Smart Farming –
Precision Agriculture

CASE STUDY

SF/PA refers to the application of smart technologies (known as agtech) and analytics to the agriculture sector. The combination of agtech and analytics enables farming that is more effective and efficient with resource inputs for greater yields in agricultural output in comparison to traditional, conventional agriculture.

SA CHALLENGES ADDRESSED BY SMART FARMING

Smart farming tech benefits and business case: Limited knowledge around smart farming technologies available on the market that are both affordable and accessible to commercial and smallholder farmers.

Smart farming-agnostic approaches: Farmer hesitancy with smart farming technology uptake and smart farming practice adoption.

Limited tech skills: Smart technologies and platforms require digital-based competencies.

Urban versus rural ICT-infrastructure divide and affordability: Lack of internet connectivity in rural areas, and high data costs in South Africa.

Energy insecurity: Constrained and unreliable grid-supply of energy deterring mechanical-operated technology uptake and use in favour of manually-operated, fuel-dependent tools

ASSOCIATED CLEAN TECHNOLOGIES

Integrated Aerial Systems: e.g. targeted crop spraying by drone.

OTHER EXAMPLES OF CEA SUPPLIERS

Aquacheck: e.g. soil moisture sensors that are used to determine how much water is in an agricultural field so that the grower can know when and how much to irrigate.

KEY DRIVERS FOR THE UPTAKE OF SMART FARMING

- Significant market value and potential
- SA's growing population shifting food system requirements
- Climate change impact vulnerability

KEY BENEFITS OF SMART FARMING

- **Real-time information driven-response to environmental and other changes:** Smart technology-driven capabilities can assess and determine optimal conditions and times for planting, irrigation and harvesting with environmental and climate monitoring
- **Maximized yields and minimized wastage:** Increased efficiency and improved productivity, output and revenue through data-driven measurements and limited human error
- **Improved terrain navigation:** Assessing and unlocking land with arable potential for further cultivation
- **Smart tech-integration for supply chain optimization:** Digital tech-synergies and app-compatibilities beyond production and processing that can link to improved supply chain distribution

UNDP'S SUSTAINABLE DEVELOPMENT GOALS (SDGS)

- 2 Zero hunger
- 9 Industry, Innovation and Infrastructure
- 10 Reduced inequalities
- 12 Responsible consumption and production
- 15 Climate action
- 15 Life on land

WHAT WILL IT TAKE TO SHIFT THE DIAL ON SMART FARMING?

- **Investment to unlock the market potential:** The global smart agriculture market is estimated to be worth USD 13.7bn in 2020 and projected to reach USD 22bn by 2025. Increased public and private sector opportunities to access traditional and alternative finance solutions will be key to unlocking the sector's potential.
- **Digital upskilling:** Smart agtech and analytical skills and training are necessary for capacity building and can be integrated into existing educational programmes or foster new, specialized learning channels.
- **Improved and inclusive digital infrastructure:** Researched estimates of only 9% of subsistence farmers having access to the internet in SA points to a digital divide and the need for greater efforts to improve digital infrastructure and reliable internet connectivity.

This content is produced in collaboration with the Friedrich Naumann Foundation for Freedom in partnership with GreenCape. Thank you to Aquacheck, Integrated Aerial Systems for providing information.