



**Momwe Zilili Zinthu Zokhudza Mbewu Zokonzedwanso Munjira Yasayansi Zomwe  
Zikulimidwa Ndikugulitsidwa Padziko Lonse  
Wolemba: Clive James, Yemwe Anayambitsa Komanso Ndiwapampando Wopuma Wabungwe La ISAAA**

*Yalembedwa popeleka ulemu kwa malemu Norman Borlaug, amene analandirapo ulemu wadziko lonse wa Nobel Peace, yemwe anali mkulu woyambilira wabungwe la ISAAA, pokumbukira tsiku lake lobadwa lazana limodzi, pa 25 March 2014*

**Mfundo Zikuluzikulu Khumi Zokhudza Mbewu Zokonzedwanso Munjira Yasayansi Mchaka Cha 2014**

**MFUNDO 1: Chaka cha 2014 chinali chaka chopambana cha 19chogulitsa mbewu zokonzedwanso bwino munjira yasayansi.** Kuyambira chaka cha 1996 pamene mbewu zamtunduwu zinadzalidwa koyamba, ndime yayikulu kwambiri kuposa kale lonse yoposa mahekitala 1.8bilyoni yalimidwa mopindulitsa, yomwe ndimodzimodzi 80% yakukula kwa malo anthaka adziko la China kapena dziko la United States. Mbewu zokonzedwanso munjira yasayansi zinadzalidwa pandime zamahekitala ochuluka m'mayiko kwana 28 mchaka cha 2014, ndipo ndimezi zawonjezeleka kwambiri tsopano koposa zana limodzi kuchoka pa mahekitala 1.7milyoni mchaka cha 2014 kufika pa mahekitala 181.5milyoni mchaka cha 2014 - kuwonjezeleka ndi mahekitala 6.3milyoni posiyanitsa mahekitala 5milyoni omwe anawonjezeleka mchaka cha 2013, kuyimira kukwera kwa pakati pa 3 ndi 4% pachaka. Kuwonjezeleka kwa ndime zolimapo ndi zana limodzi kwapangitsa mbewu zokonzedwanso munjira yasayansi kukhala mbewu zimene anthu akopeka nazo mwamsana ndikuyamba kudzala muzaka zapedwa chifukwa chaphindu lake. Mayiko omwe akulima mbewu zamtunduwu awonjezeleka kwambiri kuchoka pa 6 okha mchaka cha 1996 kufika pa 28 mchaka cha 2014, ndipo awonjezeleka ndidziko limodzi kuchoka mchaka cha 2013.

**MFUNDO 2: Chiwerengero Cha Alima Omwe Akulima Mbewu Zokonzedwanso Munjira Yasayansi.** Mchaka cha 2014, alimi okwana 18milyoni, omwe 90% mwaiwo anali alimi aminda ing'onoing'ono komanso osawuka, anadzala mbewu zokonzedwanso munjira yasayansi pamahekitala okwana 181milyoni m'mayiko 28. Alimi ndi akatswiri pozemba ziwopsezo zomwe zikuwoneka kuti zingabwere kutsogolo ndipo iwo amawonjezera zokolola zawo podzala mbewu zochuluka pamalo ochepa (kudzala mbewu pamahekitala okwana 1.5bilyoni, ndipo potero kuteteza nthaka ndikukuzza ulimi wawo). Kotero, alimi amindanoing'ono okwana 7.1milyoni amdziko la China ndi ena okwana 7.7milyoni amdziko la India anasankha kudzala mbewu ya thonje wokonzedwanso bwino pamahekitala okwana 15milyoni mchaka cha 2014 chifukwa chaphindu lochuluka lomwe mbewuzi zimabweletsa. Chimodzimodzinso, mchaka cha 2014, alimi aminda ing'onoing'ono okwana 415,000 amdziko lla Phillipines anapindula ndi mbewu yachimanga yokonzedwanso munjira yasayansi.

**MFUNDO 3: Kudzipeleka Kwa Atsogoleri Andale Kunathandiza Dziko La Bangladesh Kulima Ndikugulitsa Mbewu Ya Mabilingano Koyamba**

Dziko la Bangladesh lomwe ndilodziwika bwino ndikuchepa kwake, ndipo lili ndi anthu okwana 150milyoni, linavomeleza mbewu yokonzedwanso bwino munjira yasayansi ya mabilingano pa 30 October 2013, ndipo mopambana kwambiri, pasanathe masiku zana limodzi chivomelezeleni mbewuyi, alimi aminda ing'onoing'ono anadzala mbewu yamabilingano yokonzedwanso bwino pa 22 January 2014. Kubowoleza kumeneku sikukanatheka popanda thandizo laboma ndi kudzipeleka pankhaniyi kwa atsogoleri andale, makamakka nduna yazaulimi Matia Chowdhury - zomwe zinachitikazi ndichitsanzo chabwino kumayiko osawuka. Pakalipano, dziko la Bangladesh likudzala moyesera mbewu yambatata yokonzedwanso munjira yasayansi komanso kuwunika bwino mbewu zamtunduwu za thonje ndi mpunga.

**MFUNDO 4: Mbewu Zina Zatsopano Zokonzedwanso Munjira Yasayansi Zomwe Zinavomelezedwa Posachedwapa Ndizomwe Mayiko Amadalira Pachakudya - Mbatata ku United States ndi Mabilingano Ku Bangladesh.** Mchaka cha 2014 dziko la United States linavomeleza mitundu iwiri ya mbewu zokonzedwanso bwino munjira yasayansi kuti zingathe kulimidwa: mbatata, yomwe ndichakudya chodalilika chomwe ndimakhala ndi *acrymide* ochepa, imakhalanso ndi *carcinogen*, komanso simawonongedwa kwambiri ndi matenda; ndichakudya chimene chimadziwika kuti chimagayika mwachangu munthu akadya. Dziko la Indonesia linavomereza mtundu wambewu yamzimbe yomwe imapilira kuchilala. Dziko la Brazil linavomeleza malimidwe a mbewu yasoya yolimidwa mdzikolo yomwe sigwidwa ndi matenda, ndipo idzayamba kudzalidwa mchaka cha 2016. Dziko la Vietnam linavomeleza mbewu uachimanga yokonzedwanso munjira yasayansi kwanthawi yoyamba mchaka cha 2014. Powonjezera pambewu zazakudya zokonzedwanso bwino zomwe zimapindulira anthu ogula (monga chimanga choyera ku South Africa, shuga, *beet* komando chimanga chotsekemera ku United States ndi Canada, komanso mapapaya ndi *squash* ku United States), mbewu zina zatsopano zokonzedwanso munjira yasayansi ndi monga mabilingano ku Bangladesh ndi mbatata ku United States - mbatata ndi chakudya chachinayi pazakudya zofunika kwambiri padziko lonse ndipo zingathe kuteteza anthu kunjala m'mayiko monga China (komwe amalima mahekitala 6milyoni ambatata), India (mahekitala 2milyoni) ndi mayiko a ku European Union (mahekitala 2milyoni)

**MFUNDO 5: Mayiko Asanu Omwe Alipamwamba Podzala Mbewu Zokonzedwanso Munjira Yasayansi.** Dziko la United States lidakali patsogolo pamayiko omwe amalima mbewu zokonzedwanso bwino munjira yasayansi ndipo limali mbewuzi pamahekitala okwana 73.1milyoni (yomwe 40% yadziko lonse) ndipo chiwelengero cha anthu omwe ayamba kulima mbewu zamtunduwu ndi 90% mbewu yachimanga, 94% soya ndi 96% olima thonje. Pamene dziko la Brazil lakhala lili patsogolo chaka ndi chaka polima mahekitala ambiri ambewu zamtunduwu muzaka zisanu zapitazi, dziko la United States linakhala patsogolo mchaka cha 2014, litalima mahekitala 3milyoni koposa dziko la Brazil lomwe linalima mahekitala 1.9milyoni. Zodziwika bwino ndizoti dziko la Brazil linadzala mbewu yasoya pamahekitala okwana 5.2milyoni muchaka chake chachiwiri litakhazikitsa mbewuyi. Dziko la Argentina linakhalabe pachitatu, ndipo mahekitala ake omwe linalima mbewu zamtunduwu anatsika kufika pamahekitala 24.3milyoni kuchoka pa 24.4milyoni mchaka cha 2013. Dziko la India lomwe lili panambala yachinayi linalima mahekitala okwana 11.6milyoni a mbewu yathonje yokonzedwanso bwino munjira yasayansi (analima mahekitala 11milyoni mchaka cha 2013), ndipo anthu okwana 95% anayamba kulima mbewuyi. Dziko la Canada linali panambala yachisanu, pomwe nalonso linalima mahekitala okwana 11.6milyoni koma anachulutsa *canola*, komanso anthu omwe anayamba kulima mbewuyi anakwana 95%. Muchaka cha 2014, lililonse mwamayiko asanuwa analima mbewu zamtunduwu pamahekitala oposita 10milyoni zomwe zayika maziko othandiza kuti mbewuzi zipitilire kulimidwa mtsogolomu.

**MFUNDO 6: Mbewu Yoyambilira Yachimanga Yopilira kuchilala Yokonzedwanso Bwino Munjira Yasayansi Yomwe Inadzalidwa Mdziko La United States Mchaka Cha 2013 Inawonjezeleka Koposa Kasanu Mchaka Cha 2014.** Mbewu yachimanga yopilira kuchilala Yokonzedwanso bwino munjira yasayansi yomwe inadzalidwakoyamba mdziko La United States Mchaka Cha 2013, inawonjezeleka koposa kasanu kuchoka pa mahekitala 50,000 mchaka cha 2013 kufika pamahekitala 275,000 mchaka cha 2014, zomwe zikusonyeza kuti alimi anayilandira ndikuyivomeleza mbewuyi - ndipo mbewuyi inapelekedwanso kubungwe lamgwilizano wamabungwe aboma ndi omwe siaboma, kubungwe la Water Efficient Maise for Africa (WEMA), ndicholinga chofikitsa mbewu yopilira kuchilala yokonzedwanso bwino munjira yasayansi kumayiko osankhika amu Africa pokwana chaka cha 2017.

**MFUNDO 7: Momwe Ziliri Mbewu Zokonzedwanso Bwino Munjira Yasayansi Mu Africa.** Dziko la Africa linapitilira kuchita bwino, koma dziko la South Africa linalima mbewu zochepeleko, zokwana mahekitala 2.7miliyoni okha makamaka chifukwa chachilala. Dziko la Sudan linawonjezera ndi 50% mahekitala omwe linalimapo mbewu yokonzedwanso bwino yathonje, pomwe chilala chinasokoneza malimidwe ambewuzi ku Burkina Faso, komwe zikanawonjezeleka ndi mahekitala oposa 0.5miliyoni. mayiko ena owonjezera okwana asanau ndi awiri (Cameroon, Egypt, Ghana, Kenya, Malawi, Nigeria ndi Uganda) anadzala mbewuzi mongoyeselera pambewu zokomera anthu osawuka, lomwe ndikhwelerolo lofunika kwambiri lothandizira kuti mbwuzi zivomelezedwe mmayikowa. Chofunika kwambiri, bungwe la WEMA lakonza zopeleka mbewu yachimanga yopilira kuchilala yokonzedwanso bwino munjira yasayansi ku South Africa mchakka cha 2017. Kusowa kwa malamulo abwino okonzedwa potsatira mfundo zasayansi ndizothandiza kusunga nthawi komanso ndalama ndichinthu chachikulu chimene chikulepheletsa alimi kuyamba kulima mbewuzi. Pakusoweka malamulo abwino komanso amphamvu mwamsanga kuti alingane ndi zokhumba za alimi aminda ing'onoing'ono ndi osawuka am'mayiko omwe akukwera kumene.

**MFUNDO 8: Momwe Ziliri Mbewu Zokonzedwanso Bwino Munjira Yasayansi M'mayiko a European Union.** Mayiko asanu am'bungwe la EU anapitilira kudzala mbewuzi mmahekitala okwana 143,016, omwe anali ochepelepo ndi 3% poyelekeza ndi chaka cha 2013. Dziko la Spain ndilomwe linali patsogolo litalima mahekitala 131,538 ambewu yachimanga yokonzedwanso bwino, omwe anali ochepelepo ndi 3% poyerekeza ndi chaka cha 2013, koma anthu omwe anayamba kulima mbewuyi anakwana 31.6%. mwachidule, ndime zolima mbewuzi zinawonjezeleka pang'ono mmayiko atatu a EU, ndipo zinatsika mmayiko pang'ono mmayiko awiri, makamaka chifukwa chakuchepetsa kudzala chimanga ndi ndondomeko zovuta zautsogoleri.

**MFUNDO 9: Phindu Lomwe Limachokera Kumbewu Zokonzedwanso Munjira Yasayansi.** Kafukufuku watsopano wapadziko lonse yemwe anachitika mchaka 2014 anatsimikiza phindu lochuluka losiyanasiyana lamuzaka 20 zapitazi. Kafukufuku wamagawo okwana 147 omwe anachitika muzaka 20 zapitazi anatsimikiza kuti kusiya kulima mbewu zakale ndikuyamba kulima mbewu zokonzedwanso munjira yasayansi kwachepetsa kugwilitsa ntchito mankhwala otetezera mbewu kutizilombo towononga ndi 37%, kwawonjezera zokolola zambewu ndi 22%, komanso kwawonjezera phindu la alimi ndi 68%. Zotsatira zakufufuzaku zafanana ndi zotsatira zina zam'mbuyomu zomwe zinapezekanso mukufufuza kwina kosiyanasiyana kwapadziko lonse. Mauthenga aposachedwapa okhudza zaka zapakati pa 1996 ndi 2013 anasonyeza kuti mbewu zokonzedwanso munjira yasayansi zinathandiza kuchepetsa njala, kuchepetsa kuwonongeka kwachilengedwe munjira izi: kuwonjezera zokolola kufika pamtengo wa US\$133 biliyoni; kupeleka moyo wabwino, posunga mankhwala ophera tizilombo olemera makilogalamu 500miliyoni kuchokera mchaka cha 1996 mpakka 2012; muchakka cha 2013 chokha kuchepetsa kupemeledwa kwa mphweya wa Carbon Dioxide ndi makilogalamu okwana 28biliyoni, zomwe ndizofanana ndikuchotsa galimoto zokwana 12.4miliyoni pamsewu kwachaka chimodzi; kuteteza nthaka posunga mahekitala anthaka okwana 132miliyoni kuchokera mchaka 1996 mpakka 2013; ndikuthandiza kuchepetsa umphawi wa alimi aminda ing'onoing'ono opsa 16.5miliyoni ndi mabanja awo pamodzi anthu oposa 65miliyoni, omwe ndi ena mwa anthu osawukitsitsa padziko lonse. Mbewu zokonzedwanso bwino munjira yasayansi ndizofunika kwambiri, koma izi sizikutanthawuza kuti zimathetsa mavuto onse - njira zones zamalimidwe abwino monga kasinthatantha ndikupewa matenda ndizofunikabe kwambiri kumbewuzi monga momwe zimafunikiranso kumbewu zina zonse.

**MFUNDO 10: Akalozera Atsogolo Lambewuzi.** Kuyang'ana kutsogolo mosamala ndichiyembekezo chochokera kuphindu lomwe likuwoneka chaka ndi chaka makamaka poyang'anira kuchuluka kwa anthu amene akuyamba kulima mbewuzi (pakati pa 96% ndi 100%) pambewu zomwe zokonzedwa bwino zomwe zilipo pakalipano, kupeleka mwayi wakukula kwa misika mmayioko omwe akukwera kumene ndi omwe aliwotukuka. Mapulani omwe alipo ndiwokhazikitsa mbewu zina zatsopano zomwe ngati malamulo angavomereze kudzala kugulitsa kumayiko akunja, zidzapezeka muzaka zisanu zikubwerazi - mndandanda wazinthu zatsopano zokwana makumi asanu ndi awiri wakonzedwa. Mumndandawu muli mbewu zingapo zatsopano ndizinthu zina zaulimi zopilira kwambiri kutizilombo kapena matenda, komanso kumankhwala ophera mbewu zosafunika; mbewu yapadera yampunga ilimkati moyesedwa, komanso mbatata zopilira kumatenda a *late-blight* zikuyesedwa m'mayiko a Bangladesh, Indonesia ndi India. M'dziko la United States a Simplot apempha kale chilolezo yokhazikitsa mbewu yambatata yopilira kumatenda a *late-blight* komanso yosakhala ndi shuga wambiri; mbewu zokomera anthu osawuka, makamaka ku Africa, monga nthochi ndi khobwe wopilira kutizilombo towononga, zikuwoneka kuti zikuyenda bwino; mgwirizano wa mabungwe aboma ndi omwe siaboma yakhala yopindula kwambiri popanga ndikupeleka kkwa anthu zinthu zovomelezeka - akafukufuku anayi amabungwe amtundu, omwe anakhudwa mitundu yosiyanasiyana yambewu mu magulu onse atatu amayiko akumwera, akuwunikidwanso mundondomeko yonse.