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A Good Weed



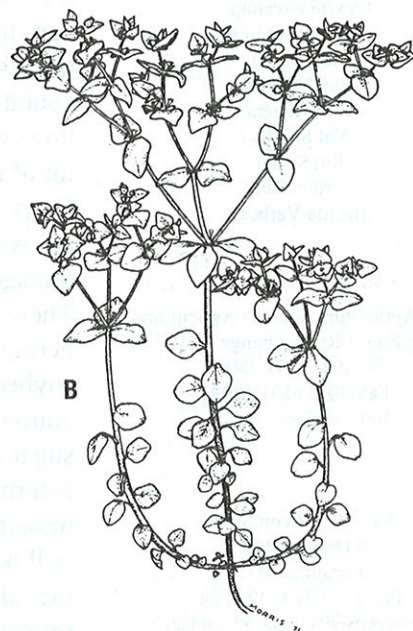
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July 2002

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Petty Spurge - miracle drug plant?

Ref. Tasmanian Weed Handbook
B.Hyde-Wyatt and B.I. Morriss 1975
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VIEWPOINT

With all the hype around about transgenic crops at present I would like to pose the question, "What's in it for us?" This will be in particular reference to herbicide tolerant crops.

Genetically modified crops have been promoted as the latest saviour for agriculture, the environment and the starving poor of the world. Although this technology promises much, it generates a great deal of mistrust within communities around the world, for a range of reasons.

This latest push is reminiscent of the "Green Revolution" of the 1960's, where western agricultural technology was transferred to "Third World" countries. It had some benefits, however history shows that a lot of mistakes were also made. Currently herbicide tolerant crops make up one third of the transgenic crop initiatives.

There are plans to release herbicide tolerant cultivars of soybeans, maize, canola, cotton, potatoes, sugar beet, sugar cane, rice, wheat, oats, lucerne, linseed, sunflowers, tomatoes and tobacco. This will be to a range of herbicides including glyphosate, imidazolinones, sulfonylureas, sethoxydim, glufosinate, bromoxynil and 2,4-D.

North America, China and Argentina are the biggest adopters of the technology with the main crops including soybeans, maize, cotton and canola.

Varieties of herbicide tolerant cotton, canola and wheat have already been released in

Australia. It should be noted that triazine-tolerant canola came from a conventional breeding program and isn't a transgenic crop.

Herbicide tolerant crops are promoted on the basis of cheaper, easier and better weed control; higher yields; overall reduction in herbicide use; increased use of reduced tillage techniques with subsequent benefits of reduced compaction, soil erosion and fuel usage; reduction in residual herbicide use; control of weeds closely related to the crop; and better control of resistant weeds.

These claims sound reasonable and attractive.

A recent survey by the American Soybean Association showed that 50% of respondents attributed their switch to glyphosate tolerant beans as the main factor allowing their adoption of reduced tillage practices. It has been estimated this change to reduced cultivation practices has saved millions of tonnes of soil and reduced fuel consumption by nearly 900 million litres in 2000 alone.

However, there are concerns regarding the use of herbicide tolerant crops.

1. Crop volunteers become weeds of agriculture

Seed dropped from the previous crop is always a problem in subsequent crops and fallows. The problem is that the volunteers are resistant to one of the herbicides successfully used in the past. If the volunteer seed has dormancy, or farm hygiene is lax, there is now a new herbicide resistant weed on the farm.

Glyphosate resistant wheat is due for release in North America between 2003 and 2005. This is to combat a major grass weed of cereals, jointed goat grass, a close relative of wheat. Tillage or selective grass herbicides will be required to control glyphosate resistant wheat in fallow. Remember these selective grass herbicides are in the high risk category for the development of herbicide resistance.

2. Resistance genes will be transferred to wild relatives (or other cultivars of the same species)

Gene transfer through pollen poses a number of issues for crops with higher levels of cross pollination, such as canola, maize and sorghum. The first and most obvious problem is the creation of herbicide tolerant weeds. This has been shown to be a real possibility with the potential for canola genes to pass to wild relatives such as wild radish, charlock and black mustard. Canada has already experienced "gene-stacking" in canola, where volunteer canola plants have been found to have resistance to two and three different herbicides.

In Canada, gene contamination of conventional varieties appears widespread, while in the US, contamination of conventional maize cultivars with resistant genes also appears to be occurring. This has had the unexpected result of growers being prosecuted by the owners of the genes for illegally having these genes on their land. One Canadian canola grower was fined \$C 130,000 for such an offence,

while seed companies in North America have had to recall seed that was contaminated with 'unwanted' genes during seed increase. Another unexpected incident was the finding of transgenic genes in wild maize species in Mexico. This could have unknown repercussions on this centre of maize genetic diversity.

3. Selection of more herbicide resistant weeds and weeds never controlled by these herbicides

Use of herbicide tolerant crops will increase selection pressure for herbicide resistance in weeds and accelerate shifts in botanical composition to weeds not controlled by these herbicides.

Three weed species have already developed resistance to glyphosate through natural selection (and "over-use). Weeds resistant to Group B herbicides (imidazolinones and sulfonylureas) are already widespread. It is now widely accepted that it takes as few as four applications of a Group B herbicide to develop a serious shift in certain weed populations towards resistance.

4. Direct hazard to humans, livestock and wild organisms

Food safety is the focus of the media and the urban public. People are worried that genes that are either deliberately or inadvertently present in food plants, lead to the production of compounds that cause allergies or poisoning. To date there is little evidence for this.

5. Vertical integration of agriculture

The trans national companies that are strongly involved with herbicide tolerant crops have

been actively buying seed companies, or forming alliances with the large seed companies. This means the people supplying the seed also produce the pesticide required and registered, to grow the crop. This vertical integration gives the corporations greater control of supply and marketing, and hence profits. This prospect is daunting for smaller growers who feel they have little influence on the direction their enterprises will head in the next five to ten years. This trend also threatens public plant breeding.

These crops are geared towards industrial agriculture and will have little positive influence on village agriculture in poorer nations, and this is where the majority of the world's population get their food. I would like to see companies refrain from telling us this technology is for the benefit of the starving poor. Everybody, except those who live in shoe-boxes, realise herbicide tolerant crops are all about commercial advantage.

There is enough food in the world to feed everyone, however what dignity is there having to line up for your daily allowance of wheat or rice to be handed to you from some well meaning welfare organisation, so that you can feed your family?

If you want to feed the starving millions, give them stable government, the ability to grow their own food at the village level and educate women.

So in summing up, like the technology of herbicide tolerant crops are a "double edged sword, with both

benefits and risks. Individual herbicide tolerant crops must be assessed for risk to agriculture and the environment before release.

Australia is in an excellent position to correctly manage these crops, with cooperation between the National Registration Authority, Federal and State departments of agriculture, along with grower groups and industry. These crops need to be promoted in a realistic manner and not sold as the "magic wand" for weed control.

Always be wary of anyone who tells you they have an easy answer to a problem. Herbicide tolerant crops must be viewed as another potentially useful tool in a well-planned weed management program.

*Andrew Storrie
Weeds Agronomist NSW
Agriculture
Tamworth, 2340*

RECEIVE "A Good Weed" NEWSLETTER BY EMAIL

To cope with rising costs of printing and mailing "A Good Weed" to each member of the Society we can now offer members the option of receiving the Newsletter by e-mail.

If you would like your copy of "A Good Weed" e-mailed instead of receiving a hard copy through the post, please send a brief message to the secretary by e-mail. Future issues of "A Good Weed" may then be forwarded to the e-mail address nominated.

WEEDBUSTER WEEK - Another Milestone

Weedbuster Week 2001 had a new coordinator this year in New South Wales. Cheryl Bate, Sydney North Regional Weeds Coordinator took over the huge task of Weedbuster Registration, promotional material supplies and organising the NSW Launch. The promotion ran smoothly thanks to the effort Cheryl made and the Launch was the best on record for NSW.

Venue for the Launch was the Sydney North Councils Conference on 6 October which was timed nicely as an introduction to Weedbuster Week which commenced on 7 October, 2001. To add to the occasion, the keynote speaker for the conference and person to launch Weedbuster was Burke's Backyard Host, Don Burke. In his address, Don stressed the need for the community to recognise that the best way to combat weeds is to prevent their escape.

The Weed Society again sponsored the colouring-in competition which was very popular receiving over 1000 entries statewide. This competition was coordinated by Bob Trounce. Congratulations to the Winners and thanks to all, who entered, supervised or coordinated the entries. Results were as follows:

Age group- 3 to 8 years

First place: Leearna Muir Class 2R Dee Why Public School DEE WHY NSW 2099

Second Place: Stephanie Dobb Class 3 Taren Point Public School TAREN POINT NSW 2229

Third place: Nicholas Burgess St Josephs Primary School MERRIWA NSW 2329

Age group- 9 to 12 years

First place: Melissa Flynn Class 4R St Catherine Laboure GYMEA NSW 2227

Second Place: Matthew Sethi Berrima Public School BERRIMA NSW 2577

Third Place: Jane Donovan year 6, Taren Point Public School TAREN POINT NSW 2229

The Winner in each age group will receive prize money of \$100 and the Schools (Dee Why Public and St Catherine Laboure) will each receive \$200 courtesy of the NSW Weed Society. Weedbuster kits were forwarded to the students who were placed 2nd and third. Winning entries have been forwarded to the National Weedbuster Coordinator for national prize judging. Results will be posted on the Weedbuster Website when finalised. www.weedbusterweek.info.au

Weed Buster Colouring-in Competition

2001 National Winners

Representatives from the Landcare and Catchment Management Education, Weedbuster and the National Weeds Awareness programs, judged the short-listed, national colouring-in competition entries in Queensland recently. The judges gave careful consideration to the artwork and thoughtful messages when determining the winners. They were certainly impressed by the thoughtful designs and array of materials used to colour in the Weedbuster pictures.

Congratulations to the winners, and a special thank you to all the entrants, teachers, supervisors and coordinators for their valued participation in the Weedbuster program.

The following places were awarded:

Age Group 3 to 8 years of age: Winner –

Summer Wary, Boisdale NSW

Highly recommended –

Leearna Dee, Deewhy NSW
Stephanie, Taren Point NSW
Casey Mitchell, Lindnow VIC

Age Group 9 to 12 years of age: Winner –

Alison Watt, Lindnow, VIC

Highly recommended –

Kirsten pel, Northview QLD
Melissa Flynn, Gynea NSW
Jana Spentgaris, AYR QLD

Most Outstanding Activity – Winner –

Wesley Vale Primary School, Tasmania

Second prize –

Brandon State School, Ayr QLD

Highly recommended –

Greater Taree City Council, Taree NSW
Randwick City Council, Randwick NSW

FREQUENCY OF WEEDS CONFERENCES

Introduction

Prior to 1995, weed issues in Australia had a generally low profile, weed research was perceived to be lacking in coordination and training at Universities and elsewhere was declining. The creation of the

CRC for Weed Management Systems and its successor the CRC for Australian Weed Management have gone some way to addressing these issues. There are other initiatives that have also helped such as the National Weeds Strategy and WONS; however, the CRC has played a significant part in fostering collaboration and adding to discussion on significant issues. The CRCs have a finite life and it is important that the gains made are not lost.

Some of the weaknesses of the current situation in weed science in Australia are:

1. The continued fragmentation of weed science both within and between states. The majority of weed researchers remain funded by state departments and there is insufficient coordination and collaboration between departments within states and across states.
2. The lack of a national body that can be fairly described as representing the views of both scientists and managers.

CAWSS has further weaknesses in being a council of state-based weed societies. This slows response times and reduces the impact that CAWSS can have on policy development.

Some Drivers for Change

There is now a wider base to weed management activities in Australia including environmental weeds, strategic and action planning, stakeholder/community engagement, weed awareness, incursion management, training/skills develop-

ment, and integration into natural resource/catchment management. This means there is more information to share and a larger base of participants to support more frequent conferences.

There is greater recognition of the value of collaboration, coordination, working in teams and networking. More frequent conferences will facilitate this. This applies to all participants from community group members to scientists.

There are greater expectations that information will be readily available to end users and also rapid developments in information management. More frequent conferences will increase information sharing and facilitate discussion on information systems. Common requirements of employers that participants present a paper or poster means that some information is presented that would otherwise never have become available.

There are greater expectations that investment by government and industry will produce outcomes and this includes weed management. Increased information sharing from more frequent conferences will assist (includes getting the outputs of science into the field as well sharing across like activities eg community groups, extension programs).

The influence of the CRC for Australian Weed Management. Its participants need to meet frequently, providing support for conference attendance and supporting students who will

benefit from more frequent conferences.

There is increased cooperation of weed management at the national and multi-state level resulting from the NWS, CRC, National Weedbuster Program and multi-State catchment management eg Murray-Darling and Lake Eyre. Hence, there is a greater need for weed managers to meet more frequently.

Recognition that the CAWSS Executive would benefit from more frequent face to face meetings that would flow from more frequent conferences.

Timing of the Australian Weeds Conference

The Australian Weeds Conference is held every three years. The strengths and weaknesses of holding the conference at this frequency are detailed below.

Strengths: Allow sufficient time between conferences for every conference to have an individual flavour. Allow sufficient time for research projects to be completed between conferences.

Weaknesses: The long period between conferences is not good for nurturing collaborative relationships. Inhibits the ability of CAWSS to rapidly influence policy. Is not effective in nurturing graduate students, as most students would only attend a single conference. Initiatives often wither and die when momentum is not maintained due to long periods between contacts. New developments in science, extension or policy are not

networked rapidly, which delays progress and can be costly to industry and the environment.

Conference Location

Currently, the Australian Weeds Conference rotates between states with state weed societies organising the conference. This is a common model for society conferences and should remain. The Australian Weeds Conference has a history of the site being selected through a bid process. This could be changed to a strict rotation system allowing each state society to have a known date for organising the conference and would be a more equitable arrangement.

Some other professional societies, such as the Plant Pathology Society and the Plant Physiology Society have held joint meetings with their New Zealand counterparts, both in Australia and New Zealand. CAWSS could consider holding an Australasian Weeds Conference, in connection with the New Zealand Biosecurity Institute, which is currently considering the merits of this approach, or possibly with the Plant Protection Society.

Recommendations

CAWSS should hold biennial meetings of the Australian Weeds Conference. Reducing the 3-year interval between Australian Weeds Conferences would help foster collaboration between weed scientists and practitioners in Australia and assist the training and development of young weed scientists. A more frequent meeting of weed scientists and

practitioners under the aegis of CAWSS would improve the ability of CAWSS to act as a peak body for weed science and education in Australia, inheriting the "mantle" when the Weeds CRC concludes. CAWSS should implement a strict rotation for the Australian Weeds Conference so that local societies have adequate time to prepare.

Responses to these Recommendations

More frequent weed conferences will impose organising duties more frequently and make greater demands on our limited budgets. Many people involved in weeds research, extension and management like to attend other conferences, such as those organised by the ecological society, grassland society, rangeland society etc as well as international conferences on plant protection and biological control. Given the choice of attending two Australian weed conferences in four years or one Australian weeds conference and another type of conference I think most people would prefer the latter. The objective of developing closer links to foster collaboration and coordination could be met by more focussed smaller meetings and workshops. Among the most successful activities of the CRC for Weed Management Systems were the focussed workshops which usually led to a 'state of the art' publication and planning for future cooperative research.

*Bruce Auld
Principal Research Scientist
NSW Agriculture
Orange 2800*

Other points of view

The CRC for Australian Weed Management has proposed to the CAWSS that the Australian Weeds Conference be held every two years rather than every three years.

I have been fortunate enough to attend each Australian Weeds Conference since the Weeds Society of NSW convened the Eighth Conference in 1987. I was also on the organising committee for the Ninth Australian Weeds Committee held in Adelaide in 1990.

Although there is merit in having more frequent conferences, these should not be weed conferences. Weed Science will continue to progress if Weed Scientists also participate in more general forum such as the Agronomy Conference and the Ecological Society Conference. If more frequent conferences are needed, perhaps these could be specialist meetings, which will attract a smaller number of participants. Others would be international conferences such as the Asia-Pacific Weeds Conference and Biological Control of Weeds Conference.

The organisation of national conferences takes a committed and dedicated team. In the past much of the work has been done only with support of employers. This level of support is not always as readily available these days.

Having conferences overseas, even in New Zealand will automatically exclude many State government participants. This is not due to costs, it is

due to the political nature of conference attendance by public servants. For instance NSW Agriculture is sending at least 14 participants to Perth for the 13th Australian Weeds Conference. Based on current government policy only two would be able to attend a conference in New Zealand even though it would cost less than half the cost of travel to Perth.

My view is that the Australian Weeds Conference should continue to be the prime weed forum, but that CAWSS should encourage other specialist conferences more frequently.

I invite society members to provide their view so that NSW can give CAWSS a clear direction on this major change proposed.

R J Carter
CAWSS Vice President and
Executive Committee Member
richard.carter@agric.nsw.gov.au

I agree with the bulk of the arguments in favour of changing to a biennial conference. One point, however, is that the existence of the CRC (Australian Weed Management) means that collaboration is on-going in all aspects of weed management. Some institutions that do not have in-kind contributors may argue with this, but even so, there is lots of collaborative work going on that is sponsored by the CRC and would go a long way towards plugging any gaps that a long break between conferences may cause. Without the CRC, a three year break would almost certainly be too long but to me, its presence does weaken the argument in

favour of moving to a two-year interval.

Steve Sutherland
Weeds Agronomist
NSW Agriculture
Wagga Wagga 2650

John Cameron agrees with this view but Gordon Tink considers that three years may be too long and that a biennial conference may be the way to go.

NEW STATE WEED CONTROL COORDINATOR

NSW Agriculture has appointed Sydney Lisle as the State Weed Control Coordinator. Syd has a Bachelor of Land Management from the University of Sydney and has over 20 years experience in noxious weed and related pest management in Victoria and Queensland, most recently in East Gippsland. He was Program Manager for Gippsland Natural Resources and Energy and was the Project Team Leader for a range of weed and pest animal projects. He also has experience as a member of state and inter-agency policy committees as a vocational trainer and in the development of competency standards.

Syd took up duties with the Department in late January and is based at Head Office in Orange, taking over the responsibilities of all noxious weed projects submitted by Local Control Authorities.

TECHNICAL REPORTS

War on Blue Heliotrope

Blue heliotrope (*Heliotropium amplexicaule*) infests more than 110,000 hectares in NSW alone and is considered a major threat to landowners as it outcompetes desirable pasture species and is toxic to stock. On 21 November, 2001 an assault on the weed began with the first release of the biological control agent *Deuterocampta quadrijuga* leaf beetle.

A Blue Heliotrope Action Committee in central western NSW has been one of the forces which has secured funding from the Rural Industries Research and Development Corporation (RIRDC) for research into bio control. Strong support for the project has also been offered

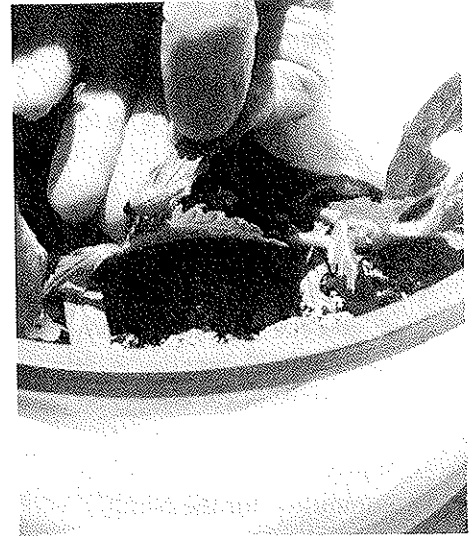
by the Macquarie Valley Weeds Advisory Committee. The CSIRO Research Scientist Dr David Briese has been largely responsible for the study, which has shown that the beetle does not attack native species or other valuable plants.

The initial release was made on the property "Weenya", owned by Bill Lambell, 30 kilometres east of Gulargambone.

Although the leaf beetle has been showing promising signs by destroying above ground parts of blue heliotrope, it will not kill the weed.

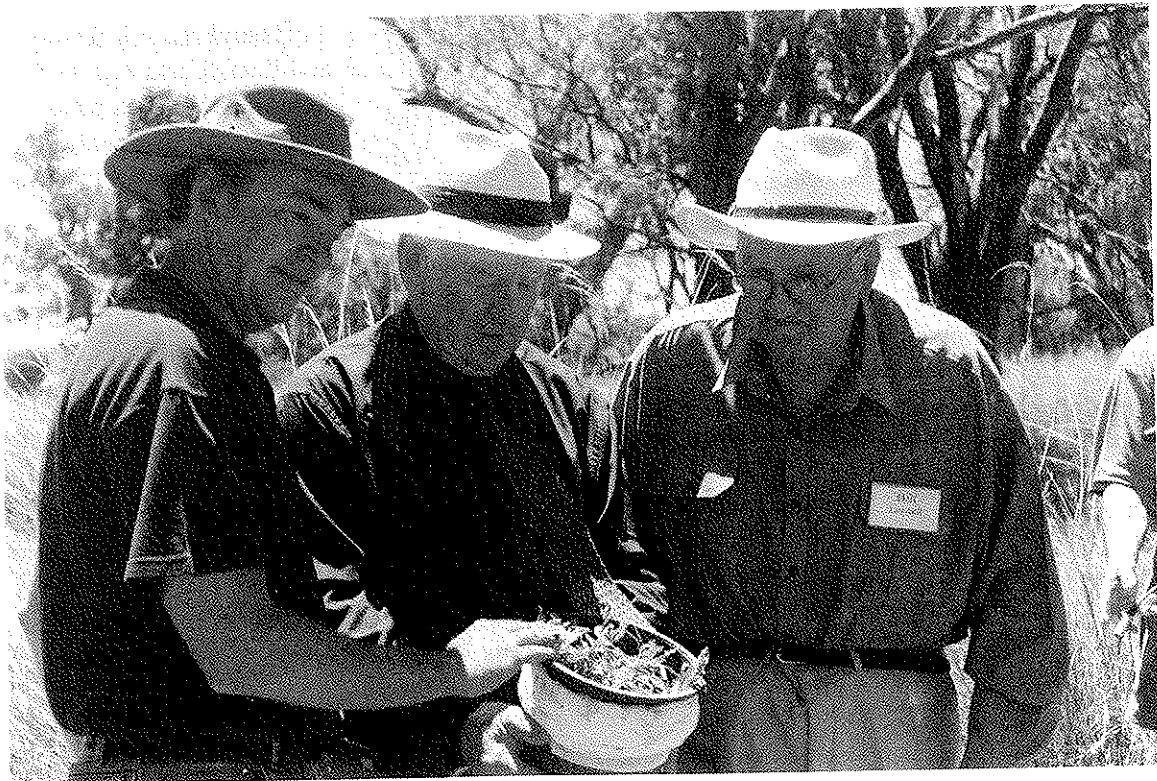
A second bio control agent, also identified in Argentina, the flea beetle, may attack the weed's massive root system. Research is underway in Argentina with a view of bringing the second beetle into Australian quarantine for testing.

Depending on the outcome of further tests, this agent could be ready for release in 2004/05.



Above. The leaf beetle *Deuterocampta quadrijuga* on a blue heliotrope plant.

Below. Dr David Briese (CSIRO), Mr George Hammond (Chairman, Macquarie Valley Weeds Advisory Committee and Mr Bill Lambell (owner of "Weenya" and strong supporter at the bio control release).



Petty Spurge (*Euphorbia peplus*) – a plant with anti-cancer properties

Peplin biotech has discovered a novel class of natural compounds, purified from *Euphorbia*, which show great potential in the laboratory as a potent treatment for a wide range of human cancers including breast and prostate cancer, leukaemia, melanoma and other skin cancers, as well as lung, colorectal and cervical cancer.

Background on members of the Euphorbiaceae family

The *Euphorbiaceae* family covers a wide variety of plants (>2000 world-wide) including weeds, trees and other types of plants of the *Euphorbia* species, many of which are slow-growing succulents. When the stems are cut, many members exude a milky sap (latex) which has an unpleasant taste and is toxic when ingested in significant quantities. Such chemical properties combined with the presence of thorns on some species (eg. Crown of Thorns), presumably protect the plant from grazing in the arid regions of the world where many of the family originate.

An early clinical trial on thick and thin non-melanoma skin cancers has confirmed that the compounds are very effective in producing long-term (possibly permanent) responses in human patients without any evident systemic toxicity when applied topically. This is highly significant because current topical methods of drug treatment require long periods of application without being fully effective, and physical methods

(eg. surgery) are expensive and difficult to apply to the large areas affected, especially in older people.

Over 70% of current pharmaceuticals are natural products or have been developed from a natural product lead. *E. peplus* is one of a number of plants in the *Euphorbiaceae* family that has attracted attention as a home remedy for skin cancer because of its milky sap. However, a survey by Peplin Biotech of over 200 species of the *Euphorbiaceae* family has shown that only *E. peplus* has the desired attributes of anti-cancer efficacy in vitro and in vivo. In addition, *E. peplus* is not a noxious weed, it grows rapidly, produces harvestable seed and it is potentially suitable for large-scale agricultural production. Thought to originate from Europe, *E. peplus* is now widespread throughout the world and can be found in most gardens.

Methods have been developed by Peplin Biotech for the extraction and purification of compounds from *E. peplus* in the laboratory, and these are currently being scaled-up for commercial production. It is anticipated that the overall cost of producing the active ingredient in pure form will result in a commercially viable treatment, provided the cost of agricultural production can be kept low.

From RIRDC newsletter 2002



OTHER GOOD READS

Haworth Press, Inc., USA has come out with a book entitled "**Allelopathy in Agroecosystems**" which has been published simultaneously as a monograph of the Journal of Crop Production (vol. 4, no.2, 2001). The book has a foreword by Professor George Waller, Founder President of the International Allelopathy Society. It has 20 chapters on various aspects of allelopathic interactions in agroecosystems including weed and crop allelopathy, beneficial aspects of crop allelopathy, weed control, crop rotation, improving pastures, sustainable management of agroecosystems, etc.

Eds. R.K. Kohli, H.P. Singh and D.R. Batish

Publishers: The Haworth Press, Inc., USA

Prices: hard US \$ 74.95
Soft US \$ 54.95

Pages 447pp. with index

Molecular Biology of Weed Control

Jonathan Gressel, Weizmann Institute of Science, Rehovot, Israel

March 2002: 234x156: 520pp: 36 b+w line drawings and 7 b+w photos

Hb: 0-415-26642-4 £75.00
(approx. \$108.00)

For information on this or any other Taylor & Francis books please contact Antonio Upali, Taylor & Francis Ltd., 11 New Fetter Lane, London, EC4P 4EE, UK Tel: +44 (0)20 7842 2021, Fax: +44 (0)20 7842 2300 E-mail: antonio.upali@tandf.co.uk or visit our online resource centre at: www.lifesciencesarena.com

Weeds are widely recognized as a major constraint to food production. They diminish harvests and, with an ever-increasing world population, the need for effective weed control is greater than ever. *Molecular Biology of Weed Control* critically assesses the impact of the new tools of molecular biology on the science of weed control as well as the ways in which the science of weed control has helped and influenced molecular biology. This book describes how weed biologists and ecologists are beginning to use these tools and discusses past successes and failures as well as taking a look at the future prospects for weed control. Providing an extensive review of the molecular aspects of the evolution of herbicide resistance in weeds and genetically-engineered herbicide resistant crops, *Molecular Biology of Weed Control* discusses their shortcomings as well as suggesting improvements to future generations of such crops. Accentuating the utility of molecular biology to contri-

bute to the control of intransigent weed species both in the developing and developed world, the book also looks to the future and describes how molecular biology can be used to diminish the use of chemical herbicides, and enhance crop competitiveness for light, nutrients and water.

Taking a multi-disciplinary, open-minded approach to the problems, pitfalls and potential benefits of these new technologies and their applications, *Molecular Biology of Weed Control* is essential reading for all weed scientists, environmental students, researchers and regulators, as well as anyone else with an interest in the future of crop production.

INTERNET SITES OF INTEREST

European Weed Research Society

<http://www.res.bbsrc.ac.uk/ewrs/>

International Weed Science Society

<http://www.css.orst.edu/weeds/iwss>

Weed Science Society of America

<http://ext.agn.uiuc.edu/wssa/>

Weed Science Society of Japan

<http://wssj.ac.affrc.go.jp/>

Herbicide Resistance Action Committee

Weed Science Pages Index
<http://www.nrcan.gc.ca/~bcampbel/weedindx.html>

World Weed Database

wwd_1@plant-sciences.oxford.uk

COMING EVENTS

2002

July 11-12

California Conference on Biological Control II

Venue: Riverside California, USA
Contact: M Hoddle, Dept of Entomology, University of California, Riverside, California 92521, USA
Tel: 1-909-787-7292
Email: ccbc2@cnas.ucr.edu
www.sss.isn.net/~ppb2000/

September 8-13

13th Australian Weeds Conference

Venue: Sheraton Perth Hotel, Perth WA
Contact: Convention Link
Ph: 08 9450 1662
Fax: 08 9450 2942
Email: convlink@iinet.net.au
www.members.iinet.net.au/~weeds

2003

February 2003

Weed Science Society of America Annual Meeting
Jacksonville, Florida Contact: Weed Science Society of America

April 27 - May 02

11th Symposium on Biological Control of Weeds
Canberra, Australia Contact: Sharon Corey
Fax: +61-02-6246-4177
E-mail: sharon.corey@ento.csiro.au
Details: <http://www.ento.csiro.au/weeds2003/index.html>

July 26 - Aug 1

7th International Rangeland Congress

Venue: International Convention Centre, Durban South Africa
Contact: NISC South Africa P/L, PO Box 377 Grahamstown 6140 S.Africa.

'Weeds -Woe to Go!'

A seminar organised by The Weed Society of New South Wales Inc.

Where: Macquarie University Room T5 Building E78
When: 18th July 2002 (during mid-semester break)
Cost: \$100.00 non-members \$80.00 members
 Includes registration, proceedings (abstracts), morning tea & lunch
 Parking on campus

MORNING

8.00 - 9.15 Registration Tea/Coffee

9.15 - 9.30 President's Welcome Bob Trounce

SESSION 1 Weeds posing a threat to the Australian Environment. Criteria for assessing. Safeguards to prevent entry.

9.30 - 10.30	Problem weeds - assessment & prevention of entry	Dave Porritt	20	(+ 10)
	Weeds of National Significance	Lindsay Nothrop	20	(+ 10)
10.30 - 11.00	Pretty plants or weeds - a Nursery Industry issue?	Rudi Fabian	20	(+ 10)

11.00 - 11.30 Morning Tea

SESSION 2 When things go wrong, the weed arrives and invades.

11.30 - 12.45	Case Study 1 - Bitou Bush	Jeff Thomas	20	
	Case Study 2 - Serrated Tussock	Fiona Leech	20	(+ 15)
	Case Study 3 - Lantana	Tony Grice	20	

12.45 - 2.00 Lunch

AFTERNOON

SESSION 3 Communicating weed issues effectively.

2.00 - 2.30	Getting the message across?	Peter Martin	20	(+10)
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SESSION 3 Integrated weed management strategies.

2.30 - 3.30	Biological control - successful, unsuccessful & new programs	Royce Holtkamp	20	
	New & novel approaches to weed management	Steve Sutherland	20	(+20)

SESSION 4 Bringing it all together & looking to the future.

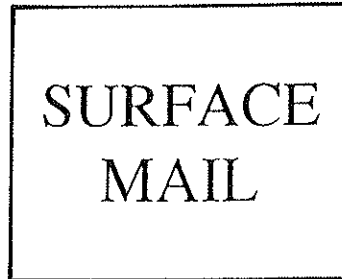
3.30 - 4.00	Bringing it all together & looking to the future	Brian Scarsbrick	30	
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A Good Weed

the NEWSLETTER of
The Weed Society of New South Wales
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