Defeating the Weed Menace R&D: researching the impacts of change on weed invasion

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Summary Land and Water Australia has recently commenced implementing the Defeating the Weed Menace R&D Plan. R&D commissioned under the plan will examine the impacts of changing trade patterns and environmental conditions, changing land uses, and the emergence of new industries on the spread of major weeds in Australia. The social and institutional factors surrounding these impacts on weed control and management will also be investigated. Land and Water Australia is keen to explore with researchers, knowledge brokers and those faced with managing major weeds, preferred tools to ensure that the knowledge generated from this R&D is of maximum benefit to the end users.

Keywords Weeds research, user input, knowledge tools.

INTRODUCTION

This paper provides an overview of the Defeating the Weed Menace R&D Plan (Land and Water Australia in press). It outlines the main areas of proposed investment and presents some initial ideas about the need for building partnerships and fostering greater knowledge exchange.

Three major themes guide the R&D projects to be commissioned between July 2006 and June 2008: reducing the rate of emergence of new weed problems; reducing the impact of existing weed problems of national priority; and supporting national frameworks and capacity for sustainable weed management.

Land and Water Australia has been contracted by the Department of Agriculture, Fisheries and Forestry (DAFF) and the Department of the Environment and Heritage (DEH) to manage the Defeating the Weed Menace R&D. It forms the R&D component of the Australian Government's broader Defeating the Weed Menace program.

THE R&D PROGRAM

The overarching goal of the Defeating the Weed Menace R&D is: to generate new knowledge to prevent the development of new weed problems; to reduce the impacts of weeds of national priority; and to build capacity for their management into the future.

The scope of Defeating the Weed Menace R&D encompasses weed issues that are agreed national priorities or are demonstrably broadly relevant across Australia and that are having an impact on extensive land systems and conservation areas, where the benefit is largely to the community as a whole.

Based on a Defeating the Weed Menace R&D Strategy prepared by the CRC for Australian Weed Management (2005), DAFF and DEH identified a set of priority topics to be addressed through the Defeating the Weed Menace R&D (Table 1). These priorities have also been agreed by the National Weeds Advisory Group.

Initial projects Addressing the priority themes set, the initial projects commissioned in August 2006 will:

- Assess the risks of different sources and pathways of weed ingress into and within Australia under changing trade patterns and environmental conditions – addressing changing operating climates;
- Facilitate understanding of the impacts of productive land use change and peri-urban development on weed incursion within Australia – addressing new patterns of land use and the social and environmental changes they bring;
- Work with industry groups to identify risks, pathways and their potential weed invasion impacts – addressing changing industry sectors and their associated land management; and
- Identify and develop new biocontrol agents most likely to bring substantial benefit/cost outcomes in addressing agreed national priority weeds within reasonable timeframes.

Second call for projects An open call for projects will be made during the second half of 2006. These research projects will be directed to:

- Identifying social and institutional factors that drive or impede understanding of weed issues and implementation of solutions – addressing changing social and policy climates;
- Quantifying the impacts of weeds on sustainable natural resource management and the environment, and assessing the relative social and economic benefits of different control measures

– addressing changing social and policy climates; and

- Working with regional NRM bodies and others to develop new integrated weed management strategies that incorporate an understanding of landscape scale ecological processes – addressing changing institutional and environmental climates.

BUILDING PARTNERSHIPS

As is well known, weeds are a major problem of national significance, in which many different sectors have an interest. Rural landholders, managers of national parks and other public lands, rural advisers, policy analysts, regulators, and both industry and community groups all have a role to play. To varying degrees and in differing ways all contribute to knowledge generation for the prevention and management of weed invasion.

Land and Water Australia is very conscious of the need to form partnerships and collaborative arrangements with other interested parties to maximise both the return on research investment in the Defeating the Weed Menace programme and the likelihood that the outcomes of the research will be of value to a range of potential users. Those responsible for Defeating the Weed Menace R&D are very conscious that the available budget of $5.4 million over the period from 2005–06 to 2007–08 is a modest investment, given the scale of the national weed problem. However, with matching investment at the project, theme or programme scale from others already active in weeds research and management, substantial progress of benefit to all can be made.

In commissioning research projects that address the priority themes set for Defeating the Weed Menace R&D, Land and Water Australia is keen to avoid duplication of effort and to find synergies between its obligations and the needs of local and regional communities, other government agencies, research providers and industry groups.

KNOWLEDGE AND ADOPTION

Land and Water Australia is primarily a research investor, a purchaser of sound applied scientific research across industry, landscape, socio-economic and institutional arenas (Land and Water Australia 2005a). However, there is little value in research without adoption and the organisation places a strong emphasis on working to increase knowledge, understanding and informed debate about ways to improve sustainable management of Australia's natural resources.

There are many different types of knowledge and there are many different ways in which knowledge is used. For instance, Brown and Pitcher (2005) capture the different ways of knowing as individual, local, specialised (or technical) and strategic (or policy) knowledge, which in Brown's theory of 'nested

Table 1. Defeating the Weed Menace R&D themes and sub-themes.

Theme 1. Reducing the rate of emergence of new weed problems
1.1. Assess the risks of different sources and pathways of weed ingress into Australia under changing trade patterns and environmental conditions
1.2. Explore the reasons for the persistence and emergence of sleeper weeds and the extinction of others
1.3. Understand the drivers of ecosystem invasibility and develop approaches to reduce it
1.4. Support the development of scientifically based robust target lists for incoming species and sleeper weeds
1.5. Develop efficient methods for surveying and eradicating agreed priority emergent weeds (sleepers and new arrivals)
1.6. Develop new approaches to help weed source sectors reduce their risk
Theme 2. Reducing the impact of existing weed problems of national priority
1.1. Update the list of Weeds of National Significance (WONS) and review progress on control of the existing WONS to date
1.2. Support the development of biological control for agreed national priority weeds
1.3. Develop new integrated weed management strategies that incorporate an understanding of landscape scale ecological processes
Theme 3. Supporting national frameworks and capacity for sustainable weed management
1.1 Identify the social and institutional factors that drive or impede understanding of weed issues and implementation of solutions
1.2 Propose workable new policy instruments and institutional arrangements to reduce weed incursion and impact
1.3 Provide knowledge to support a national information system for weeds
1.4 Quantify the impacts of weeds on sustainability and the relative benefits and costs of different control measures

knowledges' come together to provide holistic knowledge.

Defeating the Weed Menace R&D is in large part about generating new knowledge based on high quality science that is directed to helping improve weed management. However, that new knowledge must be assimilated with existing knowledge in ways that will help prevent the development of new weed problems, reduce the impacts of existing weeds of national priority, and build on-ground capacity for weed management into the future.

As Land and Water Australia's Knowledge and Adoption Strategy (Land and Water Australia 2005b) identifies, sound management of knowledge for adoption requires a whole-of-lifecycle approach (Figure 1) in which each R&D project carefully considers its target audience(s) from project scoping through to post-project learning opportunities.

At its simplest, the knowledge generated by Defeating the Weed Menace R&D may be targeted to policy, on-ground practice and/or planning. Within each of these target sectors we may be simply seeking to provide information on some aspects of the work. More likely we will be seeking to communicate with end-users. In many instances we will be seeking to engage with local/catchment communities, land managers, policy makers or other stakeholders to maximise the usefulness of the work undertaken.

DISCUSSION

Land and Water Australia and the author of this paper are keen to benefit from the wealth of experience in weeds research, management and knowledge brokering present at this conference. One of the objectives of the Defeating the Weed Menace R&D is to make the knowledge generated through the programme's research as useful as possible for end-users. A survey sheet exploring preferred mechanisms by which the R&D component of the Defeating the Weed Menace programme might engage with others addressing weed management will be available from the author for completion at the conference. The opportunities for and timing of stakeholder engagement, and the tools most useful in ensuring that the knowledge generated from this R&D is of maximum benefit are issues on which input will be welcomed.

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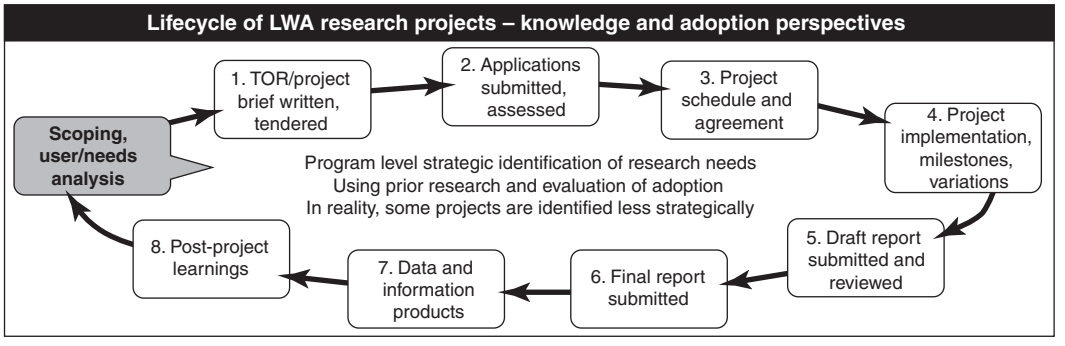

Figure 1. Land and Water Australia research project lifecycle of knowledge for adoption. Each step provides an opportunity for adoption action.