South Africa GM crop area: 2021/22 production season estimate

Prepared by BFAP

for

CropLife South Africa

Dec 2023

BFAP
DATA DRIVEN INSIGHT

Genetically modified crops in South Africa

In 2022, still only cotton, soybeans and maize that are commercially planted

BFAP DATA DRIVEN INSIGHT

GM Cotton events approved and planted		
Approval year	**Trait**	**Event**
1997	IR	MON531
2000	HT (glyphosate)	MON1445
2000	HT (glyphosate)	MON1698
2003	IR	MON15985
2005	IRxHT stack (glyphosate)	MON531 x MON1445
2007	HT (glyphosate)	MON88913
2007	IRxHT stack (glyphosate)	MON88913 x MON15985

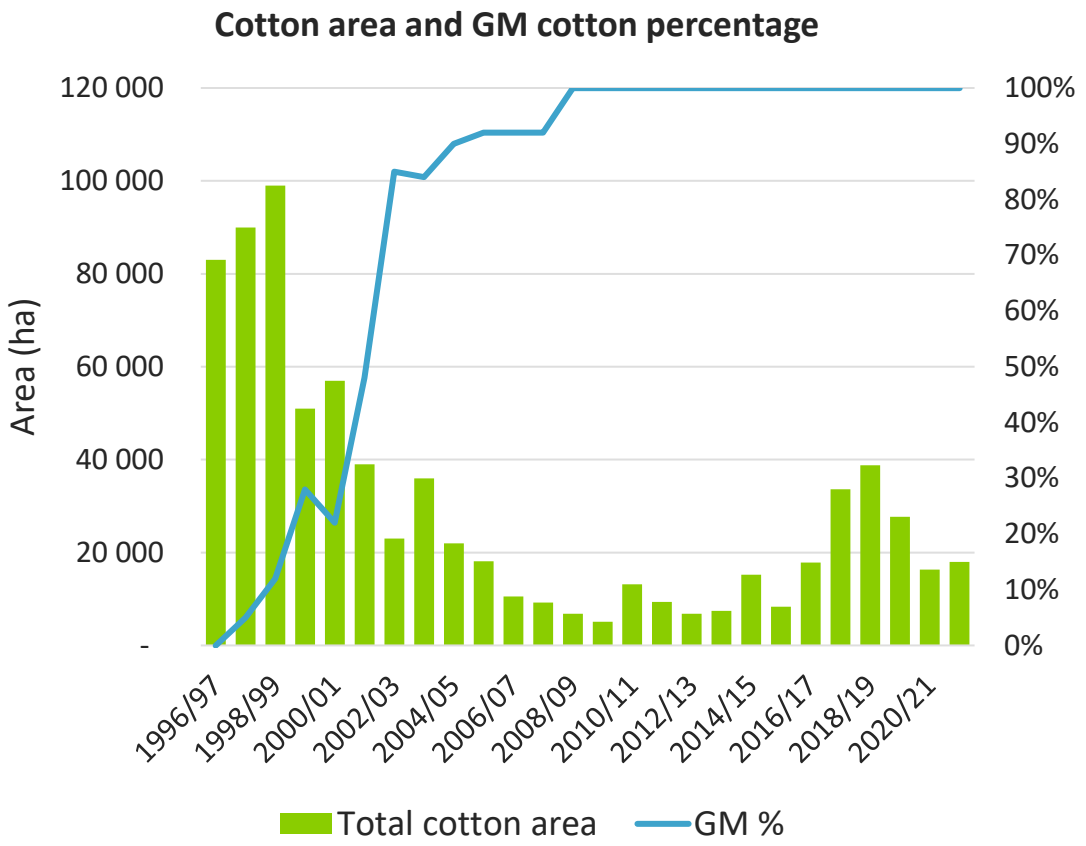
GM Soybeans events approved and planted		
Approval year	**Trait**	**Event**
2001	HT (glyphosate)	GTS 40-3-2

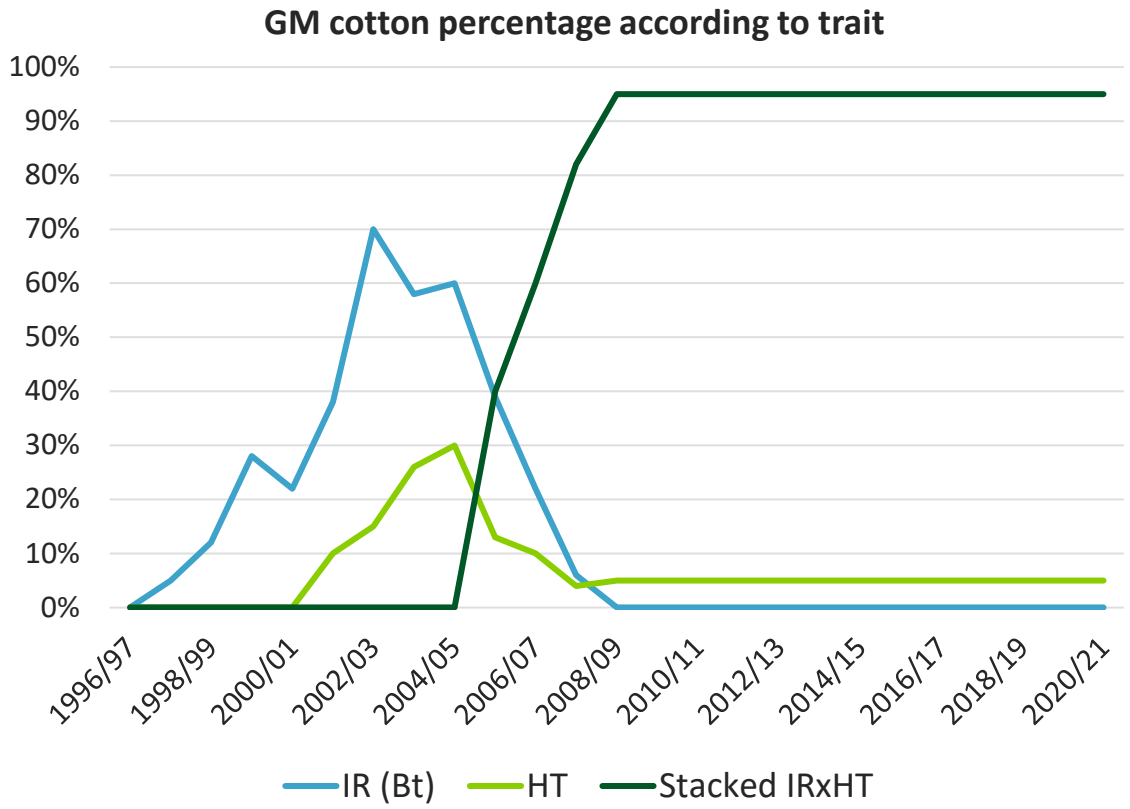
IR = Insect-Resistance
HT = Herbicide-Tolerance
Previously planted but discontinued or not available for commercial planting in 2022

GM Maize events approved and planted		
Approval year	**Trait**	**Event**
1997	IR	MON810
2002	HT (glyphosate)	NK603
2003	IR	Bt11
2007	IRxHT stack (glyphosate)	MON810 x NK603
2010	HT (glyphosate)	GA21
2010	IRxHT stack (glyphosate)	Bt11 x GA21
2010	Stacked IR	MON89034
2010	IRxHT stack (stacked IR & glyphosate)	MON89034 x NK603
2014	IRxHT stack (stacked IR, glyphosate & glufosinate)	TC1507 x MON810 x NK603
2018	IRxHT stack (stacked IR, glyphosate & glufosinate)	MON89034 x TC1507 x NK603

- A number of events have been approved and commercialised, but phased out and discontinued as new technologies became available. Some have only been discontinued temporarily, with plans to bring them back to the market in combination with newer / other events.
- While a few other GM cotton events received general release approval in 1997, these were never commercially planted at scale.
- GM events for drought-tolerance and 2.4-D herbicide-tolerance in maize have been approved for General Release, but not yet commercialised or commercially planted by 2021.
- TC1507 infers tolerance to glufosinate herbicide in maize, but for the 2014 and 2018 commercial releases, the TC1507 event is only used as selection marker. Glufosinate is not registered for use on maize in SA, and the seed as not marketed as glufosinate tolerant.
- Multiple stacked maize and soybean events / products have received Commodity Clearance to enable imports from the USA and South America, but Commodity Clearance is for imports only, and does not allow for cultivation.
- Commercial plantings of stacked IRxHT (Intacta RR2 Pro) soybeans started in 2022.

GM cotton

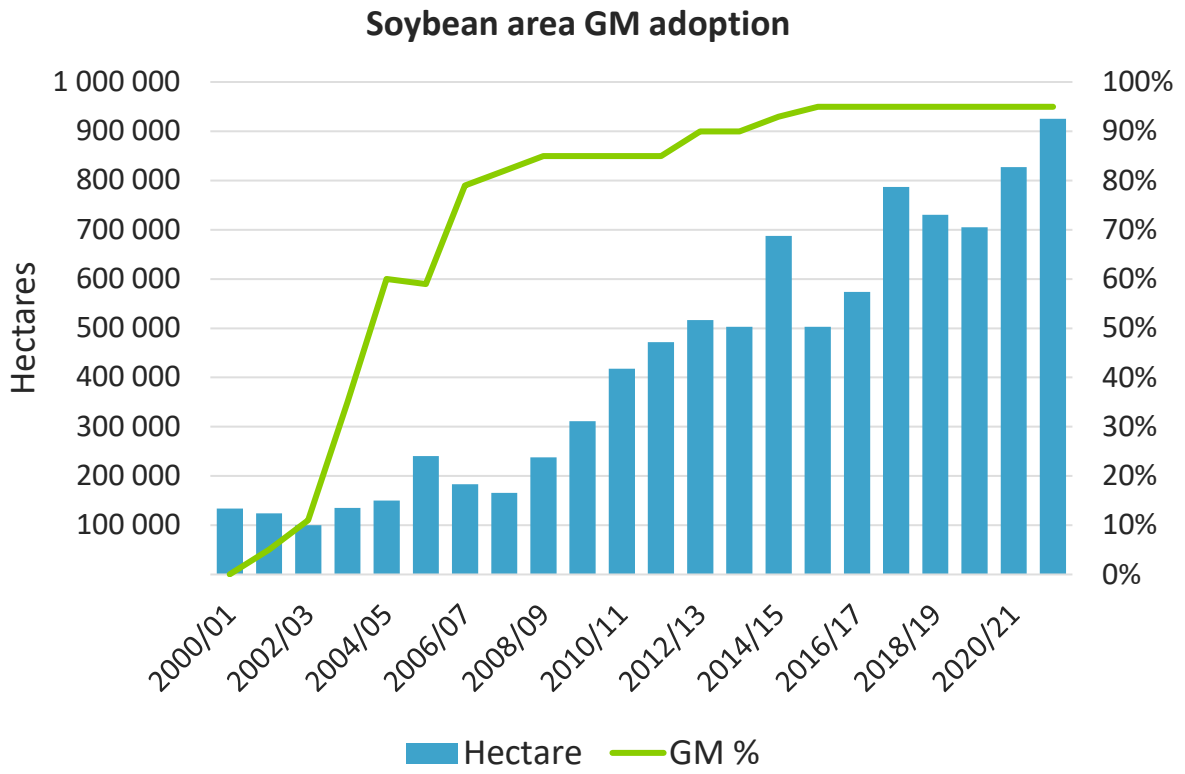




- In 2022, 100% of the 18 018 hectares of cotton planted in South Africa were genetically modified.
- There was no conventional cotton seed available for planting in the 2021/22 production season.
- 95% of the cotton area was planted to stacked cotton seed with Bollgard II insect-resistance & Roundup Ready Flex herbicide-tolerance.
- The remaining 5% was planted to Roundup Ready Flex single trait seed as the mandatory refugia area.
- Driven by the Southern African Sustainable Cotton Cluster and higher international prices, the cotton industry has seen some revival from 2017, but the industry remains a shadow of its former self largely due to the capital requirements and management difficulties of harvesting (compared to grains and oilseeds), relatively high prices for competing crops, and frustrations with the ginning and marketing of the product.

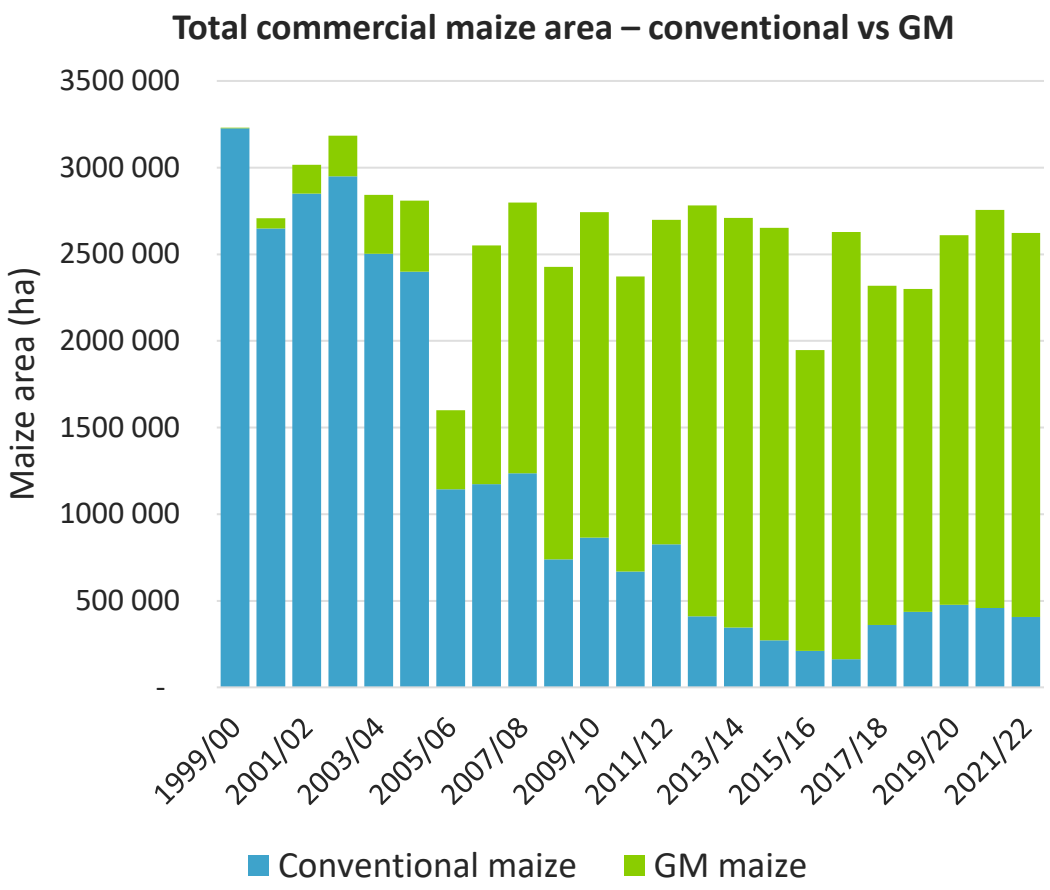
GM soybeans

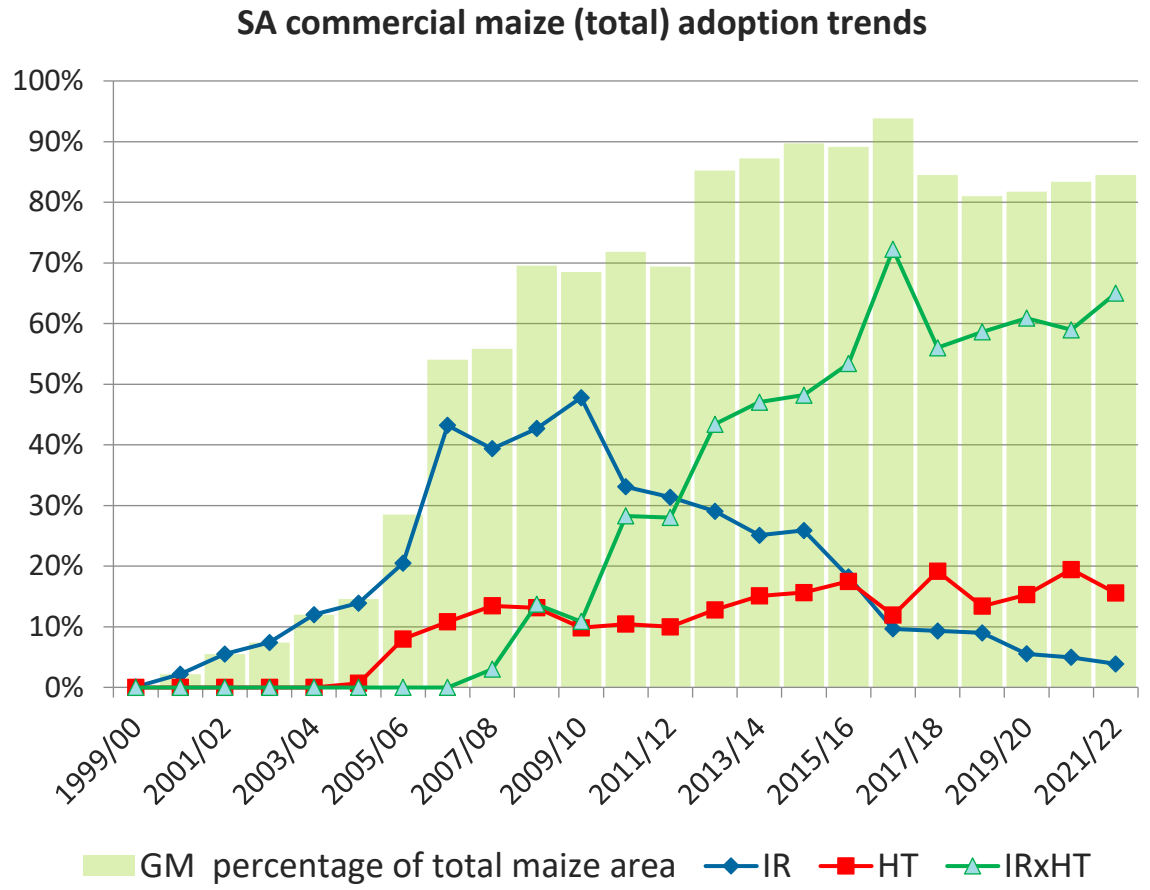
- The South African soybean industry has seen tremendous growth over the last 15 years, and in 2021, with favourable prices at planting time, soybean producers planted 925 300 hectares.
- However, since the release of HT glyphosate-tolerant beans in 2001, there has not been any additional GM technology releases.
- Historically, soybean yield trends in South Africa have lagged that of the larger international producers, partly because seed companies have been hesitant to release new soybean varieties (germplasm) and advanced GM traits in South Africa. Because soybeans is a self-pollinating crop, and 'farmer privilege' allows for farmers to replant seed produced on their own holdings, seed companies have been unable to collect the required return on investment in innovation.
- In an industry effort to address this situation, the statutory Breeding and Technology Levy system that is managed by the South African Cultivar and Technology Agency (SACTA) for wheat, barley, and oats, was extended to also include soybeans.
- Currently the soybean levy sits at 1.2% of the previous two years' average SAFEX price, of which about 5% is allocated towards administration and collection services, and 20% to development/transformation. 16.67% of the remaining 75% is allocated to the GM HT trait owner, and the remainder, pro-rata their market share, to the owners of the germplasm.
- It seems as if the soybean levy collection system is functioning well and reaching its objectives, as in 2021 and in 2022 two companies registered 4 new GM events and combinations, and between 2019 and 2023 56 new seed varieties have been registered.
- SACTA's seed company market share estimation methodology will likely be challenged when additional GM events and traits from more seed companies enter the market, but all parties seem keen to find sustainable and workable solutions.



- According to SANSOR, over the 5 years 2017-2021, non-GM soybean seed sales made up only 1.26% of all local soybean seed sales.
- However, close to 80% of the total soybean area is planted to farm saved seed, and for this reason the GM adoption (still only glyphosate-resistance) estimate errs on the conservative side at 95%.
- MON87701 x MON89788 soybean seed (Intacta RR2 Pro, which is a insect-resistance trait stacked with a new glyphosate-tolerance trait) was first planted in 2022 and should see more substantial plantings in the 2023/24 production season.

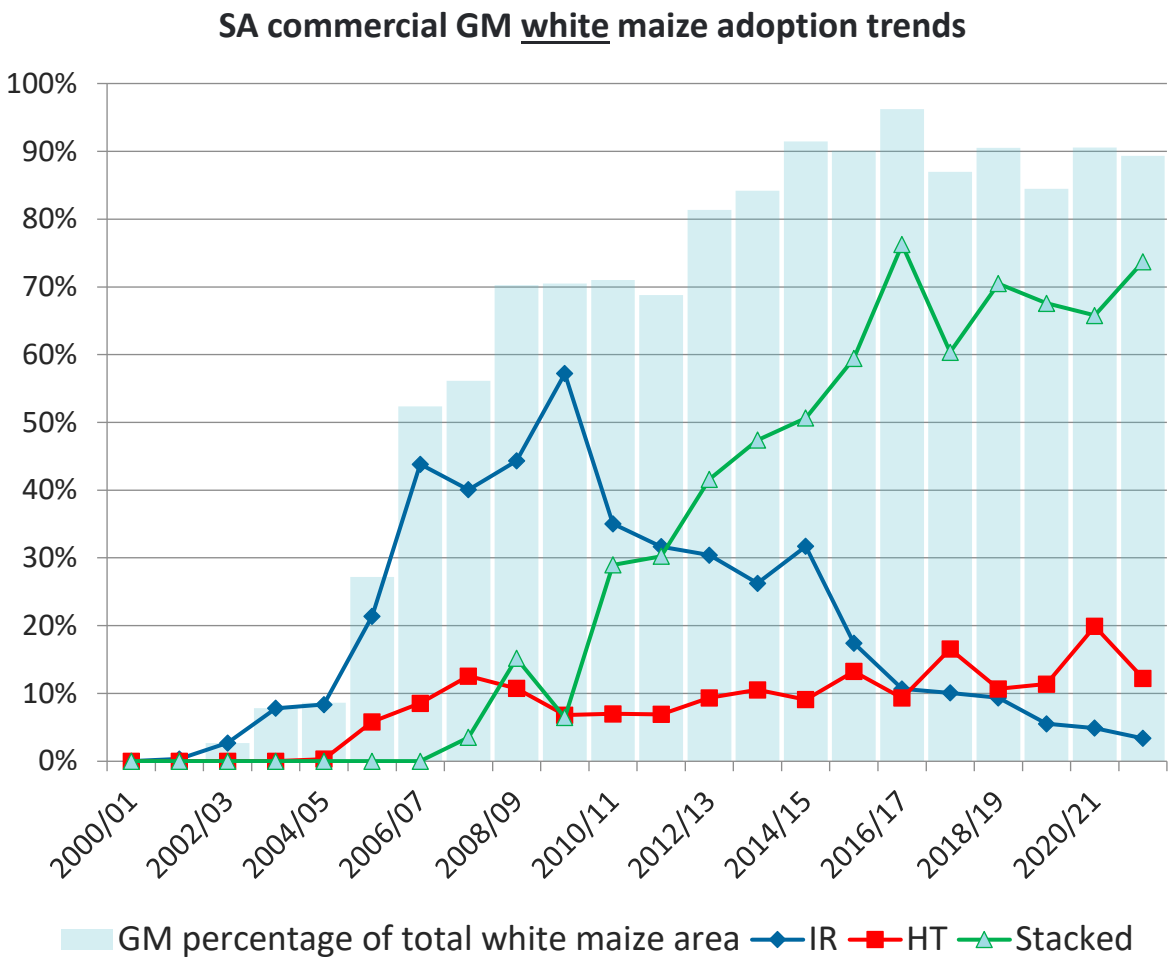
GM maize





- The SA commercial GM maize area share has seen a steady increase over the years. After settling around the 70% level between 2008 and 2011, the share increased to closer to the 90% level for 2013-2016, and then declined to closer to an 80% level for 2018-2020.
- The 2021/22 GM maize area is estimated at 84.5%, with 65% of the maize area planted to stacked (IR & HT) maize.
- South Africa's GM maize area percentage is slightly lower than that of other GM maize producing countries. In 2021, 99.6% of Argentina's maize area was planted to GM seed, while Brazil and the US had estimates of 95%. SA has a reasonably stable local and export market for non-GM maize, and the farmers who specialise in non-GM production make use of the newest non-GM varieties on the market and have adapted their production systems to deliver to these markets and earn a premium.

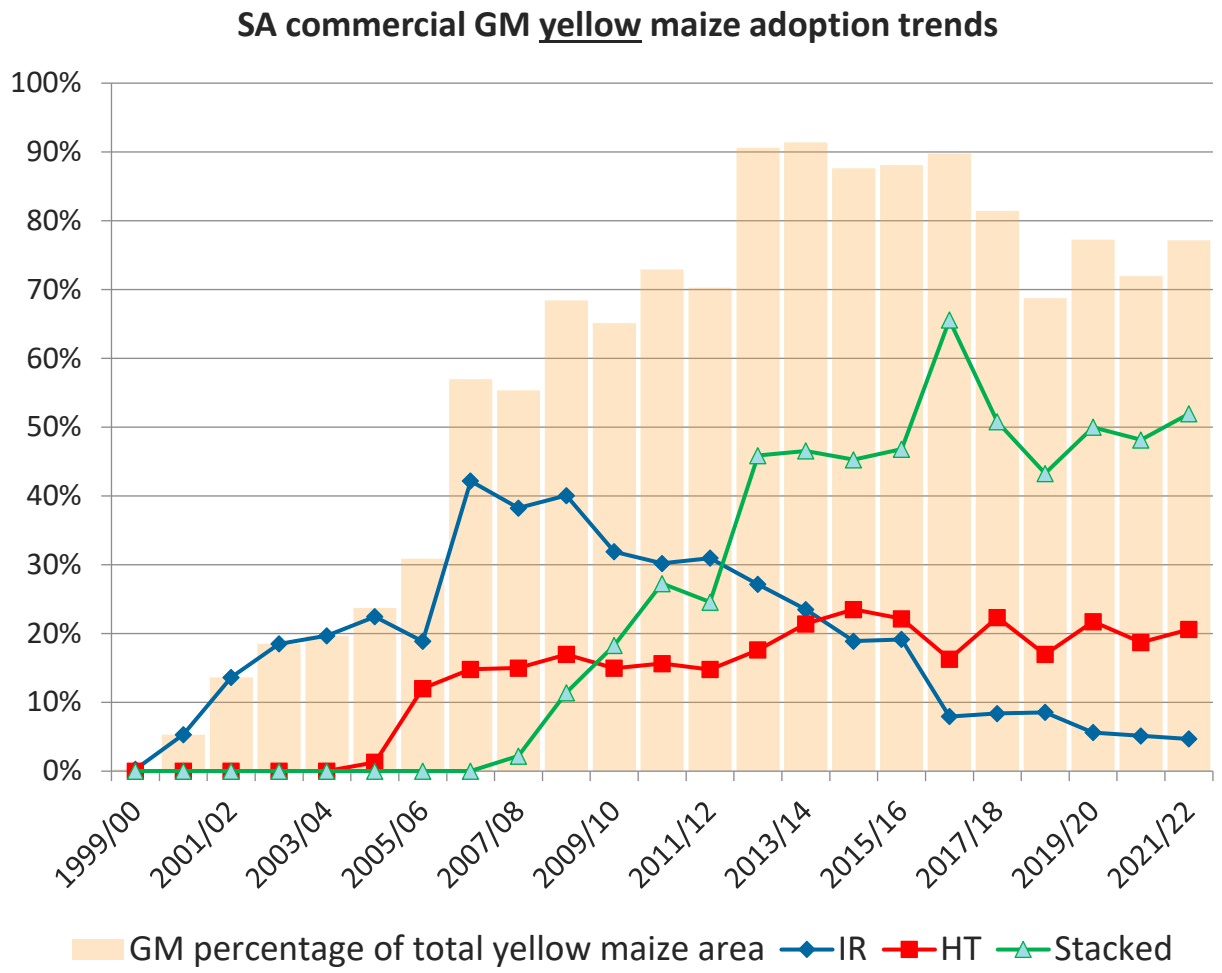
GM white maize



- The total maize area declined by 132 400 ha in the 2021/22 season, with the white maize area in the Free State and the North West Provinces decreasing by 116 000 ha.
- The GM white maize area for 2021/22 is estimated at 89%.
- It is estimated that the conventional white maize area increased slightly from 9% in 2020/21 to 11% in 2021/22 following the sharp drop from 16% in 2019/20.
- Bt maize (insect-resistant) as a single trait (albeit with two Bt events) continued to decrease, dropping from 5% to 3%.
- The area under herbicide-tolerant single trait maize decreased by 144 000 ha, to a relatively similar level as was observed in 2018 and 2019.
- Despite the total white maize area decline, the stacked maize (insect-resistant and herbicide-tolerant) area increased with just over 48 000 ha to cover an estimated 74% of total commercial white maize plantings in 2021/22.
- Based trait and conventional area share estimates of the last five years, it would seem as if 'additional' white maize hectares that come in to or go out of maize production per season (due to price or other considerations), are largely planted to HT seed in the Free State or North West Provinces.

GM yellow maize

- Following the 72 000 ha increase in 2020/21, the conventional yellow maize area decreased by just over 59 000 ha, to a similar level observed in 2019/20, lower than the levels reported for 2018/19 and 2020/21.
- While the total yellow maize area declined by 15 500 ha, the area planted to stacked maize increased by just over 32 400 ha and the single HT trait area by 16 700 ha.
- As a result, the GM yellow maize area increased from 72% in 2020/21 to 77.2% in 2021/22. This level is similar to 2019 estimations and lower than the above-85% levels observed in 2012-2016.
- The yellow maize Bt area decreased with about 5 5000 ha to its second lowest level since the technology's first introduction in 1999.
- Stacked maize adoption amongst yellow maize farmers are lower compared to white maize, while HT single trait adoption is higher.



MAIZE TRUST

CropLife SOUTH AFRICA SUID-AFRIKA

Recognition

The Maize Trust has funded an annual GM maize area assessment study since 2007. The maize area findings presented in this report were first published in the Maize Trust study report for the 2021/22 season.

The 2021/22 GM cotton and soybean area assessment and an update of the historic adoption data were financially supported by CropLife South Africa.

BFAP
DATA DRIVEN INSIGHT

BFAP
DATA
DRIVEN
INSIGHT

www.bfap.co.za

Disclaimer

The views expressed in this document reflect those of BFAP and do not constitute any specific advice as to decisions or actions that should be taken. Whilst every care has been taken in preparing this document, no representation, warranty, or undertaking (expressed or implied) is given and no responsibility or liability is accepted by BFAP as to the accuracy or completeness of the information contained herein. In addition, BFAP accepts no responsibility or liability for any damages of whatsoever nature which any person may suffer because of any decision or action taken on the basis of the information contained herein. All opinions and estimates contained in this report may be changed by BFAP at any time without notice after publication.