KATOEN COTTON SA

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A Cotton SA publication for the cotton industry of Southern Africa

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Hennie Bruwer
HUB: Katoen SA
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BEPERKENDE GROEIFAKTORE

Katoenproduksie in Suid-Afrika het sedert 2014 goeie groei getoon en dit kan toegeskryf word aan verhoogde winsgewendheid asook herstelde sakevertroue in die bedryf. Vaste investering van honderde miljoene rande in oes- sowel as pluiskapasiteit het groei verder ondersteun.

Huidige produksie toon 'n afname teenoor die vorige seisoen en kan onder andere toegeskryf word aan laat reën in meeste van die droëlandstreke en beskikbaarheid van saad tydens die plantperiode asook nuwe pluiskapasiteit wat op dreef moes kom. Die inkrimping van die globale ekonomie as gevolg van COVID-19 het ook verdere druk op die kontantvloei van boere geplaas, aangesien katoenuitvoere nie op die geskeduleerde grondslag kon plaasvind nie.

Deur die knelpunte uit te skakel, kan verhoogde produksie en groei weer aangemoedig word. Beter kommunikasie, groter deursigtigheid en verbeterde kontantvloei van die produsent is aspekte wat aangespreek moet word. Voorts moet beter samewerking in die bedryf nagestreef word ten einde bestaande verwerkingskapasiteit beter te benut. Deur die verpoeling van infrastruktuur kan verhoogde koste-effektiwiteit ontsluit word, wat tot voordeel van elke deelnemer in die bedryf sal wees.

Die katoenbedryf is een groot familie en saam is ons sterker. Laat ons saamstaan om deur vennootskappe die bedryf tot groter hoogtes te neem!

LIMITING GROWTH FACTORS

Cotton production in South Africa has shown good growth since 2014, which can be attributed to increased profitability as well as restored business confidence in the industry. Fixed investment of hundreds of millions of rands in harvest as well as ginning capacity further supported growth.

Current production shows a decrease compared to the previous season and this can be attributed to late rain in most of the dryland regions and availability of seed during the planting period as well as anticipated ginning capacity that did not realise in time. The contraction of the global economy due to COVID-19 also put further pressure on the cash flow position of farmers in that cotton exports could not take place on a scheduled basis.

By eliminating the bottlenecks, increased production and growth can be encouraged again. Better communication, greater transparency and improved cash flow of the producer are issues that need to be addressed. Furthermore, greater collaboration in the industry must be pursued to make better use of existing processing capacity. By pooling infrastructure, increased cost-effectiveness can be unlocked, which will benefit every participant in the industry.

The cotton community is a family and we are stronger together. Let us stand together to take the industry to greater heights through partnerships!

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OUTLOOK ON TEXTILES

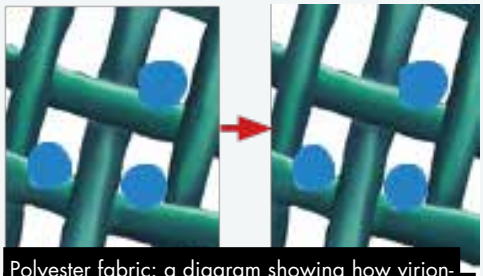
by Helena Claassens and Dr Annette Bennett,
Cotton SA (ICAC, shortened and amended article)

COTTON OR POLYESTER?

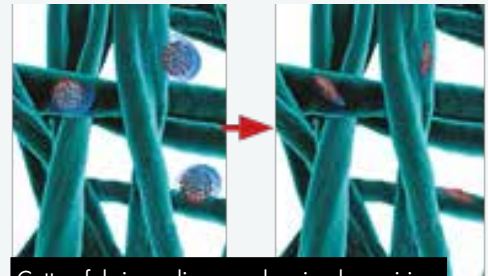
The COVID-19 pandemic warrants community protection through personal protective equipment (PPE) that commonly includes a face mask. By early May 2020, wearing face masks was made mandatory for the general public. In developing and least-developed countries, face masks are either in short supply, inaccessible or unaffordable for the poor, who are in the majority. However, fabrics made of cotton, polyester and their blends are widely available to make home-made non-medical face masks that are also cost-effective and washable. In South Africa, there is a huge drive to manufacture masks. Clothing factories have shifted their focus to the making of masks. Many entrepreneurs have come to the fore to make and sell masks and many welfare organisations have mobilised homeless and jobless people to help make masks for schools and homes.

Surgical masks and non-medical face masks have been found to be effective in preventing the transmission of SARS-CoV-2 in aerosols by more than 95%. The wearing of a face mask outdoors in Beijing during the occurrence of the 2003 SARS virus was associated with a 70% reduction in risk of getting infected, when compared to not wearing one. PPE such as face masks could play a key role in minimising the contagion.

Polyester, a synthetic fabric with its origin in petroleum, is one of the world's most popular fabrics. It has formed the basis on which many products were manufactured during the Second World War. Among allied forces there was a demand for the making of parachutes from polyester. Polyester was preferred because it does not shrink or wrinkle easily. For this reason, polyester is blended with cotton, to make a fabric that shrinks or creases less than others. Polyester, however, contributes to



Polyester fabric: a diagram showing how virion-aerosol droplets remain on the hydrophobic fibres and still survive.



Cotton fabric: a diagram showing how virion-aerosol droplets are absorbed and then desiccate and dry.

environmental pollution, due to the durability of the synthetic fibres. Polyester is one of the most prolific synthetic fabrics in the world today and clothing without any synthetic fibres is hard to find. The consumer wants to know which is best for do-it-yourself (DIY) masks: cotton or polyester?

According to the International Cotton Advisory Council (ICAC), cotton is the fabric of choice. It is absorbent, cool to wear and easy to work with. Cotton appears to have specific filtration advantages over synthetic fabrics like polyester because of its unique physical, chemical and antimicrobial properties. Tests conducted with 22 gram-positive bacteria on five different hospital fabrics showed that 100% cotton was found to be far superior to cotton/polyester blends or 100% polyester, in preventing the survival and spread of pathogens. Mounting scientific evidence supports cotton for being the preferred choice showing protection against a wide range of harmful microbial pathogens, including corona viruses such as SARS-CoV-2.

In addition, cotton demonstrates filtration efficiency, pathogen obstruction, breathability and comfort. This is due to its unique physical, chemical and iso-electric properties, which make cotton fibres superior to synthetic fibres such as polyester and nylon.

Cotton absorbs, dehydrates and deactivates. The special properties of cotton cause a stronger attachment of virions to its fibres, followed by deactivation due to dehydration. Cotton's hydrophilicity is detrimental to virions.

The survival of pathogens and virions is higher on synthetic fibres compared to cotton. As a result, a cotton-based face mask will outperform masks made out of synthetic fibres like polyester, particularly in the case of enveloped viruses like SARS-CoV-2. The median viral loads after coughs without a mask, with a surgical mask and with a cotton mask were 2,56 log copies/ml, 2,42 log copies/ml, and 1,85 log copies/ml respectively. This indicates that a cotton mask is better than a surgical mask in filtering the SARS-CoV-2 virions. Among 15 different types of fabrics tested for filtering aerosol nanoparticles, cotton performed better than silk, chiffon, flannel, and various synthetics and their blends.

Government agencies in India and the USA have recommended using fabric of tightly woven cotton fibres, such as quilting fabric, cotton sheets or T-shirt fabric, for the making of DIY non-medical masks.

Compared to the smooth texture of synthetic fibres, cotton fibres have a rough surface with numerous nano-sized pores that may serve as anchors for adsorption and adherence of nano-sized virions. This is complemented by adhesion hysteresis, which is defined as the difference between the energy needed to separate two surfaces and that which originally brought them together. These properties may contribute to the superior performance of cotton in filtering out virions relative to synthetic fibres.

Cotton fibres are amenable for coating with nanoparticles, which makes them antimicrobial. Cotton cloth coated with nanometals such as nanosilver, nanozinc, nanocopper, etc., makes a smart fabric with antimicrobial properties. Nanocopper-coated cotton fibres showed a broad-spectrum antimicrobial effect and anti-influenza biocidal activity with clear breathability and no depletion in antimicrobial activity after being washed. Highly cleaned and sterile unbleached cotton was found to have constituents that are beneficial to the haemostatic and inflammatory stages of wound healing. These properties were further strengthened by impregnation of nanometals.

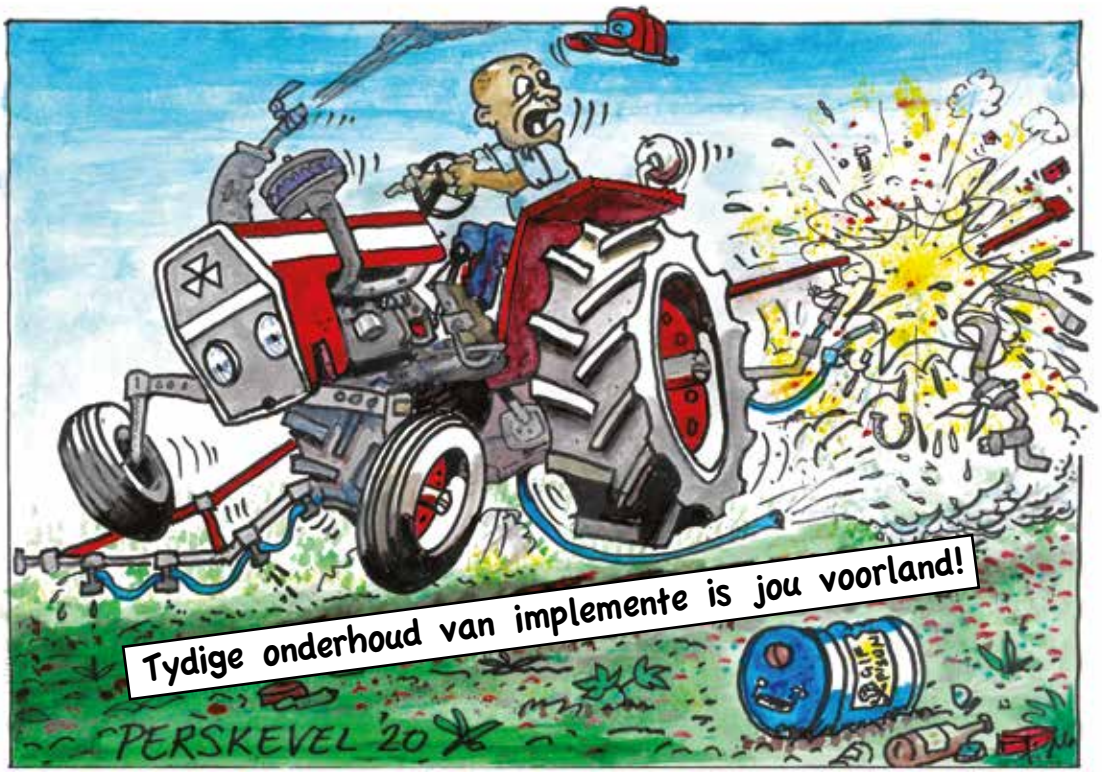
SARS-CoV survives longer in an infective form on synthetic fibre-based disposable gowns than on cotton gowns. The recovery efficiency (RE) of 2,3% to 3,0% for the MS2 virus from polyester is significantly higher than the 0,03% to 0,3% from cotton.

Of the eight cloth materials tested, 100% cotton had the highest virus-blocking efficiency compared to cotton blends and 100% polyester. Five pathogenic fungi survived significantly longer (19,5 days) on 100% polyester, spandex, polyethylene and polyurethane but survived for less than five days on 100% cotton and cotton blends.

Pure cotton and cotton blends filter 50,85% to 72,46% of the virions, and 100% cotton is recommended as the most suitable household material for the preparation of non-medical face masks.

Cotton fibres are natural and biodegradable and should be the fibre of choice, especially for disposable items that can safely be discarded without causing an environmental hazard.

For the full article, citations and references visit the ICAC website: **icac.org**



COTTON SA MARKET REPORT

by Hennie Bruwer and Helena Claassen, Cotton SA

LOWER WORLD COTTON PRICES EXPECTED IN 2020/21

INTERNATIONAL OUTLOOK

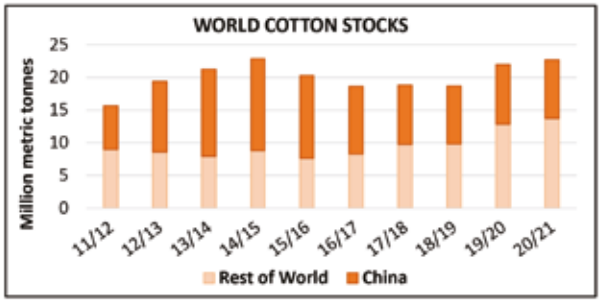
With falling demand, global cotton prices have declined in 2019/20. The season average of US71,3 cents per pound represents the third consecutive season of declining cotton prices. The sharp decrease in global consumption coupled with a global increase in production have put pressure on prices in 2019/20.

The global COVID-19 pandemic decreased the demand for cotton. Cotton spinners, textile and clothing manufacturers have had to reduce their activities as a result of few orders to fill.

It is projected that economic activity and consumer demand could increase due to lower cotton prices and that global economic growth should materialise. This could lead to a recovery in cotton consumption in the 2020/21 season.

Cotton consumption for 2020/21 is estimated to be 24,3 million tonnes, a 5% increase from the previous season. Cotton production for 2020/21 is projected at 25,05 million tonnes, a 5% decrease from the previous season.

The decline in production is due to a global area decrease of two million hectares. The decrease in hectares is the result of the COVID-19-induced economic crisis. Farmers in West Africa and Egypt are likely to change to planting food crops instead of fibre crops. Cotton production in India is expected to be lower based on a reduction in hectares to be planted with cotton. The American crop is expected to be lower based on the drought conditions in Texas.



World cotton balance sheet	Aug–Jul	2020/21	
	2019/20	July	August
	Million metric tonnes lint		
Beginning stocks	18,72	21,96	21,99
Production	26,16	24,77	25,05
Mill – use	22,70	23,85	24,34
Ending stocks	21,99	22,88	22,71
Stocks/use (excl. China)	83%	87%	83%

Quotes in US cents per pound	Today (01/09/20)	Season low	Season high	One year ago	Two years ago
Current Cotlook A Index	70,85	68,20	71,60	70,15	92,15
NY Futures Nearby Contract[a]	64,41	61,84	65,16	59,05	82,31
Basis[b]	6,44	6,34	6,87	11,10	9,84
2020/21 average to date	69,99	[a]Previous day's close			
2019/20 average	71,33	[b]Current A Index minus Nearby NY (previous close)			

Source: Cotlook Ltd.

The low cotton prices and excess supply with smaller demand for lint have also minimised export opportunities for major exporters.

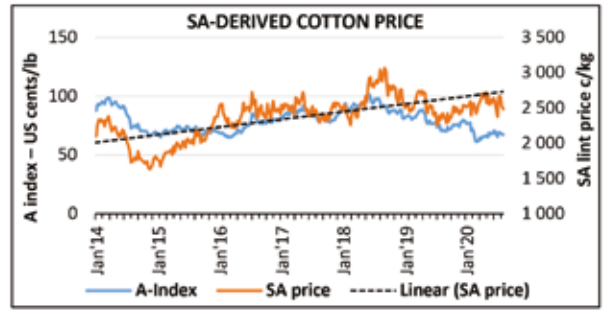
INTERNATIONAL COTTON PRICES

The price projection for the 2020/21 year-end average of the Cotlook A Index is US70,85 cents per pound this month.

LOCAL OUTLOOK

The eighth estimate for the 2019/20 production year indicates a local cotton crop of 139 047 lint bales, 1,4% up from last month's estimate due to better than expected yields in the case of dry land production. Domestic consumption of locally produced cotton from April to July is 39% less than the same period the previous year, while consumption of imported cotton is 87% less than the corresponding period the previous year.

Seed availability, restructuring of ginning capacity and unfavourable growing conditions at the beginning of the planting season,were the main reasons for lower plantings in 2019/20. The lower demand for lint and the strict lockdown regulations that limited local interprovincial travel and local trade, have stimulated the increase in lint export opportunities for the year under review. Consequently, it will be the second consecutive year for South Africa to be a net exporter of cotton lint.



SA crop 200 kg lint bales	2019/20 8th estimate	2019/20 7th estimate	2018/19 final estimate
Ha – irrigation	11 750	11 251	22 765
Ha – dryland	17 221	17 419	16 020
Total ha	28 971	28 670	38 785
Yield: kg seed cotton per ha			
Irrigation	4 473	4 602	4 506
Dryland	1 171	1 156	967
Total lint bales	139 047	137 163	218 430

NUUS / NEWS

KEN JOU LEIERS

LEONARD VENTER, DIE VOORSITTER VAN KATOEN SA

Leonard is nie net 'n voorloper in die bedryf nie, hy is ook die grootste droëlandkatoenprodusent in Suid-Afrika. Hy is gebore op 'n familieplaas in die Roedtan-omgewing en was 16 jaar oud toe sy pa, wat ook sy rolmodel was, katoen begin verbou het. Na voltooiing van sy BCom(Rek) (NWU), keer hy terug plaas toe en begin katoen verbou as 'n tweedegeslagboer, reeds op die ouderdom van 24 jaar.

Leonard is 'n groot sportliefhebber en het vir die Pukke sowel as vir die Wes-Transvaal se onder 20-rugbyspanne gespeel. Hy is 'n gesinsman en hy en sy vrou, Lona, 'n voormalige onderwyseres, het onlangs hul 44ste huweliksherdenking gevier. Hulle is trotse ouers van 'n seun en twee dogters en het sewe kleinkinders. Sy seun, Rouan, wat saam met hom boer, is die derde geslag van Venter-boere. Sy grootste uitdaging tydens die COVID-19-grendeltyd was dat hy geïsoleerd was van sy geliefdes.

Leonard is bekend vir sy nederigheid, sy sterk waardestelsel en sy deursettingsvermoë. Hy het 'n passie vir die bedryf en is reeds vir meer as 40 jaar lank betrokke by die groter boerderygemeenskap in leiersrolle in verskeie bedryfsorganisasies. Hy glo in innoverende en volhoubare produksiepraktyke en ondersteun ook produksienavorsing. Hy trap die voetspore van 'n ware landbouer en verstaan die probleme van boere.

Leonard Venter met sy vrou, Lona.

Tydens die Katoen SA-toekenningsfunksie in November 2019 is hy deur die Suid-Afrikaanse Katoen-*cluster* erken vir sy vasberadenheid om die katoenwaardeketting te bevorder. Hy was een van die sleutelrolspelers van die *cluster*-inisiatief, wat bygedra het om die katoenbedryf om te draai deur rolspelers saam te bring onder een geïntegreerde besigheidsmodel, 'n samewerkings-inisiatief van saad tot kledingstuk. Hy is 'n boer in murg en been en op die vraag wat sy gunstelingkos is, antwoord hy sonder huiwering: "pap en vleis".

Oor die toekoms van katoen in Suid-Afrika is hy steeds positief. Hy erken dat daar heelwat uitdagings is wat die bedryf onder die huidige ekonomiese toestand in die gesig staar en dat COVID-19 'n besliste impak op die uitvoer van die vesel het. Getrou aan sy aard bly hy egter optimisties en glo dat die wa weer deur die drif getrek kan word met samewerking en oop kommunikasie.

Antoon Cornelissen.

'N KATOENLEGENDE – ANTOON CORNELISSEN

Antoon het in 1981 by die LNR-IG op Kroondal, voorheen die Navorsingsinstituut vir Tabak en Katoen (NITK), begin werk. Na voltooiing van sy BScHons in genetika en entomologie werk hy tot 1985 as tabakteler op 'n aalwurmweerstandsnavorsingsprogram. As kommunikasiebeampte vanaf 1985 tot 1995 maak hy kontak met die katoenbedryf.

Vanaf 1996 raak hy betrokke by katoenteling, nadat kleinboere op die Makhathini-vlakte ernstige probleme met bladspringers ondervind het. Hy het belangrike werk verrig deur al die bestaande kultivars te plant en te vergelyk met én sonder 'n chemiese beheerprogram. In die onbehandelde kontroles het hy plante geselekteer wat weerstand teen bladspringers getoon het en dan het hy daardie plante verder in 'n telingsprogram gebruik. Daarna het hy 'n ander denkrigting ingeslaan en begin kyk na die haarlengte en groepering van hare op blare (trigome), wat weerstand bied teen bladspringers.

Die nuwe katoenlyne is nie verder kommersieel verbou nie, aangesien produsente begin beweeg het na geneties gemodifiseerde katoen (*Bt*-katoen). Sy navorsing het bygedra tot die huidige denkrigting oor weerstandbiedendheid van kultivars teen bladspringers. Vandag is daar 'n harige GMO-kultivar beskikbaar (voorheen geproduseer deur Deltapine en daarna besit deur Monsanto SA), wat genoem word Paymaster 3225 (PM 3225 BG2RF). Hierdie kultivar word tans vermeerder deur Mahyco en veral deur kleinboere geplant aangesien dit weerstand bied teen bladspringers.

Vanaf 2003 was hy betrokke by kleinboeropleiding saam met George Mabula. Antoon het in 2014 in die Kaap afgetree. Tans is Antoon nie te gesond nie, en hoewel dit blyk dat hy die stryd teen een soort kanker so te sê gewen het, voer hy nou 'n dappere stryd teen ander tipes kanker. Die bedryf bedank Antoon vir sy bydraes om katoen te bevorder en wens hom sterkte toe.

THIRD GENERATION TECHNOLOGY

Due to the COVID-19 pandemic and other factors, the process to get permission from the patent holder and to apply to government authorities for the deregulation trials for access to third generation *Bt*-technology, has been delayed. These technologies include Bollgard 3® and Xtend Flex®. The industry will continue to have in-depth conversations with relevant parties for access to new varieties that can increase hectarages and crop yields, especially for dryland producers.

CANDIA-SAAD

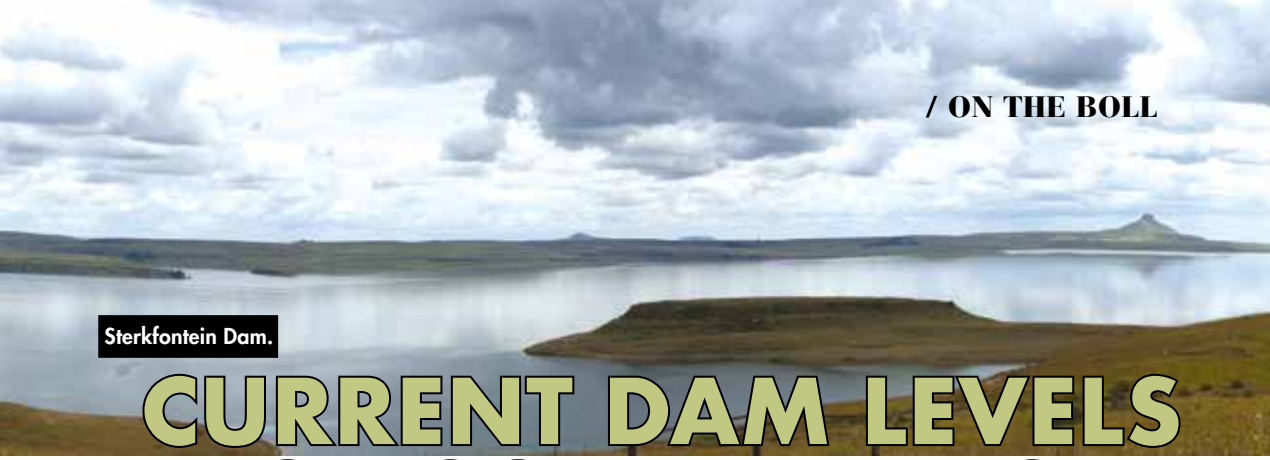
Cotton Seed Enterprises (CSE) is in Januarie 2020 gestig. Die maatskappy het twee vennote, Callie Kruger, besturende direkteur, en Beni Letebele, direkteur van besigheidsontwikkeling. Kruger het sedert 2014 namens Bayer die variëteit Candia BGRF in Suid-Afrika gevestig en nou betrokke geraak by katoen in Suid-Afrika en op internasionale vlak. Letebele is vir die afgelope ses jaar betrokke in die katoenwaardeketting, gefokus op die plaaslike mark en die ontwikkeling van katoen as die mees gesogte vesel in die klere- en tekstielbedryf.

CSE het die lisensie bekom vir die genetiese materiaal wat die volgende kenmerke of "traits" bevat, naamlik Bollgard II en Roundup Ready Flex, van Bayer. Daarmee saam is ook die lisensie vir die variëteit Candia vanaf Cotton Seed Distributors (CSD) in Australië bekom, en gevolglik het CSE die alleenreg om Candia BGRF te vermeerder, prosesseer en te verkoop.

CSE gaan vanjaar 'n kontrak sluit met ontveselingsaanlegte en beplan om teen einde September Candia-saad beskikbaar te stel. CSE streef daarna om kwaliteitsaad aan die produsent te verskaf.

Vir enige navrae, kontak Callie Kruger by 072 986 4244.

CSE
COTTON SEED ENTERPRISES



Sterkfontein Dam.

CURRENT DAM LEVELS FOR SOUTH AFRICA

South African Weather Service report as on 24 August 2020

Dam	River	Full storage capacity (million cubic meter)	This week (% full)	Previous year (% full)
Bloemhof Dam – Free State	Vaal River	1 240,2	96,5	96,7
Boegoeberg Dam – Northern Cape	Orange River	19,8	105,0	102,1
Douglas Weir – Northern Cape	Vaal River	16,3	107,8	106,3
Flag Boshielo (Arabie) Dam – Limpopo	Olifants River	83,3	96,9	85,2
Gariep Dam – Free State	Orange River	5 196,0	83,3	85,2
Grootdraai Dam – Mpumalanga	Vaal River	349,5	79,4	62,9
Hartbeespoort Dam – North West	Crocodile River	186,4	97,6	100,1
Katse Dam – Lesotho	Malibamatso River	1 519,1	27,7	18,2
Kalkfontein Dam – Free State	Riet River	325,1	21,5	27,9
Krugerdrift Dam – Free State	Modder River	71,5	97,7	95,7
Loskop Dam – Mpumalanga	Olifants River	56,9	99,7	84,2
Marico-Bosveld Dam – North West	Groot Marico River	27,0	43,9	13,7
Pongolapoort (Jozini) Dam – KwaZulu-Natal	Pongola River	2 267,1	41,5	44,0
Rhenosterkop Dam – Limpopo	Elands River	204,6	1,6	1,5
Spitskop Dam – Northern Cape	Harts River	57,8	98,2	76,7
Sterkfontein Dam – Free State	Nuwejaarspruit River	2 616,9	93,9	92,2
Taung Dam – North West	Harts River	61,4	96,0	88,9
Theewaterskloof Dam – Western Cape	Sonderend River (tributary Breede River)	480,2	85,0	71,6
Vaal Dam – Free State	Vaal River	2 603,5	38,8	61,3
Vaalharts Weir – North West	Vaal River	50,8	79,2	86,9
Vanderkloof Dam – Free State	Orange River	3 171,3	92,7	87,0

KEN DIE KATOEN-STRUKTURE

SUID-AFRIKAANSE KATOENPRODUSENTE-ORGANISASIE (SAKPO)

Vir die produsent is die ordelike raamwerk waarbinne hy katoen produseer belangrik. Daarom is strukture deur aktiewe rolspelers in die bedryf geskep om die boer te ondersteun en kollektiewe eenheid te bevorder.

Vervolgens is SAKPO aan die begin van 1998 gestig. Hierdie organisasie tree op in belang van die produsent en verteenwoordig die hoogste gesag binne die katoenbedryf, met volle outonomie in huishoudelike sake, asook sake wat katoenproduksie raak.

Die SAKPO-bestuur word op 'n federale basis saamgestel uit verteenwoordigers vanuit die verskillende gebiedsbesture, met inagneming van geografiese verspreiding en produksie in die verskillende streke/provinsies. Produksiestreke/provinsies word op grond van die produksievolume op die SAKPO-bestuur verteenwoordig en word elke twee jaar hersien.

Befondsing van die struktuur geskied by wyse van vrywillige bydraes en Katoen SA hanteer die Sekretariaat en uitvoering van besluite. Verteenwoordiging per provinsie sien tans as volg daar uit: Limpopo – vier lede; Mpumalanga – een lid; Noord-Kaap, wat Benede-Oranje en die Vrystaat insluit – vier lede; KwaZulu-Natal – een lid; en Noordwes – een lid.

SAKPO-lede gee terugvoer uit hul streke aan die bestuur met die fokus op sake van gemeenskaplike belang. SAKPO speel 'n baie belangrike rol in die bedryf om sake van gemene belang te bevorder, soos byvoorbeeld produksiegerigte navorsing tot voordeel van die produsent en die bedryf. SAKPO fasiliteer:

- volhoubare landbou;
- opleidingsaksies;
- transformasie;
- bemiddeling van produksie- en tegnologie-vooruitgang;
- verhoudingsbestuur tussen rolspelers;
- oordrag van inligting; en
- kollektiewe bedinging vir die produsent.

SAKPO dien ook as die mondstuk vir die katoenprodusent in Suid-Afrika.

SAKPO
South African Cotton Producers' Organisation
Suid-Afrikaanse Katoenprodusente Organisasie

KATOEN SA NWO

Daarteenoor is Katoen SA 'n nie-winsgewende kommoditeitsorganisasie, wat namens die hele katoenbedryf optree en 'n statutêre heffing invorder ter befondsing van die administrasie van die wetlike maatreëls ingevolge die Nasionale Landbouproduktebemarkingswet (Wet nr. 47 of 1996). Katoen SA is verteenwoordigend van die verskillende sub-sektore betrokke in die katoenbedryf – vanaf die boer tot die klere-kleinhandelaar.

Katoen SA se enkele hoofbron van inkomste is statutêre heffings wat deur ander nie-heffingsinkomstestrome aangevul word. Katoen SA bevorder samewerking met die regering en organisasies op plaaslike sowel as internasionale vlak en het geen rol te speel in die bemarking en/of vasstelling van katoenpryse nie.

Die missie van Katoen SA is die bevordering van 'n gesonde katoenekonomie en word ondersteun deur die lewering van ooreengekome bedryfsfunksies. Katoen SA dien as 'n verrekeningspunt vir:

- tegniese inligting met betrekking tot katoenproduksie en -verwerking;
- die bewusmaking van opkomende kwessies;
- die verskaffing van inligting rakende die oplossing van probleme; en
- die bevordering van samewerking om gemeenskaplike doelstellings te bereik.

Deur alle segmente van die bedryf bymekaar te bring, verrig Katoen SA 'n unieke rol as katalisator vir konstruktiewe verandering en as opleidingsmedium vir sy lede en werknemers. Die bedrysfunksies wat Katoen SA verrig, is die volgende:

- Die versameling, verwerking en verspreiding van bedryfsinligting ter ondersteuning van ingeligte besluitneming deur belanghebbendes.
- Bestuur van 'n internasionaal-geakkrediteerde graderingslaboratorium om die katoenbedryf met die bes moontlike inligting ten opsigte van die oeskwaliteit vir die suksesvolle bemarking en verwerking van katoen te voorsien.
- Koördinering en befondsing van saad-, produksie- en produknavorsing en verskaffing van voortspruitende tegniese ondersteuning.
- Die implementering en monitering van volhoubare produksiepraktyke/-programme.
- Bevordering van produksie en die bewusmaking van katoen en sy vele gebruike.
- Vaardigheidsopleiding sowel as projekbestuur van ontwikkelingsprojekte om transformasie en inklusiewe groei te bevorder.
- Dien as forum vir die bedryf, waar sake van algemene belang bespreek word.

Die Raad van Katoen SA maak voorsiening vir nege lede, wat ook as direkteure dien en wat volgens die volgende sub-sektore op nasionale vlak verteenwoordig word:

- Vier kommersiële produsente waarvan een swart boere verteenwoordig
- Een verteenwoordiger vir pluismeulevereniging
- Een verteenwoordiger vir katoenspinners
- Een verteenwoordiger vir huishoudelike en tekstielvervaardiging
- Een verteenwoordiger vir verbruikers
- Een verteenwoordiger vir arbeid

Die Suid-Afrikaanse katoenbedryfsorganisasies

KATOEN SA	SAKPO
Nie-winsgewende organisasie	Produsenteorganisasie
Verteenwoordig die totale katoenwaardeketting	Verteenwoodig die katoenprodusente
Befondsing: statutêre heffing	Befondsing: vrywillige bydraes
Permanente personeel: 10	Personeel: geen (Katoen SA gekontrakteer vir uitvoering van besluite)
Samestelling: 9 direkteure en 2 addisionele gekoöpteerde direkteure	Samestelling: 11 lede verteenwoordigend van al die produksiegebiede in die onderskeie provinsies
PRIMÊRE FUNKSIES	PRIMÊRE FUNKSIES
• Nasionale en internasionale skakeling • Bevordering van produksie en gebruike van katoen • Lewering van inligtingsdienste • Kwaliteitsbeheer en opleiding • Koördinering en finansiering van produksienavorsing, tegnologie en saad • Kleinboerontwikkeling en opleiding (transformasie) • Volhoubare produksie (BCI) • Industrieforum	• Produsenteforum/mondstuk vir produsent • Bevordering van: - eie en ordelike bemarking - winsgewende produksie - studiegroepe - waardetoevoegingsmoontlikhede • Kollektiewe bedinging ten opsigte van produksiekoste, saad en tegnologie • Nominasie van produsenteverteenwoordigers op bedryfs-, staats- en verwante liggame

GMO-KATOEN
styg uit bo GMO-mielies

Katoen SA in samewerking met GWK



'n Vergelyking van katoen- en mielieproduksie onder droëland en besproeiing in die GWK-pluismeulegebied, dui die voordeel aan wat katoen vir die produsent inhou. Belangstelling in katoen as opsionele gewas is besig om te ontwikkel in areas soos Schweizer-Reneke/Mareetsane en in besproeiingsgebiede van die Benede-Oranjerivier (Groblershoop-, Upington- en Keimoes-areas), asook Douglas en Luckhoff. Derhalwe is dit hiér waar produsente tans keuses van rotasiegewasse tussen lusern, koring, soja, mielies en katoen moet maak.

Die aantal hektaar geplant onder katoen vir die 2018/19-seisoen was 38 785 ha (22 765 ha onder besproeiing en 16 020 ha onder droëland). Dit verteenwoordig 'n grootskaalse groei in katoenaanplantings sedert 2010, toe produksie by 'n laagtepunt van 5 000 ha gedraai het. Katoen is 'n uitstekende keuse as alternatiewe gewas in marginale areas vir droëlandmielies in die Noordwes-streek. Die belangrikste geografiese areas vir katoen (2018/19) het Limpopo (23 641 ha), Noord-Kaap (6 177 ha), en Noordwes (4 289 ha) ingesluit. Die uitbreiding van katoenproduksie gedurende dié seisoen kan toegeskryf word aan verbeterde uitvoermarkte en 'n hoër prys vir katoenvesel in vergelyking met ander kommoditeite.

Katoen is 'n voorkeurgewas aangesien dit oor 'n diepgroeiende penwortel beskik wat enige diepliggende water in die grondprofiel kan bereik. Produsente in die droëlandgebiede van Noordwes is besig om produksiepraktyke te verfyn. Hulle poog om saadontkieming, plantestand en vestiging van katoensaailinge onder winderige toestande te bemeester. Katoen blyk in dié gebiede 'n goeie alternatief te wees teenoor ander gewasse soos mielies. Onderstaande syfers wys die verskil in insetkoste en winsmarge tussen GMO-katoen en GMO-mielies onder droëland- en besproeiingstoestande soos verskaf deur GWK (Tabelle 1 en 2).

Die winsmarge vir katoenproduksie onder droëlandverbouing is ongeveer R2 619/ha terwyl dit onder besproeiing in die omgewing van R11 378 is, wat aansienlik hoër as droëlandverbouing is (Tabelle 1 en 2).

Katoenproduksie in Suid-Afrika het sedert die 2014/15-seisoen 'n toename getoon tot bykans 39 000 ha, wat in die 2018/19-seisoen geplant is. Alhoewel die aantal hektaar onder katoenproduksie die afgelope seisoen weens twyfel in saadsekerheid en beskikbare oeskapasiteit afgeneem het, vertoon katoen tans goed teenoor mielies wat netto winsmarges per hektaar betref. Katoen word beskou as een van die mees kompeterende somergewasse, veral in droëlandgebiede.

Tabel 1: Insetkoste van droëlandkatoen in die Griekwaland-Wes-koöperasiestreke (insluitend die Noord-Kaap en droëlandstreke van Noordwes).

Gewas	Publikasies	Prysdatum		Katoen – droëland (ton)	
Katoen – droëland	Winter 2020	2020-07-15		1,50	
Inkomste					
Produknaam	Produkhoeveelheid	Maat-eenheid	Prys	Maat-eenheid	Produkkoste
Katoen – droëland	1,50	Ton	8 980,00	R/ton	R13 470
Brutoproduksiewaarde					R13 470
Uitgawes					
Saad	5,00	kg/ha	204,82	R/kg	R1 024
Bemesting – makro-elemente	1,00	Ha	1 091,62	R/ha	R1 092
Bemesting – mikro-elemente	1,00	Ha	214,86	R/ha	R215
Brandstof (diesel)	67,84	liter/ha	11,82	R/liter	R802
Diesel (plukker)	10,00	liter/ha	11,82	R/liter	R118
Onkruiddoder	1,00	Ha	228,90	R/ha	R229
Insekdoder	1,00	Ha	710,90	R/ha	R711
Swamdoder	1,00	Ha	0,00	R/ha	R0
Chemie – ander	1,00	Ha	191,60	R/ha	R192
High Boy-spuit	6,00	bespuitings	190,00	R/ha	R1 140
Versekering – katoen	13 470,00	rand	8,00	%	R1 078
Katoenplukker – droëland	1,00	Ha	2 137,50	R/ha	R2 138
Plastiekbedekking – saadkatoenbaal	0,65	Bale	680,00	R/baal	R439
Vervoer – katoen	1,50	Ton	174,90	R/ton	R262
Meganisasie – herstel en onderhoud	1,00	Ha	900,76	R/ha	R901
Katoenbemarkingskoste – statutêr en SAKPO	1,50	Ton	80,00	R/ton	R120
Totale direkte koste					R10 459
Rente					
Produknaam	Produkhoeveelheid	Maat-eenheid	Prys	Maat-eenheid	Produkkoste
Rente	4 357,86	rand	9,00	%	R392
Totale produksiekoste					R10 851
Marge bo koste					R2 619
Gelykbreekopbrengs/ha					1,21 ton
Gelykbreekprys/ton					R7 234

*Sensitiwiteitsanalise kan by GWK/Katoen SA verkry word.

Tabel 2: Insetkoste van besproeiingskatoen in die Griekwaland-Wes-koöperasiestreke (insluitend die Noord-Kaap en Noordwes).

Gewas	Publikasies	Prysdatum		Katoen – besproeiing (ton)	
Katoen – besproeiing	Winter 2020	2020-07-15		5,50	
Inkomste					
Produknaam	Produkhoeveelheid	Maat-eenheid	Prys	Maat-eenheid	Produkkoste
Katoen – besproeiing	5,50	ton	8 980,00	R/ton	R49 390
Brutoproduksiewaarde					R49 390
Uitgawes					
Saad	12,00	kg/ha	204,82	R/kg	R2 458
Bemesting – makro-elemente	1,00	ha	6 934,84	R/ha	R6 935
Bemesting – mikro-elemente	1,00	ha	547,85	R/ha	R548
Brandstof (diesel)	70,68	liter/ha	11,82	R/liter	R835
Diesel (plukker)	40,00	liter/ha	11,82	R/liter	R473
Onkruiddoder	1,00	ha	228,90	R/ha	R229
Insekdoder	1,00	ha	3 641,30	R/ha	R3 641
Swamdoder	1,00	ha	0,00	R/ha	R0
Chemie – ander	1,00	ha	1 470,02	R/ha	R1 470
High Boy-spuit	6,00	bespuitings	190,00	R/ha	R1 140
Versekering – katoen	49 390,00	rand	8,00	%	R3 951
Katoenplukker	1,00	ha	4 275,00	R/ha	R4 275
Plastiekbedekking – saadkatoenbaal	2,37	bale	680,00	R/baal	R1 608
Vervoer – katoen	5,50	ton	174,90	R/ton	R962
Besproeiing – Eskom	800,00	mm/ha	5,41	R/mm	R4 328
Besproeiing – Waterraad	800,00	mm/ha	1,70	R/mm	R1 360
Besproeiing – skedulering	1,00	ha	85,00	R/ha	R85
Meganisasie – herstel en onderhoud	1,00	ha	901,68	R/ha	R902
Spilpuntkoste – toerusting	1,00	ha	735,00	R/ha	R735
Katoenbemarkingskoste – statutêr en SAKPO	5,50	ton	80,00	R/ton	R440
Totale direkte koste					R36 375
Rente					
Produknaam	Produkhoeveelheid	Maat-eenheid	Prys	Maat-eenheid	Produkkoste
Rente	18 187,51	rand	9,00	%	R1 637
Totale produksiekoste					R38 012
Marge bo koste					R11 378
Gelykbreekopbrengs/ha					4,23 ton
Gelykbreekprys/ton					R6 911

*Sensitiwiteitsanalise kan by GWK/Katoen SA verkry word.

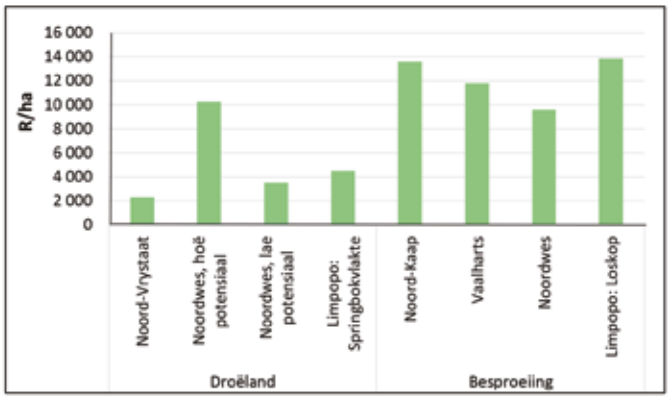
Tabel 3: Opsommende tabel om opbrengste en winsmarge aan te dui (soos op 15 Julie 2020).

Opbrengs	Droëland			Besproeiing		
Gewas	GMO-katoen	GMO-witmielies	GMO-geelmielies	GMO-katoen	GMO-witmielies	GMO-geelmielies
Gemiddelde opbrengs/ha	1,5	5,5	5,5	5,5	13	13,5
Prys (R/ton)	8 980	2 270	2 357	8 980	2 270	2 357
Produksiekoste insluitend rente/ha	10 851	10 640	10 399	36 375	28 962	29 031
Geldwaarde (winsmarge bo koste/ha)	R2 619	1 845	R2 565	R11 378	R548	R2 788

'n Vergelyking van katoen se winsmarge met dié van wit- en geelmielies geproduseer onder droëland, gee 'n verskil van R774/ha in vergelyking met GMO-witmielies, teenoor 'n verskil van R54/ha met GMO-geelmielies. Die werklike voordeel van katoenproduksie teenoor mielies kan gesien word met produksie onder besproeiing. Katoen se winsmarge bo koste teenoor witmielies verskil R10 830/ha terwyl met GMO-geel mielies die verskil R8 590/ha onder besproeiing is (Tabel 3).

Soos produsente daarin slaag om met verbeterde tegnologie te sny op kostes, is die vermoede dat hierdie verskil in winsmarges selfs verder kan vergroot soos opbrengs per hektaar toeneem. Brutomargesyfers vir katoen in ander streke vertoon goed en droëlandkatoen in die Noordwes-hoëpotensiaalgebiede (Mareetsane en Schweizer-Reneke) kan tot soveel as R10 000/ha wees (Figuur 1).

Figuur 1: Vergelyking van bruto marges van katoen tussen streke (BFAP, 2018/19). *Bron:* Data van BFAP verwerk.



GMO-katoen bly vir die produsent, wat produksie van GMO-gewasse verkies, 'n gemaklike keuse om sy risiko teenoor die plant van mielies op droëland te bestuur. Katoen is aangepas om van stres-toestande te herstel wanneer daar te min reën is. Die syfers spreek vanself en katoen bly 'n voortreflike keuse vir die produsent!

GWK (Dup Haarhoff en Nantie Fourie) word bedank vir die verskaffing van produksiesyfers van mielies en katoen vir hul gebied.

TEN COMMANDMENTS FOR RESPONSIBLE PESTICIDE USE

by Dr Gerhard Verdoorn, Croplife South Africa

1. Plan your production season carefully and only buy the pesticides and volumes that you will definitely need. Do not just buy a product because it is offered at a lower price, as it may accumulate only to have to be destroyed at a tremendous cost.
2. Only buy registered pesticides from recognised dealers, preferably agents that are affiliated with CropLife SA distributor companies, to ensure that you buy good quality, legal products. If a pesticide does not display a registration number on the front panel of the label, then it is illegal in South Africa. These registration numbers start with a capital letter L, followed by four numbers, for example L1234, and after that "Act No. 36 of 1947".
3. Store your pesticides in a proper storeroom built with bricks or concrete, a roof, sufficient ventilation, lighting, and a lockable door. Many malicious poisonings happen with agrochemicals that have been stolen from farmers.
4. Study the label of every agrochemical carefully and only apply it according to the prescribed instructions. Regulation No. R1716 of 26 July 1992 warns that the use of an agrochemical for any other purpose or in any other manner

A typical label of a registered insecticide.

than what is prescribed, is a punishable violation of Act No. 36 of 1947.

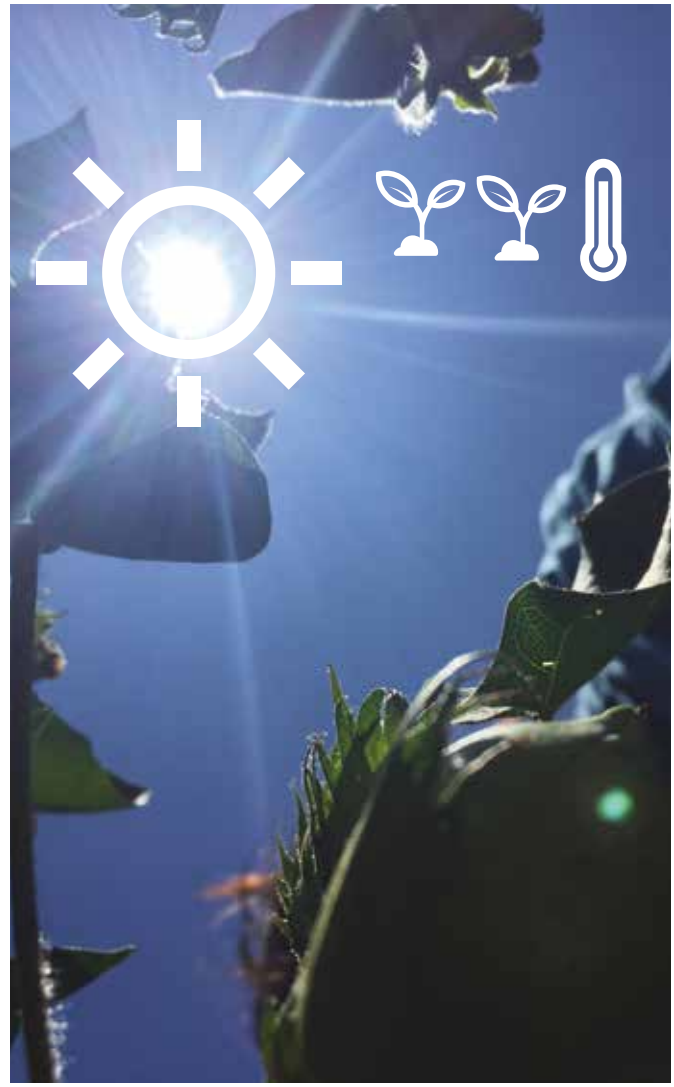
5. Provide your farmworkers with basic training about the safe and responsible use of pesticides.
6. Supply farmworkers who mix and apply pesticides with protective clothing such as face masks, cloth hats, overalls with long sleeves and long pants, rubber boots, and rubber gloves. Ensure that they always wear their protective clothing, even the tractor operator. It is necessary to protect them from splashes, mists and oral ingestion of pesticides and spray mixtures.
7. Calibrate the spray equipment to apply the correct dosage of pesticides. This includes examining the spray heads to ensure that they are not eroded or blocked. Consult your agrochemical agent for calibration advice.
8. Pesticides must only be applied if weather conditions are favourable. If the south-easter rears its head, or the highveld thunderclouds are about to explode, or if it is so hot that everything evaporates, then it is time to halt pesticide application for a while.
9. Once the pesticide containers are empty, they need to be triple-rinsed with one quarter volume fresh water and the rinse water must be decanted into the spray tank. Containers should be left to dry and afterwards pierced or cut into pieces before handing it over to a CropLife SA-approved collector or recycler. A list of approved service providers is available on **croplife.co.za** as well as guidelines for the management of obsolete pesticide containers.
10. Avoid any malicious misuse of pesticides such as poisoning of animals. Not only is this illegal and inhumane, but it also poses a secondary poisoning risk to other animals. Some species, such as vultures, have already been dealt a huge blow through poisonings.

OESOPBRENGS EN DAGGRADE

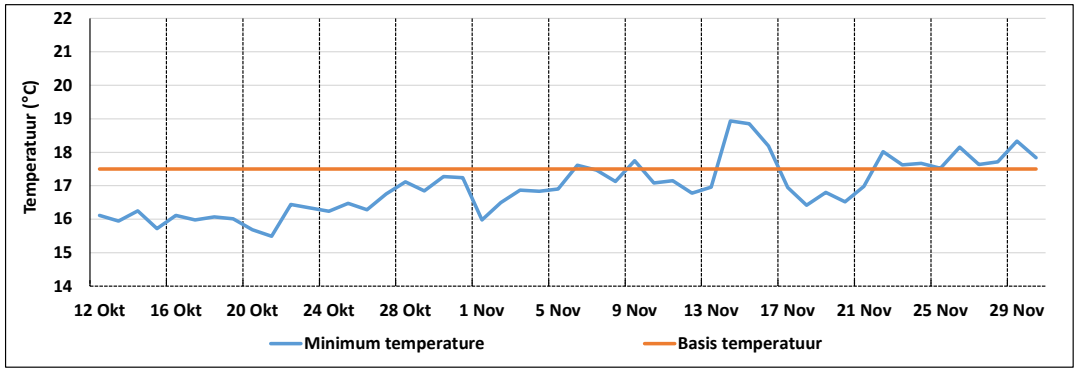
saamgestel deur dr. Annette Bennett, Katoen SA

Saadkatoenopbrengs word direk beïnvloed deur die daggrade (dd), oftewel "day degrees", ook bekend as grade hitte-eenhede (ghe), wat oor die seisoen vir die katoenplant beskikbaar is. Die belangrikheid daarvan word weer eens onder die produsent se aandag gebring en gerieflikheidshalwe sal verwys word na daggrade (dd). Om te verseker dat veselrypwording bereik word (wat die verlangde mikronêr, vesellengte en veselsterkte insluit), is 'n voldoende aantal daggrade nodig om katoen suksesvol in Suid-Afrika te verbou. Dit is belangrik om die daggrade te bereken om die lengte van die seisoen vir 'n sekere gebied te bepaal. Saam met 'n konstante minimumtemperatuur van ten minste 17,5 °C en die totale aantal daggrade beskikbaar, bepaal laasgenoemde die geskikste plantdatum en wanneer die katoen geoes kan word.

Die ontwikkeling van die katoenplant se vrugpunte op die vrugtakke hang af van die beskikbare daggrade. Die katoenplant groei ongeveer 150 tot 160 dae. Soos temperature toeneem deur die seisoen, vermeerder die aantal beskikbare sonligure, wat belangrik is vir die rypwording van die vesel. Die produsent moet alles in sy vermoë doen om te verseker dat die aantal daggrade genoeg sal



Figuur 1: Gemiddelde minimumtemperature oor 10 jaar vir die Pongola-gebied.



wees om te verseker dat die katoen sy volle groeiseisoen handhaaf. 'n Totaal van 1 500 daggrade is nodig om optimale opbrengs te verseker. Die minimum daggrade wat nodig is, beloop 1 200 daggrade, maar daggrade moet verkieslik nie onder 1 300 daal onder Suid-Afrikaanse toestande nie (P. MacCaskill). Met die minimum daggrade teenwoordig, is daar reeds 'n oesverlies van tot 25%, maar die produsent kan steeds onder gunstige toestande 'n wins maak.

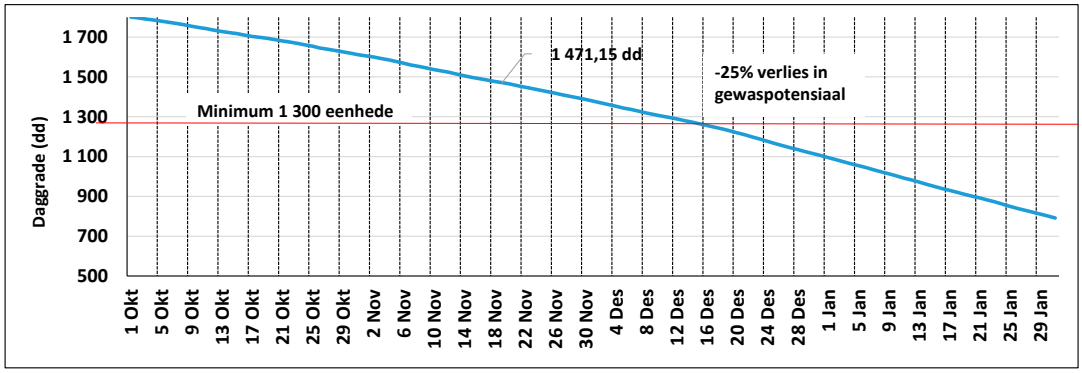
Tesame met 'n plantdiepte van verkieslik 2,5 cm, is die minimum temperatuur wat heers en die voorbereiding van 'n fyn saadbed met die nodige beskikbare vog die belangrikste faktore om 'n goeie plantestand te verkry.

Dit is belangrik om te onthou dat, tesame met daggrade, die temperatuur waar die produsent katoen wil plant 'n minimum van 17,5 °C moet wees, konstant vir sewe tot tien dae. Volgens MacCaskill, is 15,5 °C die basis- of drempeltemperatuur vir katoen in Suid-Afrika, terwyl die LNR-IG in vorige verslae 16,5 °C noem as die basistemperatuur. Om veilig te wees, word 'n konstante temperatuur van bo 17,5 °C vir suksesvolle ontkieming aanbeveel.

Sodra die daaglikse gemiddelde temperatuur onder die drempel van 15,5 °C daal, staak die plant se groei. Wanneer temperature bo hierdie kritiese drempel styg, verhoog die groei van die plant tot 'n optimale vlak. Optimale groei vind by 30 °C plaas. Die verhouding tussen groeitempo en temperatuur word gebruik om die tydsberekening te bepaal vir die verskeie ontwikkelingsfases van die plant. Die ontwikkelingsfases word oor tyd bepaal deur die akkumulasie van grade hitte-eenhede (ghe), of die aantal daggrade (dd) oor die groeitydperk. Vir dié berekening word die gemiddelde temperatuur oor 24 uur (totaal van die daaglikse maksimum- en minimumtemperature gedeel deur 2) geneem. As die drempel van 15,5 °C vir die groei van katoen daarvan afgetrek word, gee dit die aantal daggrade vir daardie dag. Byvoorbeeld, in 'n geval waar die dagtemperatuur 33 °C is, en die nagtemperatuur 18 °C, is die gemiddeld 25,5 °C. Die drempeltemperatuur van 15,5 °C word daarvan afgetrek om die daggrade vir daardie dag te bereken. Let wel: minder as 6 daggrade is ongunstig vir die plant, 6 tot 8 daggrade is marginaal, en 9 tot 11 daggrade is aanvaarbaar. Meer as 11 daggrade per dag is ideaal. Die totale aantal daggrade word dan bymekaargetel om te sien of die produksiestreek voldoen aan die minimum vereistes van meer as 1 300 daggrade vir die totale groeitydperk. Die klimaat kan heelwat verskil tussen gebiede en die daggrade moet verkieslik vir elke plaas bereken word.

Katoen SA poog om vir elke streek die geskikste plantdatum voor te stel op grond van historiese data van die afgelope 10 jaar, asook om die totale daggrade te bereken. Dit word dan in die vorm van 'n kort verslag vir die produsent beskikbaar gestel. Beskikbare inligting sluit ook 'n grafiek in wat die geskikte planttyd aandui. As voorbeeld word die Pongola-gebied hier gebruik (Figuur 1).

Figuur 2: Afname in totale beskikbare daggrade (dd) teenoor moontlike plantdatums gebaseer op 10 jaar se historiese data vir die Pongola-gebied.



"Saadkatoen-opbrengs word direk beïnvloed deur die daggrade (dd), oftewel "day degrees", ook bekend as grade hitte-eenhede (ghe), wat oor die seisoen vir die katoenplant beskikbaar is."

Vir die Pongola-gebied blyk die geskikte plantdatum vanaf 12 November te wees, met minimum temperature bo 16,5 °C. Na 21 November behoort temperature konstant bo 17,5 °C te wees, wat lyk na die geskikste plantvenster. Plant ná die einde van November veroorsaak dat die seisoen baie kort is en dat baie min daggrade vir katoen beskikbaar sal wees. Figuur 2 dui die dalende daggrade aan vanaf die plantvenster (laaste week in November, tot en met ongeveer 3 tot 5 Desember). Met 'n baie kort venster vir plant en dalende daggrade beskikbaar vir die seisoen, kan verwag word dat die oesopbrengs skerp sal daal.

Volgens MacCaskill daal die oesopbrengs vir die Loskop-gebied elke dag wat die produsent ná 15 November plant, met 1%. Figuur 2 toon duidelik hoe daggrade vir die Pongola-gebied afneem. Met 'n kort groeiseisoen beskikbaar, moet 'n kort en vinniggroeiende kultivar vir die gebied gekies word. Vir die besproeiingsprodusent is weerdata belangrik om die optimale plantdatum op sy betrokke plaas te bepaal, en om van die plantvenster gebruik te maak om 'n suksesvolle oesopbrengs te verseker. Produksiepraktyke soos plantdatum, vog, plantdigtheid, kunsmis en plaagbeheer, tesame met daggrade, sal die uiteindelike opbrengs bepaal.

Dankie aan Bonsucro vir die verskaffing van weerdata.

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DP 1240B2RF - Volseisoen, uitstaande opbrengste en kwaliteit, met goeie velselpersentasie en goeie mikronêr

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SPINABILITY IN RELATION TO FIBRE QUALITY

by Gert Klindt and Calvin Knight, Cotton SA (shortened and amended article)

Fibre quality is affected by many controllable and uncontrollable interacting factors, i.e. variety, seasonal conditions, crop and harvest management, and ginning, which can determine whether the spinner's requirements are met. Fibre quality can be improved before delivering to mills through a better understanding of fibre structure and of the factors affecting quality; having access to improved varieties; optimal management of production in each climatic region; and management of fibre processing.

The industry's task is to optimise fibre quality by means of implementing an integrated fibre management (IFM) approach during each step, from strategic farm planning concerning variety choice and crop management to harvesting and ginning. Production programmes must be directed towards the improvement of quality by means of providing guidance and assurances in production, classing and ginning. The introduction of new technologies, instruments, research, extension programmes and information transfer will help to sustain an IFM programme.

The Uster high-volume instrument (HVI) 1000.

> **"Production programmes must be directed towards the improvement of quality by means of providing guidance and assurances in production, classing and ginning."**

Key fibre quality challenges include the following:

- Maintaining and improving fibre length through better choice of variety, management during hot, dry seasons, and preservation of the fibre through harvest and ginning
- Producing fibre within the optimum micronaire/maturity range throughout hot sunny seasons, or cool cloudy spells
- High-yield management strategies
- Reducing nep content through effective defoliation and harvest preparation
- Better management of fibre moisture in the field at harvest and during processing through the gin
- Minimising contamination found in bales
- Ensuring fibre quality uniformity and consistency within and between years

THE PERFORMANCE OF THE SOUTH AFRICAN COTTON CROP

South Africa produces quality cotton that compares favourably with other international cotton-producing countries. Accurate instrument-based, bale-for-bale information on those fibre properties that affect yarn quality is available to the buyer. This makes the South African crop unique and contributes to the capture of a better grade and quality in a pooling system. Fibre-testing results are summarised in quality profiles covering all the desired fibre properties, leading to more consistent bale laydowns being possible among spinners. This places the spinner in a position to buy cost-effective and evenly distributed running lots.

South Africa produces a long fibre, which is not always requested by certain spinners. With more focused and careful management of fibre quality at every step of the value chain, i.e. from pre-planting to processing, the following spinning requirements are mostly complied with:

- South African cotton has the lowest contamination levels in Africa and is among the lowest in the world.
- South Africa produces cotton (80% of the crop) within the standard micronaire range, i.e. between 3,5 and 4,9.
- South Africa produces cotton with an average maturity index of 85%, which falls within the acceptable maturity range.
- More than 60% of fibre strength values fall within the higher category of 28 grams/tex and better.
- The staple length of 85% of the crop performs at $1^{1}/_{8}$" or 1,13–1,15 HVI inches (upper half mean length [UHML]) and longer lengths, which can contribute to the manufacturing of quality yarns.
- According to Uster cotton specifications, South Africa's short fibre index is described as low, with an average for machine-harvested cotton of between 7% and 9%, which conforms to expected norms.

FIBRE PROPERTIES FOR COTTON SPINNING

Cotton classification is important for spinners, for it allows for better selection of raw material and better control/management of laydowns. Instrument-based testing provides objective results and reliable data to make good purchasing decisions. The provision of more data increases the control of laydown variability and the quality and costs of spinning. Table 1 provides an overview of typical yarn requirements for specific fabrics and the properties required of the yarn. Each specification within a category leaves room to expand upon, for example to include different qualities of shirting material.

Different spinners will have different end products in mind, requiring specific fibre properties when purchasing lint. With more information available and with better control of specifications, a more uniform and higher quality yarn is produced. Table 2 refers to the basic requirements of some of the South African

Table 1: Typical raw cotton properties and yarn requirements for specific fabrics.

Typical cotton properties for selected fabrics					
Fabric	**Yarn count (Ne)**	**UHML (mm)**	**Strength (gms/tex)**	**Micronaire**	**Maturity ratio**
Woven					
Denim	4/1 to 20/1	23,4 to 27,9	24 to 30	3,0 to 5,0	0,80 to 0,90
Towelling	8/1 to 22/1	23,6 to 27,9	24 to 30	3,5 to 5,5	0,80 to 0,90
Twill	15/1 to 30/1	26,2 to 28,5	24 to 32	3,5 to 4,9	0,85 to 0,95
Corduroy	15/1 to 30/1	26,9 to 29,0	24 to 32	3,8 to 4,9	0,90 to 1,00
Velvets	20/1 to 40/1	26,9 to 29,5	24 to 32	3,8 to 5,5	0,90 to 1,00
Sheeting	20/1 to 60/1	27,2 to 29,5	24 to 32	3,7 to 4,9	0,90 to 1,00
Shirting	20/1 to 60/1	27,9 to 30,0	24 to 32	3,8 to 4,6	0,90 to 1,00
Rugs	3/1 to 6/1	24,1 to 27,4	24 to 30	3,7 to 4,4	0,80 to 1,00
Home furnishings					
Sheer	15/1 to 60/1	26,9 to 29,5	24 to 32	3,5 to 4,9	0,90 to 1,00
Heavy	3/1 to 12/1	24,1 to 27,5	24 to 30	3,2 to 4,0	0,80 to 0,90
Knit (18–28 cut)					
Single	16/1 to 40/1	26,4 to 29,0	24 to 32	3,5 to 4,9	0,85 to 1,00
Double	20/1 to 60/1	26,9 to 29,5	24 to 32	3,4 to 4,6	0,90 to 1,00

spinners and the number of bales from the 2018/19 crop, which met these requirements. Interestingly, the number of bales increases when the fibre length requirements are raised to longer staple cotton.

The type of spinning system used determines the properties that are most important to ensure better quality, and fewer issues during spinning. Ring spinning is influenced by length, uniformity, strength and fineness (micronaire) of raw cotton material. Rotor spinning is influenced by strength, fineness (micronaire) and length in the order from most important to least important. Therefore, emphasis is placed on the physical properties of the raw cotton and this is why Cotton SA provides the gins with as much high-volume instrument (HVI) information as possible for marketing their cotton. Fibre properties must be managed to create consistency and lower costing. This has an influence on profitability during bale laydown selection, optimisation, and bale management.

The standard properties in ring and rotor spinning (Table 3), are length, strength and micronaire. These are key factors in bale selection, along with the use of the yarn being produced, which are the first considerations that a spinner would take into account before selecting bales to purchase.

The physical properties of a specific batch of cotton influence the yarn that is produced. Table 4 gives a summary of how each physical property can affect the yarn produced. Most of these are about breakages in the yarn, and fabric appearance.

Table 2: Raw cotton requirements and availability for some of the South African spinners for the 2018/19 production year.

South African spinners	Requirements					Number of bales available
	Grade (Upland)	Length (UHML inches)	Micronaire	Strength (gms/tex)	Maturity (%)	
Spinner A Set 1	GM, SM	1,08 to 1,13	3,7 to 4,4	27,5+	86%+	3 489
Spinner A Set 2	SLM	1,05 to 1,10	3,7 to 4,4	27,5+	86%+	302
Spinner B	MIDD	1,08 to 1,13	3,7 to 4,4	27+	86%+	3 237
Spinner C	MIDD	1,08 to 1,20	3,7 to 4,4	27+	86%+	13 619
SA average	-	1,15	3,9	28,3	85%	-

GM – Good middling; SM – Strict middling; SLM – Strict low middling; MIDD – Middling

Table 3: Standard raw cotton properties required for ring and rotor spinning.

Fibre property	Ring spinning	Rotor spinning
Micronaire		
Strength (gms/tex)	28,5	28,5
Length (UHML, inches)	1,10	1,05
Uniformity (%)	82,0	81,5

Regarding fibre length, the longer and finer the fibre, the higher the yarn count. Longer fibres in the yarn overlap, which creates larger surface areas that make contact between individual fibres. This makes the overall cohesion of the spun fibre much stronger. Short fibres do not occur naturally. Cotton bolls on the plant have less than 1,0% short fibre and at the time of harvesting all fibres are about the same length. Mechanical harvesting and ginning can severely damage cotton fibre, affecting fibre length distribution of the crop. Ginning can decrease length and uniformity of the fibres and increase the number of short and broken fibres. Short fibres can cause:

- weaker, hairier or less even yarn;
- more imperfections and faults that normally do not occur;
- higher ends-down levels;
- poorer yarn performance (i.e. slower processing speeds);
- increased waste and fly waste; and
- an influence on fabric appearance.

Fineness of fibre is determined by measuring the micronaire (ug/inch). Micronaire is not a true measure of fineness but an indicator of fineness based on the resistance to air passing through a cotton fibre sample. The fibre fineness/micronaire directly determines the number of fibres in the material cross section. This is an important relationship and influences different yarn properties like material evenness, material strength and yarn count range. Micronaire is also related to fibre maturity. The thickness of the fibre walls is a measure of the maturity – immature fibres will therefore have thin walls. Higher maturity provides better dye uptake.

Table 4: Fibre properties and processing characteristics affected.

HVI fibre property	Processing characteristic affected
Strength	• Yarn and fabric strength • End breaks in spinning and weaving
Length	• Yarn and fabric fineness • Yarn and fabric strength • Nep formation during processing • Formation of pilling • Yarn evenness • Yarn imperfections
Length uniformity/ short fibre	• Processing waste • End breaks in spinning • Yarn evenness • Yarn imperfections
Micronaire/ maturity	• Nep formation during processing • White specks/shinny neps • Yarn and fabric strength • Product appearance • Processing waste • End breaks in spinning
Trash content	• Processing waste • Textile machinery contamination/component wear • Disturbances/stops in knitting • Product appearance • Cotton dust levels
Colour	• Fabric appearance (barré)
Neps	• Fabric neppiness • Waste • Weaving efficiency
UV fluorescence	• Fabric appearance (barré)

The effects of maturity on yarn include:

- increased fibre breakage;
- increased yarn evenness variation;
- higher thin, thick and nep imperfections;
- weaker yarn;
- higher ends-down levels;
- dyeability problems;
- fabric barré; and
- inconsistent dye uptake.

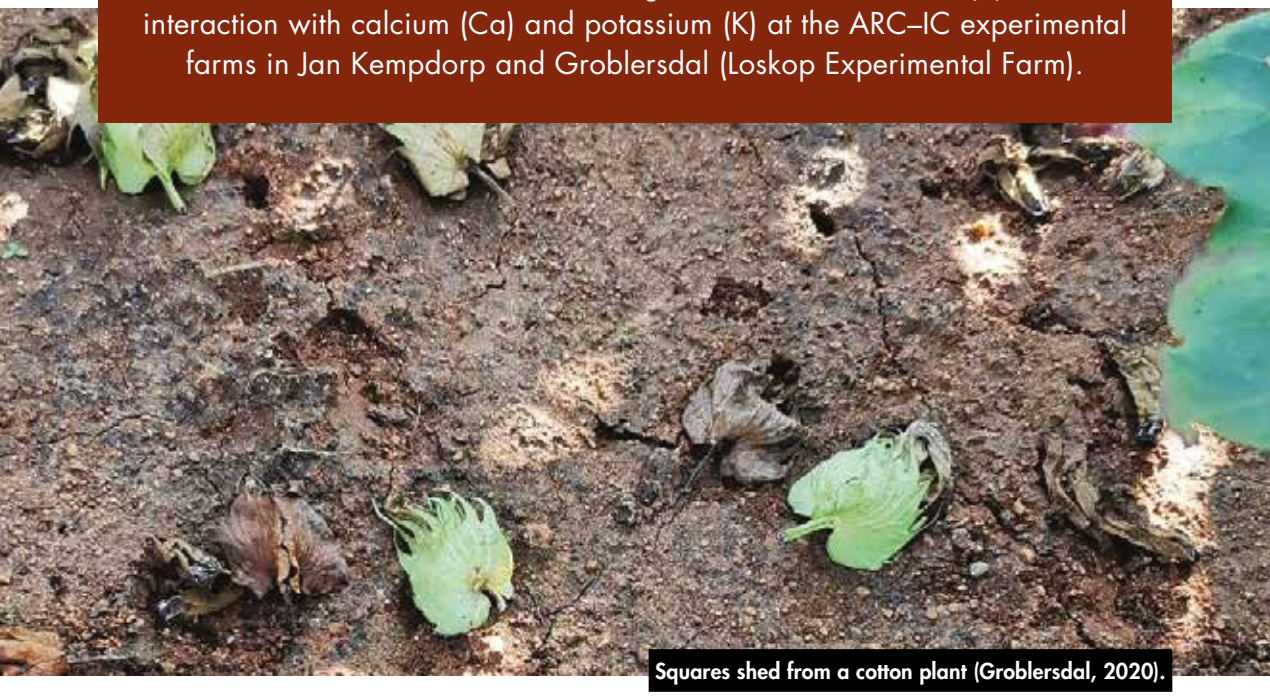
The strength of the fibres affects the strength of spun yarn. Strength effects on yarn include fibre breakage during processing, yarn breakages when the spinning tension is too high (ends down levels), yarn strength, twist levels and subsequent processing (especially weaving preparation and weaving).

Reference: David McAlister – Uster

THE EFFECT OF boron, calcium and potassium on cotton

by Calvin Knight, Cotton SA; Dr Tilla van der Westhuizen; C Fourie and J van Schalkwyk, ARC–IC

Two trials were undertaken to investigate the effects of boron (B) and its interaction with calcium (Ca) and potassium (K) at the ARC–IC experimental farms in Jan Kempdorp and Groblersdal (Loskop Experimental Farm).



Squares shed from a cotton plant (Groblersdal, 2020).

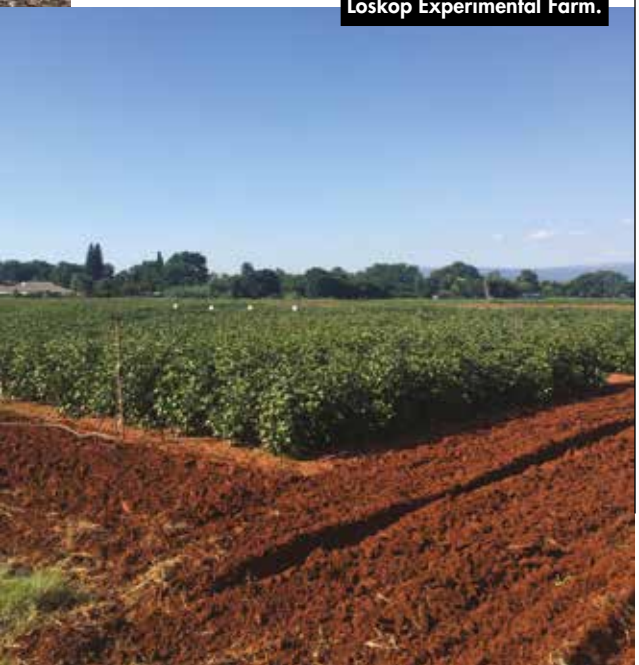
Micronutrients form essential compounds in plants. Boron influences pollen tube growth after pollination and the conversion of nitrogen and carbohydrates into complex substances such as proteins and plant hormones, which are essential for reproductive functions (Chaudhry & Guitchounts, 2003). Boron deficiency is realised in acidic soils, and may affect root tip elongation, while causing wilting, shedding of squares, or chlorosis of young leaves later in the season. Plant hormones regulate the cotton boll's growth and development. Calcium helps to strengthen cell walls and cell division, which aids carbohydrate movement, and therefore influences fibre quality. Potassium is important in boll maturation and regulates turgor pressure for fibre elongation. Deficiencies lead to bolls not opening and leaf margins can be bronzed and curled downwards (Chaudhry & Guitchounts, 2003). There is also

a relationship between fibre strength and the amount of boron applied.

Micronutrients can form toxic chemical structures if applied in too high dosages. Treatments that include microelements must follow strict label recommendations.

For these trials, the aim was to compare fibre strength and fibre length, and the hypothesis was that the application of boron on cotton will decrease the number of squares that are shed early in the season. Each square that is lost, is a lost cotton boll that could have contributed to the yield. The assumption is that the more squares that are retained, the higher the overall yield. However, shedding of squares can lead to the fewer bolls to be bigger and heavier bolls, but sometimes with a higher micronaire. Boron application should be correlated with planting time and the addition of growth regulators, to ensure that there is enough time for the fibre to ripen to produce fibre of an acceptable quality.

Soil composition of micronutrients is important. Depending on the Ca:B or K:B ratios in the soil, the addition of boron helps with the retention of squares. Both potassium and calcium have a positive influence on the fibre quality and the yield. The correct uptake ratio between calcium and potassium for the plant is based on the nature of their similar atomic structure, allowing them to bind in the same way. Therefore, the ratio of calcium to potassium used will affect the uptake of each nutrient into the plant.



Loskop Experimental Farm.

Six treatments included potassium or calcium applications, in combination with, or without boron. Potassium was applied at 75 kg/ha (K1) and at 150 kg/ha (K2), while calcium was applied at 60 kg/ha (Ca60) and at 120 kg/ha (Ca120). In both trials, boron was applied as foliar spray at 4 kg Solubor®/ha, containing 20,5% boron, applied at five weeks post-planting. A total of 800 g Solubor®/ha was applied over the season, which was below the maximum dosage of 4 kg boron/ha per season. The boron concentration in water is important. There should not be more than 1 kg of boron in 400 litres of water. Cotton is very tolerant to boron and it performs well with as much as 6 to 10 ppm of boron in irrigation water (Hake *et al.*, 1996). In these trials, the calcium and potassium treatments were done by adding calcium nitrate ($Ca(NO_3)_2$) and potassium nitrate (KNO_3) to the soil, respectively.

RESULTS

Calcium/boron trial: In terms of quality there was not much difference between the repeats or the different trials. The total number of squares lost in the boron-free treatments were more than the ones lost in the boron treatments, but not significantly so. The yields, however, showed a definite improvement when only calcium was applied (Figure 1). An increase of up to 216,7 kg/ha was achieved in the low calcium treatment (Ca60B0) when compared to the control, while 245,56 kg/ha more was achieved in the higher calcium treatment (Ca120B0) in comparison to the control. When boron was applied in combination with calcium, compared to a boron-only control (Ca0B1), an increase in yield was also achieved, but smaller than when only calcium was applied.

Potassium/boron trial: Although treatments were not significantly different, increased yields were observed in both treatments where potassium alone was added. When boron was applied in combination with potassium, especially at the higher dosage (K2B1), yield increased to over 6 tonnes/ha (Figure 2), though not so much than without boron (K2B0). Results were variable between treatments and inconsistent.

High yield increases in the boron/potassium combination treatments at the lower and higher potassium dosages were not observed in the combination treatments of the calcium/boron trial. Interestingly, the yield increases in the calcium/boron treatments were confounded by the boron additions.

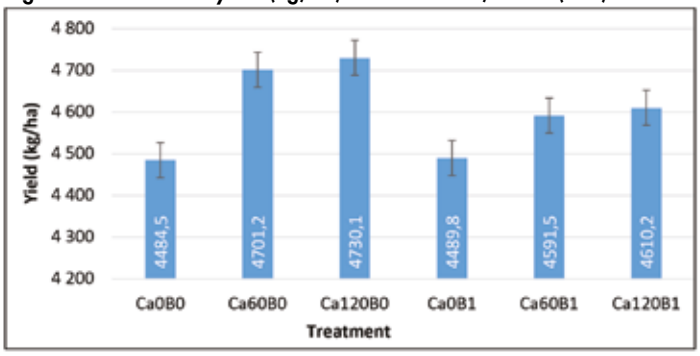
In Figures 3 and 4, the strength values obtained for the two trials were compared. Although all the strength values were above 28 gms/tex, there did not seem to be a significant improvement compared to the controls. However, the high potassium with boron treatment achieved strength values of 29,2 gms/tex, which is marginally higher than the others.

A summary of the results is given in Table 1. Treatments did not differ significantly. Fibre length values were quite long and the strength values were within the acceptable ranges of above 28 gms/tex. The micronaires achieved in the calcium/boron trial were somewhat in the higher range (normal is 3,5–4,9), while those of the potassium/boron trial were between 4,0 and 4,1. The spinning consistency index (SCI) was high in the potassium/boron trial (Table 1).

Table 1: Yield and fibre quality results for the respective trials.

	Calcium/boron trial	Potassium/boron trial
Gin out turn (GOT %)	±45%	±41%
Yield range of all treatments (kg/ha)	4 500–4 750	5 400–6 000
Strength (gms/tex)	28,0–28,7	28,2–29,2
UHML (inches)	$1^{1}/_{8}$"–$1^{5}/_{32}$"	$1^{1}/_{4}$"
Micronaire	4,7–5,0	4,0–4,1
Spinning consistency index (SCI)	128–132	148–153

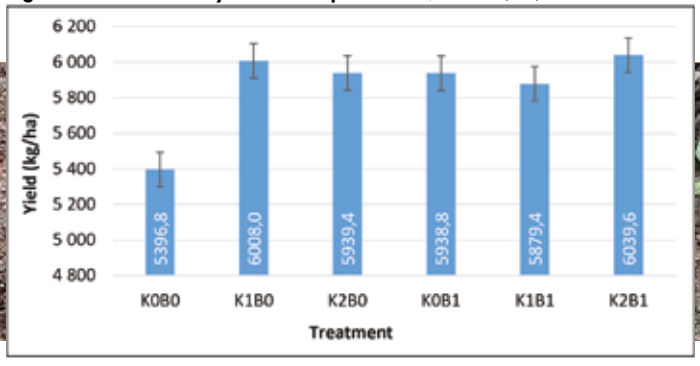
Figure 1: Seed cotton yield (kg/ha) of the calcium/boron (CaB) trial.



The yield increase when potassium was applied (Figure 2) was as high as approximately 600 kg/ha in the lower potassium-only treatment (K1B0) and the higher potassium/boron (K2B2) treatments. This can mean a significant increase in income per hectare for the farmer. At an average seed cotton price of ±R8,00/kg it can result in an additional average gross income of R4 800/ha more.

Although the boron addition showed an increase in crop yield, it did not have an influence on fibre strength when comparing treatments. The trial could be expanded by testing the treatment effects on cotton under drought stress. Although the calcium treatments showed

Figure 2: Seed cotton yield of the potassium/boron (KB) trial.



mixed results, it showed a potential to increase nutrient uptake of microelements. This emphasised the importance of taking soil samples before planting and planning crop fertilisations accordingly.

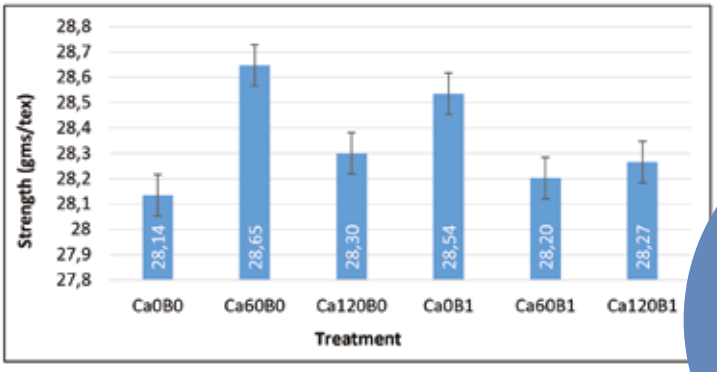
Plant deficiencies in micro-elements do not often occur as most farmers maintain good soil management practices that preserve micronutrients in the soil. Cotton can access and extract large amounts of nutrients from the soil through its tap root system, depending on what is available in the soil.

Understanding the importance of micro-elements in the soil can result in better fibre quality and acceptable yields in marginally growing areas. The results did not confirm significant differences, but showed the importance of potassium and calcium additions to obtain optimum yields. In seasons where conditions are unfavourable, yields might be enhanced by the addition of boron to avoid shedding of squares. The trials were done under optimum conditions and to determine the possible effect of boron alone, stress conditions may have to be introduced. A further trial will be conducted in more detail at the Loskop Experimental Farm during the coming season to monitor the effect of boron on the shedding of squares.

References

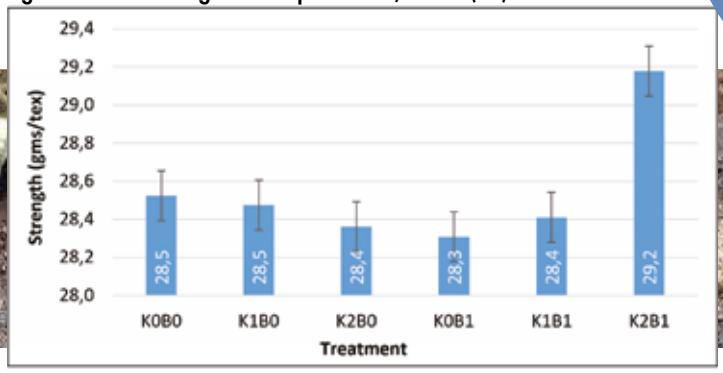
1. Hake, S.J., Kerby, T.A. & Hake, T.D. 1996. *Cotton Production Manual*, Publication 3352, University of California, Division of Agriculture and Natural Resources.
2. Chaudhry, M.R. & Guitchounts, A. 2003. Agronomy and Physiology, Chapter 3. In: *Cotton Facts*, Technical Paper 25 of the Common Fund for Commodities.

Figure 3: Fibre strength of the calcium/boron (CaB) treatments.



> "Micronutrients can form toxic chemical structures if applied in too high dosages."

Figure 4: Fibre strength of the potassium/boron (KB) treatments.



COTTON STRIP TRIALS
RESULTS FOR THE 2019/20 SEASON

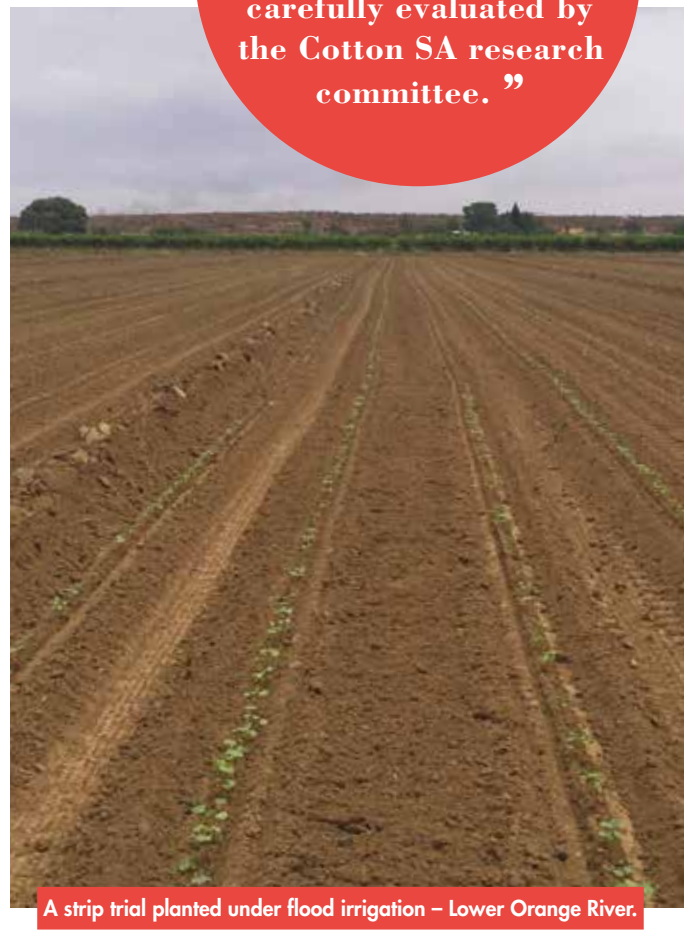
by Dr Annette Bennett, Cotton SA

Several strip trials were done in different cotton production areas. These include KwaZulu-Natal, North West and the Northern Cape. Seed cotton yields (kg/ha) are given in Table 1, as well as fibre qualities for each locality.

Strip trials consisted of at least 12 rows under centre pivot or under dryland conditions of each cultivar. For two localities the yields of Paymaster (PM 3225) and the refugia (DP18 RF) were also determined. Surprisingly, the refugia presented a good comparable yield when managed carefully. Bollworm populations were low this past season.

Micronaires were high in the Upington area (Grootdrink), probably due to excessive rain and abundant water, which caused stress to plants. Plants can grow vigorously when receiving too much rain and irrigation, both adding nitrogen, which could contribute to the escalation in vegetative growth, photosynthesis, and cellulose formation in the fibre, producing a "thicker" fibre (high micronaire). Strip trials should be repeated at multiple localities within a region to obtain a true representation of the cultivar effect. For the producer, valuable information is obtained within his own management system, but the question remains: is it applicable to other farms in the region? The purpose of strip trials and the applicability of results for producers will be carefully evaluated by the Cotton SA research committee.

> "The purpose of strip trials and the applicability of results for producers will be carefully evaluated by the Cotton SA research committee."



A strip trial planted under flood irrigation – Lower Orange River.

Table 1: Results of cotton strip trials for the 2019/20 season.

Cultivars and fibre qualities	Mkuze	Pongola	Schweizer-Reneke	Vaalharts	Luckhoff – Te Vrede Boerdery	Luckhoff – Ou Hans Boerdery (block B)	Groot-drink, Upington – Kühn Boerdery	Groot-drink, Upington – Luttig Boerdery	Modder-rivier	Koedoes-kop – Ricor Boerdery	Makoppa
DP1531 seed cotton yields (kg/ha)	4 024	5 025	500	5 640	6 238	3 463	4 329	4 160	7 769	5 253	5 523
Fibre length (inches – pulled by hand)	1 1/8"	1 3/16"	1 3/16"	1 3/16"	1 7/32"	1 3/16"	1 1/8"	1 5/32"	1 1/4"	1 1/8"	1 3/16"
Fibre strength (gms/tex)	29,7	28,7	27,9	29,6	28,7	30,1	28,8	30,2	29,9	26,8	28,5
Micronaire	4,7	3,9	4,0	4,6	4,3	3,9	5,2	5,2	4,4	4,1	4,0
DP1240 seed cotton yields (kg/ha)	4 583	5 118	1 600	5 606	6 236	4 837	5 661	4 784	7 829	5 680	6 089
Fibre length (inches – pulled by hand)	1 1/8"	1 3/16"	1 3/16"	1 3/16"	1 3/16"	1 3/16"	1 5/32"	1 1/8"	1 3/16"	1 1/8"	1 3/32"
Fibre strength (gms/tex)	30,1	31,8	29,2	30,3	29,8	29,2	32,7	31,8	30,8	29,7	29,0
Micronaire	5,2	4,5	4,6	5,1	4,8	4,6	5,3	5,2	4,1	4,4	4,1
DP1541 seed cotton yields (kg/ha)	4 617	5 009	2 300	5 948	6 250	5 157	6 327	4 576	7 729	5 543	5 843
Fibre length (inches – pulled by hand)	1 3/16"	1 5/32"	1 3/16"	1 3/16"	1 3/16"	1 5/32"	1 5/32"	1 5/32"	1 3/16"	1 1/8"	1 3/32"
Fibre strength (gms/tex)	33,2	30,5	28,3	29,1	29,6	29,1	29,3	29,1	29,1	28,6	27,7
Micronaire	4,5	4,4	4,5	5,3	4,5	3,8	5,3	4,9	4,1	4,5	4,2
Candia seed cotton yields (kg/ha)	*	5 065	2 200	5 428	6 712	5 539	5 827	4 784	8 609	5 846	6 878
Fibre length (inches – pulled by hand)	*	1 3/16"	1 3/16"	1 3/16"	1 1/4"	1 5/32"	1 5/32"	1 5/32"	1 7/32"	1 1/8"	1 3/32"
Fibre strength (gms/tex)	*	28,7	28,1	28,9	28,3	30,5	31,0	29,4	28,9	27,0	28,2
Micronaire	*	3,3	3,5	4,8	4,1	3,7	5,0	5,2	3,9	3,9	3,7
PM3225 seed cotton yields (kg/ha)	*	4547	1700	4012	*	*	*	*	*	*	*
Fibre length (inches – pulled by hand)	*	1 5/32"	1 3/16"	1 3/16"	*	*	*	*	*	*	*
Fibre strength (gms/tex)	*	30,0	30,4	30,1	*	*	*	*	*	*	*
Micronaire	*	4,1	4,1	4,5	*	*	*	*	*	*	*
DP18 seed cotton yields (kg/ha)	4 888	6 800	*	*	*	*	*	*	*	*	*
Fibre length (inches – pulled by hand)	1 1/8"	*	*	*	*	*	*	*	*	*	*
Fibre strength (gms/tex)	30,0	*	*	*	*	*	*	*	*	*	*
Micronaire	4,2	*	*	*	*	*	*	*	*	*	*

PIX – MEPIKWAT CHLORIED

'n Bestuurshulpmiddel by katoenverbouing

deur dr. Tilla van der Westhuizen en Coleen Fourie (LNR–IG)

Katoen kan geweldig vinnig té hoog groei wanneer dit aan optimum groeitoestande blootgestel word. Sekere katoenkultivars – DP1541 B2RF, DP1531 B2RF en selfs DP1240 B2RF – kan 1,8 tot 2 m en hoër groei as gevolg van ruim stikstoftoedienings, baie besproeiingswater of reën, hoë temperature en hoë relatiewe humiditeit. Twee produkte is tans geregistreer, naamlik Pix® en Quat®. Spreektaal onder produsente verwys na die woord "Pix" in die algemeen. Hoewel Pix al vir die afgelope drie dekades as groeireguleerder gebruik is in die verbouing van katoen, het produsente vandag nog vrae oor die tyd van toediening en dosis.

Pix is voordelig vir die beheer van plantgroei om korter plante te produseer wat vinniger en makliker meganies oes en beter bolretensie gee op die eerste 5 tot 10 vrugtakke, met gepaardgaande kanalisering van voedingstowwe na die bol vir veselontwikkeling. Pix versnel ook rypwording van vesel met 7 tot 14 dae. Nadele van katoen wat te hoog groei, sluit in verminderde effektiwiteit wanneer insekmiddels gespuit word, asook 'n mikroklimaat wat voordelig is vir bolvrot. Wanneer katoen te geil groei, speen dit jong bolle af. Ligpenetrasie is laer en plante se fotosintese-kapasiteit word benadeel. Produsente moet dus noukeurig oplet hoe katoen volgens 'n bepaalde produksieprogram groei. Gereelde inspeksies en meet van planthoogtes en internodelengtes kan baie nuttige inligting aan die produsent verskaf om besluite te neem oor hoe en wanneer om Pix toe te dien.

HOE WERK PIX?

Katoenblare absorbeer Pix en dit word sistemies deur die plante vervoer. Pix verlaag die gibbereliensuurkonsentrasie. Wanneer minder gibbereliensuur vervaardig word, veroorsaak dit korter takke, want selverlenging word vertraag. Pix-toedienings veroorsaak dat nuwe internodes korter is en blare kleiner is. Selle van plante wat Pix ontvang het, is kleiner en digter, wat chlorofielkonsentrasies in die blare verhoog en donkerder groen blare veroorsaak.

WANNEER MOET PRODUSENTE PIX TOEDIEN?

Om 'n sekere dosis Pix toe te dien, moet die produsent sy unieke situasie in ag neem. Oormatige vinnige toename in planthoogtes is een van die eerste tekens waarna 'n boer moet oplet om oor sy Pix-toedienings te besluit. Dit behoort redelik vroeg – met eerste blomknopstadium – toegedien te word, omdat blare van jong katoen baie aktief is en baie koolhidrate produseer terwyl daar min klein bolletjies aanwesig is wat hierdie reserwes kan gebruik. Dit lei tot oormatige vegetatiewe groei. Tydige toediening van Pix kan daarom voordelig wees. 'n Pix-proef is die afgelope seisoen op die Loskop-proefplaas gedoen as 'n twee-faktoriale eksperiment, waar drie kultivars bestudeer is onder Pix-toedienings, in 'n ewekansige uitleg met vier herhalings.

Vyf behandelings is vergelyk, waar die eerste behandeling 'n kontrole was deur 'n zero/geen-Pix-toediening. Die tweede behandeling het 'n bespuiting teen 150 ml/ha ingesluit, en die derde behandeling 'n bespuiting teen 300 ml/ha, gebaseer op groei (mm) per dag deur tweeweeklikse metings. Vir berekening van die plantgroei per week, is planthoogtes van ses plante gemeet per behandeling, per herhaling weekliks, of tweeweekliks (totaal van 24 plante per kultivar). Onder normale omstandighede groei 'n plant ongeveer 7,1 mm per dag (persoonlike kommunikasie – J. Steyn; bereken

deur M. Dippenaar, voorheen van LNR–IG). Navorsing het getoon dat waar katoen meer as 50 mm oor 7 dae gegroei het, daar 'n groei van 7,14 mm per dag was, wat min of meer dieselfde is. Indien plante ongeveer 7,1 mm groei per dag, is dit nie nodig om 'n Pix-bespuiting toe te pas nie, en meting moet die daaropvolgende week weer plaasvind om te sien of plante vinniger begin groei het. Indien die groei van 7,1 mm per dag oorskry word, kan Pix oorweeg word. Oor 'n periode van 20 weke sal katoen groei tot 'n hoogte van 1,2 m, beginnende vanaf 'n planthoogte van 20 tot 30 cm. Begin deur die plantgroei tweeweekliks te bereken deur die totale groei in millimeter te deel deur die benaderde syfer van 7 mm groei per dag.

VOORBEELD

'n Gemiddelde groei van 120 mm is gevind vir plante op 'n land gemeet oor 14 dae. Die gemiddelde groei per dag is dus 8,57 mm. Deel die gemiddelde groei per dag deur die algemeen aanvaarde syfer van 7 mm per dag (soos verduidelik bo), d.w.s. 8,57/7 = 1,22 mm per dag. Vermenigvuldig dit met die aanbevole dosis van 150 ml/ha, d.w.s. 1,22 x 150 = 183 ml/ha.

Pix-proef te Loskop-proefplaas.

Die Australiese manier van toediening.

Tabel 1: Toegediende Pix-dosisse per behandeling oor tyd.

Kultivars	Behandelings	6/1/2020 ml	20/1/2020 ml	3/2/2020 ml	17/2/2020 ml	28/2/2020 ml	6/3/2020 ml
DP1240	150 ml/ha	149	172	258	326	326	250
	300 ml/ha	338	365	533	597	597	
	Pix-lineaal	150	250	250	250	250	350
	Australiese metode	700	800	*	*	*	*
DP1531	150 ml/ha	174	196	269	320	320	200
	300 ml/ha	361	414	570	607	607	
	Pix-lineaal	150	250	250	250	250	350
	Australiese metode	1 000	500	*	*	*	*
DP1541	150 ml/ha	156	175	261	312	312	300
	300 ml/ha	346	356	516	564	560	
	Pix-lineaal	150	250	250	250	250	350
	Australiese metode	1 000	500	*	*	*	*

*Geen bespuiting.

Gebruik die berekende dosis van 183 ml/ha vir bespuiting (behandeling 2).

Vir 'n aanbevole dosis van 300 ml/ha word dieselfde berekening gebruik as hierbo, d.w.s. 1,22 mm groei per dag x 300 ml/ha = 366 ml/ha. Hierdie berekende dosis is gebruik vir behandeling 3. Hierdie toegepaste behandelings behoort katoengroei in te perk vir tenminste twee weke. Meet groei die volgende week indien dit nodig was om te spuit.

Vir proefdoeleindes, is 'n vierde behandeling met die standaardmetode van Pix toegedien, volgens etiketvoorskrifte, deur gebruik te maak van die Pix-lineaal. Dit sluit in bespuitings tydens eerste blom, piek blom en aan die einde van die blomtydperk, in dosisse wat gewissel het van 150 tot 350 ml/ha (Tabel 1).

Die vyfde behandeling, genoem die Australiese metode, is gebaseer op die beginsel van 800 tot 1 000 ml Pix/ha as eerste toediening, met 'n daaropvolgende toediening teen die aanvang van bolformasie tot 'n totaal van 1,5 liter Pix/ha, gespuit onder optimale toestande as die plante geen stres ondervind nie.

Met die plantdatum geneem op 15 November, is die aanvang van blomknopvorming in die begin van Januarie (49 dae na plant), terwyl bolvorming van middel tot einde Januarie voorkom, ongeveer 63 dae na plant. Planthoogtes is geneem op ongeveer 14 weke en oesopbrengste wys duidelike verskille aan (Tabel 2).

RESULTATE (TABEL 2)

DP1541 staan bekend as 'n geil groeier. Betekenisvolle verskille is gevind in planthoogte tussen die zero-Pix-behandeling en die Australiese manier van Pix-toediening. Saadkatoenopbrengs vir DP1531 en DP1541 het ook noemenswaardig verskil, maar in veselopbrengs het net DP1531 in vergelyking met die zero-Pix-behandelings van elke kultivar, verskil.

Saadkatoenopbrengs, veselpersentasie en vesel geproduseer per hektaar het betekenisvolle verskille by van die kultivars en Pix-behandelings gelewer. DP1531 B2RF het die hoogste saadkatoenopbrengs met die Australiese metode van Pix-toediening gelewer. DP1531 het 'n verhoogde saadkatoenopbrengs van 1 007 kg/ha gelewer teenoor die zero-Pix-behandeling vir dieselfde kultivar en 'n veselopbrengs van 2 629 kg/ha. 'n Betekenisvolle verhoging van ongeveer 397 kg vesel/ha is verkry vir DP1531 B2RF met die Australiese metode in vergelyking met die zero-Pix-kontrole. Vir besproeiingskatoen kan hierdie verhoging in vesel van ongeveer 400 kg/ha, 'n addisionele inkomste per hektaar beteken, indien katoen geproduseer en gespuit is onder dieselfde kondisies. Die verhoging in ±400 kg/ha @ R25,00/kg beteken die toename in veselopbrengs kan 'n aansienlike inkomste per hektaar beteken (prys van vesel/kg is geneem as 'n hipotetiese bedrag). Die Australiese metode van Pix-toediening kan goed

werk as die seisoen goed verloop en toestande gunstig is soos onder die proeftoestande. Sou abnormale produksietoestande egter voorkom, kan die gebruik daarvan ander resultate lewer.

Die Pix-lineaal het 'n verhoogde saadkatoenopbrengs by die DP1531- en DP1541-kultivars gegee, maar nie betekenisvol nie. Uit die Loskopproefresultate blyk dit dat Pix 'n verhoging in opbrengs gelewer het. In literatuur word dikwels nié opbrengsverhogings genoem nie; net dat die grootste voordeel van Pix die vergemakliking van meganiese pluk deur die oes van korter plante is. Geen betekenisvolle verskille is gevind tussen behandelings vir mikronêr, vesellengte en veselsterkte nie, en al die behandelings se resultate was binne die normale aanvaarbare waardes.

Die resultate het getoon dat met 'n alternatiewe manier van plantgroeibeheer in die geval van DP1531, 'n suksesvolle verhoging in opbrengs wel kan realiseer, terwyl aanvaarbare saadkatoenopbrengste ook verhaal word wanneer die geregistreerde Pix-lineaalmetode gevolg word.

ALGEMENE AANWYSINGS

- Monitor jou gewas voortdurend. Die ou spreekwoord geld: as jy nie meet nie, sal jy nie weet nie! Volg etiketvoorskrifte noukeurig.
- Voeg 'n buffer en kleefmiddel by om te verhoed dat reën Pix afwas.
- Pix mag glad nie toegedien word op katoen wat onder stres is nie (byvoorbeeld weens droogte, koue, swamsiektes, en insek- of haelskade).
- Spuit Pix vroeg gedurende optimumtoestande met meervoudige toedienings om stamontwikkeling te beheer en om eersteposisieblomknoppe te behou.
- Candia BG RF is 'n kortgroeiende kultivar en is sensitief vir Pix, maar kan onder sekere toestande welig groei en ook baat by Pix-toediening onder dieselfde riglyne. Nog navorsing is nodig in die verband.

Met dank aan Jurie Steyn ('n private konsultant) vir insette verskaf en finalisering van die protokol.

Tabel 2: Planthoogtes, saadkatoen- en veselopbrengs tussen kultivars van onderskeie Pix-behandelings tydens die 2019/20-seisoen.

Behandelings	Planthoogtes	Saadkatoenopbrengs (pluksel)	Vesel % ("gin out turn")	Veselopbrengs	Veselopbrengsverskille met die zero-Pix-kontrole/kultivar
	cm	kgha^{-1}	%	kgha^{-1}	kgha^{-1}
DP1240 – zero Pix	71,8 bcde	4 637 ef	41,5 d	1 925 g	-
DP1240 – 150 ml/ha	70,2 de	4 677 def	40,8 d	1 906 g	19
DP1240 – 300 ml/ha	70,5 cde	4 853 cdef	41,3 d	2 002 efg	77
DP1240 – lineaal	66,5 e	4 709 def	41,6 d	1 961 fg	36
DP1240 Australië	69,2 de	5 221 bcde	41,1 d	2 147 cdefg	222
DP1531 – zero Pix	82,1 a	4 990 cdef	44,7 ab	2 232 bcde	-
DP1531 – 150 ml/ha	71,8 bcde	5 347 bc	44,4 bc	2 374 abc	142
DP1531 – 300 ml/ha	76,0 abcd	5 622 ab	44,0 bc	2 475 ab	243
DP1531 – lineaal	78,9 ab	5 400 bc	43,6 c	2 352 bc	120
DP1531 Australië	76,7 abcd	5 997 a	43,8 bc	2 629 a	397
DP1541 – zero Pix	80,5 a	4 521 f	45,7 a	2 066 defg	-
DP1541 – 150 ml/ha	69,2 de	4 940 cdef	44,8 ab	2 213 bcdef	147
DP1541 – 300 ml/ha	69,4 de	5 028 cdef	44,5 bc	2 239 bcde	173
DP1541 – lineaal	78,4 abc	5 006 cdef	44,1 bc	2 209 bcdef	143
DP1541 Australië	65,2 e	5 229 bcd	43,7 bc	2 288 bcd	222
LSD Fisher	8,1	584,8	1,1	270,3	
CV %	7,8	8,1	1,8	8,6	

*Behandelings met dieselfde simbole verskil nie betekenisvol nie ($p < 0,05$).

RYWYDTES ONDER DROËLANDPRODUKSIE

deur Jurie Steyn, 'n private konsultant

Vogbewaring in grond is vir die droëland-katoenboer van uiterste belang. Plante kompeteer vir vog, en die plantpopulasie in verhouding met beskikbare vog het 'n invloed op vrugvorming, rypwording van die vesel, opbrengs, asook die uiteindelike bepaling van netto winsmarge. Indien minder plante of rye geplant word, is daar teoreties meer vog in die grond beskikbaar vir die bestaande plante. Hulle presteer dan beter, omdat daar minder kompetisie is vir vog. Terselfdertyd beteken minder plante minder saad wat gesaai is, wat insetkoste sny, maar ook minder plante wat bemes en bespuit moet word, wat 'n indirekte besparing op die algehele bestuur van die plante beteken.

Om dié kwessie te bevestig, is 'n grootskaalse droëlandproef (84 ha in totaal) in Roedtan gedoen. Voorheen is soortgelyke proewe vir die kommersiële boer gedoen, as ewekansige blok-ontwerpe, maar op 'n kleiner skaal/proefbasis (*KatoenSA*, 2010), met 'n eenvormige plantestand onder gereguleerde proeftoestande en met die hand geoes. Die doelwit was om te bepaal hoe die kultivars op groot skaal presteer. Aangesien die pluk en weeg van rye (herhalings) afsonderlik egter nie prakties moontlik is op groot skaal nie, is totale rye per behandeling per kultivar saam geweeg ná masjienpluk, net as 'n vergelyking en nie in 'n statistiese proef nie. Al die bestaande kultivars (DP1531, DP1541, DP1240 en Candia) is uitgeplant in behandelings van volrye, enkel-oorslaanrye en dubbel-oorslaanrye. Die stroke in Roedtan het 'n gemiddeld van vyf hektaar beslaan. Alle toedienings per kultivar tydens die proef was dieselfde wat betref onkruiddoders, insekdoders, ens. Die mikpunt was om opbrengs en veselkwaliteit van die kultivars tussen die drie behandelings van ry-wydtes te vergelyk.

RESULTATE

Saadkatoenopbrengste was oor die algemeen laag, hoofsaaklik te wyte aan min reën. Op droëland is finale plantestand, ontkieming en groeikrag, faktore wat dikwels in ag geneem moet word met vergelyking van oesopbrengste. Die plantestand het baie gewissel, en in dié geval was dit moeilik om die groot oppervlaktes op dieselfde tydstip te plant. DP 1541 is later geplant, en het 'n swak stand van tot so min as 7 000 tot 8 000 plante per hektaar gehad (Tabel 1). Daar word dus nie veel klem gelê op dié kultivar in verdere bespreking nie.

DP1240 en Candia het met dubbel-oorslaanrye die hoogste opbrengste gelewer, terwyl DP1531 met enkel-oorslaanrye 'n effens beter opbrengs gelewer het as volrye en dubbel-oorslaanrye (Figuur 1). Oesopbrengste is laag en kan hoër wees onder droëlandproduksie. In dié geval was daar nie genoegsame reën om 'n beter opbrengs te verseker nie.

Hierdie verskynsel wys die produsent dat 'n egalige plantestand beduidend kan wees in die bepaling van oesopbrengste. Die risiko is hoër vir 'n produsent om die dubbelrysisteem te volg wanneer dit 'n goeie reënseisoen is, want die verwagte plantestand per hektaar sal moontlik laer wees as wat verlang word. Onder gemete toestande was die opbrengs van Candia die hoogste met

Tabel 1: Plantestand tussen behandelings per kultivar.

Kultivars	Volrye	Enkel-oorslaanrye	Dubbel-oorslaanrye
DP1541	7 326	5 692	9 168
DP1531	23 198	13 010	15 262
DP1240	26 861	28 461	15 262
Candia	26 861	21 142	26 251

dubbel-oorslaanrye. Daar kan geredeneer word dat dié kultivar juis vergelyk moet word wat betref prestasie vir ontkiemingspotensiaal, groeikrag en plantestand wat verkry is, soos wat die werklike situasie was tydens uitvoering van die proef en soos ervaar deur die produsent. Van belang is ook die veselkwaliteit wat verkry is (Tabel 2).

KWALITEIT

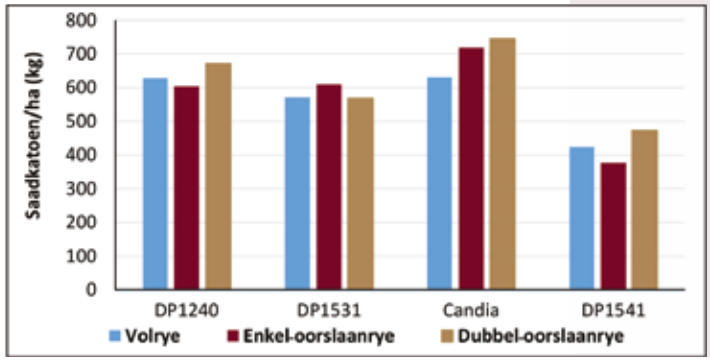
Kwaliteit by al die behandelings en kultivars het binne die normale perke geval vir mikronêr, lengte en sterkte van die vesel.

Die vesel by die enkel- en dubbel-oorslaanrye by elke kultivar was langer as by die volrybehandeling. Mikronêr was min of meer dieselfde, tussen 3,6 en 4,7. Die veselsterktes was hoër met die dubbel-oorslaanrye in vergelyking met die volrye vir die kultivars DP1240, Candia, DP1541, en min of meer dieselfde vir DP1531 (Tabel 2). Die eenvormigheid of "spinning consistency index (SCI)" is hoog by alle behandelings, wat ooreenstem met lengtes wat verkry is. Enkel- en dubbel-oorslaanrye het bewys dat langer vesel van goeie kwaliteit verkry kan word op droëland, selfs onder strestoestande.

SLOTSOM

Enkel-oorslaanrye blyk beter opbrengste te lewer in die geval van Candia en DP1531 as volrye onder die bepaalde variërende plantestand onder droëlandtoestande, terwyl by DP1240 en Candia, dubbel-oorslaanrye beter as volrye gevaar het. Die sukses in opbrengs vir die gebruik van dubbel-oorslaanrye kan riskant wees indien plantestand ingeperk word. Om veilig te wees, sal enkel-oorslaanrye dalk 'n veiliger keuse wees, omdat dit moeilik is om te voorspel wat later in die reënseisoen gaan plaasvind. Ontkieming, aanvanklike vog met plant, en beskikbare vog later in die seisoen, wat betref reënval en vog in die grond tussen die rye, is baie belangrik vir opbrengs en om kwaliteit te verseker.

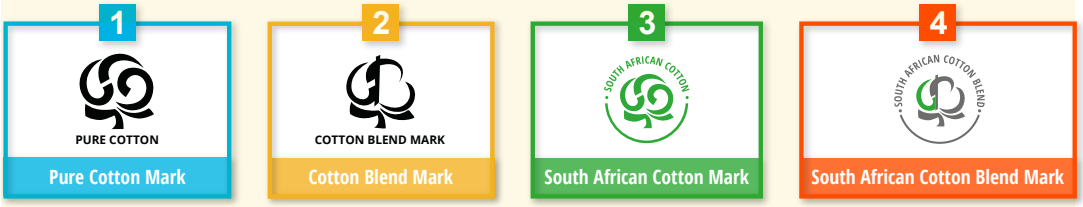
Figuur 1: Saadkatoenopbrengste (kg) vir die Roedtan-proef.



Tabel 2: Veselkwaliteite tussen behandelings.

Kultivars	Behandelings	GOT (%)	Lengte (UHML)	Lengte (met hand getrek in duime)	Sterkte (gms/tex)	SFI (short fibre index)	Mikronêr	Eenvormigheid SCI (>130–140)
DP 1240	Volrye	43%	1,07	$1^{1}/_{16}$"	31,04	6,4	4,6	138,3
	Enkel-oorslaanrye	42%	1,08	$1^{3}/_{32}$"	29,84	6,5	4,4	135,3
	Dubbel-oorslaanrye	43%	1,09	$1^{3}/_{32}$"	31,25	6,1	4,3	144,5
DP 1531	Volrye	43%	1,16	$1^{5}/_{32}$"	29,03	5,7	4,0	150,3
	Enkel-oorslaanrye	45%	1,14	$1^{5}/_{32}$"	30,23	6,0	3,8	153,3
	Dubbel-oorslaanrye	45%	1,13	$1^{1}/_{8}$"	28,90	5,8	4,3	142,8
DP 1541	Volrye	46%	1,06	$1^{1}/_{16}$"	28,72	7,48	4,7	125,8
	Enkel-oorslaanrye	42%	1,13	$1^{1}/_{8}$"	29,40	5,5	4,2	147,3
	Dubbel-oorslaanrye	44%	1,12	$1^{1}/_{8}$"	29,61	6,3	4,5	138,5
Candia	Volrye	45%	1,09	$1^{3}/_{32}$"	30,11	6,4	4,3	139
	Enkel-oorslaanrye	46%	1,18	$1^{3}/_{16}$"	30,72	5,5	3,7	155,3
	Dubbel-oorslaanrye	45%	1,18	$1^{3}/_{16}$"	30,38	6,0	3,6	157,8

THE SOUTH AFRICAN COTTON BLEND MARK



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The Pure Cotton Mark™ is registered for 17 applications (classes), from clothing to medical products, textiles, yarns, and other products. The Cotton Blend Mark™, is registered for 15 applications for services such as foodstuffs, stationery, textiles, paints, agricultural products and many others.

In December 2019, Cotton SA announced the further application of a new "green" South African Cotton Mark, which was developed from the Pure Cotton Mark™. The Cotton Blend Mark™ was further developed to also include the South African Cotton Blend Mark for applications that contain at least 33% cotton on a mass balance principle of at least 20% local cotton, versus 80% imported cotton. The cotton mark is now available in four versions, to include the Pure Cotton Mark™, the Cotton Blend Mark™, the South African Cotton Mark and the South African Cotton Blend Mark.

The circular design applied to the new marks to form the new South African marks, represents the integrated collaboration of the industry (taking hands, forming partnerships and working together) to achieve a quality cotton end-product, completing the circle. This circular design represents the cotton cycle: from production to seed cotton harvested in round bales, to the production of the spiral-shaped fibres in the gin, to yarn that is spun onto bobbins by the spinner, to finished rolls of fabric – the end-product.

The green-coloured "C" in the South African Cotton Blend Mark symbolises the growth of the cotton industry towards sustainably sourced, homegrown cotton and producers that are moving towards sustainable production. The black "B" in the rest of the cotton boll represents synthetic blends.

This South African Cotton Blend Mark of Cotton SA provides the local cotton industry with a mark they can identify with, to build a local brand for products that are made from a combination of materials. The South African Cotton Blend Mark displayed on products and/or swing tags gives the consumer the confidence that they are supporting the South African cotton farmer.

Any South African textile manufacturer, clothing manufacturer, retailer or personal and homecare product manufacturer may apply to become an authorised user of the Cotton Mark and Cotton Blend Mark. They pay a license fee to use the mark.

"The fit is perfect, mum, and I feel so cool!"

People who know, believe in the Cotton Mark. When the Cotton Mark guarantees that the dress, the shirt, the towel or anything else you're buying is quality-tested, 100% pure cotton, you can be sure it is. The Cotton Mark tells you that your cotton purchase will hold its shape and colour and resist shrinking. To make sure you are getting quality, look first for the Cotton Mark. And if you can't find it, ask for it. It's your right to get your guarantee.

Pure cotton and quality,
and that is a promise.

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