

## Annual grass weeds: workshop overview and appraisal

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### Introduction

The newly formed Co-operative Research Centre for Weed Management Systems has set itself the overall target of reducing the cost of weeds to the nation by 10% by the year 2000. In order to progress towards this goal the activities of the Centre have been divided into a number of programs intended to bring a concentrated and co-ordinated approach to the study of the most important weed problems.

A central element in the philosophy of the Weeds Co-operative Research Centre is that not only do the programs address topics of the first importance, but that within the programs priority is to be given to the most pressing practical problems. Thus, the program we have been discussing in this workshop, the 'Annual Grass Weeds Program' does not attempt to cover the dozen or more important annual grassy weeds of crops and pastures in Australia, but focuses specifically on the three that by general agreement cause the greatest losses viz. wild oats (*Avena* spp.), annual ryegrass (*Lolium rigidum* Gaudin) and vulpia (*Vulpia* spp.). All three have been the subject of extensive research both here and abroad, and some might feel, particularly in relation to wild oats, that there is little of practical importance that could possibly be added to what is already known. However, the fact remains that wild oats and vulpia are almost as prevalent as ever, and development of resistance is threatening the gains made on the ryegrass front, so it is entirely appropriate that the Co-operative Research Centre has marked out these weeds as the primary targets of the program.

### The aim of the workshop

The aim of the workshop was defined in the comments made at the start of the workshop as being "to achieve effective use of Co-operative Research Centre resources in the Annual Grass Weeds Program over the next six years". In a general way I am sure we all know what that statement means, but if one were to set out to evaluate the program in six years time, what criterion of 'effective use' would one choose? Given the comments already made about the philosophy of the Weeds Co-operative Research Centre, it seems to me that 'effective use' of the resources would imply the development of weed management strategies superior to those we have available at present together with

evidence of significant adoption of those strategies by farmers and graziers.

Putting this dual task of development of superior strategies and the achievement of significant adoption by farmers into a six-year time frame is stern discipline indeed, especially when the list includes such recalcitrant pests as wild oats. On the other hand, very few agricultural scientists today have security of funding beyond a three year period for their research and development programs, so I think that given the privilege of a six year program those concerned with accountability for the use of Co-operative Research Centre funds will feel completely justified in expecting from us a significantly better performance in relation to adoption issues than we, as a profession, have tended to deliver in the past. It is therefore essential that not only must careful attention be given to extension methods such as effective ways of presenting research information, but the Centre must encourage the growth of a research culture based on a full appreciation of the economic structure of farm businesses and an acceptance of the fact that widespread adoption of new technology into farming practice is driven primarily by the economic imperative, not by the elegance of the solution.

It is against this background that I will now attempt to make an overall appraisal of the workshop which, I understand, was the first general 'bringing together' of team members from all the groups associated with the Annual Grass Weeds Program.

### Workshop appraisal

#### *Standard of papers and discussions*

The papers were of a uniformly high standard and without exception fulfilled the specifications of the planning committee that they should summarize the present position and highlight areas of deficiency. The approach taken with all three weeds of assessing the problem, reviewing the ecology and then looking at current management strategies provided a perfect starting point for the small group discussions that followed. These papers, together with the two papers at the end viewing the annual grass weeds from the chemical industry and district agronomist perspectives, constitute a most valuable resource and I trust that the Co-operative

Research Centre will arrange for their publication and distribution.

For the discussions, the participants divided into three groups for each weed, with the result that in total there were nine separate discussions. The groups were encouraged to concentrate on defining gaps and problems rather than suggesting solutions. Naturally the directions taken in the various groups reflected, to some extent at least, the complex interaction between the group leaders and the participants, but when the reports came in it was interesting to note the broad agreement on the majority of priority areas and the good natured acceptance of the differences of opinion on the others. Given that the authors of the papers aimed to highlight gaps in our capacity to understand and manage the weeds, and that the discussion groups allowed all present to participate in a working over and evaluation of that information, the recommendations as finally edited should prove of great value in developing a strategic plan for the Annual Grass Weeds Program.

#### *Integration of old and new material*

A commendable feature of the reviews presented was the excellent integration of the older and newer information. The cost of research is now so great that it places a heavy obligation on all of us to make sure that any reliable reports in the older journals and departmental records, particularly material covering the inherently longer term areas such as ecology and non-chemical management, are properly evaluated and incorporated into our current frame of reference.

#### *Exchange of information*

The activity was an outstanding success in this area at both the formal and informal levels. The format, the setting and the social interludes all served to maximize information exchange. Typical of the unplanned yet important exchanges of practical information which have taken place are the copies we all now have of the hand written identification guides to the species of wild oats and vulpia in Australia prepared respectively by Roger Cousens and Peter Dowling in response to requests from the floor of the meeting for something more helpful than the accounts given in standard floras, and Jim Pratley's proposed logical nomenclature for non-conventional tillage systems.

#### *Co-operation*

The very name 'Co-operative Research Centre' implies that co-operation is to be a key feature of its mode of operation. Taking into account the vast geographic spread of the participating groups in this program as well as its newness, I felt the degree of co-ordination achieved in the presentation of the papers, the evident

interest in coverage of issues on a national scale, and the contacts renewed or initiated during the conference all augur well for the emergence of a truly co-operative research program.

#### *Recognition of arrival at targets*

There is an old planning adage that you must first decide where you want to go, secondly work out how to get there and finally work out how to recognise when you have arrived. By setting a clear overall goal the Co-operative Research Centre has covered the first of these points, while the recommendations of this workshop should go a long way towards defining the path to be followed. However, at this stage we have heard very little on the third point. I realise that the program is just starting, but it is important that the arrival signals be defined in detail as soon as possible, especially in view of the comments made earlier about the ultimate accountability of the Weeds Co-operative Research Centre being measured in terms of *adoption of solutions* rather than *production of solutions*. Strange as it may seem, the possession of a good set of target recognition signals is an enormous help in project design and an absolute necessity for meaningful mid-term adjustments of the balance between the various components. Plainly, some further work is required in this department.

#### *Extension and adoption issues*

The discussion groups laid strong emphasis on extension as a key to adoption, calling repeatedly for large scale or even whole farm demonstrations to be set up to show that the methods really work under field conditions. However, as several speakers reminded us, in the present era of slender farm profit margins and the progressive disappearance of the old minimum price schemes and similar stabilizing mechanisms, it is no longer appropriate to assume that a grateful farming community should consider itself under a moral obligation to adopt or at least acknowledge a method which has been demonstrated to work by a research team. Rather, adoption will follow on a particular class of farms when the operators can satisfy themselves that the method will, under average conditions and at an affordable price for both labour and materials, lead to a net gain in the probability of their long term survival in the industry. Many of those present are well used to this type of farm management thinking, but for others such as myself it requires a considerable broadening of the criteria to be used in deciding what constitutes an effective weed research outcome.

#### *Regional differences*

Looking over the papers presented and listening to general conversation during

the workshop, I was struck by the high levels of success reported by some speakers for management of a particular weed and the quite tentative findings reported by others on the same pest. A little reflection led to the realization that the more tentative solutions were often associated with the climatically unreliable mixed farming zones of south-eastern Australia, while the others were often associated with the predominantly crops based farming systems in the areas of Mediterranean climate. In a country as large as Australia, regional differences in climate and soils, and accordingly in farming systems, must be accorded due deference. At the same time, this must be seen within the Weeds Co-operative Research Centre as an opportunity to test the robustness of our understanding of the range of strategies used by a particular weed across the whole span of its distribution, and for avoiding the situation often seen in Australian agricultural research where a rigid division of the problem into east and west or north and south leaves those in the centre with a distinct dearth of guidance.

#### *Community attitudes and expectations*

It is a truism that an increasingly urbanized Australian community is setting higher and higher standards for the rural sector in terms of environmental protection, freedom from residues in farm produce, product quality, and sustainable land use. The expectations flowing from this are that agricultural research will develop low cost ways of achieving these standards with reduced inputs of water, persistent pesticides and fertilizers.

We have a long tradition of exploring chemical, cultural and biological approaches to weed management in this country, and our approach to annual grass weeds is no exception. However, to a generally uninformed but voting public, their typical perception is that weeds are 'controlled by spraying with weed killers'. In this situation it is vital that the Weeds Co-operative Research Centre include the urban community in its educational efforts with a view to replacing the 'controlled by weed killers' image with a more balanced appreciation of modern weed management systems. This is not an easy task, however, when urban dwellers who applaud the conservation value of reduced tillage systems none-the-less deplore the use of the herbicides which have made the practices possible! It does, however, place a considerable premium on traditional biological control methods and Co-operative Research Centre management should ensure that these are more prominent on the operational agenda than they were in this conference.

#### **Concluding comments**

Having formed the opinion that the workshop has been a resounding success and that the Annual Grass Weed Program could now be said to be well and truly launched, let me conclude with the following comments:

- Keep your aim firmly in mind and work steadily towards it. As the famous British Army publication 'Staff Duties in the Field' points out, selection of the aim is easy, maintenance of the aim is the real test of strength.
- Research, whether biological or economic, must proceed against a sound understanding of the whole farm system.
- Adoption of solutions is largely dependent on the economic feasibility of modifying the farming system of individual properties to accommodate them.
- Extension is greatly assisted by the development of information materials of a kind which surveys show are actually used by consultants and farmers.
- Non-chemical approaches to weed management must receive due emphasis both in their own right and to meet growing community expectations.
- Look ahead. As you go about your work give consideration to the likelihood that the adoption of changes to farming systems to manage wild oats, annual ryegrass and vulpia will almost certainly create opportunities for weeds currently regarded as lesser pests to become more prominent. In the interests of the achievement of the overall target of the Weed Management Systems Co-operative Research Centre, let us hope that *more prominent* will not, for once, equate with *more troublesome*.