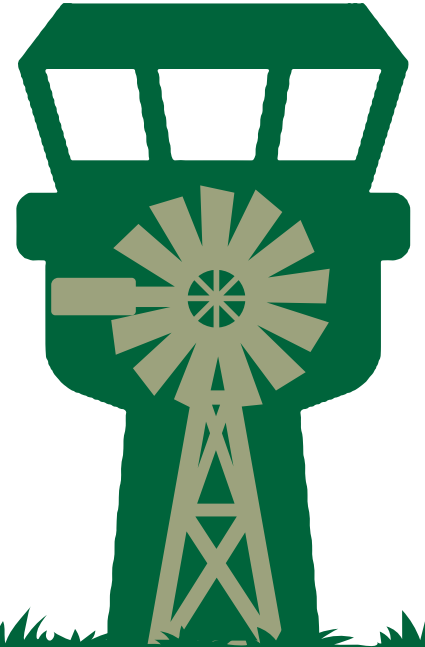




SOLUTIONS TO SUSTAINABLE -FARMING CHALLENGES

To meet the rising demand for food production, help alleviate poverty, create social inclusion and ensure the sustainability of the environment, agriculture needs to change. And this change must include transformative and innovative interventions across the entire farm lifecycle – from production to consumption. It must involve large-scale behavioural change, as well as scientific and technological solutions.

To drive sustainability it is imperative for farmers to identify the challenges to sustainable farming and find ways to mitigate those challenges. In this research document we explore some of the important challenges and offer insights into how these challenges can be addressed.

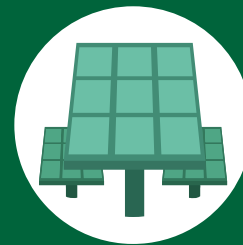


Conserving water resources

Water is the essence of every ecosystem, and our livelihood is dependent on it. With the agricultural sector using 70% of the world's freshwater resources, it has become imperative to find ways in which to farm sustainably so as to ensure that our natural water resources are preserved.

Farmers must be increasingly innovative and adopt methods of precision farming to conserve water resources. This can be done by:

- adopting technology and online tools that provide insight into water usage;
- eliminating thirsty alien invasive vegetation;
- implementing water stewardship initiatives; and
- planting drought-tolerant crops.



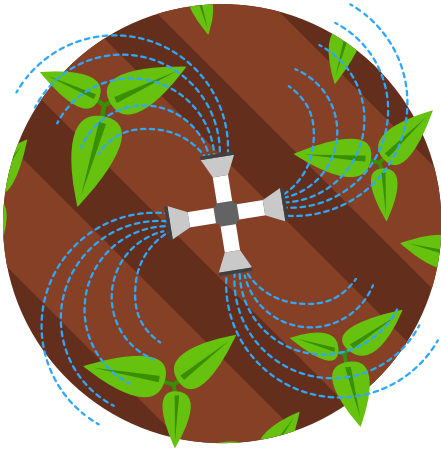
Conserving energy resources

The most significant energy sources for farmers are diesel and electricity sourced from the national grid. Diesel is used to fuel vehicles and electricity is used for the production lifecycle. Both energy sources are predominantly obtained from fossil fuels, which are major emitters of greenhouse gas. To create a truly sustainable farming business, there is increased pressure to reduce carbon emissions. Therefore, finding alternative energy sources for agribusinesses has become even more pertinent.

The adoption of renewable energy and energy efficiencies will help to create an energy-secure future for the agricultural sector and will reduce the carbon footprint and cost of energy. Possible options include:

- using solar energy to heat water and buildings and to dry crops and grains (electric heaters and fences can also be powered with photovoltaic cells, which stores energy);
- using hydroelectric power, which is great for farms near running water sources; and
- adopting energy-saving initiatives such as shifting demands from high-tariff periods (day) to low-tariff periods (night).

Focus on land and soil fertility



Land and soil are the foundation of ecosystems and key to sustaining life on earth. As a non-renewable resource, soil degradation is a real and escalating threat. With the expansion of the human population, more land is being cleared for agriculture, making soil erosion more prevalent when agricultural fields replace natural vegetation. As a result, topsoil dries out through exposure and is blown or washed away.

There is a need for productive land to create a legacy for future generations, and good crop growth is dependent on soil fertility. Building and protecting soil is therefore essential for creating a sustainable farm.

Farmers can apply several techniques in this regard, for example:

- using organic matter such as manure;
- adding organic compounds like wood ash, rock and mineral products;
- removing weeds, which, apart from intensive labour, is far better than burning; and
- testing soil to establish its exact condition in order to counter soil depletion.

Biodiversity

A farm is an ecosystem in itself, and each part of this ecosystem has a fundamental role to play. Any change in an ecosystem has a ripple effect that farmers must be aware of, as expanding agriculture threatens natural ecosystems. Biodiversity in farming is essential to ensure the production of food, allow adaptation to climate change and help the sustainability of the livelihood of people living in rural areas. Agricultural productivity must be built on a strong foundation of biodiversity.

Agricultural biodiversity is shaped by human activity and the onus is on farmers to adopt practices that sustain the environment in which it operates. Farmers are the true stewards of our global ecosystem, and biodiversity and agriculture go hand in hand.

Farmers can implement biodiversity in farming by:

- using agricultural tools and infrastructure such as crop rotation or multicropping systems to help protect biodiversity;
- using data to become more precise with farming practices, for example using the right amount of product at the right time;
- replanting and applying sustainable land management practices;
- reducing carbon footprint; and
- sustaining and increasing production levels through seed banks.



70%



Driving innovative scientific technology

It is anticipated that the world's population will boom to over nine billion people in the coming years, meaning that the demand for food will increase by 70% by the year 2050. This increase is adding pressure to our ecological systems and is threatening global security. It is therefore essential for efficiencies in food production and distribution to be improved.

Agricultural stability involves the ability to maintain production predictably, and a large driver of this stability is innovative science-based technology. Computerised technology, combined with geographical location devices and remote sensing advancements, can change the way crops are managed. This method of precision farming uses information to identify site-specific production goals.

Investing in science-based technologies will help farmers to:

- improve their livelihoods by producing crops of higher quality;
- provide for the growing population by producing more crops;
- improve the nutritional value and safety of food;
- adopt sustainable farming through modern irrigation practices; and
- reduce the use of fossil fuel, soil tillage, water runoff and pesticides.

Investing in mobile technologies will help farmers to increase their yields by providing information on the agricultural market and best practices to meet their localised needs.



Nedbank Agribusiness support

The business of agriculture can be fragmented and demands an enabling environment where the farmer's desires can come to fruition. This necessitates high-quality support that farmers can rely on as a catalyst for action to maximise the full potential of their agribusinesses.

Nedbank is well positioned to be such a catalyst. To speak to a designated agribusiness banker call 0860 555 333 or send an email to agriculture@nedbank.co.za.



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