Double cropping to improve profitability & water use

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- A trial in northern Victoria will investigate double cropping systems to determine the sustainability and profitability of this practice. While best management for individual crops may be understood there is a need to investigate rotation systems as a whole.

Double cropping systems (growing a winter and summer crop following one another) provide irrigators with an opportunity to capitalise on their investment in irrigated agriculture.

Making use of water "left over" from the previous crop has the potential to increase the on-farm water use efficiency (WUE) and reduce accessions to groundwater. In a double cropping system there is also potential to retrieve left over nutrients and make productive use of them, preventing groundwater pollution.

The Irrigated Cropping Forum, in conjunction with the Department of Primary Industries, Victoria and the Department of Sustainability and Environment, is investigating the opportunities to improve the water use efficiency and profitability of irrigated cropping. The project will be overseen by a steering committee made up of members of the Victorian Irrigated Cropping Council and the Murray Research and Development Council.

As well as the focus on double cropping, the project will demonstrate best management practice for individual crops, highlighting such issues as removal of water from saline land and nutrient budgeting to reduce nutrient loss to the environment. Best management practices have been identified for most irrigated crops, but rotation systems involving double cropping have been neglected, particularly in Victoria. Therefore the correct crop selection, layout and irrigation management are essential to making the system work, need to be identified.

Scope of the project

The project will establish a trial site in northern Victoria, funded from matching GRDC money, to test the assumed best bets for suitable double crop rotations. The best bets will be compared to current rotational systems to evaluate the potential increase in productivity and water use efficiencies of the two systems.

The treatments will be combinations of currently grown winter crops (canola, wheat, barley, faba beans and oaten hay) and summer crops (maize grain, maize silage, soybeans and forage sorghum).

Sustainability & productivity

Double cropping will only be sustainable if it is sufficiently profitable. Individual and rotational gross margins will be calculated to evaluate the profitability of various rotations. Water movement through the soil will be measured to calculate water use, soil wetting patterns and water losses from the crop root zone. To assist these measurements, groundwater bores will be installed and monitored. Soil testing to determine soil nutrients and health, eg organic carbon levels and aggregate stability, will be completed. Demonstration of best management practice for irrigation scheduling techniques will be a major part of the project.

Productivity issues

Key agronomic data such as plant establishment, tillering, head counts, flowering dates, nitrogen accumulation, biomass accumulation, yield and grain/forage quality will be recorded. Irrigation scheduling will be determined by soil moisture monitoring equipment, total irrigation water used and water use efficiency calculated. All data collected will be used to produce a best management practice booklet.

Extension

The trial sites will be part of an extension process, with one field day held at the site per season.

Updates on the trial will be published in the Northern Irrigation Cropper (principally Victorian distribution) and the *Farmers' Newsletter.*

For further information

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