

# Argentina — global leader in no-till agriculture

**A**rgentina is considered a world leader in no-till agriculture, or direct sowing, and has the largest percentage of land (92%) under no-till. At the same time, it is also the biggest per capita producer of grain in the world, producing 145 million tons of grain in the 2018/19 season.

The country's grain crops include:

- Soya: 55 million tons at an average yield of 4 tons/ha.
- Maize: 46 million tons at an average yield of 9,76 tons/ha.
- Sunflower: 3,9 million tons at an average yield of 2,1 tons/ha.
- Sorghum: 730 000ha planted at an expected average yield of 3,4 tons/ha.

These production figures are not by chance, says Dr Valeria Faggioli, soil biologist at INTA, Argentina's National Institute of Agricultural Technology. "It is due to direct sowing (no-till), as well as a series of technological and socio-political factors that led to a profound change in the production system in our country, where the correct application of technology plays an important role."

## No-till for sustainability

There has been a dramatic adoption of no-till by Argentinian farmers who trust that it is favourable for sustainability, which it is, says Dr Faggioli. The results of long-term experiments show that the conservation of organic matter is higher in no-till planting than it is in traditionally cultivated soil.

Long-term experiments also show that a lack of crop rotation can be as detrimental as conventional tillage in terms of soil carbon retention. The conservation of edaphic carbon, explains Dr Faggioli, is essential because organic compounds play key roles in soil function. Vital physical properties such as water infiltration, aggregate stability and aerial fluxes are determined by the level of organic matter. Moreover, organic compounds retain diverse communities

of soil biota that are crucial for mineral nutrition of crops, pathogenic suppression and plant growth promotion.

## Building on a strong tradition

The move towards no-till in Argentina has been supported by the country's strong agricultural machinery manufacturing sector. Machinery adapted to no-till planting is now part of a country-wide industry, which supplies domestic and global market demand.

In 2017, the sector achieved record sales of US\$2,1 million. In the same year, Argentinian agricultural machinery exports to more than 30 countries, including South Africa, exceeded US\$149 million.

The sector, according to research by Dr Mario Bragachini of INTA, creates 100 000 jobs directly related to the industry. The industry is gradually adapting to global trends of automation and robotics and machines with artificial intelligence will soon be available, a factor that will revolutionise agronomic performance.

The country has more than 500 agricultural machine factories, and access to 32 million cultivated hectares on which to test machinery. This expands the ability of the Argentinian agricultural machinery manufacturing sector to test, apply and use the latest technologies, such as ISO standards BUS 3 and 4, CAMBUS, Big Data and AgTech. However, the sector still works at a scale that allows the farmer full access to the factory design to influence practical and specific designs. The motivation for this is to make implements that are practically adapted to work in difficult circumstances, such as those found in countries like Argentina and South Africa.

Despite access to technology, the average tractor in Argentina ranges from 135kW to 180kW since the only relevant implement used in the field is the no-till planter, which needs about 8kW per row. The emphasis is on sustainability and practicality – from an environmental and economic point of view.



*A winter cover crop mix under irrigation on the farm of Hendrik Odendaal. Ten plant species can be identified.*

A demonstration day of Argentinian agricultural technology and machinery for South African farmers will be held on 10 September on Hendrik Odendaal's farm, Holmdene, between Val and Villiers near Standerton. Various manufacturers of implements and related technologies will showcase their products. Watch the press and social media for more detail.



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