PRODUCTIONWISE – AN ONLINE CROP MANAGEMENT SYSTEM

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Abstract

Record keeping and traceability are increasingly important for the primary industries, including reporting of nutrient inputs. FAR, New Zealand's levy funded crop research and extension organisation, have been working with Grain Growers Ltd, Australia in developing a comprehensive system for growers.

ProductionWise is an integrated online farm management system that allows you to map your paddocks, record management practices and inputs, to automatically generate specific reports and gross margins.   It is also expected to improve the efficiency and profitability of farmers and help with nutrient reporting and traceability.

ProductionWise functionality includes:

1. **Farm Mapping –** digital paddock mapping, topographic paddock information, general soil characteristics and grain infrastructure configuration.

2. **Paddock Diary –** Paddock record keeping of all crop management practices and inputs by date including all nutrient sources; fertiliser, effluent and supplemental feed, using pre-defined lists.

3. **Mobile App –** mobile device available from Apple and Google Play app stores, for real time data entry.

4. **Reporting –** Auto-created traceability reporting, nutrient use reporting, comprehensive operation, input and grain storage reporting,

5. **Grain Storage –** record keeping, contracts and sales management,

6. **Gross margins –** Automatically generates gross margins and cost of production.

7. **Advisor Functionality –** Connects to growers, assists with farm planning, to assist individual day to day paddock activities and input recommendations.

The system is simple for data entry, layered features for farm mapping, date range and selector options for reporting, plus a mobile app for easy data entry. The Grain Store section displays the complete history of the grain from paddock to buyer, which will provide a complete grain traceability for farmers. ProductionWise could link to nutrient management models, such as APSIM or Overseer, to reduce the data entry and improve the accuracy of data entered.

As well as providing growers with information on their cropping operation, ProductionWise assists FAR in capturing cropping information to be used for benchmarking assessment. This will enable the relationships between productivity and inputs, such as nutrients, to be defined at sub-regional, regional or national scales and to provide reports back to growers to aid them to improve and refine practices.

Background

Farm records relating to day to day crop and stock management are the basis of many decisions relating to the farm business. They are also necessary for the environmental reporting requirements for many New Zealand regional councils. For these reasons it is important that farmers have access to efficient tools to enable the recording and management of their farm information.

ProductionWise is an innovative online crop management tool developed by GrainGrowers Ltd, in Australia. New Zealand's levy organization for the cropping sector, the Foundation for Arable Research (FAR), have been working with their farmers and the ProductionWise team to adapt the tool for New Zealand cropping farms. We now have a powerful decision support platform for our sector, freely available to all FAR levy payers.

Functionality

The ProductionWise system has the following functions:

1   Digital Farm Mapping with Google powered mapping tools and high resolution imagery. The farmer has the choice about how the farm maps are developed and he or she may choose to map individual paddocks or aggregate areas to produce block management maps. Users can map on-farm grain storage facilities to manage stored grain quantities from paddock harvest to sale.

Map layers can be added to show the location farm infrastructure such as irrigators and/or natural features such as waterways and wetlands. Maps for farm environment plans can be developed to show; soils, critical source areas for nutrient losses and /or areas where there are environmental risks to consider. These maps may be printed out and filed as part of a farm environment plan.

2.   Paddock Diary information. All paddock information pertaining to the crop is recorded in the paddock diary. Inputs are dated and include all nutrient applications to the crop from all sources, all agrichemical applications, irrigation applications, supplements harvested, planting and harvesting dates, crop yield and crop management practices. There is also provision for additional observation notes.

Data entry is made efficient through the ability to add information for multiple paddocks and selection of management activities and inputs to the crop from drop-down lists. Pricing for inputs and activities is maintained as part of the functionality of the system, but farmers may chooses to overwrite these with prices specific for their operation to deliver gross margins based on their actual costs. Growers and advisers can save groups of operations and inputs using a template page, these can be saved for quick use. Summary reports from the paddock information are easy to generate. These provide accurate, easy access to data summaries for inputting into other farm planning tools such as Overseer.

3.   Mobile App. An important area of functionality requested by farmers is to have the ability to enter input data in 'real time" in the paddock..

The ProductionWise mobile app enables this to happen from a tablet or mobile phone and enables linkages to paddock recommendations, observations and plans prepared by an independent advisor, registered with a ProductionWise on the advisor site. Functionality is maintained whether the operator is on or off-line, with new operations being synchronised to the farm's online account once connectivity is available.

4.   Reporting. The ProductionWise team have worked with a number of industry groups to develop auto-generated traceability reports that summarise relevant crop input and grain storage information for the market.

As well as these auto-generated reports the user can design individual reports for specific purposes. For example the paddock records for individual crops can be aggregated for two years of the rotation to provide block information for an Overseer nutrient budget. This is beneficial from the perspective of accuracy of the data and efficiency, as collation and collection of farm data for the development of Overseer nutrient budgets is time consuming for both the farmer and the nutrient budget advisor.

5.   Grain Storage. On farm grain storage is characteristic of the industry ProductionWise's grain storage function enables the farmer to track grain movements from harvest via the diary page, in and out of silos and manage contracts and sales.

6.   Gross margins: An important function of ProductionWise is its ability to use farm information to generate cost of production and gross margin reports. These are generated from paddock diary information, and form the basis for understanding the profitability of crop, paddock or the whole farm system.

Gross margin analysis is also important when considering management changes to mitigate nutrient losses to the farm system an important component of the farm planning process.

It is important for industry sectors to track the economic performance of the sector so that they can be well placed to address problems that farmers might face and capitalise on new opportunities for the sector. A ProductionWise function assists FAR to capture regional cropping information to be used for benchmarking assessment and to provide reports back to growers at the end of the season. .   The robustness and accuracy of the benchmark information depends on the number of contributing individual farms and promotion of the system is a key focus for FAR. Farmer confidentiality is not compromised during this data aggregation process.

7.   Advisor Functionality: ProductionWise may be used by farm consultants and agronomists on behalf of their clients to develop plans and recommendations for the crop. These recommendations are viewed in the paddock diary and messages and alerts can be sent to the grower for immediate action. Template recommendations can be set up for quick use. Crop management plans can be developed and entered into the paddock diary system ahead of busy times on the farm; input information can be updated in real time as the season progresses.

8.   Data Access and Security: Farmers are concerned about data security and the privacy of their information. ProductionWise data is kept on secure servers and backed up regularly. It is available anywhere where there is internet access, via a PC, laptop, tablet computer or a mobile phone with the mobile App. A personal login protects individual farm information but this may be shared with farm employees enabling them to access the farm information.

Discussion

The organization and analysis of farm data is becoming increasingly more important to the farm business. The days of pencilled notes in the pocket-borne paper diary are almost gone as farmers are asked to provide information to generate nutrient budgets for regulatory processes and to develop management changes to reduce the risk of nutrient losses to the environment.

Farm nutrient budgets, farm environment plans and farm consents are data hungry, requiring historical records of farm inputs and management practices. The been-through-the-wash, covered in oil, tatty paper diary is no longer acceptable. ProductionWise reports are the winners for these purposes.

The ProductionWise development programme is committed to continual improvement based on feedback from the farmers. Functionality is a key driver for uptake and farmer's request that the data entry should be "less rather than more," have been taken seriously. Drop down lists with input prices and the ability to develop templates for groups of operations and inputs improve the data entry efficiency especially for repetitive actions.

The promotion of the system and the benefits that accrue from its use are an ongoing focus for FAR.

References

ProductionWise NZ website.
https://www.productionwise.co.nz/