

## **Long-term agronomic trials in Australia**

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Long-term agronomic field trials have for many years provided a key input in the decision making process for the grain, wool and dairy industries in Australia. Primary producers are finding benefit in the crop rotations and alternative tillage practices identified through investigations on these trials. Non-sustainable management practices are also being identified, promoting a preventative approach to long-term problems of soil degradation. Whilst most trials have focussed on crop production, they still provide a wealth of associated information which can be used in the formulation of short and long-term management strategies in many circumstances.

The current downturn in Australia's rural economy does not favour the establishment of new field trials with research funds being diverted into primarily short-term initiatives. We must now look to our previous stores of knowledge to develop innovative and economically viable farming practices. A major problem in accessing and utilizing this wealth of information is that it is currently fragmented across the continent.

### **Methods**

A questionnaire was distributed to agricultural scientists and institutions throughout Australia in mid-1992. The aim of the questionnaire was to provide summary information on location and purpose of past and present field trials throughout the country, in particular the design and data collected. Trials of at least 5 years duration qualified for inclusion in the survey, and could consist of any combination of treatments (cereal/pasture/grain legume, continuous cropping/rotations, grazed/ungrazed, irrigated/rainfed). Trials in excess of 25 years in length were classified as long-term. Scientists were also encouraged to include new trials which are currently planned to run for extended periods of time.

### **Results and discussion**

A total of 50 trials which have been in existence for at least 5 years were identified through the survey. Of these, 44 have been running for at least 10 years, and 20 are considered as long-term. The majority of the trials are located in the temperate semi-arid region of southern Australia, from Merredin and Wongan Hills in south-western Western Australia to Rutherglen in north-central Victoria and north to Tamworth in New South Wales. Five trials had been maintained for over 50 years, the oldest still in use being the Permanent Top-dressing Experiment at the Rutherglen Research Institute, which commenced in 1914, investigating the effects of superphosphate and lime on stocking rate of pastures. The oldest cropping trial, the Longerenong Rotation No.1, commenced in 1918 and located at the Wimmera Research Station at Dooen in Victoria.

The major benefit of this on-going project will be increased access to long-term soils, climate and plant growth information by researchers and advisers which will facilitate the development of regional and nationwide management strategies and models suitable for sound economic and ecological development. The database register and data summaries will be disseminated to the agricultural community in the form of reports and scientific publications. A computerized database will ultimately be made available for interested parties through the Cooperative Research Centre for Soil and Land Management. The structure of the database is consistent with other units currently being developed in Australia, thereby building on the concept of a national rural sector database.