

Pastures from Space – Application of satellite-derived pasture predictions improve the profitability of Australian sheep producers

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Introduction Pastures from Space, a collaborative program between CSIRO Livestock Industries and the Western Australian state Departments of Agriculture and Land Information, has developed the capacity to measure both the biomass and growth rate of annual pasture in the winter rainfall regions of southern Australia using satellite images (Edirisinghe *et al.*, 2002). Producer groups were set up to pilot test the delivery of satellite-derived pasture growth rate (PGR, kg dry matter/hectare.day) and biomass (feed on offer or FOO, kg dry matter/hectare) predictions for paddocks on individual farms in Western Australia. This paper reports on the value to Australian sheep producers of satellite-derived PGR information on pastures.

Methodology Producer groups were established at each of five localities situated in the major sheep producing areas in Western Australia. For each of the 51 co-operating producers detailed maps of their farms showing all external and paddock boundaries were entered into a geographic information system computer database for the delivery of PGR. Near-real time predictions and 7-day forecast PGR were delivered weekly for each of the paddocks on their farms via Pasture Watch™, a farmer friendly tool for downloading and analysing PGR data (Wiese *et al.*, 2004). The producer groups met on 4-5 occasions throughout the pasture growing season. At the meetings, each of the producers provided feedback on the reliability, timeliness and accuracy of the PGR predictions being delivered and shared how they were using the information to make management decisions on their farms. Beginning and end of season surveys were used to provide a qualitative evaluation of the usefulness and benefits of PGR, and six case studies provided detailed analysis of the economic value to the farm business.

Results All producers surveyed found the PGR information easy to access. Of the forty-three producers who completed both surveys, thirty three (77%) used the PGR information. Over 75% used the PGR information, at a frequency from weekly to monthly. The majority (91%) of these producers reported that they had used the PGR information to make stock management decisions. Decisions about feed budgeting (70%), planning (64%) and stocking rates (58%) were the next most frequent management decisions. Around one quarter (27%) employed PGR information to make decisions about liveweight, 21% to make land use decisions and 12% to manage the fibre diameter profile of the wool grown. Overall there were highly positive responses to the compatibility, usefulness and benefits of the technology.

In all six case studies the use of the PGR information improved the profitability of the producers' sheep enterprise. The increase in profit ranged from a gross margin of AUD\$23 to AUD\$332/winter grazed hectare. The increased profit resulted from better utilisation of pasture through more effective feed budgeting and the introduction of new management techniques into the farming system. The producers recognised PGR as a valuable tool when applied to decisions about the use of a range of management techniques such as increasing stocking rates, feedlotting of wethers, whether or not to agist livestock, application of fertilisers and conservation of fodder during spring. The information on PGR was also found to improve producers' confidence in decision-making and helped reduce their levels of stress.

Conclusions Both the surveys and case studies reported in this paper have clearly demonstrated a significant increase in the profitability of those farm businesses that have used satellite-derived pasture information. The vision of the Pastures from Space program is to provide cost effective, reliable, timely and accurate satellite-derived PGR and FOO predictions that will enable producers to substantially increase the productivity and profitability of their farming enterprise.

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References

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