



## Emaciniso Lalishumi Ngetilimo Letakhiwe Ngebucwephesha Besayensi Lebitwa Ngekutsi Yi-Biotechnology Ngemunyaka wa 2015

**Liciniso # 1. Ngemunyaka wa 2015 bekuhlangana iminyaka lengemashumi lamabili (20) solo kwacalwa kulinywa tilimo letakhiwe ngebucwephesha besayensi.** Litimmo setihlanganisa indzawo lengu 2 billion wema hektha (ha) mhlaba wonkhe, lengalinganiswa nelivekati lase-Melika maliphindvwe kabili, tilinywe ngemphumelelo mhlaba wownkhe emaveni langu 28. Kuleminyaka lengu 20 (1996 to 2015); inzuzo letfolwe balimi ilinganiselwa ku US\$150 billion. Balimi labazuzako balinganiselwa ku 18 million ngemunyaka, le 90% wabo balimi labancane basemaveni lasatfufuka.

**Liciniso # 2. Inchubo ngekumukelwa kwaletilimo kuleminyaka lengu 20.** Kulandzela kulinywa kwaletilimo iminyaka lengu 19 lelandzelanako kusukela nga 1996 kuya ku 2014 indzawo lebetilinywa kuyo ngemunyaka mhlaba wonkhe kwaba ngu 181.5 million wema hektha (ha) nga 2014, makufananiswa na 179.7 million ha nga 2015, lekukhomba kwehla nga 1% emkhatsini wa 2014 na 2015. Incumbi yemave iyandzisile indzawo yekulima, kwatsi lamanye ayehlisa ngetizatfu tekwehla kwentsengo yetilimo; indzawo lekulinywe kuyo kubhekeke kutsi ikhule makubuya kusimama simo setintsengo. Indzawo letilinywe kuyo letilimo ikhule ngalokuphindvwe ka likhulu, kusuka ku 1.7 million ha nga 1996 kuya ku 179.7 ha nga 2015, lokwenta letilimo tibe nguletemukeleka ngekushesha kuletikhatsi.

**Liciniso # 3. Iminyaka lemine lelandzelanako, emave lasatfufuka ngiwo lahamba embili ngekulima letilimo letakiwe ngebucwephesha besisayensi.** Nga 2015 balimi base-Latin America, Asia nase Africa balime 97.1 ha, nomeke 54% walenzawo lengu 197.7 ha lalinywe mhlaba wonkhe (53% nga 2014), makacatsaniswa nemave latfufukile wona lalime 82.6 million ha nomeke 46% (47% nga 2014); loluhla lolu lubhekeke kutsi lichubeke. Kulamave langu 28 lalima letilimo nga 2015, 20 ngulasatfufuka kantsi 8 ngulasatfufukile.

**Liciniso # 4. Tilimo letinetigci telufuto letihlanganisiwe titsatsa 33% walenzawo lengu 179.7 million ha mhlaba wonkhe.** Litimmoletinetigci letihlanganisiwe ngito letinconotwa balimi. Letilimo tikhule kusuka ku 51.4 million ha nga 2014 taya ku 58.5 million ha nga 2015 – kusho kukhula nga 7.1 million ha lekulingana nekukhula nga 14%. Emave langu 14 ahlanyeletigci letihlanganisiwe, timbili kuya etulu nga 2015, langu 11 ngemave lasatfufuka. Live le Vietnam lilime letigci letihlanganisiwe temumbila we Bt/HT kwekucala ngemunyaka wa 2015.

**Liciniso # 5. Tinfo letenteke emaveni lasatfufuka ngemunyaka wa 2015.** Indzawo lese Latin America ngiyo lelime letilimo leti kakhulu emhlabeni, kuhamba embili lase-Brazil, lilandzelwe live le-Argentina. E-Asia, live lase-Vietnam belilima kwekucala, live lase-Bangladesg lisitwe ngumfutfo wahulumende kuze lilime i-Bt eggplant, labese libuka i-Golden Rice, GM Potato na-kotini etilimeni letisatolinywa. Live lase-Philippines liphumelele ekulimeni ummbila loyi GM eminyakeni lengu 13, besekutsi live lase Indonasia libuketa kuvumela kulima umoba lotomelana nesomiso. Live lase-China liyachubeka nekuzuza ekulimeni kotini loyi Bt (US\$18 billion kusukela nga 1997 kuya ku 2014), kwatise kutsi nenkapane i-ChemChina beyifuna kutsenga i-Syngenta nga US\$ 43 billion. Nga 1995 lase Ndiya belihamba embili ngekulima kotini emhlabeni, ngakoke lokotini we Bt wangenisa inzuzo lenkhulu, kusukela nga 2002 kuya ku 2014, lengalinganiselwa ku US\$ 18 billion. Livekati le-Africa nalo likhicitile naloku lase South Africa belihlaselwe somiso lesinciphise umkhicito lebe ungalinywa ku ~700,000 ha nga 2015 – lokukhomba kwehla nga 23%. Loko kukhomba bumcoka besimo sesomiso e-Africa, lapho khona ngenhlanhla, kukhona i-WEMA Project leletsela inhlanganyelo leyi GM lemelana nesomiso lebehekeke kutsi icale kukhicitwa ngemnyaka wa 2017. Live lase-Sudan likhulise kukhicitwa kotini we Bt nga 30% kwaya ku 120,000 ha nga 2015, kwatsi eveni lase-Burkina Faso kube netingcinamba letimbalwa letibange kutsi indzawo lekulinywe kuyo ingandzi. Nga 2015 emave langu 8 ase-Africa bekacwaninga letinye taletilimo letakhiwe ngalobucwephesha lekutsembakala kutsi titogcine tivunyelwe kutsi tilinywe.

**Liciniso # 6. Lokwentekile eveni lase-Melika nga 2015.** Inchubo ngaletilimo ifaka ekhatsi: Kuvunyelwa kwekutsi kulinywe tilimo letinsha letakhiwe ngalobucwephesha lokufaka ekhatsi emazambane, nemahhabhula; kwakhicitwa sitfombo sekucala lapho khona kungakangetwa tigci telufoto kepha kushintjwe leto tendalo; kuvunyelwe kukhicitwa tilwane leti GM letidlawa bantfu, tinhlanti (salmon); kwakhuliswa kucwaningwa kwetilimo lapho kushintjwe tigci kuphela lelibitwa ngekutsi yi CRISPR (**C**lustered **R**egularly **I**nterpersed **S**hort **P**alindromic **R**epeats); kwemukelwa ummbila lo GM lowakhelwe kumela somiso. Tinkapane te-Dow ne-DuPont nato tihlangene takha i-DowDupont.

**Liciniso # 7. Kwemukeleka kwemmbila loyi GM lowakhelwe kumelana nesomiso eMelika.** Lommbila i-Biotech DroughtGard™, ulinywe kwekucala eMelika nga 2013, indzawo lolinywe kuyo yakhula ngalokuphindwe kayi 15 kusuka ku 50, 000 ha nga 2013 kwaya ku 810, 000 ha nga 2015 lokuyinkhomba yekwemukelwa kwalommbila balimi. Lommbila lona unikelelwe i-project ye WEMA (**W**ater **E**fficient **M**aize for **A**frica) lebukete kutsi lenhlanyelo igcine ifike emaveni lakhetsiwe e-Africa ngemnyaka wa 2017.

**Liciniso # 8. Inchubo yaletilimo te GM e-Europe (EU).** Solo letilimo tikhicitwa kulawo mave lasihlanu, achubekile ahlanyela ku 116, 870 ha wemmbila weBt, lekukhombwe kwehla nga 18% kusukela nga 2014. Kwehla kwenzawo lelinyiwe kuwo onkhe lamave ibangwe tingcinamba letifaka ekhatsi kuncipha kwekulima ummbila, nekungabongwa kwebalimi labaletsa ema rekhodi.

**Liciniso # 9. Buhle betilimo letakhiwe ngebucwephesha besayensi.** Licwaningo lelentiwe emaveni langu 147 kuleminyaka lengu 20 likhombwe kutsi **“kwemukelwa kwaletilimo kunciphise kufutwa kwetilokatana nga 37%, kukhula kwesivuno nga 22% nekukhula kwenzuzo yemali nga 68%”** (Quim et al, 2014). Lemiphumela yalelicwaningo ihambisana naleminywe lekhicitwa njalo ngeminyaka mhlaba wonkhe (Brookes et al, 2015).

Kusukela nga 1996 kuya ku 2014, letilimo tisite ekwandziseni kudla nasekuvikeleni ingucu-mhlaba; ngekukhulisa umkhicito wetilimo longaba ngu US\$ 150 billion; nangekusita ekongeni imvelo ngekuvikela kusentjetiswa kwa 584 million kg wemutsi wekubulala tilokatana; ngemnyaka wa 2014 kuphela, kunciphe kukhicitwa kwe CO<sup>2</sup> nga 27 billion kg, lokungalinganiswa nekususwa kwetimoto letingu 12 million emigwacweni ngemnyaka munye; tivikele imvelo ngekonga 152 million ha wemhlaba kusukela nga 1996 kuya ku 2014; tasita kunciphisa indlala kubalimi labangaba ngu 16.5 million, nemindeni yabo kwakha 65 million webantfu labangulabaphuyile emhlabeni. Letilimo letakhiwe ngalobucwephesha tibalulekile kepha itisiyo imphendvulo kuto tonkhe tinkinga – kufanele kulandzelelwe kulima ngalokufanele kufana nekugucula tilimo, nekuvikela kugwama kwetilokatana.

**Liciniso # 10. Kubuka Phambili.** Tintsatfu tintfo letibukiwe. **Kwekucala**, Kwemukelwa kakhulu kwaletilimo (90% – 100%) kutogcina kubange kutsi kungasangeteki letinye tindzawo tekukhulisa umkhicito; kepha asekhona emave lapho khona kusengakhicitwa loko lokuvunyelwa simo salawo mave, kufana nemmbila loyi GM **losengalinywa endzaweni lengacala ku 100 million ha mhlaba wonkhe**, 60 million ha eAsia (35 million eChina nje kuphela), kanye na 35 million ha eAfrica. **Kwesibili, Kusesenetilimo letingetulu kwa 85 letinsha letisengakhiwa ngalobucwephesha** letisacwaningwa kwanyalo, timele kuvunyelwa. Tifaka ekhasiummbila lowakhelwe kumelana nesomiso (WEMA Project) lobeketwe kutsi utocala kukhicitwa ngemnyaka wa 2017 eAfrica, iGolden Rice e Asia, bo bhanana netinhlumaya e Africa. Kusebentisana nebantfu netinkapane (Public Private Partnerships) kubonakele kusebenta ekwakheni nasekucwaningeni kwaletilimo Kanye nasekuletseni letilimo kubalimi. **Kwesitsatfu**, tilimo letakhiwe ngekushintja tigci telufuto ngito letibukwete kakhulu ekwakhiweni.

**Kunelitsembe lelikhulu kulobuciko lobubitwa nge CRISPR.** *Bocwephesha labanyenti bovumelana ngekutsi lobucwephesha bekushintja tigci bungonga sikhatsi futsi bukhicite tilimo letingaba lusito kakhulu kwengca leti letitayelekile Kanye naleto letakhiwe tangetwa tigci. Imitsetfo leminyenti lebuke letilimo letakhiwe ngekungeta tigci telufuto kubhekeke kutsi ingatibuki kakhulu letilimo letakhiwe ngekushintja tigci nje kuphela.*

*Kunendlela lencomiwe (Flavel, 2015) kungetwa nekubhicabhicana kwe tigci telufuto, kushintja kwetigci telufuto, Kanye nekusentjetiswa kwetilokatane kute kukhuliswe umkhicito wetilimo ngendlela lekhonsako lebhhekeke kutsi isite ukukhiciteni kudla lokwenele nasekunciphiseni indlala nebuphuya.*