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Monitoring station information leads to Koonunga moisture conservation

LOCATION: Koonunga

ANNUAL RAINFALL: 480 mm

FARM SIZE: 600 ha

ENTERPRISES: Winegrapes, dairy cattle, cropping, wool

Barossa Improved Grazing Groups weather monitoring station installed on Peter Kleinig's Koonunga property has demonstrated to him the continuing value of controlling summer weeds.

Peter operates a 600-hectare property in partnership with his brother Andrew, comprised of winegrapes, a dairy, a self-replacing Merino flock and cropping.

As a mixed farmer, there is often a trade-off between spraying out summer weeds to conserve soil moisture or leaving the weeds to be grazed by livestock. Once skeptical about the importance of controlling summer weeds, after a 36 mm rainfall event in early February 2017, Peter noticed the soil moisture levels of the monitoring station paddock steadily declining soon after.

As a trial Peter decided to spray the paddock with a knockdown herbicide in late February to control the volunteer barley that had emerged from the previous year's crop. This decision was vindicated as the monitoring station data confirmed moisture was immediately conserved, with the profile remaining 30 percent full going into autumn (Figure 1).

The moisture then remained available for use by the hay crop Peter sowed in June 2017.

In that particular situation, Peter found even though there wasn't a large bulk of green material growing in the paddock, the soil moisture data from the monitoring station clearly demonstrated the benefit of spraying.

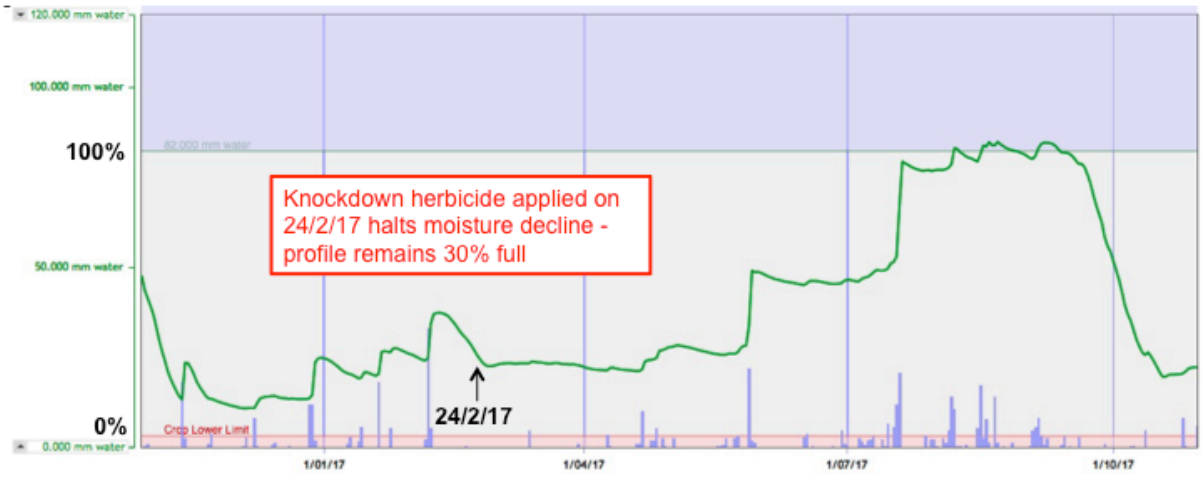

Figure 1: Estimated amount of moisture in the soil profile (15-85cm) (*green line*) and the daily rainfall (*blue bars*) at Koonunga between November 2016-November 2017.

There is now a big effort made each year to control summer weeds on Peter's property, in particular volunteer cereals, potato weed and wireweed.

Having local data on soil moisture has also proved useful for Peter by assisting him to decide how much nitrogen will be applied to cereal crops at various stages of the growing season.

Combined with the seasonal outlook, he said knowing there is a full soil moisture profile gives him confidence to put on higher rates of nitrogen in-season. Knowing the moisture profile of the soil can also help with deciding if any top up applications are needed later in the season.

As well as nitrogen application and weed management strategies, Peter said soil moisture information from the monitoring station has assisted with deciding which paddocks to graze and which to shut up for pasture hay for their dairy.

Other local weather data recorded from the monitoring station has also proved useful, including a fire danger index to make decisions on continuing crop harvesting, delta T on the suitability of conditions for spraying, including spray record keeping, and relative humidity data to judge whether conditions are suitable for hay baling.

DECISION MAKING: Peter Kleinig at BIGG's weather monitoring station installed on his Koonunga property.

KEY DECISIONS

Spraying summer weeds to conserve soil moisture so it is available for the following crop.

Having confidence to apply higher rates of nitrogen if the soil moisture profile is full and the seasonal outlook positive.

Timing of crop harvesting, spraying and hay baling operations all assisted through accessed monitoring station data.

This project is supported by the Adelaide and Mount Lofty Ranges Natural Resources Management Board, with funding from the NRM levy.
For further information visit http://biggroup.org.au/project/soil-moisture-monitoring/