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IMFASHANYIGISHO KU GIHINGWA CY'IBIRAYI



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Ishakiro

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1. Akamaro k'ibirayi

Ibirayi ni kimwe mu biribwa by'ingenzi kandi biboneka ahantu hose ku isi, bikundwa n'ingeri z'abantu bose, ni mu gihe kuko bikungahaye ku ntungamubiri nyinshi bituma biba ibyo kurya by'ingenzi. Mu Rwanda, ni kimwe mu binyabijumba by'ibanze bigira akamaro mu kwihaza mu biribwa ndetse n'ubukungu by'umwihariko.

Ni isoko nziza y'imbaraga n'izindi ntungamubiri. Bigira hafi 80% y'amazi na 20% z'amafufu. Bitewe n'ubwoko bw'imbuta y'ibirayi, hari ibigira amafufu ari hagati ya 60 na 80%. Bigira poroteyine nyinshi ugereranije bikungahaye ku ntungamubiri, cyane cyane Vitamini C iyo byariwe bidatonoye. Byagaragaye ko bigira ubutare. Bikungahaye kuri vitamin B6 n'imyunyu ngugu nka potasiyumu, fosifore, manyeziyumu, folate, tiyamini na niyasini. Ibirayi bigira kandi intungamubiri zisukura umubiri nka fenole, faravonoyide na carotenoyide. Binakungahaye kuri fayiba. Ibiribwa biribwa bitogosheje (bihase cyangwa bidahase), byokeje cyangwa bitetse mu mavuta (ifiriti).

2. Aho ibirayi bikunda

- Ibirayi bikunda cyane mu turere tw'amakoro no mu misozi miremire ifite ubutumburuke buri hagati ya 1800m na 2400m; imvura ingana na 1500mm ku mwaka; n'ubushyuhe buri hagati ya 17°C na 25°C.
- Ibirayi bikunda guhingwa cyane mu turere tw'amakoro y'ibirunga (Burera, Musanze, Nyabihu na Rubavu), isunzu rya Congo Nile (Rutsiro, Karongi, Nyamagabe na Nyaruguru) n'imisozi miremire y'ububeruka (Burera na Gicumbi).
- Ibirayi bihingwa mu butaka bwiza, bufite isi ndende, buseseka, budafite ubusharire (pH 6-6.5), buhitisha umwuka n'amazi.

3. Amoko y'ibirayi ahingwa mu Rwanda

Amwe mu moko yamamazwa harimo:

	Izina ry'imbuta	Uturere byeramo	Igihe cyo kwera	Umurumbuko (T/ha)
1	Rosi	Uturere twose duhingwamo ibirayi	Amezi 5	16
2	Challenger	Uturere twose duhingwamo ibirayi	Amezi 4.5	13.5
3	Panamera	Uturere twose duhingwamo ibirayi	Amezi 4.5–5	20.2
4	Taurus	Uturere twose duhingwamo ibirayi	Amezi 4	14
5	Nkunganire	Imisozi migufi n'imiremire	Amezi 4	32
6	Twihaze	Imisozi miremire	Amezi 4	56
7	Izihirwe	Imisozi miremire	Amezi 4	52
8	Ndeze	Imisozi migufi n'imiremire	Amezi 3	24

9	Kazeneza	Imisozi miremire	Amezi 3-4	29
10	Jyambere	Imisozi miremire	Amezi 3.5-4	25
11	Kerekezo	Imisozi migufi n'imiremire	Amezi 3-3.5	30
12	Ndamira (Shangi)	Imisozi miremire	Amezi 3-3.5	35
13	Twigire	Imisozi miremire	Amezi 3-3.5	30
14	Gisubizo	Imisozi miremire	Amezi 4-5	35
15	Seka	Imisozi migufi n'imiremire	Amezi 3.5	30
16	Kinigi	Imisozi miremire	Amezi 3.5-4	20-30
17	Kirundo	Imisozi miremire	Amezi 3-3.5	30
18	Gikungu	Imisozi miremire	Amezi 3.5-4	30
19	Cruza	Imisozi miremire	Amezi 4-4.5	20 - 30

Icyitonderwa: Yose yihanganira kandi indwara y'imvura cyane cyane Cruzan na Twihaze.

4. Inyongeramusaruro zikenerwa kuri Are imwe

Kuri Are 1 hakenerwa:

- Imbuto: kg 25-30
- Ishwagara: kg 20-25
- Imborera: kg 200 - 300
- NPK 17-17-17: kg 3

5. Uko bategura umurima

- Hitamo umurima umaze nibura ibihembwe 2 udahingwamo ibisantobo (inyanya, ibirayi, intoryi, urusenda, ibinyomoro, puwavuro, ...)
- Guhinga bwa mbere (Gutamura) utarenza isuka muri cm30 z'ubujyakuzimu mu gihe cy'icyi kugira ngo ubutaka buhore (bigabanya uburwayi kwasigaye mu butaka, gutaba ibyatsi,...)
- Kurwanya isuri bikorwa basibura imirwanyasuri ahari amaterasi yikora kugira ngo amazi y'imvura azafatwe adatwaye ubutaka.
- Guhinga bwa kabiri (Gutabira) boroshya ubutaka, ibisinde bikamenwa ubutaka bugasigara buseseka
- Gukoresha ishwagara ku butaka busharira nibura ibyumweru 2 mbere yo gutera.

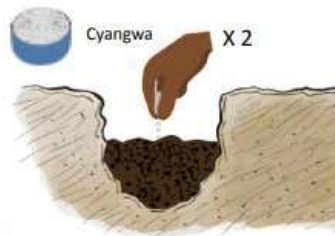


6. Gufumbira

- Imborera: amashyi yombi mu mwobo inshuro 2

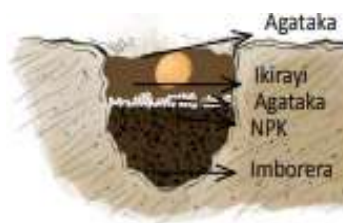


- NPK 17-17-17: agafuniko 1 k' icupa ry'amazi kuzuye cyangwa intoki 3 kugeza ku rugingo rwa 2 inshuro 2 mu mwobo, nyuma ugatwikiriza agataka gake

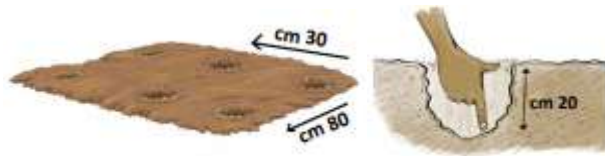


7. Gutera imbuto y'ibirayi

- Batera imbuto ifite imimeru irenga 2
- Amaso y'ikirayi agomba kureba hejuru
- Batera ikirayi 1 mu mwobo cyangwa mu tugende
- Batwikiriza ubutaka cya kirayi umaze gutera.



- Gutera mu murongo: cm80 hagati y' imirongo, cm 30 hagati y'ikirayi n'ikindi
- Gutera mu myobo: cm60 hagati y' imirongo, na cm30 hagati y' imyobo ifite ubujyakuzimu bwa cm 20-25.



8. Kwita ku murima

8.1. Kumenera no kubagara

- Kubagara bwa mbere no kumenera: nyuma y'ibyumweru 3 na 4 ibirayi bimaze kumera bifite uburebure buri hagati ya cm10-20.



8.2. Kubagara bwa kabiri

- Kubagara bwa kabiri bakuramo ibyatsi n'ubundi bwoko bw'ibirayi bwimejeje, gusukira itaka no kwongeramo imvaruganda: hagati y'ibyumweru 6 na 8, ibirayi biba bifite uburebure buri hagati ya cm 20-30. Itaka ryegerezwa ku gice cyo hasi cy'ibirayi, bigatuma bizana indi mizi bigakomera, bityo bikabona n'umwanya uhagije wo gushorera. Wongeramo imvaruganda (NPK 17-17-17) ingana na kg 1.5 kuri are imwe.



9. Kunyomora

- Kandagiza ibirenge byombi aho ikirayi gitereye ku butaka ufate imigozi y'ikirayi n'amaboko yombi, ushikuze / urandure witonze wirinda gukomeretsa inkondo y'ikirayi mu butaka
- Hashobora gukoreshwa umupanga ugatema imigozi y'ibirayi byibuze kuri cm 10 uturutse ku butaka.
- Bikorwa nibura mbere y'ibyumweru 2 kugirango usarure.
- Bituma uruhu rw'ibirayi rukomera rukabirinda kwangirika mu kubihunika
- Bituma indwara ziri mu mababi no mu migozi zidakomeza kororoka mu birayi biri mu butaka.



10. Gusarura/gukura ibirayi

- Ibirayi bisarurwa nyuma y'amezi 3 cyangwa 4 bitewe n'ubwoko bw'imbuta;
- Mu butaka buseseka nk'ubw'amakoro bakoresha intoki, mu butaka bw'urunombe bufata bagakoresha isuka;
- Iyo hakoreshejwe isuka, bamena ubutaka bukikije ikirayi bakabikuzamo intoki;
- Kura ibirayi utabikomeretsa kandi ubimaremo;
- Ibirayi bikurwa mu gihe ubutaka bwumutse kandi hari umucyo (nta mvura)
- Irinde gutwara mu buhunikiro ibirayi bitose cyangwa biriho itaka.



11. Gufata neza umusaruro

➤ Gutoranya ibirayi

- Ibirayi bikomeretse cyane bigomba gutoranywa bikaribwa vuba;

- Ibirayi bigisarurwa bigahura n'ikibazo cyo kunyagirwa ubisanza ahantu humutse neza kandi hatanyagirwa kugira ngo byumuke neza.
- Irinde kwanika ku zuba ibirayi byagenewe kuribwa kuko bituma bihinduka icyatsi bigasharira.



- Ibirayi bifite ubusembwa/byakomeretse cyangwa ibigaragaza ibimenyetso by'indwara bigomba kuvanwa mu bindi.
- Ibirayi byahinduye ibara (icyatsi), ibyakomeretse cyangwa se byangiritse, ibirayi bito bito bikabije bigomba kuvanwa mu bindi ako kanya ntibihunikwe nk'imbuto.
- Ibirayi bifite ingano nk'iy'igi ry'inkoko nibyo bifatwa nk'imbuto.



➤ **Gupfunyika**

- Ibirayi bipfunyikwa mu bikoresho byabugenewe bituma ibirayi bihumeka neza: Amagunira, imifuka idoze mu mishipiri, cyangwa mu bitete kugirango bitangirika.
- Imifuka dusanzwe tumenyereye mu gupfunyika amafu, ibigori, amasukari, ifumbire mvaruganda ntikoreshwa mugupfunyika ibirayi kuko ituma bibora.



➤ **Guhunika**

- Umuhinzi ashobora kwihunikira ibirayi by'imbuto iyo yakurikiranye neza umurima we akawurinda indwara zavuzwe haruguru
- Hashobira kwifashisha kubihunika mu birundo ahantu hasakaye, mu nzu y'imbaho, mu mifuka yabugenewe, no mu bitete.

Ikigega cyiza cyo guhunika imbuto kigomba:

- Kuba gisakaye neza (kitava);
- Kuba kinjiramo kandi gisohora umwuka n'umuyaga, ubushyuhe n'imyuka mibi iva mu birayi;
- Kuba kinjirwamo umucyo kugira ngo imimero itaba imyeru ahubwo ibe icyatsi, migufi, ibyibushye kandi minini. Ibyo bituma idahunguka mu gihe cyitera kandi ikamera vuba;



12. Kurwanya indwara n'ibyonnyi by'ingenzi

No	Indwara n'ikiyitera	Ikibitera	Ibimenyetso	Kuyirinda kuyirwanya	no	Ibipimo by'umuti bikoresheya muri L20 z'amazi + Iminsi ikenerwa kugira ngo igihingwa cyatewe umuti gisarurwe (PHI)
1	Indwara y'imvura / Mildiou	Ni indwara iterwa n'agahumyo bita " <i>Phytophthora infestans</i> ". Ikirayi	• Ifata amababi, imigozi n'ibirayi biri mu butaka. Iyo ndwara iterwa n'imvura nyinshi.	• Gutera ubwoko bw'imbuto y'ibirayi bwihanganira iyo ndwara • Gutera imbuto nziza ifite		-Ridomili: g50 PHI: iminsi 14-30 -Ditane: g50 PHI: iminsi 30

		cyafashwe kirabora	Igihingwa cyafashwe kizana urubobi ku mababi no ku migozi; nyuma akaba umukara. Iyo bikabije ugira ngo umurima wababutse.	icyemezo cy'ubwiza; - Guhinga ibirayi mu murima umaze nibura ibihembwe bibili by'ihinga udahinzemo ibirayi; - Kurandura ibirayi byimejeje kuko bishobora kubika iyo ndwara - bikayikwirakwi za mumurima; - Gutera umuti wa Ridomili (Ridomil) ku mababi hose (gr 50 muri litiro 20 z'amazi) inshuro ebyiri (mu ntera y'iminsi 7) ibirayi bikimara kumera. - Nyuma y'ibyumweru bibiri batera umuti wa Ditane ku mababi hose (gr 50 muri litiro 20 z'amazi) bagatera inshuro 1 buri cyumweru mu gihe cy'imvura kugeza ibirayi byeze. - Gusukira itaka neza ku birayi bituma ibirayi biri mu butaka bitandura.	
2	Kirabiranya/ Bacteriose	Iterwa na Bagiteri bita «	Kurabirana kw'imigozi	Gutera ubwoko bw'imbuto	-

		<i>Ralstonia solanacearum</i> ». Ishobora guterwa no guhinga ibirayi mu murima urimo bagiteri zitera iyo ndwara cyangwa se izo bagiteri zibitse mu mbuto y'ibirayi yatewe.	y'ibirayi, amababi agahinduka icyatsi kibisi cyeruruka nyuma akuma - Iyo uranduye umugozi ubona mu maso y'ikirayi cyezeho haturukamo - amatembabuzi y'umweru anuka ameze nk'amashyira; iyo ugitemye usanga imbere hari uruziga rw'umuhondo ushyira ibihogo.	y'ibirayi bwihanganira iyo ndwara - Gutera imbuto nziza ifite icyemezo cy'ubwiza; - Gutera imbuto nziza y'ibirayi byasaruwe mu murima utaragaragaye mo iyo ndwara; - Guhinga ibirayi mu murima umaze nibura ibihembwe bibili by'ihinga udahinzemo ibirayi; - Kurandurana ibirayi byafwashwe n'ubutaka bwabyo bigatabwa mu cyobo kure y'umurima; - Kurandura ibirayi byimeza mumurima igihe cyose bibonetse - Gutoranya ibirayi bigaragaza ibimenyetso by'uburwayi mu bindi mbere yo guhunika.	
3	Imfunyarazi 	Ni indwara iterwa na Virusi.	- Amababi areruruka nyuma agapfunyarara, imitwe y'amababi ikamera nk'amahembe; - Imigozi ntikura neza,	- Gutera ubwoko bw'imbuta y'ibirayi bwihanganira iyo ndwara - Gutera imbuto nziza ifite icyemezo cy'ubwiza;	-Profenofos 40% + Cypermethrin 4% EC (Rocket): ml 20 PHI: iminsi 21 -Lambdacyhalothrin: ml 20 PHI: iminsi 7

			iba migufi, ishora nabi kandi igashora uturayi duto kandi duke.	- Gutera imbuto nzima zasaruwe mu murima utaragaragaye mo iyo ndwara; - Kurandura ibirayi birwaye ndetse n'ibyimejeje kuko bishobora kubika iyo ndwara; - Gutera umuti wica uduhunduguru/inda z'ibirayi (aphids) dukwirakwiza iyo virusi.	
4	Urunyo rw'ibirayi 	Urunyo rw'ibirayi ruva mu magi aterwa n'agakoko ko mu bwoko bw'isazi yitwa <i>Liriomyza</i> sp. Iyo sazi ica utwenge mu mababi igateramo amagi. Ayo magi asohokamo inyo zikurira mu mababi zikanayarya.	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.	- Guhingira igihe cyagenwe cyo gutera ibirayi - Kurima no gutabira byibuze icyumweru mbere yo gutera ibirayi mu murima kugira ngo udusimba twicwe n'imirasire y'izuba; - Gutera umuti wica urunyo	-Lambdacyhalothrin: ml 20 PHI: iminsi 7 -Cypermethrin 5% EC: ml 20 PHI: iminsi 14
5	Inanda (Cutworm): Urunyo rusa n'umukara cyangwa ikigina 	-	- Inanda ikata igihingwa ahagana hasi ku ruti cyangwa ikagikatira mu butaka - Iyo inanda zikomeje kubaho, zitangira kurya n'ibirayi.	- Gukata ibyatsi ku nkengero z'umurima aho zishobora kwihisha mbere yo gutera; - Kubagara uko bikwiye no kugenzura umurima kare mugitondo ugatoragura inanda ukazica.	-

6	Indwara y'ubuheri bufite ifu (Galle poudreuse) 	Iterwa n'agahumyo kitwa <i>Spongospora subterranean</i>.	Ubuheri buza ku kirayi kiri mubutaka nyuma uruhu rugasaduka hakavamo ifu. Iyo ubwo buheri ari bwinshi, ibirayi ntibikura neza. Iyo ndwara ikwirakwizwa cyane n'imbuto zirwaye. Ikunda kugaragara mu butaka bukonje kandi butose.	- Gukoresha imbuto zitarwaye; - Gusimburanya ibirayi n'ibindi bihingwa mu murima	-
7	Indwara y'ububore bwumye (Pourriture sèche) 	Uduhumyo bita <i>Fusarium spp</i> n'utundi <i>Phoma exigua</i> Var. <i>exigua</i>. Utwo duhumyo dutera ububore bwumye butanuka bw'ibirayi mu gihe bihunitse. Iyo ari <i>Fusarium</i>, imbere mu kirayi, ububore butanga ifu y'umweru <i>Phoma exigua</i> ifata igice kimwe cy'ikirayi mu gihe <i>Fusarium</i> yo itera ububore bw'ikirayi cyose, inyuma hariho ifu y'umweru.	- Ku kirayi hazaho ububore bwijimye buhera inyuma bwinjira mu kirayi. - Ikirayi gikomeza kubora buhoro buhoro, uruhu rugapfunyarara.	- Gusukura ikigega - Gusarura no gufata neza ibirayi mu buhunikiro - Gusarura neza udakomeretsa ibirayi no gufata neza ibirayi mu buhunikiro	-

Icyitonderwa:

- Iyo ibirayi bikimera haterwa umuti wa Ridomil bavanga 2 gr muri 1 L y'amazi kugira ngo hakumirwe indwara y'indwara. Haterwa kandi buri cyumweru umuti wa Dithane, 2.5gr zivangwa na 1L y'amazi.
- Iyo uteye imiti myinshi utakaza amafaranga, ukangiza ibidukikije, bikanagira ingaruka ku buzima bw'abantu, inyamaswa, amazi, ubutaka ndetse n'umwuka;
- Ridomil nyinshi ituma ibirayi bingwingira, umusaruro ukagabanuka kandi ibisigazwa by'uwo muti ubisanga mu birayi byo kurya.
- Iyo uteye umuti muke, igihingwa kiremamo ubudahangarwa ntikibe kikivurwa n'uwo muti.

Icyitonderwa: Iyi mfashanyigisho yateguwe n'umushinga “HINGANA UBUZIRANENGE” ugamije kongera ubuziranenge bw'ibiribwa mu Rwanda. Uwo mushinga ushyirwa mu bikorwa n'Umuryango Nyarwanda Uharanira Inyungu Rusange Utegamiye kuri Leta “AGRIFOP” ku nkunga y'Umuryango w'Ubumwe bw'Ibihugu by'i Burayi “EUROPEAN UNION”.

Mu kuyitegura, hifashishijwe impuguke, abakozi ndetse n'imfashanyigisho zateguwe na Minisiteri y'Ubuhinzi n'Ubworozi (MINAGRI), Ikigo cy'Igihugu Gishinzwe Guteza Imbere Ubuhinzi n'Ubworozi mu Rwanda (RAB) n'abandi bafatanyabikorwa.