Weather Forecasting

Project Report for SFF L05-006:
Weather forecasting for enhanced profits and environment protection

Project Summary

This project is part of a review of new technologies for the arable sector. The Foundation for Arable Research is investigating opportunities for increased use of information technologies. These include decision support tools such as crop and disease calculators and irrigation and nutrient scheduling guides.

Access to appropriate on-demand weather data is a core component of such tools but is not widely used outside the research community. Currently Canterbury has few accessible sites with sufficient weather parameters monitored. As farmers and other key decision makers adopt decision support tools, more pertinent information at a more local level is required.

This project investigated the opportunity to co-ordinate a regional weather station network, use computer modelling to predict disease risk, irrigation need, and crop yields.

With support from technology providers, three groups of arable farmers and consultants were provided with free access to detailed localized weather forecasts and associated information. Access to this forecasting was expected to enhance cropping farmers' ability to optimise use of irrigation, agrochemicals and fertilisers and plan other farm operations.

Most weather information users are seeking predictions and use multiple sources of information. They apply their own interpretations to whichever forecasts they receive. Some people are unable to adequately access web-based information due to poor infrastructure.

There is some use of, but little emphasis on, access to historic weather data. The main identified use was for crop models such as Wheat Calculator, and limited use for disease prediction.

All but one person found the HortPlus MetWatch forecasts very useful. Local weather differences from the forecast sites were evident. The accuracy was

generally considered much better around the Chertsey weather station than Methven or St Andrews.

User surveys show that the information provided can assist on-farm decision making with regard to field operations such as spraying, harvest, cultivation and planting. However, much better disease forecasting is seen to have the biggest potential benefit.

The financial gain from using cheaper protectants is suggested sufficient to pay for the cost of obtaining the information. As such high priority should be placed on integrating suitable disease (and pest) models into the weather forecast service.

A map of potential weather stations is presented. Approximately ninety potential weather stations were identified in Canterbury, Otago and Southland. Identified stations include those operated by crown institutes, cropping organisations and private individuals.

After removing probable duplicates some seventy remain, although of these some are probably outside the main areas of interest, and access to data and the quality and reliability has not been verified.

In addition, a range of information sheets addressing weather measuring and interpretation were prepared. These cover topics from selecting sensors, to weather and disease, to interpreting weather maps.

The assistance of project partners is gratefully acknowledged.

- HortPlus provided focus group participants with one year MetWatch subscriptions at no charge and made helpful presentations to growers
- MetService generated point forecasts for the three FAR weather station sites and made these available at no charge
- Scott Technical provide weather station advice and assistance and helped identify potential weather stations
- Focus group members gave valuable feedback on the service from arable industry perspectives. 'The Glebe' and 'Copperfields' host the stations at Methven and St Andrews.