

NEWSLETTER

Number 4

December, 1994

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PRESIDENT

Alan Murphy

SECRETARY

Leon Smith

TREASURER

Alex McLennan

EDITOR

Deirdre Lemerle

THE WEED SOCIETY
OF NEW SOUTH WALES

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BEST WISHES FOR CHRISTMAS AND NEW YEAR

IN BRIEF

Resignation of Jack Burke

The resignation of Jack Burke, former secretary of the Society has been received. Jack, who was Secretary for 14 years, is venturing into other fields. Society members will remember Jack's meticulous recording of the minutes and his tireless contribution to the Society during his term as a member. We wish Jack well in your new endeavours. members attending the Annual Dinner were able to catch up with Jack and his wife.

Weed Science Teaching at Sydney University

Mike Barrett and Leon Smith have been sharing the weed science teaching duties for the 3rd year agriculture course "Crop Protection" at Sydney University. They have been filling the gap left with departure of Roger Cousens to the Western Australian Department of Agriculture. The crop protection course has 20 hours of lectures devoted to weed management including topics on weed population dynamics, crop loss, assessment, economic thresholds, weed control policies (quarantine, eradication, containment and reduction), noxious weeds, weed control strategies, biological control of weeds, use of herbicides (formulations, application, resistance, herbicide action and environmental effects). Leon Smith is also lecturing in weed management (Applied Ecology) to students in the Post-Graduate Diploma in Turf Management. This arrangement will continue in 1995 as no replacement for Roger Cousens has yet been made.

Aquatic Weeds Seminar at the Lakes Gold Course

On Thursday, November 10 a very successful seminar was held at the Lakes Golf Course. Sponsored by the Water Board and the Weed Society, the seminar attracted seventy six people, who heard talks by Geoff Sainty, Judith Rawling, Sally Durham from the Water Board, Dr Jane Mullen-Cooper from EPA, Geoff Keech, Jim Quinn and John Hall from NSW Agriculture, on all aspects of aquatic weeds management. George Diatloff from the Lands Department, Queensland was present and was noticed engaged in a spirited discussion at the BBQ luncheon. A walk to see the weeds present in the Botany Wetlands followed the lunch and most people were impressed (or depressed) with the problem posed by the *Ludwegia peruviana*. Several displays were on hand including one from Aquatic Plant Harvester Pty Ltd, Brisbane who have a machine capable of removing in excess of 10 tonnes of weed per hour (for further information phone 07 2292966). Over 20 new members joined the Society on the day and Dan Austin should be congratulated for organising this event.

Society Sponsors NSW Agriculture Caravan

The Weed Society has assisted NSW Agriculture to produce posters and promotional material on weeds for its mobile display caravan. Concentrating mainly on biological control of weeds the caravan has been on display at Mudgee Small Farms Field Days, Agquip at Gunnedah, Agview at Camden and at the Orange National Field Days. Considerable interest has been generated by this display and the Weed Society should gain valuable promotion and potential source of new members. The main aim of the display is

to increase the public's awareness of weeds and to give an overview of the Department's research, extension and regulatory programs in weeds.

Scotch Thistle Field Day at Boorowa

In October the Society jointly sponsored a thistle day at Boorowa with NSW Agriculture. Speakers from CSIRO and the Department talked about thistle identification, control of thistles by pasture improvement, goat grazing and the use of herbicides, as well as recent developments in biological control. The highlight of the day was the release of two insects by CSIRO for biocontrol of Scotch and Illyrian thistle, in the middle of which the heavens opened and a storm drenched many people present. Over 60 people, many farmers from the area attended this interesting day.

Weeds & Herbicides Industry Liaison day

The day was held at the Wagga Agricultural Research Institute on 12 October. About 120 people attended a seminar in the morning covering topics such as herbicide resistance, organic farming, regulatory aspects etc. In the afternoon over 200 people attended field experiments of Deirdre Lemerle, Bruce Hinkley and Birgitte Verbeek.

Biological control & AQIS

As well as stopping plants at the barrier, AQIS is involved in co-ordinating the entry and release of biological control agents in Australia, in conjunction with the Australian Nature Conservation Agency (ANCA). Biological control agents are a proven weapon against serious plant pests and diseases, which cost Australia approximately \$5 billion each year. The Scotch thistle is now under attack by a number of agents, the establishment of which is expected to be confirmed in eastern Australia in Spring this year. Both a receptacle weevil and a seed fly are expected to have a significant impact on the nodding thistle. The rosette crown weevil is also expected to be utilised, complementing earlier work by the CSIRO. A number of biological control agents including a leaf-mining moth, stem-boring weevils and flower-feeding weevils are expected to assist greatly in the control of Paterson's curse. A rust fungus released as a specific biological control agent of common heliotrope has been reported successful in South Australia.

Editorial Change

Dr Brian Sindel has agreed to be the new editor of this newsletter.

Brian is lecturer in Weed Science at the University of New England. I have enjoyed the job for the last 3 years and wish Brian good luck.



ANNUAL GENERAL MEETING

Fifteen members attended the AGM at Port Kembla in November. Office bearers elected for 1995 were:

President: Alan Murphy

Vice-President: John Cameron

Secretary: Leon Smith

Treasurer: Alex McLennan

Newsletter Editor: Brian Sindel

Executive Committee:

Mike Barrett, Peter Michael, John Abbott, Jim Dellow, Robert Plumbe, Jim Swain, John Toth, Bob Trounce, Dan Austin, Mike Hood, Jane Mallen-Cooper, Gary Beehag, Lawrie Greenup.

The Treasurer presented the audited accounts of the Society to 30th September 1994. The accumulated funds of the Society totalled \$24,595 compared to \$24,521 in 1993. Membership subscriptions were up to \$1,258 due to increased membership and an effort to collect overdue subs, while on the other hand printing costs rose by over \$800.00.

The motion put forward by the Executive "that student membership of the Society be established at \$10.00" was passed unanimously (students must be full-time).

A special sub-committee (L Greenup, R Plumbe, A McLennan, A Murphy) was set up to look at the membership list and the best way of updating this list as well as the possibility of sending out a directory of members.

Special mention was made of the presence at the AGM of Dr Paul Weiss, who will be sent his 25 year medallion. Dan Austin is to investigate obtaining an embroidered tie for men and a scarf for ladies. Leon Smith presented the CAWSS report and the possibility that the NSW Society may be

asked by CAWSS to assist with the organising of the 11th Australian Weeds Conference.

The next meeting of the Executive Committee has been set for 1.30pm on Friday, December 9th at BCRI.

After the AGM, members and others attended a talk and field day on Bitou bush. Excellent establishment of the Bitou bush tip moth was observed at Hill 60 in Port Kembla and on Perkins Beach helicopter sprayed field trials with glyphosate and metsulfuron were inspected.

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ANNUAL REPORT - 1994

1994 began in NSW with the worst bushfires on record. To inspect the bushfire damage and view weed regrowth, the Society began the year by holding a weed walk at the Mt Tomah Botanic Gardens. Also a short visit was made to an apple orchard at Bilpin to look at weed control practices.

The major function of the year was the seminar "What's new in chemical weed control" held at the Sydney Markets Conference Room, Flemington in July, which over 70 people attended. Another successful seminar was held at the Lakes Golf Course in November. This seminar on "Aquatic Weed Management and the Botany Wetlands" attracted 76 persons and resulted in over 20 new members being recruited.

Also the Society sponsored two regional activities in conjunction with NSW Agriculture. A herbicide and Weed Control Industry Field Day at Wagga

Wagga and a Scotch Thistle Field Day at Boorowa. Both these events, in October were well attended and gained considerable publicity for the Society. The Society also financially assisted NSW Agriculture's promotional displays on weeds and the mobile caravan which depicts the Department's Weed Biological Control Unit. The Society's logo is now prominently displayed on these exhibits.

The Landcare promotion of March as weed month was assisted by the Society which provided a list of contacts for people requiring more information on weeds and their control.

Three Travel Study Grants were awarded for 1994/95. Deirdre Lemerle was granted \$500.00 to assist with a visit to weed research establishments in the United Kingdom. Brian Sindel attended a symposium at Kew Gardens and presented two papers on fireweed, he was granted \$500.00 to assist with travel. Peter Dowling was granted \$1,000.00 to assist with his plans to attend the 15th Asian-Pacific Weed Science Society Conference in Japan in 1995, where he will deliver a paper on *Vulpia* control.

The Annual General Meeting of the Society was held at Port Kembla on the 25th November and this was followed by a field day on Bitou bush control at Perkins Beach in the Wollongong area. The Annual Dinner was held at the Parramatta Leagues Club on the night prior to the AGM.

Negotiations with Sydney University over a replacement for Roger Cousens resulted in two members, Leon Smith and Mike Barrett, being asked to lecture on the weed management component of Crop Protection (3rd year Agriculture) and Applied Biology (Post-Graduate Diploma in Turf Management).

This arrangement will continue next year and has enhanced relations with the University and the teaching of weed management.

Four newsletters were produced in 1994, but Deirdre Lemerle will relinquish her position as newsletter editor at the end of 1994 and Brian Sindel has agreed to take over this role for 1995. Both must be thanked for their efforts in this arduous task.

The plan adopted in 1993 to promote the Society and increase membership was successfully implemented in 1994. Over 50 new members were welcomed in 1994 and considerable publicity gained for the Society. 1994 was an active year when several new faces on the Executive contributed significantly to the Society and this augers well for the future.

Throughout Europe, changes in agriculture as a result of economic pressures are likely to lead to new problems in weed management. In the East, large scale farming systems are being re-converted to smaller units. In the West, the Common Agricultural Policy (CAP) has led to over production and revision is underlay. Throughout Europe, conservation of the environment and wild-life is receiving increasing priority.

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Protecting Duckweed Protein from Ruminant Degradation

by Paul Smith, University of New England.

Paul received a Weed Society Prize in 1993 for this project. Ed.

Duckweeds (*Lemnaceae*) are the simplest of all flowering plants. Lemnaceae consists

of four main genera; *Spirodela*, *Lemna*, *Wolffiella* and *Wolffia*. The favourable nutritional content of duckweed has led to its successful application in agricultural production in the past. However, one area it has failed to have an impact on is extensive animal production based on ruminant animals. The high percentage of crude protein in duckweed has the potential to increase the productivity of animals in these systems which are most commonly limited by protein and amino acid deficiencies.

A problem associated with the use of duckweed as a protein supplement in ruminant systems is the high solubility of the crude protein. Protein which is highly soluble is more readily degraded in the rumen and a lower percentage of this protein is available for animal uptake as a result. The trial outlined was designed to identify a method of reducing the solubility of the crude protein in duckweed and the subsequent level of ruminal degradation, thereby, improving the value of duckweed to ruminants.

The treatment of feedstuffs with certain substances often accommodates reductions in the levels of rumen degradation of feed protein, increasing the protein available for uptake by ruminants. Treatments for protein protection consisted of fixed rates of xylose, tannin, formaldehyde and water in trial one, and xylose at rates of 0%, 0.5%, 1%, 1.5% and 2% in trial two, applied to dried-ground duckweed. Ammonia production *in vitro* was used as an estimate of the rate on protein degradation in the rumen indicating the level of protection resulting from the various treatments with samples taken from 0 to 5 hours in trial one and 0 to 4 hours in trial two. Buffer and pepsin solubilities of the treated duckweed samples were also measured to provide a relative estimate of the effect of the different treatments on the

availability of crude protein under rumen conditions for microbes and intestinally for animal assimilation.

All treatments failed to significantly reduce protein degradation in the rumen. The treatments in trial one significantly increased buffer solubility in relation to a water treated control, while only xylose and formaldehyde treatments enhanced pepsin solubility relative to the water treated control. Trial two produced significant and favourable results with all xylose treatments reducing buffer solubility and enhancing pepsin solubility of duckweed protein in comparison to an untreated duckweed control.

While some promising results developed from the treatments in terms of buffer and pepsin solubilities the main aim of the trials was to reduce the level of ruminal protein degradation and in this respect the experiments failed to identify a successful mode of treatment.

Sessions

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9th International Symposium EWRS

10-12 July, 1995, Budapest, Hungary.

Here is information on the above conference.

1) *Changes in weed flora*

This section will discuss problems that arise from changes in weed flora resulting from the various economic pressures and structural changes imposed on agriculture and other land uses.

2) *Weed control techniques*

The these is to consider the various chemical, physical and biological methods available for controlling plant populations.

3) *Weed management strategies*

This session will consider the

integration of techniques for vegetation management whether for crop production, amenity use or in 'set aside' areas.

- 4) *Advisory systems for weed control*
The final session will deal with ways in which information and advice about weed control can be formulated and communicated to farmers and other concerned with land management. It will include both developments in information technology and administrative arrangements.

Pre-registration will ensure that you are sent a copy of the Second Circular to be issued in September 1994. The Second Circular will give details of registration fees, reservation of accommodations, accompanying person programme and the post-symposium tour.

At present accommodation fees including breakfast are forecasts to be: 30-40 DM in the student hostel and in a hotel single room 195 DM, double room: 240 DM or in an other hotel: 60 DM.

The post conference tour will probably include visits to Martonvasar Research Institute of Hungarian Academic of Sciences, to "Pannon" University of Agricultural Sciences in Keszthely and to lake Balaton from 13-14 July 1995.

Limited funds are available to assist potential contributors from Eastern Europe and students through Europe. Application should be submitted as soon as possible. They should state what other sources of funding have been approached, the sum of money required and how their attendance at the symposium will help weed science in the applicant's country. A supporting statement from an appropriate person (eg. head of department, institute director, government official) should be included.

Papers and posters

- A - Proposals for papers or posters should give a provisional title and an indication of the subject area in 500 words
B - Presentations may be on any subject relevant to the symposium
C - Presentations may be written in English or German.

Papers and a summary of the posters will be published in the Proceedings of the Symposium.

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15th Asian Pacific Weeds Conference

This conference will be held at Tsukuba, Japan, on 24-28 July 1995. Abstracts for papers must be with the editor by 25 December!. Full papers should be submitted by April 1 1995. Contact: Dr Kenji Usui, Inst. Appl. Biochem, University Tsukuba, Ibaraki 305, Japan. Fax. 81-298-53-4605.

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NSW Agriculture

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More Options Available in Winter Crop Herbicides

By Alan Umbers, Umbers Rural Services

There are several changes in herbicides of interest. There have been some major changes in the companies, some new products on the market and quite a few new registrations for existing products. Cyanamid - having acquired Shell Agriculture - picked up several important products. Cyanamid have reduced the price of Mataven (formerly a Shell product). They have also revamped the approach to Stomp and have applied for some new registrations for Spinnaker and Sertin herbicides. The joint venture arrangement between Hoechst and Schering - which created Agrevo - means this company now has a very large and broad range of products. Agrevo will be actively looking at new recommendations, especially earlier applications of post emergent herbicides in cereals. ICI and Incitec have merged to form the new company Crop Care Australasia.

Broadstrike and Eclipse

Two new DowElanco products have been released for broadleaf weed control in cereals in 1994. Broadstrike and Eclipse are low dose rate granular products. Both have excellent activity on a range of Cruciferous or brassica weeds such as radish, mustards and particularly turnip. They also have activity on other weeds. Both products are ALS inhibitors - a similar mode of action to the sulfonyl ureas (Glean, Logran, Ally etc) - absorption is mainly by the leaves but some is also taken up by the root system. Like the sulfonyl ureas they are more active and more residual in soils of higher pH and lower organic matter. Also like the SUs they are formulated as water dispersible granules. Broadstrike has been registered in wheat, medics, sub clovers

and lucerne. There is also some interesting results in peas, chickpeas vetch and barley. This is because Broadstrike has little or no activity on many legumes. But the story is complicated by the fact that it will cause serious damage (or kill) crops like lupins, faba beans and canola which are all brassicas.

Use rates will be between 15 and 25 g per hectare, with 20-25 g per hectare most used. Its main activity is on the brassica weeds, but Broadstrike also has good activity on amsinkia, shepherd purse and Pattersons curse. It has poor activity on capeweed, fumitory, saffron thistles, soursob and all grasses. So it is likely to be mixed with partner herbicides for control of broader weed spectrums.

I understand there is excellent compatibility with all broadleaf and grass control herbicides, and it is rainfast in two hours.

There are believed to be no plant back problems with most rotational crops nine months after use. Eclipse is a related compound to Broadstrike, though used at much lower rates (5-7 g per hectare).

Like Broadstrike, Eclipse has major activity on brassica weeds, but will also control most legumes. It has some selectivity on lupins and chickpeas; being registered for brassica weed control in Danja lupins this year.

So growers will need to watch which herbicide they are using, especially in undersown situations, to ensure they do not use Eclipse where they need Broadstrike.

Eclipse is registered in wheat, barley, oats, triticale, cereal rye (and Danja lupins) and can be applied very early (from the two leaf stage through to jointing). Weeds registered include all brassica weeds,

volunteer canola, plus clovers, peas, vetch and amsinkia. It also has good activity on sheepweed, with some suppression of Patterson curse, capeweed and spiny emex.

But it offers poor or no control of saffron thistles, wireweed, fumitory, deadnettle, soursob, lupins, bedstraw, sowthistle, melons or prickly lettuce.

Like Broadstrike, Eclipse is widely compatible, and should be used with an oil/surfactant additive as outlined on the label. When mixed with other products - such as grass herbicides - the additive appropriate for the grass herbicide should be used.

Both products look like funding use especially in situations where brassica weeds dominate - with the differences between the two products influencing the crop situation used. They mix readily with many products. And in many cases they will provide a low cost means of increasing activity where brassica weeds are a problem.

Jaguar and Tigrex

Jaguar has been used in cereals undersown with clover or lucerne for the past couple of years. Rhone Poulenc now has registered this product for use in clover and lucerne pastures for control of many broadleaf weeds. This will allow many mixed farmers to control broadleaf weeds in their pastures - allowing better clover and lucerne growth - and the benefits this brings for subsequent crops.

Jaguar is registered for use in pastures from the three trifoliate leaf stage. This use of Jaguar in pastures is restricted to clover and lucerne only - not medics.

Tigrex, similarly to Jaguar, has been registered for control of a range of broadleaf weeds in sub clover pastures (not

lucerne), again from the three trifoliate leaf stage. Rhone Poulenc are working on reducing this to the trifoliate leaf stage.

Both products can control a wide range of weeds in either cereals undersown with sub clover (and/or lucerne in the case of Jaguar) And these registrations simply allow these products to be used to control the same broad weed spectrum in either freshly sown or older pastures based on these legumes.

Spinnaker

Cyanamid have applied for registration of Spinnaker, mixed with simazine for use in chickpeas, offering control or suppression of a number of broadleaf weeds. The mix is applied after sowing and before the crop emerges. Weeds controlled include wireweed, deadnettle, Indian hedge mustard, wild radish and corn growwell (white ironweed).

The mix applied for is 125 ml per hectare of Spinnaker plus 1.0 - 1.5 litres of Spinnaker plus 1.0 - 1.5 litres per hectare of simazine (500 g per litre formulation). Higher rates of simazine are recommended for use on heavier soils or where higher weed burdens are expected (especially wireweed). Cyanamid warn that this mix will not be recommended in light sandy soils and some short term crop yellowing may occur.

I have seen this mix in trials in 1993 where it gave excellent control of a wide range of broadleaf weeds for a very acceptable cost (estimated at \$20 - \$25 per hectare).

At this stage permits for grower evaluation have been approved in NSW and South Australia. It will give growers in these states an opportunity to trial a potentially very useful mix for control of potentially very useful mix for control of difficult

weeds (such as wireweed) in chickpeas.

Sertin Plus

This grass herbicide from Agrevo offers good activity on black oats, in addition to Sertin's well known excellent activity on ryegrass and phalaris. Sertin Plus contains a new special adjuvant which helps the active ingredient sethoxydim, to perform better on wild oats.

Sertin Plus will be a 120 g per litre formulation, used at 600 ml to 1.6 litres per hectare, and no oil is required as distinct from Sertin EC.

Select

This grass herbicide from Cyanamid has had some rate changes making it more cost effective for winter legume growers.

Select has best activity on ryegrass and phalaris at 150-250 ml per hectare; wild oats, brome and barley grass as 175-250 ml per hectare; volunteer wheat and oats at 200-250 ml per hectare, and volunteer barley at 250 ml per hectare. These rates will be best used on grasses at the two to four leaf stage, through to fully tillered.

Mataven

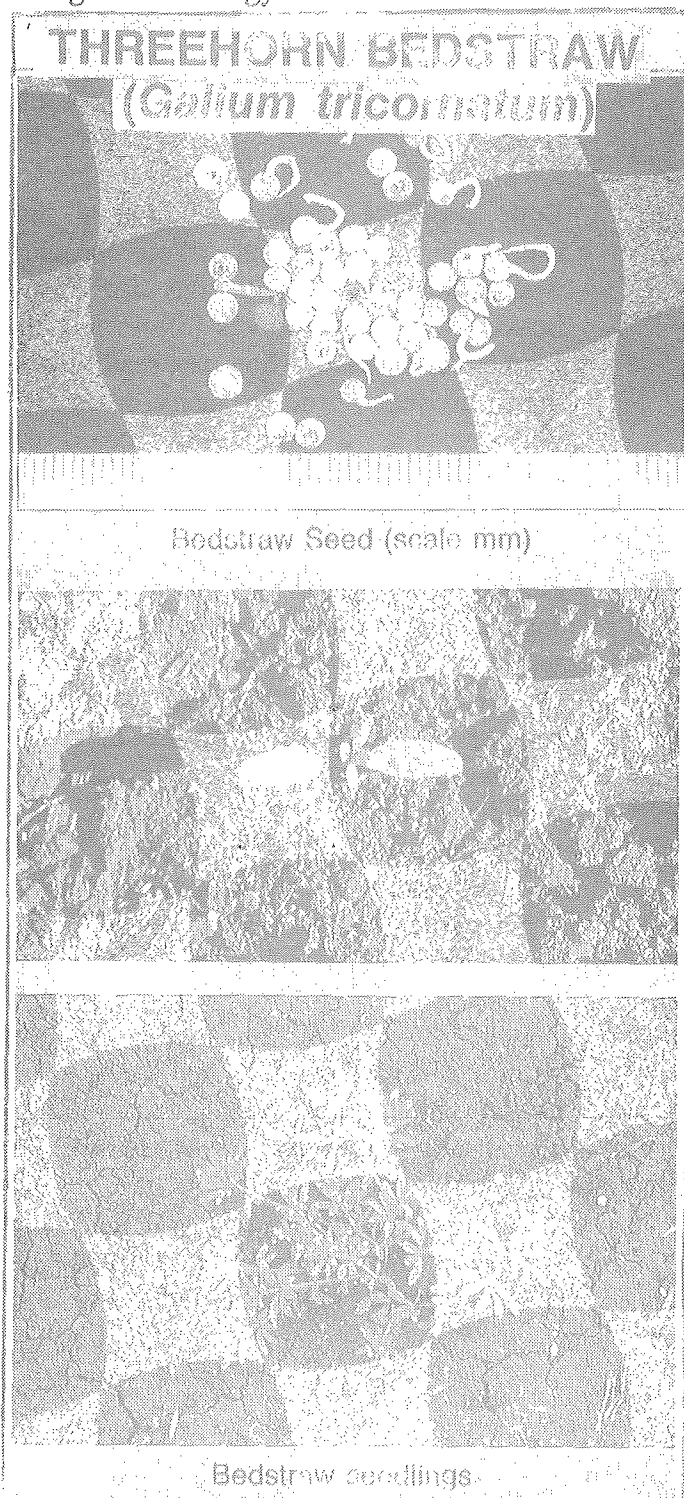
Mataven has been around for many years and is known as a very good wild oat product able to handle small (three leaf) and large wild oats in wheat. Mataven is an amino propionate and does not belong to the "fop" or "dim" groups of herbicides, and so can play an important role where wild oat resistance to these groups is suspected.

Cyanamid has dropped the price of this product to make it strongly competitive with other post emergent wild oat herbicides. The problem of narrow weed spectrum (for example, it doesn't control ryegrass) can be helped by looking at pre-emergent products for control of other

weeds.

Stomp

This product from Crop Care also has been around for some years, but can also play a role in a resistance management program for ryegrass. It has benefits over trifluralin because it is less volatile and requires less rigid incorporation. It is one of many products now being looked at where ryegrass herbicide resistance is feared as it can have an effective role in a resistance management strategy.



BOOKS

The Ecology and Management of Nuisance Aquatic Vegetation

by Arnold H Pieterse, Senior Ecologist, Royal Tropical Institute, Amsterdam, The Netherlands and Kevin J Murphy, Lecturer in Botany, University of Glasgow, Scotland. ISBN 0-19-854840- Oxford University Press, January 1994, 610 pages, 678 halftones, 50 line ill., bibliography, index, Paperback, £stg 30.00* \$A66.25 \$NZ80.00 Price at July 1994.

Contents: *PART I: CONCEPTS, ECOLOGY AND CHARACTERISTICS OF AQUATIC WEEDS:* Introduction; General biology and ecology of aquatic weeds; Origin, autecology, and spread of some of the world's most troublesome aquatic weeds; Ecophysiology of the world's most troublesome aquatic weeds; Flow resistance by aquatic weeds; Relation between aquatic weeds and public health; *PART II MANAGEMENT OF AQUATIC WEEDS:* Physical control of aquatic weeds; Chemical control of aquatic weeds; Biological control of aquatic weeds; Present status and prospects of integrated control of aquatic weeds; Survey and monitoring of aquatic weed problems and control operations of relationships between survival strategy of aquatic weeds and control measures; Models on metabolism of aquatic weeds and their application potential; Practical uses of aquatic weeds; *PART III: AQUATIC WEED PROBLEMS AND MANAGEMENT IN VARIOUS PARTS OF THE WORLD:* Aquatic weed problems and management in Europe; Aquatic weed problems and management in Asia; Aquatic weed problems and management in Africa; Aquatic weed problems and management in Australasia; Aquatic weed problems and management in North America; Aquatic weed problems and

management in the western United States and Canada; Aquatic weed problems and management in the eastern United States and Canada; Aquatic weed problems and management in South and Central America.

Plant Protection, Crop Management, Molecular Biology, Agricultural Chemistry

Molecular Biology in Crop Protection

Edited by George Marshal and Dale R. Walters, both of Dept. of Plant Science, Scottish Agricultural College, Auchincruive, Ayr. ISBN 0-412-54400-8 Chapman & Hall July 1994, 304 pp., 234 x 156, References, Paperback £stg24.95* \$A55.00 \$NZ66.50 Price at July 1994.

This book provides a comprehensive account of the use of techniques in plant molecular biology for crop protection. The book is divided into four user-friendly sections, the first providing a sound introduction to the terminology and range of techniques available in the domain of plant molecular biology. The second section provides detailed information on the applications of these techniques for solving a variety of technological problems in crop protection.

The third section of the book covers genetic engineering of resistance to diseases, herbicides and pests. The final section in the book covers commercial and legislative aspects, including a commercial view of biotechnology in crop protection and the environmental and regulatory aspects of using genetically modified plants and micro-organisms in the field.

The editors have drawn together an impressive international list of contributors from the industrial and academic world, providing a wealth of information for a wide range of personnel in the crop protection industry, researchers and

academics.

Contents: Part 1 Introduction: an introduction to molecular technology, Robert P. Finch. Part 2 Chemical and biological control: molecular approaches to the design of chemical crop protection agents, John B. Pillmoor and Steve G. Foster; molecular approaches to the design of biotic crop protection agents, Robert D. Possee and Linda A. King; molecular determinants for resistance to crop protection chemicals, Derek W. Hollomon and Jenny A. Butters. Part 3 Engineering resistance to diseases, herbicides and pests: molecular biology and genetic engineering to improve plant disease resistance, Eric Ward et al; molecular mechanisms - herbicides, David J. Cole; genetic manipulation of crops for insect resistance, Angharad M.R. Gatehouse and Vaughan A. Hilder; assessment and the impact and performance of transgenic plants, Alan McHughen. Part 4 Commercial and legislative aspects: a commercial view of biotechnology in crop protection, Mary C. Miller and Wayne Powell; environmental and regulatory aspects of using genetically-modified plants in the field, Thomas E. Nickson and Roy L. Fuchs; environmental and regulatory aspects of using genetically modified micro-organisms in the field, L. Anne Glover.

Modelling Crop-Weed Interactions

Edited by M.J. Kropff, International Rice Research Institute, Philippines and H.H. van Laar, Wageningen Agricultural University, The Netherlands.

Contents:

- . Empirical models for crop-weed competition, *M.J. Kropff and, L.A.P. Lotz*
- . Eco-physiological models for crop-weed competition, *M.J. Kropff*
- . Mechanisms of competition for light, *M.J. Kropff*
- . Mechanisms of competition for water,

M.J. Kropff

. Mechanisms of competition for nitrogen, *M.J. Kropff*

. Ecophysiological characterization of the species, *M.J. Kropff and L.A.P. Lotz*

. Understanding crop-weed interactions in field situations, *M.J. Kropff et al.*

. The impact of environmental and genetic factors determining interplant competition, *M.J. Kropff, N.C. van Keulen, H.H. van Laar and B.J. Schnieders*

* Practical applications, *M.J. Kropff, L.A.P. Lotz and S.E. Weaver*

* Appendices

October 1993, 304 pages HB ISBN 085198 7451 PRICE: £35.00 plus postage.

Parasitic Weeds of the World

C. Parker, Weed Science Consultant and C. Riches, Natural Resources Institute, UK.

Parasitic weeds are becoming a more serious problem with intensification of cropping practices. Available control measures are far from complete or simple, and an understanding of biology, ecology and socioeconomic factors is required to design successful integrated control systems. Contents include:

- . Definition and the nature of parasitism
- . The main parasitic groups
- . *Striga*, the Witchweeds, on cereal crops
- . *Striga* and *Alectra* on cowpea and other broadleaved crops
- . *Orobanche* species: the Broomrapes
- . Other root parasites
- . *Cuscuta* species, the Dodders; and *Cassytha filiformis*
- . Loranthaceae and Viscaceae: The Mistletoes

November 1993, 334 pages, 54 colour plates, HB ISBN 085198 873 3

PRICE: £45.00 plus postage.

Water Plants in Australia - A field Guide

(Third Edition) by G R Sainty and S W L Jacobs. Available from the Secretary, the recently reprinted and updated edition. A special price to Weed Society members is \$25.00 (a saving of \$5.00). Send \$25.00 to Secretary, Weed Society of NSW, P O Box 438, Wahroonga NSW 2076

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**THE WEED SOCIETY OF NEW SOUTH WALES
STATEMENT OF OPERATIONS
FOR THE YEAR ENDED 30 SEPTEMBER 1994**

INCOME	30 September 1994 \$	30 September 1993 \$
AGM and seminar	535	2,010
Interest received		
ANZ cheque account	13	50
ANZ term deposit	0	76
Advance Bank step ahead account	1	6
Advance Bank term deposit	1,113	1,392
		1,524
Member subscriptions	2,951	1,693
Seminar registrations July 1994 (July 1993)	1,990	1,405
Total income	6,603	6,632
EXPENSES		
AGM and seminar	736	2421
Audit fees	270	2820
Bank charges	20	22
Donation - NSW Department of Agriculture	570	0
Field expenses - Camden Agview	0	35
Honorarium	900	0
Insurance	412	412
Postage and stationery	36	80
Printing	1253	465
Secretarial expenses	426	165
Seminar expenses - July 1994 (1993)	756	1082
Student prize - University of New England	75	75
Student prize - University of Sydney	75	0
Study grant - M Barrett	0	450
Study grant - P Michael	0	450
Study grant - C Nazer	0	450
Study grant - D Lemerle	500	0
Study grant - B Sindel	500	0
Subscription - CAWSS	0	90
Subscription - AQIS	0	32
Weed Society Prize - I Kelly	0	750
Weed Society Prize - I Eyles	0	250
Total expenses	6,529	10,349
Surplus from operations	74	(3,717)

**THE WEED SOCIETY OF NEW SOUTH WALES
STATEMENT OF NET ASSETS AS AT 30 SEPTEMBER 1994**

ASSETS	30 Sept 1994 \$	30 Sept 1993 \$
Cash at bank	3,068	578
ANZ cheque account	0	226
Advance Bank account		
	3,068	804
Short Term Deposits	21,527	23,717
Advance Bank		
	21,527	23,717
Total assets	24,595	24,521
MEMBERS' FUNDS		
Accumulated funds at 1 October 1993	24,521	28,238
Add; Surplus/(deficiency) from operations	74	(3,717)
Accumulated funds at 30 September 1994	24,595	24,521



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