

PULA IMVULA

GROWING FOOD • PEOPLE • PROSPERITY



UMA UKULIMA KUYIBHIZINISI, ngakho ke abalimi kufanele babe OSOMABHIZINISI

WONKE UMLIMI KUDINGEKA AZIBHEKE NJENGO-
MLIMI OPHELELE KUNGAKHATHALEKILE UKUTHI
MKHULU NOMA MNCANE KANGAKANANI – FUTHI
ESINGATHE IMIGOMO YOKUPHATHWA IBHIZINISI.
KULE ATHIKHILI SIBHEKA UKULIMA NJENGESIBUKO
ESIKHULISAYO SEBHIZINISI PHECELEZI I-MAGNIFYING GLASS.

U-General Eisenhower wathi, '*EmaIndweni ayikho indoda ehlakaniphile noma indoda enesibindi engalala phansi emzileni ilindele isitimela sesikhathisizayo sizoyishayisa*', okusho ukuthi wonke umlimi kufanele abheke umkha-kha futhi ahlele izenzo zakhe ngokucophelela ngokolwazi alutholayo.

UKUFUNDA ISIMO SENHLALO YENDAWO UQOBO

Njengamanje eSifundazweni saseNyakatho neNtshonalanga lapho ngihlala khona, abalimi bamatasatasa banakekela izilimo zabo ezisencane

Ngu-Jenny Mathews, umbhalawi Pula Imvula. Uma ufuna imininingwane egcwele, i-imeyili ku-jenjonmat@gmail.com



zasehlobo, bahlasela ukhula nezinambuzane futhi bayashabasheka babheka isimo sezulu ngomdlandla kanye nesibhakabhaka esiluhlaza esishisayo esibonakala sinwebeka unomphela. Silangazelela ikhetheni elimnene lefu elingenddalwa livale ilanga kanye nomkhiqizo omncane wemvula ezongena phansi ithambise umhlaba wethu owomile, – kodwa ngeke sikhononde uma izulu lihloma likhuphula amafu amanyama, liduma lihlaba umbani owesabekayo maqede line imvula eyizikhawu!



IZWI ELIVELA KU...

Du Toit van der Westhuizen

PHELA LE SIKHATHI SONYAKA SIYE SISIBIZE NGESIKHATHI SEMERCEDES: NGESIKHATHI LAPHO OKUSANHLAMVU KUSESEMBEWINI FUTHI SINETHEMBA LOKUTHOLA ISIVUNO ESIHLE, KUYA NGEZIFUNDA NGOKWEHLUKANA KWAZO.

Lesi yisikhathi abalimi ngokuvamile abaqlala ngaso ukualaza bebone imoto entsha abangayithenga, kodwa ukudumala kungaba kukhulu uma isilimo singenzi njengoba bebecabanga. Ungathathi amashansi ngesikweletu. khumbula: 'Akubalwa amachwane inkukhu ingakafukamel', futhi ngicela uwunakekele umsebenzi wakho ngaphambi kokuba ungene ezikweletini ezingadingekile noma usebenzise imali isidingo singekho.

Sibe nesikhathi esinzima sesizini yokutshala ezweni lonke, ngemvula engani lonke izwe nangesikhathi. Sibona kahle lapho abalimi babephoeqeka ukuba benze amaqhinga ukuze bayifake phansi ngesikhathi imbewu ngethembra ukuthi isilimo sizotholakala. Abalimi abaseNyakatho neNtshonalanga nabaseFreystata ikakhulukazi abazange bayithole imvula ngoKhisimusi futhi kwadingenga ukuba bashintshe masinyane uhlelo lwesilimo sabo. Kwatshalwa ummbila omncane nobhekilanga omningi.

Empeleni kusekhona abalimi abasalwiana nokulawula ukhula. Ukhula empeleni luyisitha esikhulu somlimi, futhi ngonyaka ofana nalo, ukulawulwa kokhula kungaba yifektha enqumayo phakathi kwesilimo esikhulu nokungaphumeleli kwesilimo. Noxhaso lwemali lube luluncane kakhulu kanti isixazululo sabalimi kwaba ukonga lapho kunethuba khona ngaphandle kokuzama ukusebenzisa imali encane ekutshaleni.

Ngenhlanhla, umlimi angenza ipulane, futhi amapulane enziwa ngempela! Abalimi kufanele baqinisekise ukuthi bayabunakekile ubudlelwano babo obunempilo nalabo ababaxha ngemali. Izaba ezinkulu ziyenziwa unyaka ngonyaka ukuhlelela abalimi ukuba bathole imali futhi kuba lula uma umlimi ethembekile ngesilimo sakhe. Uma wena njengomlimi ucabanga ukuthi kukhona okungahambi kahle enhlabathini yakho okukuvimbela ukuba usevise i-akhawunti yakho, bikela abakweboleka imali ngokushesha.

Umuntu ngamunye osebenze kanzima kule sizini edlule abusiseke futhi abone isimanga uma sekugijima abavuni! Bayakhonza abaseNyakatho neNtshonalanga. ■

Uma ukulima kuyibhizinisi, ngakho...

Ziningi izinselelo ezibhekene nabalimi bebheke amasimu ebuna elangeni. Isifundo sase-Colorado State University sidalule ukuthi **kudingeka ikhono lokuphattha amabhizinisi ethu ezikhathini ezifuze lezi** njengoba ingcindezi nokhwantalala kubeka abalimi engcupheni. Phakathi kwephethini yokuziphattha kubonakala kuqhantsha izinhlansi zokwanda kokusebenzisa izidakamizwa, izehlakalo ezenzeka emapulazini ukulimala nokuzibulala. Izibalo zikhombisa ukwanda kothutuva phakathi kwamadoda namakhosikazi futhi lokho kudala ukushuba kwesimo phakathi kwabazali nezingane, lokho kwenza kudala ukuncipha kokuzimisela esikoleni nokuncipha kwamazinga okuzithemba.

U-Bill Gates uthe senza isilinganiso ngokweqela njalo ireyhi yoguquko ezokwenzeka eminyakeni emibili ezayo – kodwa asisinakile isilinganiso sereyhi yoguquko oluzokwenzeka eminyakeni eyishumi ezayo.

Ukukhetha kulele ekutheni umuntu wenza kanjani ngaphansi kwalezi zimo. **Konke kubuyela phansi ekutheni uvumelanu nesimo.** Abantu abahambisana nesimo yilabo abanamava obuholi futhi kungenzeka bakhethe 'ukulwa' kunoekhetha 'ukubaleka'. Labo bantu bafuna izixazululo futhi baphume bayofuna usizo. Ukvumelana kuyasisiza ukuba siqondisa ukucabanga kwethu kusuke emqondweni wokweswela kuye endleleni lapho singagxilisa khona kwasikukhethayo – isisusa ekubeni singenzi lutho senze utho epulazini nasebudlelwani bethu.

USOMABHIZINISI UBUKELA PHAMBILI

U-Jim Carroll ohamba phambili ngokubukela phambili, 'abanye abantu babona isimo – futhi babona ubungozi. Abasunguli babona isimo esifanayo – futhi wabona ithuba.' Ukholelwana ukuthi akudingeki sibuze 'ugqozi lwebhizinisi' Lokhu kusinikeza amandla okuphendula ukujijimisa isimo sangaphandle ukuze sibone ithuba, iwadi lenselelo nokuhlela izinsiza zempumelelo esheshayo. Abalimi, abagcina lokhu okungahambisani nabo, benza amaphutha. Ukwenza isibonelo yingakho ke, sisingathe ngempumelelo amaplatifomu owhebo ngenkathi abanye bemile bedidekile futhi bengenathemba.

Singaliphumelelisa ka-njani ibhizinisi elisheshayo

ngenkathi sincintisana nezinselelo ezisenza sizi-zwe sinomthwalo futhi siphelelwana nangamandla? Sigxile esithombeni esikhulu futhi sithola isi-thombe somsebenzi wethu lapho singakwazi khona ukukhula phakathi koguquko. U-Carroll uthi udaba okufanele sigxile kulo u-:

- Ukubumba kabusha umncintiswano wamakhono okuhlakanipha;
- Shiya phansi isiko futhi uthathe amaphrojekthi amanningi azohola phambili;



S

AMANDLA

- Yimaphi amandla elinawo ibhizinisi lakho okwenza wena ube nomncintiswano? Izibonelo zingafaka phakathi umndeni, umsebenzi, imishini, usayizi wepulazi, njil.
- Yini oyenza kangcono kuna-noma ubani omunye?
- Ngabe ungumphathi ongcono, ezolimo noma imishini?
- Ngabe ungumqashi ohloniphekile?
- Ngabe ukwazile ukuqedela ukutshala nomsebenzi owanele wokuvuna?
- Ngabe abanye yini abayibonile engamandla akho?

W

UBUTHAKATHAKA

- Yini ongayenza kangcono?
- Ngabe yini ekudonsela emuva?
- Ngabe yini izinguquko ezincane ezingenza umthelela omkhulu?
- Yini ongayigwema?
- Ngabe uluqedile ucwaningo lwebhizinisi lakho lokuvivinya ibhizinisi lakho?
- Ngabe yini abanye abalimi abayenza kangcono kunawe?

O

AMATHUBA

- Yiziphi izimo ezibhekene nebhizinisi lakho?
- Ngabe kufanele ukhule ngosayizi ukuze usale use-mncintiswaneni noma ungasala ukusayizi okuko njengamanje?
- Ngabe kwenzekani emphakathini wakho engaba yithuba?
- Ngabe amafasilithi amasha ayeza endaweni yakho engakunikeza imakethe entsha yezelimo ozilimayo uphinde uzidayise?
- Ngabe likhona ithuba lokumaketha ngqo kuya kubathengi bendawo?
- Ngabe sikhona isikhala/ima-kethe esipesheli?

T

UBUNGOZI

- Yiziphi izingqinamba obhekene nazo?
- Ngabe uhamba kanjani umncintiswano wakho?
- Ngabe izinguquko zobuchwepheshe zinobungozi ebhizinisini?
- Ngabe isimo sakho sezimali sinobungozi ebhizinisini lakho?
- Ngabe ubuthakathaka obuthile bunobungozi obukhulu epulazini lakho?

- Thatha isinqumo;
- Sungula;
- Yakha ubambiswano olwehlukile futhi uhlanganise ndawonye izizukulwano ezalhukene; na-
- Guqukela kubuchwepheshe obusha – ngokushesha!

U-Bill Gates uthe senza isilinganiso ngokweqela njalo ireythi yokuquko ezokwenzeka eminyakeni emibili ezayo – kodwa asisinakile isilinganiso sereythi yokuquko oluzokwenzeka eminyakeni eyishumi ezayo. Eminyakeni eyishumi edlule, yangetekho i-twitter, ingekho ne-Amazon Kindle reader ne-Facebook yayisetshenzisa kuphela yizitshudeni zaseniyuvesi – ngisho i-Apple ne-iPads babeyinkundla yezemidlalo yabambilwa – futhi kodwa namuhla zingamathulizi abalulekile empilo yansuku zonke. Akungabazeki ukuthi kufanele sigcine umuno wethu ngqo oguqukweni.

- Izinguquko ezimbala wa ezaibalulwe ku-Carroll's '25 Trends ka-2025' u-:
- Ukheshi uzoba nakho konke kodwa unyamalele.
 - I-Afrika ngabe isiyekile ukuba 'yi-zwekazi eliyisikhaya' ngenxa yokuhamba kwabantu ngobuningi beyokwakha kwamanye amazwe ne-nhlalo yasemadolobheni. Inging labantu emhlabeni lizohlala ezindaweni emadolobheni amakhulu angaphansi kwama-30 ngo-2025.
 - Ukuhlala emadolobheni ngobuningi kuzophoqa ubuchwepheshe bentuthuko yakwakha kuyiwe phezulu nama-'skyscraper' amabhiliyi ayizitezi.
 - Abantu basemazweni asentshonalanga bazophila isikhathi eside kanti abasemazweni ase-Asia, e-Afrika nase-Middle East bazophila isikhathi esifushane.
 - Imodeli entsha yebhizinisi izoqala ngamaqembu amancane abantu abagxile kumagoli, imibono nasekusunguleni. Cabanga kaKhulu. Ube Mncane!
 - Iphepha lizoba 'elezikhathi zakudala'.
 - Ifundo izoguqukela kulwazi lwe-'just-in-time' phecelezi ngesikhathi esifanele. Amathuba azokuya ngamandla okuthola ulwazi

ngesikhathi esifanele ngenhoso efanele. Iziq zaseNyvesi zizobe zingasasebenzi.

- I-Sub-Saharan Africa izokhula njenge-China entsha yomhlaba izobe ishesha ngokukhuphuka ngokushesha kwamanzi, inqubo yokuhluza usawoti emanzini kanye nokulawulwa kwasimo seziyu phecelezi i-micro-weather.

HLOLA IBHIZINISI LAKHO NJENGAMANJE

Ngikuphonsela inselelo yokuqala kulo nyaka omusha ngokwenza ucwaningo i-SWOT lebhizinisi lakho. Ucwaningo phecelezi i-SWOT analysis yisinyathelo sokuqala se-strategic business planning futhi theknikhi esetshenzisa ukucwaninga (S) amandla nobuthakathaka (W), amathuba (O) nobungozi (T) ebhizinisini. Lokhu yibhizinisi elisebenzayo lokwazi kabanzi ngale zindlela ezine zebhizinisi lakho futhi kuzoholela ekutheni ubheke amandla empumelelo nokuqaphela kakhulu ubungozi.

Dweba izikwеле ezine emakhasini angenalutho njengoba kudwetshiwe ku-Thebuli 1 futhi ugcwalise nganoma yimuphi umqondo ofika engqondweni ngamabhlokhi. Amandla nobuThakathaka kuzoba yizindaba zangaphakathi ONGAZILAWULA, UMTHELELA noGUQUKO ngenkathi izikwеле ezimbili ezingezansi kuzoba ngamaThuba neThreats okugxila ezindaben zangaPHANDLE ongeke uzilawule – kodwa ungakwazi ukuphatha ngendlela enciphisa ngomthelela omubi kuwena nakubhizinisi lakho.

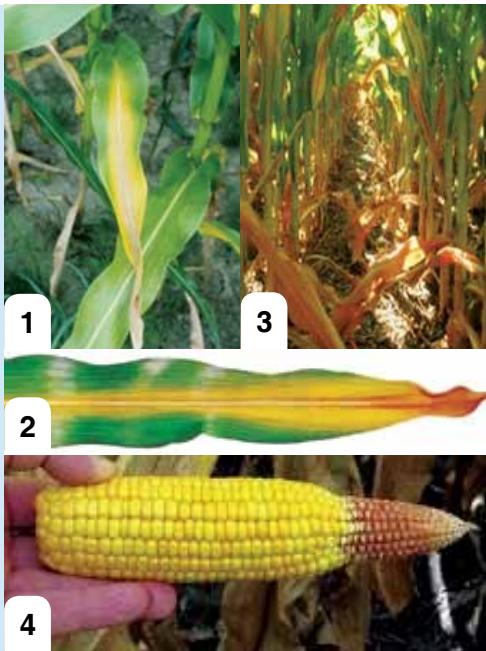
Ucwaningo i-SWOT akuwona umsebenzi owenza kanye kuphela kodwa kuba ukubukezwa kwaminyaka yonke. Uyisebenzisa ukubukeza impumelelo, ukwenza isilinganiso samakhono futhi ubone izindawo ezidinga ukwenziwa ngcono. Uma sizimisele ngempumelelo yebhizinisi kufanele sizimisele ngendlela esizoyisebenzisa yeqhinga lokuhlela phecelezi i-strategic planning futhi silandeleya yona unyaka wonke. U-2019 akabe unyaka ogculisayo nonezithelo kithi sonke. ■

ISIDINGO SIKAMANYOLO ukuze kukhiqizwe isivuno esikhulu sommbila



INAYTHROJINI (N)

- Inciphisa ukukhula kwesitshalo siphinde sithathe isikhathi eside ukuba sifake izimbali.
- Kuba luhlaza okotshani okuphaphathekile noma umbala ophuzi (**Isithombe 1**). Umbala oluhlaza okuphaphathekile (**Isithombe 1**).
- Ukuba phuzi kwamahlamvu amadala okuqala esihlokweni, okuqhubelela phakathi nobambo phecelezi i-mid-rib ngokwesimo sphethini yabacaphuni i-“V” (**Isithombe 2**).
- Uma ukuntuleka kubhebhethuka le ndawo enomthela iyaguquka ibe nsundu bese iyafa. Amahlamvu amadala akhombisa izimpawu zokuqala (**Isithombe 3**).
- Isihloko sesikhwebu asizuba nazo izinhlamvu futhi ekugcineni kwesihloko kuzoba nezinhlamvana ezincane (**Isithombe 4**).



IFOSIFORASI (P)

- Amahlamvu abukhwebezane eztshalweni ezsencane. (**Isithombe 5** ne**Isithombe 6**).
- Ukuvuthwa kubambezelekile (**Isithombe 7**).
- Ukuqhakaza kunciphile na/noma ukukhiqizeka kwezinhlamvu.
- Isistimu yezimpande zeztishalo ayikhuli kahle.



NOMA ISIPHI ISILIMO OKUFAKA PHAKATHI UKUKHIQIZWA KOMMBILA OMNINGI, UMSWAKAMA ODINGE-KAYO NAMA-ELEMENTI KAMANYOLO KUFANELE ABE KHONA NJALO NJENGOBA ISITSHALO SIKUDINGA.

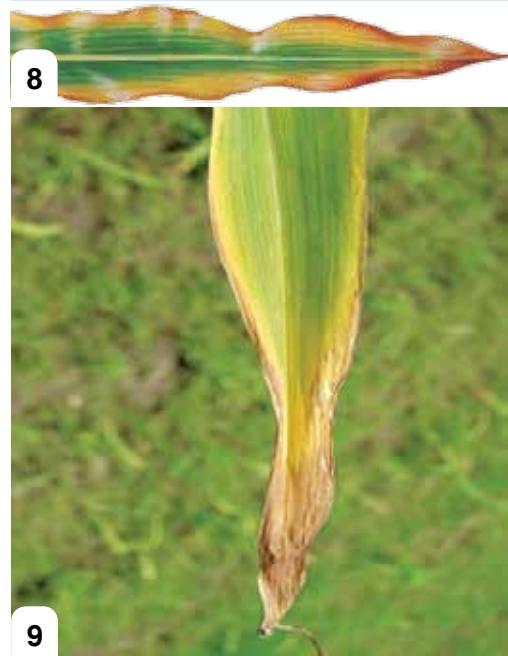
Ama-macro elementi abalulekile avamise ukufunwa yisitshalo yiNayithrojini (N), iFosforasi (P) bese kuba yi-Potassium (K) maningi amanye ama-elementi afana ne-Magneziyamu (Mg), iSalfa (S), iKhalsiyamu (Ca), i-Zinc (Zn) kanye neManganizi (Mn) edingelwa ukukhulisa kakhulu.

I-Nayithrojini (N), isebenza ohlangothini Iwenqubo yempilo efana ne-photosynthesis, ukukhulisa nokukhiqiza. Ukugcinwa kwe-genetic identity inqunywa ngokuhlanganyela i-nayithrojini. Umthelela



IPHOTHEZIYAMU (K)

- Ukuba phuzi konqenqema lwamahlamvu ukusuka esihlokweni; ngokuhamba kwesikhathi ayasha; iphakathi nendawo lisale liluhlaza (**Isithombe 8**).
- Ukuba phuzi kwamahlamvu kuqala ngaphansi noma kumahlamvu amadala kuye phezulu (**Isithombe 9**).
- Izinhlamvu ziyanipa ngobukhulu uma kuya esihlokweni, zibukeke sakucija.
- Iztshalo ezindala ziwa kalula ngenxa yokuncipa kwamandla ezinhlanga. Ubunzima bezimo ikakhulukazi benza kube lula ukuhlaselwa yizifo.



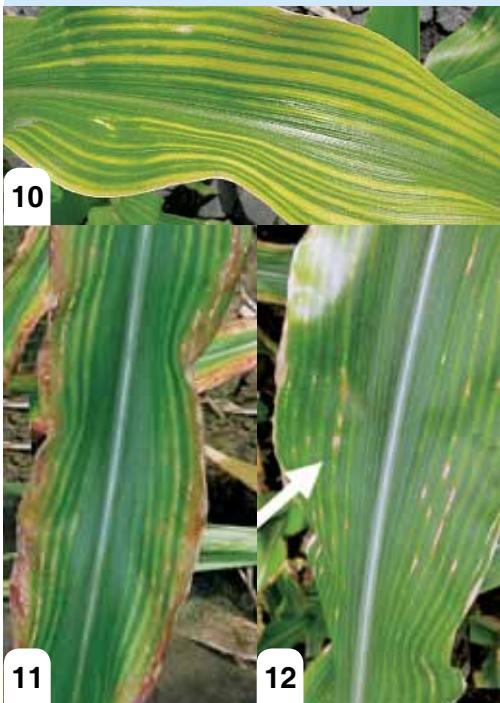
wenaythrojini ukunikeza amahlamvu umbala oluhlaza okotshani ukukhula kwezimilazeztishalo kuhambisana ne-nayithrojini.

iFosforasi (P) nayo ineqhaza kwi-photosynthesis, ekukhuleni, ekukhizeni nasekunakekelweni kwe-genetic identity, futhi iphinde ibe neqhaza ku-respiration proses. i-fosforasi yona ihambisana nomkhakha wamaseli, ukukhula kwezimpande, ukuqhakaza kwezimbala nokuvuthwa kwesilimo.



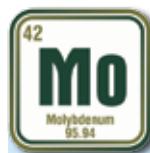
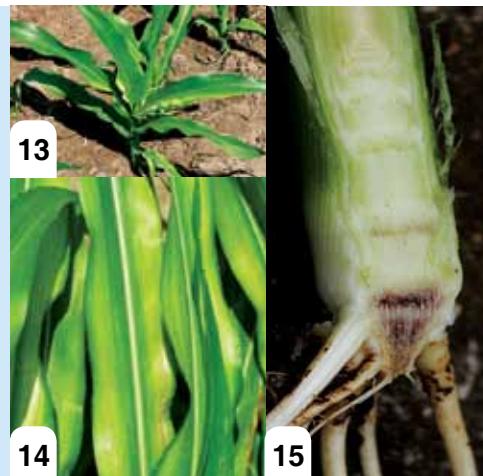
I-MAGNESIYAMU (MG)

- Imithende ephuzi phakathi kwemithambo (**Isithombe 10**).
- Ngokuhamba kwasikhathi imithende iba "ubuhlalu" (**Isithombe 11**).
- Izigaba zokuqala – Imithambo engaphakathi ye-chlorosis (**Isithombe 12**).



I-ZINC (ZN)

- Iztshalo jikelela zibhashile (**Isithombe 13**).
- Imithende ephuzi noma amahlamvu ezitshale ezisencane anamabhande (**Isithombe 14**).
- Kungaphinde kukhombise imithende ebanzi ephuzi ngasohlangothini oludwa noma nxazonke ensiken i phecelezi kwi-midrib.
- Umkhakheni owubude bohlanga kubonakala ubumnyama belunga eliphansi (**Isithombe 15**).



I-MOLYBDENUM (MO)

- Amahlamvu jikelele aba luhlaza okuphaphathekile futhi abe mancane (**Isithombe 16**).
- Izihloko zamahlamvu nonqenqema lwezitshalo ezisencane kuyasha.
- Okusanhlamvu akusetheki khale ngenxa yokuncipha kwempva phecelezi i-pollen.
- Umkilia kwezinhlamvu emadlebeni isikhathi singakafiki kungolunye uphawu lokwentuleka kwe-molybdenum.



IPhotheziyamu (K) ihambisana nezinti phecelezi i-straw noma amandla ohlanga (ikakhulukazi kokusanhlamvu), isomiso kanye nokumelana nokubanda nekhwalithi yezithelo. Ikhuthaza ukwakheka kwephrotheni, ushukela, isitashi nowoyela.

Ku-Grafu 1, ireythi ye-NPK nyuthrienti emuncwa ummbila njengokunquma kukaPannar okukhonjisiwe. NgokukaGrafu 1 kubaluleke kakhulu ukuba nawo onke ama-elementi akhona ngesikhathi ukuze isitshalo sikhiqize kakhulu.

Ngaphambi kokuhakaza, amanyuthriyenti amanangi asemuncwe yisitshalo. Lokhu kwenza ukuba kubaluleke kakhulu ukuba onke amanyuthriyenti kufanele atholakale ngesikhathi.

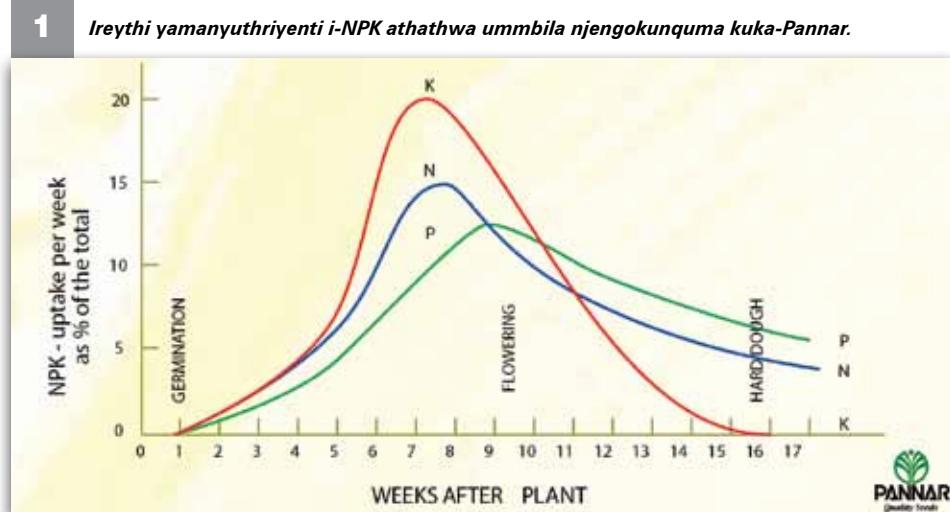
Ngokwencwadi i-Handbook, eshiclelwie Yi-Fertilizer Association ngokwe-Fertilizer Association of South Africa, ithani elilodwa lommbila ongamakethika (izinsalela zishiywa ensimini) zizothatha cishe u-15 kg N, u-3 kg P no-4 kg ka-K, 0,5 kg Ca, 1kg Mg no-4,5 kg S. Lokhu kusho ukuthi isivuno samathani a-4 azodinga u-60 kg N, u-12 kg P no-16 kg ka-K, u-2 kg Ca, no-4 kg Mg no-18 kg ka-S. Khumbula ukuthi lawa ama-khilogremu ama-elementi ahlukeni hhayi amakhilogremu kamanyolo afakiwe.

Lolu lwazi kufanele lifakwe ukuze kwensiwe isinqumo ngokuthi ungakanani nokuthi yiluphi uhlubo lukamanyolo okufanele lufakwe ukukhulisa umkhiqizo wommbila. Amasampuli enhlabala namandla enhlabathi nakho kufanele kufakwe ekunqumeni ngezidingo zikamamyolo ne-lime.

IZIMPAWU ZOKWENTULEKA KWAMELEMENTI AHLUKENE ASHODAYO

Le zimpawu ezilandelayo zokwentuleka zivamile ukushoda kuma-elementi ahlukeni. Uma lezi zimpawu zibonakele lapho kuzonciphia isivuno.

Kubalulekile ukuba ungakuboni lokhu kwe-nntuleka ensimini kodwa ukugweme lokhu ngokufaka umanyolo owenele ukuze ukhiqize kakhulu. ■



IZILIMO EZIYISEMBOZO

Ingxube nama-aplikheshini eNtshonalanga neKapa

UKUSETHENZISWA KWEZILIMO EZIYISEMBOZO KWI-CROPPING SYSTEMS YINTO ENTHA CEKE ENTHONALANGA NEKAPA. I- DIRECTORATE PLANT SCIENCES KUMNYANGO WEZOLIMO ENTHONALANGA NEKAPA IQALISE AMAPHROJEKTHI AMABILI UKUVIVINYA UKUSEBENZA KWEZILIMO ZOKWEMBOZA EMINYAKENI EMINÉ EDLULE. UMA UGXILE EKUVIVINYENI INHLANGANISELA YEZILIMO EZIYISEMBOZO KANYE NEZINYE EKUSETHENZISWA KWIZILIMO EZIYISEMBOZO.

ZIYINI IZILIMO EZIYISEMBOZO?

Isilimo esiyisembozo yisilimo esiyinlanganisela yezilimo ezitshalelw uku- ba yisisekelo sokulawula ukuguguleka komhlaba, ukuvunda kwenhlabathi, ikhwalithi yenhlabathi, amanzi, ukhula, izinambuzane, izifo, i-biodiversity nezilwane zasendle ku-agro-ecosystem. Kufanele sikhumbule ukuthi ipulazi lakha i-agro-ecosystem. Akufaki phakathi izilimo esizitshalayo zodwa nezilwane esizifuyiwayo kodwa ikhaya lama-spisisi ezitshalo ezizivelela ngo-kwemvelo, izilwane, izinyoni nezinambuzane.

Eyodwa yezingkinga ezinkulu esibhekene nazo kwezolimo namuhla ukweswela izinhlobo ezahlukene uma siqhathanisa imisebenzi yokulima naleyebekade ikhona ngaphambi koqala ezolimo. Ngeshwa, siybulele i-eco-system yemvelo eyayenzeka emapulazini ethu futhi kudingeka sibheke izindlela zokubuya lokho lawo ma-system afuze lawo ayekhona ukujinisekisa uzinzo lvesikhathi eside emisebenzini yethu yokulima.

LAPHO KUFANELE SIFAKA KHONA ISILIMO ESIYISEMBOZO NOKUKHETHA ISILIMO ESIYISEMBOZO

Singena kuphi isilimo esiyisembozo kusizini yethu yokukhiqiza eNtshonalanga neKapa? Ngenxa yokweswela izimvula zasehlobo engxenyeneni enkuluyaseNtshonalanga neKapa, ukuqaliswa kwezilimo esiyisembozo kufanele kube yingxene yohlelo olukhona lomjikeleziso wezilimo ezikhiqizwa ebusika.

Ngokubandakanya izilimo eziyisembozo kumjikeleziso wezilimo okhona, uvimba ithuba lokutshala ama-cash crop, nento esabakhathaza abakhiqizi

Ngu-Dr Johann Strauss, i-Senior Scientist,
uLisa Smorenburg, i-Research Technician and Rens Smit,
i-MSc Student, i-Directorate Plant Sciences, i-Research and
Technology Development, Umnyango wezolimo
eNtshonalanga neKapa. Uma ufuna imininingwane
egcwale, thumela i-imeyili ku-johannst@elsenburg.com



1

Isibonelo selola ekhelayo/ethandelayo.

namanje. Kodwa kunemihlomulo eminingi engazuzwa uma kufakwa izilomo eziyisembozo kusistimu yokulima njengoba sibona incazelengnha.

Uma ufuna indlela enhle yokunqoba ukhula, tshala isilimo esisodwa esiqhudelana ngamandla nokhula. Isibonelo esihle yi-black oats noma i-asaa oats. Kuthrayali lapho kutshalwa khona inhlanganisela, senza isilinganiso se-biomass ekhiqizwa yizilimo eziyisembozo kanye nokulawulwa kokhula.

Kumasizini amabili edlule i-black oats ayizange ibe nokhula kumathrayeli. Iphinde ikihiqize i-biomass ephezulu engasiza ukwemboza inhlabathi yakho ngesikhathi sezinyanga zasehlobo ezishisayo iphinde ivikele inhlabathi ingagugulwa umoya. Uma unemfuyo epulazini lakho nalokho kungasiza ngoba imfuyo ingakwazi ukudla izinsalela ngesikhathi sasehlobo. Okwamanje sinobunzima ngama-herbicide anenkan kwamanye amanani okhula ngokusebenzisa izilimo eziyisembozo kuniyeza umkhiqizi elinye ithulizi ebhokisini elinamathuluzi ukuceda ukhula.

Inhlosa yokukhiqiza izilimo eziyisembozo ukuzikhiqiza ngama-input amancane. Sizitshala ngaphandle kukamanyolo futhi awekho ama-input esiwafakayo ngesikhathi sesizini. Ngaphambi kokumila kwezinhlamu sizisusa ngokuthandelayo (bona **Isithombe 1**) noma ngokuthintana ne-herbicide.

Uma kuza kwinhlanganisela (**Isithombe 2**), kubalulekile ukuthola amareshiyo aqondile ezingxube ezahlukene. Amathuba ezingxube alele ekujuleni okwehlukene kwezimpande zezilimo ezahlukene. Izilimo ezinezimpande ezingajulile zikunikeza ithuba lokwephula ukuggishelana komhlabathi ophezulu kanti izitshalo ezinezimpande ezikujulile, ezifana nethileji *radish*, kunkunikeza ukukhetha kwe-kwempilo yethileji yemikhakha ejulile yokugqishelana.

Ngenhlanganisela, ngokuvamile sithola ukuthi isibalo sikhulu kune-zingxene, okuchaza ukuthi ngokuvamile sithola umkhiqizo omkhulu we-biomass onenhlanganisela kunohlobo lvesilimo esisodwa. KuThebula 1 uhla lwezinhlanganisela ezahlukene kunalezo esezihloliwe okwamanje kumaphrogremu ophenyo. Uhla futhi lunikeza umkhiqizo we-biomass kanye nokulawulwa kokhula kwezinhlanganisela ezahlukene.



2

Inhlanganisela yezilimo eziyisembozo ezitshalwe e-Riversdale (2016).



3

Ikhava yezilimo zasehlobo e-Riversdale.

Inhlanganisela	Izilimo	Ireythi yezi-nhlamvu i-kg/ha	Isivuno seBiomass i-kg/ha		Amaphesenti okhula	
			i-Tygerhoek	i-Caledon	i-Tygerhoek	i-Caledon
1	i-Cereal rye	15	2 779	3 325	41	6
	I-Vetch	15				
2	I-Fodder peas	40	2 690	3 237	32	6
	I-Rye	15				
3	I-Cereal rye	10	2 918	3 695	45	5
	I-Vetch	10				
4	I-Bitter Lupin	40	3 291	2 973	35	7
	I-Saia oats	10				
	I-Vetch	10				
5	I-Fababeans	30	3 191	3 082	30	4
	I-Cereal rye	7				
	I-Vetch	10				
	I-Fodder peas	25				
6	I-White mustard	1	2 812	3 000	42	4
	I-Fodder barley	20				
	I-Berseem clover	5				
	I-Fodder peas	25				
7	I-Tillage radish	1	1 752	2 828	59	6
	I-Crimson clover	5				
	I-Stooling rye	10				
	I-Japanese radish	10				
8	I-Fodder peas	40	3 533	3 413	49	6
	I-Cereal rye	15				
	I-Sweet white clover	5				
9	I-Saia oats	50	3 087	4 116	0	0
10	I-Stooling rye	10	3 050	2 839	29	8
	I-Saia oats	10				
	I-Red oats	10				
	I-Grazing vetch	10				
	I-Persian clover	4				

INDELA YOKUSEBENZISA IZILIMO EZIYISEMBOZO

Uphenyo lokusebenzisa izilimo ezahlukene eziyizembozo lwenziwa e-Langgewens Research Farm eduze kwase Moorreesburg. Sighathani-sa izilimo eziyisembozo zokondla imfuyo ukususa isembozo njenge-hhoyi noma siyishiye njengezinsalela ngaphezu kwemhlabathi.

Imiphumela emihle iyavela kulesi sifundo. Kufanele kube sobala ukuthi ukushishiya isembozo njengezinsalela kuzokuba nomphumela wesembozo esikhulu senhlabathi, uma kuqhathaniswa nezinye izindlelo ezimbili. Ukon-dliwa kwemfuyo ngesilimo eziyisembozo, kusengaba yisembozo esanele somhlaba ongaphezulu uma ukudliwa yimfuyo kushesha ukumiswa ngo-kwanelekuze kuzophinda kuhlume kabusha.

Ngokwenza ihhoyi ngesilimo esiyisembozo, cishe yonke imethiriye iyasuswa enhlabathini engaphezulu. Imiphumela emangazayo kwithrayali iqhamuka ekuqhathaniseni amanyuthriyenti asele enhlabathini nakulokho okusele. Inqubo yokwenza ihhoyi ithatha amanyuthriyenti amanangi uma kuqhathaniswa nalezi ezinye izindlelo ezimbili. Kodwa, awuzange ube kho-na umehluko, kumanyuthriyenti akhona kwasinye isilimo phakathi kwamapuloti okudlisa imfuyo kanye namapuloti ezinsalela (*mulching*). Lokhu kuhamba kahle ukusetshenziswa izilimo eziyisembozo njengesengezelelo sokondla imfuyo futhi kwenza umqondo olula wokudayisa kwabakhqizi.

Enye indlela yokubandakanya izilimo eziyisembozo phakathi kwamasizini okulima, ukutshala isilimo esiyisembozo sasehlobo. Kodwa lokhu kunzima kakhulu eNtshonalanga neKapa uma unganiseli. Kukhona abakhqizi eningizimu nekapa abatshale izembozo emazingeni ahlukene empumelelo (ikakhulukazi utshani i-Teff kanye namabele ahlukene), kodwa kungenzeka kube khona izimvula zasehlobo, kanti iSwartland yona ayinayo. Impumelela sayithola kuzembozo zasehlobo kuphela ophenyweni lwethu kowodwa eminyakeni emithathu silokhu sitshala.

Onyakeni owaba yimpumelelo sathola ama-200 mm emvula ngesikhathi sasehlobo (**Isithombe 3**). Uma ukwazi ukutshala isilimo esiykhava sasehlobo lokho kunganikeza umkhqizi ukukhetha okwengezeziwe ekudleni kwemfuyo noma kuniikeze isembozo sensimu ukuvikeleka kwe-nhlabathi ingagugulwa umoya kanye nokushisa kwelanga lasehlobo, lokho kugcina inhlabathi ipholile futhi nalokho kuzosiza ekugcineni umswakama wasehlobo ngezinyanga zikaFebhuwalu, uMashi no-ePhreli.

ISIPHETHO

Izilimo eziyisembozo zingaletha ukuguquguquka kusisitimu yamanje yokukhqiqa ngaleso sikhathi kuvikela ukuvikeleka kokudla nokwanda kwe-biodiversity epulazini. Isembozo esihle esilima konke. ■

Ukubukela okuzayo ngokolo ka -2018/2019

L E ATHIKHILI IBEKA IZIHLOKO NGAMATHUBA KAKOLO EZIMAKETHE ZAKULELI NEZOMHLABA, NGOKOMKHIQIZO, ISAPLAYI, IDIMANDI UWHEBO NESITOKO SOKUVALA.



AMATHUBA EMHLABENI WONKE

Emhlabeni ngo-2018/2019 amasaplaya kakolo kulindeleke ukuba akhuphuke ngokulinganiselwa ku-0,8 wezigidi zamathani ngenxa yesengezelelo sikakolo obuvele ukhona eRussia naseCanada, ukusuka ekuncipheni komkhiqizo e-Australia.

Ngokususela kusilinganiso esivuselelwye yi-ABARES, umkhiqizo wase-Australia uncishiswe ngo-500, 000 wamathani kuya ku-17,0 wezigidi. Lona kuzoba umkhiqizo ophansi kakhulu e-Australia kusukela ngo-2007/2008. Umkhiqizo kakolo e-Canada ukhuliswe ngo-300,000 wamathani ukuya ku-31,8 wezigidi ngokwezilinganiso zakamuva ngo-kweZibalo zaseCanada.

Kubonakala uwhebo emhlabeni ngo-2018/2019 lwehla, njengoba lunciphile kwelase-Australia, e-EU nase-U.S. okudayiselwa kwamanye amazwe kuthe gqwa gqwa ukusuka eRussia edayisela amanye, ekhule ngo-1,5 wezigidi zamathani kuye ku-36,5 wezigidi.

I-Russia namanye amasaplaya ase-Black Sea ayaqhubebea nokugduzu okudayiselwa amanye amazwe ezimakethe eziningi engxenyeni yokuqala ka-2018/2019 kodwa kulindleke ukube kunciphe ukuncinti-

sana kanti ingxene yeшибili igxile ekuncipheni kwamasaplaya athumela kwamanye amazwe. Unkolo wase-Australia othunyelwa kwamanye amazwe unciphe ngo-1,0 isigidi samathani kuya ku-10,5 wezigidi njengoba amanani okuthengisela amazwe angaphandle kulindeleke ukuba ehlale engancintisani futhi amasaplaya amanangi athengelwa ukondla ngaphakathi ezweni.

Isito sokuvala emhlabeni sikhuphukile saba ku-1,4 wezigidi zamathani saya ku- 268,1 wezigidi ikakhulukazi ngokuhuphuka e-EU nase-U.S. kodwa aphansi ngo-4% uma kuqhathaniswa nerekodi laongonyaka odlule lika- 279,9 wezigidi.

AMATHUBA AKULELI

Isaplayi kakolo ulindeleke ukuba abe ku-3,9 wezigidi zamathani ngo-njaka wezimakethe ka- 2018/2019; lokhu kubalwa kukho cishe u-700 000 wamathani esitoko sokuvala kusukela mhla ka-1 Okthoba 2018, amadilivari ezohwebo kuleli u-1,8 wezigidi zamathani, kanye no-8000 wamathani.

Idimandi kakolo ilinganiselwa ku-3,3 wezigidi zamathani; lokhu kufaka phakathi u-3,2 wezigidi wamathani adliwa abantu, u-3 100 wamathani akhululewa ukuqedha ngabathengi nokukhishwa umkhiqizi ngokuhlanganyela ngamathani ayi-19 000 wezinhlamvu ezenzelwe ukutshala.

Okudayiswa kwamanye amazwe kulinganiselwa ku-37 000 amathani omkhiqizo ophrosesiwe namathani angama-80 000 e-whole wheat.

Imikhakha yesitoko sikakolo asilinganiselwa ku-600 000 wamathani ngomhlaka -30 Septhemba 2019, ne-avareji yekhwantithi ephrosesiwe ka-260 000 ngenyanga, imele isitokwe esikhona sezinsuku ezingama-68. ■

1 Isaplayi nedimandi kakolo emhlabeni.

	2017/2018	2018/2019	
	Isilinganiso	Amaphrojekshini (01 Nov)	Amaphrojrkshini (06 Dec)
Umkhiqizo	Izigidi zamathani	Izigidi zamathani	Izigidi zamathani
	760,3	727,9	725,1
Isaplayi	1 015,4	1 004,7	1 001,9
Osetshenziswayo	738,0	740,1	739,6
Uhwebo	176,2	173,2	172,5
Isitoko sokuvala	276,7	264,4	264,5

Umthombo: Amis (2018)

You need to be aware of what others are doing,
applaud their efforts, acknowledge their successes,
and encourage them in their pursuits.
When we all help one another, everybody wins.

~ JIM STOVALL

Ukulungiselela isikhathi sokutshala – ukolo nobhali oniselwayo

AMALUNGISELELO ADINGEKAYO OKUTSHALWA UKOLO NOBHALI NOMA INDAWO YE-CENTRE PIVOT MHLAMBE INGAFANA JIKELELE KUMFANA NGAMUNYE KODWA INGAHLUKA NGOMKHIQIZO OWAKE WABA KHONA PHAMBILINI NGOKWEKLAYIMETHI YENHLABATHI NAMASISTIMU OKUNISELA ATHOLAKALA EZINDAWENI EZITHILE.

Abaphathi ukuze bafinyela enzuzweni abayihlosile yomkhiqizo kakolo noma kabhali lokho kuyokwenziwa isinqumo soku-implimenta amafetha acatshangisisiwe.

Lokhu kubalwa kukho:

- Isisitimu yokushintshanisa izilimo ehlwelwe ngokufanele.
- Ukukhethwa kwenhlabathi.
- Ukuthatha amasampuli enhlabathi eyohlaziya nokwenza ngcono isimo sokuvunda kwenhlabathi.
- Iphrogremu esebezayo yokuthela i-lime uma kufanele kusebenze imali.
- Iphrogremu esebezayo kamanyolo kakolo noma kabhali ngayinye idinga imikhakha eyahlukene ye-aplikheshini yenayithrojini.
- Izindlela ezifanele zokulima inhlabathi.
- Utshale ngesikhathi esifanele sokutshala noma isikhathi sethuba.
- Iphrogremu yokuqualisa ukufafaza ehlwelwe kahle yokulawula ukhula, izinambuzane nezifo ngaphambi nangesizini yokuhula.
- Ukvuna ukolo nobhali ngesikhathi.
- Umaketha izilimo zakho ngempumelelo.

OKUFANELE KUCATSHANGWE ABAPHATHI NGAPHAMBI KOKUTSHALA

Onke amafetha abaluliwe ngenhla kufanele abhekisiswe ngaphambi kwenza isinqumo ngomkhiqizo wakho nezinyathelo okufanele zithathwe. Lezi zinyathelo kufanele zenziwe ngesikhathi sonke ukuqinisekisa izikhathi ezifanele zokutshala ngesikhathi esifanele sama-cultivar akhethiwe.

Ulwazi oluphelele lweminingwane yemijikelezo yokuhula mhlambe kukakolo noma kukabhali kufanele kutholakale ngokufunda incanzelo epehelele ekhona. Umehluko jikelele wenczeloyezigaba zokuhula kwama-cultivar ozosetshenziswa kufanele abekiswe futhi nemikhuba yokuphatha kufanele isitshenziswe njengoba injalo.

Ngokwesiboneko, ekukhiqizweni kukakolo, mathathu amasistimu abalulekile achaza izimo zokuhula kukakolo ezibizwa nge-Feekes, Zadoks, kanye ne-Joubert systems. Noma iyiphi isistimu onquma ukuyisebenzia kubalulekile ukuba wazi ngesigaba sokuhula kwesilimo sakho ukuze uzofaka inani elifanele lamazi okunisela nekhwantithi yenayithrojini ingafaka ngezikhathi zasebusuku.

Ukusebeniza lonke lolwazi olungenha nesipiliyoni kubalulekile ukuthola isivuno osihlosile ngesimo sakho ukuqinisekisa isilimo esingenisa inzuso. Le sivuno osithagethile yisona esizo nquma uju-nqu ngokufanele kwenziwe ukuphumelelisa inhoso yakho.

OKUNISELA

Amanzi asetshenziswa yisilimo sakho okunqumayo ukuba khona komswakama emvuleni etholakele noma ukunisela ngaphambi kokuba utshale ukuze ubuyisele inhlabathi esimweni sensimu, imvule etholakele ngesikhathi sokuhula kwestishalo kanye namanzi okunisela afakiwe.

I-Athikhili ebhalwe umfama osathatha umhlalaphansi



Kubalulekile ekukhiqizaweni kwakho kokubili ukolo nobhali ukuba ne-centre pivot enakekelwe kahle ngamaphampu asesimweni esihle samathange okuhlanganisa umanyolo agciniwe ngaphambi kokuba kuqale ukutshala. Isigaba sokuhula siyashesha ngendlela yokuthi uma kukhona ithuluzi elingephuka lokho kungakukhokhisa kakhulu. Ukugxila kwimininingwane ukuqinisekisa ukuthi noma yimuphi umshini usebanza kahle 100% ayikho enye indlela okungacizelewa ngakho lokhu.

IZINDELELA ZOKUTHILA ZOKULUNGISA IMIBHEDE YEMBEWU

Inte ebaluleke kakhulu okufanele icatshangwe imisebenzi eyahlukene edingekayo ukuze kusungulwe imibhede yembewu emihle kakhulu. *I-conventional tillage* inconyelwe ukolo ku-mjikelezo wolimo lukakolo ukunciphisa izifo zezimpande zesilimo kodwa inhlabathi isala dengwane igugulwe umoya namanzi. Kwezinye izindawo zezikimu iyaqhube ka imijikeleziso kakolo emva kombila kweyodwa namasizini anempumelelo kuyenziwa. Lokhu kungaba nomthelela omubi wokunciphia kokuvunda kwenhlabathi kunciphise isivuno kuzo zozimbili izilimo.

I-conservation tillage inganciphisa izehlo zokugugulwa kwenhlabathi amanzi nomoya kodwa kungaholela ekwandeni kwezinsalela zesilimo ngaphezulu enhlabathini lokho kwenza ukutshala kubenzima kakhulu ngisho 'nakwabatshala nge-no-till'. Ukunqwabelana kakhu-lu kwezinsalela kuhle kodwa kungaphromotha izifo zezimpande. Ilungele umjikeleziso ofaka phakathi okuthela imidumba phecelezi ama-legumes, izilimo zasehlobo ezifana nommbila kanye nezikhathi zokungalimi lutho uma ama-pivots amanangi akhandiwe njengoba engatholakala ezindaweni ezinkulu zokulima.

IZIKHATHI EZIKAHE ZOKUTSHALA KANYE NOKUZWELA KWEZINHLAMVU

Ireythi yezinhlamvu ngokwamakhilogrammu ngehektha lilinye ukuze usungule ukutshala kahle nokumila kwenani ngokwe-skwe mitha ngenye ye-zinto ezbabalulekile ngokwesivuno sesitshalo esiphezulu. Umlimi kufanele alinganise ngokucophelela futhi abale inani lezinhlamvu ngokwekhilogrammu yezinhlamvu eztshaliwe. Ngaphandle kwalokho, i-1 000 yesisindo sezinhlamvu sezinhlamvu singakalwa futhi sisetshenziswe ukuze i-optimummu ye-kg/ha iplaywe nge-planter esetshenziswayo. Lokhu kungaba u-25 wamagremu kuye ku-52 wamagremu ngama-kernel ayi-100, ukuze kubalwe ngokucophelela.

Jikelele, izinsuku zokutshala ezinconyiwe kanye nama-density kakolo ingaba phakathi komhla ka 1st kajuni kuye ku-31st kaJulayi nama-density ezinhlamvu ka-80 kg kuya ku-140 kg kanye naku-160 kg kuya ku-200 kg, kuma-cultivars athile. Umlimi kufanele azi kahle ukuthi i-cultivar ethile idinga yiphi ireythi yokutshala. Ubhali ngokuvamile utshalwa uwu-80 kg kuya ku-110 kg ihektha. Kubalulekile ukwazi ukuthi yini enconyelwe i-pivot nepulazi lakho.

ISIPHETHO

Kubalulekile ukwazi kabanzi ngezibonakalo eziningi zikakolo nobhali oniselwayo ezidengekayo ukuze ukhiqize isilimo esiphumelelayo. Ukulima ngempumelelo kuwubuciko nesayensi. ■

KHULISA IHOLI LAKHO

– sebenzisa ubuchwepheshe obusha

UKUBA NGUMLIMI NAMUHLA KUNGENKULU INSELELO NENDLELA ENOBUNGOZI YOKUPHILA. UKUZE UPHUMELELE, KUBALULEKILE UKUTHI KWENZIWE INZUZO YESIKHATHI ESIDE. QAPHELA UKUTHI INZUZO YESIKHATHI ESIDE AYISHO INZUZO ENKULU KODWA IKHOMBISA NGOKWENZA INZUZO ENKULU. OKUKHULU KUSHO UKUTHI ZONKE IZINSIZA EZIFANA NENHLABATHI. AMAFUSI NAMAZI KUSETSHENZISWA NGOKUNAKEKELWA UKUZE KUVIKELEKE KONGELWE ISIZUKULWANE SESIKHATHI ESIZAYO.

Ngeshwa, isimo sesikhathi sethu sanamuhla sokulima yilesi esibizwa ngokucipha kwamanani entengo phecelezi *i-cost-price squeeze*. Abalimi yibona abatha amanani entengo yeningi, awukwazi ukuzinqumela inani lentengo yomkhiqizo wakho/wena siqu, imakethe, imakethe yanamuhla ekhululekile yio enquma amanani entengo. Ukwengeza kulokhu umlimi kufanele alandlele isisekelo sokugcina sesibalo seNzudo = Imali engenayo - Imali Esebenzile. Okusho ukuthi, umlimi kufanele akhulise imali engenayo yebhizini lakhe no-/noma banciphisa imali yezindleka njalo ngonyaka ukuba balime isikhathi eside.

Njengoba kubalulwe yisihloko sale-athikhili indlela yokukhulisa iholo ukusebenzisa ubuchwepheshe besimaje. Akungabazeki ukuthi ngokusebenzisa ubuchwepheshe obusha imali engenayo izikhula na-kuba lo buchwepheshe obusha buza ngentengo.

Uma ufunda leligama elithi ubuchwepheshe, ungaribheki njengento engurmshini njalo. Ubuchwepheshe busho ezinto okuningi. Ake sibheke.

Mayelana nama-**input okukhiqiza**, sesivele siyabusebenzisa ubuchwepheshe obusha. Ama-*cultivar* amasha ezilimo ezaahlukene ayaqhube ka nokukhiqizwa. Isibonelo ummbila – eminyakeni engama-20 edlule i-avareji yomkhiqizo ngaphansi kwezimo ezinhle kwakuba u-2 kuya ku-2,5 wamathani- ni ihektha, namuhla u-4,5 kuya ku- 5 wamathani ihektha.

Onke amanye ama-*input* afana nomanymolo, amakhemikhali, nokudla kwemfuyo nemithi nokunye konke sekwenziwe ngcono – lokho ubu-chwepheshe obusha.

Ngasohlangothini **lokukhiqiza ngezandla** kube nenku lu intuthuko nakho futhi lokho ubuchwepheshe obusha. Kunobufakazi obanele ukuthi indlela yokutshala yawenza umonakalo wesimo sokuthola inhlabathi yethu okuholele esidingweni sokufaka umanyolo omningi ukuze kuhkulise umkhiqizo. Ingingi selyiasi manje ngezindlela ezibukeziwe zokulungiswa kwenhlabathi – ukunciphisa ukuthila, ithileji eminimamu kanye ne-no-tiling. Lezi zindlela zokulungisa inhlabathi zenzelwe ukulungisa impilo yenhlabathi jikelele ukusebenzisa umanyolo namanye amakhemikhali ayingozi. Ukwengeza

Ngu-Marius Greyling, umbhalu wePula Imvula. Umam ufuna imini-ningwane egcwale, thumela i-imeyili ku-mariusg@mcaacc.co.za



kulokhu, ukusetshenziswa kwezilimo eziyisembozo yintuthuko yakamuva noma ubuchwepheshe obusha bokukhuphula imali engenayo kunciphe izindleko. Lokhuokungenhla konke kuyingxenyeyokulima ngokongaphecelezi *i-conservation farming*.

Lentuthuko isiholele ekwakhiweni **imishini emisha**, ukwenza isibonelo njenge-*no-till planter*. Ama-planter neminye imishini esetshenziswa ekukhiqizeni nasekuvunweni kwezilimo, kokubili ama-*cash crops*, nezilimo zefoda kukhulisiwe ukuze kwenze ngcono ukusebenza kwayo. Ukungezwu kwe-elektronikhi efana ne-GPS emishinini nakogandaganda abazokwenza ngcono umsebenzi wabo isiyaziwe njengokulima okuqonde ngqo.

Ubuso bemboni yemfuyo nabo buyaguquka ngentuthuko yokukhiqizwa kwemishini emisha nakho kuyashintsha kuthuthukisa umkhiqizo. Isistimu yokondla ezishintshayo ukunciphisa umsebenzi owenziwa ngezandla nokuthuthukisa ukwenza kahle ukwenza isibonelo uma kundliwa izinkomo. Embonini yokuzalela amaqanda, umshini, ukhona wokuqoqa amaqanda, futhi akusensiwa manyuvali.

Mayelana **nolwazi lokukhiqiza** kuningi okubizwa nge-apps noma ke ama-aplikheshini akhona azosetshenziswa kumakhompyutha, *iPads* noma *i-smartphones*. Lokhu kwenza kwenzeke kumlimi ekusizeni ukukhomba izinambuzane noma izifo ngenkathi esemhlabeni. Enye yama-apps akiwe abizwa ngeKhula, igama lesiZulu elisho ukukhula. Le app yenzelwe ukusiza abalimi abancane abanomthamo omncane emakethe efomali ngokuhlanganisa umkhiqizo kubalimi abaningi ukuze bagcwalise i-oda elikhulu le-khasimende.

Nge-inthanethi uthola lonke ulwazi ngentengo ephansi – njengoba kushiwo ukuthi just ‘google’.

Amadroneskawasaziwa manje futhi assetshenziswa ukubheka, ukuthatha izithombe zepulazi lakho – omhlaba, imfuyo, izilimo, kwenzelwe ukuvikeleka nokunye okuningi. Okusho, ukuthi iningi idatha ekhona ezosetshenziswa ukwenza ngcono ukuphatha.

Ngokususelwa ekuqoqeni **i-production data**, ubuchwepheshe bamanje buthuthukiselwe ukwenza ngcono uku-capture nokuphrosesa idatha. Ikhona amaphrogremu angasetshenziswa ekhyputheni. Omunye naye angazakhela isistimu yakhe ngokusebenzisa iphogremu ye-Excel. Khumbula ukumeneja, ukulinganisa kuyimpopo.

Akungabazeki ukuthi ukusetshenziswa kobuchwepheshe obusha kukhulisa umkhiqizo kanye nemali engenanyo. Kodwa zikhona izindleko ezengeziwe ezfakiwe uma u-aplaya ubuchwepheshe obuthuthukile futhi ngakho ke kubalulekile ukucabanga ngesimo sakho sezezimali ngokucophelela. Qala ngalokho ongakwazi ukukwenza, mhlampe *i-smartphone* nokuxhuma ku-inthanethi kanye nobunye ubuchwepheshe uma kwenzeka.

Futhi, ukhumbule ukuqinisekisa ukuthi isisekelo sokuphatha sisezingeni eligculisayo ngaphambi kokufaka ubuchwepheshe obusha. Ubuchwepheshe obusha ngeke bulungise ukwehluleka ukuphatha kungaba ithulizi lokuthuthukisa ukuphatha kwakho ezingeni eliphezulu. ■



Ukusebenzisa ubuchwepheshe obusha kungakhuphula umkhiqizo wakho futhi kwandise nemali yakho engenayo.

UKUHLOLA YISISEKELO sempumelelo ye-IPM sistimu

UKUHLOLA EMPELENI KUCHAZA UKUHAMBA EMHLABENI WAKHO NOKUHLOLA NOMA YISIPHI ISILIMO ESIHAMBISANA NE-*INTEGRATED PEST MANAGEMENT (IPM)* SISTIMU KUSUKELA KUNGAKATSHALWA KUZE KUYOVUNWA NANGALE KWEZINYE IZIBONAKALO ZOMJIKELEZO WONKE WOKUPHATHWA KOKUKHQIZWA.

AMASISTIMU E-IPM

Uma umlimi esenqume uku-implimenta isu lokuqala i-IPM sisistimu kubalulekile ukugcina irekhodi ngalokho okufanele kuqashelwe futhi kurekhodwe.

Isimo sangempela esiqhubekayo kusibonakalo sesilimo okufanele sihlolwe singabe sesiqhathaniswa nomphumela ohlosiwe nokuhlelwa kjesilimo obekufanele kwenzeke emva kwesilimo sokugcina ngesikhathi sokwenziwa kwebhajethi ephelele yepulazi noma *i-gross margin analysis*.

Amaphutha enzeke ngesizini edlule angalungiswa kule sizini yamanje.

YINI ESIYIFUNAYO?

Ngesikhathi sokutshala, isimo senhlabathi sizoba nomthelela kuphesenteji yokulima nokungaguquka kuncishiswe yizinambuzane nangaphambi kokuba kumile. Bala futhi uqaphele ukuthi zingakhi izitshalo ezimilile. Lokhu kuqhathanise nethagethi yakho oyihlosile futhi njalo ezinsukwini ezimbalwa hlola izimpande namahlamu amilayo noma iziqu futhi ubone ukuthi ngabe azikho yini izimpawu zomonakalo odalwa yizibungu noma amabhungane.

Ukuqapha kwi-IPM sisitimu kuzokwenza wazi kusukela kusaqala esigabeni sokukhula kuqhubeke njalo ezigabeni zonke ezahlukene zokukhula kuze kufinyelele ekutheni kuvuthwe lapho umonakalo ongenzeka kusukela ekuboneni isinambuzane esilimeni kwenza kube lula nangokomnotho ukuba usebenzise amakhemikheli okulawula.

Kwesinye isikhathi emva kokubheka kusaqala umonakalo odalwa yizinambuzane, amalungiselelo angenziwa okufafaza izilimo futhi nangokunquma kwesiqu, ihlamvu, noma umonakalo wokukhula kwestikhwebu esisesincane sekufinyelele ku-*economic threshold* ukwenza ukufafaza kube yigunya. Izindleko zokufafaza lezo zinambuzane kufanele zibe ngaphezelu kokukhava njengoba isilimo sithola amandla okwelulama ngokuthola ukuphumelela kwesivuno esifanele ngokomnotho. Uma kuyekelwa isilimo sizokufa. Umdayisi wamakhemikhali kanye nomdayisi wembewu kufanele babuzwe njalo masinyane uma ubona ukuhlasela kwezinambuzane ngesikhathi esifanele noma esigabeni sokuqalisu ukulawula ngamakhemikhali.

Ukukhetha kuma-*cultivar* ommbila amanangi utshale lawo angadlwa yizinambuzane (i-Bt Maize) nezifo yisikhathi esibucayi kakhulu lesokuba wenze isinqumo kusaqala.

Kuyadingeka ukuba umlimi, ikakhulukazi uma le kuyisizini yakho yokuqala yokutshala ummbila, ukuba ufunde ngalesihloko noma wethamele izifundo ezifanele ukuze ube nolwazi ngezinhlobo eziningi zezinambuzane nokhula okungaba nomthelela kusilimo sakho sommbila noma kukusiphi isigaba.

Uma ungazi ukuthi yini okufanele uyibheke uyothole emva kwestikhathi eside ukuba uhlenge isilimo sakho ngaleso sikhathi uyobe ngoba sekuneckinga. Umlimi futhi kufanele azazi izimpawu zomthelela usaqala we-*fungus* nezinye izifo futhi. Kufanele wazi ukuthi iyiphi ingxenyey yokusakhula okuncane okufanele ihlolwe umonakalo noma i-stalk bore eggs noma umonakalo odalwa yi-caterpillar esencane emahlamvini.

Uma uthola isitshalo esonakele, ihlamvu noma isikhwebu sigcine esikhwameni isibonelo noma ebhodeleni ukuze isinambuzane uqobo sizodalulwa ngochwephesheshe. Kweminye iminyaka kuba nokuhlasela okwenziwa

I-Athikhili ibhalwe umlimi osathatha umhla phansi



yizinambuzane ezingejwayelekile kumzume umlimi nomeluleki bengazelele. Khumbula ukuthi ngenkathi uhlola futhi ubheka ukukhula kwesilimo nempi-lo yaso, ukuba khona kwezinambuzane kanye nokumila nokukhula kokhula olungadingeki okudingeka kulawulwe ngamakhemikhali nemishini.

AMAYUNITHI OKUSHISA

Mayunithi okushisa noma amazinga okushisa osuku alinganiswa nesikhathi namazinga okushisa kunqunywa yisikhathi ilanga elisuke likhanyise ngaso kanye namazinga okushisa ebusuku nasemini. Ubukhona benani lamandla avela elangeni akhona ku-*photosynthesis* mayelana nokukhula kwesilimo okuhambisana namazinga okushisa okutholakalayo kuzoba nomthelela ekutheni isilimo sifinyelela ezigabeni ezahlukene ngokwe-*benchmark* ezigabeni zokukhula.

Kuya ngokosuku lokutshala kanye namazinga okushisa akhona atholakalayo ngesizini ethile lawo ma-*benchmark* angahluka emazingeni asijwayelekile alindelele. Iningi labadayisi bembewu inomcebo wolwazi olukhombisa izigaba zokukhula kommbila ngemininingwane ebanzi futhi lungadawunilo-dwa ku-*websites* yabo. Umilimi kufanele akwejwayele lokhu ukuze ezokwazi ukutshela umdayisi wakhe wembewu/noma wamkhemikhali njalo ngezigaba zokukhula ukuze ezokwazi ukuhamba phambili ngesikhathi nangekwantithi yokulawula ngamakhemikhali azosethsenziswa.

Njengoba amayunithi okushisa ephazamisa ukukhula kwesilimo ngakho kuba nomthelela ku-*physiological activity* nasemijkelezisweni wokukhula kwezinambuzane ezingaba izinambuzane kuzilimo zakho. Amazinga okushisa esinambuzane ayafana nawesimo senhlaho endaweni. Imijkeleziso yesimo sezulu iba nomthelela ngenkanti i-stalk borer moths, isibonelo, iqala ukundizela umijkeleziso wokuqala futhi iyozaleta amaqanda ezitshalweni zombila wakho osemncane. Lokhu futhi kunquma isikhathi emva komijkeleziso wokuqala we-borer caterpillars' esencane ikuhla iba yi-moth endizayo lesu yisikhathi sokuhlasela kwesibili kwezinambuzane kusilimo sommbila.

ISU LE-IPM YALE SIZINI

I-cultivar ngayinye yommbila izoba nezinsuku ezilindlele kuye ku-50% wempova kanye nokuvuthwa emzimbeni. Kuya ngendawo olima kuyo nesimo sezulu iphuzu lika-50% wempova ingafinyelela ngezinsuku ezingama-64 kuya ku-84 emva kokutshala nangokuvuthwa kwestikhwebu kusukela kumalanga ayi-105 kuya ku-240 emva kokutshala.

Izimvula zokuqala ebezilindlele kungenzeka zifike emva kwestikhathi endaweni yakhe, akukho ukutshala osekubambezelele. Ummbila otshalwe ngomhla ka-15 November 2018 ungafinyelela ku-50% wempova ngasekupheleni kukaFebhuwari 2019. Ngabe kubalulekile ukucqinisa ukuhlola kwesibili umonakalo womijkeleziso wesibili wamaqanda e-stalk borer noma ubufakazi bomonakalo wehlamu odalwa yi-caterpillar esencane enyangeni yonke ka-Febhuwari.

Kokutshalwe kamuva wonke omonakalo ongaba khona ezikhwebini zommbila ezsakhula kufanele zihlolwe njalo. Isikhathi sokuqala ukuhlola kungasiza ngokufafaza futhi kulawulwe ukuhlasela ukuhlasela kwe-stalk bore kusaqala ukuze kugwemeke umonakalo ezikhwebini emva kwestikhathi. Ukubhekwa njalo kwestikhwebu ngokuhlolwa kufanele kwe-niwe kuze kuvunwe. Kungenzeka ngesikhathi sika-Ephreli, ngesikhathi uhlola, ukubheka isilinganiso sesivuno usebenzisa inombolo yama-kernel aqholiwe pecelezi (*pollinated*) okwenzeka ezokhwebini ezsakhula.

PULA IMVULA

Ithimba labahleli

GRAIN SA: BLOEMFONTEIN

46 Louw Wepener Street
1st Floor
Dan Pienaar
Bloemfontein, 9301
■ 08600 47246 ■
■ Fax: 051 430 7574 ■ www.grainsa.co.za

UMHLELI OMKHULU

Jane McPherson
■ 082 854 7171 ■ jane@grainsa.co.za

UMHLELI UKWABA

Liana Stroebel
■ 084 264 1422 ■ liana@grainsa.co.za

UMLINGANI WEZOKUSHICILELA

INFOWORKS
Johan Smit ■ Ingrid Bailey ■ Marisa Fourie
■ 018 468 2716 ■ johan@infoworks.biz



IPULA IMVULA IYATHOLAKALA FUTHI NANGALEZI ZILIMI EZLANDELAYO:

Isizulu,
IsiBhunu, isiNgisi, IsiTswana, IsiSuthu,
IsiSuthu saseNyakatho, nesiXhosa.

Uhlelo IweGrain SA LokuThuthukisa amaFama

ABAQONDISI BENTUTHUKO

Johan Kriel
Free State (Ladybrand)
■ 079 497 4294 ■ johank@grainsa.co.za
■ Office: 051 924 1099 ■ Dimakatso Nyambose

Jerry Mthombothi

Mpumalanga (Nelspruit)
■ 084 604 0549 ■ jerry@grainsa.co.za
■ Office: 013 755 4575 ■ Smangaliso Zimbili

Jurie Mentz

Mpumalanga/KwaZulu-Natal (Louwsburg)
■ 082 354 5749 ■ jurie@grainsa.co.za
■ Office: 034 907 5040 ■ Sydwell Nkosi

Graeme Engelbrecht

KwaZulu-Natal (Dundee)
■ 082 650 93157 ■ dundee@grainsa.co.za
■ Office: 012 816 8069 ■ Nkosinathi Mazibuko

Luke Collier

Eastern Cape (Kokstad)
■ 083 730 9408 ■ goshenfarming@gmail.com
■ Office: 039 727 5749 ■ Luthando Diko

Liana Stroebel

Western Cape (Paarl)
■ 084 264 1422 ■ liana@grainsa.co.za
■ Office: 012 816 8057 ■ Hailey Ehrenreich

Du Toit van der Westhuizen

North West (Lichtenburg)
■ 082 877 6749 ■ dutoit@grainsa.co.za
■ Office: 012 816 8038 ■ Lebo Mogatlanyane

Sinelizwi Fakade

Mthatha
■ 071 519 4192 ■ sinelizwifakade@grainsa.co.za
■ Office: 012 816 8077 ■ Cwayita Mpotyi

Articles written by independent writers are the views of the writers and not that of Grain SA.

Isimo sezulu nomthamo kuno-mthelela kwintengo yommbila

UKHIQIZA KUNQUNYWA INDAWO ETSHALIWE KANYE NESIVUNO; KODWA, LOKHU KUPHEN D U P H E N D U K A KWALOKHU OKUBILI KUNCI-KENE NESIMO SEZULU.

Uma ucabanga ngokungaqondakali okulethwa yisimo sezulu ngezinhliso zokutshala, le-athikhili izoletha imicabango yezimo ezahlukene zokusese okudayiseka kwamanye amazwe ngokusetshe-nziswa kwezinhliso ze-crop estimate's committee (i-CEC) ngokutshala futhi kwenziwe isivuno seyi-avareji njenge-baseline (**kuThebula 1**).

IThebula 2, siyabona ukuthi i-CEC yenze isilinganiso sendawo yokukhiza ummbila sika-2 448 400 wamahektha anqumayo (i-horizontal axis), kanti i-avareji yesivuno sika-4,98 wamathani/ha athe mpo (i-vertical axis). Ngendawo etshaliwe ne-avareji yesivuno esingasala sika-3 591 545 wamathani kungabonwa kuleli thebula. Okusele okungadai selwe amazwe angaphandle kukhonjiswe kucwaningo olutengayo umbala oluhlaza usho amathani engaphansi kuka-1,5 wezigidi zamathani ngesizini bese kuthi kuba obomvu uma kungaphe-zulu kuka-1,5 wezigidi zamathani. Amaseli akhonjiswe ngombala obomvu ngokugqamile kanti kudvwetshwa umugqa uma kungekho okusele okungadai selwa amanye amazwe.

Ukuya ngakwesokudla kwezinhliso ze-CEC, uma indawo etshaliwe ihluka ngo- +10%, +15% noma +20% ngaphezulu kwezinhliso ze-avareji yesivuno sika- 4,98 wamathani/ha, lokhu kungashiyela isivuno esiphakathi kuka- 4 809 624 wamathani no- 6 027 703 wamathani. Ngokwesimo sezulu njengamanje, aphezulu amathuba okuba kungenzeni.

Ukuya esinxeleni sezinhliso ze-CEC, uma indawo etshaliwe ihluka ngo- -10%, -15% noma -20% ngokuncipha kunezinhliso ze-avareji ka-4,98 wamathani/ha, okusele noma isaplasi ingaba

Ngu-Ikageng Maluleke, i-Junior Economist, yakwa-Grain SA.
Uma ufuna imininingwane egcwele, thumela i-imeyili ku-ikageng@grainsa.co.za



1 Izibalo ze-baseline ye-suplayi nedimandi yommbila.

Isamba sommbila

Izhinhliso zokutshala i-(ha) ze-CEC	2 448 400
Isivuno esiyi-avareji (ithani/ha)	4,98
Isitokwe okuqhutshekwe naso 2018/2019 (ithani)	2 807 005
Isamba esithengwa kuleli (i-avareji yeminyaka emi-3) (ithani)	10 130 000
Isitoko esizayo (\pm 1,5 wezi-nyanga) (ithani)	1 266 250

Umthombo: I-Grain SA, i-SAGIS, i-SASDEC, i-CEC

phakathi kuka-2 373 466 no-1 555 387 wamahektha. Ngokwehluka kwamahetha afanayo kodwa isivuno sibe phansi, okukhula kakhulu ukuthi akuzubakho okuzosala.

Umkhiqizo unothelela kwi-saplayi nedimandi, oguquka ube nomthelela kumanani entengo. Ngokusele okungadai selwa amanye amazwe okungaphansi kuka-1,5 wezigidi zamathani, amanani entengo kungenzeka asondele ngaku-parity level (aphakame); lokhu kudalwa ukuncipha komkhqizo. Ngokusele okungadai selwa amanye amazwe okungaphezulu kuka-1,5 wezigidi zamathani, amanani entengo kungenzeka ukuthi asondele ku-export parity (ukuya phansi), lokhu kudalwa ukukhqiqa okusele. Kusobala ukuthi isimo sezulu njengamanje, indawo okutshalwa kuyo ummbila kungenzeka ibe ngaphansi kwezinhliso ze-CEC, okungaholela ekutheni amanani entengo eseke. ■

2 Ucwanningo olutengayo lommbila osele ngokutshalwe ngokwehlukanza isimo sesivuno sonyaka wemakethe ka-2019/2020.

Area Planted (ha)

	-20%	-15%	-10%	Izhinhliso ze-CEC	+10%	+15%	+20%
Isivuno (amathani/ha)	1 958 720	2 081 140	2 203 560	2 448 400	2 693 240	2 815 660	2 938 080
3,48	-1 782 693	-1 357 284	-931 874	-81 055	769 764	1 195 174	1 620 583
3,98	-803 333	-316 714	169 906	1 143 145	2 116 384	2 603 004	3 089 623
4,48	176 027	723 857	1 271 686	2 367 345	3 463 004	4 010 834	4 558 663
4,98	1 155 387	1 764 427	2 373 466	3 591 545	4 809 624	5 418 664	6 027 703
5,48	2 134 747	2 804 997	3 475 246	4 815 745	6 156 244	6 826 494	7 496 743
5,98	3 114 107	3 845 567	4 577 026	6 039 945	7 502 864	8 234 324	8 965 783
6,48	4 093 467	4 886 137	5 678 806	7 264 145	8 849 484	9 642 154	10 434 823
6,98	5 072 827	5 926 707	6 780 586	8 488 345	10 196 104	11 049 984	11 903 863

Umthombo: I-Grain SA, i-SAGIS, i-SASDEC, i-CEC

MADE POSSIBLE BY
THE MAIZE TRUST