CASE STUDY:

PRECISION AGRICULTURE FOR PASTURES

Precision Agriculture for Pastures is one of the many Producer Demonstration Sites (PDS) that Meat & Livestock Australia is currently funding, with the aim to 'increase the rate of adoption of key management practices and technologies that improve business profitability, productivity and sustainability'.

Precision soil mapping in Central Victorian Pastures, is being coordinated by Precision Agriculture and run with the Pyrenees and Smeaton Best-Wool/ Best-Lamb (BWBL) groups. The project aims to investigate the potential benefits of grid soil mapping and the use of variable rate technology for the application of ameliorants and fertiliser in pastures.

One of the participants Scott Howell, from Amphitheater in the Pyrenees region of Victoria, used variable rate spreading technology to distribute several nutrients across his trial paddocks.

Scott, a member of the Pyrenees BWBL group, runs a prime lamb operation on 1330 hectares. The soil type is a granite based sandy loam and has leaching potential. He became interested in the project as he had previous experience in grid soil mapping with Precision Agriculture, and was consequently aware of the pre-existing variability of nutrients across his paddocks.

The trial paddocks were tested by Precision Agriculture using their method of grid soil sampling, where a paddock is broken down into a grid pattern and intensively sampled *(see Figure 1)*.

Once the soil data is received from the laboratory, Precision Agriculture produce several variable rate application maps based on the data from each grid *(see Figure 2)*.

The project steering committee, along with Scott's input, determined where the main constraints existed, and which paddocks were to be designated as the control paddocks and treatment paddocks.

The soil sampling results indicated high variability across several analytes including pH, phosphorus and potassium, and as a result, these became the focus for the trial. Certain areas of the paddock were already sitting at the target level; however, some areas of the paddock were well under the target levels.

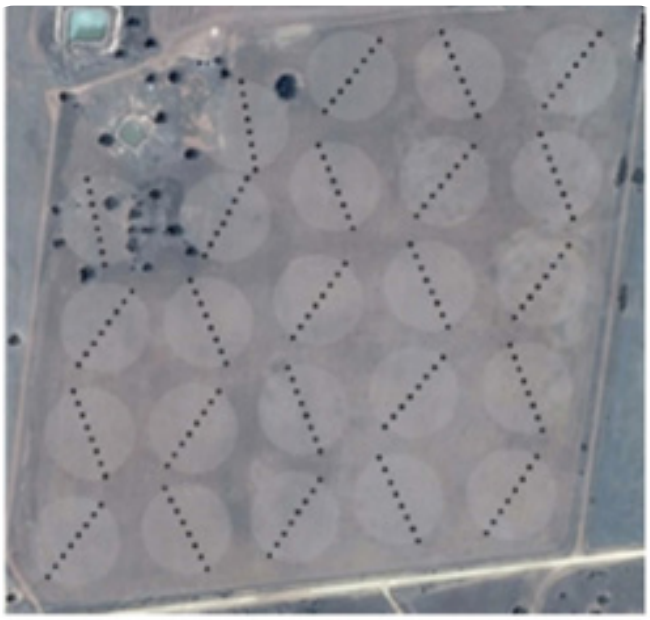

Figure 1: Grid Soil Sampling Map

Figure 2: Variable Rate Application Map

Scott set nutrient targets for his property with a minimum of 5.2 pH (CaCl), an Olsen P of 15, and approximately 150mg of potassium. The required amount of fertiliser (calculated by the project steering committee) was applied using variable rate spreading technology. The spreader guided by GPS, spread high rates of fertiliser where it was required and little, or no fertiliser where targets were already at the optimum levels *(see Figure 3)*.

The nutrient base supports productive perennial pastures of primarily Phalaris and sub clover. Scott mentioned that historically the property was a large paddock set stock operation, which led to stock camps and an uneven distribution of manure across the paddocks. Grid soil sampling identified these stock camps and the areas that required more nutrition.

The process of grid soil sampling has enabled Scott to make better input decisions. When asked what he hopes to achieve from the project, Scott remarked 'more efficient use of fertiliser'. With the current increase in fertiliser prices, Scott believes that being more informed about how much fertiliser is required and knowing where to put it for maximum benefit, is much more cost effective than a blanket application

Neil James, livestock extension officer from Agriculture Victoria and coordinator of the Pyrenees and Smeaton BWBL groups, has been monitoring the pasture growth for a number of months, measuring the pasture dry matter each time livestock are moved in and out of the paddock. While it's early days, the prediction is that paddock pasture growth will become more even, as variability of nutrient levels are evened out.

Identifying if variable rate spreading is economical and vastly improves productivity in pastures, is the big question that will determine whether more producers invest in grid soil sampling and consequently variable rate ameliorate and fertiliser application technology.

For more information, contact Georgie Rees (Georgie.rees@precisionagriculture.com.au) or Neil James (Neil.James@agriculture.vic.gov.au).

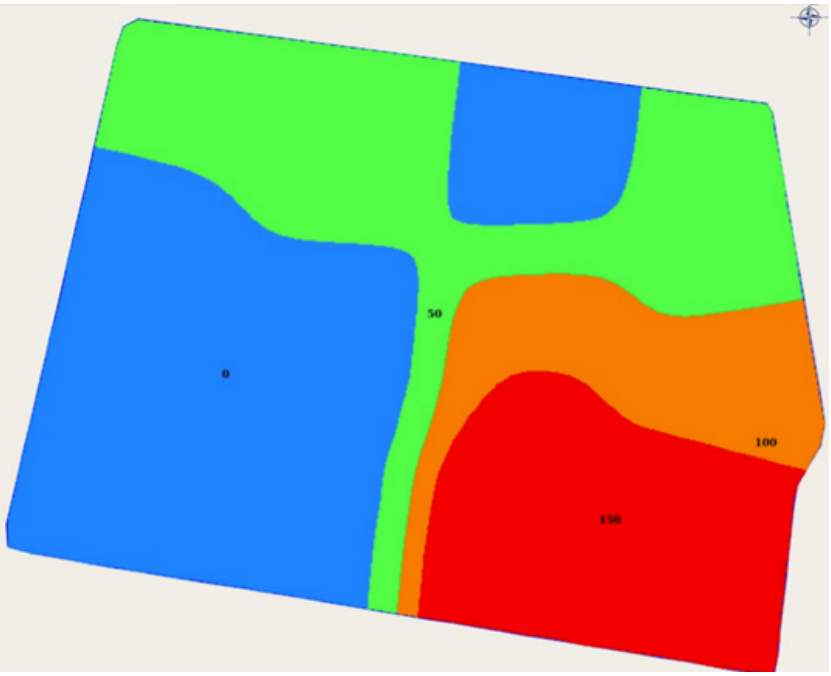

Figure 3: Variable application rates of MOP

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