Africa rises to lead conversation on sustainable agriculture amidst climate change

By Dr Shadrack Moephuli

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The drought which brought the Western Cape to its knees and hammered agriculture in various parts of the country - resulting in job losses and lost production - brought home the pressing need for a sustainable agriculture sector built on smart resource management and adaptation of production systems.

Image source: Gallo/Getty

Internationally, agriculture is under strain from climate change, the effects of which have been harshly felt in South Africa which is reeling from the worst drought. The fourth industrial revolution provides innovation and technological advances that can have a meaningful impact on the journey towards sustainable agriculture both in South Africa and on the continent.

The time for Africa – which is widely touted as being the world's richest in terms of agriculture potential – to lead the conversation and innovation in sustainable farming has arrived.

Government support and collaboration among all stakeholders, incorporating global best practices in food security, management of land and water resources, value chain integration, access to finance and markets, and education and training should all be priorities in transforming the agriculture sector locally and on the continent as a whole.

Often, crises are the stimulus for innovation, and the water crisis in the Western Cape has been no different. Research and technology have already seen leaps forward in water management and technology-supported farming, and the trend is set to continue.

Four reasons why WC agriculture is important to SA's economy

29 Jun 2017

The Western Cape agriculture sector and economy has changed as a result of the drought and water restrictions. The drought has had a massive impact on agriculture, with the World Wildlife Fund estimating that 30,000 jobs have been lost in the province, while exports are down between 13 and 20% in 2018. Roughly 15% of the workforce in the province is dependent on agriculture.

Farmers have had to adapt and innovate in order to stay afloat, and climate predictions anticipate that by 2050 the average rainfall will have decreased by 30%. Increased water tariffs have also meant that the sector as a whole has needed to be innovative in order to be sustainable. This buttresses the point that, going forward, investment in agricultural research and development (R&D) is of utmost importance as climate-smart agriculture becomes an imperative rather than an option.

Future-proofing SA agriculture against climate change

According to the WWF and Water Research Commission (WRC, 2018), the Western Cape has the largest area in the country under irrigation (269 476ha), but uses the lowest water use per unit area (5874 m3/ ha). This is a testament to measures the sector has put in place as a direct result of having to deal with the drought that ravaged the province.

The drought illustrated the need to future-proof the sector against climate change. And the sector is making strides in rising to the challenge, such as the use of more drought-tolerant crops (such as the ARC's Water Efficient Maize for Africa – WEMA maize cultivar), coordinated removing of water-thirsty alien vegetation in catchment areas and the use of technology for real-time measurement and management of available water and precision farming.

Precision agriculture is key to meeting Africa's growing demand for food

Tony Esmeraldo 23 Jul 2019

Precision farming is a broad term that describes the use of technology to monitor farming inputs and outputs in response to climate change in order to boost efficiency. The innovations come in the form of satellite technology, drones, interconnectivity and measurement of farming processes and equipment as well as biotechnology, and much more.

Globally, technology provides farmers with the ability to analyse water resources, soil quality, pests, tractors and other equipment in real time, and make adjustments and intelligent decisions based on the data.

While it is natural, and vital, for the private sector and entrepreneurs to innovate, it is equally important for all stakeholders to collaborate on a local, regional, national and international level.

There are various agritech entrepreneurs in South Africa, ranging from start-ups that use artificial intelligence and machine learning to provide agile farming solutions to an innovative financing model where investors, much like crowd-funding, can buy into shares of livestock.

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Importantly though, the need for government support is paramount. Examples of successful tech-driven support for the farming industry can be found in the Western Cape agricultural department and the Agricultural Research Council (ARC).

Equipping farmers to improve yields

The Western Cape Department of Agriculture sponsors FruitLook, a smart project designed to equip farmers with insights to improve efficiency and production. Using information from satellites, FruitLook data is provided free of charge to users, which gives them information on their farms, particular fields or areas of interest, and weekly and seasonal trends. Similarly, the ARC has developed several applications (Apps) to provide farmers with farm-specific weather information, such as AgriCloud and commodity and on-farm support with ARC Hub.

New technologies key to transforming SA's agriculture sector

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In terms of demonstrating the effectiveness of technology in the quest for sustainable agriculture, data derived from FruitLook can be used to assist with practical decision-making – such as where to irrigate, when would be most efficient to do so, and how much water to apply. This information builds up a database that can be analysed to improve future yields and output.

The Agricultural Research Council has facilitated research and development into the development of new crop cultivars and livestock breeds. This has enabled the development of new cultivars of fruits, crops, as well as forage crops over and above other technologies developed over time.

The ARC has also taken steps to empower South African farmers with a digital tool to access information. In 2018 the ARC launched its ARC Hub App, which provides information on different types of crops, livestock and production in relation to prevalent and forecasted weather conditions.

Managing the food security process

According to the National Department of Agriculture, Forestry and Fisheries (DAFF), the sector's contribution to national GDP was 2.4% in 2017. The department acknowledges that the sector is vital to food security, it can also play a big role in the economic development and social transformation of the country. The department is now known as Department of Agriculture, Land Reform and Rural Development under newly appointed Minister Thoko Didiza.

The national department has various initiatives and schemes to provide finance and support for emerging farmers, as well as plans to support the commercial sector, all while managing the government's vital process of land and agrarian reform. The lessons from the crippling drought point to the fact that the department also has a responsibility to ensure that the country's farmers remain competitive in the era of technology.

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29 May 2019

All efforts to grow and transform the sector need to be cognisant of the developments in technology and the potential for disruption and competitive advantage.

The challenges are immense and the stakes are high. However, as recent research by Disrupt Africa shows, the continent is ready to take its place at the forefront of agritech. In its *Agrinnovating for Africa: Exploring the African Agritech Start-up Ecosystem Report 2018*, it found that the number of start-ups in Africa grew 110% in the two years preceding the report.

It is against this backdrop that the International Agricultural Technology Exhibition and Conference will take place in Cape Town in June 2020. In a city that had to think out of the box and a province that had to innovate quickly, agriculture and agritech players from around the world will converge to learn and share about how technology is influencing global best practice in food security, financing models, training and more.

The time has arrived for Africa to lead the conversation, but it requires the input and collaboration of all stakeholders, from government all the way down the industry value chain.

ABOUT THE AUTHOR

Dr Shadrack Mbephuli is President and CEO, Agricultural Research Council.