

REGULATORY

AI in farming

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Adding value one industry at a time, artificial intelligence (“AI”) is proving to be a fundamental tool in advancing technologies and enhancing various aspects of businesses all around the world.

The agriculture industry is no exception.

AI farming, also known as smart farming is gaining traction as many farmers have embraced a range of innovative AI-driven instruments.

These tools are playing a pivotal role in transforming and making agriculture more accessible, enabling small-scale farmers to tap into the expertise of agronomists, data scientists, and algorithms.

This assistance aids them in optimising their planting, irrigation, fertilisation, and harvesting processes, leading to cost savings and enhanced sustainability and competitiveness.

Many countries are observing the “agtech” revolution closely, as governments strive to bolster food production to accommodate expanding populations, despite diminishing water, land resources and mounting challenges posed by geopolitical and economic turbulence.

But what does AI farming entail? In short, the following –

- the process begins with collecting vast amounts of data from satellite imagery, drones, weather stations, sensors, as well as on-farm machinery equipped with sensors. These data sources provide information on soil conditions, weather patterns and crop health;
- the AI algorithms then process and analyse the collected data to extract valuable information. Machine learning is used to identify patterns, trends, and anomalies within the data. For example, AI can predict disease outbreaks, assess soil quality, detect pests, and analyse weather forecasts aid farmers to make informed decisions;
- farmers will receive real-time recommendations and insights from these AI systems. These recommendations can include when to plant, irrigate, fertilise, and harvest crops;
- AI-powered machinery and robots can perform various tasks autonomously. For instance, autonomous tractors can plow, plant, and harvest crops with precision, reducing the need for human labour. Drones can monitor crop health and distribute treatments, and robotic weeders can identify and remove weeds without damaging crops;
- AI also helps precisely applying and optimizing the use of water, fertilisers, and pesticides. By using real-time data, farmers can reduce waste, cut costs, and minimise environmental impact;
- it can forecast crop yields and market conditions, enabling farmers to make informed decisions about pricing, marketing, and crop rotation; and
- farmers can monitor and manage their operations remotely through mobile apps or web-based platforms, aiding them in making critical decisions even when they are not physically present on the farm.

As much as the AI farming undeniably aids the agricultural industry, the collection of vast amounts of data must be collected and processed in line with privacy laws and regulations such as the Protection of Personal Information Act 4 of 2013, if the data is processed in South Africa. Farmers preparing to implement AI tools should consider the following –

- farmers and agricultural enterprises must ensure transparency in data collection and obtain the requisite permissions for gathering data on their farms, to the extent that that is necessary;
- defining data ownership in AI farming systems can be intricate and it is therefore essential to establish unambiguous rights and responsibilities pertaining to the data accrued;
- AI farming frequently entails sharing data with third party service providers like agricultural technology firms, data analytics companies, and governmental entities. Farmers should assess the terms and conditions of data sharing agreements to ensure the protection and compliant utilisation of their data;
- ensuring data security is of paramount importance to mitigate unauthorised access, data breaches, and cyberattacks. Robust encryption, access controls, and routine security audits should be implemented to safeguard sensitive agricultural data; and
- anonymising or aggregating data can safeguard the privacy of individual farmers, making it impossible to trace back to specific individuals or farms. This approach facilitates the dissemination of valuable insights while upholding privacy.

It is evident that AI farming can offer significant benefits in terms of agricultural efficiency and productivity. However, one should not under-estimate its challenges related to data privacy.

Farmers, agricultural organisations and policymakers are encouraged to create clear guidelines, practices and regulations which ensure adherence to privacy regulations.

In keeping up with the rapid growth of AI farming, data privacy risks associated with it should be front of mind.

Read more on [AI and protection of data in the mining industry](#)



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