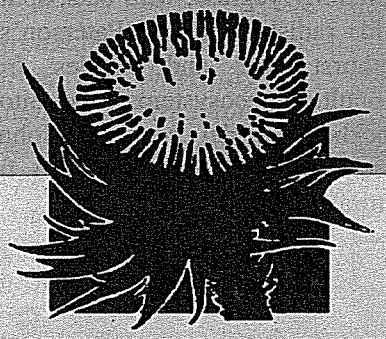
A Good Weed



the NEWSLETTER of
The Weed Society of New South Wales

1
MARCH 1995

Weeds Hit the Big Time

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On 15 December last year, Senator Peter Cook announced that 10 new Cooperative Research Centres (CRCs) had been selected in the 1994 (and final) selection round for funding by the Commonwealth Government. Among those 10 was the CRC for Weed Management Systems, a significant new venture for weeds research and education in southern Australia worth $15 million over the next 7 years.

Editor: Brian Sindel
Department of Agronomy and Soil Science, University of New England, Armidale 2351
Ph: (067) 733 747
Fax: (067) 723 262 Email: bsindel@metz.une.edu.au

Secretary: Leon Smith
8 Darwin Drive,
Lapstone 2773
Ph/fax: (047) 393 564

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.....Weeds Hit the Big Time

The CRC for Weed Management Systems provides for a significant boost in funding for the partners of the CRC to the tune of $2.2 million per year for the next 7 years. The three core partners in the CRC are NSW Agriculture, the CSIRO Division of Entomology and the University of Adelaide. Other NSW partners include the University of New England at Armidale, the most northern node of the CRC, and Charles Sturt University at Wagga Wagga in the south of the State.

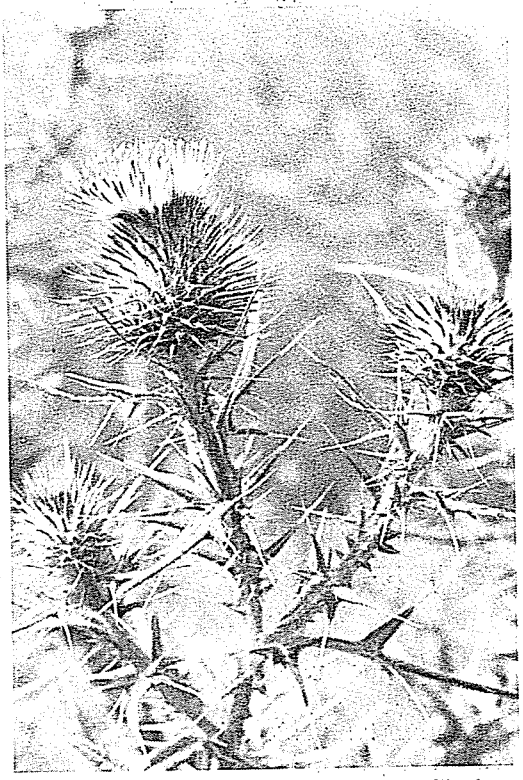
The major industry partners are the Grains Research and Development Corporation (GRDC) and Avcare.

The funding of this CRC represents an acknowledgement on the part of Government of the enormous impact that weeds are having on the Australian environment and economy. The interviewing team accepted that whatever could be done to foster collaborative and effective research and education in weeds should be done. The fact that weeds are estimated to cost the Australian economy $3.5 billion in contamination of agricultural products, lost production and control costs, and that $500 million worth of herbicides are sold each year, is evidence of the magnitude of the impact that weeds are having.

Whilst it was argued that the CRC could not realistically attempt to investigate every weed problem in Australia, it nevertheless aimed to develop Integrated Weed Management (IWM) principles and systems that may have benefits in geographic areas not covered by the CRC. In this regard, the CRC for Tropical Pest Management was seen as providing similar research and educational services in weed management to the northern tropical regions of Australia.

The Centre's Director is Steve Powles from the University of Adelaide, an expert in herbicide resistance. Mr John Kerin is Chairman of the Board.

There are three research programs in the CRC based around annual agro-ecosystems, perennial pasture ecosystems and natural ecosystems. Several key weed species have been targeted for study including ryegrass, wild oats, spiny emex, wild radish, vulpia, Paterson's curse, Bathurst burr and thistles from the agricultural ecosystems, and bitou bush, blackberry, bridal creeper, St John's wort, horehound and Scotch broom from the natural ecosystems.



Thistles, like this spear thistle (Cirsium vulgare), *are to be targeted in CRC research along with other major weeds of southern Australia.*

The Education and Adoption programs were emphasised as being keys to the success of the CRC. The need for effective education and communication in weeds has been highlighted by the relatively recent developments in herbicide resistant weeds. Much of the existing base of research knowledge needs to be incorporated more effectively into farming practice and land management.

Currently, there is a lack of education in weed science with only one full time Lecturer in Weed Science teaching in NSW universities.

Undergraduate students like these from the University of New England at Armidale (in the process of hand-weeding a canola plot) should benefit in their understanding and training in weed management through the activities of the CRC. ➲

Funding for the CRC begins in July and the contact officer for the CRC is Dr Jim Cullen of CSIRO Division of Entomology, GPO Box 1700, Canberra, ACT 2601). ❐

The Role of Herbicide-Resistant Crops and Pastures in Australian Agriculture

A stimulating workshop was recently held by the Commonwealth Bureau of Resource Sciences to examine views on the introduction of transgenic herbicide-resistant crop and pasture varieties in Australia and how these new technologies might be used for substantial national advantage.

The development of crops with resistance to herbicides is already a commercial reality. Herbicide-resistant canola and maize developed using techniques that exploit mutations and natural variability within species will soon be followed onto the market by other crops, including cotton, maize and soybean, with genes for herbicide resistance derived from alien sources, such as bacteria. The technology is claimed to offer new opportunities for weed control that could radically alter some farming systems.

The workshop brought together people from science, industry, government and consumer groups and at times stimulated lively comment. Speakers from overseas, where transgenic herbicide resistant crops are already on the market, were also involved.

One of the concerns expressed by some speakers was that transgenic herbicide-resistant crops could lead to greater dependence by land managers on herbicides for weed control. Increased usage could in turn lead to more rapid development of herbicide resistance in weeds and to environmental contamination of soils and groundwater.

The idea that these transgenic varieties may themselves become major weeds or transfer their resistance to related weedy species or weedy races of the crops themselves was also discussed. However, in the context of Integrated Weed Management (IWM), transgenic herbicide-resistant crop and pasture varieties were seen to offer an additional alternative to traditional chemical weed control in that certain herbicides may be able to be used 'in crop' that would otherwise not have been possible. Indeed, it was stressed that one of the aims of this latest strategy should be to contribute to the development of IWM systems which combine a variety of weed control methods.

Various members of the Society who attended the workshop (including the editor) have copies of the workshop papers, and a monograph of the proceedings should be published sometime in 1995. The recommendations from the workshop will be used to help frame appropriate policy guidelines on the release and use of transgenic herbicide-resistant crops. ❐

Is Chicory one of the 'Good' Weeds?

Chicory (Cichorium intybus) belongs to the plant family Asteraceae. It is an edible native perennial herb of Europe and Asia which, in Australia, has escaped cultivation to grow as a weed along roadsides and in wastelands. In a recent article in the Newsletter of the Grassland Society of NSW, David Michalk, David Kemp and Yohannes Alemseged from NSW Agriculture discussed the potential of this renegade herb as a forage for improving livestock production in Australia. The following is an edited account of their article.

Preliminary nutritive analyses and livestock performance suggest that chicory is close to the ideal forage. The availability of chicory as a pasture plant is changing the type and structure of pastures, but we know very little about how to manage and utilise herb-based pasture ecosystems.

Chicory is not a new plant to agriculture. In Europe, it is noted in medieval herbals for human consumption and the taproot is used as a coffee substitute. The leaves of some ecotypes are used as a green vegetable, and salad varieties of chicory are often sold for human consumption in NSW.

Chicory has also been used as livestock feed at various times throughout history. For example, in central Europe (which appears to be the centre of origin), it has been a component of pastures for more than 300 years, while records of its use in pastures in the U.K. date back to the 18th century. In Australia, the herb was introduced from Europe and is now found throughout the south east of the continent, mainly as a weed along roadsides, but not in neighbouring paddocks which are continuously grazed.

Preliminary testing suggests that chicory has the potential to bridge the summer/autumn feed gap in the Tablelands of NSW with quality forage. Winter dormancy enables the plants to survive frosty winter conditions. The

cultivar of chicory currently being sown in pasture mixes in Australia is Puna. In drier seasons and on less favourable soils chicory may even out-perform lucerne.

Two problems arise from the high growth rates of chicory. Firstly, when flowering, much of the dry matter which accumulates can be coarse, unpalatable stems. Secondly, to attain high growth rates, a high level of nutrition is required, especially nitrogen. Current programs at the Agricultural Research and Veterinary Centre, Orange, are providing the technical basis for grazing strategies and management practices to minimise these problems and maintain chicory pastures in a productive and nutritious state for sheep production.

Animal production from chicory has consistently shown high levels of production per head. One possible reason for the enhanced animal performance on chicory is its high nutrient content. Research continues on the nutritional factors that enable chicory to produce high animal growth rates. The question remains - are we seeing a comeback of this ruderal weed? Is it in fact one of the 'good' weeds? ❐

The Lemerle Report - Weed Science in the UK

In June 1994, Deirdre Lemerle made visits to two major centres of weed research in the UK on a Travel Study Grant from the Weed Society. In this issue of A Good Weed, Deirdre reports on some of her discussions with British weed scientists. She writes:

I visited two research institutes while in the UK, Long Ashton and Rothamsted. Rothamsted Experimental Station has 450 staff and is located in Hertfordshire (north of London). Long Ashton has 250 staff, and is associated with the Department of Agricultural Science, University of Bristol. Both institutes are part of the Agriculture and Food Research Council (AFRC) Institute of Arable Crops Research.

Originally there were about 80 weed scientists in the Weed Research Organisation (WRO). WRO was disbanded in the 1980s and 25 people were relocated to Long Ashton, and others elsewhere. Now there are 12 people left at Long Ashton and about 24 at Rothamsted.

The Agricultural Development and Advisory Service (ADAS) does much of the applied research previously carried out at the WRO. Scientists at Long Ashton and Rothamsted are mainly physiologists and ecologists who are aiming to develop integrated weed management with lower inputs of pesticides and the use of natural control agents. After years of high input agriculture, the emphasis is changing in favour of lower–input farming, organic growing and land use diversification. Weed studies are focussing on the agricultural and environmental interface and the need for greater biodiversity.

Research funding is very tight and there has been a trend away from funding 'near–market' projects towards more basic research. Researchers feel that the pendulum will swing back the other way in the next few years.

A number of other factors have recently affected the management of weeds. Stubble burning was banned in 1991 and now stubble is cut, chopped and incorporated. This change has led to problems with weeds such as brome grass, greater dependence on herbicides, and herbicide resistance, especially in black grass (*Alopecurus myosuroides*). The triazine herbicides have been banned in Europe, and trifluralin and triallate may be added to the list soon because of

their volatility. Therefore, we cannot guarantee the future of these herbicides in Australia. There will be an expansion of lupins (*Lupinus albus*) in the future for animal feed in the UK and this may lead to more herbicide resistance because lupins are poor competitors and are dependent on herbicides for weed control.

The 'set–aside' of 15% arable ground has led to large areas of land being sprayed with glyphosate. The compensation for farmers is £140/ha for cereals and £440/ha for rapeseed.

The following is a brief summary of work being done by colleagues at Long Ashton and Rothamsted.

Long Ashton

Agroecology (Dr John Marshall)

In the UK, agricultural land is a combination of crop, woodland, grassland and hedgerows. Current studies are investigating how enemies of crop pests such as aphids utilise alternative resources in the patchy environment. Most weeds are 'recycled' in the paddock, except *Galium aparine* (cleavers) and *Bromus sterilis*, which spread from the perimeters. For such weeds they are looking at growing a perennial grass e.g. *Festuca* around the perimeter of paddocks combined with spraying fluazifop to stop the spread of brome grass into fields.

In addition, these strips of grass (beetle–banks) could contain useful seed–eating beetles for eating weed seeds in crops. 'Beetle–banks' are said to encourage natural enemies of pests. Studies of plant–insect interactions are being used to improve the understanding of both pest and beneficial species. The trend is towards small fields with native strips to allow migration of natural enemies of crop pests into the crops. Examples of natural methods of control are slug control with nematodes, and ragwort with mycoherbicides.

Less–Intensive Farming and Environment (LIFE) research project

This is a long–term rotation trial established at a number of sites in the UK and Europe which aims to provide fundamental information on the effects, interactions and ecological implications of an integrated farming systems approach. It also aims to develop less–intensive farming systems which are economically and ecologically sound and sustainable in the long–term. Four systems of production are compared that involve integration of different degrees of agrochemical and energy inputs in relation to different crop rotations, cultivars and cultivation methods. Although yields were reduced in the first couple of years in the 'less intensive' system, savings in variable costs allowed profitability to be maintained. Weed thresholds are considered to be important in reducing the number of applications of chemicals. Minimum tillage has led to more diverse fauna.

Weeds seed biology and ecology (Dr Nick Peters)

Physiological and biochemical studies of weed seed dormancy and the possible regulation of dormancy in *Avena fatua* are being used to design effective long–term control strategies.

Areas of particular interest are:

- production, survival and dispersal of weed seeds;
- genetic variation in weed seeds and use of genetic markers to identify it;
- models for predicting weed emergence and crop loss; and
- brome grass biology and ecology.

Brome grass is expected to become a major weed in the future and studies are examining its biology and ecology. *B. diandrus* is the main problem being able to emerge from 25-cm soil depth.

Dr Geoff Seavers
G.S. has replaced Bernard Wilson. He will be looking at integration of control strategies, weed thresholds, modelling, competition and factors affecting weed spread.

Enhancement of mechanical weed control by sub–lethal doses of herbicide (Dr John Caseley)
The effect of spring-tine harrows in combination with low doses of herbicides on weeds are being examined. Wheat is sprayed at the 3–4 leaf stage with a herbicide that inhibits root and shoot cell division (e.g. a sulfonylurea or phenoxyacetic acid) and the crop is cultivated about a week later. Sub–lethal doses enhance the effects of cultivation by holding the weed at a vulnerable stage and inhibit growth following cultivation. Wheat cultivars with erect habit and high tillering would be damaged less by this technique.

Mycoherbicides – has the bubble burst? (Dr Mike Grieves)
Over the last 5 years, mycoherbicide research has received government and commercial funding, however, this seems to be changing. While the biological basis of mycoherbicides is quite feasible, the high development costs, time taken for commercialisation and the environmental risks to crops, have led to less support recently.

Leaf attacking agents are the most widely researched, and agents are available for brome grass and wild oats. There are problems, however, with spread, contaminants, specificity, formulation and company acceptance. The potential for mixing mycoherbicides with low doses of herbicides is also being examined. Products based on organisms which attack the roots of weeds are more difficult but nevertheless possible, e.g. fusarium on brome grass, but again there is low commercial acceptability.

Rothamsted

Weed biology and ecology (George Cussans)
The persistence of 19 weed species is being examined over 3 years. Weed patchiness is also being studied because weed infestations tend to be patchy in UK fields. Small fields have been amalgamated and waterlogging is spacially very variable. Weed control decisions based on thresholds are inappropriate for fields with patchy infestations. Researchers are developing techniques to map fields (by visual assessment and then computer images) which may then be able to be linked with a navigational device on a spray unit for herbicide application to the weed patches only.

'Beetle–banks' on the perimeter of fields in the U.K. with the aim of maintaining fauna diversity.

Allozymes and DNA analysis are being used to differentiate between the reproductive and vegetative spread of perennial weeds within a field.

Dr Lisa Rew (postdoctoral fellow) is examining the movement of weed seeds by cultivation and the movement of pollen.

Expert systems which have been collated by consultants and advisers are also being assessed.

Ecotypes of brome grass, a major weed, being examined by Deirdre Lemerle.

Herbicide resistance (Dr Steve Moss)

Wild oat resistance has recently developed to the aryloxyphenoxy propionates (fops), cyclohexanediones (dims), and the amino propionate, flamprop–methyl (Mataven). Even when farmers keep good records, it is very difficult to predict the time and conditions needed for resistance to develop. Blackgrass resistance is strongly associated with zero tillage, but 70% of farmers plough because stubble burning is not allowed. The use of break crops is increasing to allow alternative weed control options. Although DNA probes have been tried, pot screening is still the most reliable method of identifying resistance.

Weed competition thresholds (Dr Peter Lutman)

Farmers need a reliable predictor of the potential impact of weeds on yields. Research is examining competition between weeds and the broadleaf crops, beans and canola. Dry matter is proving to be a more reliable estimate of weed presence than plant numbers. The use of relative leaf cover of weed/crops is being assessed for predicting yield loss. Other experiments are examining the interaction between crop/weed competition and agronomic factors such as sowing date, seed rate and fertiliser.

Rapeseed is showing potential to behave as a weed in some broadleaf crops and as a contaminant of canola–standard rapeseed. With the return to ploughing, problems have arisen because shattered canola seed becomes 'dormant' when buried dry at harvest. It is less of a problem where there is no cultivation and wet conditions at harvest.

Classical experiments at Rothamsted

Broadbalk has had continuous wheat since 1844 with various fertiliser, manure, and pesticide treatments. Yields of 1.2 t/ha are obtained without fertiliser while up to 9 t/ha is achieved with all inputs. Where no herbicides have ever been applied, 10–20 different plant species are present. Where herbicides have been applied, less than five species occur at very low levels. Weed problems have shifted as new herbicides have become available. Increased levels of fertiliser and less competitive crops has led to an environment that generally favours the weed more than the crop. Modern crops appear to be more dependent on pesticides for success.

Parkgrass is the oldest grassland in the UK. Laid down in 1856, it demonstrates how continued manuring with different fertilisers affects both the botanical composition and productivity of pastures. The area is cut for hay once

a year. The unmanured plots have the most diverse flora of about 50 – 60 species. The addition of lime, N, P and K has led to shifts in some species. ❐

(Deirdre Lemerle is Senior Research Scientist – Weeds, with NSW Agriculture at the Agricultural Research Institute, Wagga Wagga, NSW 2650.)

Editor's note. *I also received a Travel Study Grant from the Society last year, but given the inclusion of Deirdre's very interesting report in this issue of the newsletter, I will hold my report over for the next issue.*

Siam Weed found in Australia

Landholders in far north Queensland have been warned to be on the lookout for Siam weed following an outbreak near Tully.

One of the world's worst environmental weeds, *Chromolaena odorata* poses a serious threat to World Heritage rainforests and farming areas because of its aggressive growth. It is invasive and poisonous to livestock, and is believed to have the potential to destroy native rainforest and take over large areas of Cape York and Arnhem Land.

Technical staff from the Queensland Lands and Primary Industries Departments have conducted a comprehensive ground search to determine the spread of the weed and are now attempting to eradicate it.

Control of the weed will be by herbicide application with follow-up treatments involving surveillance and elimination of emerging plants for a period of 5 years.

Siam weed is a freely branching perennial shrub, forming dense tangled bushes 2-3 m tall in open land, and reaching up to 20 m as a scrambling climber on trees. Siam weed flowers in winter, with small white or pale lilac flowers developing on all branches and side shoots, to cover the whole plant.

It has the potential to establish on the coast from Narooma in southern New South Wales, through coastal and northerly inland areas of Queensland and the Northern Territory and along the Western Australian coast to Broome.

Siam weed is a native of Central America and is widely distributed in Asia. Attempts to control it biologically in South Africa, Ghana and south-east Asia have so far failed.

Australian Quarantine and Inspection Service (AQIS) staff have been monitoring the spread of the weed through south-east Asia to Papua New Guinea for several years.

A botanist working under the Northern Australia Quarantine Strategy, Barbara Waterhouse, spotted the outbreak while travelling recently near Tully. ❐

Grain and Stockfeed Imports

With the recent drought in parts of NSW, there is concern amongst many people that the movement of fodder and grain from interstate and within NSW will result in the spread of some major weeds, such as parthenium weed (*Parthenium hysterophorus*). Likewise, grain imports have the potential to introduce new alien species to Australia.

In this regard, the Minister for Primary Industries and Energy, Senator Collins, has announced the establishment of a special task force within the Australian Quarantine and Inspection Service (AQIS) to handle applications to import grains which have resulted from shortfalls in domestic supplies caused by the prolonged drought.

By early November 1994, AQIS had received 40 drought-related applications to import grains and processed stockfeeds, totalling about 1.56 million tonnes.

Twelve applications had been approved with appropriate quarantine conditions on shipping and handling.

Each application is being considered on its merits against the Government's quarantine policy. The Bureau of Resource Sciences is assisting with a pest risk analysis of grains which have not previously been imported.

Whole grain imports for processing in approved metropolitan premises must meet a range of conditions, including 'proper disposal of all screenings, *weed seeds* and other foreign matter removed from the grain'. Whole grain imports for processing in country areas present the highest quarantine risk as country mills are usually situated close to growing or storage areas. Hence, in these cases, much more stringent quarantine controls will be required.

The first drought-related importation of grain was discharged at Newcastle on 24 October. The 5,500 tonnes of US maize was cracked at Newcastle and transported to Blayney in the central west of NSW for processing into petfood.

AQIS has prepared a summary document 'Grain Imports for Stockfeed or Milling', which provides a general guide to the quarantine requirements of AQIS.

Editorial

As the new editor of this newsletter, I would like to thank and congratulate Deirdre Lemerle for her splendid work over the last 3 years in producing an informative and interesting 'read'. I hope that I can maintain the high standard set by Deirdre.

I guess that I will be adding my own personal flavour to the newsletter but it remains a members newsletter, and so I would like to encourage you to take the opportunity of having an input. Why not write a letter to the editor to express your view or perhaps offer to contribute a brief article on some weed-related matter. The newsletter will have broader attraction if we hear and learn from all our members in all of your diverse fields of work and interest in weeds.

I am also personally interested to hear your comments as to the strengths and weaknesses of the newsletter, so that, if possible, I can tailor it to better suit members' needs. So why not drop me a line! By the way, if the Society can be of help to you, or you to the Society, then please let us know!

Please accept my apologies for the fact that this issue of the newsletter is a little late in being compiled and sent out, but the change over in editors has necessitated devising and organising new production procedures.

Harvesting and Drying Hyacinths the Natural Way

The Castillero Lagoon is a natural floodplain of the Orinoco River in Venezuela, having a surface area of about 140 ha. The climate is biseasonal, having dry and wet seasons. During the wet season (April to September), the Castillero Lagoon fills and reconnects to the Orinoco River. During the dry season, the lagoon loses water and becomes isolated form the river.

Water hyacinth (*Eichhornia crassipes*) is a common plant of the lagoon, having suddenly become widespread in the late 1970s. It is believed that the increased growth of the plant is due to overflowing wastewater tanks of the nearby town into the river.

Researcher, Rodriguez Reyes, and his colleagues at the Universidade de Oriente Instituto Limnologico, have found that the numbers of water hyacinth plants in the lagoon can double in seven days, and hyacinth weight can double in 10 days. The net productivity is 18 $g/m^2/day$, dry weight.

During the wet season, large dense rafts of water hyacinths are blown in amongst the trees and bushes of the lagoon which, during dry times, are well up on shore. During the dry season the water recedes, leaving thousands of tons of water hyacinths high and dry.

To researchers and locals who wanted to improve the acid soils of their gardens and fields, this seemed a useful resource free for the taking. So, for the past several years, they have gathered tons of the naturally dried and freely accessible water hyacinths for their favourite compost recipes. These formulas include blends of chopped dried hyacinths, cow manure, sawdust and phosphatic rock.

Unlike other ventures in which using hyacinths as soil amendments has been uneconomical, the entrepreneurs at Castillero have found composting profitable. That's because nature and the fluctuating Castillero Lagoon have eliminated the usually prohibitive production costs of harvesting and drying the water hyacinth plants.

Canadian Herbicide-Resistant Canolas

An alliance between Pioneer Hi-Bred, United Grain Growers (UGG) and Cyanamid Canada has brought a new canola-herbicide combination to the Canadian market.

The 1471 Argentine canola strain is resistant to Cyanamid's broad-spectrum herbicide, Pursuit (one of the imidazolinones).

By using *in vitro* mutagenesis, two genes for resistance were isolated. These were developed into two strains of Pursuit-tolerant canola, one that possesses a single resistant gene and another (1471) that carries both genes.

The partnership combined Pioneer's plant breeding strength with Cyanamid's expertise in chemistry. UGG (through their Proven Seeds division) provides the marketing for Western Canada, as well as the seed multiplication services and customer service people.

The partners hope to have the canola-Pursuit package on the market this year. Pursuit is already used extensively on the central Canadian soybean crop and registration for field peas is expected soon.

Agrevo also has a new herbicide-resistant canola. The seed of this variety, which is resistant to glufosinate ammonium, is currently being multiplied up at sites across Western Canada.

Glufosinate ammonium is a non-selective, post-emergent herbicide

designed to control all weeds in one pass without incorporation. It also causes no re-cropping restrictions. Currently used as a crop desiccant, it is awaiting registration approval from Agriculture and Agri-Food Canada for use as a herbicide. Similar approval is being sought in the U.S. for soybeans and corn.

The herbicide will be marketed under the brand name Liberty. Seed for crops with the resistant trait will carry the Liberty Link stamp. The herbicide-canola package is expected to be available to farmers for the 1995 spring sowing.

Development of a NSW Weeds Strategy

Following a recommendation made by the Noxious Weed Advisory Committee (NWAC), NSW Agriculture has engaged Bob Paton on a consultancy basis to assist in the development of a *'NSW Weeds Strategy'*.

Bob is an entomologist who has over 30 years' experience in plant protection, the last 20 of which were with the Australian Quarantine and Inspection Service (AQIS). The terms of reference of the consultancy include:

- assessing interstate quarantine and other measures aimed at reducing the risk of introducing new weeds into NSW;
- assessing procedures for the management, administration and funding of noxious weed programs and the adequacy of legislation in support of these actions;
- assessing the capacity for research to provide the information necessary to develop effective weed management strategies for both agricultural and environmental weeds and the extent that it is adequately resourced, coordinated and prioritised; and
- assessing the extent that extension and other training opportunities in weed sciences provide the background necessary to land managers and the public on their responsibilities for weed control and the skills required to effectively manage noxious weeds.

The assignment will be undertaken on a part-time basis over a period of about 18 months in order to allow for sufficient time to consult with stakeholders and other interest groups.

Further information about the project can be obtained from Bob Trounce, Acting Program Leader (Weeds), NSW Agriculture, Orange, phone (063) 91 3172.

Travel Study Grants Available

Travel Study Grants, funded by the Weed Society, are now available to financially assist individuals to attend conferences or to travel on specific interstate or overseas study tours in the period from 1 July 1995 to 31 June 1996. The grant is open to persons over 18 years of age who are involved with weed research, extension, regulation or practice. Studies of limited interest to the Society will not be considered. Applications will only be considered from persons who reside in NSW or the ACT. Members of the Society may be given preference. Rarely will the grant meet the full expenses of travel so applicants must arrange additional funds from other sources. Applicants attending conferences are expected to contribute to the conference.

Grantees are expected to return to service within NSW. They will be

required to submit a succinct written report for publication in this newsletter (see report from Deirdre Lemerle in this issue) soon after returning to duty and/or pass on results of the assignment to other workers in an appropriate manner, e.g. seminar or meeting.

Applications are to be forwarded by 31 May this year to:

The Secretary
The Weed Society of New South Wales
P O Box 438
WAHROONGA NSW 2076

Application forms are available from the Secretary, Leon Smith, at the above address or by telephoning (047) 393 564.

Members Matter

□ Congratulations to ***Andrew Leys*** for his recent appointment to the National Parks and Wildlife Service in Sydney. Whilst Andrew leaves his position as Program Leader (Weeds) with NSW Agriculture, thankfully his expertise in weeds will not be lost from NSW or the Society. Andrew is to be succeeded by John Fisher from Wagga Wagga.

□ ***Ken Russell*** sends his thanks and best wishes to members of the Weed Society after receiving his 25 year medallion for membership in and contribution to the Society. Ken is now enjoying retirement in the Woy Woy/Umina district.

□ After 2 years in office, ***Leon Smith*** (our current secretary) has just retired from the position of President of the International Weed Science Society (IWSS). He is succeeded by John Terry from Long Ashton Research Station in the U.K.

News in Brief

□ The Council of Australian Weed Science Societies (CAWSS) recently gave approval and $1,000 for the setting up of a Tasmanian Weed Society through Allan Harradine.

□ One of the latest herbicides to be registered by Monsanto is the sulfonylurea, halosulfuron-methyl, known as 'Sempra'. It is aimed at controlling nutgrass (*Cyperus rotundus*) and couch (*Cynodon dactylon*) in turf.

□ Ross Shepherd from the Weed Science Society of Victoria has been elected Vice-President of CAWSS and Chair of the Organising Committee for the 11th Australian Weeds Conference (see enclosure).

□ CAWSS has budgeted $6,000 for the production of a weed name booklet in 1995 and $7,000 to assist State societies with promotion and publicity of weed projects.

□ Comments were recently sought on the draft NSW Environmental Protection Authority's (EPA) Licensing Guidelines on Herbicide Use in or near Waters. Section 16 of the *Clean Waters Act 1970* makes it an offence to pollute waters unless authorised to do so by a licence issued by the EPA. The decision whether or not to apply for a licence is at the discretion of the herbicide applicator. The Act does not make it an offence not to hold a licence; rather, it is an offence to pollute unless authorised by a licence.

In summary, the Guidelines state that:

- a licence is unnecessary if contact of the herbicides with waters can be avoided by the exercise of due diligence and the herbicide application is consistent with the provisions of an EPA-recognised code of practice or guideline;

- the EPA would not grant a licence if a more appropriate method of weed control is available;

- the EPA will consider a licence incorporating strict operating and monitoring conditions if the use of the herbicide is justified and contact of the herbicide with waters is unavoidable; and

- it is the responsibility of the operator to ensure compliance with the conditions of pesticide registration, any relevant EPA-recognised codes of practice or guidelines for the use of herbicides, and the conditions of any applicable pollution control licence.

Further information can be obtained from:

Waters and Catchment Branch
NSW EPA
Locked Bag 1502
Bankstown NSW 2200

Other Good 'Reads'

Water Plants in Australia

A Field Guide, 3rd edition, by G.R. Sainty and S.W.L. Jacobs, Royal Botanic Gardens, Sydney. 1994. 327 pp. *This colourful and comprehensive handbook is now available to members of the Weed Society from the secretary for the* ***reduced price of $25.***

This is a unique pocket-sized identification book which describes 120 water plants. It also has chapters on algae and management. Colour photographs and drawings of special features accompany descriptive notes about each plant.

A useful feature of this book is its extensive use of colour-coded drawings which are keys to the growth habits, leaf shapes and leaf arrangements of the plants.

Management of Agricultural Weeds in Western Australia

edited by J. Dodd, R.J. Martin and K.M. Howes. This book is an ideal reference for farmers, students, and others associated with broadacre cropping in southern Australia. The book stresses the need for integrated weed management which relies on the combination of agronomic, biological and chemical methods. If modern agricultural systems are to be sustainable, both environmentally and economically, then the information and principles as set out in this book show the path for the future. Available from the Western Australian Department of Agriculture, 3 Baron-Hay Court, East Perth, WA 6151 for $50 plus postage. 1994, 280 pp.

Biological Control of Weeds: Southeast Asian Prospects

by D.F. Waterhouse, Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia. 1994. 302 pp. (Order from ACIAR, 3rd Floor, 10 Moore Street, Canberra, ACT 2601, Australia. (06) 248 8588).

The purpose of this book is to summarise the 27 major exotic weeds of agriculture in Southeast Asia, what is known about their natural enemies and the prospects for classical biological control.

This list of major agricultural pests includes several aquatic plants. The author concludes that 6 of the plants have good to excellent prospects for biological control and that 6 more are likely to have valuable natural enemies. There exists insufficient information to classify the remaining 15 major pest plants. Each plant is treated with a line drawing, an Asian distribution map, and text.

Weeds of the West
by T. Whitson, L. Burrill, S. Dewey *et al.*, Western Society of Weed Science. 1992. 630 pp. (Order from Weed Diagnostic Lab, Department of Plant, Soil and Entomological Sciences, University of Idaho, Moscow, Idaho 83844-2339, 208/885-7831. $19.50).

This thick paperback book was published by the Western Society of Weed Science in cooperation with the Western United States Land Grant Universities Cooperative Extension Service. It includes 300 species of 51 plant families. A key to the families is included.

Each plant treatment includes full colour photographs, one full page mature plant and two smaller photographs of close-up distinguishing characteristics. The text includes a basic morphological description and a short paragraph about the plant's distribution, flowering, etc. The book presents no control information.

Upcoming Events

(Further details of these events are available from either the Secretary or the Editor of the Newsletter.)

Weed Society Happenings
29 June - Urban Weed Management Seminar, Sydney University, Zoology lecture theatre. Cost $65 (members), $75 (non-members), lunch included.

August - Weed Identification Training Program, University of Sydney or Ryde TAFE

October - Country Area Field Days in association with NSW Agriculture, including at Wagga Wagga

24 November - Annual Dinner, AGM, Field Day, Newcastle area

10th Annual Conference of the NSW Grasslands Society
Armidale, 11-13 July 1995. *Theme*: Pasture Strategies to Target Specific Markets. *Enquiries*: Dr John Ayres, Agricultural Research and Advisory Station, Glen Innes NSW 2370. Phone: (067) 301900, Fax: (067) 301999

15th Asia-Pacific Weed Science Society Conference
Tsukuba, Japan, 24-28 July 1995. *Enquiries:* The Secretary, The 15th Asia-Pacific Weed Science Society Conference, C/- Institute of Applied Biochemistry, U Tsukuba Ibaraki 305, Japan, Fax: 81 298 53 4605

Fourth International Symposium on Adjuvants for Agrochemicals
Melbourne, 3-6 October 1995. *Theme:* Formulation Development, Delivery Systems, Uptake and Efficacy and Use. *Enquiries:* FISAA, PO Box 1108, Frankston Vic 3199 Australia Phone: (03) 785 0137, Fax: (03) 785 2007

IX International Symposium on the Biological Control of Weeds
Stellenbosch, South Africa, 21-26 January 1996. *Enquiries:* Dr J.H. Hoffman, Zoology Dept, University of Capetown, Rondebosch 7700, South Africa, Phone: +27 21 650 3400, Fax: +27 21 650 2710

Second International Weed Control Congress
Copenhagen, Denmark, 25-28 June 1996. *Theme:* Rationalising Weed Control Options. *Enquiries:* International Conference Services, PO Box 41, Strandvejen 171, DK-2900 Hellerup, Denmark. Phone: +45 31 61 2195, Fax: +45 31 61 2068. *Abstracts* may be sent to Per Kudsk, Senior Scientist Danish Institute of Plant and Soil Science, Department of Weed Control and Pesticide Ecology, Flakkebjerg, Dk-4200 Slagelse, Denmark. Phone: +45 53 58 6300, Fax: +45 53 58 6371

A Good Weed

the NEWSLETTER of
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