

New technological breakthrough unveils full value of precision farming

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Producers constantly need new and better technology for sustainable production. South Africa's agricultural industry is also dependent on good research to remain competitive on an international level. Good information, however, is scarce; new research and opportunities are becoming increasingly rare. Even internationally, including the US, good norms and guidelines are also outdated and difficult to access. This is mainly because many guidelines and standards are based on old research and cultivars and are not calibrated to the latest, higher yield levels of genetics.

Producers are also flooded with new products and services and consequently, are not always sure what to believe. In addition to this, many producers' recommendations differ, especially on calcinations, solutions and methods of analysis of soil and plant tissue. The different norms and methodologies of different companies also do not help to clarify the decision-making process.

Walking blindly and not using scientific-based

information is a major risk in the grain industry. Sir William Thomas Kelvin said that if you cannot measure something, you will not be able to change the outcome. These words are of great value, especially for producers, as affirmative action cannot be taken if the problem is not identified and converted into detailed data.

The potential for historical data

In the grain industry, we have a final return measurement in the form of yield maps. This data is connected to GPS points, which are then used to convert the yield data into spatial analysis charts.

The arrival of Agri Technovation's cloud-based platform, MyFarmWeb™, enables producers today to retrieve and save all precision data (historical and current data). This data is also correlated with GPS points on the farm and thus has great value to the producer. It is, therefore, understandable that the processing of 'big data' systems is becoming a buzzword in data science and the world.

It is important for the grain industry that producers effectively use their own precision data to uncover new opportunities. Unfortunately, it still happens that farms' old historical yield and analysis data are not used to unlock new opportunities.

With accurate precision data, further processing of yield versus soil types can be done if producers have completed the soil classification work on the farm. Agri Technovation has developed new methods where the cultivars that were planted can be measured to expose risk. Identifying pieces of land that annually lead to a loss is of great importance, because it is directly hampering profitability.

Opportunities in the soil

Agri Technovation is at the forefront of processing 'big data'. Through genetic testing, the new MyFarmWeb™ technology, as well as commercial data on producers' farms, the so-called multi-layering action can be performed. This process involves the comparison of specific genetics with yield data on soil type maps, as well as soil precision fertility charts, to search for specific correlations. Cultivars' stability charts can also be set up accordingly to search for long-term positions on farms to ensure maximum yield results.

This data analysis methodology gives producers very powerful and valuable capabilities: to uncover new opportunities at farm level.

This is made possible by identifying which

genetics are the most stable and will fare the best based on soil type. What was previously a hypothesis can now be demonstrated with precision data.

The soil fertility levels relative to the yield of genetics can also be measured to determine the best levels of production. Different levels in parts per million (ppm), basic saturation levels (%) and ratios between elements, micro element levels, acid saturation and pH can also be determined and read directly from data tables. New analyses from commercial data show that higher yields are obtained with phosphate levels in soils that exceed handbook norms at this time. Thus, the opportunities in the soil's fertility levels are uncovered

A new standard of smart farming

With the push of a button on MyFarmWeb™, producers can generate a precision map from their own yield maps regarding profitability. They can insert their own input costs and grain prices, which then generates and displays on the map. The profitability card is displayed with a legend that visually indicates a profit, loss or if the producer breaks even. Producers are able to play with input costs and can immediately see what they can spend for the season in question, against their maize or grain price. Soils or spots on land that are not profitable each year can be very easily pointed out, so those producers can make informed decisions not to plant in these areas or to plant at lower rates.

(Figure 1, see next page).

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For more information on cultivar selections by soil types, and insights that promote profitability, contact Agri Technovation.

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Total input cost = R9 500 per ha and price is R1 800 per ton



Figure 1: Example of a profitability card on MyFarmWeb™ system, where green indicates profitable and red non-profit.

The core of smart farming is to start by identifying the best genetics that correlates with the different soil types and soil potential. With this new, unique methodology, producers can now achieve what was never before possible – with the same input costs, existing cultivars can be better placed on areas where it will yield the best results.

Profitability's winning recipe

With Agri Technovation's new data analysis methodology, producers no longer have to rely on outdated guidelines established years ago; new opportunities can now be identified without guessing and wondering whom to believe. In addition to the advantage of reducing risk significantly, data can be applied smarter every year to farm the next season more efficiently. With these insights, coupled with the scientific data and adaptability of the

MyFarmWeb™ system, adjustments can be made that will make a significant impact on yield per hectare at the end of the season.

Ultimately, for the first time in agricultural history, it is possible to give real insight into potential risk hedging and future profitability.

Without these two aspects, a farm is not sustainable, so this technology provides much more than just data. First, it creates a scientifically-based foundation for producers to make more informed decisions. Second, it exploits the most potential from producers' soil without increasing input costs.

Last, but not least, it promotes sustainability. For South African producers, the key process to unlock the full value of precision farming has finally become available to the grain industry.