NSW GOVERNMENT Primary Industries

PRIMARY INDUSTRIES
SCIENCE & RESEARCH

BRIEFING NOTE

Water in Primary Industries –Winter 2011

INTRODUCTION

NSW DPI conducts research to encourage sustainable and appropriate use of water by the state's primary industries.

The Water in Primary Industries Unit specialises in water research at the paddock, farm and small catchment scale because this is where land use and water management decisions are made by primary producers. If there is to be a change in water outcomes, it will be driven at the paddock scale where we specialise.

We not only produce good science, we work hard to ensure it has practical and affordable applications and collaborate closely with extension officers so it is actually put in practice. Our water research also underpins the development of sound policies and plans for land use and water management.

Primary Industries Science & Research is currently implementing more than 70 water research projects. A snapshot of some of these projects is provided below.

RESEARCH CAPABILITIES

- There are 24 water research staff within the Unit. A number of the Department's research agronomists, horticulturalists and foresters also address water management as part of their duties.
- Science & Research manage nine dedicated research institutes within the Murray Darling Basin and several supporting research stations.
- A network of hydrology research sites in headwater catchments collecting data on the impact of landuse on interception, stream flow and ground water.
- A focus on ensuring our research is actually adopted, through close collaboration with extension colleagues and primary producers.
- Strong partnerships with key industry and research players including numerous CRCs, Research & Development Corporations, CSIRO, Universities and producers.

CONTACT US

For more information on our full portfolio please contact Peter Regan (02) 6391 3185 or *peter.j.regan@industry.nsw.gov.au*

PROJECT UPDATES

LESS WATER FOR MORE RICE (2008–2012)

INTRODUCTION: Rice is a profitable crop with a history of high water use. Over the last 20 years, research and extension has doubled rice production per megalitre of water used. This project asks whether a delay in permanent flooding water will result in further water savings without affecting crop yields.

FINDINGS: Delaying permanent water can mean water savings of 21% and a simultaneous increase in water productivity of up to 17%. We are now researching how rice farmers can implement these techniques to reliably deliver further water savings AND increased productivity.

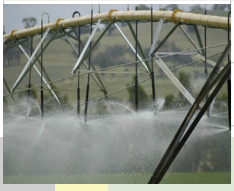
CONTACT: Brian Dunn, Yanco 02 6951 2621

PARTNERS: CSIRO, ACIAR

THE CASE FOR MOVING FROM SURFACE IRRIGATION TO PRESSURISED SYSTEMS (2005–ONGOING)

INTRODUCTION: Switching from surface irrigation to pressurised systems can save water and increase production. However, this change requires a large capital investment and the impact on the farm business is difficult to assess without objective cost/benefit data. This project set out to obtain these data on typical riverine plains.

FINDINGS: Pressurised irrigation systems can apply 1.2 and 2.5 megalitres less irrigation water per hectare in wheat and lucerne respectively, without significantly reducing yields. Objective data has been gathered, made available to farmers and incorperated into education programs and decision support tools.



CONTACT: Sam North, Deniliquin 03 5881 9926 samuel.north@industry.nsw.gov.au

PARTNERS: Murray Irrigation, CRC for Irrigation Futures

IMPROVING BASIN IRRIGATION SYSTEMS IN SOUTHERN NSW (2007–2010)

INTRODUCTION: Basin irrigation systems are surface irrigated areas that have complete perimeter banks to pond water and prevent run-off. They are used on very low permeability soils in rice farming systems in southern NSW. This project set out to improve the design and performance of these systems while delivering higher yields for a wide range of crops with reduced operating and environmental costs.

FINDINGS: Waterlogging following irrigation was identified as a key problem, its principal cause being excessively long drainage times. The efficiency of slow-draining basin irrigation systems in southern NSW may be improved by up to 0.3 ML/ha for each irrigation – if layouts are modified to reduce drainage times.

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PARTNERS: Murray Irrigation, CRC for Irrigation Futures

KEY SITES – HOW AGRICULTURAL & FOREST ACTIVITIES AFFECT WATER FLOWS (ONGOING RESEARCH WHICH COMMENCED IN 2002)

INTRODUCTION: Eight representative 'headwater catchments' were selected to provide information on the effect of typical agricultural and forest activities on water flows and salinity. The sites have become a valuable asset, providing highly sought after and rare data on plant water use and catchment flows.

FINDINGS: The current salinity management techniques (perennial pastures and trees in recharge zones) are generally ineffective for salinity control AND can reduce the flow of water in streams. Changing from annual to perennial systems may not reduce salinity but can significantly reduce water flow in rivers.

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PARTNERS: DECCW, FFI CRC, Bureau of Meteorology, University of NSW

HOW MUCH WATER DO PERENNIAL PASTURES USE? (2008–2012, A COMPONENT OF THE FFI CRC TROPICAL GRASSES PROJECT)

INTRODUCTION: Perennial pastures are productive and deliver better natural resource outcomes than annual pastures. Tropical grasses are highly productive but information is needed on how to best manage them and how much water will they use.

FINDINGS: Tropical grass pastures offer significant benefits to grazing systems in northern inland NSW – showing high water use efficiency and maintaining ground cover to protect the soil. They also use more soil water than native grass-based pastures. Research has shown that tropical grasses can extract an additional 100 mm of water from the soil, which has a potential to reduce runoff to streams by 1ML per hectare, per year. Seed sales suggest that these pastures are being sown across large areas of inland NSW (250,000 ha in 08/09), which may reduce stream flows by 250,000 megalitres.

CONTACT: Dr Sean Murphy, Tamworth (02) 6763 1244

PARTNERS: FFI CRC

THE ECONOMICS OF LAND USE AND WATER SHARING WITHIN A CATCHMENT (2007– 2012)

INTRODUCTION: We are investigating the policy options for land use changes that incur the least cost to water users while delivering best possible water sharing outcomes. Rainfall, geology and land use work together to determine how much water reaches streams and groundwater. Generally, trees are the greatest water users and deliver the lowest catchment water yields while annual crops and annual pastures use the least water but yeild the greatest stream flows. Between these extremes are perennial pastures.

FINDINGS: We have identified water policies such as tradeable entitlements, that provide more equitable sharing of water among upstream and downstream users. These new water policies can deliver net benefits to the farming community at a reasonable cost.

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PARTNERS: EH Graham Centre, FFI CRC, DPI-Vic and MDBA