

Pachikuto ndi zifaniani zili mubuku ili, Derrick Nasando ndi Nicholas Wukupa

Ndondomeko Zamakono Zoyendetsera Ulimi wa Nsomba za Alimi Ango'noang'ono m'Malawi

Ndondomeko Zamakono Zoyendetsera Ulimi wa Nsomba za Alimi Ango'noang'ono m'Malawi

Olemba bukuli

Netsayi Noris Mudege,¹ Mary Lundeba,¹ Peterman Mark,² Patience Chungu,¹ Peter Allen,² Dorothy Chisusu,¹ Alinafe Maluwa,¹ Meriam Phiri¹ and Rose Komugisha Basiita¹

Mabungwe ogwira nawo ntchito

¹WorldFish

²Mississippi State University

Mukafuna kunena za bukhuli gwiritsani mawu awa

Mukafuna kunena za bukhuli gwiritsani mawu awa: Mudege NN, Lundeba M, Mark P, Chungu P, Allen P, Chisusu D, Maluwa A, Phiri M and Komugisha RB. 2021. Better Management Guidelines for smallholder fish farmers in Malawi. Penang, Malaysia: WorldFish. Manual.

Zokhuzana ndi bungwe la WorldFish

WorldFish ndi bungwe lopezeka m'mayiko ambiri koma losayimira dziko lina liri lonse la chitukuko chapakati pa mayiko chokhudza kafukufuku ndi kupereka upangiri pansi pa ndomokeko yotchedwa Dyetsani Tsogolo, yomwe ndi chochitika cha chokhudza ntchito yowonesetsa kuti anthu ali ndi chakudya chokwanira yomwe ikugwiridwa ndi Bomba la United States of America.

Bungwe la kafukufuku la Mississippi State University limayesetsa kulimbikitsa njira zimene anthu amapazera zosoweka zawo zatsikunditsiku ndi kupezeka kwa chakudya chokwanira ndi chofunikira mthupi polimbikitsa njira zamakono zogwirira ntchito za usodzi ndi zoweta nsomba. Bungweli liri ndi likulu lake ku Penang, m'dziko la Malaysia, komanso liri ndi maofesi ku Asia, ku Africa, ndi kudera la Pacific.

WorldFish imatsogolera ntchito yokhazikika ya kafukufuku oyendetsedwa ndi bungwe la CGIAR okhudza mmene zimachitikira mogwirizana zinthu zokhudza kulima ndi nsomba mwachidule FishAgri-Food Systems (FISH) muchingerezi.

WorldFish imalandira thandizo la ndalama kuchokera kwa amene amaponya ndalama zawo kuthumba la chithandizo lotchedwa CGIAR Trust Fund lomwe zambiri zake zikupezeka pa tsamba la intaneti ili: <https://www.cgiar.org/funders/>

Bungwe la Fish Innovation Lab limathandiza bungwe la United States kumbali yoyendetsa ntchito yokhazikikayi. Sukulu za ukachenjere za Rhode Island, Texas State, Washington ku St Louis, ndi RTI International zimagwira gwira limodzi ndi United States ntchito yoyendetsa ntchito.

Omwe anathandiza ntchito yolemba bukuli

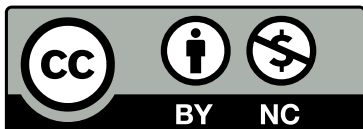
Mabungwe a WorldFish ndi Feed the Future Innovation Lab for Fish adagwira ntchito limodzi kuti alembe buku lophunzilirali. Ntchito yomwe inagwira WorldFish inalandira thandizo la chuma lochokera ku ntchito yapadera ya nthambi yachitukuko ya dziko la Germany ya Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) yotchedwa Kutsogolera Ntchito Yowonesetsa Kuti Mabizinesi Akuchitidwa Moganizira Anthu Onse

Komanso Zinthu Zonse Zoyenera Kutero yopangidwira alimi angono'ano a nsomba ndi anthu osauka omwe amagwira nawo ntchito zomwe zimathandiziraa kuti nsomba zifike kunsika ziri zokonzeka kugulitsidwa ku Malawi ndi ku Zambia. Ntchitoyi ikugwiridwa panso pa kafukufuku wa bungwe la CGIAR okhudza m'mene zinthu zokhudza kulima ndi nsomba zimachitikira mogwirizana, muchingerezi FishAgri-Food Systems, mwachidule FISH. Ntchitoyi imalandira thandizo la ndalama kuchokera kwa amene amaponya ndalama zawo kuthumba la chithandizo lotchedwa CGIAR Trust Fund lomwe zambiri zake zikupezeka pa tsamba la intaneti ili: <https://www.cgiar.org/funders/>. Gulu lomwe linagwira ntchito yolembe bukuli likuthokoza ntchito yomwe anagwira a WorldFish Zambia, mothandizidwa ndi Aquaculture Technical, Vocational, and Entrepreneurship Training for Improved Private Sector and Smallholder Skills Project (AQ TEVET) chifukwa ntchito yawo idapereka zinthu zambiri zomwe zinagwiritsidwa polemba buku lino. Chomodzimodzinso, gulu lomwe linalimba buku lino likuthokozanso kuti linali ndi mwayi wogwiritsa ntchito zolembedwa zotchedwa The Malawi Gold Standard Aquaculture Production System zokonzedwa ndi Nthambi ya Boma la Malawi Yona za Nsomba mogwirizana ndi abwenzi a Malawi pachitukuko. Tikuthokozanso Vishnumurthy Mohan Chadag, Kelvin Mashisia Shikuku ndi Ahmed Nasr-Allah chifukwa chotilimbikitsa nthawi zonse komanso chifukwa cholera kuwerenga bukuli lisanasindikizidwe pofuna kuwonesetsa kuti ndi lalembidwa bwino.

Mmene mungawapezere olemba bukuli

WorldFish Communications and Marketing Department, Jalan Batu Maung, Batu Maung, 11960 Bayan Lepas, Penang, Malaysia. Email: worldfishcenter@cgiar.org

Creative Commons License



Content in this publication is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License ([CC BY-NC 4.0](https://creativecommons.org/licenses/by-nc/4.0/)), which permits non-commercial use, including reproduction, adaptation and distribution of the publication provided the original work is properly cited.

© 2021 WorldFish.

Ojambula zinthunzi

Pachikuto ndi zifanifani zili mubuku ili, Derrick Nasando ndi Nicholas Mukupa

Mndandanda Wa zolembedwa Za Mkatimu

| | |
|--|----|
| Ulimi wa Nsomba m'Malawi: | 1 |
| Mitundu ya Tilapia Yomwe Imawetedwa m'Malaw: | 3 |
| Tilapia: | 3 |
| Mlamba (Catfish): | 5 |
| Komwe imapezeka mitundu ya nsomba zololedwa m'Malawi: | 6 |
| Kusankha malo oyenera kukumbapo damu la nsomba: | 8 |
| Njira zamakono zosamalilira madambo: | 11 |
| Kakhalidwe ka damu pa malo ndi kamangidwe kake: | 13 |
| Ndondomeko ya chitetezo cha zamoyo zopezeka pa malo: | 17 |
| Madamu a Nazale: | 23 |
| Kayika nsomba mudamu: | 25 |
| Chakudya ndi madyetsedwe: | 30 |
| Kuthira feteleza ndi kupereka chakudya chowonjezera: | 37 |
| Ubwino wa madzi: | 41 |
| Thanzi la nsomba: | 45 |
| Kukolola: | 50 |
| Kasamalidwe ndi mayendedwe: | 54 |
| Kugulitsa nsomba: | 57 |
| Bizinesi ya Ulimi wa Nsomba: Kukonza Ndondomeko ya Bizinesi: | 60 |
| Kuphunzitsa | 72 |

1. Ulimi wa nsomba m'Malawi:

Mawu Oyamba

Ngakhale mawu oti Ulimi wa Nsomba ndiokhazikika pa liwu loti nsomba mawuwa amatanthausanzo ulimi wa nsomba ochitidwa limodzi ndi ulimi wa nyama zina zam'madzi ndi zomera za m'madzi. M'malawi muno, mtundu waukulu wa Ulimi wa Nsomba umene umachitidwa pogwiritsa ntchito malo omwe amatheka kuweteramo nsomba monga madamu, mathanki komanso zikwere. Ulimi wa Nsomba ukhonzika kuchitidwa kumtunda komanso kumadzi ambiri monga kunyanja.

1.1. M'malawi muno, Ulimi wa Nsomba

M'malawi muno, Ulimi wa Nsomba unayambidwa mu chaka cha 1965 pamene mdziko muno munafika nsomba zamtundu wa Rainbow Trout (*Onchorhynchus mykiss* muchilankhulo cha akatswiri a sayansi). Pa nsomba 100 zirizonse zolimidwa mu Mayiko a m'Bungwe la Chitukuko la Mayiko a Kum'mwera kwa Africa (SADC), zisanu (5%) zimalimidwa mu dziko la Malawi. Mu zaka zaposachedwapa Ulimi wa Nsomba wapita patsogolo kwambiri m'dziko muno. Malinga ndi zomwe ananena a bungwe la CASA Malawi, mu chaka cha 2020 chiwerengero cha nsomba zowetedwa chinakwera kuchoka pa matani 4,900 mu chaka cha 2015 kufika matani 7,672 muchaka cha 2016. Nthambi ya Boma Yoona za Nsomba inapeza kuti dziko la Malawi liri ndi alimi a nsomba pafupifupi 15,465

1.2. Kodi mavuto omwe alimi ang'onoang'ono ansomba amakumana nawo m'Malawi muno ndi otani?

- Kusowa kwa mbewu ndi chakudya zabwino kufupi ndi dera lawo
- Kukwera mtengo kwa chakudya chamakono
- Kulephera kupeza thandizo ndi upangiri kuchokera kwa alangizi
- Kusowa kwa thandizo la chuma
- Kusowa misika yopezetsa phindu lambiri
- Kusowa nyumba zogwiriramo ntchito
- Kugwiritsa ntchito njira zosayenera zoyendetsera ulimi
- Kulephera kupeza mitundu ya nsomba zokula nsanga



Chithunzi 1. Chitsanzo choonetsa kagulitsidwe ka nsomba.



Chithunzi 2. Phindu lochokela mu kugulitsa nsomba.

1.3. Phindu la Ulimi wa Nsomba

- Umapangitsa kuti pakhomu padzikhala chakudya chokwanira ndipo umathandiza alimi ang'onoang'ono kuti adzidya zakudya zamagulu.
- Mu nsomba mumapezeka michere yofunikira omwe timasoweka mthupi la munthu monga Vitamin A yemwe amapezeka munsomba zazing'onozing'ono ndipo ali ndi ubwino wambiri ku thanzi la munthu
- Munsomba mumapezeka zakudya zomanga ndi kukulitsa thupi zomwe zimapezeka mu zinthu za thupi la nyama
- Mitundu ina ya nsomba imakhala ndi mafuta otchedwa Omega 3 ochuluka omwe ndiabwino kumbali ya thanzi. Mafutawa akhonza kulipeputsa thupi ku chinchito chomwe limagwira chomenyana ndi zinthu zomwe zimaliwononga. Akhonzanzo ndi kuchepetsa mafuta oyipa otchedwa triglyceride omwe amapezeka m'magazi.
- Umapangitsa kuti nsoma zidzipezeka kumalo komwe kulibe nyanja kapena mitsinje
- Umapereka mwayi wa ntchito komanso woyambitsa mabizinesi
- Umakweza ntchito zosamalira zachilengedwe pamene ukugwiritsa malo osayenera kulimamo mbeu
- M'popezera ndalama pa alimi ang'onoang'ono, aamuna ndi aakazi, zomwe ubwino wake umasefukira ku mabanja akumidzi omwe si alimi.

2. Mitundu ya Tilapia yomwe imawetedwa m'Malawi

(Gawo ili lachokera mu Nagoli J, Pulaizi A, Unyolo S, Phiri YL, Kanthenga H, Chemula D, Mbamba D, Thidza I and Sainani H. 2020. Fish farming trainers' guide: Pond aquaculture. Manual. Malawi: WorldFish.)

2.1. Tilapia

Tilapia ndi mtundu umodzi wa nsomba omwe umachita bwino m'madamu ang'onoang'ono ndipo pakali pano ukuwetedwa m'mayiko otentha a ku Africa, a ku Asia, ndi ku America. Pali mitundu yoposa 100 ya tilapia yomwe imapezeka mu Africa. Mtundu uliwonse wa Tilapia umaoneka mosiyana ndi unzake ndipo umakhala ndi chikhalidwe chosiyana ndi cha zinzake

2.1.1. Chambo (*Oreochromis karongae* – *Muchilankhulo cha a sayansi*)

Chambo chomwe chimadziwikanso ndi dzina loti chejumo, chiri mugulu la nsomba zomwe zimasamalira mazira ndi ana awo mkamwa. Chimafungatira mazira ndikusamalira ana ake nkamwa Mtundu wa nsomba umenewu umatengedwa kuti wabwino kwambiri kuweta M'malawi. Ndiyotuwa ngati phulusa ndipo iri ndi mizere yolembedwa chotsitsa pathupi pake. Chambo chimaberekana bwino m'madamu ndipo chimakula mwansanga kuposa makumba kapena chilinguni. Chambo chimatenga kanthawi kuti chikule zomwe zikutanthauza kuti chimagwiritsa mphamvu zambiri pakukula kusiyana ndi pakuswa ana. Nthawi zambiri chimaliza kukula chikafika magilamu 70. Izi zimapangitsa kuti chambo chidzitengedwa ngati nsomba yapamwamba kwambiri yomwe imalamulira mitengo ya nsomba zonse m'Malawi. Chambo chimadya tizinyama ndi zomera zomwe zimapezeka mwachilengedwe m'madzi a mu madamu othiridwa feteleza ndi manyowa, ndi zinthu zina zokhala ndi chakudya chokulitsa thupi (pulotini) monga soya ndi mpendadzuwa.

2.1.3. Makumba (*Oreochromis shiranus*)

Makumba ndi nsomba yomwe imasamalira mazira ndi ana ake nkamwa. Imafungatira mazira ndikusamalira ana ake nkamwa. Mtundu umenewu umapezeka madera ambiri m'Malawi koma sumakondedwa ndi alimi ambiri chifukwa umachedwa kukula. Koma, ngati munthu ukuganiza kwambiri za kalemeredwe kansomba osati za kukula kwake, nsomba imeneyi ndi yomwe imanenedwa kuti ndiyabwino chifukwa imakhwima nsanga. Makumba amaswana mosavuta mu damu ndipo amayamba kuswa mwamsanga (pafupifupi akafika magilamu 20). Chifukwa nsombayi imagwiritsa ntchito mphamvu zambiri pakuswana kusiyana ndi pokula imayenera kudiyetsedwa bwino; kupanda

kutero kakulidwe kawo kamakhala kapang'onopang'o kwambiri. Makumba amakula bwino mu madamu omwe athiridwa feteleza koma kuchuluka kwa kholola lawo kumatengera kachulukidwe ka zakudya zomwe zinagwiritsidwa ntchito. Makumba amayanjana ndi zakudya zosiyanasiyana, osaiwala tizomera ndi tinyama ting'onoting'ono ta m'madzi (plankton muchingerezi) komanso akhonza kudya zinthu zina monga madeya a chimanga ndi a mpunga. Amakula bwino ngati akuwetedwa aamuna okhazokha kapena aakazi okhaokha.

2.1.4. Chilunguni (*Coptodon rendalli*)

Chilunguni ndi chaku Malawi komkuno ndipo chimatha kukhala bwinobwino m'malo ena aliwonse opezeka madzi. Koma sichiwetedwa ndi alimi ambiri ku Malawi kuno. Nsomba imeneyi kawirikawiri imatchulidwa nsomba ya chifuwa chofiira ndipo imadziwika ndi mayina ena ambiri monga; nyungusale, katakuzi, nyakalua, mgoma mbungu ndi ena otero. Imaswera mazira pansi pa madzi, ndi yowala, ili ndi mizere yonenepa ya pakati 5 ndi 7, ndipo ili ndi dontho lowala lofiira pam'mero ndi pachifuwa komanso dontho lochititsa chidwi lakuda pa msana pake lotchedwa "dontho la Tilapia. Mwachilengedwe, chilinguni sichidya nyama koma zomera.

Chilunguni cha misinkhu yonse chimadya zomera ndipo chimakhala m'malo amene momwe muli zomera zambiri. Chifukwa chakuti imatha kugaya zomera za m'madzi, nsomba imeneyi ndi yofunika kwambiri kuyiphatikiza ndi nsomba zina za mtundu wa Tilapia. Zina mwa zomera zomwe chilunguni chimadya ndi mbatata yakholowa, chinangwa, masamba apapaya, chisoso ndi nsenjere. Imaswa kwambiri ndipo imaswa ana okwana pakati pa 5000 ndi 7000 ndipo imaswa kokwana kasanu ndi katatu chaka chili chonse. Chilunguni chimakula nsanga kuposa makumba chifukwa chimayamba kuswa mochedwa. Poti chimayikira mazira pamalo osazama, chiwelengero chamazira ake omwe amaswedwa ndi tiana tobadwato ndikukhala bwinobwino chimakhala chochepa. Izi zimachitika chifukwa chakuti mazirawo amaonongeka komanso tianato timafa chifukwa chakutentha kwambiri komanso chifukwa cha nyama zomwe zimadya zinzawo.

2.2. Chikhalidwe cha mitundu ikuluikulu yansomba zowetedwa m'Malawi

| Mtundu | Chambo (<i>Oreochromis karongae</i>) | Makumba (<i>Oreochromis shiranus</i>) | Chilinguni (<i>Coptodon rendalli</i>) |
|--|---|---|--|
| Kochokera | Yakonkuno | Yakonkuno | Yakonkuno |
| Mayina Achikuda | Chambo Chejumo | | Nyungusale, Katakuzi, Nyakalua, Mgoma Mbungu |
| Gulu | Yodya nyama ndi zomera | Yodya nyama ndi zomera koma zimasintha nkuyamba kudalira kudya tizomera tammadzi zikatalika kufika 100mm | Yodya zomera zokhazokha |
| Kakulidwe | Zokula nsanga | Zokula pang'onopang'ono | Zimakula nsanga bwinoko kuposa makumba |
| Maswanidwe olingana ndi mmene nsomba zasamalidwila | Kukula pakati pamiyezi inayi kufika miyezi isanu ndiumodzi; kuikila mwezi uliwonse ngati kutentha kuli kosaposa madigiriyi seloshasi 24 | Kukula pamiyezi itatu mpakana miyezi isanu ndiumodzi; kuikila mwezi uliwonse ngati kutentha kuli kosaposa madigiriyi seloshasi 24 | Kukula pa miyezi isanu ndi iwiri; kuikila milungu inayi kufikila milungu isanu ndi itatu iliyonse ngati kutentha kuli kosaposa madigiriyi seloshasi 24 |
| Katenthedwe kopiririka | Madigiriyi seloshasi 24 kufikira 36 | Madigiriyi seloshasi 19 kufikira 36 | Madigiriyi seloshasi 24 kufikira 36 |
| Katenthedwe koyenelera | Madigiriyi seloshasi 27 kufikira 29 | Madigiriyi seloshasi 24 kufikira 32 | Madigiriyi seloshasi 24 kufikira 32 |
| Kopezeka mwachilengedwe | Nyanja ya Malawi ndi Nyanja ya Malombe | Nyanja ya Malawi ndi Kuntunda kwa mtsinje wa Shire koma nzopezeka kwambiri kwa alimi a nsomba. | Nyanja ya Malawi ndi Kuntunda kwa mtsinje wa Shire koma nzopezeka kwambiri kwa alimi a nsomba. |

Tebulo 1. Chikhalidwe cha mitundu ikuluikulu yansomba zowetedwa m'Malawi.

2.3. Ndimitundu yanji ya nsomba zina zowetedwa m'Malawi?

2.3.1. Mlamba (catfish)

Mlamba ukhonza kuwetedwa bwinobwino pamodzi ndi makumba. Kuwetera limodzi mitundu imeneyi kukhonza kulimbikitsa makulidwe a mitundu ya nsomba iwiri. Pakuti mlamba umadya nyama, pamene ukudya makumba umakhala ukuchepetsa chiwerengero cha makumbawo. Ngakhale zili chonchi, mulamba siwoloredwa ndi anthu ambiri m'dziko muno ndi m'mayiko ena pa zifukwa za chikhalidwe ndi zipembezo. Mlamba ndi nsomba yomwe ili ndi mutu waukulu wophwatalala ndipo uli ndi chiphyephye chapansana chofewa ndi wautali ndiwopanda mamba. Mlamba umatha kupuma mpweya wapantunda chotero, kusiyana ndi nsomba zina, umatha kukhala m'malo momwe nsomba zimakhala mothinana, komanso imatulutsa zokolola zambiri m'malo osiyanasiyana m'mene imawetedwa.

| Mtundu | Mlamba (catfish) |
|--|--|
| Kochokera | Yakonkuno |
| Gulu | Yodya nyama yokhayokha |
| Kakulidwe | Zokula nsanga kwambiri |
| Maswanidwe olingana ndi mmene nsomba zasamalidwila | Kukula pa miyezi isanu ndiumodzi. Pakadutsa miyezi isanu ndi inayi zimayamba kuikila mazila mu Novembala mpaka mu Febuluwale pamene katenthedwe kwamasana kumafika madigiriyi seloshasi 27 kufikira 32 |
| Katenthedwe kopiririka | Madigiriyi seloshasi 18 kufikira 36 |
| Kutentha koyenera | Madigiriyi seloshasi 24 kufikira 30 |
| Kopezeka mwachilengedwe | Zakumalawi konkuno Zimapezekanso mu Nyanja ya Malawi, Nyanja ya Chilwa, Nyanja ya Chiuta komanso Kusi kwa Mtsinje wa Shire |

Tebulo 2. Chikhalidwe cha mlamba m'Malawi,.

Mlamba umakula nsanga kuposa chilinguni koma umavutika kuti uikire mazila mmadamu komanso m'mathanki. Tiana ta mlamba tomwe timapulumuka tikagobadwa ndi tochepa chifukwa chakuti timadyedwa ndi nsomba zina ngati damulo silimasamalidwa bwino.

3. Komwe imapezeka mitundu ya nsomba zololedwa m'Malawi

Lamulo loteteza ndi ndikuona za mayendetsedwe a malo amene mumachitika usodzi lomwe linalembedwa mu cha 1997 limafotokoza momwe malo ochitira usodziwa komanso Ulimi wa Nsomba zimayendetsedwera m'Malawi. Lamuloli limalitsa kugwiritsa ntchito mitundu yansomba yakunja mu ulimi wa nsomba kuti mitundu ya nsomba za chiMalawi yitetezedwe. Mitundu yonse yobwera monga *O. niloticus* siziloledwa m'madera owetera nsomba mu Nyanja ya Malawi. Common Carp (mitundu wina wa nsomba zochokera ku mayiko ena) unaletsedwa m'chaka cha 1992.

Mndandanda uli m'musiwu ukusonyeza mitundu ya nsomba zomwe zimawetedwa m'madera ambiri muno m'Malawi

| Dzina la Asayansi la Mtundu wa nsomba | Dzina lachikuda | Malo |
|--|-----------------|---|
| Oriokoromisi shiranasi | Makumba | Widely cultured in Malawi |
| Oriokoromisi Karongaye | Chambo | Chimawetedwa kwambiri ku Malawi |
| Kupudotoni rendali (Chambo chofira pa ntima) | Chilinguni | Chimawetedwa kwambiri kuchigwa cha mtsinje wa Shire |
| Cat Fish | Mlamba | - |

Tebulo 3. Mitundu ikuluikulu yansomba zowetedwa madala osiyanasiyana m'Malawi.

3.1. Ngati ndikufuna kuweta Common Carp kapena mitundu ina ya nsomba zochokera m'mayiko akunja, ndi chifukwa chani sindiri oloedwa kutero?

Pali zifukwa zambiri zomwe amaletsera kutero. Choyamba ndi chifukwa cha lamulo. Lamulo la mchaka cha 1997 loteteza ndi ndikuona za mayendetsedwe a malo amene mumachitika usodzi, likulola alimi kuweta mitundu ya nsomba zomwe zili za ku Malawi kuno zomwe zimatengedwa kuti ndizopezekeratu m'malo omwe mumapezeka madzi. Kuyamba kuweta nsomba zochokera m'mayiko akunja m'malo amenewa sikofunika komanso kumaika pa chiopsezo zamoyo zopezeka malo amenewo. Mwachitsanzo, Common Carp amakumba mu timalo tomwe Tilapia amayikira ndi kuswera mazila ake zimene zimapangitsa kuti kaswedwe kake kachepe kamba koonongeka kwamalo oswera (Chirwa et al., 2019).

Umboni wochokera m'mayiko ena a mu Africa ukuwonetsa kuti nsomba zakunja zikaloredwa kuwetedwa mu Africazimapangitsa kuti zokolola za nsomba za kuno kwathu zomwe anthu akumudzi amazidalira zichepe.

1. Nsomba zochokera mmaiko enazi zimakanganilana zakudya, malo oswanirana komanso malo okhala ndi za kuno kwathu
2. Nthawi zina nsomba zakuno kwathu zimatha kuberekerana ana ndi nsomba zobwerazi zimene zimapangitsa kuti ana obadwawo asakhale ndichikhalidwe cha nsomba zakuno kwathu zomwe zimalowetsa pansu mtundu wa nsombazi.

3.2. Nditha kukwanitsa kusamala mitundu ya nsomba yobwera m'malo anga ochitira ulimi wa nsomba, kodi palibe chiopsezo chomwe chingabwere kamba kuphatikiza nsombazi ndi za kuno kwathu?

Kawirikawiri pamakhala chiopsezo choti nsomba zikhoza kuthawa. Mwachitsanzo Nailo Tilapia atayikidwa mu malo owetera nsomba ozungulira m'tsinje wa Kafue muzaka za 1982 kufikira 1988 nsomba zina zinathawa m'malo owetera nsombazi ndipo zinayamba kuswana kudzera mwa makolo achikuda mu mphepete mwa mtsinje wa Kafue. Alimi ansomba anapereka uthenga woti nsomba za Nailo Tilapia zachuluka kwambiri koma chiwerengero cha nsomba zina za kuno kwathu zokhala ndi madontho atatu ndi zamutu wobiriwira chatsika (Zolembedwa ndi Kafue River Trust <http://www.kafuerivertrust.org/invasive-alien-species>). Mitundu ya nsomba za kuno kwathu ili pa chiwopsezo. Zitadziwika kuti nsomba zamtundu wa Common Carp zikuthawa m'madamu, boma la Malawi linaganiza zotseka ulimi wa nsombazi popewa zotsatira zosakhala bwino.

3.3. Mudera langa ndizovuta kuti ndipeze mbewu ya nsomba, ngati ndikufuna kuti ndigule kuchokera m'boma lina, nditani?

Pamafunika chilorezo chochokera ku Nthambi ya Boma Yoona za Nsomba (Department of Fisheries) kuti muchotse nsomba za moyo kuchokera ku dera limodzi kupita nazo ku dera lina. Kusamutsa nsomba kuchokera ku boma limodzi kupita ku boma lina kuti zikawetedwe mu damu kukuyenera kuchitika ngati pali chilolezo chochokera ku nthambi ya boma imeneyi kapena malangizo ochokera kwa alangizi a za nsomba a m'dera lanu. Zimenezi nzofunika chifukwa zimapangitsa kuti mbewu ya mitundu ya nsomba zomwe zimapezeka mwachilengewe m'malo omwe mumayambira mitsinje mu dera limenelo isungike.

3.4. Ndingadziwe bwanji kuti mtundu wa nsomba omwe ndikufuna kuweta ndiwoyenera mu dera langa?

- Pazifukwa zomwe tanena kale, mitundu ya nsomba za m'deramo ndi yomwe ili yoyenera kuwetedwa. Ngati simukudziwa bwino za izi apezeni alangizi a za Ulimi wa Nsomba.
- Ngati mukuweta nsomba za malonda, mukuyenera kuonetsetsa kuti mtundu womwe mukufuna kuwetawo umakondedwa ndi anthu ambiri pa msika.

3.5. Ndi zinthu zina ziti zomwe ndikuyenera kudziwa ndikamasankha mtundu wa nsomba zoweta?

- Dziwani kakulidwe ka mtundu wa nsomba zomwe mwasankha. Ngati mukupanga ulimi wa nsomba ngati bizinesi, mtundu wa nsomba ukhale okula mofulimira.
- Mtundu wa nsomba ukuyenera kukhala woti thupi lake lidzikula motakasuka ukadya chakudya chamakono.
- Mtundu wa nsombazo ukuyenera kukhala wotha kugwiritsa bwino ntchito zakudya zachilengedwe zopezeka mu damu zotchedwa pulankitoni, tomwe ndi chakudya chachilengedwe cha nsomba chopangidwa mu damulo mukathiramo manyowa kapena feteleza.
- Mukuyenera kuweta nsomba zomwe sizingagwidwe nsanga ndi tizirombo toyambitsa matenda.
- Ngati mukuweta nsomba zosiyanasiyana mu damu limodzi mukuyenera kusankha mitundu yoti siyimadyana. Mwachitsanzo, mulamba umadya nsoma zinzake.
- Mukuyenera kuganizira kapezekedwe ka mbewu yabwino yoti muzibwenzeretsera nsomba mu damu lanu.
- Nsomba zomwe zili zokoma kudya.
- Mukamapanga Ulimi wa Nsomba kuti muzingopeza chakudya kapena pa zifukwa za thanzi, mukuyenera kuweta mtundu wa nsomba woti umaswana mosavuta mu damu.
- Mukamapanga Ulimi wa Nsomba zoti mudzigulitsa mukuyenera kuweta nsomba zomwe zimakondedwa kwambiri pa nsika ndipo pali anthu ochepa omwe amagulitsa nsombazo.

4. Kusankha malo oyenera kukumbapo damu la nsomba

4.1. Posakha malo oyenera kukumbapo damu lanu, ganizirani zinthu izi:

4.1.1. Malo odalirika ochokera madzi

Madziwo azipezaka chaka chonse komanso opanda ziyangoyango. Ngati kuli kotheka, madzi amayenera kuchoka pomalo okwelerapo kuposa pa malo pomwe pali damu kuti muchepetse mphamvu zomwe zingafunike kuti mupope madzi kuchokera kumalowo kupita mu damu lanu pakuti madziwo amabwera mwa mphamvu kuchokera pamalo okwera kupita mudamu.

4.1.2. Katenthedwe kapena kaziziridwe ka madzi

Katenthedwe kapena kaziziridwe ka madzi kazikhala kolingana ndi momwe umakondera mtundu wa nsomba zomwe mukufuna kusunga mu damu lanu. Mtundu wa Tilapia umakhala bwino m'madzi a katenthedwe kochokera pa madigiriyi seloshasi 24 kufikira 32. Mtundu wa Tanganyika Brim siwuyanjana ndi madzi ozizira kwambiri.

4.1.3. Yesetsani kupeza malo otetha kwambiri

Yesetsani kupeza malo otetha kwambiri amene mungathe kupeza ku dera lanu kuti mukumbepo damu lanu komanso patali ndi mitengo ndi zomera zoyanga zomwe zingatchinge madzi ku dzuwa ndi kuwapangitsa kuti akhale ozizira. Tilapia amachita bwino pa ntetete komaso m'malo amene ndi a dzuwa ndithu komwe madzi amakhala otetherapo.

Kuti madzi mudamu lanu akhale otetha chitani zotsatirazi:

- Onesetsani kuti madzi a mudamu asamayende
- Muonjezere madzi pokhapokha akatsika kwambiri kufika pa masentimita 15 kapena kuposera apo
- Damu lanu likhale lokuya mita imodzi (1m). Mbali yakuya kwambiri itha kufika ma sentimita 120 kufikira masentimata 130 ndipo yosaya itha kukhala masentimita 60 kufikira masentimita 80 kutengera makulidwe a damu. Madamu aakulu amakumbidwa mwakuya molingana ndi kutalika kwa milambala ake
- Chifukwa chani mukuyenera kupewa kuti damu lanu likhale losaya kwambiri: Madzi a mu damu losaya kwambiri amasintha mosavuta kaziziridwe kapena katenthedwe
- Damu losaya kwambiri limayika nsomba pa chiwopsezo ku mbalame zikuluzikulu monga za mtundu wa Marabou zomwe zingagwire ndi kudya nsomba mosavuta. Damu lakuya moyenera limathandiza nsomba kuthawa ku zinthu zomwe zimafuna kuzigwira.
- Choyenera kudziwa anthu ochulukitsa nsomba: Damu losaya kwambiri limakhala bwino kugwiritsa ntchito pochulukitsa nsomba. Kutentha kwa madzi apa damu kumatengera kuya kwa damu, damu losaya kwambiri limakha ndi madzi otetherapo. Ndi kutentha kwa madzi kumeneku komwe kumathandizira kuchulukana kwa nsomba
 - Pankhani ya njira yogwiritsira ntchito mahapa pa nsomba zoyikira osagwilitsa ntchito damu losaya. Akayikidwa moyenera mahapa amakhala pansu pa damu. Mahapa amayikidwa pa 10-15cm kuchokela pansu. Damu lakuya limapangitsa kuti ma hapa adzikhala ndi madzi okwanira komanso pa kuchuluka kwabwino
- Ngati malo angakuloreni, kumbani damu lokhala ndi mkati motsetsetseka; madzi a m'mbali yotsetsetseka amakhala otetherapo kusiyana ndi ambali zina za damu chifukwa mbali yotsetsetseka imakhala yosaya

4.1.5. Mtundu wa dothi oyenera

Damu lidzikhala ndi dothi la mtundu wa makande chifukwa limasunga madzi. Dothi la nchenga silabwino chifukwa m'phepete mwa damu mumakokoloka mosavuta ndipo madzi amatayika kudzera pansi pa damu.

4.1.6. Sakhani malo otsetserika pang'ono

Kumbani damu pa malo otsetserika pang'ono pomwe sipangakhale povuta kuyika komanso kochotsa madzi kusiyana ndi kugwiritsa ntchito njira zina zomwe zingasowe ndalama zambiri.

4.1.7. Damu limayerena kukhala pafupi

Damu limayerena kukhala pafupi ndi nyumba ya mlimi kuti kasamalidwe kasavute (monga kudyetsera komanso kuyang'anira nsomba zanu). Damu lizikhala kumalo komwe kuli misewu yosavuta kulumikizana ndi misika komanso zinthu zofunika pa ulimi wa nsomba

4.1.8. Sankhani madera omwe kulibe chiopsyeyo cha kusefukira kwa madzi.

Sankhani madera omwe kulibe chiopsyeyo cha kusefukira kwa madzi. Izi zimathandiza kuchepetsa ndalama zomwe mungalowetse pobwenzeretsa nsomba zomwe zapita ndi madzi osefukira. Pewani malo omwe amakhala pa chiopsyeyo cha kusefukira kwa madzi. Pewaninso kusakanikira kwa madzi a pansi pa nthaka ndi madzi a mudamu.

4.2. Ndine mlimi oyamba kumene ndipo ndikufuna kuyamba Ulimi wa Nsomba, nditani?

4.2.1. Pali chiopsezo chilichonse chomwe chingabwere ngati ndingakwanitse kusamala mitundu ya nsomba yobwerayi m'malo anga ochitira Ulimi wa Nsomba?

Popewa kulakwitsa komanso mavuto omwe mungakumane nawo kutsogolo, pitani ku Nthambi Yoona za Ulimi wa Nsomba mukalandire uphungu okhudza kasankhidwe ka malo oyenera kumangapo damu. Alimi sakuyenera kuyamba ulimi wa nsomba asanadziwitse mafumu ndi akuluakulu a Nthambi ya Boma Yoona za Ulimi wa Nsomba.

4.3. Ndikufuna kuyamba Ulimi wa Nsomba, koma malo anga ali pa dambo. Nditani?

Chonde werengani chikalata chodziwitsira anthu chomwe chili ndi mayankho a funso lanu.

4.3.1. Ndi njira iti yosavuta komanso yosabowola nthumba yomwe ndingagwiritse ntchito kuti ndione ngati mtundu wa dothi la pamalo anga uli oyenera kukumbapo damu?

Pali njira zitatu zomwe mungagwiritse ntchito.

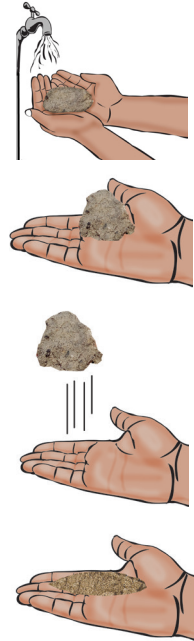
1. Njira yofinya

- Nyowetsani dothi lodzadza n'dzanja ndi madzi ochuluka bwino kuti likhale ndi chinyontho
- Finyani dothilo potseka dzanja lanu ndi mphamvu
- Ngati dothilo litakhale momwe mwalifinyilamo mukatambasula dzanja, dothi limenero ndilabwino kukumbapo damu



2. Mpweya wa mudothi

- Nyowetsani dothi ndi kulibulungiza ngati mpira
- Ponyani m'mwamba dothi lobulingizidwalo ndi kuligwira
- Ngati m'buluwo siusweka, dothilo ndilabwino kukumbapo damu
- Ngati kam'buluko kasweka kapena kulekana, dothi limenero silabwino kukumbapo damu



3. Kuyeza kalowedwe ka madzi mudothi (Zoyenera maphunziro a masiku angapo)

- Kumbani dzenje lakuya mita imodzi (1m). Dzadzanimu madzi. Vindikirani dzenjelo ndi masamba.
- Tsiku lotsatira madzi adzatsika chifukwa adzalowa mu dothilo. Thirani madzi ena kufika pamwamba ndipo vindikirani ndi masamba
- Tsiku lotsatira, onani momwe madzi alekeza. Ngati madzi adakali ambiri dothi limenero ndiloyenera kukumbapo damu. Ngati madzi athamo, dothi limenero siloyenera ku ulimi wa nsomba.

5. Njira zamakono zosamalilira madambo

5.1. Kukumba damu lanu pa dambo kuli ndi kuyipa kungapo monga:

- Simungathe kuchotsa madzi mu damu lanu kuti mukolore nsomba kapena kukonzamo. Ndikofunika kuchotsa madzi onse kuti mukolore nsomba zonse mu damu makamaka ngati mukupanga ulimi wa nsomba ngati bizinesi.
- Pamakhala chiopsezo chakuti nsomba zikhonza kuthawa pa nthawi yomwe madzi asefukira mu nyengo ya mvula
- Kumanga damu kumakhala kovuta mu nyengo ya mvula chifukwa cha kuchuluka kwa madzi kapena nthaka ikakhala ndi madzi ambiri
- Ntchito yowonesetsa kuti madzi akhale abwino, mwachitsanzo, kuchulukitsa tidzakudya tansomba tompera ndi tanyama tomwe timapezeka m'madzi, ndikovuta
- Zakudya zachilengedwe zimavuta kuti zipezeke mudamu mukathira manyowa/feteleza chifukwa cha kuchuluka kwa madzi.
- Takambirana kale zokhudza ziopsezo za pa chilengedwe monga kusakanikirana kwa madzi a mu damu ndi a pansi.

Komabe, ngati mukufuna kumanga damu lanu mu dera lotere, pali njira zina zopewera mavutowa:

- Kulitsani mulitali ndi mulifupi mwa mlambala ya damu pofuna kupewa kusefukira kwa madzi mu nyengo ya mvula; komanso mlambala lanu likhale lotambalala bwino popewa kusakanikirana kwa madzi mu madamu oyandikana.
- Gwiritsani ntchito ma paipi akuluakulu odutsa madzi pofuna kuthandiza kuchotsa madzi mu damu akadzadza kwambiri; madzi akadzadza kwambiri ali ndi kuthekera kogwetsa mlambala la damu

M'musimu muli mndandanda wa machitidwe oyenera ndi ndondomeko zomwe mungatsate pomanga damu ku dambo:

5.2. Malo akhale ndi chiopsezo cha kusefukira kwa madzi chochepa

- Kusefukira kwa madzi mu damu kumapangitsa ziweto zam'madzi kukokoloka, kuyipitsidwa kwa damu ndi nyama zachilengedwe, komanso kusakanikirana kwa madzi oyipa ndi madzi a mu damu. Ku dambo kumakhala chiopsezo chachikulu cha kusefukira kwa madzi ndipo muyenera kusankha malo amene mungakwanitse kuthana ndi vuto la kusefukira kwa madzi. Funsani alimi ena komanso anthu okhala mu deralo zambiri ya kusefukira kwa madzi mderalo komanso mapezedwe a madzi mu zaka zisanu zapitazo.

5.3. Osamanga damu pa kasupe

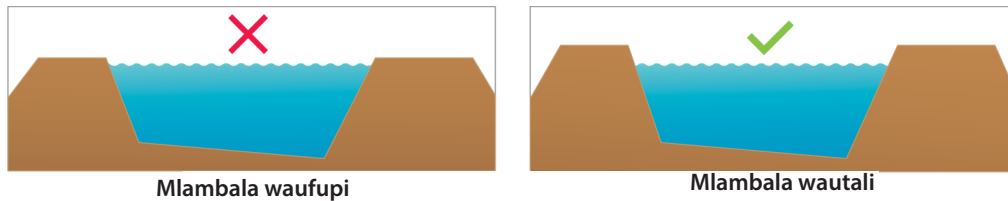
Kasupe ndi malo opezeka pansi pa nthaka omwe mumachokera madzi; kasupe amapezeka ku dambo. Zifukwa zomwe simukuyenera kukumba damu pa kasupe ndi izi:

- Madzi akachuluka kumakhala kovuta kuwasamala
- Madamu akhonza kusefukira ngati madzi achuluka
- Nsomba zikhonza kukokoloka ndi madzi
- Ngati manyowa/feteleza anathiridwa, zimadzakhala zovuta kuona zotsatira zomwe mumayembekera chifukwa cha kutaika kwa michere yamumanyowawo/yamufetelezayo komwe kumachitika pamene madzi asefukira mu damu.

M'malo mwake gwiritsani ntchito akasupe ngati kolowera madzi mu damu. Ku dambo lomwe kuli vuto la madzi, mungathe kupanga damu lina losungiramo madzi pafupi ndi komwe madzi akuchokera, monga kasupe, kenako akhotetsereni madziwo mu madamu la nsomba.

5.4. Malo atetezedwe ku madzi osefukira.

Pomwe pali chiopsezo chachikulu cha kusefukira kwa madzi, milambala otchingira madzi osefukira amangidwe ngati zili zofunika kutero.



Chithunzi 3. Maonekedwe acham'bali a damu lokhala ndi milambala yayifupi (njira yolakwika yosamalirira madamu) ndi damu lokhala ndi milambala yayitali (njira yabwino yosamalira damu)

5.5. Musamange madamu a nsomba m'malo omwe muli madzi koma zochitika za madziwo zimakhudzana kwambiri ndi zachilengedwe zina.

Ndondomeko ya zanyama ndi zomera za m'madzi mudziko muno imatenga magawo makumi awiri pa zana limodzi liri lonse la malo m'Malawi (Government of Malawi, 2015). Timakamba za ndondomeko ya zanyama ndi zomera za m'madzi mudziko lino timatanthauza nyanja, mitsinje, madambo ndi malo ena ang'ono ang'ono amene mumapezeka madzi. Malo a m'madambo monga yanja ya Chilwa ndiofunika kwambiri padziko lapansi, ndipo anachedwa "Ramsar site and a Man and Biosphere Reserve (MAB)". Malowa anaonongeka ndikusintha kwa nyengo ndi machitachita awanthu, zimene zachititsa kusokoneza ntchito za anthu zikwi (Government of Malawi, 2015). Ulimi wa nsomba sukuyenela kusokoneza malo ngati amenewa. Chotelo njira zosamalira malowa ziyenela uikidwa.

Mwachitsanzo, ndondomeko za chitetezo cha nyama ndi zomera zomwe zimapezeka pamalo zikuyenera zikonzedwe pofuna kuteteza kukhala modalirana kumene nyama ndi zomera zammadzi zimakhala nako pamene chilengedwe chili m'malo mwake. Zina mwa ndondomekozi ndi:

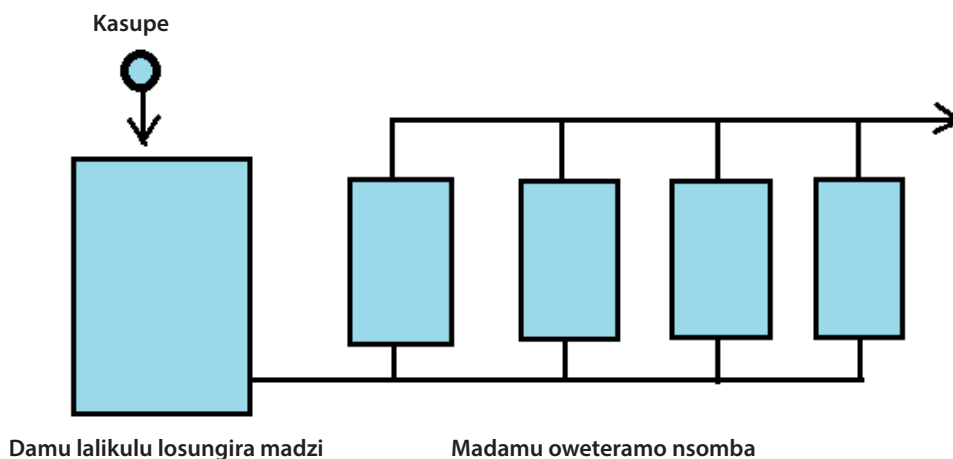
- Kumanga madamu apadera othandizira kuchotsa zoipa za m'madzi ochokera ku madamu a nsomba
- Kugwiritsa ntchito nsomba za chilengedwe zomwe sizingasokoneze kagwiridwe ntchito ka zinthu zachilengedwe
- Kupewa kugwiritsa ntchito mankhwala omwe angaononge madzi

6. Kakhalidwe ka damu pa malo ndi kamangidwe kake

Ndizofunikira kwambiri kuganizira kakhalidwe ka madamu pamalo mogwirizana ndi mtundu wa nthaka, komwe kukuchoka madzi komanso komwe akupita. Makonzedwe a madamu a nsomba akhale oti zisamavute kuikamo madzi komanso kuchotsamo madzi onse. Makonzedwe adamu

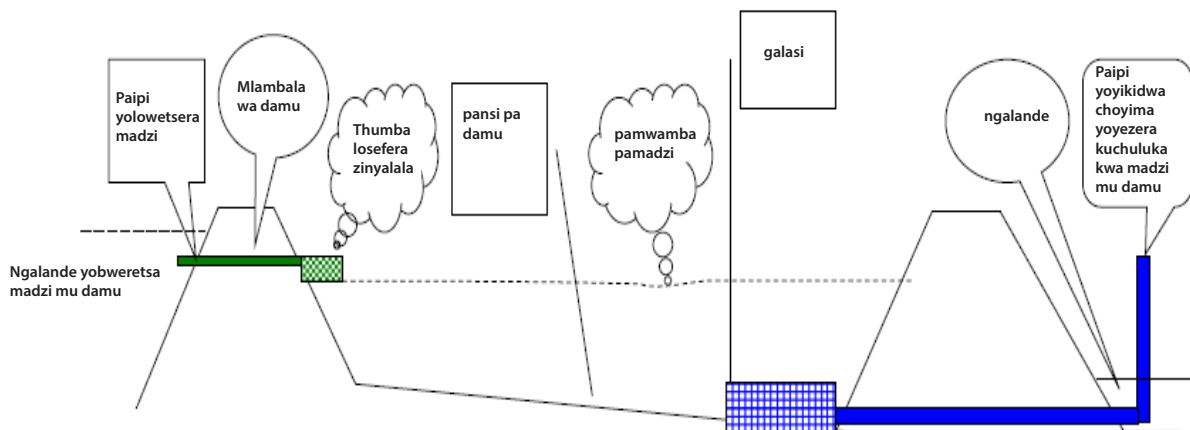
6.1. Kodi madamu angasanjidwe bwanji?

- Kumbani madamu mbali zoyang'anizana monga ikhalira mikono ya muthu.
- Onetsetsani kuti madamu anu onse ali ndi malo odutsa madzi popanda kudutsa mu damu kuti mudzitha kulowetsa ndi kutulutsa madzi mu damumo popanda kudalira mayendedwe amadzi amene mumatengako madzi a mudamu lanu.
- Kumanga damu pambali pa linzake kumathandiza kuti damu lililonse likhale ndi polowera komanso potulukira madzi pakepake.
- Madamu asathire madzi mu madamu ena pofuna kuchepetsa chiopsezo cha kuonongeka kwa madamu komanso kuchulukitsa zotsatira za kuthira manyowa/feteleza mu damu lililonse.
- Madamu akhale ndi kochokera madzi kofanana komwe kutha kukhala akasupe, mitsinje, ndi malo ena (onani chitsanzo m'musimu)



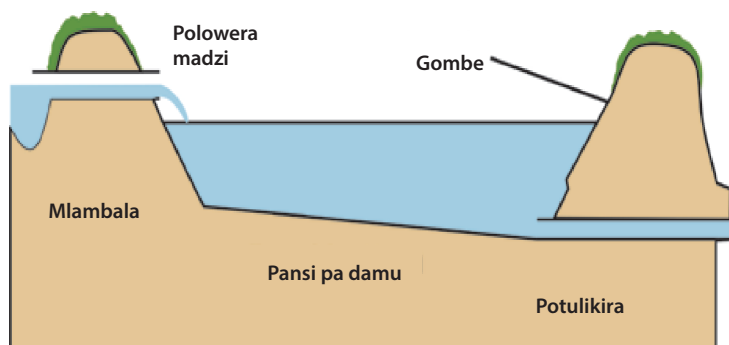
Chithunzi 4. Madamu okumbidwe moyang'anizana ndipo lililonse liri ndi malo olowela ndi otulukila madzi ake ake koma madzi akuchokela pamalo amodzi.

- Ikani milambala yotchingira madzi kuzungulira damu pofuna kuonetsetsa kuti madzi akugweramo ndipo akukhalitsamo.
- Dzalani udzu pamwamba pamlambala kuti likhale lolimba popewa kukokoloka kwa nthaka
- Samalani udzuwu ndipo onetsetsani kuti usakule kwambiri
- Onetsetsani kuti madzi ali pa muyezo oyenera powonesetsa kuti mu damu musatenthe kapena kuzizira kwambiri, pofuna kuchepetsa zomera za mmadzi ndi kusamala mpweya.



Chithunzi 5. Maonekedwe acham'bali a damu labwino lokhala ndi zones zofunikira.

- Onetsetsani kuti damu lanu liri ndi kolowera madzi, kotulukira madzi, komanso ma paipi otulutsira madzi akadzadza kwambiri.
- Ikani sefa kolowera madzi, kotulukira madzi komanso mu ma paipi otulutsira madzi osefukira pofuna kupewa kulowetsa tizirombo tosafunika komanso kuthawitsa nsomba. Mungagwiritsenso ntchito miphika ya dothi yokhala ndi mabowo, sefa wa waya, chitsulo chobooledwa, mphasa, dengu lokhala ndi mipata yodutsa madzi koma osakwana kudutsa nsomba zazing'ono.
 - o Tsukani masefa amenewa pafupipafupi kuti muchotse zinyalala zomwe zingamate njira ya madzi
- Onetsetsani kuti damu lanu liri ndi panso popendeka popendekeka moyang'ana kotulutsira madzi pofuna kuthandiza kayendedwe kamadzi pa nthawi yowachotsa mu damu.



Chithunzi 6. Maonekedwe acham'bali a damu okhala ndi panso posendekeka

- Ngati damu lanu likuthira madzi mu malo ongokhala malowo atha kukhala ndi matope komanso tchire. Mukhonza kumakhala ndi nthawi zoyikika zokonza malo ongokhalawo
- Polowera madzi pokwera kuposa kukwera kwa madzi pamathadiza kuti mpweya udzizungulira bwino

6.2. Mamangidwe ndi makonedwe a damu amakono

6.2.1. Kakulidwe ndi maonekedwe oyenera za damu

Mulingo oyenera ndi maonekedwe a damu zimadalira cholinga cha zokolola, kukula kwa zokolola, ndondomeko ya msika, njira zokololera ndi ndalama zomangira damu. Madamu a ngodya zinayi amakhala osavuta kumanga komanso kusamala. Makulidwe oyenera kwambiri adamu la nsomba omwe angapereke zokolola zokwanira kwa mlimi ndi masikweya mita chikwi (1000/m²). Mulingo umenewu utha kukwaniritsidwa mu njira zosiyanasiyana monga kumanga madamu awiri a masikweya mita 500 liri lonse kapena kumanga madamu asanu a masikweya mita 200m² liri lonse. Mlimi akhoza kutsimikizika pa nkhani ya makulidwe a damu malinga ndi chuma ndi zogwilira ntchito zomwe ali nazo, zofunikira pa ntchito komanso kutengera misika.

6.2.2. Gwiritsani mulezo oyenera wamayedwe a damu

Kuya kwa madzi kukhale masentimita 60 kufikira masentimita 80 (pafupifupi kufika m'mawondo) mbali yosazama ndi 1.2m kufikira 1.3m (kufika mchiuno) kumbali yozama. Mbali yakuya kwambiri imathandiza potunga madzi othira mu nazare. Damu lanu litha kukhala lozama kuposera apa ngati mumagwiritsanso ntchito posungiramo madzi nthawi yopanda mvula. Onetsetsani kuti madzi onse akhoza kuchotsedwamo mu nthawi yokolola. Ndizofunikira kusalaza pansi pa damu mukafika mlingo oyenera. Izi zimapangitsa kuti kugwiritsa ntchito ukonde kusakhale kovuta pokolola nsomba; ukonde umayenda mosavuta ngati pansi pali posalazidwa bwino. Madamu osazama kwambiri akhonza kugwiritsidwa ntchito pochulukitsa nsomba koma osati kuzisiya kuti mpaka zikulire momwemo.

6.2.3. Mlambala lotchinga likhale lalitali ndi lopendeka moyenera

Mlambala wa damu ukwezedwe kufikira pa utali wabwino kuti madzi osefukira asalowe mudamu la nsomba. Kapendekedwe ka mlambala kakhale mita imodzi pa mamita awiri aliwonse. Mukhonza kupanga mlambala okhudzana mu ngodya zitatu kuti zikuthandizeni kupendeketsa damu moyenera. Mlambala ukatalika kwambiri limakhala losalimba komanso kumakhala kovuta kugwira ntchito mu damu. Dothi logwiritsidwa ntchito pa mlambala wotchinga lisakhale ndi miyala, mchenga ndi zinyalala pofuna kupewa kutaya madzi. Onetsetsani kuti pakati pa madamu pali mpata okwanira pofuna kupewa kugwa kwa mlambala lotchinga zomwe zikachitika zimapangitsa kuti madzi asakanikirane. Mpatawu umathandizanso kuti pakhale mpata okwanira ogwirirapo ntchito. Pamemne mukumanga mlambala mosinja, dothi likhale lolimba. Mukathira dothi lokwana masentimita 30 lipondeneni ndi mapazi kapena gwiritsani ntchito chipangizo chosinjira. Mutha kusinja ndi mpini wa khasu, mtengo olemera ndi zida zina. Izi zimapangitsa damu kukhala lolimba.

6.2.4. Damu lililonse likhale ndi kolowera ndi kotulira madzi

M'malo olowera ndi otulukira madzi musakhale moyandikana; madzi asachoke mu damu limodzi kulowa mu damu lina. Ngati nkoyenera kuti alowe, madzi olova atsukidwe pogwiritsa ntchito mosungira madzi kapena pogwiritsa ntchito njira zamakono zosefera madzi. Madzi olova mu damu awunukidwe pogwiritsa ntchito mavavu kapena zipata zapadera zoyikidwira ntchitoyi. Madzi olova asefedwe pofuna kupewa kulowetsa nsomba zachilengedwe, zinyalala, masamba ndi zinthu zina mu damu. Kotulukira madzi kuyikidwe ku mbali imene ili yozama kwambiri kuti zidzikhala zotheka kuchotsa madzi onse mosavuta. Payipi yolowetsera madzi komanso yochotsera madzi akad zadza zikhale pa mlingo okwana masentimita 15 kuchokera polekezera madzi popewa kuthawitsa nsomba. Tsukani masefa okhala molowera madzi mu madamu ndi madzi oyenda pofuna kupewa kusokoneza kayendedwe ka madzi. Kubowola mlambala lotchinga pofuna kuika motulukira madzi sikoyenera chifukwa izi zimayambitsa kukokoloka kwa nthaka komanso kufooka kwa mlambala.

6.2.5. Madzi otuluka mu damu akonzedwe

Madzi ochotsedwa mu damu akagwira ntchito yake akonzedwe kudzera mu damu kapena mu ngalande zochotsera zinyatsi pozipangitsa kuti zikhazikike pansi pamadzi popewa kuononga chilengedwe. Potulukira madzi pakonzedwe popewa kutaya kunja nsomba zakufa.

6.2.6. Kumbani dzenje lokololeramo nsomba

Pofuna kuthandizira kukolola nsomba, dzenje la mamita awiri mulifupi likumbidwe malo otsika kwambiri molunjika mbali yomwe madzi amatulukira.

6.2.7. Umitsani damu lanu mukamaliza kukolola

Ngati mukugwiritsa ntchito madamu omwe mumatha kuchotsamo madzi, madzi achotsedwe ndithu. Pansi

pa damu pawumitsidwe kufikira patapanga ming’alu; izi zimathandiza kuti nthaka ikhale yabwino komanso kuchotsa zonyansa za chilengedwe zina.

6.2.8. Chotsani zinyatsi mu damu lanu mukatha kukolola

Yang’anani mosamalitsa ngati mlambala la damu labowoka ndi kulikonza. Konzani mlambala la damu pokweza matope pa mlambalalo. Konzaninso kutsetserika kwa mlambalali ngati kuli koyenera kutero. Ziyang’anani mosamalitsa ngalande zolowera ndi zotulukira madzi ndi kuzikonza kuti madzi adziyendamo mosavuta.

7. Ndondomeko ya chitetezo cha zamoyo zopezeka pa malo

7.1. Kodi ndondomeko za chitetezo cha zamoyo zopezeka pa malo nchiyani?

Ndondomeko zotetezera nsomba monga gulu la zamoyo zimakhudza machitachita onse okhudzana ndi:

- Kuchepetsa kuopsa kobweretsa matenda komanso tizirombo toyambitsa matenda ku nsomba zanu
- Kuthandizira kuchepetsa chiwopsezo cha tizirombo toyambitsa matenda towopsa kwambiri (todzera mutizirombo tina kapena m'madzi) kapena cha nsomba zogwidwa ndi matenda zomwe zingathawe kapena kuchoka mu damu lanu nkupita m'malo ena momwe munapezeka madzi, m'malo ena ochitira ulimi wansomba kwa nyama zina zomwe zingathe kudwala matendawo.
- Kuchepetsa kupsinjika kwa nyama, zomwe zingachepetse kuthekera kotenga matenda (Erlacher-Reid, 2012)

7.2. Kasamalidwe ka zinyama

Mbewu ikhale yathanzi komanso yosadwaladwala

- Ngati simukudziwa alimi obeleketsa ana a nsomba ovomelezeka, funsani alangizi azansomba. This is not a sub-heading, it is a point
- Gulani mbewu kwa oswetsa nsomba ovomelezeka. Ngati simukudziwa oswetsa nsomba ovomelezeka, chonde funsani kwa alangizi a za Ulimi wa Nsoma m'dera lanu.
- Mbewu iliyonse ya nsomba yomwe yagulidwa kumene ipatulidwe poyiyika mu damu la yokha popewa kufala kwa matenda komanso tizirombo toyambitsa matenda.
- 'Kupatulidwa ndi ndondomeko imene imatsatidwa pamene nsomba imodzi kapena zingapo ziyenera kusungidwa m'malo apadera kuti zizolowere malo atsopano kapena kuti ziwunikidwe pazifukwa zomwe zilipo, ndi kuti ngati nkotheka ndi koyenera zichizidwe ku matenda osiyanasiyana zisanaikidwe mu damu kapena kugulitsidwa zamoyo (mwachitsanzo, kukaweta kapena kukaziyika m'makontena a galasi ogwiritsidwa ntchito pa chionetsero cha Ulimi wa Nsomba)' (Yanong and Erlacher-Reid, 2012).

7.2.1. Kasamalidwe ka zinyama

Mbewu ikhale yathanzi komanso yosadwaladwala.

- Gulani mbewu kwa oswetsa nsomba ovomelezeka. Ngati simukudziwa oswetsa nsomba ovomelezeka, chonde funsani kwa alangizi a za Ulimi wa Nsoma m'dera lanu.
- Mbewu iliyonse ya nsomba yomwe yagulidwa kumene ipatulidwe poyiyika mu damu la yokha popewa kufala kwa matenda komanso tizirombo toyambitsa matenda.
 - o 'Kupatulidwa ndi ndondomeko imene imatsatidwa pamene nsomba imodzi kapena zingapo ziyenera kusungidwa m'malo apadera kuti zizolowere malo atsopano kapena kuti ziwunikidwe pazifukwa zomwe zilipo, ndi kuti ngati nkotheka ndi koyenera zichizidwe ku matenda osiyanasiyana zisanaikidwe mu damu kapena kugulitsidwa zamoyo (mwachitsanzo, kukaweta kapena kukaziyika m'makontena a galasi ogwiritsidwa ntchito pa chionetsero cha Ulimi wa Nsomba)' (Yanong and Erlacher-Reid, 2012).

7.2.2. Kupatulidwa nkofunika chifukwa chiyani?

- Kumateteza nsomba zomwe muli nazo mu damu lanu ku matenda komanso ku tizirombo toyambitsa matenda
- Kumapereka kuthekera koti nsomba zomwe zangobwera kumene zizolowere nyengo yatsopano komanso chakudya ndi chisamaliro chatsopano.

- Kumapereka nthawi yokwanira kwa nsomba kuti zichire ku kututumutsidwa kakudza ndi kugwidwa komanso kusamutsidwa.

7.2.3. Mumatani nsomba zikapatulidwa?

Pamene mwazilekanitsa nsombazi onetsetsani kuti mukuchita chidwi ndi zinthu zotsatirazi:

- Maonekdwe a nsomba: kodi zikuoneka bwino kapena ayi
- Chidwi chakudya: kuthawa kwa chilakolako cha chakudya ndicho chizindikiro choyamba cha matenda.
- Pamene mwagula nsomba zatsopano kwa anthu oweta, musaziyeke mu malo omwe muli kale nsomba zolekanitsidwa ndi zina. Zisungeni muhapa yakeyake. Musayike pamodzi ana a nsomba zosiyana m'malo amene mukusungiramo nsomba pa nthawi yozilekanitsayi.

7.3. Kodi nsomba ndidzizipatula kwa nthawi yayitali bwanji?

Kutalika kwa nthawi yolekanitsa nsomba kumatengera m'mene zinthu ziliri, mtundu wa nsomba, chifukwa choziwetera, zotsatira za zoopya zomwe zadza pofufuza chabe ndi zina zambiri. Nthawi yovomerezeka ndi kuyambira masiku 15 mpaka miyezi itatu (3 months) potengera m'mene kasamutsidwe kanachitikira komanso kukula kwa chiwopsezo chomwe chilipo. Masamutsidwe ngofunikiranso - kodi ndi pamalo panu pomwepo? Kodi ndi pakati pa malo a ulimi wa nsomba awiri? Kodi ndi kuchokera kudera lina kapena kuchokera ku dziko lina? Nkhani ya mmene umoyo uliri pa malo omwe nsombazo zikuchokera komanso komwe zikupita ikuyeneranso kuganiziridwa.

7.3.1. Ulimi wabwino

- Onetsetsani kuti nsomba sizikututumutsidwa. Chepetsani kusamutsasamutsa nsomba chifukwa kungavulaze khungu lake komanso makutu pochepetsa chitetezo cha nsombazo kumatenda. Izi zikutanthauza kuti mukuyenera kuchita zinthu zotsatirazi kuti mupewe matenda omwe amagwira nsomba:
 - o Onetsetsani kuti madzi ndi abwino nthawi zonse.
 - o Gwiritsani ntchito chakudya choyenera komanso cha kuchuluka kwabwino potengera mtundu wa nsombazo.
 - o Tsatirani chiwerengero choyenera cha nsomba mu damu limodzi. Nsomba zikapyola chiwerengero choyenera mu damu zikhonza kuchulukitsanso tizirombo tosiyanasiyana tomwe tingachulukitse kuthekera kotu nsomba zanu zigwidwe ndi matenda. Chiwerengero choyenera cha nsomba pa damu chimatengera chisamaliro chomwe nsombazo zimalandira. Mumayenera kufunsa mafunso ngati awa: zimasiyidwa kuti zizipeza zokha chakudya? Zimapatsidwa chakudya pang'ono? Zimapatsidwa chakudya choyenera? Zimapatsidwa chakudya chili chonse? Alimi ang'onoang'ono onse timawalimbikitsa kuti adziweta nsomba zitatu pa sikweya mita iliyonse (3 fish/m²).
- Kuonetsetsa tsiku ndi tsiku zomwe nsomba zikuchita pa nthawi imene zikudya – kusintha kwa khalidwe ndi chidwi pa chakudya zikhonza kukhala zizindikiro za matenda.
- Mukumagwiritsa ntchito chakudya chochita kugula onetsetsani kuti tsiku lomwe linalembedwa kuti chidzayamba kuonongeka silinadutse. Masungidwe osamala achakudya amapangitsa kuti zinthu zofunikira mu chakudya zionongeke komanso kuti chakudya chiyambe chuku. Sungani chakudya cha nsomba pa malo owuma bwino komanso ozizira bwino kupewa tizirombo tomwe tingaononge chakudya.
- Mukuyenera kupereka katemera ku nsomba zanu popewa matenda ena. Funsani ku Nthambi ya Boma Yooni za Nsomba m'dera lanu pofuna kudziwa zambiri za katemerayu.

7.4. Masamalidwe a Damu

7.4.1. Gwiritsani ntchito zipangizo za khondo

Tsukani maukonde, mabeseni, makontena ndi zipangizo zina zonse musanagwiritse ntchito komanso pamene mwazigwiritsa ntchito m'madamu osiyana pogwiritsa ntchito makhwala ophera tizirombo monga Kulolini ndi Vairukilu. Mukhonzanso kutsuka ndi nchere zipangizo zonse zing'onozing'ono monga maukonde a nkomboro ndi masefa. Umitsani zipangizozi padzuwa kwa kanthawi ndithu.

| Dzina la mankhwala | Kutalika kwa nthawi yomwe amagwira ntchito mukawatulutsa * | | |
|------------------------|--|---|--|
| | KKunyika 30 Sec | Kusamba thupi lonse m'madzi (kwa ola limodzi) | Palibe malire |
| Nchere** | Magawo atatu pa magawo 100 aliwonse kapena mamiligilamu 30 pa lita | Gawo limodzi pa magawo 100 aliwonse –kapena mamiligilamu 10 pa lita | Zigawo ziwiri pazigawo 1000 zili zonse |
| Formalin** | Mamiligilamu 400 pa lita | Mamiligilamu 250 pa lita | Mamiligilamu 15 kufikira 25 pa lita |
| Potassium permanganate | Mamiligilamu 1000 pa lita | Mamiligilamu 20 pa lita | Mamiligilamu awiri pa lita |
| Madeline blue | Mamiligilamu 1000 pa lita | Mamiligilamu 20 pa lita | Mamiligilamu awiri pa lita |
| Copper sulphate | Mamiligilamu 500 pa lita | Mamiligilamu 4 pa lita | Kuchuluka kwa nchere opezeka mu chinthu mwachilengedwe 100 |

* Kutalika kwa nthawi yomwe amagwira ntchito mukawatulutsa ndi chiyang'aniro chabe ndipo nthawi zina nzosafunikira nkomwe

** Izi zikuimilira mankhwala opha tidzilombo toyambitsa matenda omwe amapezeka mosavuta ku Nthambi ya Boma Yoona za Nsomba

Tebulo 4. Mankhwala ophera tizirombo omwe amapezeka mosavuta ndi nthawi zovomerezeka zowagwiritsira ntchito.

7.4.2. Gwiritsani ntchito madzi aukhondo

- Madzi amene akulowa mu damu azikhala aukhondo
- Madzi asamachoke mu damu lina kupita mu damu linzake
- Onetsetsani kuti damu lirilonse liri ndi mapaipe ake ake komanso madzi otuluka akudusa mwake mwake kupewetsa kuonongeka kwa madzi.

7.4.3. Umitsani ndi kukonza madamu anu podikira kubwera kwa nsomba zina

7.4.3.1. Zokhudza madamu onse ophwetseka.

- Tulutsani madzi mu damu.
- Umitsani pansu pa damu mpaka dothi litapanga ming'alu. Liumitseni kwa masiku osachepera 10. Kuumitsa damu kumathandiza kukonzanso m'mene dothi lingamagwilire ntchito, kuchotsa zoipa ngakhaleenso kuchotsa kapena kuchepetsa nyama zina za m'madzi monga nkono ndi zokwawa zomwe zingabweretse matenda mu damu.
- Pamene damu lauma ndipo nthaka yapanga ming'alu, thirani layimu amene amaonjezera kuchuluka kwa

asidi wopezeka mwachilengedwe mu nthaka kapena m'madzi komanso kupha zilombo zoopsa. Kuthira layimu kumachepetsa kachukulidwe ka asidi, zomwe zimapangitsa kuti manyowa/feteleza agwire bwino ntchito komanso kuteteza damu ku tizilombo toononga. Nthaka yomwe ndi yofiira komanso ya madera omwe kumagwa mvula yambiri imakhala ndi asidi wochuluka poyerekeza ndi nthaka yomwe ndi yokuda komanso ya madera omwe samalandira mvula yochuluka.



Chithunzi 7. Kuthira laimu mu damu.

Funsani kwa alangizi a za nsomba ndi a zaulimi wa mbewu komanso mukhonza kutsatira mzere zovomerezeka ziri m'munsimu:

- A Bungwe Loyang'anira za Chakudya ndi Ulimi pa Dziko Lonse (FAO) anapeza kuti layimu (CaCO_3) amathiridwa malinga ndi mtundu wa dothi.
 - o Madamu atsopano amafunikira layimu wambiri poyerekeza ndi madamu akale. Dothi la mchengachenga lingafunike layimu wokwana makilogilamu 2,000 pa hekitala imodzi pamene dothi la dongo kwambiri lingafunike layimu wokwana makilogilamu 4,000 pa hekitala imodzi.
 - o Madamu ophwetsedwa akhonza kulowa layimu wochepa. 'Kamodzi pa chaka, thirani gawo limodzi la magawo anayi a layimu yemwe amene mumafunikira kuthira mu damu limodzi la tsopano mukamalitsuka'
 - o Madamu adzithiridwa layimu pafupifupi masabata awiri kapena anayi musanathire manyowa/feteleza.
 - o Madamu adzithiridwa layimu pafupifupi masabata awiri musanaikemo nsomba zina.
- Afunseni alangizi ku Nthambi ya Boma Yoona za Nsomba mudera lanu ngati simukudziwa muyezo woyenelera wa layimu wothira mu damu.

7.5. Kuthira layimu

| Dera lowetera nsomba | Kuchuluka kwa layimu (pa masikweya mita mazana awiri (200sq m)) |
|--|---|
| Madera omwe dothi lake ndi lanchere ochepa: Chitipa, Rumphi, Mzimba, Namwera, Lilongwe, kuzambwe kwa Zomba | Tidzidebe 4 ta layimu toti mumalowa lita imodzi ya madzi Tidzidebe 5 ta phulusa la nkhuu toti mumalowa lita imodzi ya madzi |
| Madera omwe dothi lake ndi la nchere wambiri: Nkhata Bay, Mulanje, Thyolo, Chiradzulu, kumvuma kwa Zomba, komanso madera ena a Dedza | Layimu = Tidzidebe 25 toti mumalowa lita imodzi ya madzi Tidzidebe 30 ta phulusa la nkhuu toti mumalowa lita imodzi ya madzi |

Zatengedwa mu: Malawi Gold Standard

Tebulo 5: Kathilidwe ka layimu mudamu malingana ndi mtundu wa dothi lomwe panakumbidwa damu.

7.5.1. Ngati damu lanu silimaphwetsedwa:

- Popanimo madzi pogwiritsa ntchito pampu ya madzi
- Ngati pampu ya madzi mulibe, chotsani madzi mpaka madzi ena atsopano ataikidwamo.
- Thirani layimu mu damu lanu



‘Njira ina yotetezera damu lanu ku matenda ndi kuwumitsa ndi kugalawuza. Njira imeneyi imatheka nthawi ya chilimwe yokha ndipo siyingatheke ku madera omwe dothi lake ndi la madzi ambiri kapena kumakhala mvula yambiri. Damu limapatsidwa mpata woti liwume kwa sabata imodzi mpaka pamene pansi pake pachita ming’alu yozama mainchesi 4 omwe ndi chimodzimodzi ndi masentimita 10. Izi zikachitika, dothi ligamulidwe mozama pafupifupi mainchesi 8 womwe ndi chimodzimodzi ndi masentimita 20 kenako lisiidwe kuumanso kwa sabata imodzi pokonzekera kubwezeretsedwa kwa madzi komanso nsomba zina. Njira imeneyi imathandiza kupha tizirombo toyambitsa matenda kudzera mu kuvunditsa tiziromboto, kuwala kwa dzuwa, kudutsa kwa mpweya mu nthaka, komanso kuumitsidwa.’ (Yanong, 2013)

Mukhonzanso kuthira phulusa la mitengo pamene mwaumitsa Damu lanu. Phulusa limathandiza kupha tizirombo toopsa. Njira ina ndiyoti, pamene dothi la pansili lapanga ming’alu, lichotseni pogwiritsa ntchito manja kapena fosholo. Mukhonzanso kuligwiritsa ntchito m’munda dothi limeneli. Kuchotsa dothi limeneli kumathandiza kuchepetsa tizirombo toononga mu damu lanu.

7.5.2. Tayani zinyatsi moyenera

- Tayani moyenera zinyatsi monga zochokera ku zipangizo, nsomba zokufa komanso zakudya zomwe zaonongeka popewa kuononga madzi kapenanso kubweretsa zirombo zowononga
 - o Gwiritsani ntchito ukonde wa nkombere kapena ndowa pochotsa nsomba zodwala kapena zakufa, mu damu la nsomba
- Tenthani kapena kwilirani nsomba zakufazi patali ndi madamu (Kutalika kwake usachepere mamita 100).
 - o Musalore tchire ndi zomera zowilira kumera pafupi ndi madamu
 - o Zomeramera za m’madzi zimasunga tizilombo tobweretsa matenda komanso zilombo zogwira nsomba. Tchire lomera m’milambala ya damu komanso zomera zowilira zikamera pafupi ndi damu zimasanduka malo abwino obisalamo nyama kuphatikizapo zomwe zimagwira nsomba
- Chotsani ndi manja zomera m’milambala ya damu
- Musagwiritse ntchito makhwala okupha tchire chifukwa akhonza kukhalanso owopsa ku nsomba
- Gwiritsani ntchito njira zothanirana ndi tizirombo toononga komanso zilombo zogwira nsomba
- Tizilombo towononga komanso zilombo zogwira nsomba zikhonza kubweretsa matenda pamene zikulowa mu damu. Nyama monga mbalame, nkono, achule komanso ng’azi zithamangitsidwa mu damu. Ng’azi, njoka ndi mbalame zimadyanso nsomba mu damu.
- Tsekerani molowera madzi ndi meshi, mangirani mpanda madamu anu, pewani kusunga mitengo yaikulu m’ngalande, mudzionanso ngati nthaka ya m’ngalande ikukokoloka komanso kungani zingwe pamwamba pa damu.

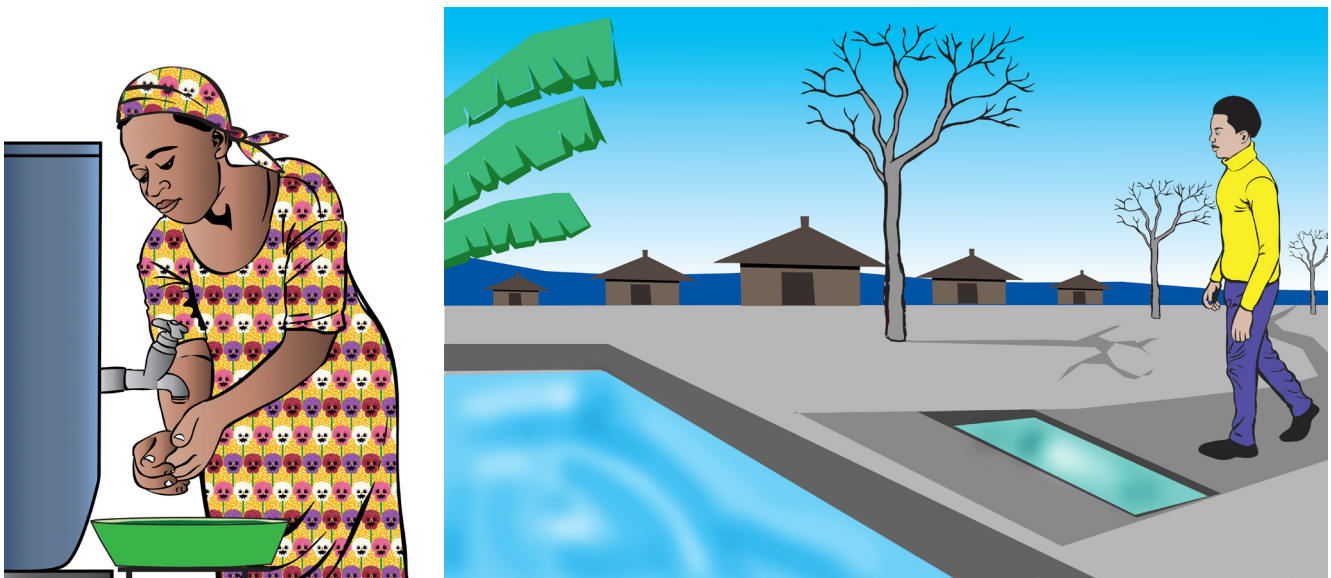
- Chotsani achule komanso mazira awo pogwiritsa ntchito ukonde wa nkombero
- Kuwumitsa damu pamene mulibe nsomba
- Madamu amene athiridwa feteleza amachepetsa kuonekera kwa nsomba ku mbalame (Chonde onani gawo lomwe likukamba za kuthira feteleza komanso kupereka zakudya zoonjezera)
- Onetseatsani kuti damu liri ndi madzi ozama bwino pofuna kuchepetsa mfungo la nsomba
- Yang'anirani damu lanu pafupipafupi ndipo muike ziboliboli zoopsezera nyama.

7.5.3. Musalekelere ziweto ndi nyama zina zapakhomo kulowa mu damu.

Onetsetsani kuti ziweto ndi nyama zina zapakhomo sizikulowa m'madamu. Kuti izi zitheke, ikani zotchingira pozungulira madamu anu. Ziweto zikhonza kutenga matenda kapena tizirombo toyambitsa matenda zomwe zingaitse madzi komanso kudwalitsa nsomba.

7.5.4. Masamalidwe a anthu

- Wina aliyense amene akugwira ntchito kapena amene wangobwera akuyenera kuvala zovala komanso zovala kumapazi zosamalidwa bwino. Tizilombo toyambitsa matenda tikhonza kubwera m'madamu kupyolera mu zovala kapena zovala kumapazi monga nsapato
- Musalore alendo ochokera komwe nsomba zikudwala kapena zikungozifera
- Anthu amene akugwira ntchito mu damu azisamba m'manja asanayambe kugwira ntchito, akamaliza kudya komanso pamene achokera ku chimbudzi. Chepetsani kugwira madzi a mudamu.
- Polowa mu damu, ogwira ntchito akuyenera kukhala atasamba komanso atasintha zovala. Sambani ndipo sinthani zovala musanalowenso mu damu lina ngati mukugwira ntchito yokhudza nsomba zosiyana thanzi lawo. Limbikitsani izi makamaka pamene mukugwira ntchito ndi aganyu pakuti chiopsezo kufalikira kwa matenda komanso tizilombo toyambitsa matenda chimakula ku malo amene kuli madamu anu kukamabwera athu osiyanasiya.
- Mukhale ndi posambira m'manja komanso mapazi pa anthu ogwira ntchito komanso alendo.



Chithunzi 8. Zitsanzo za njira zina zaukhondo monga posambira mmanja komanso mapazi.

- Mukhonza kukhala ndi makhwala ophera tizilombo opondamo oyikidwa polowera ku madamu anu kuti munthu aliyense olowa adzipondapo asanalowe.

8. Madamu a nazale

8.1. Kodi damu la nazale ndi chiyani?

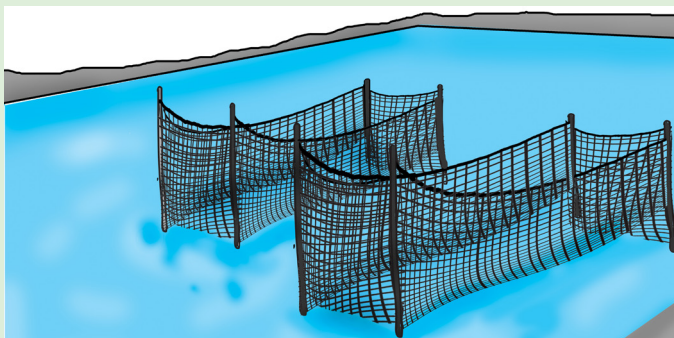
Ili ndi damu limene mumayikidwa nsomba zongobadwa kumene (fry muchingerezi) zisanafike msinkhu woikidwa mu madamu othiridwa feteleza kapena manyowa momwe zimakhala moyo wawo onse. Mahapa omwe amaikidwa mumadamu amatha kugwiratsidwanso ntchito posamalira tiana ta nsomba. Mutha kusamalira nsombazi mpaka zitakula m'mene mukufunira musanazichotse kuti zikule kufika poti mukhoza kuziika m'madamu oti ziswane. Mukhonza kuziweta nsomba zimenezi kwa mwezi umodzi kufikira itatu kapena mpaka zitakula m'mene mukufunira. Nsomba zanu zikafika pakati pa magilamu 5 ndi magilamu 20, ndikofunika kuzisamalira kuti muchepetsa imfa za nsomba zing'onozing'ono (Fingerlings muchingerezi).

8.2. Kodi ndikofunika bwanji kuweta nsomba zing'onozing'ono m'madamu othilidwa manyowa/feteleza?

- Cholinga chenicheni chosungira nsombazi m'madamu othilidwa manyowa/feteleza ndi kupanga malo abwino omwe nsomba zingakhale ndi moyo komaso kukula mwachangu
- Kuthira feteleza mu damu kumathandiza kusamala malo aakulu komanso zamoyo zomwe zimadyedwa ndi nsomba (toyandama mmadzi, tompera mmadzi komaso tinyongolotsi), uku kukuthandizanso kuti madzi akhalebe abwino woyenera kukhalamo ndi kukuliramo nsomba.
- Nkofunika kwambiri kukonza madamu a nazale. Kuthiramo madzi ndi kuthiramo manyowa/feteleza kudzychitika mu nyengo yoyika nsomba zing'onozing'ono mu damu kuti muonetsetse kuti nsomba zing'onozing'ono zikuyikidwa mu damu nthawi yoti madamuwo anapatsidwa nthawi yokwanira yoti mupezeke tizinthu tompera ndi tanyama toyandama m'madzi tomwe nsomba zimadya. Kuchita zinthuzi munthawiyi kumathandizanso kuti nthawi yomwe imapita pakati pa kukonza madamu a nazale, kuthiramo madzi ndi kuthiramo feteleza isakhale yayitali kwambiri mpaka kupangitsa kuti tidzilombo towuluka ndi tina tomwe timaononga nsomba tisachuluke. Chitani chimodzimodzi pamene mukukonza madamu oweteramo nsomba zing'onozing'ono zikachoka ku nazale. Kutu mudziwe m'mene mungathilire feteleza ndi mmene mungayikire madzi mudamu wonani gawo lomwe likukamba za kuyika nsomba mu damu.

8.2.1. Ndiliba damu laling'ono lokulitsira ana a nsomba, china chomwe ndingachite ndi chiyani posunga nsomba zanga ndisanazisamutsire mu madamu akuluakulu?

Ngati mulibe damu laling'ono, mutha kugwiritsa ntchito mahapa poweta nsomba zanu.



Chithunzi 9. M'mene mahapa amaikidwira mu damu.

- Ikani hapa yanu mu damu lanu laling'ono kuti muwete kwa masabata ochepa musanazipititse mu damu la madzi ambiri.
- Hapa ya ma sikweya mita 5.4 kapena ma mita 3.0m kuchulikitsa ndi ma mita 1.8 ndikuchulikitsanso ndi ma mita 0.9 itha kusunga nsomba zing'onzing'ono zokwana 500.

- Ubwino wa Hapa ndi wakuti imakulorani kuwerenga ana ansomba mosavuta.
- Samalirani hapa yanu ndi bulashi sabata liriyonse. Mahapawa kawirikawiri amaonongedwa ndi zakudya zotsala, ndowe za nsomba komanso tizilombo ting'onoting'ono tomwe timayambitsa matenda

8.2.2. Kodi pamene nsomba ziri munazale ndikuyenera kuzidyetsa kangati ?

- Tsiku lirilonse, nsomba zing'onozing'onozi zidyetsedwe kasanu zakudya zaufa zapamwamba Magawo 30 kapena kuposera apo pa magawo 100 aliwonse a chakudya akhale chakudya chomanga thupi ndi kukulitsa (mapulotini) ndipo adziperekedwa kwa nsombazo mundondomeko yoti chakudya chapatsiku chidzilemera mofanana ndi magawo 10 pa magawo 100 aliwonse akalemeredwe kansomba yodyetsedwayo
- Onetsetsani kuti nthawi yodyetsa nsomba siikumasitha
- Ngati mulibe chakudya chapamwamba, mutha kugwiritsa ntchito chakudya chopanga nokha ndi kuphatikizirapo kuthira manyowa/ feteleza mu damu (chonde werengani zimene zinalembedwa pa gawo 10 kuti muphunzire zambiri)

8.2.3. Sankhulani nsomba zanu motsatira nthawi zoyikika

Kuti nsomba zambiri zisafe alimi amalimbikitsidwa kuti nsomba zing'onozing'ono zomwe zili m'mahapa zichepetsedwe posankhulamo zokulirapo mwezi wina uliwonse kamodzi. Kusankha nsomba potengera kukula kwake kutha kukwanilitsidwa posefa ndi ukonde. Kuyika nsomba m'magulu osiyanasiyana kumakhala kofunika malinga ndi makulidwe a nsomba zomwe mutadzasankhe. Mukamaliza kusankha, kuchuluka kwa nsomba zosungidwa malo amodzi kukuyenera kutengera makulidwe a nsomba zomwe mwasankha. Cholinga chosankhira nsombazi kapena nsomba zing'onozing'ono zimenezi ndi kufuna kusunga nsomba za misinkhu yofanana mu madamu okulitsira kapena omwe zimasamalidwira mpaka kukoloredwa. Mwachitsazo, nsomba zazing'ono ndi zazikulu zikuyenera kusungidwa m'madamu osiyana. Izi zizathandiza kukolola nsomba za misinkhu yofanana, chomwe ndi chinthu chabwino pa nkhani ya misika

8.2.4. Sankhulani nsomba zanu motsatira nthawi zoyikika

| Kuchuluka kwa Tilapia | | Kuchuluka kwansomba mupondi kovomelezeka |
|-----------------------|---------------|---|
| Masentimita (cm) | Magilamu (gm) | Kuchuluka kwa nsomba pa sikweya mita iliyonse (m ²) |
| 25 | 0.2 | 750 |
| 3.8 | 0.5 | 440 |
| 5.1 | 1.0 | 255 |
| 6.4 | 2.0 | 143 |
| 7.6 | 5.0 | 63 |
| 9.0 | 100 | 35 |
| 10.0 | 20.0 | 20 |
| 11.4 | 50.0 | 10 |



Zatengedwa: (Tilapiathai.com/nam-sai-library cited in Hoevenaars K & Ng'ambi, 2019)

Tebulo 6. chiwerengero chovomelezeka cha Tilapia mu damu lokulitsira nsomba chiyenera kukhala chotani.

9. Kuyika nsomba mudamu

9.1. Ndi chiyani chomwe ndikuyenera kuganizira poyang'ana mbewu zoika mu damu langa?

- Ganizirani malo ochulukitisira nsomba, malo oswetserako nsomba olipiritsa, malo oweterako nsomba a boma kapena anthu akudera kwanu ophunzitsidwa bwino kagwiritsidwe ntchito ka malo oswanitsira nsomba
- Funsani akatswiri ochulukitsa nsomba m'mene mungasamalilire kapena kusungira mbewu zanu musanazisamutsire malo ena
- Chepetsani kuswana kwa nsomba mu damu posunga malo amodzi nsomba zonse zazimuna ngati zilipo mudera lanu kapena mutha kuyesa kusandutsa nsomba kukhala zazikazi kapena zazimuna pamene zafika magilamu oyambira 20g kufikira 30g ngati muli ndi upangiri otha kutero. Kenako mukhonzza kusunga zazimuna zokhazokha. Muthanso kufunsa nzeru ku Nthambi ya Boma Yoona za Nsomba m'dera lanu
- Sungani Tilapia yense wamamuna ndi owoneka ofanana kapena ofanana muyezo
 - o Nsomba zamamuna ndi zamuyezo ofanana zimakula mothamanga kuposa zomwe zasakanikirana
 - o Nsomba zazimuna zimagwiritsa ntchito bwino zakudya (zipatseni chakudya kuti zikule osati kuti zichulukane), zomwe zotsatira zake ndi kakulidwe kabwino komanso phindu lochuluka.
- Sungani nsomba zomwe zilibe matenda
- Sungani nsomba zing'onozing'ono zosachedwa kukula
- Pewani kusunga nsomba zochedwa kukula popeza ana ansomba oyambira ulimi kuchokera kwa anthu okhawo amene ali akatswiri pa ntchito yobereketsa nsomba.
- Sungani nsomba zomwe zikuoneka zochenjera pakusambira, kudya komanso zamphamvu
- **Musagule** mbewu ya nsomba kwa mlimi wina chifukwa pali chiwopsezo choti ikhonza kufalitsa matenda kapena kuchulutsa mbewu zosakula msanga.
- **Musatenge** nsomba zoweta kuchokera ku magulu a nsomba zosaweta kapena m'madzi achilengedwe ngati musakudziwa za mitundu ya nsomba zoweteka.
 - o Ngakhale nsomba zoweteka zikhonza kudziwika pali chiwopsezo choti zikhonza kuyambitsa kapena kufalitsa matenda kuchokera ku magulu ansomba zosaweta
 - o Kupeza nsomba kuchokera ku nsomba zosaweta kuthanso kuchepetsa nsomba zosaweta.

9.2. Ndingatsimikize bwanji ubwino wa nsomba zing'ono zing'ono zoweta

- Nsomba zing'ono zing'ono zidzikhala zosachepera gilamu imodzi iiyonse
- Sankhani nsomba zing'ono zing'ono zathanzi ndi zopanda chilema; yang'anitsitsani mtundu wake kuti muonetsetse kuti ndi wake weniweni wachilengedwe; kusuluka kwa mtundu kumasonyeza kuti nsombayo siyalungalunga. Yang'ananso mafufumidwe ndi makhotedwe athupi la nsombazo kuti muonetsetse kuti ndiyowoneka m'mene imayenera kukhalira.
- Sankhani nsomba zing'onozing'ono zomwe zikuoneka zosangalala powona mmene zikuyendera komanso m'mene zikudyera; nsomba ya nthanzi imayenda komaso imadya momasuka ndipo ngati sizili choncho chimenecho ndi chizindikiro choti sizathanzi.

9.3. Ndidamvapo kuti mbewu zimavutika kwambiri nthawi yomwe zikuchotsedwa kumalo omwe zinabwira kupita kumalo omwe zizikawetedwa. Kuvutika kumeneku kumasokoneza zimene mbewuyi ingathe kuchita ndipo ikhoza kufa. Kodi ndi njira ziti zomwe ndingatsatire kuteteza mbewu yanga?

- Pezani malo omwe amabadwitsirako nsomba apafupi ndi komwe kuli malo anu a ulimi kuti muchepetse nthawi yomwe mungayendere komanso ndi kuti muonetsetse kuti pali mayendedwe ambewu osavuta
- Kambilanani ndi amene mukuwagula mbewu masiku angapo lisanafike tsiku lokatenga mbewuyo ndipo

konzekerani kuyenda pakati pa nthawi ya sikisi koloko madzulo ndi teni koloko kum'mawa imene ndi nthawi yoti kunja kumakhala kusanayambe kutentha

- Izolowezeni mbewuyo kusadya kapena isalitseni chakudya musanayisamutse. Kusadya kwa nsomba kumathandiza kuti zisaipitsire mumakontena kapena m'matumba omwe zanyamulidwira, zomwe zitapanda kuchitika zitha kupangitsa kuti ziyipitsire mmadzi nthawi yomwe zikusamusidwayi ndipo izi zikhonza kupha nsombazo.
- Sinthani madzi amumamatumba kapena makontena omwe munanyamulira mbweu pothiramo madzi oyera ngati ndikofunika kutero makamaka ngati mukuona kuti mbewuyo ikubanika kapena kubwera pamwamba pamadzi kuti ipume mpweya wakunja kwamwadzi. Mukaona nsomba zikupuma moyasamula kwambiri kapena zikubwera pamwamba pamadzi dziwani kuti madzi siali bwino kapena kuti ulibe mpweya okwanira
- Nyowetsani manja anu musanayambe kugwira nsomba chifukwa manja owuma amatha kuchosa mamba ansomba kuti idzitha kupewa matenda. Sungani nsomba zanu m'madzi pamene mukuzisankha komanso kuziwerenga.
- Onjezerani kaziziridwe ndikatenthedwe kamadzi pang'onopang'ono kuti nsomba zanu zisakumane ndi vuto lakusintha kwa matenthedwe ndi maziziridwe kwadzidzidzi; chotsani madzi ena mumatumba onyamulira mbeu ndipo thiranimu pang'onopang'ono madzi ozizira bwino



Chithunzi 10. Kaikidwe ka mbewu mudamu.

- Gwiritsani ntchito madzi ozizira pafupifupi ma digiriyi seloshasi 20 mpaka 23 ngati ndikotheka. Nsomba sizimakhala zotakataka m'madzi ozizira, kotero zimagwiritsa ntchito mphweya wabwino (okisijeni) ochepa ndikutulutsa ammonia ndimphweya woipa wa kaboni wochepa zimene zimapangitsa kuti madzi asayipitsidwe ndi kuti nsomba zife.
- Pewani kusamutsa ana ansomba mu nyengo yotentha kuti mupewe kuwavutitsa.
- Yendetsani galimoto mosamala (kuthawa mabampu ngati ndikotheka) kupewa kuzivutitsa nsomba. Mathamangitsidwe agalimoto amadalira mmene misewu iliri. Ngati nsomba zafika mwachangu malo omwe zimapita, zimakhala ndi mwayi waukulu wokhala ndi moyo mpaka kukula.
 - o Pamene mukuyenda, sunzumirani nsombazo pakati pa mphindi 15 kufikira 20 zili zonse kuti muwone ngati nsombazi zisakubwera pamwamba kufuna mphweya. Ngati izi zachitika, onjezerani madzi abwino. Ngati simungathe kupeza madzi abwino, wazani madziwo ndi dzanja lanu kapena onjezerani mphweya pogwilita ntchito pampu ya njinga.
- Posamutsa nsomba zanu mutha kugwiritsa ntchito chotengera china chilichonse chosamalidwa bwino monga ndowa, chipanda, chitini cha 20 litazi, m'golo ndi zina zotero. Tsimikizani kuti chotengeramocho ndichoyera komanso chilibe sopo, mafuta kapena mankhwala.

9.4. Ndizinthu zina ziti zomwe ndikuyenera kuganizira pamene ndikusamutsa ana a nsomba:

| Kukula kwansomba (Magilamu) | Kachulukidwe kansomba muchonyamulira (Nsomba pa lita) | Kuchuluka kwa nthawi yosamutsira nsomba (Mphindi) | Matenthedwe (Digiriyi seloshasi) |
|-----------------------------|---|---|----------------------------------|
| 1–5 | 8 | 30 | 25 |
| 5–10 | 5 | 30 | 25 |
| 10–20 | 3 | 30 | 25 |
| 20–50 | 1 | 30 | 25 |

Zatengedwa mu: Hoevenaars & Ng'ambi, 2019

Tebulo 7. Chiwerengero chabwino cha ana a nsomba muzotengera komanso nthawi yosamutsira ana a nsombawo pogwiritsa ntchito zonyamuliramozo.

Ngati nthawi yamsamuko ili yopitilira mphindi 30 ndipo kukutentha kupyola ma digiriyi 25, mukuyenera kusintha madzi pa mphindi 30 zilizonse.

9.5. Pamene mukusamutsira kumalo ataliatali komanso pamene mukusamutsa zambiri nthawi imodzi, zotsatirazi ziyenera kugwilitsidwa ntchito

- Matumba okhala ndi mpweya wabwino
- Mathanki osamutsira
- Funsani malangizo kwa alangizi a za nsomba

9.6. Ndi njira ziti zabwino zoyenera kutsata pamene mukusunga nsomba mu damu?

- Nsomba zikuyenera kukhala ndi malo okwanira mu damu kuti zikule bwino. Ngati muli nsomba zachuluka, zimakhala mothithikana komanso zimakwinimbira. Popewa vuto limeneli:
 - o Sungani nsomba zing'onozing'ono zitatatu mpaka zisanu ndi imodzi pa sikweya mita iliyonse mogwirizana ndi kuchuluka kwa kasamalidwe kansombazo
 - o Patulani nsomba zing'onizing'ono pafupipafupi ndipo ziyikeni malo okulira osiyana mu mahapa kapena mudamu.
 - o Mu miyezi 4 iliyonse ya munyengo yotentha ndi 5 iliyonse ya munyengo yozizira kololani nsomba zanu zomwe zafika pa muyezo wogulitsidwa
- Funsani ogwira ntchito ku Nthambi ya Boma Yoona za Nsomba malangizo okhudza chiwerengero cha nsomba chomwe chingakwane mu damu lanu losungiramo. Kuchuluka kwaukulu kwambiri oyenera wa nsomba mu damu umapangitsa kuti nsomba ziswane kwambiri komanso kuti zikhale za pamwamba, chotero phindunso limachuluka.
- Kachulukidwe ka nsomba mu damu (kuchuluka kwa nsomba zomwe zingakhalemo) kumasiyana potengera kakulidwe ka damu lanu komanso njira zomwe limasamalidwira
- Mukuyenera kuonetsetsa pamene mukusunga nsomba mumadamu mukuzizoloweza pang'onopang'ono malo atsopanowo kuti sizasamve kupanikizika mmaganizo chifukwa chopezeka mmalo achilendo.

9.7. Kodi ndikamaliza kusamutsa mbewu ya nsomba ndikuyenera ndi zizoloweze bwanji malo atsopano oti zikhalemo?

- Siyani matumba ambewu zanu aziyandama mudamu lanu kwa mphindi 20 kufikira mphindi 30 musanayiyike mbewuyo mudamu kuti zizolowera katenthedwe kapena kazizilidwe kadamzi omwe ali mudamulo.



Chithunzi 11. Kaikidwe ka ana a nsomba mudamu.

- Yambani kudyetsa nsomba tsiku limodzi kapena awiri kuchokera pamene mwaziyika m'madzi kuti zichire kukupanikizika m'maganizo komwe zinakumana nako pa nthawi yomwe zimasamutsidwa.

9.8. Ngakhale ndikudziwa kuti ndikuyenera kufunsa mkulu wa Nthambi ya Boma Yoona Zansomba ndi malo ochuluka bwanji amene mafunika kuti ana ansomba akhalemo motakasuka?

- Sungani nsomba zing'onozing'ono zitatu kufikira zisanu ndi imodzi pa sikweya mita mu malo ochitira ulimi wakathithi pangono'no womwe umadziwika ndi kuthira manyowa kapena feteleza mudamu ndi kuzipatsa nsomba chakudya chowonjezera. Chakudya choonjezerachi chitha kukhala chopangidwa pakhomo kapena chochita kugula.

9.9. Kodi nthawi yabwino komanso malo abwino omwe ndingayike mbewu yanga mu damu ndiziti?

- Ikani mbewu yanu mudamu kunja kukuzizira: imene ili pakati pa 6 koloko madzulo ndi 10 koloko mam'mawa imene ndi nthawi yoti sikusanayambe kutentha. Komanso zimakhala zotamandika ngati kuyika mbewu mu damu kwachitika mam'mawa pamene kukuwala kuti muthe kuona ndi maso ntchitoyi.
- Sungani mbewu zanu pafupi ndi pomwe pamalowera madzi kupita mu damu kuti nsomba zikhale ndi mpweya okwanira

Zoyenera kukumbukira mukamanyamula ndi kuyika nsomba nzing'onozing'ono mu damu

Choyenera kuchita: Samutsani nsomba zanu kusanayambe kutentha

Choyenera kuchita: Gwiritsani ntchito manja onyowa nthawi zonse

Choyenera kuchita: Nsomba zanu sikhale zili mmadzi pamene mukuziwerenga ndi manja

Choyenera kuchita: Zigwireni nsombazo modekha

Choyenera kuchita: Dzadzani zotengeramo nsomba madzi a mudamu

Choyenera kuchita: Vindikirani chonyamuliramo nsombacho ndi masamba kapena kansalu

Choyenera kuchita: Gwirani ntchito mwachangu ndipo yendani mofulumira

Choyenera kuchita: Nthawi zonse mudziyesa mazizilidwe ndi matenthedwe amadzi ndiponso muzidzikonzekeretsa nsomba matetenthedwe kapena mazizilidwe amadzi pamene mukuzisamutsira ku madzi ena. Mukhonza kuzizoloweretsa pothira pang'onopang'ono mu kontena yomwe muli nsomba madzi ochokera mu damu lomwe mukufuna mulowetsemo nsombazo

Chosayenera kuchita: Kupangitsa matope mudamu pamene mukuika khoka

Chosayenera kuchita: kufinya, kugwetsa kapena kuponya nsomba

Chosayenera kuchita: Kugwiritsa ntchito zonyamuliramo nsomba zaumve
Chosayenera kuchita: Kusiya nsomba nthawi yaitali mu chotengeramo nsomba
Chosayenera kuchita: Kusiya nsomba padzuwa
Chosayenera kuchita: Kuika nsomba zochuluka mu chotengeramo nsomba
Chosayenera kuchita: Kusintha katenthedwe kapena kasinthidwe kamadzi mofulumira kwambiri

10. Chakudya ndi madyetsedwe

Chakudya chapamwamba chimathandiza kuti nsomba ziswane kwambiri komaso kuti zikhale ndi thanzi labwino. Kuti zikule bwino kwambiri komaso kuti zibweretse phindu lambiri, nsomba zimayenera kudyetsedwa zakudya zokulitsa thupi (za mapulotini). Pulotini ndi wabwino chifukwa amakulitsa nsomba.

10.1. Zakudya zogula zopangapanga zili ndi ubwino ungapo woposa dzakudya zina. Ubwino wake ndi:

- Kasinthidwe kosavuta chakudya chikalowa nthupi
- Kapezekedwe kokhazikika ka michere yomwe nthupi limapeza kuchokera ku chakudya
- Kukula mofulumira kwa nsomba
- Kuchepetsa chiwerengero cha nsomba zomwe zimafa
- Kukwera kwa ubwino wa madzi

Ngakhale chakudya chogula chimawoneka chodula kwambiri chimagwira ntchito mwachangu nthupi. Tikayerekeza ndi m'mene nsomba zimalemelera zikamadya chakudya chopangidwa ndi alimi eni, nsomba siziyenera kuti zidye chakudya chambiri chogula kuti mlimi apeze nsomba zolembera kilogilamu imodzi. Munjira ina zakudyazi zili ndi kuthekera kosandutsidwa kukhala zinthu zimene nsomba zimapindula pakuchokera ku chakudya popanda nsombazo kuchita kufunika kuti zichite kudya chakudya chambiri kuti zipindule nacho. Kuthekera kumuneku pachingerezi kumatchedwa Food Conversion Ratio (FCR) Izi zikutanthauza kuti ngati nsomba imodzi ingapatsidwe chakudya chogula chamuyezo wofanana ndi wa ina yomwe yapatsidwa chakudya chopangigwa ndi mlimi, yodya chogulayo idzakhala ndi mnofu wambiri kuposa wa yodyetsedwa chakudya chopangidwa ndi mlimi. Mwanjira ina, zakudya zimene zili ndi kuthekera kokwaniritsa zosowa za thanzi la nsomba opanda kuyembekezera kuti nsombazo ziyambe zadya chakudya chambiri zikhonza kukwezetsa phindu la mlimi wa nsomba. Onani mu tebulo loyamba m'munsimu chitsanzo cha m'mene mulimi angamapangire phindu kupyolera mu chakudya chimenechi.

| | Chimanga (Chosinja) | Chakudya Chogula/ chakudya cha timibulu titalitali tochedwa ma peletsi muchingezezi |
|---|------------------------|---|
| Mtengo wachigawo chazakudya pa kilogilamu | 189 | 1,040.00 |
| Kuthekera kogwiritsa ntchito chakudya (FCR) (makilogilamu ofunika muchakudya chofunika kupanga mnofu wolembera kilogilamu imodzi) | *20 | 2** |
| Mtengo wonse wachakudya chofunika kuti ituluke kilogilamu ya nsomba | 3,780 | 2,080 |

*Zochokera Singini et al., 2014

**Zochokera mu Jamu et al., 2017

Zatengedwa mu: modified from Isyagi et al. 2009.

Tebulo 8. Kusiyanana kwa mitengo ya zakudya zosiyanasiyana.



Chinthunzi 12: kukula kosiyanasiyana kwa zakudya zogula.

10.2. Kugwiritsa ntchito chakudya chochita kupanga kungabweretse kusitha kotani pa ulimi wa nsomba?

- Chakudya chikuyenera chikhale cha magulu oyenera komanso cha mtengo wabwino
- Chakudya chikhale chopezeka nthawi zonse komaso cha mtengo ofikirika
- Pezani chakudya chansomba kwa anthu odziwika bwino kapangidwe kake
- Gwiritsani ntchito chakudya chopangidwira mtundu wa nsomba zimene mukuweta, mwachitsanzo zakudya za Chilunguni kapena Milamba
- Tsatirani malangizo operekedwa ndi anthu omwe amapanga zakudyazo
- Kayezedwe kachakudya katengere kulemera kwa thupi la nsomba
 - o Kuchuluka kwake kumasintha malinga ndi kakulidwe kansombayo (Nsomba zocheperapo zimafunika zakudya zambiri mogwirizana ndi kalemeredwe ka matupi awo)

10.3. Ndingawerengetsera bwanji kuchuluka kwa chakudya chomwe ndingazipatse nsomba zanga?

Nachi chitsanzo cha m'mene mungawerengele kuchuluka kwa chakudya chopelekedwa ku nsomba

| Kufotokoza | Kuwerengetsera |
|---|---|
| Zolembedwa zanu. Yezani nsomba 503 ndipo mupeze kulemera koyimira nsombazo, monga magilamu 82 | Kalemeredwe koyimira nsomba zosankhidwa: magilamu 82 Kuchuluka kwa nsomba: 800 |
| Kulemera kwa nsomba zonse zomwe zili mu mudamu: Kulemera kwa nsomba kuchulukitsa ndi kuchuluka kwa nsomba | Nsomba 800 kuchulukitsa ndi magilamu 82 = magilamu 65,600 kuwagawa ndi 1,000 = makilogilamu 65.6 |
| Magawo atatu pa 100 aliwonse akulemera kwa nsomba = Magawo atatu kugawa ndi 100 = 0.03 | Magawo atatu pa 100 aliwonse akulemera kwa nsomba = Magawo atatu kugawa ndi 100 = 0.03 Makilogilamu 65.6 kuchulukitsa ndi 0.03 = makilogilamu 1.968 = makilogilamu awiri |
| Magawo amadyedwe (mwachitsanzo magawo awiri awiri kapena kawiri pa tsiku) | Chakudya cha m'mawa: zigawo ziwiri kugawa ndi ziwiri = kilogilamu imodzi Chakudya cha masana: zigawo ziwiri kuzigawa ndi ziwiri = kilogilamu imodzi |

Zochokera mu Hoevenaars ndi Ng'ambi, 2019

Tebulo 9: kuwerengetsera kuthekera kogwiritsa ntchito chakudya mthupi.

- Dyetsani nsomba chakudya chamulingo oyenera. Sinthani kuchuluka kwa nthawi zopatsa nsomba chakudya potengera kukula kwa nsombazo. Nsomba zazing'ono zimafunika kupatsidwa chakudya pafupipafupi kusiyana ndi nsomba zazikulu
- Zochitika muchilengedwe, makamaka kutentha kapena kuzizira, zikhonza kusinthitsa kuchuluka kwa chakudya chomwe chingafunukire kuti nsomba zidye. Mwachitsanzo, pamene katenthedwe kamadzi katsika munyengo yozizira, nsomba zimadya pang'ono Pofuna kupewa kuonongeka kwa chakudya mu nyengo yozizira, mutha kuchepetsa chakudya kapena kuchepetsa nthawi yopereka chakudyacho. Onetsetsani mmene nsomba zikuchitira mukadzipatsa chakudya mumiyezi yozizira.
- Onetsetsani khalidwe la nsomba panthawi yomwe mukudzipatsa chakudya ndipo onetsetsani kuti nsombazo zikudya. Ngati nsomba zisakufuna kudya, zitha kukhala zotsatira za kumva kupanikizidwa maganizo kapena matenda.
- Pewani kuzidyetsa mopitilira muyezo kapena mosakwanira. Kuchuluka kwa chakudya chosadyedwa kumapangitsa kuti madzi mu damu awonongeke komanso pansi pa damu paonongeke. Kudyetsa nsomba mopyola muyezo kumaonongetsa chakudya

10.4. Ndingagwiritse ntchito chiyani ngati chakudya chogula sichinapezeke mudera langa?

- Mutha kugwiritsa ntchito chakudya chopangidwa pamalo a ulimi wansomba kapena panyumba
- Zina mwa zipangizo zomwe zimagwiritsidwa mu ntchito yopanga chakudya pakhomo ndi soya, mpendadzuwa, chimanga, mapira, chinangwa, nsomba zoonongeka (ngati mkotheke) ndi mpunga.
- Chakudya chamapulotini chitha kupangidwa mosavuta posakaniza makilogramu 37.5 a soya komanso ma kilogilamu 62.5 achimanga. Chakudya ichi chimapereka magawo atatu pa 100 aliwonse a pulotini ofunika, komanso mapulotini akachuluka amalimbikitsa kukula kwa nsomba. Alimi akulimbikitsidwa kuti azilandire ndi kuyamba kuzitsatira njira zatsopano zopangira chakudyazi pamene njira zina zamakono zoperekedwa ndi kafukufuku zikunka zilengezedwa. Soya akazingidwe bwino. Zipangizo zina zopangira zakudya zisinjidwe poganizira nsomba zing'onozing'no ndi zazikulu zomwe. Dyetsani nsomba chakudya chaufa mu mwezi oyamba ndipo kuyambira mwezi wachiwiri zipatsidwe zakudya zopilinga bwino ngati chewula (mapeletsi).



Zatengedwa kuchokela kwa Chambo Chileshe, mulimi wa nsomba

Chithunzi 13. Zipangizo zopangira chakudya choopezeke ratu (Zotengedwa kwa alimi ansomba za chomba chileshe).

- Funsani kwa alangizi ochokera ku Nthambi ya Boma Yoonaza Nsomba kuti mudziwem'mene mungapangire nokha chakudya cha nsomba.
- Gwiritsani ntchito manyowa kapena feteleza kuti mukwanilitse zomwe sizingakwanilitsidwe ndi chakudya chopangidwa pakhomo. Chakudya chopangidwa pakhomo sichimapereka chakudya chamagulu osiyanasiyana okwanira chifukwa chilibe zofunikira zina ndi zina

10.5. Kasungidwe ka chakudya

- Tetezani zakudya zanu kuti musagwere zinthu zoononga monga tizilombo, mankhwala oopsa, ndi zina zotero. Pamene chakudya chayipitsidwa ndi zinthu zomwe siziyenera kupezeka mu chakudyacho, ubwino

- wake umachepa ndipo phindu limachepanso. Chakudya chitha kuonongeka kudzera mu zinthu zomwe zinagwiritsidwa ntchito popanga chakudyacho, chifukwa cha kasungidwe kolakwika kapena chifukwa chochisunga nthawi yaitali.
- Sungani chakudya m'malo owuma komanso ozizira bwino, otetezedwa kuzilombo zoononga komanso ku zinthu zonse zomwe zingachiononge zikasakanikirana nacho.
- Mukamalandira chakudyacho, mudzionetsetsa za ubwino wake komanso tsiku lomwe chitadzaonongeke.

10.5. Ndingawerengetsera bwanji kuthekera kogwiritsa chakudya (Food Conversion Ratio-FCR) nthupi la nsomba?

Ndikwabwino kumvetsetsa zakuthekera kogwiritsa ntchito chakudya nthupi la nsomba chifukwa kuli ndi ubwino wokhudza phindu mu ulimi wa nsomba. Kuthekera kogwiritsa ntchito chakudya nthupi ndi kuchuluka kwa chakudya chimene chimafunika mukafuna kupeza nsomba zolembera kilogilamu imodzi mukaziyika pamodzi. FCR ndi chisonyezo cha kagwiridwe ntchito ka chakudya, kugwira ntchito mwachangu, komanso kukolola nsomba malingana ndi chakudya. Mwachitsanzo, FCR ya 1.6 ikutanthauza kuti ngati mungadyetse chakudya cholembera makilogilamu 1.6 mupanga kilogilamu imodzi ya nsomba. FCR ikachepa (osapyola 2) ndiye kuti chakudya ndi chabwino.

Mutha kuwerengetsera FCR motere: FCR imadziwika mukatenga kulemera kwa chakudya chomwe mwapatsidwa ndi kuwugawa ndi kukula kwamalemeredwe ansomba.

| Kulongosola | Kuwerengetsera |
|--|--|
| Zotsatira kuchokera kuzosankha zanu. | Nsomba zonse mudamu zinkalembera 40 kilogilamu. Pano Nsomba zonse mudamu lanu ndizolembera 65.6 kilogilamu. Chakudya chimene nsomba zapatsidwa (kuchokera kuzosunga zanu) Matumba awiri a makilogilamu 20 = 40 kilogilamu mukaphatikiza. |
| Kukwera kwakulemera: Kulemera kwatsopano kuchotserapo kulemera kwakale. | Makilogilamu 65.6 kuchotsera makilogilamu 40 = Makilogilamu 25.6 |
| FCR: Kulemera kwachakudya m'makilogilamu kugawa ndi kukwera kwakulemera m'makilogilamu . | Makilogramu 40 kugawa ndi makilogilamu 25.6=1.56 = pafupifupi 1.6 |

Zatengedwa mu Hoevenaars ndi Ng'ambi, 2019

Tebulo 10: Kuwerengetsera kwa FCR

10.6. Kodi ndi mulingo wanji wa FCR umene uli oyenela?

- Tinsomba tongoswedwa kufikira nsomba zing'nozing'ono FCR yake ndiyapafupifupi 0.8 mpaka 1. Nsomba zazikulu FCR yake ndiyapafupifupi 1.4 mpaka 1.8
- Kampani ina yotchedwa AllerAqua ku Zambia inakwanitsa izi: Kukula kwa FCR kumene tinakwanitsa 1.2-1.4 (mosungira) ku 1.3-1.4 (madamu) kutengera ndikukula kwa nsomba munyengo iliyonse.
- FCR ya 1 mpaka 2 kwa nsomba zimene zikukula (magilamu 10 mpaka msinkhu ogulitsira) ndi yabwino mudamu kutengera ndi mtundu wachakudya ndi chisamaliro cha pamalo ochitira ulimi wa nsomba.
- Pa nsomba zazing'ono 0.4 mpaka 1 ndi zimene mulimi azilakalaka.

10.7. Kudyetisa nsomba kwa makono

1. Chakudya chiyenera kugulidwa kwa opanga chakudya odalirika.

- Potengera kuti mtengo wa chakudya ukuimira mbali yayikulu ya ndalama zogwiritsidwa pa ntchito yoweta nsomba, gulani chakudya choyenerana ndi mtundu wa nsomba.
- Gwiritsani ntchito chakudya chabwino komanso muchigule kuchokera kuchigayo chazakudya kapena kwa anthu omwe mumawakhulupirira.
- Gulani chakudya ching'ono ching'ono chomwe chimatsalira pamwamba chisanadyedwe. Izi zimakuthandizani kuti muwone ngati nsomba zikugwirizana nacho chakudyacho.

2. Chakudya chokhacho chimene chili chatsopano komanso chabwino ndichimene chiyenera kugwiritsidwa ntchito.

- Onetsetsani kuti mtundu wa chakudya ndiwabwino powonetsetsa zolembedwa pa thumba la chakudya, zinthu zomwe adapangira chakudyacho, tsiku lomwe chidzaonongekere, kadyetsedwe, mtundu wa nsomba komanso uthenga wina ofunikira.
- Sungani chakudya pamalo podutsa mphepo, powuma komanso popanda umve ndi tizilombo tomwe titha kuononga chakudyacho.
- Pamene mukudyetsa, onetsetsani kuti chakudyacho ndi chowuma komanso mulibe ndere.
- Chakudya chiyenera kugulidwa komanso kugwiritsidwa ntchito moganizira nthawi imene chidzaonongekere.

3. Gwiritsani ntchito muyezo olondola.

- Gwiritsani chakudya chochuluka mogwirizana ndi kuchuluka kwa nsomba zanu pa msinkhu uliwonse.
 - o Ngati chakudyacho chili chikuluchikulu, nsomba sizingathe kuchidya chifukwa izo kudya kwake zimangomezeka; sizimatafuna.
 - o Ngati chakudyacho chili ching'ono ching'ono kwambiri, nsomba zimafunika kuti zichite kulimbikira mwapadera kuti zidye chochuluka. Ngati nsomba zikuchita kuvutikira kuti zidye, zemalephera kuti zichulukane bwino.
- Gwiritsani ntchito miyezo yoyenera yachakudya imene imaperekedwa ndi opanga chakudyacho yomwe ndi yogwirizana ndi msinkhu wa nsomba.

4. Wonesetsani kuti simukusinthasintha nthawi yopereka chakudya kwa nsomba komanso kuti mukuzidyetsa pafupipafupi.

- Nthawi yodyetsera ikhale imodzi tsiku liri lonse. Kusunga nthawi yodyetsera ndi kwabwino chifukwa makulidwe a Chilunguni amakhudgidwa kwambiri ndi nthawi.
- o Chilunguni chimazolowera nthawi yake yodyera. Dyetsani Chilunguni mu nthawi yoikika tsiku ndi tsiku kuti nsomba zichulukane mwamsanga.
- Gawani nthawi yodyetsa nsomba zanu pa tsiku potengera msinkhu wa nsomba. Chiwerengero cha nthawi zodyetsa imasiyana potengera kukula wa nsomba.
- Dyetsani nsomba zing'ono zing'ono chakudya chokwana magilamu 50 katatu kapena kanayi pa tsiku. Dyetserani nsomba zikuluzikulu kamodzi kapena kawiri pa tsiku, uku mukuwonesetsa kuti chakudya chonse chisapitilire kuchuluka kwachakudya chapatsiku cha damu lililonse.

| Kulemera kwansomba (Magilamu) | Kadyetsedwe (kulemera kwa nsomba (gawo 100 liri lonse)) | Chiwerengero cha nthawi zodyetsa pa tsiku |
|--------------------------------------|--|--|
| 1-5 | 6-10 | 5-6 |
| 5-25 | 5 | 4 |
| 25-150 | 3 | 3 |
| Kudutsa 150 | 2 | 2 |

Zotengedwa mu Hoevenaars ndi Ng'ambi, 2019

Tebulo 11. Ndondomeko yakadyetsedwe ka nsomba kukamatentha madigiriyi seloshi 24 mpaka 30.

5. Gwiritsani ntchito njira zosaononga chilengedwe.

- Mukamagwiritsa ntchito chakudya, tsatirani malangizo operekedwa ndi amene anapanga chakudyacho.
- Onetsetsani kuti madzi akhale aukhondo nthawi zonse.
- Osazipatsa chakudya chambiri, chifukwa chikatsala chimaola ndikuononga madzi
- Osazipatsa chakudya chochepa, izi zimachititsa kuti nsomba zisakule bwino.
- Mukamagwiritsa ntchito chakudya choyandama, gwiritsani ma paipi kuti chakudya chisasefukire m'mbali mwadamu chifukwa zimaitana mbalame, choncho ndikovuta kuti nsomba zidye.



Zachokela ku Kafue.

Chithunzi 14. Kudyetsela nsomba chakudya choyandama.

6. Kudyetsa muyezo oyenera wachakudya.

- Chepetsani kapena chulutsani kadyetsedwe potengera machitidwe a nsomba.
 - o Nsomba zisadye kwambiri (pasapezeke chakudya chotsala), komanso osazipatsa chakudya chochepa.
- Yezani kulemera kwa nsomba zochepa zomwe mwazisankha kuti muthe kuyerekeza kulemera kwa nsomba zonse mudamu ndikuwerengera muyezo oyenera wachakudya.
- Ngati palibe sikelo, ndikovuta kuwerengetsera kuchuluka kwa nthawi zodyetsera nsomba. Choncho, mutha kumazidyetsa ndikusiya mukaona kuti zakhuta. Kugwiritsa ntchito chakudya choyandama zimathandiza kuyang'anira nsomba pamene zikudya. Chakudya chiyenera kudyedwa mu mphindi 20 kuchokera pa mphindi yomwe nsomba zapatsidwa chakudyacho.
 - o Ngati nsomba sizinadye chakudyacho mumphindi 20, muyenera kuchepetsa kwachakudya.
 - o Ngati zadya mphindi 20 zisanakwane, muyenera kuonjezera chakudya.
- Mutha kugwiritsa ntchito ndondomeko yotsatirayi chakudyacho chikakhala kuti ndi soya osakaniza ndi madeya. Izi zimatengera kuti damulo likhale lofikira masikweya mita 500 kapena 1000. (Tazitenga Mu Malawi Gold Standard)

| Zaka za nsomba | Damu la 500 sikweya mita. | Damu la 1000 sikweya mita |
|------------------|--|---|
| Mwezi oyamba. | Makilogilamu 110 (Makilogilamu 4 pa tsiku) | Makilogilamu 220 (Makilogilamu 8 pa tsiku) |
| Mwezi wachiwiri. | Makilogilamu 183 (Makilogilamu 6 pa tsiku) | Makilogilamu 365 (Makilogilamu 12 pa tsiku) |
| Mwezi wachitatu. | Makilogilamu 236 (Makilogilamu 8 pa tsiku) | Makilogilamu 472 (Makilogilamu 16 pa tsiku) |
| Mwezi wachinayi. | Makilogilamu 270 (Makilogilamu 9 pa tsiku) | Makilogilamu 540 (Makilogilamu 18 pa tsiku) |
| Zonse pamodzi | Makilogilamu 800 | Makilogilamu 1600 |

Tebulo 12. Kadyetsedwe molingana ndi kukula kwa nsomba mu damu la 500m² ndi 1,000m²

- Miyeso iyi ikutengera kadyetseredwe ka magawo atatu pa magawo 100 ali wonse yakulemera konse.

7. Nthawi yoyenela yodyetsela nsomba

- Dyetserani nsomba kawiri patsiku; m'mawa (8 koloko mpaka 10 koloko) komanso masana (2 koloko mpaka 4 koloko) madzi adakali ofunda. Iyi ndi nthawi imene nsomba zimakhala zochangamuka.
- Dyetserani nsomba nthawi imodzi, mwachitsanzo 9 koloko m'mawa ndi 3 koloko masana.
- Ndibwino kuyika chakudya malo amodzi tsiku liri lonse. Nsomba zimadziwa komwe kuli chakudya ndipo sizimavutika ndikuyang'anayang'ana.

8. Sungani chakudya pamalo powuma, podutsa mphepo komanso popanda tizilombo.



Chithunzi 15. Kasungidwe koyelenela ka chakudya

- Sungani chakudya bwinobwino kuti chipitilire kukhala chabwino.
- Sungani chakudya pamalo podutsa mpweya komanso powuma kuti zisawole, kumera ndere ndi kuonongeka. Pansi, muzipupa, kapena kudenga kwa malo osungiramo chakudya musapezeke mipata kuti zilombo zisalowemo.
- Sonkhanitsani matumba achakudya potengera mtundu komanso kukula kwachakudya.
- Sungani matumba achakudya; Yambani ndi chaching'ono ching'ono ndipo malizirani ndi chachikuluchikulu.
- Tsegulani thumba limodzilimodzi ndipo thirani chakudya cho muchosungiramo chokhala ndi chivindikiliro.
- Chakudya chonyowa, chakale kapena chomera ndere chiyenera kutayidwa.

11. Kuthira feteleza ndi kupereka chakudya chowonjezera

11.1. Chimachitika ndi chiyani pothira manyowa kapena feteleza mu damu?

- Kuthira manyowa monga ndowe, ndi opangidwa pokwilira zomera kuti ziwole.
 - o Zina mwa zitsanzo za manyowa ndi ndowe ndi zitosi zochokera ku ziweto monga nkhuku, mbuzi, nkhumba ndi ng'ombe
- Kathiridwe ka feteleza mudamu la nsomba
- Feteleza ndi oyenera mukafuna kuchulukitsa zokolola. Manyowa a kompositi ndi manyowa ochokera ku zitosi ndi ndowe ndiosavuta kupeza komanso ndi otsika mtengo koma sangathandize kwambiri kuti zomera zam'madzi zomwe nsomba zimadya zikule bwino.
- Muyezo osachepera mamiligilamu 20 pa lita monga Calcium Carbonate (CaCO_3) wa michere yokulitsa zakudya za nsomba ndi omwe uli oyenera kuti zomerazi zikule bwino. Kutengera kuchuluka kwa asidi mu damu, layimu akhoza kuthiridwa mudamumo pofuna kuchulutsa chonde. Onani gawo la madzi komanso chitetezo cha zomera mu bukhuli kuti mudziwe zipangizo zomwe mungagwiritse ntchito pochulukitsa asidi mu damu
 - o Ngakhale pali mitundu yosiyanasiyana ya layimu, mtundu oyenera kugwiritsa ntchito ndi layimu waufa yemwe amagwiritsidwa ntchito mu ulimi. Layimuyu ndi otsika mtengo komanso amapezeka mosavuta.
 - o Ngati madamu a nsomba akufunika layimu thirani layimu pakati pa masabata awiri ndi anayi ndipo dikirani masabata osachepera awiri kufikira asanu musanathire feteleza wa mtundu ulionse. Funsani Nthambi ya Boma Yoona za Nsomba ngati simukudziwa kuti madamu a nsomba akufunika layimu

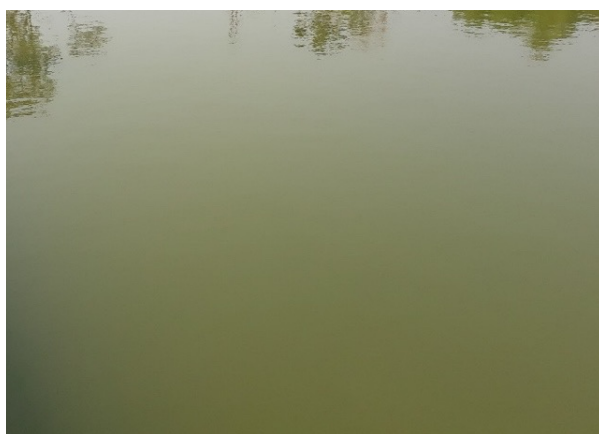
11.2. Cholinga chothilira feteleza ndi chani?

- Kufuna kuchulukitsa zakudya za nsomba zomwenso zingachulukitse zokolola.
- Michere ya mu nthaka (yachilengedwe ndi yochita kupanga) ikathiridwa mu damu la nsomba imathandizira kukula kwa zomera zomwe zimadyedwa ndi nsomba kuti zikule bwino. Nsomba zazing'ono zimadya zomerazi mu damu lomwe lathiridwa feteleza.
 - o Tidzakudya toyandama m'madzi timene nsomba zimadya tili m'magulu awiri; tomvera komanso tathupi la nyama.
- Zakudya za chilengedwe mu damu (zomera ndi zathupi la nyama) zimakhala zazing'ono kwambiri moti sizingaoneke ndi maso
- Mtundu wa madzi mu damu la nsomba umasonyeza kupezeka kwa chakudya cha nsomba. Kawirikawiri, madzi amaoneka obiriwira, a mtundu onga katondo, ofilirapo kapena opanda mtundu ulionse
- Kubiriwira kumasonyeza kukula bwino kwa zakudya za nsomba. Kubiriwiraku kumatha kukhala kosakanikirana ndi mtundu wa katondo onkera ku chikasu komanso obiriwira modera (bluish green).
 - o Mtundu onkera ku katondo umasonyeza kuti zomera zili ndi zakudya za nsomba za nyama pomwe mtundu omwewu ukamaoneka osakanikirana ndi chikasu umatanthauza kuti madziwo ali ndi zakudya za nsomba za thupi lanyama.
 - o Tizomera tina timapangitsa madzi mu damu kuoneka ofiira nthawi zina.
- Madzi a mtundu onga katondo amadza chifukwa cha donthi limene limayandama mmadzi; ichi ndi chizindikiro chakuti damu la nsomba liribe chonde ndipo izi ndizofanana ndi pomwe madzi akuoneka opanda mtundu ulionse.
- Madzi obiriwira ndi abwino pa ulimi wa Tilapia. Kubiriwiraku kukakhala kwa ndii, zimasonyeza kuti madzi ali ndi feteleza opitilira muyezo. Onani gawo la mtundu wamadzi kuti mumve zambiri.



Chithunzi 16. Madamu othiridwa feteleza mopitilira muyezo

- Osathira fatereza mopitilira muyezo mu madamu anu



Chithunzi 17. Madamu othiridwa feteleza mokwanila.

Ngati njira yochepetsera kugwiritsa ntchito zakudya zamakono zokha, ma kampani opanga zakudya za ziweto amapanganso chakudya china choonjezera chimene chitha kugwiritsidwa ntchito pamodzi ndi feteleza. Nsomba zazing'ono zimadya zomera mu damu lothiridwa feteleza ndipo zakudya zoonjezera zosakhala ndi ma pulotini ambiri zimaperekedwa kwa nsombazo zikakula. Njira imeneyi itha kugwiritsidwa ntchito pa ulimi okhala ndi chiwerengero chosapitilira nsomba 5 pa sikweya mita.

11.3. Ndingachite chiyani ngati sindingakwanitse kupeza chakudya choonjezerachi za pamsika?

- Kuthira feteleza kokha sikokwanira pofuna kuchulukitsa zokolola za mudamu la nsomba
 - o Ndizotheka kukhala ndi feteleza osakwanira othira madamu a nsomba. Alimi ena alibe ziweto zokwanira zowapatsa feteleza wachilengedwe.
 - o Nthawi zina zitha kukhala zovuta kuti mudzikagula feteleza oti muthire mu madamu anu.
- Ndizofunikira kuonjezera zakudya fetelezayo akathilidwa mu madamu a nsomba
- Mukhonza kupanga nokha zakudya pogwiritsa ntchito chimanga, mawere, soya, mpendadzuwa, chinangwa ndi zina. (Onani gawo lomwe likukamba za kadyetsedwe m'bukuli kuti mumve zambiri).

11.4. Ndingathire bwanji manyowa kapena feteleza mu damu?

11.4.1. Manyowa

Musanathire madzi mu damu, yikani manyowa pansi pa damu ndipo yikani mipanda ya kompositi yosakanizidwa ndi manyowa ochokera ku ziweto ndi udzu owuma mpaka zifanane ndi kuchuluka kwa madzi omwe mukufuna kugwiritsa ntchito. Mukathira madzi mu damu takasani kompositi kamodzi kapena kawiri pasabata. Onjezerani kompositi madzi akachepa. Makompositi oterewa ndiwokwanira kuyambira pachiyambi pa ulimi mpaka pamapeto pa damu la masikweya mita 200.

11.4.2. Ngati mukugwiritsa ntchito manyowa a ndowe kapena zitosi za ziweto:

- Wazani manyowa pansi pa damu musanathiremo madzi. Mwazani manyowa mofanana. Thumba limodzi la manyowa a ng'ombe, nkhusa, mbuzi kapena nkhumba ndi lokwanira pa masikweya mita 100
- Manyowa azitozi za nkuku amagwira ntchito bwino chifukwa amapezeka nchere opereka chonde wa naitirojeni wambiri.
- Kuika manyowa mu masentimita 10-15 oyambirira a dothi kumathandiza kuti damu lisamataye madzi akathiridwamo. Pa katutidwe koyenera ka manyowa, tsatirani ndondomeko zochokera ku Unduna wa Zamalimidwe m'Malawi poziyika ziweto zanu mu makola amangidwa pokwera.

11.4.3. Feteleza

Feteleza akuyenera kuthiridwa pamene madzi adzadzitsidwa kale mu damu. Magilamu 200 a feteleza pa sabata ndiwokwanira pa damu la masikweya mita 200 mpaka madzi awoneke obiriwira. Musathire feteleza wambiri pa nthawi imodzi chifukwa izi zingathe kupha nsomba zanu.

Njira za makono za kathiridwe ka feteleza mu damu ndi kadyetsedwe ka nsomba

11.5. Onesetsani kuti mukugwiritsa njira za makono podyetsa nsomba chakuyda chowonjezera

11.5.1. Tsatirani malangizo operekedwa ndi ogulitsa zakudya pa zakagwiritsidwe ntchito ka zakudya za nsomba.

- Tsatirani ndondomeko zoyikidwa ndi opanga chakudya cha ziweto kuti mupeze zokolola zabwino.
- Musathire zinyalala za manyowa mu damu chifukwa zisithandiza kukulitsa zomera za mu damu ndipo zimachepetsa malo amene nsomba zimakhala.

11.5.2. Osathira feteleza mopitilira muyezo

- Sinthani nthawi yothilira feteleza komanso kathiridwe pofuna kukhalabe ndi madzi osabiliwira kwambiri mu damu (Masentimita 30 pa kuwerengera kogwiritsa ntchito ma sechi disiki) gawo limene likunena za ubwino wamadzi.
- Ngati madzi ali obiliwira mokwanira, osathiranso feteleza wina.
- Kuthira feteleza mopitirira muyezo kumawononga mpweya osungunuka mu damu ndipo nsomba zimatha kufa.

11.5.3. Manyowa akuyenera kukhala opanda mankhwala ali onse.

- Pogwiritsa ntchito manyowa ochokera ku nkuku, ng'ombe kapena nkhumba, onetsetsani kuti akuchokera kumalo koyenera komwe sadyetsa mankhwala zoweta zao.

- kumalo koyenera komwe sadyetsa mankhwala zoweta zao.

11.5.4. Pewani kusinthanitsa madzi mu madamu othiridwa feteleza.

- Musasinthanitse madzi a mudamu lothiridwa feteleza kapena kuchepetsa kwambiri kasinthanidwe ka madzi pokhapokha ngati pali chovuta chimene mukufuna kukonza.
- Ngati madzi sakusungidwa mu damu, kagwiridwe ntchito ka feteleza kamachepa.

11.5.5. Feteleza akuyenera kuwazidwa pamwamba pa madzi kamodzi pa sabata

- Onetsetsani kuti feteleza wawazidwa mofanana pamwamba pa madzi a mu damu.
- Sungunulani feteleza m'madzi musanathire mu damu.
- Musathire feteleza osasungunula mu damu chifukwa mibuluyo imakafika panso pa damu ndipo kumakhala kovuta kuti zomera zimufikire

11.5.6. Thirani feteleza masiku omwe kuli dzuwa

- Feteleza amagwira ntchito mochedwerapo kukakhala mitambo kapena kukamagwa mvula

11.5.7. Chotsani zomera za mmadzi mu damu

- Kagwiridwe ntchito ka feteleza kamachepa ngati mu damu muli zomera za'mmadzi chifukwa zomerazi zimakhala zikugwiritsa ntchito feteleza wambiri kuposa zomera zomwe nsomba zimadya

11.5.8. Siyitsani nsomba kudya ma peletsi

- Yambani kuchepetsa chakudya zomwe mumapereka kwa nsomba mu damu kuyambira sabata ya chisanu ndi chiwiri kuti nsomba ziphunzire kudya zakudya zina.
- Tsatirani ndondomeko za kagwiritsidwe ntchito ka chakudya chomwe mukugwiritsa ntchito.

12. Ubwino wa madzi

Ubwino wa madzi ndiwofunikira kwambiri kuti nsomba zikule bwino komanso mwa thanzi. Madzi oyipa angasokoneze kuchuluka kwa nsomba zomwe zingakololede.

Magawo ofunikira mu damu oyikidwa pa mndandanda wosonyeza kufunikira kwawo.

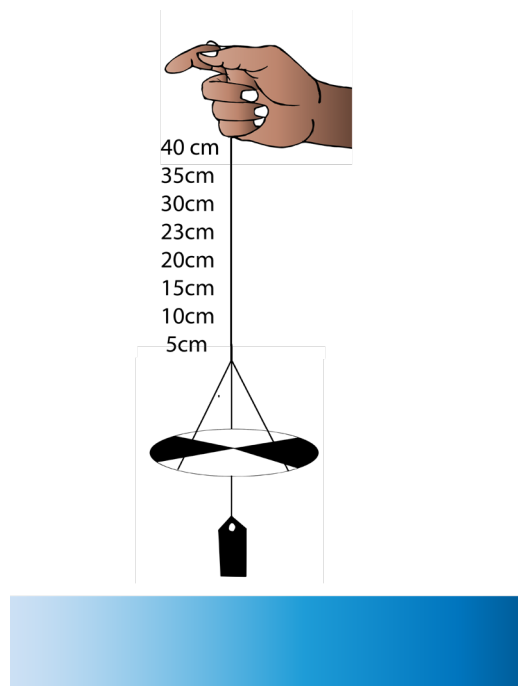
Mpweya osungunuka. Kuchuluka kwa pakati pa mamiligilamu 5.0 ndi 7.5 pa lita ndi omwe ali oyenera. Kuchuluka kwa chakudya chomwe chingatulutse nsomba zolembera kilogilamu imodzi zikayesedwa limodzi kumatsika kwambiri ngati mpweya uli ochepera mamiligilamu 3.5 pa lita. Zizindikiro za kuchepa kwa mpweya (monga kubanika kwa nsomba, kubwera pamwamba pa madzi kwa nsomba, maonekedwe akuda amadzi, kuvutika kusambira kwa nsomba) zikuyenera kumaonedwa m'mawa ngati zikuchitika.

Kutentha: Nsomba zambiri za mu gulu la Tilapia zimakula bwino kutentha kukakhala madigiriyi seloshasi 24 kufikira 30. Kutentha kukhoza kuyezedwa ndi chipangizo cha m'manja choyezera kutentha.

Kuchuruka kwa asidi: Nsomba za mtundu wa Tilapia zimatha kukhala moyo kuchuluka kwa asidi m'madzi kukakhala kochoka pa ma pH 5 mpaka 10, koma zimakula bwino pa ma pH 6 mpaka 8.

Kuyera kwa madzi: Kuyera kwa madzi kumasonyeza kuchuluka kwa zinyalala zopezeka mmadzi. Kuyera ku mayezedwa mu chithuzithunzi chotalika masentimita 60. Mungathe kugwiritsa ntchito chipangizo chopanga nokha chotchchedwa secchi pofuna kuyezera zinyalala zopezeka mmadzi.

sing pH strips or a pH meter. A similar pH is important when transferring fish. Alkalinity is important for fish health and fertilization.



Chithunzi 18. Maonekedwe a Secchi disk.

Mtundu wa madzi: Madzi osabaliwira kwambiri, a mtundu onga katondo osakanikirana ndi kubiriwira kapena madzi obiriwira ndi omwe amakhala ofunikira kwambiri pa ulimi wa nsomba. Madzi akuda ndi obiriwira kosakanikirana ndi dothi siabwino kwa nsomba.

Ammonia: Ammonia amapezeka mu mitundu iwiri; wamphamvu kwambiri ndi wamphamvu zochepa. Pewani kugwiritsa wamphamvu kwambiri osungunulidwa mamiligilamu 0.1 pa lita imodzi ya madzi. Mphamvu za Ammonia zikakula kupyola 8 pH mphamvu za Ammonia wa mphamvu kaleyu zimachulukanso. Muonetsetse kuti mwasamalira thanzi la nsomba mukamagwira ntchito zokhudza izi:

- Ammonia wamphamvu zambiri
- Mphweya oyipa (CO₂)
- Nitrite
- Tidziduswa toyandama m'madzi - gwiritsani ntchito manyowa kuti muchepetse tidziduswa toyandama m'madzi
- Zinthu zopezeka m'madzi zomwe zimawapangitsa kuti asakhale ndi asidi wambiri
- Kugwira ntchito mogwirizana kwa zinthu zonsezi ndi komwe kumapangitsa kuti nsomba zikule mnsanga komanso ndi thanzi.

12. Njira zamakono zosamalirira madzi

Tsimikizani ubwino wa madzi tsiku lililonse ndipo fufuzani kuti muone ngati ndondomeko siziri momwe zikuyenera kukhalira

| Zomwe mwapeza | Kayezedwe ka ndondomeko | Njira zoyenera pochepetsa mavuto |
|--|--|--|
| Kutentha kwambiri (Kosachepera madigiriyi seloshasi 30) | Yezani ndi chipangizo choyezera (Izi ndizokwera mtengo, chonde funsani ku Nthambi ya Boma yoona za nsomba ngati ali nazo) | <ul style="list-style-type: none"> Sinthitsani madzi (Madzi olowa ndi otuluka) |
| Kuchepa kwa mpweya (kuchepa kuposa 3.5 ppm m'mawa, 5 ppm masana) | Yezani ndi chipangizo choyezera kupezeka kwa mpweya mmawa kwambiri. Chonde funsani ku Nthambi ya Boma Yoona za Nsomba | <ul style="list-style-type: none"> Wonjezerani kasinthanidwe ka madzi (Madzi ambiri adzilowa komanso kutuluka mu damu) Siyani kupereka zakudya mpaka vutoli likonzedwe Yanganani zizindikiro za tizirombo komanso matenda Kutakasa kapena kemenya madzi Madzi oyenda amachulukitsa mpweya opezeka m'madzi. Yambani mwasiya kuthira feteleza mu damu |
| Kuchepa kwa asidi (Kuchepa kuchuluka kwa 6 pH) | Yezani ndi choyezera pH (Zipangizo izi ndizokwera mitengo, chonde funsani ku Nthambi ya Boma Yoona za Nsomba) | <ul style="list-style-type: none"> Thirani mudamu zithu zochepetsa asidi (soda, layimu, phulusa) Chepetsani kaperekedwe ka zakudya Onani kuchuluka kwa ammonia |
| Kuchuluka kwa ammonia (TAN woposa mamiligilamu 0.25 pa lita) kapena akhale oposa 9 | Yezani pogwiritsa ntchito njira ya sayansi yotchdewa titration mu chingerezi (Zipangizo za njirayi ndi zokwera mtengo; chonde funsani ku Nthambi Yaboma Yoona za Nsomba) | <ul style="list-style-type: none"> Sinthitsani madzi (madzi olowa mudamu ndi otuluka mu damu) Chepetsani zakudya zoperekedwa ku nsomba Onetsetsani ngati pali zizindikiro za tizirombo kapena matenda Ngati ammonia ali ochuluka kwambiri (kupitilira kuchuluka kwa 8.3) thirani gypsum; CaSO_4 Chonde musathire layimu ngati ammonia wachuluka kwambiri. Layimu (CaOH, CaO) akhoza kukweza kuchuluka kwa asidi ndipo zikatero zimachititsa ammonia kufika pa muyezo oopsa. Layimu wina sasungunuka mmadzi omwe ali ndi asidi opitirira 8.3 pH |

| | | |
|---|---|---|
| Kuda kwa madzi (Kuchepera ma sentimita 30) | Njira ziwiri Gwiritsani ntchito Secchi disiki Gwiritsani ntchito njira ya nkono. Mizani nkono m'madzi mpaka kufika pa theka | <ul style="list-style-type: none"> • Sinthani madzi mu damu • Chepetsani kupereka chakudya kwa nsomba • Onani ngati pali zizindikiro za tizirombo ndi matenda • Siyani kuthira feteleza |
| Mtundu obiliwira osakanikirana ndi zinyalala kapena wa mtundu onga katondo (ZOSAYENERA) | Gwiritsani ntchito Secchi Disiki kapena njira yogwiritsa ntchito nkono pofuna kuyeza mtundu obiliwira osakanikirana ndi zinyalala, Yang'anisitsani madzi mu damu pofuna kudziwa ngati madzi asanduka mtundu onga katondo | <ul style="list-style-type: none"> • Sinthitsani madzi (kulowetsa ndi kutulutsa madzi mu damu) • Siyani kuthira feteleza |

Zatengedwa mu: *Hoevenaars & Ng'ambi, 2019*

Tebulo 13. Kutsimikiza kuti madzi ali bwino mu damu.

13. Thanzi la nsomba

Matenda akhonza kusokoneza phindu la alimi chifukwa amakweza chiwerengelo cha imfa za nsomba ndiponso amakhudzanso kakulidwe ka nsombazo. Popewa chiopsezo komanso kufala kwa matenda mu madamu anu ndibwino kutsatira njira zabwino za ulimi wa nsomba. Kupewa matenda ndi kofunikira. Kodi mukukumbukirabe zina mwa njira zabwino zomwe takambirana?

13.1. Kodi ndi zizindikiro ziti za nkhwawa zomwe zimapezekapezeka?

- Kusintha kwa khalidwe kwa nsomba kukhonza kukhala chizindikiro choyamba choti zili ndi nkhwawa
- Kusintha kwa thupi monga kukula modabwitsa, kusintha kwa ziwalo kapena mtundu wa thupi, kutaya mamba, chifunga cha m'maso, kunyenyeke kwa ziphyeephye, kutsekeka kwa mopumira ndi zina zotero zikhoza kukhala zizindikiro za matenda.

Zizindikiro za matenda ndi kugwidwa ndi tizirombo zokhudza nsomba za mgulu la Tilapia

- Nsomba zimachepetsa kudya kapena kusiya kudya kumene
- Kusintha kwa ziwalo kapena kutuluka magari pa thupi kapena m'maso.
- Mchira ndi zipyepye zimayamba kuwola.
- M'makutu mumakhala motuwa ndi moonongeka
- Tinthu tonga ulusi timawoneka pa thupi la nsomba
- Madontho oyera amaoneka pa thupi komanso m'minga za nsomba.
- Madontho akuda ndi oyera kapena zithupya zimapezeka m'makutu a nsomba
- Kuchedwa kukula kwa nsomba
- Kufooka kwa thupi, kupindika kwa thupi, ndi kutopa poyenda
- Nsomba zimasambira mozungulira, kuchepa kwa mphamvu zodzimitsira, kuyandama chogadama
- Maonekedwe ofilira a bowo lotulukira chimbudzi ndi maliseche
- Maso okhala ndi chifunga komanso maso osatheka kuti muthu awone mkati mwake bwinobwino.
- Kutupa kwa mimba kapena kudzada kwa madzi m'mimba
- Kudzada kwa madzi m'thupi la nsomba
- Kutupa kwa ziwalo za m'mimba monga chiwindi, impsyo, ndulu ndi kapamba.
- Kutuluka magari m'ziwalo za m'mimba
- Zotupa kapena zithupsa zoyera kapena zakuda pa ziwalo za m'mimba.

Thandizo labwino la nsanga ndi loyenera matenda akagwa

Damu limene mwaoneka matenda liyenera kutsekedwa ndipo kasamalidwe kake kayenera kusinthidwa. Mankhwala ovomerezedwa ndi alangizi a ziweto akhoza kugwiritsidwa ntchito popereka chithandizo chothana ndi matenda. Nthawi zonse, funsani alangizi a ulimi wa nsomba kapena ziweto a kudera lanu musanagwiritse ntchito mankhwala a mtundu uliwonse. Kugwiritsa ntchito mankhwala mosasamala ndi molakwika popewa kapena kuchiza matenda kukhonza kubweretsa mavuto osiyanasiyana kuphatikizapo zotsalira zoopsa za mankhwala ophera tidzilombo mu nsomba, kuzoloweledwa kwa mankhwala ndi nsomba, komanso chiopsezo chobwera chifukwa cha kusakanikirana kwa zakudya ndi mankhwala. N'koyenera kuyeza bwino mankhwala kuti mupereka chithandizo choyenera kwa nsomba. Palibe chithandizo cha matenda oyambitsidwa ndi tizirombo ta ntundu wa vayilasi koma matenda oyambitsidwa ndi tizirombo tina akhonza kuchilitsidwa ndi mankhwala ovomerezeka ndi achipatala.

13.2. Kodi ndingadziwe bwanji kuti imfa za nsomba zimene zikuchitika siimfa wamba?

Ngati chiwelengero cha nsomba zakufa chikupitilira imodzi mwa nsomba 1000 zill zonse m'maola 24 dziwani kuti imfa zimenezi ndi zachilendo.

Ngati chiwelengero cha nsomba zakufa chikupitilira imodzi mwa nsomba 1000 zill zonse m'maola 24 dziwani kuti imfa zimenezi ndi zachilendo.

Cholinga cha chithunzichi chachikuluchi ndi kulimbikitsa malo aswanilamo nsomba komanso malo okuliramo nsomba, ndi alangizi a zaulimi kuzindikira matenda a nsomba. Kupewa, kuzindikira mwamsanga, kuyeza ndi kuchitapo kanthu mwansanga ndi njira zabwino zedi zogonjetsera matenda a nyama zokhala m'madzi. Ngati mwaona zizindikiro za matenda, kusintha kwa khalidwe la nsomba, kapena imfa ya nsomba kaneneni mwansanga kwa akatswiri a zamatenda a nsomba.

Zizindikiro zikuluzikulu za matenda a nsomba ya Tilapia

Cholinga cha chithunzichi chachikuluchi ndi kulimbikitsa malo aswanilamo nsomba komanso malo okuliramo nsomba, ndi alan gizi a zaulimi kuzindikira matenda a nsomba. Kupewa, kuzindikira mwamsanga, kuyeza ndi kuchitapo kanthu mwansanga ndi njira zabwino zedi zogonjetsera matenda a nyama zokhala m'madzi. Ngati mwaona zizindikiro za matenda, kusintha kwa khalidwe la nsomba, kapena imfa ya nsomba kaneneni mwansanga kwa akatswiri a zamatenda a nsomba.



Nsomba zafooka ndipo sizikudya



Diso lotulukira kunja



Kukwinyirira kwa diso



Kuda kwa diso kolepheretsa kuwona



Kukanganuka kwa khungu kotulutsa magari



Kusintha mtundu kwa khungu



Zilonda za pakhungu kapena pathupi



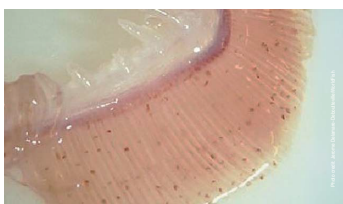
Kutupa mimba



Kutumphuka kapena kuthothoka kwa mamba



Nsomba kuyesera kupuma mpweya wa pamwamba pa madzi



Kutuwa kwa za mkati mwa khutu (Kuchepa kwa magari mthupi)



Kuwola kwa zamkati mwa khutu



Kuwola kwa chiphyephe/mchira



Malo otulukira chimbudzi otupa

Zolembedwa ndi zojambula za matenda ansombazi zinakonzedwa pa ntchito yakafukufuku oyendetsedwa ndi bungwe la CGIAR okhudzana kulima ndi nsomba mosogozedwa ndi WorldFish. Izi zinapangidwa ngati mbali imodzi ya ndondomeko za WorldFish zamakono zoyendetsera ulimi wa nsomba.



RESEARCH
PROGRAM ON
Fish

Mosogozedwa ndi

WorldFish



fish.cgiar.org

Chithunzi 19. Chithunzi choonetsa matenda a nsomba za Tilapia.

| Osazipangitsa nsomba kukhala ndi nkawa | Ndondomeko/Dongosolo |
|--|---|
| Musazipatse nkawa nsomba | <ul style="list-style-type: none"> • Chepetsani nkawa za nsomba pogwiritsa chiwerengero cha nsomba choyenerana ndi malo osungiramo nsombazo. • Dyetsani nsomba mwandondomeko. • Zigwireni nsomba pokhapokha pomwe pafunikira kutero ndipo mutero mosamala. • Gwiritsani ntchito madzi abwino nthawi zonse |
| Mudzisankha zina za nsomba zanu pafupipafupi kuti muzione bwinobwino | <ul style="list-style-type: none"> • Sankhani nsomba zosachepera makumi awiri komanso zosapitilira makumi anayi zomwe mudziziwona makulidwe ake ndi thanzi lake kamodzi kapena kawiri pa mwezi. • Sankhani nsomba m'mawa, zipimeni kuti zikulemera bwanji mukangozigwira ndipo muzibwezeretse bwino mu damu. • Gwiritsani nsomba zomwe mwasankha ntchito yowunika moyo wa nsomba komanso yowerengetsera kuchuluka kwa chakudya chofunikira • MUSADYETSE nsomba musanasankhepo zina. |
| Muziziyang'anira nsomba pafupipafupi | <ul style="list-style-type: none"> • Muziyang'ana pafupipafupi ngati nsomba zili ndi zizindikiro za matenda • Nsomba ya thanzi labwino imakhala ndi chilakolako chabwino chakudya ndipo imasambira bwino |
| Sungani zolembedwa zokhudza ulimi wanu | <ul style="list-style-type: none"> • Lembani kuchuluka kwa imfa za nsomba zomwe mwaona tsiku liri lonse muli pa mlambala wa damu lanu. • Lembaninso magwero a imfa za nsomba amene mungathe kuwaganizira • Uzani ogwira ntchito ku Nthambi ya Boma Yoona za Nsomba mukangoona mliri wa matenda ndi imfa zosayembekezera pa ulimi wanu. |
| Patulani damu lanu mwansanga mukagowona mliri wa matenda | <ul style="list-style-type: none"> • Onenetsetsani kuti anthu sakulowa ku dera la damu lanu kupatula okhawo amene ali ovomerezedwa komanso ngati kuli koyenera kutero. MUSATULUTSE zida zanu kunja kwa dera la damu lanu. |
| Gwiritsani ntchito mankhwala oyenera opatsidwa ndi alangizi a ziweto moyenera. | <ul style="list-style-type: none"> • Perekani mankhwala motsatira malangizo ochokera kwa amene anawapanga. • Gwiritsani ntchito mankhwala okhawo ovomerezeka ndi a Bungwe Losamalira Zachilengedwe (Environmental Management Agency komanso Lamulo LYoona za Nsomba No.22 lokhazikitsidwa mu chaka cha 2011, makamaka Gawo 48). • Mankhwala ayenera kuperekedwa ndi anthu okhawo ovomerezedwa kutero. • OSAKOLOLA nsomba panthawi yomwe mankhwala akugwirabe ntchito m'matupi a nsomba, werengani zimene zingapezeke pa chidindo cha mankhwala. |

| | |
|--|---|
| Tayani mosamala nsomba zakufa | <ul style="list-style-type: none"> • Chotsani nsomba zakufa mu damu lanu mwamsanga • Tayani nsomba zakufa kutali ndi damu lanu. • Mukhonza kukwilira nsomba koma muchite izi kutali ndi dera la damu lanu- thilani layimu wa ulimi wokwanira theka la kapu kuti athandize kawoledwe ka nsombazo. • Mukhonzanso kuwotcha nsomba zakufa • Ngati imfa za nsomba zili za chilengedwe mukhonza kuganiza zogwiritsa ntchito nsombazo pozipangira feteleza. Komabe, pochita izi kwirilani ndi dothi moyenera kuti mupewe fungo. |
| Gwiritsani ntchito njira zotetezera zachilengedwe pa malo anu a Ulimi wa Nsomba. | <ul style="list-style-type: none"> • Onenetsani kuti nyama, anthu kapena galimoto sizikufika dera la damu lanu. • MUSAGWIRITSE ntchito zida za munda wina musanazipopere ndi mankhwala oyenera ndi moyenera • MUSALOWETSE nsomba za kwina, inde ngakhale zochokera kuchilengedwe. |

Tebulo 14. Kasamalidwe ka thanzi la nsomba kamakono.

13.3. Ndaphunzira kuti ndizigwiritsa ntchito kulemera kwa nsomba zomwe zinasankhidwa powerengetsela kuchuluka kwa nsomba mu damu. Ndingazichite bwanji zimenezi?

| Kulongosola | Kuwerengera |
|---|--|
| Chiwerengero chokhudza nsomba zomwe zasankhidwa | Chiwerengero cha nsomba zogwidwa: 54 Magilamu 521 |
| Kulemera kwa nsomba imodzi moyimira zinzake: Kulemera kwa nsomba zonse pamodzi kugawa ndi chiwerengero chansomba zonse | Magilamu 521 kugawa ndi nsomba 54 = magilamu 9.65 omwe ndi pafupifupi 10 |
| Chiwerengero chenicheni: Nsomba zomwe zinayikidwa mu damu kuchotserapo zomwe zinafa | Nsomba zomwe zinayikidwa mu damu: 1,100 Nsomba zomwe zinafa (Onani pomwe munalembe chiwerengerochi): $63 = 1,100 - 63 =$ Nsomba 1,037 |
| Kulemera kwa nsomba zonse pamodzi mudamu: Chiwerengero cha nsomba kuchulukitsa ndi kulemera kwa nsomba imodzi moyimilira zinzake (sinthani magilamu kukhala ma kilogilamu; gawani ndi 1000) | Nsomba 1037 kuchulukitsa ndi magilamu 10 = Magilamu 10370 Magilamu 10370 kugawa ndi 1000 = Makilogalamu 10.37 |

Zatengedwa mu Hoevenaar & Ng'ambi, 2019

Tebulo 15. Chitsanzo choonetsa kuwelengela nsomba zimene zili pa damu.

- Werengetserani kulemera kwa nsomba pogawa kulemera kwa nsomba zomwe zasankhidwa ndi kuchuluka kwake
- Yerekezani kulemera kwa nsomba zonse zosankhidwa; onetsetsani kuti mwachotsera zomwe zafapo.
- Muyenera kukhala ndi sikelo yoyezera kulemera kwa nsomba

14. Kukolola

Kukolola nsomba kukuyenera kugwiritsa ntchito njira za changu ndi zotetezedwa. Ngati mukukolola nsomba za malonda, onetsetsani kuti ndi zazikulu bwino komanso zogwirizana ndi zokhumba za ogula Kusasamala nsomba kapena kugwiritsa ntchito zipangizo zosayenera kungathe kuononga nsomba.

14.1. Mungasankhe bwanji zipangizo zoyenera kugwiritsa ntchito pokolola nsomba?

Chisankho cha zipangizo chimatengera kakulidwe ka ntchito, kachulukidwe ka ogwira ntchito, nthawi yogwilira ntchito, kachulukidwe ka ndalama zomwe zilipo, njira ya kakololede yomwe mumakonda, komanso kachulukidwe ndi kakulidwe ka nsomba zokololewazo. Komabe, kugwiritsa ntchito khoka ndi komwe kuli kwabwino kwambiri kwa alimi ang'onoang'ono.

14.1.1. Maukonde a pansi

Kugwiritsa ntchito makhoka a pansi ndi njira yovomerezeka chifukwa nsombazo zimakhala ndi moyo poyerekeza ndi makhoka oyimika. Mu madamu amene muli nsomba zazimuna komanso zazikazi, momwe nsomba zimaswanirana, maukonde apansiwa amatha kugwira ana ansomba oti abwenzeretsedwe m'madzi kapena kugulitsidwa. Kugwiritsa ntchito ma ukonde a pansi kumathandiza kuti nsomba zigwidwe mu nthawi yochepa.

- Ma ukonde apansi amagwira ntchito bwino m'madamu ambiri komanso amene pansi pake ndi pa thyathyathya
- Madamu amene sangaphwetsedwe angakhale bwino kukololede pogwiritsa ntchito ma ukonde apansi. Ngakhale izi zili chonchi, kuphwetsa damu kotheratu ndiyo njira yodalilika yokololera nsomba.
- Musagwiritse ntchito maukonde apansi mu damu losaya chifukwa izi zimapangitsa thope kukhala lochuluka zomwe zimachulutsa mpweya woyipa mudamu ndipo mapeto ake nsomba zimasautsidwa kwambiri. Madzi osaya amatenthanso nsanga mu nyengo yotentha, zomwenso zimasautsa nsomba.



Chithunzi 20. Kukolola nsomba kwa gulu la alimi.

14.1.2. Njira zina zokololera nsomba

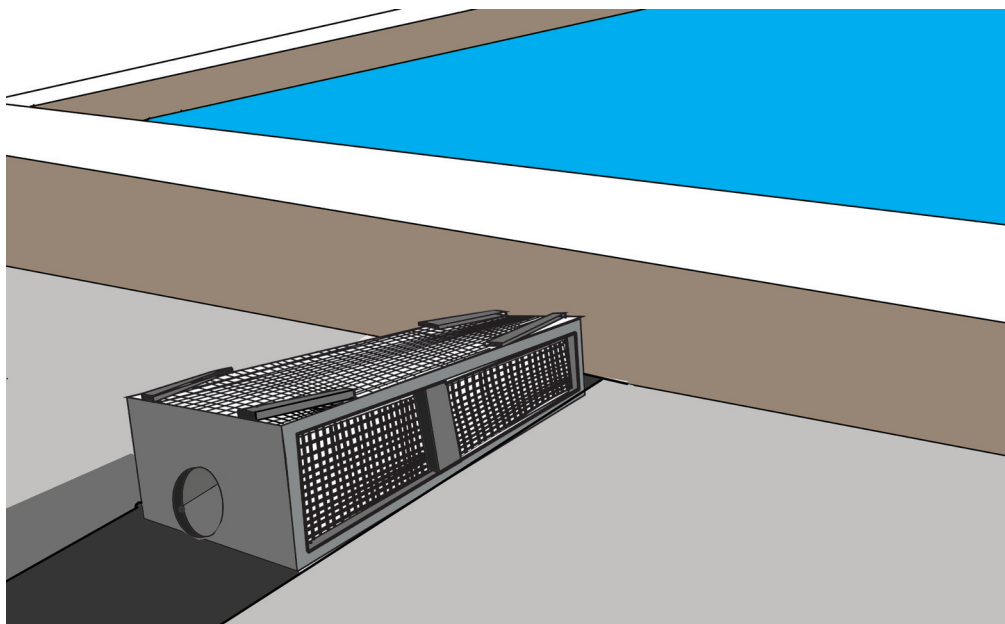
Ngakhale kukolola kogwiritsa ntchito maukonde apansi kuli kolimbikitsidwa kwambiri, njirayi siyotsika mtengo komanso ndi yosowa ku madera akumudzi. Mukhonza kugwiritsa ntchito njira zina zokololera nsomba monga:

14.1.3. Makhoka oyimika

- Ndi otsika mtengo ndithu poyerekeza ndi makhoka a pansi
- Akhonza kupezeka mu midzi yambiri, makamaka kumene kumachitika usodzi kwambiri
- Makhoka amenewa amagwiritsidwa ntchito yogwira nsomba malingana ndi kukula kwao.
- Kuipa kwa makhoka amenewa ndikwakuti amavulaza nsomba ndipo zimafa zisanatengeredwe ku msika. Izi zimapangitsa kuti nsombazo zikhale zosapatsa chidwi ogula.

14.1.4. Kugumula mlambala wa damu

- Gumulani pang'ono mlambala la damu kuti mulole madzi kutuluka mpaka pa kuchuluka kwabwino.
- Madziwa akatsika, gwiritsani ntchito madengu kapena ukonde wa mkombero ngakhaleenso chipangizo chilichonse pokolola nsomba
- Mukhonzanso kupanga bokosi lokololera lomwe mungalisiye pamalo akuya kwambiri mu damumo komwe nsomba zambiri zingapezeke pamene damu likuphwetsedwa. chotsano nsombazo mu bokosilo



Chithunzi 21. Chida chogwelitsa ntchito pokola nsomba mu damu.

- Kuopsa kumodzi kwa njirayi ndikoti mlambala wa damu limakhala losalimba chotero likhonza kugumuka nthawi yokolola isanafike ndipo zitakero nsomba zimaonongeka.

14.1.5. Zipangizo kapena zida zofunikira pokolola

- Sikelo: Yoyezera nsomba
- Basiketi, beseni ndi zina zonga izi: momwe tingaikemo nsomba pamene tikuziyeza pa sikelo.
- Mahapa (ngati alipo): kuti musungiremo nsomba zidakali mu damu poyembekezera kuti zipititsidwe kokagulitsidwa.

14.2. Kukolola kwa makono

14.2.1. Onetsetsani kuti mwakonzerathu zonse zokhuza msika komanso mayendedwe

- Konzekerani bwino kukolola kuti mupewe kuwonongeka kwa nsomba kochitika chifukwa cha zochedwetsa zokhudza mayendedwe komanso chifukwa cha kusowa kwa ogula

- Mukonzerethu dongosolo lonse lofunika ndi ogula
- Tsukani ndi kukonza zida zonse zokololera musanayambe kukolola
- Pezani ogwira ntchito okwanira komanso zipangizo zokhwanira.
- Kololani nsomba zanu m'mawa kwambiri madzi adakali ozizira kuti zisafe nsanga

14.2.2. Nsomba zazikulu komanso za thanzi bwino zikoloredwe

- Sungani ndi kukolola nsomba zomwe kulemera kwa ili yonse nkosachepera magiramu 150
- **MUSAGULITSE** nsomba zoonongeka ndi zopanda thanzi.
- Ziwonetseni nsomba zanu musanazikolole kuti mutsimikize thanzi lake, kakulidwe kake, komanso ubwino wake pa nsika.

14.2.3. Siyani kudyetsa nsomba musanazikolore

- Musazidyetsa nsomba mutangotsala pang'ono kuzikolola.
- Padutse tsiku limodzi kapena awiri mutasiya kudzipatsa chakudya musanazikolole makamaka ngati msika wake uli wa kutali.
 - o Nsomba zikhonza kuwonongera momwe zanyamulidwira popita kukagulitsidwa ndipo madzi akhonza kuonongeka.
 - o Nsomba ndi zopilira ndipo sizimadandaula kwambiri pamene zili ndi njala.
- Ngati nsomba zapatsidwa chakudya chomwe chili ndi mankhwala, onetsetsani kuti mphamvu ya mankhalayo yatha zisanakololede kuti zisungidwe.

14.2.4. Onetsetsani kuti mukuphwetsa damu moyenera

- Phwetsani madzi mudamu kufika theka musanayambe kukolola kuti ntchitoyi isavute; ndi zovuta kwambiri kukolola pamene madzi ndi odzadza mudamu.
- Musanayambe kuphwetsa madzi, tsekani ngalande yolowetsera madzi mudamu.
- Onetsetsani kuti ngalande yotulutsira madzi ingathe kuphwetsa madzi onse bwino lomwe musanayambe kukolola.
- Tsekani pabowo la ngalande yotulutsa madzi ndi ukonde kapena sefa kuti nsomba zisatuluke

14.2.5. Sankhani nsomba

- Sankhulani nsomba potengera kakulidwe ndi m'mene anthu akuzifunira ku msika
 - o Kakulidwe ka nsomba ndi kamene kangapereke mtengo woyenera ku nsomba mogwirizana ndi msika omwe ulipo.
- Gwiritsani ntchito njira zosamalira nsomba zomwe zafotokozedwa mu gawo la Kasamalidwe ndi Mayendedwe.

14.2.6. Tsukani nsomba

- Nsomba zomwe zakololede zikuyenera kutsukidwa kuti tichoke nyansi komanso thope
- Mukhonza kuyikamonso zigulumwa za madzi owundana kuti nsombazo zisaonongeke.
-
- Mukakolola (Werengani mutu omwe ukukamba za kukonzanso damu ndi kuikamo nsomba):
- Tsiku ndi tsiku, yenderani damu losungiramo ana a nsomba ndipo mudzithiramo madzi abwino ochuluka.

14.2.7. MUSAIKEMO ZAKUDYA KAPENA FETELEZA.

- Umitsani damu kwa ma sabata awiri
- Liyendereni damu lanu, konzani moonongeka monse komanso thirani feteleza.
- Dzadzani madzi mu damu.
- Werengani nsomba zing'onozing'ono zimene mukufuka kusamutsira mu damu lowetera nkuziyika motengera moyenera. Onani ngati pali kusiyana kwa katenthedwe kadamu a mudamu lalikulu ndipo muzitenthetse nsombazo ngati pakufunika kutero. Kenaka, ikaninso nsomba mu damu.

15. Kasamalidwe ndi mayendedwe

- M'mene nsomba zimagwiridwira pozikolola komanso m'mene zimasamalilidwira zikakoloredwa, zimapangitsa kuti nsombazo zikhale zabwino kapena ayi
- Ubwino wa nsomba umatengera maonekedwe ake, fungo lake, kakomedwe kake, makhuthalidwe ake m'manja, kuchuluka kwa magulu azakudya amene amapezeka mwa iyo, kafananidwe kake ndi zinzake m'maonekendwe, komanso kukwanira kwa chitetezo chake pankhani ya matenda omwe amafala kupyolera mu chakudya
- Ubwino wa nsomba ndiwofunika kwambiri kunkhani yamatsatsidwe a nsombayo kunsika komanso kumbali yachitetezo cha chakudya.
- Pamene mukukolola, nsomba zanu zikhale m'madzi pamalo a nthunzi.
- Ndibwino kuziziritsa nsomba zanu ngati mukuyenda mtunda wautali.
- Ikani nsomba zanu muzotengera, monga mabokosi, zotheka kusungiramo zinthu zoyenera kusungidwa ziri zozizira kapena m'mabokosi okutlidwa ndi ziguduli zonyowa.
- Ziziritsani nsomba zanu mwachangu mukamaliza kuzikolola. Kutentha kusapitilire madigiriyi seloshasi 4 chifukwa tizirombo ta bakiteriya tomwe timayambitsa matenda timachulukana kwambiri kutentha kukakhala koyambira pa madigiriyi seloshasi 4 kufikira 60
- Nyamulani nsomba mosamala ndi mwachangu.
- Osaika nsomba padzuwa komanso pamphepo.
- Potengera kumene mukufuna kukagulitsa, kuyanika nsomba zanu ndi njira imodzi yosamalirira kuti zisungike nthawi yayitali.
-

15.1. Ndingachite chani kuti nsomba zikhalebe za zabwino kwambiri panthawi yokolola komanso pa nthawi yoti zakoloredwa?

- Zigwireni nsomba mosamala komanso mwa ukhondo.
- Gwiritsani ntchito zipangizo zaukhondo komanso gwiritsani ntchito malo abwino ndi a ukhondo.
- Onetsetsani kuti nsomba ziribe vuto lililonse pamene mukuzikolola komanso mukamaliza kuzikolola.
- Anthu amene akugwira nsomba awonetsetse kuti akutsatira njira zosamalilira chakudya monga kuvala zovala zaukhondo, kusamba m'manja ndi kugwiritsa zipangizo zaukhondo.
- Onetsetsani kuti pakhale kuzizira kwa muyezo woyenera nthawi zonse kuti nsomba zikhale zabwino komanso zotetezedwa. Pali njira zosungira ndi kupititsira zinthu ku nsika zosiyanasiyana zomwe zimayesetsa kuti pasakhale kusitha kwa mazizilidwe kuti zakudya zikhalebe zapamwamba komanso zotetezedwa

15.2. Ndizofunika bwanji kutsatira njira zaukhondo tikamakolola nsomba?

- Ngati nsomba zagwiridwa ndikukonzedwa bwino, zikhonza kusungidwa kwa nthawi yaitali zidakaribe zapamwamba.
- Kuonongeka kwa nsomba kumayambitsa matenda omwe amaika pa chiopsezo umoyo wa anthu.

15.3. Zizindikiro za kuonongeka kwa nsoma ndi ziti?

- Nsomba zimayamba kuwola nthawi yomwe mwangozipha. Zitsanzo za zizindikiro zakuonongeka ndi kusintha kwa mtundu wa khungu kapena kakhuthalidwe ka maso, mamba, kununkha, komanso kusakoma.

15.4. Zimatenga nthawi yaitali bwanji kuti nsomba zomwe zakolledwa zionongeke?

- Zimatengera masungidwe komanso kusakoma.

| <i>Zochitika</i> | <i>Matenthedwe, m'madigiriyi seloshasi</i> | <i>Nthawi imene imapita kuti nsomba zioonongeke</i> |
|-----------------------------------|--|---|
| Kuikidwa padzuwa | 25 kufika 35 | Ma ola 6 mpaka 8 |
| Kuikidwa motchinga | 20 kufika 25 | Ma ola 12 mpaka 16 |
| Kuikidwa mozizira koma osagwirana | 5 kufika 10 | Masiku 5 mpaka 7 |
| Mozizira mpaka madzi kugwirana | 0 | Masiku 14 mpaka 20 |

Tebulo 15. Matebulo 16 mpaka 20 ndi zitsanzo zazolembela zimene mulimi akuyenela kusunga.

15.5. Kukonza nsomba kuti zisungike nthawi yayaitali

15.5.1. Use easy to clean buckets, baskets or containers

Ngati nsomba zilipo zochulukira zoti sizingathe pozigulitsa pang'onopang'ono, zisamalireni pozithira mchere komanso poziyanika. Izi ndi njira zomwe mungatsate pothira mchere kapena poyanika nsomba:

- Zitsukeni ndi kuzichotsa mamba.
- Zing'ambeni mulitali ndi kuzitsegula.
- Zithireni nchere pozinyika m'madzi a nchere kapena kuzisanja muchotengeramo ndikuthira nchere nsomba musanasanjepo zina pa mwamba pake.
- Yikani nsomba pa nthunzi kuti zikhe madzi osafunika.
- Tsopano wumitsani nsomba ndi dzuwa kapena moto. Ngati muyanike padzuwa, ziikeni pathandala kapena kuziyala m'mizere pamalo abwino kwa masiku atatu kapena asanu kufikira zitauma kwambiri. Pamene mukuwamba, yalani nsomba pathandala lopangida ndi waya ndipo pansi pake moto ukhali ukuyaka kwa masiku angapo mpaka zitauma.
- Sungani muchotengera chokhala ndi chovindikira chothina bwino nsomba zomwe zaumitsidwa ndipo muzisunge pamalo owuma podutsa mpweya

15.6. Magwiridwe ndi mayendetsedwe ansomba amakono

15.6.1. Gwiritsani ntchito ndowa zosavuta kutsuka, mabasiketi kapena zonyamuliramo zina

Gwiritsani ntchito ziwiya zosavuta kutsuka, mabasiketi kapena zonyamulira zina monga ndowa zapulasitiki ndi zipangizo zosalala posunga kapena kunyamula nsomba zomwe zakololedwa.

Gwiritsani ma hapa, madengu, kapena makontena omwe ndi osalala popewa kunyenya nsomba.

Osagwiritsa ntchito masaka, popeza kutero kukhonzika kuononga nsomba.

Gwiritsani zinthu monga ndowa za pulasitiki ponyamula. Ndowazi ndi zipangizo zina zonse zikhale zopangidwa moti zingatseke kuthandiza kuti nsomba zisamamenyekemenyeke pamene mukupita nazo ku msika. Zikhalenso zothandiza kupititsa nsomba ku msika mwachangu Zonyamulirazi monga makontena zikhale zokhonzika kutaya madzi zigulumwa za madzi owundana zikasungunuka.

15.6.2. Samalani nsomba modekha

Samalani nsomba modekha kuti mupewe kunyenyeke, zomwe zimachititsa kuti tizilombo toyambitsa matenda tifikire mwamsanga kuchokera m'mimba, m'mamba, ndi pa khungu la nsomba komanso m'minofu yake.

Samalirani nsomba ndi madzi a ukhondo musanazisunge kapena kuzinyamula.

Ikani nsomba mu bokosi kapena nu kontena ndipo onetsetseni kuti zisapindike zikakhala m'meneno.

Osaika nsomba zambiri mubokosi limodzi kapena mukontena imodzi.

15.6.3. Onetsetsani kuti anthu amene akusamala nsomba akutsatira ndondomeko za ukhondo

Tsatirani ndondomeko za ukhondo mukamasala nsomba.

Sambani m'manja, valani zovala zochapa, ndipo tchingani tsitsi lanu.

Tsukani ziwiya zanu.

Musadyere pafupi ndi nsomba, ndipo musakhosomolere kapena kulavulira nsomba.

Osavala zozikoloweka.

15.6.4. Nsomba zikuyenera kusungidwa m'malo othandiza kuti zisawonongeke

Kutentha ndi chinyezi za m'malo osungiramo nsomba zikhale pa muyezo oyenera.

Nsomba zikuyenera kuikidwa m'malo abwino otetezedwa ku uve wobwera ndi tizirombo ndi mankhwala.

Kunyenyeke kwa nsomba ndi chiopsezo ku nsombazo chifukwa kumakopa tizirombo toyambitsa matenda.

Sungani nsomba pamalo podutsa mpweya ndi potetezedwa ku dzuwa kufikira zitagulidwa kapena kuikidwa mu makina ozoziritsira zithu.

15.6.4. Nsomba ziyenera kuikidwa mwamsanga muchotengera chomwe muli zigulumwa za madzi owundana kapena mu makina oziziritsira zinthu kwambiri

Nyamulani nsomba m'magalimoto okhala ndi makina oziziritsira zinthu kapena muzotengera zomwe muli zigulumwa za madzi oundana (chigulumwa chimodzi pa nsomba iliyonse) pofuna kufikira kutentha kosapitirira madigiriyi seloshasi 4 komanso kuyandikira kutentha kotikukhonza kusungunula zigulumwa munthawi yaulendo onse. Gwiritsani zigulumwa za madzi owundana zokwanira pofuna kukwaniritsa kuzizira kofunikira mogwirizana ndi mtundu zotengeramo zanu, kutalika kwa nthawi yomwe mukuyenera kusunga nsombazo, kutalika kwa nthawi yaulendo, ndi zifukwa zina. Gulani zigulumwa tamadzi oundana kwa ogulitsa ovomerezedwa popewa uve. Zigulumwa zamadzi oundana zikuyenera kupangidwa ndi madzi aukhondo (oti akhonza kumwedwa). Sanjani nsomba mozipatula ndi zigulumwa za madzi owundana. Nyamulani nsomba usiku kapena m'mawa kwambiri popewa maola otentha kwambiri amasana. Kumbukirani kulemba m'mabuku anu zakatenthedwe kapena kaziziridwe pamene mukugwira ntchitoyi.

15.6.5. Zochitika zokhudza mayendedwe a nsomba kuchokera ku madamu kupita kumalo ena zisapangitse kuti nsomba zikhudzane ndi zinthu zomwe zingazipangitse kuti zionongeke

Gwiritsani galimoto zikuluzikulu zonyamula katundu mosalowetsa mpweya, zotengera zotseka kwambiri kuti meteteze nsomba kutizilombo ndi zinthu zina zomwe zingathe kuziononga kupyolera mu mpweya, dothi, madzi, mafuta, kapena mu mankhwala.

16. Kugulitsa nsomba

Ngati mukuweta nsomba kuti mugulitse, chonde chitani zotsatirazi

- Tsatirani ndondomeko zamakono zosamalira nsomba kuti muchulukitse nsomba zanu komanso kuti nsomba zikhale za mtengo wabwino
- Muchite zomwe ogula amasangalatsidwa nazo
- Wetani nsomba zochuluka kuti zikwanire onse ozifuna
- Zipatseni nsomba zanu mtengo wabwino popeza misika yapadera kapena gulitsani nsomba zabwino kwambiri zomwe zingakupangireni mbiri pakati pa ogula

16.1. Kodi ndi misika iti ya nsomba yomwe ndikhonza kukagulitsako nsomba zanga?

Ku Malawi kuno, omwe angagule Tilapia ndi eni masitolo amakono akuluakulu, mahotela, masukulu, misika ndi anthu ogula ndi kugulitsa nsomba

16.2. Njira zamakono zogulitsira nsomba

16.2.1. Sankhani malo oyenera ogulitsira nsomba zanu

- Sankhani misika yapafupi ngati simukwanisa kusamala nsomba poziyika m'malo ozizila nthawi yamayendedwe
 - Ogula azigula nsomba pafupi ndi malo owetera nsombazo ngati mlimi sakwanitsa kukhala ndi zida zosungila nsomba zozizila pa ma ulendo ataliatali
- Mukhonza kugulitsira nsomba pamalo omwe zimawetedwera
- Mukhonza kumaika nsomba zanu mu thanki yaikulu kapena mu damu lanu lomwelo kuti ngati simugulitsa zonse, za moyo zija muzibwezeretse m'madzi
- Chepetsani kupita ku damu lanu pomapitako nthawi yokhayo imene kwabwera anthu ofuna kugula nsomba
- Pofunikanso kukhala ndi malo osambira m'manja komanso m'mapazi alendo pofuna kuchepetsa matenda pa munda ndi pa damu lanu

16.2.2. Onetsetsani kuti mwapezerathu msika musanakolole

Musanazikolole nsomba zanu, pezeranithu ogula.

Mukhonzanso kukhala ndi m'ndandanda wa ogula ndi kuchuluka kwa nsomba zomwe akufuna ndi cholinga chodziwiratu kuchuluka kwa nsomba zomwe mukuyenera kukolola kuti mugulitse patsiku lomwe mwasankha kugulitsa nsombazo. Gwirizanani bwino lomwe ndi ogula anu kuti tsiku lokolola nsomba zisadzawonongeke chifukwa chosowa malonda.

16.2.3. Bweretsani ku msika nsomba zomwe anthu akhonza kuzikonda

Gulitsani nsomba zamlingo womwe anthu akhoza kuwukonda. Ku Malawi, mlingo wa nsomba uyenera kukhala magilamu 150 komabe funsani ogula mlingo womwe iwo amakonda. Tsatani njira zapamwamba kwambiri zaulimi wa nsomba zomwe takambira (Werengani zolembedwa zomwe muli nazo kale pankhani ya kachitidwe kazinthu ka pamwamba) kuti nsomba zanu zikule bwino komanso zikhale za pamwamba

16.2.4. Khalani m'modzi mwa anthu a m'masikimu

Ngati muli ndi misika yochepa kapena ndinu wochepekedwa ndalama, mukhonza kutenga nawo gawo mu sikimu a alimi. M'masikimuwa, ma kampani ena amapereka mbewu ndi zakudya za nsomba kwa alimi kenako amadzawagula zokolola zawo pa mtengo womwe agwirizana. Masikimuwa ali ndi kuipa kwakuti ogula amatha kugula nsombazo pa mtengo wocheperapo kuti abwezeretse ndalama zomwe anamugulira mlimiyo mbewu ndi zakudya. Musanalowe musikimu, werenetserani kaye phindu kuti muone ngati mungapeze phindu kapena ayi.

16.2.5. Kumanani ndi mabungwe omwe si a boma omwe amapereka ulangizi

Pali magulu angapo omwe si aboma ku Malawi omwe amapereka ulangizi kwa alimi ang'onoang'ono. Makampaniwa amagulitsa zakudya za nsomba ndi mbewu komanso amapereka upangili kwa alimi ang'onoang'ono. Amathandizanso kupeza ogula nsomba za alimi.

(Chilimikani kupeza mabungwe omwe si aboma kuti mupeze zonse zomwe mukuyenera kudziwa komanso upangili omwe mungafune)

16.2.6. Khalani ndi tsiku loyikika makamaka ngati mukufuna kugulitsa nsomba zanu pambali pa damu lanu

Izindizabwinongati mukugulitsansombazing'onozing'ono. Dziwitsani ogula anu kuti mudzigulitsa patsikulakuti lakuti komanso mtundu wa nsomba zomwe muzigulitsa. Mukhonza kutsatsa kudzera mzikwangwani ndi kuwauza anthu m'mudzi mwanu. Pa zikwangwani, mukhonza kujambulapo nsomba yooneka bwino kuti mukope anthu. Izi zidzakuthandizani kutsatsa moyenera ndipo ogula adzazindikila masiku oyenera kudzagula nsomba kapena mbewu zanu.

16.3. Kodi makasitomala ndingawakope bwanji?

NSOMBA ZOGULITSA



MBANI: +000 00000 00

Chithunzi 22. Chitsanzo cham'mene mungatsatsile malonda.

16.3.1. Pali njira zinayi zokopera ogula

1. Maonekedwe a nsomba yanu. Nsomba za mtengo wapatali zimapangitsa ogula kubwera kudzagulanso
2. Mtengo wa malonda anu: mtengo siwofunika kwenikweni. Anthu amafuna kuti ndalama zawo zipite pachione
 - a. Nthawi zina mtengo wotsika umapangitsa anthu kukayikira ubwino wa katundu ogulitsidwa
 - b. Kumakonzekera bwino ulimi wanu. Nsomba zaziwisi nthawi yoti siyamvula zimakhala ndi mtengo wokwererapo
3. kuweta mtundu wa nsomba omwe anthu akuukonda kumabweretsa mtengo wabwino
4. Ganizirani zokonda za anthu kutengera kukula kwa nsomba zanu. Nsomba zokondedwa zimagulidwa pa mtengo wabwino
5. Ikani ndondomeko yabwino ya bizinesi yanu: Ntunda wapakati pa bizinesi yanu ndi kasitomala ndi wofunika kuwuganizila zedi. Kodi wogula angayende ulendo wautali kuzagula nsomba zangazi?

6. Mwatsatsa motani malonda anu: Kodi ogula wadziwa za malonda anu? Mukhonza kutsatsa kudzera mu Zikwangwani, mumanyuzi pepala ndi mumawayilesi musanakolore. Kutsatsa

16.4. kwanu kuyenera kutsindika zinthu zomwe mukugulitsa, tsiku lokolola ndi upamwamba wa nsomba zanu

- a. Nenani nsomba zomwe mukugulitsa
- b. Itanirani katundu wanu ndi masiku ogulitsa kudzera pa ma positala
- c. Chitsanzo cha positala: Chonde ikani ma nambala anu kuti anthu akuimbileni

17. Bizinesi ya Ulimi wa Nsomba: Kukonza Ndondomeko ya Bizinesi

17.1. Kodi ndondomeko ya bizinesi nchiyani?

- Ndondomeko ya bizinesi ndi kalozera yemwe amasonyeza masophenya a bizinesi, m'mene itadzayendetsedwere, komanso nthawi yomwe masophenyawo adzakwanitsidwe.
- Ichi ndi chida chomwe chimaonetsa ngati ntchito ya ulimi ili yopindulitsa komaso kuti phindu lopezekalo lizagwiritsidwe ntchito popititsa patsogolo bizinesi.
- Imayanga'ha mosamalitsa zinthu zabwino zomwe bizinesi ili nazo, zofooka zake, mwayi wosiyanasiyana omwe ili nawo, komaso ziopsezo zomwe yayang'anizana nazo.

17.2. Kodi n'kofunika bwanji kupanga ndondomeko ya bizinesi?

- Ndondomeko ya bizinesi imathandiza kuyendetsa bizinesi ndi masophenya okhazikika
- Imathandiza kuona mosamalitsa kayendedwe ka ndalama mu bizinesi
- Ndondomeko ya bizinesi yolembedwa bwino ndi chida chothandiza mulimi kupeza thandizo la ndalama kuchokera ku mabungwe obwereketsa ngakhale othandiza alimi ndi ndalama mwakufuna kwabwino
- Ulimi wa Nsomba uli ndi zobetchera zake ngati m'mene aliri ma bizinesi ena onse. Ndondomeko ya bizinesi imathandiza kuganizila za mtsogolo kuti mulimi adzathe kudzathana ndi zovuta zikadzafika
-

17.3. Amasoweka ndondomeko ya bizinesi ndi ndani?

- Alimi onse a nsomba ayenera kukhala ndi ndondomeko ya bizinesi ndipo izi zimayenera kuchitika machitachita a bizinesiyo asanayambe.
- Kwa aliyense ochita bizinesi posatengera kuchepa kapena kukula kwake ndondomekoyi imathandiza kuti adzipanga ziganizo zomveka bwino za m'mene angayendetsere ndi kupititsira patsogolo bizinesi yake.
- Alimi ang'onoang'ono a nsomba amafunikaso ndondomeko ya bizinesi chifukwa sachita ulimiwu kuti azingodya nsombazo ai. Amachita ulimiwu kuti adzigulitsa nsombazo chotero ulimi wawowu ndi bizinesi ndithu
- Ndondomeko ya bizinesi itha kulembedwa ndi mlimi mwini wake ngati amatha kulemba koma akhonzanso kulembetsa kwa anthu omwe amadziwa kalembedwe ake.

Ndondomeko ya pa mwamba kwambiri yochitira bizinesi

1. Kuonetsetsa kuti malo a bizinesi ndi ofikilika komanso ndi abwino pa ulimi wa nsomba. Pamafunikanso kuonetsetsa kuti zinthu monga madzi, ana ansomba, chakudya cha nsomba komanso antchito zikhoza kupezeka mosavuta. Magulitsidwe ansombazo nawonso ayenera kulingaliridwa



2. Chitani chikonzero cha ulimi wanu munjira yoonetsa kuti mukuwutenga ulimiwu kuti ndi bizinesi ndipo mukhale olora kuyikamo upangili, nthawi, komanso ndalama zanu. Chitani nawo maphunziro a bizinesi ndi a Ulimi wa Nsomba kuti muchulukitse chidziwitso ndi luso lanu

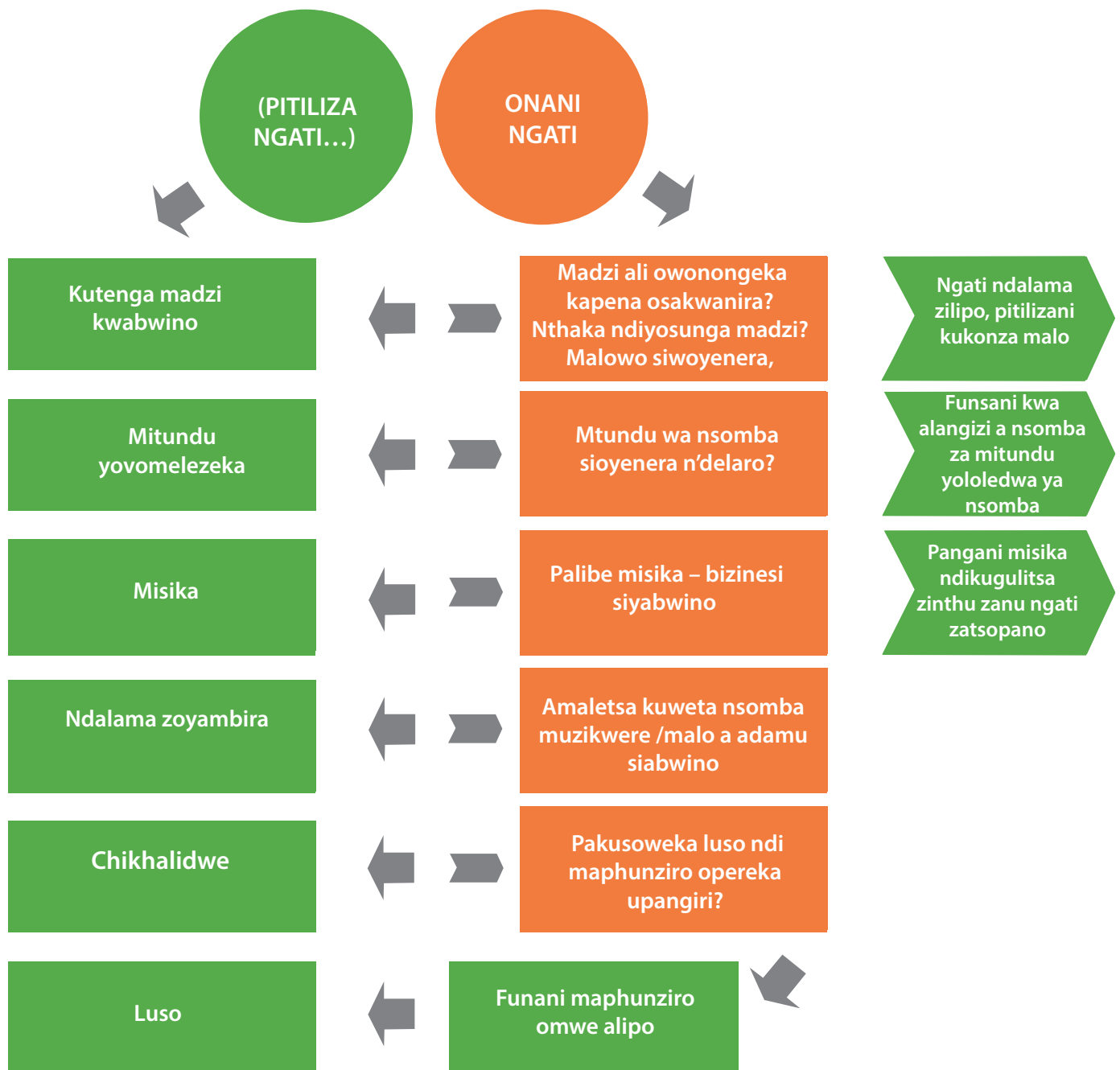


3. Onesetsani kuti muli ndi njira zopezera ndalama komanso zida zofunikila. Onesetsaninsu kuti bizinesiyo itha kupanga phindu. Musadalire anzanu nthawi zonse pakapezedwe kapena kachitidwe ka zinthu zofunika kwambiri, konzekerani mu nthawi yake kuti mupezeretu zithu zomwe muyenera kulowetsa pa ulimi wanu.

1. Kodi bizinesi yanga idzidzagulitsa chiyani? (Kugulitsa nsomba zopereka chikoka kwambiri)
2. Ogula anga ndi ati? (Ogulitsa nsomba, ma hotela, misika ikuluikulu, ma sukulu)
3. N'chifukwa chiyani ogula agule nsomba zanu osati za alimi ena? (kukula ndi chikoka cha nsomba)
4. Zokonda za ogula ndi ziti? Kodi nsomba zanga zidzakwanitsa zokonda za ogula?
5. Kodi ndi njira ziti zomwe zimagwiritsidwa ntchito ndi alimi ena? Kodi njira zanga zikusiyana kapena kufanana bwanji ndi za alimi ena?
6. Kodi pali malamulo amene bizinesi iyenera kutsatira?
7. Kodi ndingathe kupeza zinthu monga madzi, ana ansomba komaso chakudya cha nsomba?
8. Kodi ndidzakonzekera m'masiku, masabata kapena m'miyezi kuti ndi dzapeze zinthu zofunika pa ulimi monga ana ansomba, chakudya cha nsomba ndi zida zina zofunikira pa ulimi ndi posamalira malo a ulimi?
9. Pazafunika zida zANJI ndipo zizafunika ndalama zochuluka bwanji? (zida zokumbira, mbewu komaso chakudya)
10. Mungathe kuganizira za ndalama zolowetsa komaso zobwera pa nthawi liriyonse ya ulimi? (mwalowetsa zingati pa zinthu monga tinsomba, chakudya, antchito ndipo mupeza zingati mukagulitsa)
11. Mufunika ndalama zingati kuti muyambire bizinesi ndipo mukazitenga kuti ndalamazo?
12. Muli ndi upangili woyambira bizinesi kapena muzafunika maphunziro? Muli ndi chidwi chochita pamaphunzirowa?



Chithunzi 23. Pokonza ndondomeko ya bizinesi, dzifuseni mafunso otsatirawa.



Zatengedwa mu: Modified from WF BMPs Manual 2020.

Chithunzi 24. Njira zamakono zopangi chiganizo poyendetsa buzinesi.

17.4. Chikonzekero cha ulimi

Ntchito za ulimi wa nsomba munga kuika nsomba mudamu, kudzidyetsa komanso kuzikolola zimakhudza kayendetsedwe ka ndalama.

Ngati muli ndi madamu ochulukirapo, ndi bwino kuikamo nsomba pa nthawi zosiyana kuti ndalama zolowetsa zizilowa pang'onopang'ono komanso kuti phindu lanu lichuluke. Dziwani kuti zochitika munga kugula ana a nsomba komanso kukolola zidzichitika pafupifupi ndipo ndalama munga zamayendedwe zidzikhala zambiri.



Dziwani nthawi yomwe
nsomba zanu zitenge kuti
zikule, ndipo chitani chikonzero
cha nthawi imene mudzayike
nsomba mudamu, kuzikolola,
komanso kuzigulitsa

Chithunzi 25. Njira zamakono zopangi chiganizo poyendetsa buzinesi

17.5. Ndongomeko za makono za kawetedwe ka nsomba

17.5.1. Werengerani zonse zofunikira ndipo chitani zonse zokonzekera

- Pezani kukula kwa nsomba zomwe zimakondedwa ndi anthu amene mukufuna kukawagulitsa.
- Kutengera kuchuluka kwa nsomba zomwe mudzawete pa sikweya mita imodzi, komanso chiwerengero kwa zomwe sizigafe, mupeze chiwerengero cha nsomba zomwe mukufuna kukhala nazo ndi mtengo wake. Dziwaninso kukula kwa ana ansomba.
- Mukonzetsere kuyika mu damu ana ansomba olemera kilogilamu imodzi akayezedwa pamodzi kuti muwonetsetse kuti ana ambiri asafe ndipo onesetsani kuti mukudziwa FCR ya chakudya chimene mukufuna mudzipatsa nsomba zanu.
- Werengetserani kuchuluka ndi mtengo wa zakudya za nsomba komanso zomwe zingafunike kuti nsomba zikule kufikira nthawi yomwe zidzapite ku msika
- Kumbukirani kuwerengetsera mitengo ya zinthu zina zomwe mutagwiritse pa ntchitoyi munga layimu, ndalama zolipira antchito, nthawi yomwe mukhale mukulankhula ndi anthu, mayendedwe ndi zina. Mukhonza kugwiritsa ntchito zinthuzi zonse zomwe zakambidwazi kuti muwerengetsera ndalama zolowa ndi zopindulidwa.

17.5.2. Onesetsani kuti mwapeza ndalama zokwanila pa ntchito zonse zokhudza ulimi wanu

- Mukuyenera kukhala ndi ndalama zokwanira zoti mudzilipilira zinthu mu nyengo yonse yomwe mukhale mukuweta nsomba mpakana nthawi yokolola.
- Phindu lopezeka mukagulitsa nsomba ligwiritsidwe ntchito yolipira zonse zomwe zingafunike kuti muwetenso nsomba. Ndalama zotsalazo ndilo phindu lanu lenileni.

17.5.3. Onesetsani kuti pali msika wopezekerathu pa nthawi yokolola

Yang'aniranitu msika wa nsomba zanu musanayambe kuziweta.

| | Factor | Mafuso otsogolera | Yankho | Chitsanzo |
|----|---|--|--------|----------------------|
| 1 | Kukula kwa nsomba zopita ku msika (magilamu) | Nsomba mudzazigulitsa ziri zazikulu bwanji? | | Magilamu 300 |
| 2 | Nthawi yosamalira nsomba – miyezi | Nsomba zimatenga nthawi yayitali bwanji kuti zikule kufika pa msinkhu umenewu? | | 6 |
| 3 | Chiwerengero cha madamu | Muli ndi madamu angati? | | 2 |
| 4 | Kukula kwa damu lirilonse – Damu loyamba: Mamita 20 kuchulukitsa ndi mamita 30 (Masikweya mita 600) | Malo onse a damu – Damu loyamba | | 600 m ² |
| | Damu lachiwiri: mamita 30 kuchulukitsa ndi mamita 40 (masikweya mita 1200) | Malo onse amadamu –Damu lachiwiri | | 1200 m ² |
| 5 | Chiwerengero cha nsomba pa damu lirilonse – nsomba 4 pa sikweya mita iliyonse | Nsomba zosungidwa mu damu loyamba | | 2400 |
| | | Nsomba zosungwidwa mu damu lachiwiri - (Masikweya mita 1200 kuchulukitsa ndi nsomba 4 pa sikweya mita) | | 4800 |
| 6 | Nsomba zonse pamodzi | Nsomba za mu madamu onse olembedwa mu mzere wachisanu | | 7200 |
| 7 | Nsomba zonse zokoloredwa (m'makilogilamu) | Yankho la mzere 6 kuchulukitsa ndi yankho la pa nzere woyamba ndikugawa ndi 1000 | | 2160 |
| 8 | Chakudya chofunika (m'makilogilamu) | Yankho la pa mzere 7 kuchulukitsa ndi FCR (Gwiritsani FCR ya 1.5) | | 3240 |
| 9 | Ndalama zofunika kuti mugule ana ansomba | Yankho la pa mzere 6 kuchulukitsa ndi mtengo wa ana a nsomba | | K7200 |
| 10 | Ndalama zofunika kuti mugule chakudya cha nsomba | Yankho la pa mzere 8 kuchulukitsa ndi mtengo wa chakudya pa kilogilamu | | K38, 880 |
| 11 | Zolowa zina monga layimu, ndalama zoyendera, zida zina, antchito, zomangira damu | Mugwiritsa ntchito ndalama zowonjezera zili zonse pa ulimi wanu? | | (K12 pa kilogilamu) |

| | | | | |
|----|--------------------------------|---|--|---|
| 12 | Ndalama zonse zofunika | Yankho la pa mzere 9 kuphatikizapo yankho la pa mzere 10 ndi la pa mzere 11 | | K51,080 |
| 13 | Nsomba zongoyerekeza kuti zifa | Yankho la pa mzere 7 kuchulukitsa ndi magawo 10 pa 100 pa nsomba zakufa | | Makilogilamu 1944 |
| 14 | Nsomba zomwe mungagulitse | Yankho la pa mzere 13 kuchulukitsa ndi mtengo wogulitsira | | Makilogilamu 1944 kuchulukitsa ndi K30 pa kilogilamu amulutsa K58,320 |
| 15 | Phindu lomwe lingapezeke | Yankho la pa mzere 14 kuchotsera yankho la pa mzere 11 | | K 7,240 |

Tebulo 16. Polembera zokhudza ndalama.

17.6. Chuma

Ndikoyenera kusunga ndondomeko ya chuma zomwe mwagwilitsa ntchito ndi zomwe mwapeza. Musunge ndondomeko ya chuma cha bizinesi yanu mubuku lolebamo zinthu zokhudza ndalama. Lembani mubukuli ndalama zonse zomwe mwagwilitsa ntchito ndi zomwe mwapeza, ndipo pezani ndalama zotsala. Nthawi zonse mudzilemba mubukuli zimene mwagulitsa pa ulimi wanu.

Muyenera kuwerengera bwino zinthu zonse zomwe mwalowetsa kuti musalakwitse powerengetsera zolowa ndi zomwe mungapeze.

17.7. Njira za zamakono zoyendetsela chuma

- 1. Sungani malisiti a zolowa ndi zomwe mwagulitsa:** Nthawi zonse sungani ma lisiti a zinthu zomwe mwagula. Chomodzimodzi sungani ma lisiti a zomwe mwagulitsa.
- 2. Sungani buku la zachuma:** Bukuli lizilembedwa pafupipafupi mukachita malonda kuti china chisaiwalidwe. Lembani tsiku mu mpata wowoneka ngati bokosi woyamba. Mumpata wachiwiri lembani zomwe zalowa ndi zomwe mwapeza. Pa zomwe zalowa, lembani mtengo mu mpata wachitatu Mungalembe bwanji kabuku ka zachuma (Onani chitsanzo chachiwiri).

| Tsiku | Kufotokoza | Zomwe mwapeza | Zomwe zalowa | Zotsala |
|-----------|--|---------------|--------------|---------|
| 1-1-2019 | Zomwe mlimi wasunga | 1000 | | 1000 |
| 1-1-2019 | Zida zokumbira ndi mapayipi | | 350 | 650 |
| 12-2-2019 | Nsomba zing'onozing'ono Mapisi 200 kuchulukitsa ndi 1 gilamu | | 200 | 450 |
| 12-2-2019 | Chakudya (Matumba atatu kuchulukitsa ndi makilogilamu 15) | | 300 | 150 |
| 16-4-2019 | Chakudya (Matumba awiri kuchulukitsa ndi makilogilamu 15) | | 200 | 50 |
| 28-9-2019 | Kugulitsa makilogilamu 36 | 1116 | | 1166 |

Tebulo 17. Mmene mungalembera zokhudza ndalama.

17.8. Kulemba zochitika pa ntchito ya ulimi

Kulemba zinthu ndi zochitika pa ulimi ndi kuzisunga bwino ndi zinthu zofunika kwambiri. Lembani ndi kusunga zochitika zonse moyenera. Zolembedwa zokhudza ulimi zosungidwa bwino zimakuthandizani kuti mudzitha kutsatira zochitika pa ulimi wanu ndi kupanga ziganizo zoyenera..

17.9. Njira za makono za kasungidwe ka zolembedwa zokhudza ulimi wa bizinesi

17.9.1. Njira za makono za kasungidwe ka zolembedwa zokhudza ulimi wa bizinesi

- Tsiku loika nsomba mudamu komanso nambala ya nsomba zomwe zaikidwa mu damu lirilonse
- Zolembedwa zokhudza chakudya chansomba ndi kadyetsedwe kake (monga, komwe chinagulidwa, mtundu wake, m'mene nsomba zinachilandilira) zikhonza kugwiritsidwa ntchito kasamaliridwe ka nsomba ka tsiku ndi tsiku, kusintha kasakanizidwe ka chakudya, kuwerengetsera FCR ndi kakulidwe ka nsomba.
- Zolembedwa zokhudza za kasungidwe ka zakudya, mwachitsanzo masiku amene chakudya chitadzaonongeke ngati sichigwiritsidwa ntchito, masiku omwe chinagulidwa, kuchuluka kwa matumba omwe agulitsidwa ndi omwe atsala, ziyenera kusungidwa
- Zolembedwa zokhudza matenda ndizothandiza kulondoloza m'mene munathanirana nawo matenda. Izi zimathandiza mlimi kudziwa kabweredwe ka matenda komanso njira zothanirana nawo
- Kuchuluka kwa nsomba zomwe zinafa mu damu lirilonse ndi masiku omwe zinafa.
- Kagwilitsidwe ntchito ka mankhwala ophera zithu ndi makhwala ochizira nsomba. Mbiri ya komwe mankhwalawo achokera komaso tsiku loyamba kupereka mankhwalawo kwa nsomba, tsiku losiya kuwapereka, zizindikiro zamatendawo, kamwedwe kamankhwalawo ndi madamu omwe mankhwalawo anaikidwa.
- Mmene madzi aliri, mwachitsanzo kuchuluka kwa mpweya wa wabwino omwe uli m'madzimo, ndi katenthedwe ka madziwo. Kuyeza m'mene madzi aliri ndi kwabwino chifukwa kumapangitsa kuti mlimi adziwe ngati madziwo ali osayenera kuikamo nsomba (Werengani tsamba lonena za kasamalidwe ka damu ndi madzi oyenera)
- Zolowetsa, ndalama zokonzera zinthu ndi ndalama zochokera ku zogulitsa zonse zilembedwe.
- Kusamala zinthu nthawi yoti kukolola kwatha kumakhudza zinthu monga zolemba zokhudza tsiku lokolola, makololedwe, mwachitsanzo muyera kudziwa ngati zakoloredwa nsomba zonse kapena ngati zangokoloredwa mbali imodzi yokha?. Kalemaredwe ka nsomba pa nthawi yomwe zakololedwa kayenera kusungidwanso.

Mukamaliza kulemba, muzakhala ndi izi

- Nthawi yomwe nsomba zinatenga kuti zikule kufika poti zigulitsidwe.
- Kuchuluka kwa nsomba zonse zomwe zakoloredwa komanso kulemera kwake zikayikidwa pamodzi.
- Kuchuluka kwa chakudya chimene nsomba zinadyetsedwa (Gwiritsani zomwe zalembedwa mu nfundo (b) and (c) kuti muwerengetsera FCR).
- Kusintha kwa katenthedwe kapena kaziziridwe ka madzi omwe nsomba. zimawetedwamo.
- Chiwerengero cha nsomba zonse zomwe zinafa ndi zifukwa zomwe zinafera.

17.10. Magulu

- Monga mlimi, mutha kupindula pakukhala chiwalo cha gulu. Gululi likhonza kukhala lopangidwa ndi alimi monga anthu oyima pa okha, mabungwe a alimi, chitaganya cha omwe amabweretsa alimi pamodzi kuti adzigulitsira zinthu zawo limodzi, gulu la alimi monga anthu a ntchito. Anthuwa amabwera pamodzi chifukwa ali ndi cholinga chimodzi, zosowa zofanana, amadalirana, komanso amagwira ntchito zolowelerana.
- Muyenera kulowa magulu okhawo omwe ali ndi utsogoleri wabwino, ntchito zooneka, opereka upangili wabwino ndi wopindulitsa kwa alimi, ndi oyendetsa bwino za chuma

- Azimayi ndi azibambo akhale ndi mphamvu zofanana mu gulumo
- Membala aliyense ayenera kukhala ndi damu limodzi kapena kuposerapo

17.10.1. Ubwino wokhala membala wa gulu

- Machitachita a paulimi monga kupeza zida, nsomba komanso ndalama amakhala osavuta
- Kugawana nzeru ndi upangili kuchokera kwa alangizi kumakhala kosavuta
- Kukwaniritsa zoyenera kuchita kuti ntchito igwirike kumakhala kophwekerapo chifukwa mumakhala mukuchita zinthuzi monga gulu
- Mudzapindulanso pokhala mbali ya gulu lomwe limafikira ndondomeko zowonetsera kuti nsomba zogulitsidwa ndi zotetezedwa mokwanira bwino kumavuto okhudza kufalitsa matenda ofala kupyolera mu chakudya.

Zitsanzo za mitundu ya zolembedwa zokhudza ulimi zomwe mlimi wa nsomba akhonza kusunga.

Molemba zogulitsa

| Tsiku | Ogula | Zogula ndi Zogulitsa | Ndalama zolowa | Ndalama zotuluka |
|-------|-------|----------------------|----------------|------------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Matebulo 16 mpaka 20 ndi zitsanzo zazolembela zimene mulimi akuyenela kusunga.

Mbali yoyamba ya zolembedwa zokhudza madamu

Dzina _____ Nambala ya Damu _____ pa) _____ (Damu)

Kumanga

| | |
|-------|-----------------|
| Tsiku | Kukula kwa Damu |
| | |

Kuthira layimu koyamba

| | |
|-------|--------------|
| Tsiku | Makilogilamu |
| | |

Kuthira feteleza koyamba

| | | |
|-------|--------------|------|
| Tsiku | Makilogilamu | Gulu |
| | | |

Kuika nsomba mudamu

| | | |
|-------|-------------------------|--------|
| Tsiku | Chiwerengero cha nsomba | Ntundu |
| | | |

Imfa

| | |
|-------|-------------------------|
| Tsiku | Chiwerengelo cha nsomba |
| | |
| | |
| | |

Kubwezeretsa

| | |
|-----------------------------------|---|
| Tsiku lomwe ana a nsomba awonedwa | Chiwerengelo cha nsomba zomwe zawonedwa |
| | |
| | |
| | |
| Zosankhidwa (Tsiku) | Chiwerengero cha zosankhidwa |
| | |
| | |
| | |

Zolembedwa za chiwiri za pa damu - Kholora

| | |
|----------------------------------|---|
| Zogwiritsidwa ntchito pa (Tsiku) | Chiwerengero cha makilogilamu Choyerekeza |
| | |
| | |
| | |
| Zogulitsidwa – (Tsiku) | Makilogilamu |
| | |
| | |

Zonse zokolodwa (mu makilogilamu)

| |
|-------|
| Tsiku |
|-------|

Zolembedwa zokhudza kukonzedwa kwa zinthu zogwiritsidwa poweta nsomba

| | |
|-------|---|
| Tsiku | Zokonza, kuzintha kwa madzi, kuteteza ku nyama zoononga nsomba, ndi zina zotero |
| | |
| | |
| | |
| | |
| | |
| | |

Zolembedwa zokhudza kuthiridwa kwa layimu

| | |
|-------|--------------|
| Tsiku | Makilogilamu |
| | |

Zolembedwa zokhudza kuthiridwa kwa feleleza

| | | |
|-------|--------------|------|
| Tsiku | Makilogilamu | Gulu |
| | | |

Zolembedwa zokhudza kuyikanso nsomba mudamu

| | | |
|-------|------------------------|--------|
| Tsiku | Chiwerengero chansomba | Ntundu |
| | | |

Chikalata Cholembapo zokhudza Chakudya cha Nsomba

Dzina la malo owetera nsomba: _____ Nambala ya damu: _____ Kuchuluka kwa madamu: _____

Lembani kuchuluka kwa chakudya (mu makilogalamu) chomwe mwadyetsa nsomba

| Sabata - Kuchokera pamene nsomba zinayikidwa mu damu | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|
| Lamulungu (M'mawa) | | | | | | | | | | | | |
| Masana | | | | | | | | | | | | |
| Lolemba (M'mawa) | | | | | | | | | | | | |
| Masana | | | | | | | | | | | | |
| Lachiwiri (M'mawa) | | | | | | | | | | | | |
| Masana | | | | | | | | | | | | |
| Lachitatu (M'mawa) | | | | | | | | | | | | |
| Masana | | | | | | | | | | | | |
| Lachinayi (M'mawa) | | | | | | | | | | | | |
| Masana | | | | | | | | | | | | |
| Lachisanu (M'mawa) | | | | | | | | | | | | |
| Masana | | | | | | | | | | | | |
| Loweruka (M'mawa) | | | | | | | | | | | | |
| Masana | | | | | | | | | | | | |

18. Kuphunzitsa

18.1. Kukhonzekela

- Konzani pulani ya mitu imene mukufuna kuphunzitsa
- Sankhani ngati mufune kuwaitana alimi pa malo amodzi kuti muwaphunzitse kapena muchita kumuyendela mulimi aliyense payekhapyekha.
- Muonetsetse kuti muli ndi zonse zofunika kuti mupangitse maphunziro
- Mukhale ndi kaundula wa anthu onse amene akhale nawo pa maphunzirowa. Kaundula ameneyu kayunela kukhala ndi: dzina la munthu ophunzilayo, ndi aamuna kapena aakazi ndi dela lomwe akuchokela
- Musunge malekodi ngati mwayendela alimi pakhomu pawo
- Ziwani zimene ophunzira akuyembekezela komanso cholinga chawo
- Onetsetsani kuti maphunzirowo akhale ndi mbali yowalola ophunzirawo kuyeselela pa damu zomwe aphunzira
- Muphatikize kuphunzitsa moyankhula ndi kupanga zionetse chifukwa alimi amaphunzira bwino njira ziwirizi zikagwilitsidwa limodzi

18.2. Njira zophunzitsila

- Kopani/muitanile alimi onse amayi ndi abambo. Ngati kupezeka kwa azimayi kukuvuta, yetsani kugwiritsa ntchito alimi achitsanzo azchizimayi kapena atsogoleri ammudzi kuti athandize kukopa/kuwaitanila azimayi kumaphunzirowa.
- Musankhe malo ochititsila maphunziro amene alimi atha kuwapeza mosavuta.
- Musankhe nthawi imene amayi ndi abamabo atha kukwatsa kukhala nawo pamaphunziro
- Muwalimbikitse azimayi ndi achinyamata kuti azingawana ndi ophunzira anzawo zimene amakumana nazo mu ulimi komanso akhale omasuka pa nthawi yamaphunzirowa.
- Maphunziro aliwonse akuyenela kukhala ndi anthu osapitilira makumi awiri ndi asanu. Cholinga nchakuti padzikhala nkumano/kumasukilana bwino pakati inu aphunzitse ndi ophunzira
- Maphunziro akhale muchiyankhulo chimene ophunzira atha kumvetsa bwino
- Kutu mumalize mitu yonse imene ili mubukhuli, zita kukutengelani masiku atatu kapena asanu. Ngati maphunzilowa akuchitikila mmudzi, muwagawe masikuwa pa masabata angapo.

18.3. Dongosolo la maphunziro

- Sankhani mitu imene mukufuna kuphunzitsa
- Welengetselani kuchuluka kwa nthawi imene mungafune kuti muphunzitse mitu mwasankhayo
- Sankhani cholinga cha maphunziro mukufuna kupangitsa: Kodi ophunzira akuyenela kuti akamaliza kukambila mitu?
- Fufuzani za mitu yomwe ophunzira akudziwa kale
- Sankhani zimene ophunzira akuyenela kudziwa ndi ukadawulo ofunika
- Muonjeze pazimene akudziwa kale komanso luso/ukadaulo umene ali nawo kale

18.4. Ukadaulo ophunzitsila

- Khonzekerani bwino musanayambe kuphunzitsa
- Gwiritsani ntchito mayankhulidwe abwino
- Dziwani chiyankhulo chophunzitsira
- Pelekani ulemu kwa wina aliyense
- Mvetsetlani bwino komanso kuthokoza zoyankhula ophunzira onse
- Onetsetsani kuti ophunzira akukambilana

- Onetsetsani kuti aliyense akutengapo mbali, makamaka azimayi ndi achinyamata, powafunsa maganizo awo komanso powalimbikila kuti awonetse luso lawo pa zinthu zina
- Nenani zoon ngati simukudziwa

18.5. Kalondolondo/kuwunguza

- Pangani kalondolondo wa ophunzira
- Ngati ophunzira sakumvetsa, sinthani njira yakaphunzitsidwe
- Muwauze zotsatila alimi amene apanga maphunziro

Mabukhu Omwe Anawerengedwa Polemba Bukhu lino

Bhujel RC. 2013. On-farm feed management practices for Nile tilapia (*Oreochromis niloticus*) in Thailand. In Hasan MR and New MB, eds. On-farm feeding and feed management in aquaculture. FAO Fisheries and Aquaculture Technical Paper No. 583. Rome: FAO. 159–89.

Chirwa ER. Kassam, D and Jere WL. 2019. The Farming of Common Carp (*Cyprinus carpio* L.) in Malawi. Review about history, policy and research directions. International Journal of Applied Sciences: Current and Future Research Trends 1(1) pp 56-69

https://ijascftrjournal.isrra.org/index.php/Applied_Sciences_Journal/article/view/5

FAO Chapter 5: Pond Conditioning through liming (nd) http://www.fao.org/fishery/docs/CDrom/FAO_Training/FAO_Training/General/x6709e/x6709e05.htm#top

Farm Africa. 2016. Kenya market-led aquaculture programme: Strategic Environmental Assessment and Environmental Management Plan. Farm Africa, Kenya. <https://www.farmafrica.org/downloads/kmap-environmental-management-plan.pdf>

Government of Malawi. 2016. Malawi National Biodiversity Strategy and Action Plan II (2015-2025) <https://www.cbd.int/doc/world/mw/mw-nbsap-v2-en.pdf>

Jamu DM. 2017. Potential for reducing FCRs in the farming of native tilapias in Malawi. In Hasan RM and Soto D. 2017. Improving Feed Conversion Ratio and its impact on reducing greenhouse gas emissions in aquaculture. FAO, Rome

Jia B, St-Hilaire S, Singh K and Gardner IA. 2017. Biosecurity knowledge, attitudes and practices of farmers culturing yellow catfish (*Pelteobagrus fulvidraco*) in Guangdong and Zhejiang provinces, China. Aquaculture 471:146–56.

Hoevenaars K and Ng'ambi JW. 2019. Better management practices manual for smallholders farming tilapia in pond-based systems in Zambia. Penang, Malaysia: CGIAR Research Program on Fish Agri-Food Systems. Manual: FISH-2019-07.

Louw M. Maintenance in freshwater fish farming: Aquaculture in South Africa. <http://southafrica.co.za/maintenance-freshwater-fish-farming-.html>

Nagoli J, Pulaizi A, Unyolo S, Phiri YL, Kanthenga H, Chemula D, Mbamba D, Thidza I and Sainani H. 2020. Fish farming trainers' guide - Pond Aquaculture. Malawi: WorldFish. Manual. [https://digitalarchive.worldfishcenter.org/bitstream/handle/20.500.12348/4073/Kulima_project_field_school_manual_03182019%20\(Fish_farming_trainers_guide_Pond_Aquaculture\).pdf](https://digitalarchive.worldfishcenter.org/bitstream/handle/20.500.12348/4073/Kulima_project_field_school_manual_03182019%20(Fish_farming_trainers_guide_Pond_Aquaculture).pdf)

Nagoli J, Pulaizi A, Unyolo S, Phiri YL, Kanthenga H, Chemula D, Mbamba D, Thidza I and Sainani H. 2020. Fish farming trainers' guide: Pond aquaculture. Manual. Malawi: WorldFish.

Noga EJ. 2010. Fish Disease: Diagnosis and Treatment (2nd ed). John Wiley and Sons. Iowa State University Press

Ridha MT. Preliminary study on the growth, feed conversion and production in non-improved and improved strains of the Nile tilapia *Oreochromis niloticus*. Aquaculture, Fisheries and Marine Environment Department, Kuwait Institute for Scientific Research <https://cals.arizona.edu/oip/ista6/ista6web/pdf/060.pdf>

Yanong RPE. 2013. Biosecurity in aquaculture, Part 3: Ponds. Southern Regional Aquaculture Center.

Publication # 4712. <https://empangqq.files.wordpress.com/2014/10/srac-publication-no-4707-biosecurity-in-aquaculture-part-3-ponds.pdf>

Yanong RPE and Erlacher-Reid C. 2012. Biosecurity in aquaculture, Part 1: An overview. Southern Regional Aquaculture Center. Publication # 4707. <https://agrifecdn.tamu.edu/fisheries2/files/2013/09/SRAC-Publication-No.-4707-Biosecurity-in-Aquaculture-Part-1-An-Overview.pdf>

Singini W, Msiska OV, Kapute F, Kasulo V, Kang'ombe J, Wilson Jere W, Nyasulu T, Mzengereza K and Kamangira A. Development of quality and affordable fish feed for small scale fish farmers in Malawi Research Application Summary pp: 407 – 413. Fourth RUFORUM Biennial Regional Conference 21 - 25 July 2014, Maputo, Mozambique

Zokhuzana ndi bungwe la WorldFish

WorldFish ndi bungwe lopezeka m'mayiko ambiri koma losayimira dziko lina liri lonse la chitukuko chapakati pa mayiko chokhudza kafukufuku ndi kupereka upangiri pansi pa ndomokeko yotchedwa Dyetsani Tsogolo, yomwe ndi chochitika cha chokhudza ntchito yowonesetsa kuti anthu ali ndi chakudya chokwanira yomwe ikugwiridwa ndi Bomba la United States of America.

Bungwe la kafukufuku la Mississippi State Universprofit limayesetsa kulimbikitsa njira zimene anthu amapazera zosoweka zawo zatsikunditsiku ndi kupezeka kwa chakudya chokwanira ndi chofunikira mthupi polimbikitsa njira zamakono zogwirira ntchito za usodzi ndi zoweta nsomba. Bungweli liri ndi likulu lake ku Penang, m'dziko la Malaysia, komanso liri ndi maofesi ku Asia, ku Africa, ndi kudera la Pacific.

WorldFish imatsogolera ntchito yokhazikika ya kafukufuku oyendetsedwa ndi bungwe la CGIAR okhudza mmene zimachitikira mogwirizana zinthu zokhudza kulima ndi nsomba mwachidule FishAgri-Food Systems (FISH) muchingerezi.

WorldFish imalandira thandizo la ndalama kuchokera kwa amene amaponya ndalama zawo kuthumba la chithandizo lotchedwa CGIAR Trust Fund lomwe zambiri zake zikupezeka pa tsamba la intaneti ili: <https://www.cgiar.org/funders/>