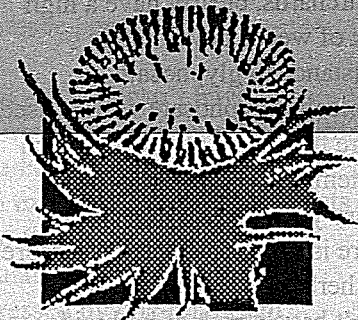


A Good Weed

17

August 1999



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Annual ryegrass

The number of herbicide resistant weeds continues to increase and over 200 resistant biotypes have been found in 45 countries world-wide. An increasing number of these cases are in developing countries where herbicides are being used more intensively.

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GUEST EDITORIAL

Glyphosate Resistance in Weed Species

Chris Preston

Since the announcement by researchers at Charles Sturt University in Wagga Wagga of the discovery of a glyphosate-resistant annual ryegrass population, there has been intense media and grower interest in the issue.

Why should we be concerned about glyphosate resistance?

Glyphosate resistance is clearly something we should be concerned about. Herbicides with the properties that have made glyphosate so successful will be extremely rare. In over 2 decades since the release of glyphosate, the multi-national agrochemical industry has been unable to come up with a single replacement despite intensive effort. If glyphosate is lost due to weed resistance, managing weeds in many enterprises will become more difficult and costs will increase. Therefore, it makes sense to do whatever we can to save glyphosate as an effective herbicide.

At the same time, we don't need a fear campaign built around glyphosate resistance. A quick review of the situations where resistance has occurred suggests that the major risk factors are: total reliance on glyphosate as the only herbicide option; and little or no other weed management following glyphosate application. If these risk factors are avoided,

there is no reason why we should not make valuable use of glyphosate for many years.

Glyphosate resistance in horticulture

Permanent cropping systems such as orchards, clearly have a high risk of weeds developing resistance to glyphosate. Typically glyphosate will be used more than once per year in such systems and is frequently used every year. In such situations there is intense selection pressure for herbicide resistance. We don't have a rash of herbicide resistant populations in orchards around the country, which suggests that resistance will be relatively rare. We must not let this lead to complacency. Horticulturalists who rely solely on glyphosate for weed control need to take a more integrated approach to weed management that includes rotation of herbicides and, where practical, the use of non-chemical weed controls.

Glyphosate resistance and no-till grain cropping

In grain cropping, growers with no-till cropping systems using narrow seeding points are at higher risk of developing glyphosate resistance (and paraquat resistance) than those who still use some cultivation. This assessment is based on the observation that all the major risk factors for the development of glyphosate resistance can occur in no-till systems. The narrow points typically used in no-till do not disturb the soil sufficiently to kill all survivors of the pre-seeding herbicide application. Also, because of existing

resistance to Group A and B herbicides, there may be no further weed control following glyphosate application. This provides the potential for glyphosate resistant weeds to grow on through the crop and set seed enriching the seed bank with resistance genes.

However, it doesn't have to be this way. In my discussions with Canadian researchers who have been examining long term effects of no-till systems on weed populations, I have been most impressed by one important point. In Canada, they have observed that rotation of crops, herbicides, and crop sowing times is required to maximise weed control in no-till systems. In some years certain weed species are favoured, but in other years these weeds are discouraged. Keeping the cropping environment the same, whatever the system, allows weeds to adapt. What we should be aiming to do is to keep the weeds off-balance.

How much glyphosate resistance is out there?

The present situation with glyphosate-resistant weeds world-wide is that there are two confirmed and several suspected cases of resistance in annual ryegrass in Australia. One confirmed population is from an orchard where glyphosate was used 2 to 3 times per year for 15 years. The other confirmed population was from a permanent bed cropping system with a similar length of glyphosate usage. The populations with suspected glyphosate resistance are from orchards, vineyards, and

continuous cropping systems. In addition to the resistant populations detected in Australia, there are two populations of glyphosate-resistant ryegrass in orchards in California and at least one population of goosegrass with glyphosate resistance in orchards in Malaysia. Most cases of resistance or suspected resistance to glyphosate are from orchards with intensive use of glyphosate, no tillage, and few or no other herbicides used.

A survey for glyphosate resistance in grain cropping is being conducted across southern Australia by researchers from Charles Sturt University, The University of Adelaide, and Agriculture WA. This survey has so far examined over 400 populations of annual ryegrass from cropping fields. The good news is that almost all populations show no indications of resistance to glyphosate having developed. There is only one population of concern and at the moment it is unclear whether this population has low level resistance to glyphosate or is just at the extreme edge of the natural variation in tolerance to glyphosate. In some populations, an occasional individual easily survived two glyphosate applications suggesting that there is a low frequency of resistant individuals in cropping fields in southern Australia.

Dr Chris Preston
CRC Weed Management Systems
The University of Adelaide
Department of Applied &
Molecular Ecology
Waite Campus, PMB 1 GLEN
OSMOND SA 5064

Further Reading

Powles, S.B., Lorrain -
Colwill, D.F., Dellow, J.J. &
Preston, C. (1998)
Evolved resistance to glyphosate
in rigid ryegrass (*Lolium
rigidum*) in Australia (*Weed
Science*) 46: 604-7

STOP PRESS

Glyphosate resistant ryegrass found in northern NSW

The world's third case of weeds developing resistance to glyphosate has been found south of Gunnedah. Annual ryegrass (*Lolium rigidum*) has developed resistance to glyphosate after 30 to 40 applications of glyphosate (450 g a.i./L) at rates which varied from 0.4 to 2.0 L/ha. The paddocks where the resistant ryegrass occurs, has been predominantly wheat-fallow-sorghum rotation since 1981 and has been under min-till management since 1990. The ryegrass is also resistant to "fops", probably from exposure to post emergent herbicides used to control wild oats in the wheat crops.

The Northern Weed Control & Demonstration Unit, based at Tamworth, is currently monitoring a field trial which was established to evaluate possible control options for the grower. The results from this trial will be used to develop a three to five year management plan with the farmer and his consultant.

Andrew Storrie
Weeds Agronomist,
NSW Agriculture, Tamworth

Answers from Argentina Search for serrated tussock control underway

Ursula Taylor

Serrated tussock costs Australian graziers \$45 million per year in lost production but control options are being sought. Potential biological control agents that weaken serrated tussock (*Nassella trichotoma*) have been found and grazing strategies to control this weed are being investigated.

The discovery of fungi on serrated tussock at Melbourne airport has excited scientists. One of these fungi has been identified as *Dimenospodium*, which can kill serrated tussock seeds and infect seedlings. These findings have encouraged scientists to search for more serrated tussock pathogens in Argentina, as serrated tussock originates from South America.

In a cooperative project between the Weed CRC, Victorian Department of Natural Resources and Environment and CSIRO Entomology, scientists aim to identify damaging host-specific pathogens (fungi that only attack serrated tussock) in Argentina, assess their effectiveness and introduce them onto serrated tussock infestations in Australia.

This project has been funded by RIRDC, Meat and Livestock, Australia, NSW Agriculture, NSW National Parks and Wildlife Service and a consortium of local shires, county councils and other government agencies. Such support shows the commitment of the entire

community to manage this detrimental weed.

Weed CRC scientist Bill Pettit from CSIRO Entomology will fly to Argentina in September to commence a 3 year research project. Bill will be working with an Argentine pathologist and grassland ecologist to assess the effectiveness of pathogens on serrated tussock in the field.

Mr Pettit says he will be "checking the vigour of plants affected by pathogens, counting seeds in the soil seed bank and looking at seed head production. We really need to know how well these pathogens work before we introduce them to Australia".

Once pathogenic fungi for serrated tussock have been identified they will be thoroughly tested in Argentina then Australia to make absolutely sure they do not harm native species or adversely affect industries such as cereal crops and turf.

The biological control research is promising, but Mr Pettit says that the importance of integrating other control methods cannot be overstated.

"Research will also concentrate on the ecology of serrated tussock so effective grazing strategies can be investigated" said Mr Pettit.

Ursula Taylor
Weed Education Officer
CRC Weed Management Systems
UNE ARMIDALE

Bill Pettit
Plant Ecologist, CSIRO
Entomology
ph: 02 6246 4047

fax: 02 62464177

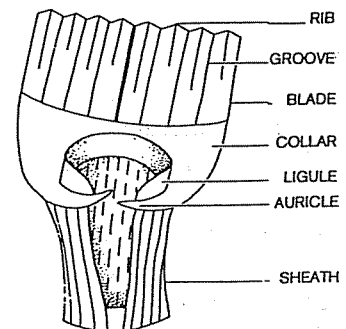
Visiting scientist

Dr Roberto Distel, a grassland ecologist from CERZOS in Argentina will be visiting Australian centres in Melbourne, Orange and Canberra, in November to look at the management of serrated tussock. In Argentina Roberto is studying the competitive ability of a number of palatable and non-palatable (including serrated tussock) tussock grasses. Because of overgrazing, the non-palatable grasses are becoming more prevalent. Through changes in management it is hoped that this situation can be reversed.

On his visit to Australia, Dr Distel will be assessing the serrated tussock problem here. Weed CRC scientist Dr David Briese from CSIRO Entomology hopes Dr Distel can help Bill Pettit with his work in Argentina. "With Dr Distel's help and assistance from other scientists in Argentina, the control of serrated tussock in Australia may be possible through improved pasture management and biological control" said Dr Briese.

BOTANY LESSON

VEGETATIVE FEATURES OF A GRASS



What grass is that? N Lambrechtsen 1986

Fungi Making a Splash

Working out ways to spread the Bathurst burr biological control agent

Ursula Taylor

A fungus that attacks and kills Bathurst burr, a major weed of the wool industry, exists.

Scientists are now working out ways to spread this biological control agent far and wide.

Weed CRC student Angela Chittick from Charles Sturt University, Wagga Wagga is searching for naturally occurring and synthetic substances to keep the Bathurst burr fungi moist so they can be spread by spraying.

"The Bathurst burr fungi need to be moist so they can attack and infect plants. Early morning dew is excellent for fungi growth but in areas where Bathurst burr occurs, it is often too dry and the fungi die. To overcome this problem I'm looking for products that will keep the fungi moist long enough for it to be effective" explained Ms Chittick.

The range of products Ms Chittick is investigating is incredible.

"The products I'm looking at include nappy fillers, water crystals used for slow release watering in pot plants and natural gums from acacias (eg. wattles). They all hold water for a short length of time and I'm trying to determine which one will give the Bathurst burr fungi the best chance to grow and attack Bathurst burr plants".

Applying these products to large Bathurst burr infestations quickly and easily is an important aspect of the research.

"It's equally important that these substances can be applied broadly and effectively by spraying. The further we can spread the fungi the better control we'll achieve" said Ms Chittick.

Ms Chittick's supervisor Dr Bruce Auld from NSW Agriculture, Orange is encouraged by the research.

"Being able to broadcast the Bathurst burr fungi will be of enormous help to producers. Removing Bathurst burrs will help keep the wool clip clean and this can only improve the financial returns to Australian wool growers" said Dr Auld.

Ms Angela Chittick, Weed CRC Honours Student.
Telephone: 02/ 6391 3971 Fax: 02/ 6391 3899

Dr Bruce Auld, Senior Research Scientist, NSW Agriculture.
Telephone: 02/ 6391 3826 Fax: 02/ 6391 3899

Ursula Taylor
Weed Education Officer
CRC Weed Management Systems
UNE Armidale
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Xanthium spinosum

Weedbuster Week 1999

The 1998 Weedbuster Week program resulted in greater than 600 events with participation from an estimated 12,000 Australians nationally. Many groups were involved in 1998 and their work was highlighted through the media generated as part of Weedbuster Week. The media was very supportive in 1998 and it was estimated that greater than \$370 000 of media publicity resulted in the weeks preceding and during Weedbuster Week. In New South Wales there were 150 coordinators registered, promoting competitions, displays, functions and working bees.

National Weedbuster Week 1999 will take place between 10-17 October and the theme focuses on "Weed Prevention is the intention". A variety of information and promotional products that include posters, bookmarks, stickers and brochures are currently being developed.

Registration is invited from anyone interested in promoting the awareness of weeds and effective controls. Registrants will be sent free mailing of literature, posters, handouts and competition material.

To obtain a registration form contact:
Bob Trounce
Weeds Agronomist
NSW Agriculture, Orange
Weedbuster Coordinator (NSW)
Ph: (02) 6391 3156
Fax (02) 6391 3740

The Biological Control of Paterson's Curse

Matthew Smyth,

Paterson's curse (*Echium plantagineum*) is a winter annual native to Mediterranean Europe and North Africa. In Australia it is a weed of grazed pasture where it can out compete desirable plant species. Paterson's curse contains alkaloids and if consumed in large quantities, it reduces livestock weight and woolclip in sheep and severe cases death. It was introduced into Australia in the 1800's through deliberate introductions to botanic gardens and as contaminant of seed. The weed allegedly received its common name from the Paterson family who lived near Albury NSW, who brought the seed from Europe so they could grow it in their garden. Since the 1800's it has spread rapidly and is the dominant pasture weed of many regions in temperate southern Australia. It is now estimated to cost Australian graziers at least \$30 million per annum.

Work undertaken by CSIRO Entomology for the biological control of the Paterson's curse has looked closely at the biology of the weed in Australia and Mediterranean Europe. The studies highlighted the differences between the native and weedy range of Paterson's curse. In Europe Paterson's curse grows in pasture where 80-100 species all compete for space. It is not surprising then that no one species can dominate these pastures in Europe. In contrast pastures in Australia typically have only 4-5 species (ie 2-3 annual grasses, a clover and an annual weed). In these pastures it

is easy for 1 plant species to dominate if environmental and climatic conditions suit. This is exactly the case for Paterson's curse, germinating under a wide range of temperatures, tolerating periods without moisture that kills desirable plant species (false breaks) and responding vigorously to the application of fertiliser. Under these conditions Paterson's curse is a prolific seeder, resulting in up to 30 000 seeds per square metre in the soil. So controlling Paterson's curse in one year will do little to limit germination in the next because of the vast number of seeds in the soil. Control of Paterson's curse should be continued over many years to reduce the number of seeds in the soil. The other factor that promotes Paterson's curse in Australia is the heavy stocking rates that remove perennial grasses from the pasture. If perennial grasses are allowed to establish, they can out-compete annuals like Paterson's curse which need to regenerate from seed each year. An increase in perennial grass cover results in a direct decrease in Paterson's curse.

Of course the primary role of our work in Europe was to select insects or fungal pathogens that could limit the competitive ability of Paterson's curse. During the selection process we not only consider how damaging the insect is to Paterson's curse but how safe it will be in Australia. Insects found to be damaging to Australian native or commercial plants are not introduced into Australia. Of the one hundred of more insects found feeding on Paterson's curse in Europe, 6 were selected and released into Australia. When

releasing several insect species on a weed, the aim is to attack all parts of the plant over the entire growing season.

The first insect released was the leaf-mining moth in 1989 and it now covers the entire range of the weed. It needs green plant material all year to survive, so in dry summers the population is severely restricted. The next insect released was the crown weevil in 1993 and it has now been released at 800 sites. Adults of this weevil lay eggs in the rosette leaves and the larvae (grubs) of this weevil feed in the leaf stalks and the crown (growth point) of the plant. Once the crown is destroyed, as seen by black decaying plant tissue, the plant dies. There are now several sites in south eastern Australia where the crown-boring weevil has spread kilometres and has reached a population density that is starting to kill plants. At one site in the Riverina, free from grazing, six years after release 100% of plants were killed. The next insect released was the root weevil. Eggs are laid like the crown weevil but as its name suggests, larvae feed in the taproot of Paterson's curse. Feeding below ground enables this weevil to escape livestock grazing which can slow the population growth of insects that feed above ground. Another root feeding insect is the flea beetle, so named because of its powerful hind legs that enables it to jump a metre or more. It feeds on the roots of Paterson's curse yet can coexist with the root weevil by feeding on the secondary roots. Adults of this beetle lay their eggs directly on the taproot giving this insect further protection from grazing. It is

believed the root weevil and the flea beetle will be the two most damaging insects in grazing pasture. These two insects have the added ability to over summer without Paterson's curse for longer than the crown weevil, remaining inactive until autumn when rain stimulates seedling germination. These two insects have been released at only 30 sites each, though they are now the focus of nation wide redistribution program funded by the Woolmark Company and Meat and Livestock Australia. Depending on funding, the redistribution of these insects will continue for one more year with the possibility of a further three. In spring the stem-boring beetle attacks the bolting stem of Paterson's curse causing smaller stems to collapse. This is the least damaging of the insects so little resources are being used for its redistribution. The final insect on Paterson's curse is the flower beetle released in 1996 and has only been released at 10 sites across Australia. The adults and larvae of this insect feed on the buds, flowers and immature (green) seed of Paterson's curse. When adult numbers are high seed production can be reduced by more than 60%. Although this will not limit Paterson's curse by itself it will add to the damage done to the rosette by the crown and root feeders.

The process of biological control can be slow, it has taken ten years from the first insect released to reach where we are today. Yet six years after the release of one insect we are starting to see a level of damage that is reducing the competitive ability of Paterson's curse at several sites. The addition of new insects at

these sites will only increase the impact on the weed and time will tell if satisfactory control will be achieved. At this stage the prospects for the biological control of Paterson's curse are promising.

Acknowledgments: This work is supported by the Woolmark company, Meat and Livestock Australia and the Australian Government

Matthew Smyth,
CSIRO Entomology, CRC for
Weed Management Systems
Black Mtn Canberra 2601
Ph: 02 6246 4249
Email: matthews@ento.csiro.au

This article was presented by Matthew Smyth at the Riverina Branch Dinner held at Wagga Wagga on 29th June 1999.

LETTERS TO EDITOR

Dear Alex McLennon
Thank you for your kind note. Yes time marched on. Glad to hear that the Society continues to grow. I enjoy reading the "A Good Weed" newsletter because it keeps me up-to-date with the latest trends and fashions in weed control. I was particularly interested in the article on St John's Wort in the December issue. What a turn around for a weed. As an anecdote that article you may be interested in the following story.

My father-in-law emigrated from England in the 1930's and took up a wheat property (probably only a land property at that stage)

in the Tumbarumba area. He had to walk off the property because it was overrun with St John's Wort of course, at that time there was no known control for that weed. Now it seems they can't get enough of the weed for use as a natural medicine.

I am enjoying good health in a nice part of the country which is looking pretty good at the present time.

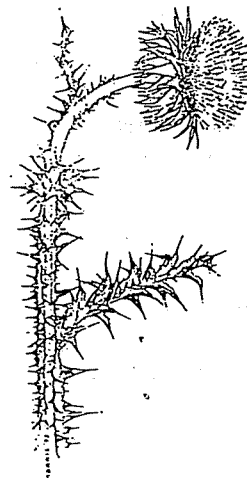
Kind regards

Dermott Reilly
Woodside Cottage
Lot 5
Old Wingello Rd
Bundanoon

Hi Everyone

Just a short note to tell you that we now have an Events Page on our web site. If you have any weed or weed related events which you think should be listed please let me know. Look at the web site, which is shown below.

Leon Smith
Hon Secretary
The Weed Society of NSW Inc.
Email: nswweedsoc@bigpond.com
Telephone/Fax 02 4739 3564
Web site: <http://nb.au.com/nswweedsoc>



Nodding thistle

OBITUARY

Kenneth Arthur Watson
(b. 23.1.1928 d 1.1.1999)

Ken was president of the Weed Society of New South Wales in 1968 and again in 1974. He was a valued member of the executive for many years and was also a secretary/treasurer of CAWSS 1987 and 1988. Ken was born in Harbord and grew up in Sydney where during the Second World War he attended Hurlstone Agricultural High School. He went on to complete his degree in Agricultural Science at Sydney University. He was a keen tennis player in those days and also played cricket and rugby. He was a member of the University Regiment. After finishing uni Ken worked for the Department of Agriculture in Sydney and at Grafton. In 1950 he went to England, studied briefly at Cambridge and then joined the British Colonial Service which posted him to Nigeria in 1951 where he helped the locals establish areas for agriculture as well as teaching the various aspects of land management. In 1953, on Ken's first leave to Sydney he married Margaret Manley. Two children, Linda and Peter were born in Nigeria. In 1964 the family moved back to Sydney, settling in Carlingford. Ken first worked for Amalgamated Chemicals at the head office location at Bankstown and travelled extensively to rural areas. In his years with Amalgamated Chemicals, Ken attended the 2nd Asian-Pacific Weed Control Interchange in the Philippines in 1969 where he presented a paper "Herbicide Investigation in Tropical Australia" reviewing

work in cotton, rice, safflower and peanuts. At the 3rd APWSS Conference in Malaysia in 1971, he gave a general review of recent developments in weed control in Australia. Ken then moved to Colin Campbell (Chemicals) Pty Ltd and finally to Dow Chemical Australia Limited where he initially held positions in Research and Development and then Manager of Registration until his retirement in 1989. During this period, Ken presented a paper, "Triclopyr-a New Herbicide for Control of Broadleaved and Woody Weeds", at the First Conference of the Council of Australian Weed Science Societies in Melbourne, 1978.

Ken had many health problems in his latter years, his deterioration after his wife Margaret's sudden death in 1989 and his son's Peter's death in 1991 were hard to bear.

We acknowledge his quietness and intelligence which he freely shared at Weed Society meetings, his love for reading and music and his avid support for rugby (especially Eastwood Club).
Vale Kent!!

Alan Murphy & Peter Michael
With details from Ken's niece,
Ann Fiona Manley

Future Direction of CAWSS – A proposal from Bruce Wilson (WSQ)

CAWSS has several standard and very important activities - sponsorship of the Australian Weeds Conference, financial support for four key purposes (set

out in a Policy), CAWSS Medal for Leadership, Young Scientist Travel Award, CAWSS Home Page and a sponsorship of the Biological Olympiad (recent addition). We have a major project in progress in the development of the Handbook of Plants of Economic Importance. In addition, there is a degree of liaison between States via our executive meetings.

Within the above, CAWSS is reactive in providing financial support and we are dependent on the requests that are made to achieve success in this activity. Is CAWSS providing the activities and services that its member societies and their members want? Is it adequate for CAWSS to continue doing a good job on only the above activities? Are there other activities that CAWSS should do, and do we have the resources? I believe we need to retain a *reactive* capacity but should CAWSS be partly *proactive* in determining projects to receive financial support?

My proposal is that we should review the activities and future direction of CAWSS. This can be done by member societies without a huge effort. If members feel strongly about some of these issues, you should convey these thoughts to your executive committee as soon as possible or send to me by September 1.

I will collate the results for discussion in Hobart prior to the 12th Australian Weeds Conference (September 13-16).

Bruce Wilson, General Manager
Land Protection, Dept Natural
Resources, Locked Bag 40
Coorparoo DC QLD 4151

COMING EVENTS

1999

August 10-12

52nd NZ Plant Protection Conference

Venue: Auckland, New Zealand
 Contact: A. Rahman, Ruakura Agric.
 Research Centre
 PB 3123, Hamilton, New Zealand
 Tel: 64-07-838-5280
 Fax: 64-070838-5073
 Email: rahmana@agresearch.cri.nz

September 9

"Biotechnology and Weed Science into
 the 21st Century"

Professor Jonathan Gressel,
 University of Sydney Staff Club at
 12.30pm
 Lunch and seminar cost members \$20,
 non-members \$25
 Contact: Leon Smith
 Tel: 02 4739 3564
 Email: nswweedsoc@bigpond.com

September 12-16

12th Australian Weeds Conference

Venue: Hobart, Tasmania, Australia
 Contact: Conference Design, PO Box 342,
 Sandy Bay, Tasmania 7006, Australia
 Fax: 61-03-6224-3774
 Email: mail@cdesign.com.au

September 27

Dr Mark Gardener
 Charles Darwin Research Station
 Galapagos Islands, Ecuador
 Dr Gardener will speak about
 "Environmental Weeds in the Galapagos
 Islands"
 North Sydney Anzac Memorial Club at
 7.30pm
 Contact: Louise Brodie
 Tel: 02 9258 0123
 Email: brodie@aquarius.com.au

September 27-29

17th WSSEA Conference

Venue: Harare, Zimbabwe
 Contact: Hottensiah Mwangi
 Email: pnjuho@kari.org

October 10-16

Weed Buster Week

A week of activities on a national level,
 aimed at raising awareness about the
 effects of weeds.

Contact: Bob Trounce
 Tel: 02 6391 3156
 Fax: 02 6391 3740

October 12

Special day of weed activities in Wagga Wagga
 hosted by Riverina Branch of the Weed Society.

11.30 am-12 noon NSW State launch of
 Weed Buster Week at Wagga Wagga
 City Council Chambers
 12.30pm-1.30pm Picnic lunch on banks of
 Murrumbidgee River
 1.30pm-3.30pm Riparian weed tour of
 Murrumbidgee River by boat
 4.00pm-5.00pm Annual General Meeting
 of the Weed Society of NSW at Charles
 Sturt University Winery
 7pm Annual Dinner at Manor House
 Restaurant, Wagga Wagga
 Contact: R Graham 02 6926 9335
 Email: grahamr@wagga.nsw.gov.au

October 13-16

**5th International Conference of
 Invasive Alien Plants**

Venue: Sardinia, Italy
 Contact: Giuseppe Brundu, Dipartimento
 di Botanica ed Ecologia Vegetale,
 Universita di Sassari, Via F. Muroni, 25,
 07100 Sassari - Italy
 Tel: 39-335-237315
 Fax: 39-79-233600
 Email: gbrundu@tin.it
 gbrundu@box1.tin.it

October 15

Weed display in Wagga Wagga Market
 Place with a visit from Woody Weed, the
 Weed buster Week mascot.

October 23-24

Weed display by Riverina Branch at
Spring Garden Fair in the Wagga Wagga
Botanical Gardens.

Fax: 051-401 2217

Email: seefpret@lanbou.uovs.ac.za

November 15-18

**Brighton Crop Protection Conference,
1999, Weeds**

Venue: Brighton, United Kingdom
Contact: The Event Organization, 8
Cotswold Mews, Battersea Square,
London SW11 3RA, United Kingdom
Tel: 44-171-228-8034
Fax: 44-171-924-1790
Email: 44-171-228-8034
Website: www.BCPC.org

February 5-10

Weed Science Society of America

Venue: Westin Harbour Hotel, Toronto,
Canada
Contact: J. Breithaupt, PO Box 1897,
Lawrence, KS 66044, USA
Tel: 1-913-843-1235
Fax: 1-913-843-1274
Email: jbreith@allenpress.com

November 22-27

**17th Asian Pacific Weed Science
Society Conference**

Venue: Bangkok, Thailand
Contact: Dr. Sombat Chinawong,
APWSS Secretary, Department of
Agronomy, Faculty of Agriculture,
Kasetsart University, Chatuchak,
Bangkok 10903, Thailand
Fax: 662-579-8580;
Email: agrsbc@nontri.ku.ac.th
Website:
aggi.kps.ku.ac.th/APWSS/index.html

June 3-6

22nd Brazilian Weed Science Congress

Venue: Foz do Iguassu, Brazil
Contact: B.N. Rodrigues
Email: sbcpd@cnpso.embrapa.br
or neodi@pr.gov.br

June 6-11

**III International Weed Science
Congress**

Venue: Foz do Iguassu, Brazil
Contact: PJ Eventos - Fieras e
Congressos, Rua Jose Risseto, 1023 -
Curitiba, Parana- Brazil
CEO 82.015010
Tel/Fax: 55 41 372 1177
Email: pj@datasoft.com.br

December 7-9

**5th International Conference on Pests
in Agriculture**

Contact ANPP, 6, boulevard de la
Bastille, F-75012, Paris
Tel: 33-1-43-44-89-64
Fax: 33-1-43-44-29-19
Email: anpp@anpp.asso.fr

STOP PRESS

8 September 3pm

Prof. Jonny Gressel, Weizmann
Institute of Science, Israel, will
present a seminar "Herbicide
Resistance and *Lolium*" at Orange
Agricultural Institute, NSW
Agriculture, Forest Road, Orange

2000

January 18-20

**Joint Congresses of the Southern
African Weed Science Society, the
South African Society for Crop
Production and the Southern African
New Crop Research Association**

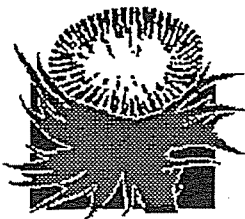
Venue: Sand du Plessis Theatre,
Bloemfontein, South Africa
Contact: J.C. Pretorius, PO Box 339,
Bloemfontein 9300, South Africa
Tel: 051-401 2217

Variegated thistle



Tasmanian Weed Handbook

B. Hyde-Watt & D. Morris 1975



THE WEED SOCIETY
OF NEW SOUTH WALES INC.

LUNCHEON SEMINAR BY PROF. JONATHAN
GRESSEL

"BIOTECHNOLOGY AND WEED SCIENCE INTO THE 21ST CENTURY"

- DATE: THURSDAY 9TH SEPTEMBER 1999
- WHERE: SYDNEY UNIVERSITY STAFF CLUB (Sir Herman Black Room)
- TIME: 12.30PM TO 3.00PM
- COST: \$20 - includes buffet luncheon and seminar. Luncheon consists of hot dish, cold meats and salads, petit pain, tea or coffee.
- RSVP: by Monday September 6th, to Leon Smith Ph/Fax 02 4739 3564 or Email

Professor Gressel is from the Plant Sciences Department, Weizmann Institute of Science, Rehovot, Israel. He is Immediate-Past President, International Weed Science Society and is visiting Australia to deliver the CAWSS Oration at the 12th Australian Weeds Conference in Hobart, 12 -16th September.

EVENING SEMINAR BY DR MARK GARDENER

"ENVIRONMENTAL WEEDS IN THE GALAPAGOS ISLANDS"

- DATE: MONDAY 27TH SEPTEMBER 1999
- WHERE: NORTH SYDNEY ANZAC MEMORIAL CLUB
Cnr Miller and Ernest Street,
Camberay
Easy car parking in this area and buses go along Miller St.
- TIME: 7.30PM
- COST: \$7.50 members, \$10 non-members - includes light supper and seminar.
Dinner can be obtained at the club before the seminar. Bistro is open until 9.00pm.
- RSVP: Registration and further information by Friday September 24th, to Louise Brodie, Ph 9258 0123, Fax 9251 111, Email or Leon Smith Ph/Fax 4739 3564 or Email

Dr Gardener is currently working at the Charles Darwin Research Station in the Galapagos Islands, where he is studying weed incursions into this unique environment.

A Good Weed

the NEWSLETTER of
The Weed Society of New South Wales
PO Box 438
WAHROONGA NSW 2076

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A Good Weed.