo kuyaraririza

2. Indwara iterwa na Virus yitwa Garaseri (Grasserie) : iterwa na virus yitwa Borrelina (Nuclear Polydrosis Virus) ikaba iza ku mababi y'ibobere bagaburira amagweja. Iyi ndwara irangwa cyane cyane nuku amagweja ananirwa kurya, amagweja arabyimba n'umubiri ukabonerana, iyo apfuye ahinduka umukara kandi iyi ndwara ikunze kugaragara amagweja ageze mu cyiciro cya 5 cyangwa mbere yo gukora ubudodo. Iyi ndwara yirindwa haterwa imiti mu nzu yo kororeramo n'inkengero zayo ndetse no ku bikoreho byose mbere yo guturagwa kw'amagi.

3. Indwara ya Flacherie : iterwa na bacteria bituma amagweja anananuka kandi ntakure, yasogora imyanda ntihagira igisohoka, amagweja akaruka, umubiri w'amagweja ukaba umukara kandi amagweja apfuye agakwirakwiza umwuka mubi. Iyi ndwara yirindwa hakorerwa isuku cyane cyane ibikoreho bikorehwa mu bworozi bakabishyira mu miti bikamaramo iminsi 10, gukurikirana ubushyuhe n'ubuhehere bukenewe kuri buri cyiciro ndetse no gutandukanya bwangu amagweja arwaye n'atarwaye.

C. IKAWA



Kawa isasiye neza

1. Uturere tuberanye n'igihingwa cya kawa : Mu Ntara zose z'u Rwanda no mu turere twose two mu gihugu. Intara zifite amakawa menshi ni Intara y'Iburengerazuba, y'Amajyepfo, n'iy'iburasirazuba. Uturere 6 dufite amakawa menshi ni Nyamasheke, Rutsiro, Rusizi, Gatsibo, Ngoma na Kirehe.

2. Ubutaka : Ikawa yera ku butaka bwiza, burebure, buhehereye (kandi buri aere) kandi budakomeye cyane.

3. Amoko yamazwa : Jackson 2/1257, BM 71, BM 139 na RABC 15

4. Gutegura ubuhumbikiro/Pepiniyeri

Bahumbika imbuto mu kwezi k'Ukwakira n'Ugushyingo kandi kg 1 y'imbuto itanga ingemwe ziri hagati ya 2 500 na 3 000. Ubuhumbikiro bushyirwa aho buzashobora kuvomererwa ku buryo bworoshye kandi bugatwikirwa. Ingemwe zigemurirwa mu bihoho (birimo itaka ryiza n'ifumbire) nyuma y'amezi 3 cg 4 , nyuma zikavomererwa buri gihe, zikamaramo amezi 8.

5. Gutegura umurima

Imirimo ikorwa mu gutegura umurima ni iyi ikurikira: guhinga, kurwanya isuri, gucukura imyobo ya cm 60 z'ubugari kuri cm 60 z'uburebure na cm 80 z'ubuzyakuzimu.

6. Gutera ingemwe

Haterwa ingemwe 2 500 kuri Ha 1 hagakoreshwa ibipimo bya m 2 hagati yumurongo n’undi na m 2 hagati y’urugemwe n’urundi ku murongo 1. Batera kava mu kwezi k’ Ukwakira n’Ugushyingo naho gusimbura ingemwe zapfuye bigakorwa muri Werurwe.



Pepiniyeri ya kawa

7. Gufata neza kawa mu mirima

. Gufumbira:

Hari uburyo bukurikira bwo gufumbira kawa:

- Bashyira kg 15-20 z’ifumbire y’imborera iboze neza kuri buri giti, imvura igitangira kugwa (Werurwe na Nzeri). Iyifumbire y’imborera ninayo ikoresheya mugutera ingemwe za kawa.
- icyo gihingwa bagiha kandi gr 100 za NPK 22.6.12+S (mu byiciro bibiri ku giti gikuze : imvura igitangira kugwa Werurwe na Nzeri).
- Mu butaka bushariye cyane, ni ngombwa ko umuhinzi ashiramo kg 1 y’ishwagara ku giti buri myaka itatu (3).
- Ni ngombwa kandi gutera mu gipimo cya kawa ibiti ndumburabutaka.

Gusasira kawa

Ni ngombwa kubagara uvanamo ibyatsi, wirinda gukomeretsa imizi ya kawa; Ni byiza gusasira igipimo cyose ukoresheje Temeda, setariya, ibirere n’ibindi bishishwa biboneka.

Gukata

Gukata kawa, hari uburyo butatu bwo gukata kawa:

a. kugonda kawa: ikawa ziba zimaze amezi 10 zitewe hagamijwe kuzatereka amashami 3 kuri buri giti. Iryo kata baryita : **ikata ritereka kawa.**

b. ikata ryongera umusaruro: Buri mwaka, amashami yo hasi atacyera, ayumye, asobekeranye n'ibisambo, ayo yose agomba gukatwa.

c. ikata ryo gusazura igipimo: bikorwa nyuma y'imyaka 5 cyangwa 7 kawa itanga umusaruro. Ku mwaka wa mbere batema ibiti 2 nyuma y'isarura (Nyakanga-Kanama), hagasigara kimwe; ku mwaka wa mbere w'iryo kata, batema ibiti bibiri, nyuma y'isarura (muri Nyakanga-Kanama) hagasigara igiti 1, ku mwaka wa kabiri w'iryo kata, batema igiti cya 3 cyari gisigaye. Ibyo bita bitemwa bamaze kongera gutoranya ibishibu 3 bifite cm 50.

Kurwanya indwara n'ibyonnyi bya kawa:

Mu byonnyi n'indwara by'ingenzi twavuga ibi bikurikira:

a. Agasurira : ni agakoko bita Antestiopsis lineaticolis gafite ibara ry'umuhondo n'ibara ry'umukara n'ubururu bujya kuba icyatsi ku nda no ku mugongo. Iyo utwo dusimba utwiciye ku rutoki turanuka. Ni na two twangiza kawa bigatubya umusaruro. Utwo dusimba dukunze kuba ahantu hihishe, nko mu mababi menshi, muni y'amababi no hagati y'imbuto nyinshi z'ikawa.

Uko utwo dusimba twangiza:

- * Twonona kawa dushinga umugobora watwo mu ruteja rukiri igitumbwe maze tukanyunyuzwa amazi bityo ntirushobora gukomera neza, ahubwo ruba igihuhwe;
- * Uretse uruteja, udusurira twangiza amababi akiri mato, imitwe y'amashami n'ururabyo. Ibyo na byo bituma kawa ikura nabi igiti kikazana amababi akonjamye kandi akaba menshi kandi mabi, ururabyo rukaba ruke n'utubuto tujeho, utwo dusimba tukaturya maze umusaruro ukagabanuka.



Uburyo bwo kurwanya utwo dusimba

- Batera imiti yica udukoko nka:
 - Fastac : Uwo muti ugomba guterwa ku gihe mu mezi y'Ukwakira/ Ugushyingo kandi hamwe, batera inshuro 2 birengeje ibyumweru bibiri. Bavanga ml 2.25 z'umuti na litiro 15 z'amazi maze iyo mvange igaterwa ku biti hafi 40.
 - Pyrethrin 5EWC Plus : Igihe ni kimwe n'igihe baterera Fastac. Bavanga ml 22.5z'umuti na litiro 15 z'amazi maze iyo mvange igaterwa ku biti hafi 40.

b. Imungu ya kawa (coffee berry borer)

Utwo dukoko dutera amagi mu miteja n'ibitumbwe by'amezi atatu cyangwa ane. Twinjira mu kibuno (apex) k'urubuto rw'ikawa. Inyo ziturazwe mu magi zitungwa n'impeke hagasigara ibishishishwa gusa(parchment).

Kubera ko kaba kamaze amezi katarya kihishe mu bisigazwa by'umugaruro (imbuto zumye ku giti cyangwa zaguye hasi) ako gakoko karumagura imbuto zikiri ntoya ariko ntikinjiremo kubera ko zirimo amaezi menshi. Imbuto zarumwe zirabora maze zigahunguka. Imbuto zarumaguwe, iyo ziraboze ngo zihunguke zitanga impumuro mbi idakunze n'abanzwe n'abanywi b'ikawa.



Kuyirwanya :

- Kuvana ibisigazwa by'umusaruro mu mirima : zaba imbuto ku biti cyangwa izahungutse zandagaye hasi;
- Gukata ikawa uko bikwiye kuko imungu y'ikawa idakundana n'urumuri ruvanze n'akayaga;
- Gusarura kawa zose z'imburagihe;
- Gutera umuti : Fastac cyangwa Pyrethrin nkuko barwanya agasurira.

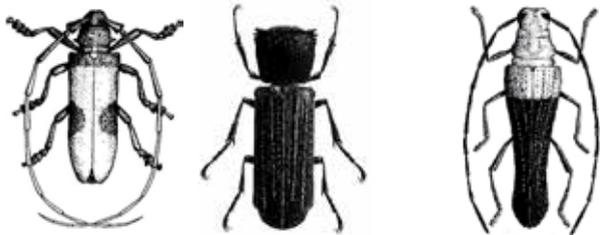
c. Inkangabashi (Stem borer)

Inkangabashi cyangwa se ibivumvuri zoroshye kuzibona kuko zicukura igihimba cy'igiti cya kawa zigasiga umwobo wa cm 1 y'umuzenguruko. Mu gihe cy'iminsi micye, aka gasimba gasiga impeta ku giti. Aho zacukuye zihasiga ibisigazwa bimeze nk'ibarizo. Ku bindi bimenyetso, ibivumvuri bituma amababi y'igiti aba umuhondo ndetse akagwa hasi uretse ko ibi bimenyetso bishobora no guterwa n'ibindi bibazo.

Ikivumvuri gikuru kigira cm 3 z'uburebure n'amahembe areshya na 2 cm. Ikgore gitera amagi mu gishishwa cy'igiti. Amagi aturaga mu gihe cy'ukwezi. Iyo ibyana bimaze gukura (inyo), bicukura imyobo mu giti bigasiga bicyangije.

Ibyana bikiva mu magi (inyo) nibyo byangiza cyane igiti cya kawa kuko bitungwa n'igishishwa bikagitemberamo bigasiga gicitse intege.

Igiti cyatobowe n'inkangabashi



Kuyirwanya

Kubirwanya harimo akazi katoroshye ariko ikiza ni ugufata neza igiti kuko ibivumvuri bidakunda kwibasira ibiti bifite ubuzima bwiza.

- Gusena igiti ku gice cyo hasi bityo ntibishobore kuhatera amagi
- Mu gusena igiti ushobora gukoresha agakoresho kadakomeretsa nk'agati cyangwa umwenda ukomeye. icyuma nacyo cyakoreshwa ariko utabyitondeye gishobora gukomeretsa igiti.

- Gushyira ipamba mu muti wa cypro cg pyrethrin wafunguwe mu mazi nyuma ugashyira mu mwobo wacunkuyewe nako gakoko ukoresheje agati.

Indwara z'ingenzi:

a) Akaribata: ni indwara iterwa n'udukoko duto cyane twitwa « *Colletotricum coffeanum* ».

Ibimenyetso:

- Imbuto zigaragaraho amabara ahombanye aho yafashe, zikagera n'ubwo zibora cyangwa zigahinduka umukara.
- Amababi y'igiti cyafashwe amera nk'ayababutse, ururabo n'intete bikumira ku giti ndetse rimwe na rimwe n'amashami akuma imitwe.
- Iyo ndwara yiyongera cyane mu bihe by'imvura.



Uko bayirinda: gufata neza kawa (bivuga kuzibagarira, kuzisasira, kuzifumbira no kuzikata ku gihe).

Uko barwanya indwara: Gutera umuti wa Oxylchlorure de cuivre inshuro 7 kugeza kuri 14 bitewe n'ubwinshi bw'imvura. Haterwa gr 140 bavanga na litiro 20 z'amazi batera ibiti hafi 25 bakagenda birenza iminsi 15, batangira gutera umuti hashize ukwezi 1 kawa zirabije.

Batera umuti mu mezi ya Nzeli, Ukwakira, Ugushyingo, Ukuboza, Gashyantare (iyo imvura yatangiye kugwa) no muri Werurwe, Mata na Gicurasi (iyo imvura ikigwa).

Gutera umuti wa Cabrio : 6 ml/15 ml z'amazi ziterwa ku biti 40.

b. Umugese:

Iyo ndwara iterwa n'uduhumyo duto cyane bita *Hemileia vastatrix*.

Ibimenyetso :

Ku ruhande rwo hasi rw'amababi hazaho ifu y'umuhondo imeze nk'agakungugu gasa n'icunga rihye.

Ikunze kuboneka mu gihe cy'ubushyuhe, cyane cyane mu mpera z'itumba no mu ntangiriro z'impeshyi.

Uko birinda umugese

Ni ngombwa gutera ubwoko bwihanganira indwara y'umugese (ari na bwo bwamamazwa mu Rwanda) kandi bagafata neza kawa (kuzibagarira, kuzisasira, kuzifumbira no kuzikata).



Uko barwanya umugese

Gutera umuti wa Oxylorure de cuivre: gr 70 bavanga na litiro 20 z'amazi bagatera ku biti hafi 25. batera 1 mu kwezi, batangira gutera mu kwezi kwa Nzeri, bagakomeza mu kwezi kwa Nzeri, bagakomeza mu Ukwakira, Ugushyingo, Ukuboza, Gashyantare, iyo imvura igwa Werurwe, Mata na Gicurasi.

Gutera umuti wa cabrio : 6ml/15 litres z'amazi ku biti 40. Umuti ugaterwa kabiri mu kwezi k'Ukwakira n'Ugushyingo.

c. Indwara ya gikongoro

Ni indwara bita « Die-Back” Iterwa n'umukeno. Ikinze gufata kawa ziteye ku butaka bubiri, izidakomeye ndetse na kawa zeze cyane ariko ntizibone ifumbire ihagije.

Ibimenyetso



Uyibwirwa n'uko imbuto zihisha imburagihe (guhinduka umuhondo) maze zikirabura, zikumira ku giti. Amashami na yo arirabura akuma ahereye ku mitwe.

Kwirinda no kurwanya iyo ndwara:

- gutera kawa mu butaka bwiza kandi kawa zigasukurwa neza, gufumbira cyane kandi buri gihe, gusasira buri gihe ndetse no kuzikata neza kandi ku gihe.

10. Gusarura no gutunganya kawa:

- Kawa isarurwa yeze neza (imbuto zitukura) igahita igemurwa mu ruganda rutunganya ibitumbwe (coffee washing station) kugira ngo uruganda rushobore kuyitunganya no kuyironga, ikanikwa ku meza (drying tables) asukuye ku zuba ritari ryinshi ku buryo kawa yuma neza ntirenze 12% z'ubuhehere.
- Umusaruro ushobora kuboneka: uri hagati ya kg 2-3 cya kawa y'ibitumbwe ku giti bitewe n'imihingire. Kuri ha ya kawa hakaba hahingwa ibiti 2,500.
- Kawa isarurwa, igomba kurara igemuwe ku ruganda rutonora kawa kuko ari kuri uwo murimo umuhinzi agarukira.

D. ICYAYI



1. Aho igihingwa gikunda : Mu Rwanda, icyayi gihingwa mu turere tw'imisozi miremire n'ibishanga dukonja kandi tugusha imvura ihagije.

2. Ubutaka : icyayi gihingwa mu butaka busharira (pH iri hagati ya 4.5 na 5.5), burebure, butambutsa amazi kandi bufumbiye.,hafite ubuhaname butarengeje 60%

3. Amoko yamamazwa : Ubu hari, 6/8, 31/8,,100/5, BB/10, BB/35 BB/10, 12/56, , 11/4, 303/577, 301/4, 301/5- n'izindi.

4. Uko bategura umurima

* Imirimo y'ingenzi ni 3 ari yo: kurwanya isuri, guhinga umurima no gucukura imyobo.

5. Gufumbira :

Mu cyayi kigiterwa mu murima haterwa ifumbire ya SSP ingana na g 30 mu mwobo wa 45 cm X 22.5 cm.

Ubukurikiyeho haterwa ifumbire ya NPK 25-5-5

Umwaka wa 1 : kg 240/ha

Umwaka wa 2 : kg 280/ha

Umwaka wa 3-5 : kg 320/ha

Umwaka wa 6-7 : kg 480/ha

Umwaka wa 8 no kuzamura: kg 600/ha

6. Gutera ingemwe

Batera kuri cm 120 hagati y'imirongo na cm 60 ku murongo bigahinduka bitewe n'ubuhaname. Batera ingemwe 10,400 kugeza kuri 14,000 kuri Ha bitewe n'ubuhaname bagatera mu Ukwakira-Ukuboza iyo ari imusozi naho mu gishanga ni muri Gashyantare-Werurwe.

7. Gufata neza icyayi mu mirima

Imirimo umuhinzi agomba kwitaho ni iyi: kubagara, kugomorora amazi, gusasira, gutera ibiti bihagarika umuyaga, gukata icyayi (iyo kikiri gito kugirango kigare nk'uko bigomba n'iyo cyatangiyeye gutanga umusaruro buri myaka ine) , gusimbura ingemwe zapfuye, kurwanya indwara n'ibyonnyi, gusoroma buri minsi 7-10 iyo igihe cyo gusoroma kigeze, gutera ifumbire, etc.

8. Indwara n'ibyonnyi biboneka cyane mu cyayi

a) Indwara y'ububore (Armillaria root rot):



Iterwa n'agahumyo bita *Armillaria mellea* igafata mu mizi y'icyayi igatuma ibora.

Ibimenyetso byayo: Kugwingira mu mikurire, guhinduka umuhondo kw'amababi, Kurabya imburagihe, guhunguka kw'amababi, guturika k'uruti mu ntangiriro yarwo, uruhumbu rwera hagati mu busate n'imbere mu ruhu.

Kuyirwanya: Kurandura no gutwika icyayi kigifatwa n'iyo ndwara, kwirinda gutera ibiti bishora imizi cyane aho ikunze kuboneka.

Icyitonderwa:

Iyo ibishyitsi by'amashyamba cyangwa ibyo ku mirwanyasuri bisigaye mu mirima bitaranduwe, bituma kenshi na kenshi indwara ikura igafata icyayi. Iyo ndwara iboneka cyane mu butaka buremereye kandi buhehereye.

b) Indwara y'ibidomo by'ibijuju: Ni indwara iterwa n'agahumyo kitwa *Staliopsis thea*.

- Ifata ku mababi akuze, ibidomo bikaba biri hagati y'ikigina n'igicucu, bifite ishusho ijya kuba uruziga naho hagati y'ibidomo hajya kweturuka naho ku muzenguruko wacyo harijimyeye.

Kuyirwanya:

o Kwirinda icyatuma icyayi gikura nabi;

o Kwirinda gukoresha ifumbire y'Azote nyinshi ;

o Gukata icyayi neza no kugisasira ku gihe ;

o Iyo bibaye muri pepiniyeri, hakoreshwa umuti wa Mancozeb (Dithan M45).

b) Agatagangurirwa k'umutuku: ako gatagangurirwa bakita *Oligonichus coffea*.



- * Ni agakoko gato (mm 0,5) iyo gakuze kagira ibara ritukura. Ibyana n'udukuru bitungwa no konona icyayi dushinga umugobora watwo ku mababi ku gipande cyo munsu kandi iyo tumaze gukura tunyonyuza amazi bityo amababi yafashwe ahinduka ikigina kijya gutukura.
- * Uko kuma bikabwira bituma amababi ashobwira kuma no guhunguka. Ubwone bukunze kugaragara ku biti bimwe na bimwe mu mirima kandi bigakura cyane cyane mu gihe cy'impeshyi.

Kurwanya utwo dutagangurirwa: hakoreshwa umuti witwaga Dimenthoate.

Icyitonderwa: Iyo mu kurwanya utwo dutagangurirwa hakoreshwaga umuti wa dimethoate, icyayi gisoromwaga nyuma y'iminsi 15.

c) Hypoxylon wood rot



Iterwa n'agahumyo bita Hypoxylon serpens.

Ibimenyetso byayo : Kugabanuka kw'amashami ashibuka nyuma yo gukata, ibidomo by'umukara ku mashami yaboze/yapfuye/yumye.

Kuyirwanya : Kurinda ko izuba rirasa ku nkovu z'igiti igihe cy'ikata, Gukata neza ku buryo amazi y'imvura atemba ku nkovu, kwirinda gukatira icyayi ku burebure bwo hasi, gukoresha ibikoresho byabugenewe mu gihe cyo gukata, kurenza amashami ku biti byakaswe mu gihe cy'izuba.

9. Igihe cyerera: cyera bwa mbere nyuma y'imyaka ine.

10. Gusarura no kukibika:

- Basarura ibibabi uko iminsi 7 ishize kugera kuri 10. Iyi minsi ishobora kwiyongera mu gihe cy'izuba ryinshi.
- umusaruro ushobora kuboneka ni toni 7.5 kugera no kuri 13 z'icyayi kibisi kuri Ha 1 ku cyayi gikuze
- Mu biro 4.3 by'amababi y'icyayi havamo ikiro cy'icyayi cyumye (amajyani)
- Iyo icyayi kimaze gutunganyirizwa mu nganda, icyayi cyumye gishyirwa mu bisanduku byabigenewe, bikarindwa ubukonje.

E. SITEVIYA



1. Aho Siteviya ikunda: Siteviya ihingwa mu Gihugu hose. Kubera ko ubutaka bwo mu Rwanda ahenshi buri ku butumburuke buri hagati ya metero 1,400 na 2,000, imvura igwa mu buryo busaranganyije mu mwaka wose, byagaragaye ko iki gihingwa cyera neza mu Rwanda hose ndetse kigatanga umusaruro ushimishije.

2. Ubutaka buberanye na Siteviya:

- Siteviya yera neza hafi ku butaka ubwo aribwo bwose ariko aho ikunda cyane ni mu butaka buseseka burimo agacanga gake kandi bukungahaye ku ifumbire mborera.
- Aho Stevia yaturutse hari ku butaka bushaririye bikaba bigaragara ko yihanganira ubutaka bufite ibipimo bitandukanye by'ubusharire bw'ubutaka (PH), ariko aho Siteviya yitwara neza igatanga umusaruro ushimishije ni ku butaka bufite igipimo cy'ubusharire (PH) buri hagati ya 6 na 7.5.

- Sitevia ikunda ubutaka buhehereye ariko kandi butarimo amazi menshi arengeje. Amazi areka mu butaka adatabuka neza yangiza imizi ya Siteviya. Uretse gusa mu butaka burimo umucanga , ubundi Siteviya itanga umusaruro mwiza iyo ihinzwe mu dutabo tuzamuyeho gato kugirango amazi abashe kujya akamukamo igihe yabayemo menshi. Sitevia ntikura neza ku butaka bw’urwunyunyu.

3. Amoko ya Siteviya ahingwa mu Rwanda: Ubwoko bwa Siteviya bwitwa PC1 (AKLH1) bwagaragaje ko bwera neza mu Rwanda kandi bugatanga umusaruro ushimishije. Ubu bwoko nibwo bwonyine buri gukwirakwizwa mu gihugu muri iki gihe.

4. Uko bategura ingemwe:

- Ingemwe za Siteviya zishobora kuboneka ukoresheje uburyo butatu: ukoresheje umurama, ukoresheje agace gato ka Siteviya muri Laboratwari zabugenewe zituburirwamo ingemwe cyangwa se ukoresheje udutwe twa Sitevia ubwayo. Iyo ugereranyije ubwo buryo uko ari butatu, usanga bwose butanga ingemwe nziza nta tandukanirwo rinini ririmo mu mikurire ya Siteviya cyangwa se no mu ngano y’isukariiba iba iri mu mababi yayo. Uburyo bumenyereye kandi bworoshye dukoresha mu Rwanda ni ugukoresha udutwe twa Sitevia muri pepiniyeri.
- Ukata agatwe k’agashami ka Siteviya ihinze mu murima cyangwa agatwe ka Sitevia iri pepiniyeri gafite nka 5cm z’uburebure n’amaso nibura 3 kugera kuri 4;
- Utera udutwe twa Siteviya mu dutabo duteguye neza ugatwikiriza ishashi zabugenewe kugirango hahoremo ubuhehere buhagije kandi n’imizi ibashe kuza bitagoranye. Hejuru kandi kuri pepiniyeri utwikirizaho shedineti kugirango ugabanye imirasire ikarishye y’izuba. Agatabo kamwe gafite metero 10 kuri metero 1 gashobora kujyamo udutwe twa Sitevia tuzatanga ingemwe 10,000.
- Nyuma y’iminsi 10 ukuraho ya shashi yari ipfutse utugemwe hanyuma nyuma y’iminsi 15 ugatwikururaho shedineti hejuru ya pepiniyeri. Ingemwe ziba zigejeje igihe cyo guterwa nyuma y’iminsi 60.

5. Uko bategura umurima: UHINGA neza umurima wawe unateganya uko uzavomerera ukurikije uburyo uzakoresha mu kuvomerera. Kurima bwa mbere uvanamo ibyatsi byose, guhinga bwa kabiri ugenda unogereza ubutaka neza, usanza neza ubutaka. Iyo umurima wamaze kuwutegura neza ugenda ukoramo udutabo mbere yo gutera ingemwe.

6. Gufumbira:

- Koresha Toni 20 z'ifumbire y'imborera iboze neza kuri Hegitari uri guhinga bwa nyuma utaratera ingemwe ndetse na buri nyuma yo gusarura;
- Koresha kandi ibiro 460 n'ifumbire mvaruganda ya NPK 17-17-17 mu byiciro bibiri, ni ukuvuga ibiro 230 kuri Hegitari mu gihe utera, n'ibiro 230 nyuma y'iminsi 45 uteye ingemwe.

7. Gutera ingemwe: Ubucucike bwemewe mu gutera ingemwe za Siteviya ni Sentimetero 18 hagati y'urugemwe n'urundi na Sentimetero 30 hagati y'umurongo n'undi. Ni ukuvuga nibura ingemwe 150,000 kuri hegitari iyo ukuyemo ubuso bw'utugende tuba turi hagati y'imitabo.

8. Gukenura no kwita ku murima wa Siteviya: Kwita ku kuvomerera buri gihe, gufumbira ku gihe ndetse no kubagara bihoraho. Ugomba kwirinda ikirare mu murima wa Siteviya kuko itihanganira ibindi byatsi bimera mu murima hamwe nayo.

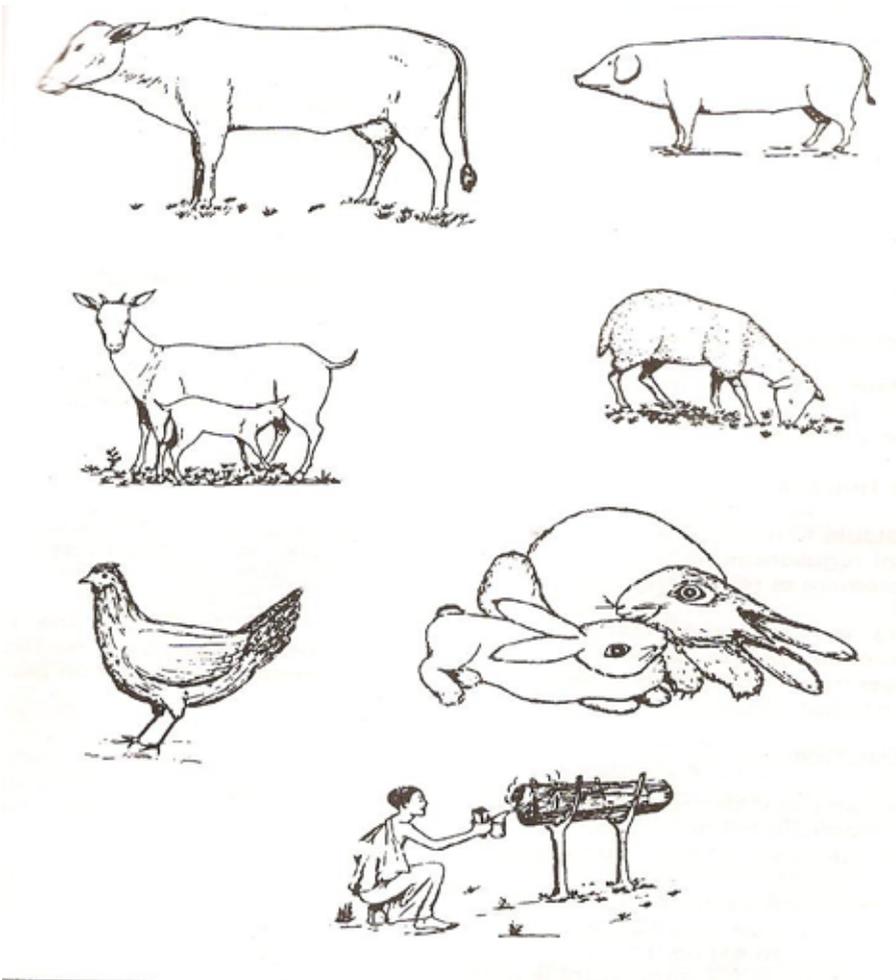
9. Kurwanya indwara n'ibyonnyi: Muri rusange Siteviya ntikunda guhura n'uburwayi bukabije cyangwa ibyonnyi byihariye uretse uduhumyo dukunda kubonekamo cyane cyane mu gihe cy'imvura. Kurwanya uburawyi buterwa n'uduhumyo, utera umuti wa Mancozeb cyangwa undi muti wose urwanya uduhumyo uboneka ku isoko.

Ku bijyanye n'ibyonnyi, umuswa niwo ukunze kwangiza Siteviya cyane cyane mu duce dushyaha cyane. Kurwanya uwo muswa utera umuti urwanya umuswa uwo ariwo wose uboneka ku isoko.

10. Igihe Siteviya yerera: Sitevia isarurwa nyuma y'amezi 3 itewe, hanyuma ikamara imyaka 4 kugera 5 itanu ugenda usarura buri mezi atatu ikabona gusimbuzwa ugatera izindi ngemwe nshya.

11. Gusarura Siteviya no kuyihunika: Kuva ihinzwe, Siteviya isarurwa nyuma y'amezi atatu ku nshuro ya mbere. Kuri iyi nshuro ya mbere umusaruro kuri Hegitari ugera ku biro 800. Nyuma y'andi mezi atatu urongera ugasarura, uyu musaruro uba ugera kuri Toni 1 kuri Hegitari. Ku musaruro wa gatatu ushobora gusarura toni 1.5 kuri Hegitari cyangwa hejuru yazo. Ni ukuvugako impuzandengo y'umusaruro wa Stevia kuri Hegitari ku mwaka ari Toni 4.5 kugera kuri Toni 6 z'amababi yumye. Kuri Stevia, igice gisarurwa ni amababi, ayo mababi mabisi aranikwa yamara kuma akabikwa neza atsindagiye mu mifuka yabugenewe mu gihe agitegereje koherezwa hanze.

8. UBWOROZI



A. UBWOROZI BW'INKA



1. Aho zirara

Ikiraro gituma umworozi yongera umusaruro ukomoka ku matungo nk'amata, inyama, ifumbire n'imirimo.

1.1. Akamaro k'ikiraro ni aka:

- gukingira amatungo ibihe bibi biturutse ku kirere nk'ubushyuhe, izuba n'ibindi
- gucunga neza amatungo, kuyagaburira neza no kwita ku buvuzi bwayo
- Koroshya uburyo bwo gufata umusaruro w'ubworozi bw'inka : Amata n'ifumbire
- kongera umusaruro uyaturukaho, gutanga ifumbire no kugabanya abakozi.

1.2. Uko ikiraro kigomba kungana

Kuri buri nka, hagomba umwanya wa m 1,50 z'ubutambike, naho ubuhagarike bukangana n'uko inka ireshya, kuva ku mazuru kugera ku matako wongeraho cm 10 ari byo bingana na m 2-2.50.

1.3. Kororera mu kiraro

Ikiraro bororeramo kigomba kuba gisakaye, kandi gifite icyarire. iyo kitubakiye mu mpande, inka barazizirika.

Ikimopoteri (ingarani) kiba kigizwe n'icyobo cy'ubugari bwa m 2,5, uburebure bukangana na m 2 ku nka ebyiri. Ubujoyakuzimu buba bufite m 1, ibitaka bijugunywe iruhande bikora akantu k'agakingo. Inyuma haba hacuramye buhoro.

2. Kororoka

Bitewe n'uko ari ubworozi busanzwe cyangwa ubwa kijyambere inka zima zigahita zifata ni 50% kugeza kuri 80% inka yima ubwa mbere imaze amezi 24 ivutse iyo yorowe kijyambere cyangwa 36 iyo yorowe bisanzwe bya gihanga. Imfizi imwe iba ihagije kwimya inka 50. Hagati y'imbyaro 2, haca amezi 12 kugeza kuri 21 bitewe n'uko inka yorowe. Inka ivanwa mu bworozi imaze imyaka 10-13.

Inka ihaka amezi 9, bahagarika kuyikama ishigaje amezi 2 ngo ibyare.

Gutera intanga ni byiza kurusha kubangurira ku mfizi; mu moko y'inka zo mu mahanga dufite iwacu kandi dushobora kubangurira n'ubwoko bwacu bw'Ankole kugira ngo haboneke ibyimanyi byiza, twavugaga nka Jersey. Brun-suisse, Sahiwal, Frisonne n'izindi.

3. Kugaburira inka

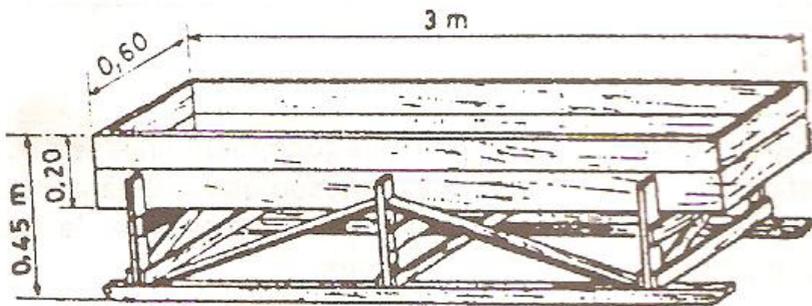


3.1. Aho zirira

Aho inka zirira mu kiraro hagomba kuba hubatse ku buryo ibiryo byazo bidatakara zirimo kurya, kandi umuntu akaba yahasubiramo bitamugoye iyo bibaye ngombwa.

Mu biraro bisanzwe by'abahinzi-borozi, uburiro bushobora gukorwa mu mbaho cyangwa ibiti. Dore uko uburiro bugomba kungana :

- ubugari cm 60-80
- ubutambike bungana n'ubw'ikiraro
- uburebure imbere cm 10-40
- uburebure kuva hasi kugera aho zirira : cm 80
- ubufukure : cm 20



3.2. Igaburo

Inka zirira ibyatsi byo ku gasozi, ibyahingirwe amatungo, ibisigazwa bituruka ku musaruro w'ubuhinzi, cyangwa ibyo mu nganda. Ikintu inka iriramo kigomba gushyirwa mu kiraro cy'inika.

Mu byatsi bihingirwa inka twavugaga "Tiribusakumu, setariya, urubingo, desmodiyumu, luzerine, Kariyandara, kororisi gayana, n'ibindi".

Inka yororerwa mu kiraro isaba guhingirwa ari 30-40 z'ubwatsi ku mwaka. Hakurikijwe ko bwahinzwe mu kibaya cyangwa ku gasozi. Ni byiza ko mu igaburo ry'inika haba harimo imvange y'ibinyampeke n'ibinyamisogwe.

Iyo bafumbira umurima w'ubwatsi bw'amatungo bashyiramo toni 10 z'ifumbire yo mu ngarani na kg 300 z'ifumbire mvaruganda kuri hegitari imwe.

Kugira ngo baziteganyirize ibihe bibi, inka bazibikira ubwatsi bwumye (foin) cyangwa ubwahunitswe mu butaka (ensilage).

Inka zikamwa n'izihaka hejuru y'amezi arindwi, ni byiza kongera ku igaburo ryazo risanzwe ibiryo mvaruganda. Iyo umukamo uri hejuru ya litiro 6, bayiha 0,5 kg cyabyo kuri buri litiro yiyongeraho. Buri nka igomba guhabwa igaburo yihariye cyangwa rusange.

4. Umusaruro

Bitewe n'uko yorowe bisanzwe cyangwa kijyambere, inka ya kinyarwanda ikamwa:

- iminsi 180 (ubworozi busanzwe), igakamwa litiro 325 havuyeho ayo inyana yonka;
- iminsi 300 (ubworozi bwa kijyambere), igakamwa litiro 2 280, inyana yonka amalitiro 350 y'amata;
- inka ya kinyarwanda iyo ibazwe itanga umurumbuko wa 48-50% by'innyama.

Umusaruro w'izindi nka zororwa mu Rwanda

	Sahiwal (Sayiwale)	Jersey (Jerise)	Brun Suisse	Firizone Holstein	Jersey Sahiwal Ankolé
Umukamo (litiro)	2 300	2 500	4 000	5 000	3 757
Igihe imara ikamwa (iminsi)	359	330	330	305	333
Umusaruro iyo ibazwe	50%	45%	50%	50%	50%

5. Indwara z'Inka

Indwara zikunze kuboneka cyane ni inzoka zo mu nda, iziterwa n'uburondwe nk'ikibagarira n'amashuya, naho indwara zandurwa twavuga ruhaha, uburenge, ubutaka, amakore, igituntu, kurwara amafumbi y'icebe.

Icyitonderwa: Mu bikorwa kugira ngo barengere ubuzima bw'inka hari ukuzikingira ubutaka na ruhaha buri mwaka, kuzuhagiza umuti wica uburondwe byibura rimwe cyangwa kabiri mu cyumweru, no kuziha imiti y'inzoka kabiri mu mwaka.

Indwara z'inka n'uburyo bwo kuzirwanya

Indwara	Ikigero cy'inka zifatwa	Ibimenyetso	Uko bayirwanya
1. Inzoka zo munda	Inyana, inka nkuru	- Kubyimba inda - Kudakura neza, guhitwa, kunanuka, gukorora, guhinduriza ubwoya	- Imiti y'inzoka nka Nil-zan kabiri mu mwaka - Kororera mu kiraro
2. Ikibagarira (igikira) Theileriosis	Inyana, inka nkuru	Kugira umuriro mwinshi 39.5-41°C, kutarisha, kubyimba inturugunyu, guta urukonda, guhumeka nabi, kubyimba amaso	Gutera imiti y'uburondwe na decatif rimwe cyan-gwa kabiri mu cyumweru kuvurisha oxytétracycline na Butalex
3. Umwumira (Anaplasma) cg Gasheshe	Inyana, inka nkuru	Kugira umuriro minshi, kutarisha, kunanuka cyane, amaso y'umuhondo	- Gutera imiti y'uburondwe
4. Amashuya Trypanosomiasis	Inyana, inka nkuru	Kugira umuriro mwinshi 39-40 kurisha nabi, kugira amaraso make, kunanuka bikabije	- Kurwanya isazi ya Tsétsé (hakoreshejwe intego no gukuraho ibihuru yihishamo) - Kuvurisha Samorin, Bérénil, Trypamidium
5. Uburenge Foot and mouth disease	Inyana, inka nkuru	Kugira umuriro mwinshi 40-41°C, ibisebe mu kanwa, ku mabere, no binono	- Koza ibisebe - Kororera mu kiraro
6. Ruhaha (PPCB)	Inyana, inka nkuru	Kugira umuriro mwinshi 42°C, guta urukonda, guhumeka nabi, umutima ugatera cyane, kutabasha kugenda, kubabara mu nda, kubyimba urwakana-kana, no gukorora kunanuka cyane, hapfa 30-50% y'izafashwe	- Gukingira - Kororera mu kiraro

Indwara	Ikigero cy'inka zifatwa	Ibimenyetso	Uko bayirwanyanya
7. Ubutaka Block quoter	Inyana, inka nkuru	Izafashwe akenshi zipfa ako kanya nta bimenyetso by'indwara byigaragaje Kugira umurimo mwinshi 40-41°C, guhinda umushyitsi, kutarisha, umutima utera cyane, ingorane mu guhume-ka, inyama zisa n'izababutse, guhitwa amaraso, kuganga amaraso	Gukingira Gutera za antibiotiques Gutwika inka yishwe n'ubutaka
8. Ubutaka bubyimbisha Symptomatic anthrax	Inyana, inka nkuru	Kugira umuriro 41-42°C, kugira ububyimba bunini ku rwakanakana, mu gituzo, mu nyama zo mu itako, no mu kaboko kubyimba inturugunyu	Gukingira Gutera za antibiotiques Kwica inka yafashwe
9. Amakore (afata n'abantu) Brucellosis	inka nkuru	Kuramburura ku mezi 6, kuzana ububyimba mu ngingo z'amaguru n'amaboko, kubyimba amabya (imisuha)	Gukingira na B 19 Kwica inka zafashwe
10. Igituntu (gifata abantu) Tuberculosises	inka nkuru	Kugira umuriro rimwe na rimwe, kunanuka bikabije, gukorora cyane, guhumeka nabi, kubyimba inturugunyu zo ku bihaha, kugira utubuyimba turimo amashyira mu icebe, no mu mura, amata ajya gusa n'icyatsi kibisi kivanze n'umuhondo	Kwica inka yafashwe igatwikwa
11. Ifumbi y'icebe Mammite	inka nkuru	Kugira umuriro, amabere icebe birashyuha kandi n'imoko zikabyimba, amata arimo amashyira	Kugira isuku ku mukamyi n'ibikoresho byo gukama Gukama amata agashiramo
12. Babeziyoze Karaso	inka nkuru	Kugira umuriro amaganga y'umuhondo no kubyimbirwa	Gutera imiti yica uburondwe
13. Igifureto Lumpy ckin disease	inka nkuru	Kugira umuriro mwinshi n'ibiturugunyu ku ruhu	Gukingira igifuruto iyo igihe cy'umuriro gitangiye no kugira isuku

UBWOKO BW'INKA BUTANGA INYAMA

BORAN

- Boran imenyereye imibereho yo mu Rwanda (zirahari)
- Yihanganira indwara z'ahantu hashyuha
- Ikura vuba
- Iboneka Kenya, Tanzania



Brahman

- yihanganira ubushyuhe, isazi n'utundi dukoko kubera uruhu rwayo rufite umubyimba munini.
- Zishoboye imibereho yo mu Rwanda
- Zaboneka Afrika y'epfo



Simental

- Ubwoko butanga inyama n'amata afasha inyana n'ibimasa gukura neza kandi vuba
- Ubwoko bukomoka mu Ubusuwisi ariko bwabanguriwe ku yandi moko atandukanye hashakishwa andi moko (flexvieh)
- Ubu bwoko buba no mu Rwanda bushoboye imibereho yaho
- Bukomoka mu Uburayi na Africa y'epfo



Sahiwal

- Zihanganira ubushyuhe
- Zigira amata
- Zikuravuba



Limousin

- Zikura vuba
- Zibyibuha cyane
- Zikomoka mu Ubufaransa /SA
- Ntabwo ziragera mu Rwanda



B. UBWOROZI BW'INGURUBE



1. Aho irara

1.1. Uko ikiraro kigomba kuba kingana

- * Imfizi y'ingurube igomba kugira inzu ifite m^2 6-10 n'aho yidagadurira hari igicucu;
- * Inyagazi igomba inzu ifite m^2 3 aho irara;
- * Inyagazi hamwe n'ibibwana byayo zikenera aho zirara zinagaburirwa hafite m^2 8;
- * Kuva icutse kugera ku biro 50, ikenera m^2 1,2 kuva ku biro 50 kugera ku 100 ikenera m^2 1,5.

2. Kororoka

- * Ingurube bayibangurira ifite kg 115-120, iba ifite hafi amezi 6 ivutse, ku z'ubwoko bwiza naho inyarwanda, iba ifite ibiro 80-90 imaze amezi 12 ivutse;
- * Hagomba imfizi 1 ku nyagazi 20;
- * Ingurube ihaka iminsi 114. Iyo icukirije amezi abiri, ishobora kubwagura kabiri mu mwaka
- * Ingurube nziza ibwagura muri rusange ibibwana 10 uko ibwaguye, ikaba yacutsa ibibwana 8.
- * Mu mezi abiri, ikibwana gishobora gucuka gifite kg 15
- * Iyo inyagazi y'ingurube imaze kubwagura inshuri 6, muri rusange iba imaze imyaka 4 y'amavuko, igomba kuvanwa mu bworozi. Ariko ishobora kuvanwa mu bworozi igihe cyose babona ko ibyara nabi.

3. Igaburo

Iyo ibibwana by'ingurube bigaburiwe imvange y'amafu (ibiryo byo muruganda), bikura vuba, bikaba byabagwa bikiri bito.

- kg 15 mu mezi 2
- kg 30 mu mezi 3
- kg 100 mu mezi 7.

Dore uko bagabura imvange

Icyigero cy'ingurube	Ibiro ipima	Imvange ku munsi
Amezi 2,5	20	Kg 1 ituma zikura
Amezi 3,5	30	Kg 1,4 ituma zikura
Amezi 4	40	Kg 1,8 ituma zikura
Amezi 4,5	50	Kg 2,2 ituma zikura
Amezi 5-7	60-100	Kg 2,5 ituma zibyibuha

Si byiza kugurisha ingurube ikiri nto kuko iyo igeze ku biro 60 ni bwo iba itangiye kunguka uburemere bwinshi tugereranyije n'ibyo irya.

Igaburo ry'inyagazi zibyara riterwa ahanini n'ibiro zifite kimwe n'ibibwana yonsa.

Urugero

Ibiro by'inyagazi (kg)	Igaburo ry'imvange ku munsi (kg)		
	<i>Ibibwana</i>		
	8	10	12
150	Kg 4.5	Kg 5.3	Kg 6
200	Kg 5	Kg 5.8	Kg 6.5
250	Kg 5.5	Kg 6.2	Kg 7
300	Kg 6	Kg 6.7	Kg 7.5

Inyagazi ihaka cyangwa itegereje kwima, na yo bayigaburira bakurikije ibiro byayo

Ibiro by'inyagazi (kg)	Imvange ku munyi (kg)
150	2
250	2,5
Itegereje kwima (250)	2,5

Umusaruro: inyama zingana na 60% z'uburemere byayo

Indwara z'ingurube

Indwara	Ikigero cy'ingurube zifatwa	Ibimenyetso	Uburyo bwo kuyirwanya
1. Inzoka z'asikarisi	Ingurube ntoya cyane cyane	Kudindira mu gukura, kutarya, kunanuka cyane, guhinduriza ubwoya	Piperazine Kororera mu kiraro
2. Salumoneroze (Salmonellose)	Ingurube ntoya cyane cyane	Kugira umuriro mwinshi, kuruka, guhitwa cyane, gukamukamo amazi, guhumeka nabi, kuzana amabara asa n'ubururu hapfa 25-60% by'izafashwe	Kwita ku isuku Kuvuza na antibiotiques+ antidiarrhéiques
3. Muryamo Peste porcine	Ingurube ntoya n'inkuru	Kugira umuriro mwinshi 41-42°C, kuruka, guhitwa amaraso, kubyimba amaso harimo n'amashyira, gucika igice cy'inyuma (amaguru) kuzana amabara y'amaraso ku ruhu, kuramburura ku zihaka amezi makuru	Kugira isuku Kororera mu kiraro gifite isuku
4. Rushi	Ingurube nkuru	Nta bimenyetso byihariye uretse kubona rushi ku rurimi	Kororera mu kiraro Gutwika ingurube zirwaye
5. Kolibasiloze (Colibacillose)	Ingurube ntoya zitaranuka	Guhitwa cyane amazi agakamuka mu mubiri, kubyimba ku ruhu, kugira ibisazi	Guha iyafashwe amazi -Tetracyclines, - Chloramphenicol, - Colistine, sulfamides

C. BWOROZI BW'IHENE



1. Ikiraro

1.1. Uko ikiraro kigomba kuba kingana

- Ihene n'abana bayo zikenera m² 1,20
- Ihene y'incuke ikenera m² 0,60
- Ihene ikuze ikenera m² 0,80
- Isekurume ikenera m² 2

2. Kororoka

- * Ku'ihene 100 zimye, habyara 85;
- * Ku'ihene 100 zibyara, havuka abana 140 ku nyarwanda, 180 ku za kijyambere;
- * Ihene yima bwa mbere imaze amezi 11-12 ivutse ku nyarwanda, amezi 9 ku za kijyambere;
- * Ihaka iminsi 149-152 (amezi 5);
- * Isekurume 1, ihagije inyagazi 50, kandi itangira kwimya imaze amezi 15 ivutse;
- * Abana b'ihene bacuka bamaze amezi 3 bavutse bitewe n'ubwoko cyangwa uburyo ihene zororwa;
- * Hagati y'imbyaro n'indi haca amezi 9-12;
- * Abana b'ihene bavuka bafite kg 2 (isekurume), na kg 1.8 (inyagazi);
- * Ihene nyarwanda ishobora kubangurirwa ku isekurume nyamahanga kugira ngo ishobore kugira ibiro cyangwa umukamo mwiza;
- * Inyagazi bayikura mu bworozi igihe cyose ifite ibibazo bikomeye by'ubuzima;
- * Ihene ivanwa mu bworozi iyo igize imbyaro 6 ku nyarwanda zisanzwe, n'imbyaro 9 ku za kijyambere ubwo iba ifite imyaka 7.

Igaburo

* Ihene zitungwa n'ibyatsi bisanzwe, setariya, tribusakumu, urubingo, n'ibisigazwa byo ku bikomoka ku buhinzi

* Zishobora no kurya imvange y'ifu iyo umworozzi ashobora kuyibona, ibyo bituma zicutsa vuba, zikabyana kenshi, n'abana bagakura neza.

Dore uko batanga imvange y'ifu

* Ihene yonsa n'abana bayo zihabwa gr 300 cyangwa 400

* Ihene zicutse zihabwa gr 50 kugera kuri 100

* Isekurume yimya ihabwa gr 300

4. Umusaruro

Isekurume ikuze ishobora gupima kg 40, inyagazi igapima kg 30 (ihene za kinyarwanda). Iyo ihene ibazwe itanga inyama zingana na 48% z'ibiro byayo ari nzima. Ihene 3 zoroze mu kiraro zishobora gutanga toni 2 z'ifumbire ku mwaka.

5. Indwara z'ihene

Indwara	Ikigero cy'ihene zifatwa	Ibimenyetso	Uburyo bwo kuyirwanya
1. Inzoka zo mu nda	Ihene nkuru n'intoya	Kudakura neza, guhitwa, kunanuka, guhinduriza ubwoya, gukorora	Kugira isuku imiti y'inzoka
2. Ibinwanwa (ibimwete)	Ihene ntoya n'inkuru	Kugira umuriro mwinshi 41°C Urukoko ku munwa ibimwete mu kanwa bishoboka gutuma amara abyimba, bikazana n'ingorane mu guhumeka	Glycerine ivanze na iode kuri ¼ bogesha ibimwete, gutera antibiotiques Gukingira
3. Ruhaha	Ihene nkuru n'intoya	Kugira umuriro mwinshi 41°C gukorora, gupfuna ibimyira bivanze n'amashyira guhumeka nabi, guhirita, kutabasha kugenda, umutima ugateracyane	Gukingira antibiotiques

D. UBWOROZI BW'INTAMA

1. Ikiraro

1.1. Uko ikiraro kigomba kuba kingana

- Inyagazi y'intama iri kumwe n'abana bayo kugeza bacutse ikenera ahantu hafite m² 1,5
- Isekurume y'intama bayigenera m² 2
- Umwana w'intama ufite munsu y'amezi 8 agenerwa m² 0,7

1. Kororoka

- Ku ntama 100 zimye, habyara 85;
- Ku ntama zibyara, havuka abana 140 ku nyarwanda, 180 ku za kijyambere;
- Intama ibangurirwa bwa mbere imaze amezi 8 ivutse, icyo gihe iba ifite ibiro hafi 23 ku za kijyambere, na 12 ku Nyarwanda;
- Isekurume imwe ihagije inyagazi 50, igatangira kwimya ifite amezi 15 ivutse;
- Intama ihaka iminsi 149-152 (amezi 5);
- Yonsa amezi atatu, ishobora rero kubyara buri mezi 9 iyo yorowe kijyambere;
- Intama iba ishaje iyo imaze imyaka 6-7 ivutse iba itangiye gukuka amenyo);
- Bahita bayikura mu bworozi.

3. Igaburo

- Intama itungwa n'ibyatsi ;
- Iyo ihaka ni byiza kuyongerera igaburo. Bayiha imvange gr 100-150 ku munsu (mu mezi abiri ya nyuma). Bituma ibyara banini kandi na yo igakomeza kuba nziza. Iyo yonsa bayiha gr 300-400 ku munsu bakurikije umubare w'abana ;
- Isekurume bayiha gr 300 z'imvange iyo yimya ;
- Iyo zicutse, intama baziha gr 50-100 z'imvange ku munsu.

3. Umusaruro

- Intama iyo ibazwe, itanga inyama mu rugero rwa 48% kugeza 50% ku zimeze neza.

6. Indwara z'intama n'uburyo bwo kuzirwanya

Indwara	Ikigero cy'intama zifatwa	Ibimenyetso	Uburyo bwo kuyirwanya
1. Inzoka zo mu nda	Intama ntoya n'inkuru	Guhitwa, kunanuka, kudakura neza, gukorora	Imiti y'inzoka Kugira isuku
2. Ibivumvuri byo mu gihanga	Intama nkuru	Kuzengerera, kubyimba mu gihanga	Kurwanya isazi
3. Ibimwete (ibinwanwa)	Intama ntoya cyane cyane n'inkuru	Kugira ibikoko ku munwa ; Kubyimba mu kanwa kugakurikirwa no kubyimba amara n'ibibazo byo guhumeka	Glycérine ivanze na iode kuri $\frac{1}{4}$ Gutera antibiotiques
4. Ibisebe byo mu binono	Intama nkuru n'intoya	Uruhu rwo hagati y'ibinono rureruruka bikanuka cyane, hakanakuramo ikibyimba urwara rukavaho	Koza mu kinono na antiseptique Gutera antibiotiques

E. UBWORZI BW'INKOKO

1. Aho ziba

- * Inkoko zigomba kuba ahantu zisanzuye kandi hari urumuri n'umwuka bihagije.
- * Dore umwanya bateganya uko ugomba kuba ungana :
- * 1 m² ku mishwi 20 (umunsi umwe kugeza ku minsi 30) ;
- * 1 m² ku bigwana 10 (ukwezi kugeza ku mezi 5) ;
- * 1 m² ku nkokokazi 5 zitera ;
- * inkoko zigomba kugira urugo rwo gutemberamo ku zuba. Urwo rugo rugomba kuba ruzitiye kugira ngo zitajya hanze yarwo.

2. Kororoka

- * Inkokokazi itangira gutera imaze amezi 5,5 ivutse ;
- * Irarira iminsi 21 ;
- * Inkokokazi ishobora gutera idafite isake, ariko igatera amahuri ;
- * Isake imwe irahagije ku nkokokazi 10 kugira ngo zitere amagi atari amahuri;
- * Inkokokazi imaze umwaka itera igomba kuvanwa mu bworzi.

3. Igaburo

- * Kugira ngo inkoko zikure neza kandi zitange amagi menshi, zigomba kugaburirwa neza;
- * Ku bashoboye kubona imvange, dore uko bagomba kuyitanga kuri buri nkoko, ku munsu:
 - Icyumweru cya 1 ivutse: gr 15
 - Icyumweru cya 8: gr 50
 - Icyumweru cya 20: gr 100
 - Icyumweru cya 22: gr 120
 - Inkoko itera: gr 130

4. Umusaruro

Uretse ubwoko bw'inkoko zitera, hari n'ubwoko bw'izitanga inyama, ari bwo bita mu gifaransa "poulet de chair"

- * Mu mezi abiri, inkoko y'ubwo bwoko ishobora kuba ipima kg 1,6 itabaze ;
- * Iyo ibaze ishobora gutanga umusaruro wa 70% (inkoko ifite kg 1,6 ari nzima itanga kg 1,120 z'inyama) ;
- * Inkoko zisanzwe zo, zishobora gutanga umusaruro wa 60% w'inyama ;
- * Inkoko yo mu bwoko bwa RIR (Rhode Island Red) ishobora gutera ku mwaka amagi 220 iyo yafashwe neza. Ni ukuvuga umusaruro w'amagi wa 60% ;
- * Inkoko yo mu bwoko Derco, iyo ifashwe neza ishobora gutera amagi 250 ku mwaka. Ni ukuvuga umusaruro wa 69% ku mwaka ;
- * Hari ubundi bwoko bushobora gutera amagi 300 ku mwaka, aha twavugaga nka Warren ;
- * Inkoko isanzwe ya kinyarwanda ishobora gutera amagi 60 kugeza kuri 90 ku mwaka. Mu bwoko bwa kinyarwanda, hagenda habamo zimwe ziba nziza kuruta izindi.

5. Indwara z'inkoko

Indwara	Ikigero cy'in-koko zifatwa	Ibimenyetso	Uburyo bwo kuyirwanya
1. Inzoka	Inkoko ntoya cyane cyane	Guhumeka nabi, gufureka, gukura nabi, guhitwa, kwitsamura, kunanuka	Imiti y'inzoka Kugira isuku y'aho ziba n'ibyo ziriramo
2. Umuzimire (coccidiose)	Inkoko ntoya cyane cyane	Guhitwa amaraso, kunanuka bikabije, gupfa ari nyinshi	Kuvuza sulfamides (amprolium) Kugira isuku y'aho ziba n'ibyo ziriramo
3. Umuraramo (umusinziro)	Inkoko ntoya n'inkuru	Guhitwa iby'umweru cyangwa iby'umuhondo, amababa agacurama, inkoko ziriyegegeranya, ntizishobore kugenda, ntizirye, ntizibona ntizibashe guhagarara	Kugira isuku y'aho ziba n'ibyo ziriramo Kuzikingira zikivuka, ku mezi 2 no ku mezi 4 Kuziha sulfamides (Furazolidone)
4. Indwara ya Gumboro	Ibyana by'ibyumweru 3 kugeza kuri 6	Guhitwa cyane iby'umweru, guhinda umushyitsi, gutumba, kwigunga. Hapfa 10-30% by'izafashwe	Gukingira imishwi
5. Ubushita (Variole)	Inkoko ntoya n'inkuru	Kubyimba amaso n'amazuru no mu kanwa, kuzana uduberi ku ruhu tukazana urukoko. Mu Rwanda indwara ihaboneka ntikanganye	Gutera antibiotiques na vitamine

UBWOROZI BW'INKOKO Z'INYAMA

- Ni ubworozi bumara igihe kigufi cyane,
- zishobora gutanga umusaruro nyuma y'iminsi mirongo itanu gusa (amezi abiri gusa) .
- icyo gihe inkoko imwe uyibaze, iba ipima ikiro n'igice (1.5kg)

Imishwi y'inkoko z'inyama

- Igomba gushyirwa ahantu hashyushye (ushobora gukoresha imbabura, cyangwa se ampoules z'amashanyarazi).
- Ubushyuhe bugomba kuba buringaniye (32°)
- Mu cyumweru cya mbere imishwi 50 ijya kuri metero kare imwe, ni ukuvuga metero imwe kuri metero imwe.
- Isaso y'inkoko igomba kuba ihagije (ushobora gukoresha ibarizo cyangwa se ibishishwa by'umuceri).

Ibigwana by'inkoko z'inyama

- Ikenera icyo kunyweramo kimwe kijyamo litiro eshatu z'amazi ku nkoko 50 z'imishwi, iyo zikuze hakenewe icyo kunyweramo kimwe cya litiro icumi.
- Zikenera icyo kuriramo kimwe gifite uburebure bwa metero imwe ku mishwi 50,
- zakura zigakenera icyo kuriramo kimwe kijyamo ibiro 20 by'ibiryo.

GAHUNDA YO GUKINGIRA KU NKOKO Z'INYAMA

NB: Izi ngero zishobora guhinduka cyane bitewe n'akarere inkoko zirimo ndetse n'ubwoko bw'inkoko

IBIRYO BIKENEWE KU NKOKO Z'INYAMA

UBWOROZI BW'INKOKO Z'AMAGI



Ifoto y'amagi

Imishwi y'inko z'amagi

igomba gushyirwa ahantu hashyushye (ushobora gukoresha imbabura, cyangwa se amashanyarazi). Ubushyuhe bukenewe ku nkoko z'inyama ni nabwo bukenewe ku nkoko z'amagi.

Ifoto y'imishwi y'inkoko z'amagi



Ibigwana by'inkoko z'amagi

Ni ukuva ku cyumweru cya cyenda kugeza ku cyumweru cya 20

Ni muri kiriya gihe inkoko zigomba gukurikiranwa, hagakorwa inkingo zose zabugenewe, isuku ikitabwaho ibiryo n'amazi nabyo bikaba bihagije.

Inkoko zitangiye gutera amagi.

- Kuva ku cyumweru cya 20 kugeza inkoko zishaje (hafi ku byumweru 80),
- Mbere y'ibyumweru 2 ngo inkoko zitangire gutera, umworozi agomba gushyiramo udusanduka inkoko zizatereramo kugirango zizatangiye gutera zaratumenyereye.
- Iyo inkoko zatangiye gutera amagi, umworozi agomba kunyura mu nzu y'inkoko nibura incuro enye; mu gitondo mu masaa tatu; saa tanu; saa munani, no ku mugoroba mu ma saa kumi n'imwe, kugirango akuremo amagi inkoko zimaze gutera.
- Gukuramo amagi inshuro nyinshi bituma zitayamena.

F. UBWORZI BW'INKWAVU

1. Aho ziba

- Akazu inkwavu zibamo kagomba kuba nibura kicaye kuri cm 75 uvuye ku butaka.
- Agasanduku kagomba kuba gafite : ibipimo bikurikira :
 - Uburebure : m 1
 - Ubugari : cm 75
 - Ubuhagarike : cm 55
- Abana 6 bamaze gucuka
 - Uburebure : cm 90
 - Ubugari : cm 70
 - Ubuhagarike : cm 55
- Inkwavu zikunda ituze, cyane cyane mu gihe cyo kubangurira, guhaka no kubyara.

2. Kororoka

- Urukwavu rubangurirwa bwa mbere rumaze amezi 7 ruvutse;
- Urw'urugabo rushobora gutangira kwimya kare, ariko ibyiza ni uko rwatangira rufite amezi 8 ruvutse;
- Imfizi imwe ihagije ingore 10, kandi bikwiriye ko itakwimya ingore zirenze 3 mu cyumweru.
- Urukwavu ruhaka iminsi 30-32;
- Hasigaye iminsi itatu ngo rubyare, ni byiza gushyira mu kazu karwo agasanduku ko kuzabyariramo. Urukwavu rugiyeye kubyara rwipfura amoya rutegura aho ruzabyarira;
- Abana b'urukwavu batangira kureba bamaze iminsi 12 bavutse;
- Batangira kurya bamaze iminsi 18. nyina ibonsa rimwe mu muni. Ikabonsa iminota 3-5 gusa;
- Inkwavu zicuka zimaze amezi 2 iyo zirya ibyatsi gusa. icyo gihe nyina ishobora kubyara inshuro 3 mu mwaka;
- Iyo zirya n'imvange y'ifu (zihaka, zonsa) urukwavu rucukira iminsi 35-42. Rushobora rero kubyara 5 mu mwaka rugacutsa abana 30;
- Iyo hasigaye icyumweru ngo abana b'inkwavu bacuke, bakuramo ka gasanduku kugira ngo zibanze zimenyere kuba mu kazu katarimo ako gasanduku;
- Iyo urukwavu rumaze imyaka 2,5-3, ruba rushaje, bagomba kuruvana mu bworzi ;
- Hari n'izindi mpamvu zituma baruvanamo : iyo rubyara abana batarenze bane, iyo rukunda kuramburura, no kubyara abana bapfuye.

2. Igaburo

- Urukwavu rugomba kubona amazi n'ibyatsi bihagije;
- Rushobora kurya kg 2-2,5 z'ibyatsi ku munsu bashyira mu byo kuriramo kitegeranye n'icyarire;
- Ariko umuntu ashoboye kurwongereraho n'imvange byaba byiza :
 - Ukwezi kumwe rucutse : gr 50 ku munsu
 - Amezi abiri rucutse : gr 75 ku munsu
 - Amezi atatu rucutse : gr 100 ku munsu
 - Urukwavu rutegereje kwima : gr 100 ku munsu
 - Urukwavu rwonsa gr 300-400 (biterwa n'umubare w'utwana twonka).

3. Umusaruro

- iyo inkwavu zirya ibyatsi gusa zishobora kugira kg 2 zimaze amezi atanu (ubwoko bwa kijyambere).
- iyo zirya imvange y'ifu zipima kg 2 zimaze amezi 3,5-4 zivutse
- urukwavu rwa kinyarwanda rurya ibyatsi gusa rushobora kugira kg 2 rumaze amezi 7
- iyo rubona imvange rugira ibyo biro rumaze amezi 4,5-5
- urukwavu rutanga inyama zingana na 60% z'ibiro byarwo ari ruzima.

5. Indwara z'inkwavu

Indwara	Ikigero cy'inkwavu zifatwa	Ibimenyetso	Uburyo bwo kuyirwanya
1. Umuzimire (coccidiose)	Inkwavu ntoya ni zo zikunda gufatwa	Guhitwa cyane bituma inkwavu zumirana zigahita zipfa iyo hafashwe amara. Gutumba iyo hafashwe umwijima	Imiti irwanya umuzimire, Amprolium Ferazolidone Kugira isuku y'aho ziba, n'ibyo ziriramo
2. Ubuheri bwo mu matwi	Inkwavu zose	Gucurika amatwi arwaye, kubyimba imiheha y'amatwi no kugira urukoko mu matwi	Gukuraho urukoko, koza n'isabune n'amazi y'akazuyazi no gushyiramo umuti wica udukoko (nka crésyl) uvanze n'amavuta. Benzoate du Benzyl

G. UBWOROZI BW'INZUKI (UBUVUMVU)



1. Akamaro k'ubworozi bw'inzuki

- Inzuki zibangurira indabo zihoramo, bityo umusaruro ukomoka ku buhinzi ukiyongera
- Inzuki zitanga ubuki, bukaba bufitiye imibiri y'abantu akamaro kanini kuko burimo intungamubiri nyinshi zitera ingufu (79% z'isukari mu buki) kandi buvura n'indwara nyinshi.
- Ubworozi bw'inzuki bushobora gukorerwa ahantu hadahingwa, busaba amafaranga y'igishoro make ariko bugatanga inyungu nini kandi ntiburushya ubukora.
- Ibishashara bishoboka kuvamo buji (bougies), siraje (cirages) n'ibindi.

2. Uruvumvu

Uruvumvu rushobora kujyamo imizinga mike cyangwa myinshi kandi rukayirinda ibihe bibi (izuba, imvura, umuyaga), rugashyirwa ahantu kure y'ingo n'inzi y'abagenzi n'amatungo, ahantu hatari mu kibaya mu gishanga kandi hadakonja.

Ibyiza ni ukurushyira mu ishyamba (ry'inturusu) cyangwa hafi yaryo kandi rukazitirirwa na senyenge. Imizinga igomba guhora isukurwa bavanaho ubwatsi mu mpande z'uruvumbu kugira ngo intozi zitinjira mu mizinga. Imizinga igomba gusurwa kenshi guhera sa kumi n'ebiyiri kugera saa yine mu gitondo, no guhera saa kumi kugera saa kumi n'ebiyiri ni mugoroba kandi bigakorwa vuba mu gihe gito.

3. Uko imirimo y'inzuki ikorwa mu mwaka

Iyo mirimo yigabanyijemo ibice bibiri: imirimo ikorwa igihe hariho ubuki bwinshi n'ikorwa igihe butariho.

3.1. Imirimo y'igihe hariho ubuki bwinshi

Icyo gihe inzuki ziraboha, urwiru rurabyara cyane bigatuma n'inzuki zica. Ubuki buba buriho muri Kamena, Nyakanga, Kanama, Nzeri, Ukwakira, Gashyantare na werurwe.

icyo gihe:

- Guhakura birashoboka
- Bagereka imizinga iyo zabaye nyinshi
- Baragika kandi bagashyira inzuki mu mizinga
- Barwanya uruco
- Bakoresha akuma kanini kimira urwiru ku mizinga ifite inzuki nyinshi cyane. Ako kuma iyo bagashyize hagati y'isanduku yo hasi n'ingereko yayo babanje kumanura urwiru mu isanduku yo hasi, bitanga umusaruro mwinshi kuko bahakura ubuki gusa mu ngereko nta cyana na kimwe. Urwiru ruguma mu isanduku yo hasi, intazi zo zigahitamo zikajya mu yo hejuru.

3.2. Imirimo y'igihe ubuki butariho

Icyo gihe inzuki ntiziboha, urwiru na rwo rugabanya kubyara bigatuma inzuki zigabanuka mu mizinga, zimwe ndetse zikaboneranwa n'ibyonnyi. Ubuki buba buke muri Mutarama, Mata, Gicurasi, Ugushyingo n'Ukuboza.

icyo gihe:

- Ni bibi guhakura
- Nta kugereka ahubwo bagerekura imizinga irimo inzuki nke zidakwiriye ingereko
- Kirazira kwagika cyangwa gushyira inzuki mu muzinga udafite icyo uzigaburira, birumvikana ko nta ruco ruboneka
- Barwanya ya ndwara y'ikinya
- Akuma kanini kimira urwiru ntibashobora kugakoresha ahubwo bagakura ku mizinga bagashyizeho.

4. UMUSARURO

Mu turere inzuki zeramo neza, umuzinga wa kijyambere w'ubwoko bya Langstroth ushobora kwera kg 50 kugera kuri 70 z'ubuki, naho uwa gihanga ukera kugera kuri kg 10 gusa.



G. UBWOROZI BW'AMAFI



Ubworozi bw'amafi bugamije kongera umusaruro kugira ngo bufashe abanyarwanda kwihaza mu biribwa.

Mu Rwanda hororwa amafi yo mu bwoko bw'ingege, igihwati, inyamugera n'ingembe.

1. icyuzi cy'amafi

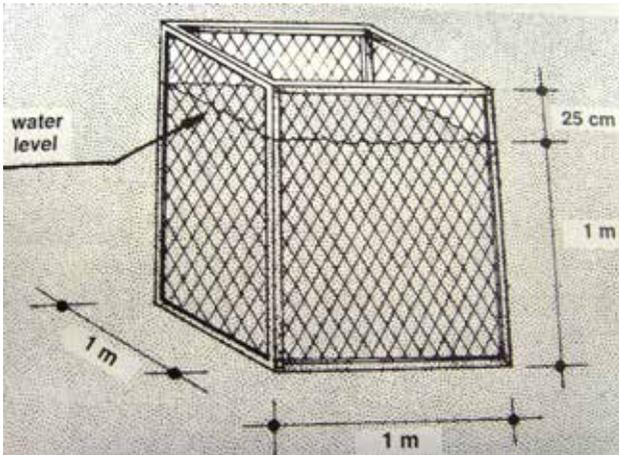
- icyuzi cy'amafi cyubakwa ahantu amazi adashobora kumena ubutaka, haboneka amazi meza kandi ahagije ;
- Uburebure bw'incyuzi mu gice cya ruguru cm 40-cm60 naho aho barobera amafi ni m 1,10-1,20 ;
- Imirimo ijyanye n'ubwubatsi ikorwa muri Mutarama-Gashyantare, Kamena-Nyakanga.

2. Gutera amafi mu byuzi

- Mu cyuzi haterwamo amafi 2 kuri m². Batera amafi muri Werurwe, Nzeli.

3. Kororera amafi muri Kareremba

- Kareremba zishyirwa mu biyaga, mu nzuzi no bizenga by'amazi mu rwego rwo kurinda mafi kugeza asaruwe.
- Amafi yo muri Kareremba agaburirwa ibiryo by'amafi byo mu nganda kugeza igihe cyo kujya ku isoko.
- Ibiyaga n'imigezi myinshi yo mu Rwanda bishobora gukoreshwa mu bworozi bw'amafi muri Kareremba
- Amoko y'amafi aboneka mu Rwanda ashobora kororerwa muri Kareremba Ifoto ya Kareremba n'ibipimo byayo.



Akamaro ka Kareremba

- Yongera umusaruro w'amafi kugeze ku nshuro 10 – 12 ku mafi yororewe mu byuzi
- Igabanya inagruka ziterwa n'isuru
- Ntizikenera guhinduranya amazi
- Zifasha kororoka kwa Tilapia

4. Imirimo y'ubworozi

- igihe cy'ubworozi : amezi 6-8 ;
- kugaburira amafi mu gihe cyose ari mu cyuzi ;
- gufumbira icyuzi: 10% z'ubuso bwacyo, ni ukuvuga ibiro 20 kugeza 50 kuri ari imwe y'icyuzi mu cyumweru ;
- kugenzura ko harimo amazi ahagije ;
- kuroba ibyuzi, kugurisha amafi manini naho amatoya akongera guterwa (Gashyantare, Kanama) ;
- umusaruro: ibiro 20-40 kuri ari imwe.

5. Imirimo yo gufata neza ibyuzi

- gusana imiyoboro y'amazi
- gutunganya imigende ikamura amazi
- gutera ibyatsi birwanya isuri hafi y'ibyuzi
- kumisha icyuzi nibura iminsi 15 bitewe n'uko igihe cyifashe (Gashyantare, Kanama).

6. Ubworozi bw'amafi n'andi matungo

Uburyo bwo korora ingurube, inkoko, inkwavu cyangwa ibishuhe hejuru cyangwa iruhande rw'icyuzi bituma umusaruro w'amafi wikuba kabiri kubera ifumbire, hakiyongeraho umusaruro ukomoka kuri ayo matungo kandi urondereje ubutaka.

UBUROBYI

Ibisobanuro:

• **Uburopyi** ni uburyo bwo kubyaza umusaruro w'amafi ibiyaga n'ibidendezi kamere ku buryo burambye

• **Imiterere y'uburobyi:** ibiyaga, ibidendezi kamere n'inzuzi bingana na 6 ku ijana by'ubuso bwose bw'igihugu cyose

Mu Rwanda haboneka amoko y'amafi arenga gato mirongo itatu. Amoko ane muri ayo kugeza magingo aya ni yo arobwa ku buryo bugaragara.

Umusaruro w'uburobyi uboneka kugeza ubu mu biyaga, ibidendezi kamere n'inzuzi ugera hafi kuri toni 6 000 ku mwaka hatabarwamo igice cy'umusaruro kiribwa n'abarobyi kimwe n'ikindi gice kigurishwa kitanyuze mu mashyirahamwe y'abarobyi.

Urebye umuntu yavuga ko umusaruro w'uburobyi waba ukabakaba toni 7 500 ku mwaka.

• **Amoko y'amafi arobwa:** Tilapia, Isambaza, Indugu n'Inkube.

• **Ibikoresho by'uburobyi:** Ubutimba guhera ku gipimo cya 4 ubutimba butegurwa mu irobwa ry'isambaza, Palangres, inshundura na masses.

• **Uburyo bwo kuroba bubujijwe:** Amakokoro, ubutimba bufite amaso ari muni ya 4, gukubita amazi kimwe no kurobesha imiti yica amafi.

- **Amategeko y'uburobyi:** kuroba mu mazi y'u Rwanda byemererwa gusa abenegihugu n'abanyamahanga batuye kandi bakabarurirwa mu Rwanda. Abo bose bagomba kugira impushya z'uburobyi cyangwa bagakodesha ibikingi by'uburobyi ku buryo bukurikije itegeko rigenga uburobyi.

Impushya zo kuroba ziri muri ibi byiciro.

Icyiciro cya mbere „A“: Uburobyi bw'ikiruhuko bugabanijwemo ibice bibiri:

- A1: Uburobyi bukozwe n'abenegihugu
- A2: Uburobyi bukozwe n'abanyamahanga

Icyiciro cya kabiri “B”: Uburobyi bw'ubucuruzi

- B1: Uburobyi bukoresha ibikoresho biciriritse nk'inshundura ;
- B2: Uburobyi bukoresha ubutimba butarengeje m 1000 ;
- B3: Uburobyi bukoresha ubutimba buterurwa ;
- B4: Uburobyi bukoresha umukwabu uhindukizwa.

ZIMWE MURI KOMPANYI ZIRI MU BIKORWA BY'UBUHINZI N'UBWOROZI

UBWOROZI				
No	IZINA RYA KOMPANYI	UMUYOBOZI	CONTACT	ICYO IKORA
1	AQUAHORT EXPORTS LTD	BART GASANA Managing Director	bgasana@gmail.com 0788301966	Ikora ibiryo by'amafi
2	ABUSOL	Jean Baptiste Musabyimana Managing Director	abusolrda@yahoo.com / jeanbapti@yahoo.fr 0782235566	Borora inkoko
3	Blessed Diaries	Milton NGIRENTE. Managing Director	ngirentemiltoni@yahoo.fr 0788652783	Batunganya amata n'ibiyakomokaho
4	Easy Hatch Ltd	Themba Mashinini CEO	gen.info@easyhatch.rw 0786372657	Batanga imishwi
5	Fine Fish	Karekezi Solange	0788358168	Borora amafi/bafite ituragiro
6	Huye animal feed	Lee YONGIL	0783943341/0785980993	Ibiryo by'amatungo
7	Impano Rabbitry	Eric Manirakiza Managing Director	ericmanirakiza36@gmail.com 0782862355	Ubworozi bw'inkwavu
8	Inyange Industries		0 788161900 info@inyangeindustries.com	Batunganya ibikomoka ku buhinzi n'ubworozi
9	KIVU Tilapia Farm	Charles Moncher	072848974	Borora amafi
10	LAKESIDE FISH FARM	Roger SHAW	Roger@lakesidefishfarm.com 0785696606	Borora amafi/ bafite ituragiro
11	Masaka Farm	Gulio Zavagni	masaka.farm@yahoo.fr 0785712506	Batunganya ibikomoka ku mata
12	Poultry East Africa Ltd (PEAL)	SHUMEI LAM Managing Director	shumei.lam@pearl.rw 0788302406	Ubworozi bw' Inkoko
13	Rwanda Best	Jean Claude RUZIBIZA Managing Director	jclauderuzibiza@gmail.com 0788302406	Ubworozi bw'Inkoko
14	THE APIARY PTE LTD	Mrs. Esther Su Founder/ CEO	gumaalexandre@gmail.com 0788645536	Batunganya ubuki
15	Vision Agribusiness Farm	Shirimpumu J.Claude	0788590416	Ubworozi bw' Ingurube
16	ZAMURA FEEDS LTD	Matthew Karugarama	matthewkn@gmail.com (250)782023093	Bakora ibiryo by'amatungo
17	Zirakamwa Meza Dairy Ltd	Kayitesi Immaculee Founder/CEO	mkayi2020@yahoo.fr	Batunganya amata n'ibiyakomokaho.

UBUHINZI

No	IZINA RYA KOMPANYI	UMUYOBOZI	CONTACT	IBIKORWA
1	AFRICA IMPROVED FOODS RWANDA LTD	Mr Paul Van Ooijen Managing Director	paul.ooijen-van@dsm.com 0783682091	Batunganya ibinyampeke
2	APTC	Col Moses Bayigamba CEO	ceoaptc@gmail.com 0788414734	Ifumbire, imbuto, Batunganya Inyama
3	BLOOM HILLS RWANDA LTD	Mr. Shungo HARADA Managing Director	shungo.harada1202@gmail.com 0786802950	Indabo
4	BRAMIN Ltd	Felicien Mutalikanwa Shareholder	fmutalikanwa@yahoo.fr 0788300240	Bahinga ibigori na soya
5	CLINTON DEVELOPMENT INITIATIVES (CDI)	JEAN PAUL NDAGIJIMANA CEO	jndagijimana@clintonfoundation.org 0 788 313938	Bahinga ibigori na soya
6	Damarara Ltd	Sosthene Kabayiza	s.kabayiza@yahoo.com 0788303897	Batunganya umu- saruro w' icyayi
7	East African Agro Industries	Nitin Dabholkar Director	nitindabholkarkenya@gmail.com 0788308786	Batunganya umu- saruro w'inyanya
8	Farm Fresh	Christian Heremans Managing Director	Christian.heremans@farmfresh.rw 0727130510	Batunganya Umu- saruro w' ibishyimbo
9	Garden Fresh	Chantal Isugi Managing Director	0736923806	Imboga n'imbuto
10	Gashora Farm Ltd.	Dieudonne Twahirwa Managing Director	twahirwadiogo@gmail.com 0788793329	Imboga
11	GET IT Ltd	Lauren Russell Nkuranga Founder & CEO	lauren@getitrwanda.com 0786544523	Imboga,imbuto n' Inyama
12	GISOVU TEA COMPANY (Borelli Tea Holdings)	Harjot BRAR	harjot.brar@mcleodrusssel.com / hbmb22@gmail.com 7845 75503	Icyayi
13	Hollanda Fair Foods Ltd	Thijs Boer BV Founder & CEO	boer@hollandafairfoods.com 0789055892	Batunganya ibikomo- ka ku binyabijumba
14	ICM Rwanda Rice Industry	Michael Ebert	info@icm.com.au	Umuceri
15	Kabuye Sugar Works	M. Thirunavokkarasu General Manager	gm.kabuye@gmail.com 0788305225	Bahinga bakana- tunganya ibisheke bivamo isukari
16	Kigali Farm	Laurent DEMUYNCK Managing Director	administration@kigalifarms.com	Ibihumyo
17	Kinazi Cassava Plant	Emile Nsanzabaganwa	ensanze@yahoo.fr 0788300435	Batunganya imyumbati
18	MFK Group Ltd	Emmanuel HARELIMANA	h.emmanuel@mfggroup.com / harelimana_emmanuel@yahoo.com 0788304110 / 0788382299	Imbuto n'imboga
19	PASTA-RWANDA LTD	Mr. Jean Luc UFITSE Founder/CEO	jeanluc.ufitese@yahoo.com 0789798008	Pasta processing

20	PRODEV	Jean Paul Mutalikanwa Managing Director	jeanps2000@yahoo.fr 0788302858	Batunganya umu- saruro w' ibinyam- peke,imboga n' imbuto
21	Projet Abeille	MUNYANEZA Wellars Managing Director	wellaneza123@yahoo.fr 0788742666	Batunganya ubuki
22	Proxifresh	Arnaud de Ramboures General Manager	arnaud@proxifresh.com	Imbuto n'imboga
23	Rubaya Tea	Managing Director	rubayatea@gmail.com	Icyayi
24	Rwanda Farmers Coffee Company	Eric Rukwaya Sales and Marketing Manager	eric.R@gorillascoffee.com 0788612131	Batunganya ikawa
25	Rwanda Mountain Tea	Bisengimana Jonathan	jbisengimana@rwandamoun- taintea.com 0788306958	Icyayi
26	Rwanda Tea Packers	Kabagambe Ham	info@rwandateapackers.com 0788302537	Tea
27	Rwanda Youth in Agribusiness Forum	Jean Baptiste Hategekimana	kizingafarm2012@gmail.com 0788530417	
28	Sake Farm Ltd	KAYITESIRE Marie Laetitia Managing Director	lakayite@yahoo.fr 0783296642	Ikawa
29	Sake Farm Ltd	KAYITESIRE Marie Laetitia Managing Director	lakayite@yahoo.fr 0783296642	Batunganya umu- saruro w' Ikawa
30	Shekina Entreprise	Mbatezimana Pierre Managing Director	0788592198	Imboga
31	Tuzamurane coopera- tive	Jean Damascene Hakuzimana President	tuzamurane02@yahoo.com 0786327726	Gutunganya umu- saruro ukomoka ku mbuto
32	Urwibutso ltd	Sina Gerard Marketing Manager	ceo@sinarwanda.com; owner@sinarwanda.com 0788302929	batungaya ibikomoka ku buhinzi n'ub- worozi
33	VOLUNTOUS AG- RICON	B. HANUMANT REDDY	bhanumanthreddy@gmail.com / hanumant@voluntous.com 0787856562	Imashini zo gukore- sha mu buhinzi
34	WINNAZ	Murasira Pascal	0788301147	Batunganya umu- saruro ukomoka ku binyabijumba

LISITI Y'IMPUZAMAHURIRO Z'AMAKOPERATIVE Y'ABOROZI

N°	IZINA RY'IMPUZAMAHURIRO	IZINA RY'UMUYOBOZI	contact
1	NDFFR : National Dairy Farmer's Federation of Rwanda	GAHIGA GASHUMBA Chairman	ggahiga@gmail.com 0788831591
2	FEFICORWA : Federation of Fishers Cooperative In Rwanda	NYANDWI Theophile Chairman	nyatheoph@yahoo.fr 0788478808
3	FERWACAPI : Fédération Rwandaise des Coopératives des Apiculteurs	NTAGANDA Damascen Chairman	damasntaganda@gmail.com damasntaganda@yahoo.com 0788455973

LISITI Y'IMPUZAMAHURIRO Z'AMAKOPERATIVE Y'ABAHINZI

N°	IZINA RY'IMPUZAMAHURIRO	IZINA RY'UMUYOBOZI	contact
1	FERWACOTHE : Fédération Rwandaise des Coopératives des Theiculteurs	KARAMAGA Francois Chairman	ferwcothe_tea@yahoo.fr karamaga2020@yahoo.fr 0788304749
2	RCCF :Rwanda Coffee Cooperatives Federation	NYIRAMAHORO Theopista Chairperson	rccf2009@yahoo.fr/tnyiramahoro@ yahoo.fr 0788876323
3	RWCCF : Rwanda Cassava Cooperative Federation	HARERIMANA Martin Chairman	Harerimana2025@yahoo.fr 0788669356
4	FECOPORWA : Fédération des Coopératives des Producteurs de Pomme de terre au Rwanda	HAVUGIMANA Vincent Chairman	havugimanavincen@gmail.com 0788477642
5	RFWC : Rwanda Federation of Wheat Cooperatives	MUTANGANA Simon Chairman	rftwc01@gmail.com 0788730272
6	FUCORIRWA : Fédération des Unions des coopératives Rizicoles au Rwanda	GAHIZA Appollinaire Chairman	ffucorirwa@yahoo.com 0782811152
7	FCMR : Fédération des Coopératives de Maïs	TUGIRINSHUTI Evariste Chairman	tugirinshutie@gmail.com 0785345192
8	RFHC : Rwanda Federation of Horticulture Cooperatives	MUKASERIRE Devotha Chair- person	devothamukaselire@yahoo.com 0788739960

