

Specifically:-

- Blackberry rust to ACT, NSW, SA and WA.
- Ragwort insects to Tasmania.
- Boneseed/bitou bush insects to Tasmania, NSW and SA.
- Paterson's curse insects to Tasmania, SA, WA, NSW and QLD.

A feature of this work is the ability of DCNR to access CSIRO's facilities in both France and South Africa.

Whilst the government contributes to biological control work, increasingly the input from industry research groups is becoming more important. The breakdown of funding for biological control in 1993/94 is shown in Table 1. What it does not show is all the "hidden" costs; the cost of construction of the quarantine facilities; the operational overheads to maintain glasshouses and other equipment.

I have roughly estimated that if this valuable piece of real estate on which Keith Turnbull Research Institute is situated was included in the Urban Land Authorities' portfolio and sold for residential development we would require more than \$10 million to replace the facilities at another site.

So what does the future hold for the funding of biological control, given the scenario that it can take up to ten years to develop the biological control agent and a further eight to ten years for it to do its job? There is no argument that times have changed. The 1990s are a far cry from the 1970s.

"Public good" is a disappearing expression. I used it very successfully in arguments for funding in the late 1970s – it does not hold much water now. As a manager I may be required to carry a funding cut of 5–10% in an area which I would argue is all concerned with "public good". The context we now operate in is one which is characterized by a declining budget and declining staff numbers. In the past two years, we have seen the numbers in my branch, Land Protection, decline by approximately 50, which is a loss of 30%.

Coupled with this is the impact of the changed organizational arrangements of the 1980s which saw the former Vermin and Noxious Weed Board incorporated into the Department of Conservation, Forests and Lands. There is no doubt that this had an impact on the priority placed

on weed control. Three years ago when I joined the Department, pest animal and pest weed control ranked lowest on the list of Departmental priorities.

The reality then is that we will not be expanding our biological control work as we do not have the capacity to take on new weeds such as cape tulip. We have had to adapt our work methods and to look to putting weed control back on the agenda. We have had some measure of success in this through our partnership with the Victorian Farmers Federation in Operation Blue Hills, a campaign to halt the speed of Paterson's curse.

There are, however, some constants from the 1970s which may contribute to the survival of our activities in biological control. The first is that the problem has not gone away. In fact the situation with weeds affecting productivity and environmental values on public land is possibly greater. The second, and perhaps most significant, is that the concern about the use of chemicals is not only still with us, but is more widespread.

The bottom line for maintenance of funding will be results on the ground.

The role of funding in biological control: from funding corporations

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Introduction

Australian farmers have had a longstanding commitment to biological control of weed and invertebrate pests of pastures. This commitment, through the various rural industry research corporations (RIRCs) and their predecessor organizations, has been very substantial in dollar terms. Over the past decade, millions of dollars have been invested in research programs aimed at controlling our major pests.

The enthusiasm for such approaches to the control of pests reflects a desire to move away from a reliance on chemical-based solutions. The perceived alternative appears to be longer term, 'natural' management rather than more complex IPM systems. Both rural and urban communities have high expectations about the likely outcomes from our biological control projects. Arguably, the rhetoric to date has far exceeded the effectiveness.

In relation to biological control programs for agricultural weeds, a number of projects have been initiated over the past decade with support from RIRCs.

Targeted species include a number of this-tle species, Paterson's curse, docks, ragwort, St John's wort, horehound, heliotrope, skeleton weed, fireweed, and Noogoora burr. The list is not exhaustive, but clearly a relatively wide spectrum of species has been chosen as targets.

The corporations involved in funding these projects have principally been the Wool Research and Development Corporation (WRDC) and the Meat Research Corporation (MRC), while the Dairy, Grains and Rural Industries corporations (DRDC, GRDC, RIRDC) have supported more limited portfolios of research.

Projects were initiated broadly in relation to industry significance, and reflected the level of available funding. Industry significance is not well-defined in many cases and earlier attempts to better describe comparative importance of different pest species, such as the 1988 Sloane Cook and King Report commissioned by the predecessor of the WRDC, have not been particularly helpful.

The RIRCs have been responsive, however, to input from grower groups

presenting cases for research on particular weeds, although the ability to respond is severely restricted at present. The view taken in this current situation of reduced funds is to pursue the completion of existing projects, rather than launch into attacks on new target species.

Resources

The funds committed by the RIRCs to biological control represent only one of a number of sources, and the contribution of the research organizations, and their commitment over many years to the projects, is acknowledged by the RIRCs. Growers, too, have been prepared to commit their own funds to support specific projects. However, I am concerned that in some of these cases with which I am familiar, the growers needs have been more short-term, and collected funds may have been better placed in a more organized approach to conventional control.

What is the level of inputs from the RIRCs to biological control of weeds? In 1993/94 total funds exceed \$1 million, but this is a lower amount than the previous

year and the downward trend is expected to continue for another year at least. The declining funding base of the WRDC is the principal cause of the trend. A breakdown of the contributions of the various RIRCs to biological control is shown in Table 1.

Table 1. Funding support from RIRCs

RIRC	No of Projects	93/94 Funds \$'000s
MRC	8	569
WRDC	7	586
DRDC	2	65
GRDC	2	146
RIRDC	1	52
Total		1418

The research organization receiving the greatest level of support from these funds is the CSIRO Division of Entomology. This group receives about 70% of the total funding. The Division has also received major capital funds in recent years to support the redevelopment of facilities at Montpellier in France.

In Victoria, WRDC funds support work on Paterson's curse, thistles and horehound at Keith Turnbull Research Institute, Frankston.

The MRC and WRDC jointly support projects on *Onopordum* thistles and Paterson's curse, and are planning to invest substantial funds in a project focused on more efficient distribution of biological control agents. The RIRCs have been concerned about the difficulties in administering such projects and are moving toward more streamlined project management systems with the aim of reducing the administrative burden on researchers. This will see the development of single reporting mechanisms through only one of the supporting RIRCs.

These changes are a reflection of the increased emphasis on creating more efficient project management and operating systems that will see firstly, the RIRCs adopting proactive and constructive approaches to portfolio management; and secondly, a strengthening of collaborative arrangements between the RIRCs and with research organizations.

The present emphasis with funding of projects also strongly shows the bias to the 'R' side of the 'R&D' equation. The creation of a project on distribution recognizes the need to boost our efforts on the 'D' side. A portion of the funds set aside for this project will, in fact, be used to support a part-time position of Co-ordinator of the RIRC's efforts in the biological control of weeds.

Dr. Peter Stahle, a consultant with Econsult (Australia) Pty. Ltd., has been appointed recently to this position and he will have the task of overseeing the devel-

opment of this distribution project as part of his brief.

The appointment of a co-ordinator will progress the development of integrated projects across Australia and should be clearly seen as an indication of the desire of the RIRCs to better use limited resources and more quickly realize potential outcomes.

A more national focus

Our past efforts in biological control, for which both the research organizations and the RIRCs must share a collective responsibility, have attracted criticism in several regards. Perhaps the three most pertinent to the creation by the RIRCs of a specific program are:

- i. resources have been spread over too many target species,
- ii. the distribution protocols have been poorly developed and in some cases, poorly managed and
- iii. there was a lack of national focus.

Has it been too much a science-driven approach with a continuing concentration on the research aspects occurring increasingly at the expense of achieving specific control outcomes? This is not to disregard the difficulties and complexities of the research undertaken, nor does it ignore the early needs to identify and understand potential agents. What has become apparent is that the logistics of distribution systems urgently require addressing given the number of agents in the pipeline.

It must also be clearly understood that from an investment perspective, significant and worthwhile returns to industry will only be achieved if the agents are rapidly and efficiently spread. Success is defined not as the release of an agent but the control of a targeted weed on a national, not regional, basis.

The development of a co-ordinated program offers scope to make better use of our increasingly limited resources and to better use the limited number of facilities. Importantly, it also offers the opportunity to better harness the support and goodwill for the biological control activities that exists amongst farmers and the broader community.