

China's commercial cultivation of GM maize and soybeans would have serious implications for global agriculture

There was an important development in global agriculture this past week but it received minimal media coverage. The Chinese National Crop Variety Approval Committee released two standards that clear the path for cultivating genetically modified (GM) crops in the country. We understand that this has been the missing piece in the regulations for the commercial production of GM maize and soybeans in China, as the government has two steps in these regulations, namely, a "safety certificate" and a "variety approval" before crops can be commercially cultivated.¹ Various GM maize and soybean varieties have received the safety certificate since 2019, and the missing piece has been the "variety approval", which has now been approved. This means the full approval and commercialization of GM crops in China is a real possibility. This message was also echoed by the Chinese Agriculture Ministry, noting that "China plans to approve more genetically modified (GM) maize varieties".² Currently, China imports GM maize and soybeans but prohibits domestic cultivation of the crops.³ The change in regulations would potentially lead to an improvement in yields. This is aligned with China's ambition of becoming self-sufficient in essential grains and oilseeds.

Currently, China's maize yields are comparable with the likes of South Africa, the United States, Argentina and Brazil, which have long adopted GM seeds (see Exhibit 1). The added benefit is that in countries like the United States, Brazil and Argentina, amongst others, GM seeds have had additional benefits such as lowering insecticide use, more environmentally friendly tillage practices and crop yield improvement. This insight is demonstrated in a research paper by Purdue and Kansas Universities agricultural economists Jayson Lusk, Jesse Tack and Nathan Hendricks.⁴

If maize and soybean yields improve in the coming years, China's import dependence could lessen. Currently, China is one of the world's largest maize and soybean importers. The country accounted for 13% of global maize imports in 2021 and roughly 60% of the world's soybean imports. A reduced volume of China's soybeans and maize imports in the global market would mean downward pressure on global prices. However, we do not foresee this happening within the next two seasons as widespread planting of GM crops in China will likely take some time.

There are also lessons here for the African countries, which, for a long time, have resisted the cultivation of GM crops. South Africa is the only exception in the African continent that has embraced the use of GM crops. According to the International Grains Council, South Africa produces about 16% of sub-Saharan maize, utilizing a relatively small area of an average of 2.5 million hectares since 2010. In contrast, countries such as Nigeria planted 6.5 million hectares in the same production season but only harvested 11.0 million tonnes of maize, equating to 15% of the sub-Saharan region's maize output. Irrigation has been an added factor in South Africa, but not to a large extent, as only 10% of the country's maize is irrigated, with 90% being rainfed and making it similar to other African countries.

¹ We gained this insight in an article from "China Dialogue", published [here](#).

² The Chinese Ministry comments are covered in an article [here](#).

³ More on Chinese GM crops matters covered in this [article](#).

⁴ The paper is available [here](#).

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Wandile Sihlobo

Chief Economist

+27 12 807 6686

wandile@agbiz.co.za

www.agbiz.co.za

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South Africa began planting genetically engineered maize seeds in the 2001/02 season. Before its introduction, average maize yields were around 2.4 tonnes per hectare. This has now increased to an average of 5.6 tonnes per hectare as of the 2020/21 production season. Meanwhile, the sub-Saharan African maize yields remain low, averaging below 2.0 tonnes per hectare. While yields are also influenced by improved germplasm (enabled by non-GM biotechnology) and improved low and no-till production methods (facilitated through herbicide-tolerant GM technology), other benefits include labour savings and reduced insecticide use as well as enhanced weed and pest control.

With the African continent currently struggling to meet its annual food needs, using technology, GM seeds, and other means should be an avenue to explore to boost production. The benefits of an increase in agricultural output are evident in the likes of Argentina, Brazil, the United States, and South Africa.

Many African governments should reevaluate their regulatory standards and embrace technology. Of course, this typically introduces debates about the ownership of seeds and how smallholder farmers could struggle to obtain seeds in some developing countries. These are realities that policymakers in the African countries should manage in terms of reaching agreements with seed breeders and technology developers but not close off innovation. The technology developers also need to be mindful of these concerns when engaging various governments in the African countries. Geopolitical and climate change risks present the urgency to explore the technological solutions to increase each country's agricultural production. The Chinese regulators are following that path.

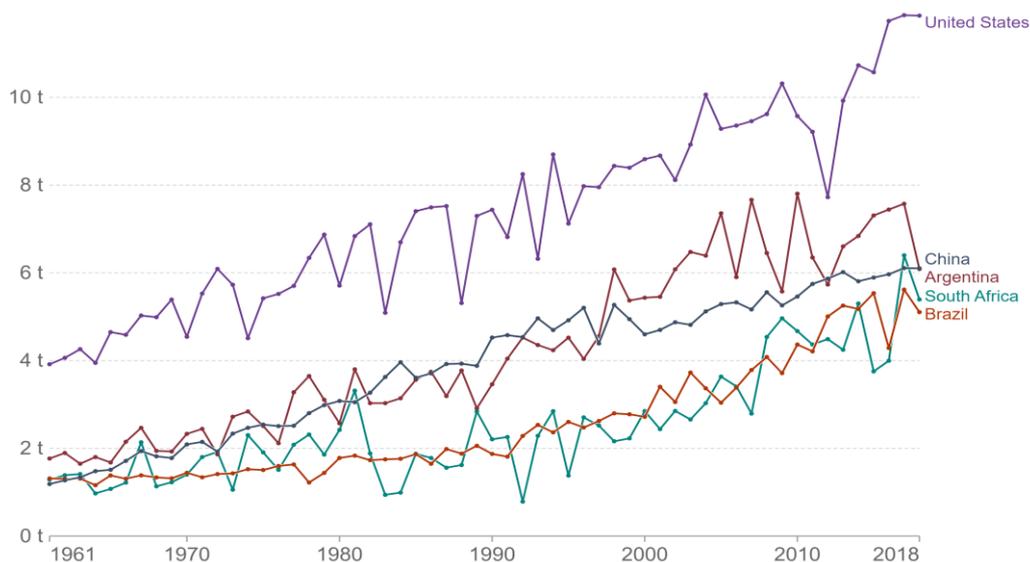
South African farmers and agribusinesses will need to pay close attention to these developments. The increase in production in other parts of the world, specifically in maize, where South Africa is a net exporter, could bring increased competition and downward pressure on prices in the medium term. Some of South Africa's key maize export markets are South Korea, Japan, Taiwan and Vietnam, and all have proximity to China. If China progressively increases production and becomes a consistent net exporter of maize, South Africa would have to explore markets elsewhere, which would be a challenge. These is one aspect that must be kept in mind for the long-term growth of the domestic agricultural sector.

Exhibit 1: Maize yields in selected countries

Corn yields

Average corn (maize) yields, measured in tonnes per hectare per year.

Our World in Data



Source: UN Food and Agriculture Organization (FAO)

OurWorldInData.org/crop-yields • CC BY

Source: Chart Adopted from Our World in Data

Weekly highlights

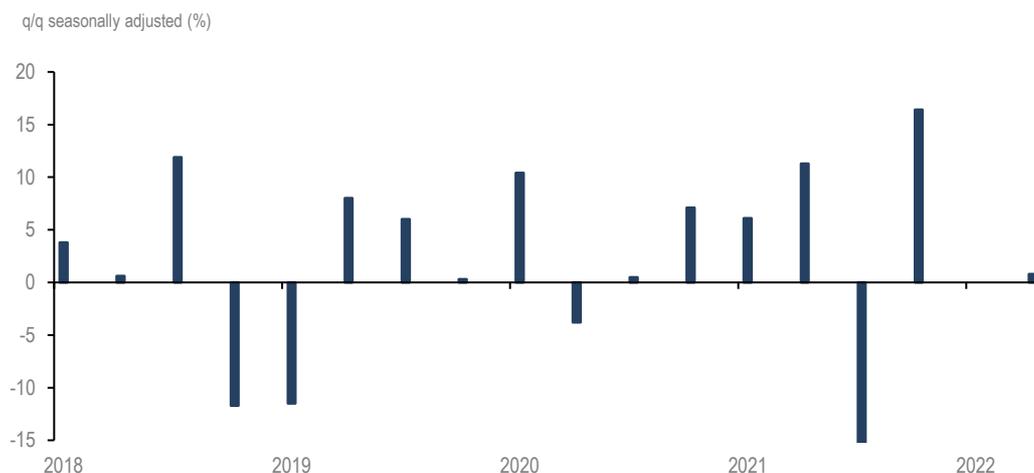
SA agriculture registers a mild quarterly expansion

The numbers released last week by Statistics South Africa show that in the first quarter of 2022, agriculture gross value added grew by 0,8% quarter-on-quarter (seasonally adjusted). We believe that this quarterly growth is on the back of improved activity in the horticulture industry and some field crops such as soybeans and sunflower seeds, amongst others. While the 2021/22 agricultural production season started on a downbeat footing, with excessive rains damaging some crop and vegetable fields, a breather from mid-January allowed for replanting and recovery in some fields. In addition to these improvements, we have had a decent deciduous fruit harvest. Moreover, there are expectations of a large citrus harvest.

Nevertheless, South Africa's agriculture quarterly gross value-added figures tend to be quite volatile; hence our recent communication focused on the annual performance. We expect a mild contraction of between 3-5% year-on-year in 2022. This will mainly be on the back of a decline in some field crop harvests, combined with the base effects after two years of solid growth where the sector expanded by 14,9% y/y in 2020 and 8,8% y/y in 2021 (revised figures). By field crops, we are not only referring to summer grains but also sugar cane, which experienced sizable damage from the recent heavy floods in KwaZulu-Natal. This impact will likely show in the second quarter data. Moreover, the livestock subsector, which accounts for a substantial share of the South African agricultural value-added, also faces numerous challenges this year, such as rising feed costs and the outbreaks of foot-and-mouth disease, which have led to an export ban to various markets.

Overall, while we are downbeat about South Africa's agriculture growth prospects this year, this sector still has potential for growth in the coming years. Notably, this year's possible underperformance does not mean that the sector is in bad shape per se; the output in a range of commodities is well above the long-term levels, which speaks to the exceptional performance of the past two years rather than the current production conditions. From a policy position, the sector recently launched an Agriculture and Agro-processing Master Plan to drive long-term inclusive growth and help unlock barriers that currently constrain performance. Some of the barriers require collaboration with the line departments, specifically the need to boost the efficiency of municipalities and the much-needed network industries, mainly the roads, rail, ports, water, and electricity.

Exhibit 2: South Africa's agriculture GVA



Source: Stats SA and Agbiz Research

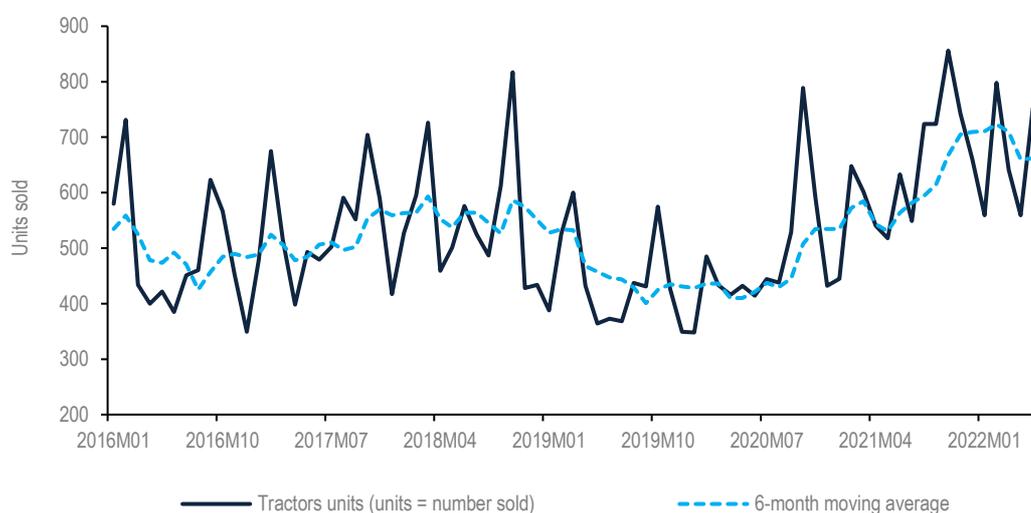
SA agriculture machinery sales remained robust in May

We continue to be surprised by the solid agricultural machinery sales, which have remained robust in the first five months of 2022. The data released by the South African Agricultural Machinery Association this past week show that in May 2022, tractor and combine harvester sales were up by 36% year-on-year (y/y) and 51% y/y, with 662 units and 53 units sold, respectively. The generally healthy sales are welcome developments, as they indicate a primary agricultural sector that is still in a better financial condition and continues to invest in movable assets.

We, however, believe that the second half of the year could show a decline, which will be a break from the two years of a positive trend. First, the rising farm input costs, such as fertilisers, fuel and agrochemicals, and increasing interest rates will likely weigh on farmers' finances in the coming months. Second, the strong agricultural machinery sales in 2020 and 2021 could lead to a lower replacement rate this year. For example, South Africa's tractor sales for 2021 amounted to 7 680 units, up by 26% from the previous year. Combine harvester sales amounted to 268 units in the same period, up by 46% from 2020. Notably, 2020 was also an excellent year for South Africa's agricultural machinery sales, so surpassing it meant 2021 was exceptional. In 2020, tractor sales were up by 9% from 2019. Combine harvester sales increased by 29% from 2019. Last, the summer crop harvests this year is down from the 2020/21 season, which will likely have negative financial implications for farmers.

Overall, the improved farmers' finances from large harvests and higher commodity prices, specifically in grains and oilseeds, mainly underpinned the agricultural machinery sales of the past two years and the first five months of 2022. The grains and oilseeds prices were supported by global events such as dryness in South America and Indonesia and rising demand for grains and oilseeds in China. Had it not been for higher global agricultural prices, the local grain and oilseed prices would have softened due to large harvests.

Exhibit 3: South Africa's tractor sales



Source: South African Agricultural Machinery Association and Agbiz Research

Data releases this week

We start the week with a global focus, where today the United States Department of Agriculture (USDA) will publish its weekly **US Crop Progress** data. In the previous release, in the week of 05 June 2022, maize and soybean plantings were nearly complete, although still behind the 2021 pace because of dryness in some regions of the US. For example, about 94% of the US maize hectares had been planted compared with 98% on 05 June 2021. Moreover, 78% of the soybeans had been planted compared with 89% in the corresponding period last year. On Thursday, the USDA will release the **US Weekly Export Sales** data.

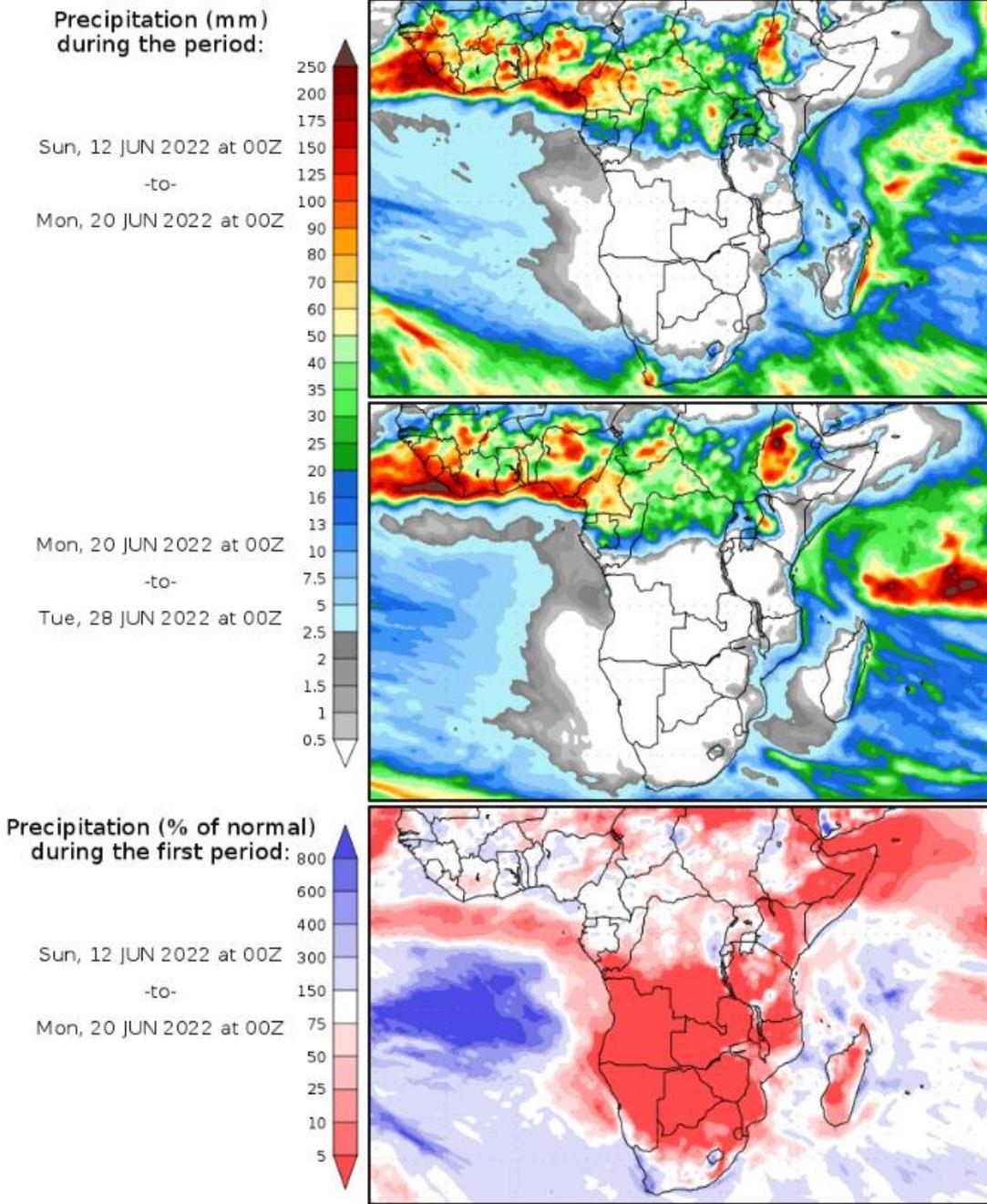
On the domestic front, today, Agbiz will release the second-quarter results of the **Agbiz/IDC Agribusiness Confidence Index**. In the first quarter, the Agbiz/IDC Agribusiness Confidence Index (ACI) moderated by 12 points to 62, after reaching its second-highest level on record in Q4 2021. A level above the neutral 50-point mark implies that agribusinesses remain optimistic about operating conditions in the country. Therefore, the first-quarter results still reflected favourable conditions, albeit not as strong as the recent quarters.

On Thursday, SAGIS will publish the **Weekly Grain Trade** data for the week of 10 June 2022. In the previous release on 03 June 2022, which was the fifth week of South Africa's 2022/23 maize marketing year, the weekly exports amounted to 52 026 tonnes. The key markets were Italy and the Southern Africa region. This brought the total 2022/23 exports to 330 510 tonnes out of the seasonal export forecast of 3,2 million tonnes. This is slightly down from 4,1 million tonnes in the past season due to an expected reduction in the harvest.

South Africa is a net importer of wheat, and 03 June was the 36th week of the 2021/22 marketing year. The total imports are now at 1,11 million tonnes out of the seasonal import forecast of 1,48 million tonnes (slightly below the 2020/21 marketing year imports of 1,51 million tonnes because of a large domestic harvest). About 26% is from Argentina, 24% from Lithuania, 18% from Brazil, 15% from Australia, 12% from Poland, 4% from Latvia and 1% from the US.

If one looks into South Africa's wheat imports data for the past five years, Russia was one of the major wheat suppliers, accounting for an average share of 26% a year. This has now been replaced by the above-mentioned markets.

Precipitation Forecasts



We have a favourable weather forecast for this week. The winter crop areas within the Western Cape could receive much needed rains.

Meanwhile, the summer crop growing areas, which are in a harvesting period, and other provinces of South Africa could experience drier weather conditions, which is conducive for field work.

Source: George Mason University (wxmaps)