

# A Good Weed



**The Newsletter of the Weed Society of New South Wales Inc.**

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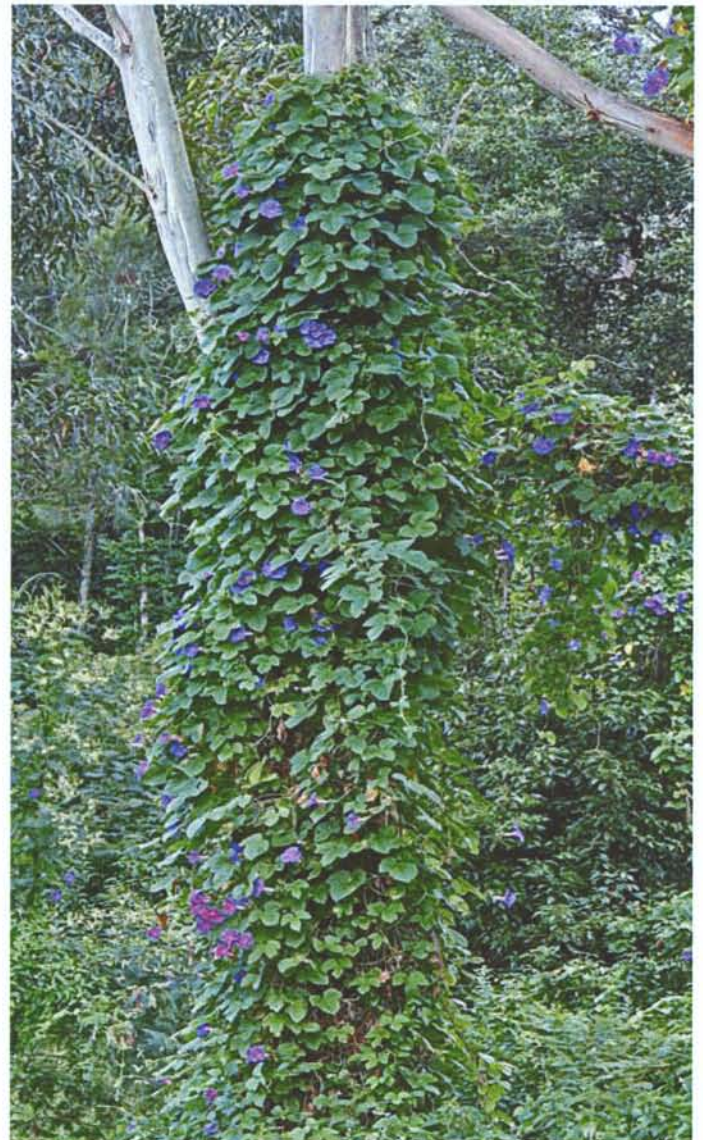
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PO Box 438 WAHROONGA NSW 2076

Secretary: Alan Murphy

Editor: Lawrie Greenup  
Assistant Editor: Stephen Johnson



blue morning glory *Ipomoea indica*

A garden escape and a weed of coastal bushland communities often smothering native Eucalypts and other species



**THE WEED SOCIETY  
OF NEW SOUTH WALES INC.**

**Office Bearers for 2007/08**

President	Rex Stanton [Wagga Wagga]
Vice President	Stephen Johnson [Orange]
Immediate Past President	Stephen Johnson [Orange]
Secretary	Alan Murphy [Umina]
Treasurer	Jim Swain [Thornleigh]
Public Officer	Mike Barrett [Beecroft]

**Other members of the Committee**

Newsletter Editor	Lawrie Greenup [Westleigh]
Assistant Newsletter Editor	Stephen Johnson [Orange]
CAWS Delegates	Rex Stanton [Wagga Wagga], Warwick Felton [Tamworth]
Committee	Peter Dowling [Ingleburn], Warwick Felton [Tamworth], Peter Harper [Orange], Deirdre Lemerle [Wagga Wagga], Luc Streit [Chatswood], Hanwen Wu [Wagga Wagga]

**Committee Meeting Dates for 2009 - contact Secretary for details**

February 6	August
April	October
May	December

**Newsletter issues & deadlines for 2008/2009 are as follows:**

# 46 Summer	30 November 2008	# 47 Autumn	28 February 2009
# 48 Winter	31 May 2009	# 49 Spring	31 August 2009

**Weed Society of New South Wales**

The Society was formed in 1966, the first weed society in Australia. It is affiliated with similar societies in Queensland, Victoria, South Australia, Tasmania, Western Australia and New Zealand under the umbrella organisation - The Council of Australasian Weeds Societies [CAWS]

**Society Aims:-**

- To promote a wider interest in weeds and their management.
- To provide opportunities for those interested in weeds and their management and to exchange information and ideas based on research and practice.
- To encourage the investigation of all aspects of weeds and weed management.
- To co-operate with other organisation engaged in related activities in Australia, New Zealand and overseas.
- To encourage the study of weed science and the dissemination of its findings.
- To produce and publish such material as may be considered desirable.

Membership is open to all and costs \$40.00 per annum for general membership, \$20.00 per annum for bona fide students. For an application form contact: **Secretary PO Box 438 WAHROONGA NSW 2067** or visit our website [www.nswweedsoc.org.au](http://www.nswweedsoc.org.au)



## Society News

### President's Report to the 2008 Annual General Meeting.

Firstly, I would like to thank the committee with whom I have had the pleasure to work with this year, and also thank everyone in attendance at this meeting for being able to make the commitment to be here.



I commenced in this position twelve months ago, taking over from Stephen Johnson. Stephen's drive and enthusiasm has been hard to match, but I think we, as a committee and a Society, have continued to move forward. As in previous years, the low point has been the lack of

new faces volunteering to serve on the committee. It has been a rewarding experience to work with the dedicated and knowledgeable members of the committee, but I am sure they would agree that there needs to be more younger faces around to learn the ropes. This would allow the Society stalwarts an opportunity to step back and be wise mentors on the general committee rather than being needed as executive office bearers.

Hosting seminars has been, and will continue to be, one of the avenues through which we provide services for our members. Yesterday, the Society held a *GM Crops: risks and benefits* seminar in conjunction with the Australian Institute of Agricultural Science and Technology. I would like to heartily thank Warwick Felton and his sub committee for the enormous effort they have made to bring this event to fruition. We are also continuing to work with both the North Coast Advisory Committee and the Weeds Officer's Association, with the possibility of collaborating with the running of seminars or conferences. Not only do these linkages stand to increase the benefits for existing members, but they also raise the profile of the Society and provide opportunities to increase our membership.

The Society has continued to support undergraduate studies in weed science through academic prizes with a number of tertiary institutes. Encouraging future weed scientists or weed management practitioners is important if we are to continue to develop and maintain successful weed management programs. Supporting current weed managers is also important, and to this end the Society is investigating supporting a Weed Officer's Association Award to recognise outstanding achievements in managing noxious weeds. The Society is also investigating initiating a Society Award to recognise outstanding contribution by a Society member in weed management.

Work has been progressing behind the scenes with developing a new website for the Society. In the electronic age, the Society needs to engage audiences through this popular medium by having a professional, informative website that is easy to use and navigate. Inclusion of historical copies of the *Good Weed* newsletter will showcase to non-members the depth and breadth of activities being conducted by Society members. Access to more recent copies of the newsletter will remain a distinct membership benefit, as these will not be available through the website.

The Society is in a strong position to continue to be an important body for promoting awareness and control of weeds. I look forward to working with other Society members to achieve this goal.

Rex Stanton

### New member

The Society would like to welcome a new member:

- Ms Diana Picone, Bushland Manager  
National Trust of Australia (NSW)

**SEASONS GREETINGS AND ALL THE BEST  
FOR THE NEW YEAR**

Society News

Treasurer’s Report to the 2008 Annual General Meeting

• Membership.

The society has as at the 1<sup>st</sup> October 2008 166 members compared with 172 as at the 1<sup>st</sup> October 2007.

Membership is made up of 2 life members, 117 members financial for 2008, 33 who are unfinancial for 2008 and 14 who are unfinancial for 2007 and 2008.



Those who are unfinancial for 2007 and 2008 have been sent a final tax invoice advising them that if they do not renew by the 1<sup>st</sup> December 2008 that their names will be removed from the membership list.

17 organisations & /societies receive the newsletter.

There are 5 sponsors of the newsletter – **A Good Weed** - Dow AgroSciences, Scotts, Bayer, Syngenta, Farmcare Training and Luhrmann.

• Audited Financial Report.

The audited financial report for the financial year 1<sup>st</sup> October 2007 to 30<sup>th</sup> September 2008 is presented for approval.

The auditors, Thomas GLC continue to provide us with the required service and it is recommended that we continue to use their services for future audits.

The society made a profit of \$1,724.44 for the year compared with a profit the previous year of \$3,818.24. The profit largely comes from interest earned on our term deposits and money extra account. A loss is shown for seminars but this is due to an amount of \$475.01 being applied in this financial year which relates to the GM Crops seminar held on the 12<sup>th</sup>

November 2008. The AGM dinner for 2007 incurred a loss of \$1,194.00 due to poor attendance.

Our expenses are \$2,441.38 higher than last year due to higher meeting expenses, bank charges which relates to the use of the credit card facility, general sponsorship, rent and storage and an honorium to the newsletter editor.

We should note that membership income is up this year compared to last year by \$1,885.00 which reflects the increase in members fees from \$30.00 to \$40.00.

We have continued to use the Bendigo Bank at Turrumurra for the societies banking and have 2 accounts there. A cheque account and money extra cash management account.

In addition we have 3 term deposits with a total investment of \$63,674.20 with variable terms so that we have access to funds if required.

The society is now able to accept MasterCard and Visa card, for payment by credit card of subscriptions, attendance at seminars, dinners etc. and this has proved to be popular with members.

The balance sheet shows that the society is in a sound financial position as net assets have increased by \$1,697.44 for the year.

The audited financial statements for the year ending the 30<sup>th</sup> September 2008 was approved and the statement by members of the committee signed

Jim Swain Hon. Treasurer 11th November 2008

From the editor

Contributions for the newsletter are always welcomed, especially those dealing with local and regional weed issues.

Material can be sent to:  
Editor PO Box 438 Wahroonga NSW 2067  
or [editor@nswweedsoc.org.au](mailto:editor@nswweedsoc.org.au)

Society News

New committee members

Deirdre Lemerle (Professor)

Deirdre is a weeds research scientist who has worked for the last 20 years for NSW Department of Primary Industries at Wagga Wagga developing integrated weed management strategies to reduce weed impacts and farmers' dependence on herbicides. She led the



Cropping Program of the Weeds Co-operative Research Centre, has published many papers in national and international journals, and supervises post-graduate students. Deirdre Lemerle was appointed as Director of Graham Centre and Professor of Innovative Agriculture in April 2005. The EH Graham

Centre for Agricultural Innovation is a new alliance between Charles Sturt University and the NSW Department of Primary Industries. The Centre aims to develop innovative technologies for market-driven, profitable and sustainable southern agricultural systems for variable climates.

Hanwen Wu (Dr)

Hanwen received his Bachelor degree in Agronomy and Master degree in Plant



Breeding at the Fujian Agricultural and Forest University (China) in 1984 and 1987 respectively. From September 1987 to October 1994, he lectured Weed Science and Farming System Research at the same University. He then studied at Wageningen University

(The Netherlands), where he received a Master degree in Ecological Agriculture in 1996. In

1999 Dr Wu received his PhD degree in Agriculture (Allelopathy) from Charles Sturt University.

He then worked as a Postdoctoral Fellow on genetic markers of wheat allelopathy at Charles Sturt University between 2000-2002 and as a Weed Research Agronomist on integrated weed management of summer weeds with Leslie Research Centre, Toowoomba, QDPI&F, between 2003-2005. Since January 2006, he has been with NSW Department of Primary Industries, where he is now a senior Weeds Research Scientist and a team leader at Wagga Wagga Agricultural Institute. His research interests are in weed management, allelopathy, organic agriculture, biochemistry and molecular weed biology.

He loves playing volleyball and gardening.

“Taytie” McLennan

It is with great sadness that we report the recent passing of “Taytie” McLennan in Sydney.

This followed heart surgery and a period of chronic illness after Alex, a life time supporter and contributor of the Weed Society, died eighteen months ago.

Although not enjoying the best of health in later life she always attended our Annual Dinners which she greatly enjoyed.

Alex and “Taytie” were a devoted couple with a wonderful family and many friends.

The Society has sent a letter of condolence to their son Mark and family, and to daughter Kim.

Mike Barrett

## CAWS President Update – December 2008

Seasons Greetings and all the best for managing weeds in 2009.

This is my last CAWS update as we welcome in Sandy Lloyd as the new CAWS President from this month



forward. Sandy, based in Perth, is widely known in the Australian and New Zealand weed community with her long history in raising awareness about various weed issues. I wish Sandy well and thank all CAWS members for their support over the past two years. I would particularly

like to thank Dennis Gannaway, for being a keen, well-organised and proactive Secretary/Treasurer. The new contact details for CAWS are below. Welcome to the new WA-based Secretary/Treasurer, Alex Douglas, and also the new Vice-President from New Zealand, Trevor James.

Congratulations to Ardess Nursery in Albany, Western Australia, for being the 2008 Australian winner of the CAWS Most WeedWise Nursery. A special presentation was made by ABC 'Gardening Australia' presenter and Patron of Sustainable Gardening Australia Josh Byrne at Ardess Nursery on 28 October. In recent years the nursery has made substantial changes to its species range as it elected to minimise the sale of invasive garden plants. In addition, nursery staff are actively involved in local environmental community groups, including weed removal in local parks and reserves. Staff were also instrumental in the drafting of a local Grow Me Instead brochure with the South Coast Natural Resource Management organisation. Sandy accompanied Josh Byrne to Ardess Nursery and also took him on a local tour of invasive weeds in the Albany district.

CAWS has been keeping a watching brief on the Australian Weeds Research Centre (AWRC) and was

glad to see an interim round of research projects being called in October. Whilst it is particularly challenging to undertake a meaningful scientific study within 12 months, nonetheless there was apparently a large number of projects submitted for the \$2 million that was available. Further cash input from other stakeholders will be required if the AWRC is to be able to build sufficient long-term resources to meet with the demand for weed science. This will be particularly important for environmental weeds as the just-released Caring For Our Country 2009-2010 Business Plan specifically excludes weed research. Whilst the CFOC Business Plan is welcome in its inclusion of the strategic management of Weeds of National Significance, including on-ground control and awareness/education activities, its exclusion of weed research is a regressive step. The AWRC may attract considerable industry support for weeds of agriculture and forestry, but if organisations with a mandate for environmental weeds (typically government agencies) do not co-invest then this research area will suffer a decline.

Finally, I was fortunate to be able to visit Christchurch in November for an international workshop comparing weed risk assessment techniques for genetically modified plants and non-native plants. Christchurch is a beautiful, compact and very English city and is an excellent choice for the 17<sup>th</sup> Australasian Weeds Conference in 2010 (26-30 September). Locally, there's a strong weed research community at the University and Landcare Research at Lincoln, which will no doubt have much knowledge to pass on for field trips across the Canterbury Plains and into the Southern Alps. Remember to keep an eye on the 17AWC website ([www.17awc.org](http://www.17awc.org)) and do all you can to ensure you get to Christchurch in 2010.

**Dr John Virtue, (Ex) CAWS President**





### Julian Cribb

Adjunct Professor in Science Communication at the University of Technology Sydney, and a fellow of the Australian Academy of Technological Sciences and Engineering

### Keynote Speaker at the GM Seminar

### TACKLING THE GLOBAL FOOD CRISIS

*The world faces its gravest food crisis in half a century, due to resource scarcity, underinvestment, and changing climate. There is a high probability of regional food supply collapses, leading to conflict and refugee floods on a scale not before seen. There is an urgent need to redouble the global scientific enterprise in food production.*

The reasons are straight-forward:

1. The **human population** is growing.
2. We are facing a **global water crisis**.
3. The world is **running out of good arable country**.
4. We are running out of **nutrients, especially phosphorus**.
5. **Biofuels** are eating into food production areas.
6. There has been a 30-year decline in **global scientific research** to lift farm production.
7. There is heavy inflation in the **prices of fuel, fertiliser and chemicals**.
8. A third of the world's major **fisheries** are in decline.
9. **Politics and economics** are acting against agriculture.
10. The **climate is changing**. Half the Earth may be in regular drought by 2100.

The challenge facing today's farmers is to double world farm output, using less land, far less water, fewer nutrients, the prospect of less technology, and in the teeth of increasing drought. What the world's governments including our own have failed to grasp is that the food crisis is not caused by one or two of these factors—but by all of them acting in concert.

Most recent conflicts round the world have been driven, at their core, by disputes stemming from a scarcity of food, land or water. Food insecurity is a major driver of refugees and war. If we wish to avoid these wars, riots and refugee tsunamis, the answer is to secure the world supply of food. This—even more

than climate change—is the most urgent issue of the early 21<sup>st</sup> century.

**The total world investment in agricultural science and technology today is around \$23 billion—in contrast with a world armaments spend of \$1.2 trillion**

In Australia we have been cutting support for research and extension in State agriculture departments for a quarter of a century. CSIRO, after many cutbacks, recently announced a new round of cuts aimed almost exclusively at agriculture. Our universities have seen 20-40 per cent declines in enrolments in agricultural science. Many scientists are close to, or past retirement age.

GM science has a vital role to play. GM holds some of the answers to these challenges. However, for GM to achieve its potential, its proponents need to understand some rather brutal home truths about the suspicion and mistrust of the general public and many politicians.

The advocates of GM have failed to carry out even the most elementary research into what the public wanted, or to anticipate the perfectly reasonable concerns ordinary people have about this powerful new technology. Research by the consumer associations in both Europe and Australia in the early 1990s found that consumers would be prepared to eat GM foods **provided they held benefits for consumers**. By its initial choice of transgenes with exclusive benefit to corporate agribusiness, and some farmers, the biotechnology sector set itself up for public rejection.

GM was seen by many members of the public as not only a risky technology—but a deliberate affront to and infringement of their freedom of choice. In an age of increasing democratisation, this was unacceptable.

It was a transfer of power away from ordinary citizens to largely foreign-owned corporations—and one that people in many societies were not prepared to stomach.

When GM proponents engage in communication, they must learn to *listen* as well as simply evangelising their products. They must address the public good in every significant product or research undertaking. After all, much of their work is done using the public's money.

**Australia's role in meeting the challenge include:**

1. A 200 per cent increase in irrigation water use efficiency across all crops. GM is one of the technologies that can assist.
2. Participating in a massive global effort to exploit still-poorly understood soil biology to achieve major yield increases—and here gene mapping will be vital.
3. Low-input farming systems that require far less energy, nutrients, chemicals and water and which replenish soil carbon. GM can help design the crops for them.
4. More effort to recycle and conserve all nutrients, on farm, in the food chain and at the sewage works. GM may be able to help in this nutrient harvest and recycling.
5. Collaborating in a worldwide campaign to raise vegetable production and consumption, which will also address the problems of obesity and malnutrition. GM can speed up the improvement of many of these new crops and help raise their yields.
6. Adoption of 'green cities' (urban horticulture) and vegetable protein biosynthesis using nutrients from recycled sewage and composted waste, to help feed the mega-cities.
7. Farming and grazing systems that protect native vegetation and biodiversity, cleanse

water and 're-carbonise' our soils, especially in the world's arid rangelands.



*Seminar speakers at the panel session*



**Rex Stanton (President), Suzanne Warwick (Keynote Speaker) & Warwick Felton (Organising Committee)**



Dr. Suzanne Warwick's visit was supported by a financial contribution from CAWS. The Weed Society of New South Wales Inc. greatly acknowledges this sponsorship.





**Dr. Suzanne I. Warwick**

Principal Research Scientist  
Agriculture and Agri-Food Canada – Ottawa

**Keynote Speaker at the GM Seminar**

**LESSONS FROM CANADA: GM CROPS IN AGRICULTURE**

By 2007 the estimated global area of genetically modified (GM) crops reached 114.3 million hectares with production in over 23 countries. First grown commercially in Canada in 1995, it is currently the fourth largest producer of GM crops at 7.0 million ha. These include canola [*Brassica napus* L.], soybean [*Glycine max* (L.) Merr.], and maize [*Zea mays* L.], with herbicide resistance (HR) and insect resistance (Bt) traits dominating.

Approximately 88% of the canola grown in Canada is genetically-modified for herbicide resistance (glyphosate, glufosinate) and an additional 10% is imidazolinone-resistant (IMI-HR). Rapid adoption of herbicide-resistant (HR) canola has been driven primarily by easier and improved weed control, or higher net returns to farmers.

Large-scale use of HR canola provided an opportunity to estimate pollen and seed gene flow. Pollen-mediated gene flow (crop to crop crossing) in adjacent HR canola commercial fields was observed at distances up to 800 metres. Both pollen and seed were shown to be avenues for transgene movement and gene flow from HR canola volunteers (weedy/feral canola) and was important in subsequent years. Consequences of gene flow include the presence of volunteers in agricultural fields (also roadsides) with multiple or stacked HR traits and adventitious presence (contamination or off-types) of pedigreed seed lots.

Large seed losses occur in commercial fields (ca. 20 times the normal seeding rate), and canola can persist in the gene bank for a minimum of 4-5 years. Herbicides with alternative modes of action, such as metribuzin, 2,4-D, or MCPA are the dominant weed control tool for managing single- or multiple-HR canola volunteers.

Inter-specific hybridization, in contrast, is a less likely consequence of gene flow. Pollen flow from GM canola to Polish canola (*Brassica rapa*) and oriental mustard (*Brassica juncea*) fields have been documented up to 200 metres. Canola can potentially hybridize with four related weedy species in Canada: bird rape (*Brassica rapa*), wild radish (*Raphanus raphanistrum*), dog mustard (*Erucastrum gallicum*), and wild mustard (*Sinapis arvensis*), although field studies to date have only found evidence of hybridization with weedy *B. rapa*. Hybridization frequencies, both for GLY and GLU HR traits, averaged 10%, and transgenes can persist and even be stably incorporated (introgressed) into populations of *B. rapa*.

There is no evidence of selection of HR biotypes in unrelated weed species or shifts in weed diversity towards more tolerant species, due to herbicide-use patterns associated with HR canola. Glyphosate-HR canola is associated, however, with large scale adoption of no-tillage agriculture systems in western Canada and with this system – there has been a shift to more perennial weed species. Recommendations include: adoption of a specific stewardship plan at the time of introduction of HR canola, monitoring and regulation of adventitious HR traits in premium and certified seed; long-term studies on indirect effects on weed management, biodiversity, and/or selection of resistant biotypes and further research on the ecological effects of new 'fitness-enhancing' stress-tolerances GM traits in agricultural and non-agricultural habitats (now largely undocumented).

Segregation of GM and non-GM canola will be expensive, and unlikely to be sustainable.

## Managing GM canola in Australia

After extensive risk assessments, the Office of the Gene Technology Regulator (OGTR) approved GM canola for commercial release in 2003 on the grounds that it posed no greater risks than conventional canola. Subsequent state government moratoria were lifted this year, allowing GM herbicide tolerant canola to be grown commercially for the first time in New South Wales and Victoria.

There is some concern among farmers and the wider community that pollen flow will lead to significant admixture of GM into non-GM canola crops. This season provides a unique opportunity to conduct a survey of non GM canola paddocks to measure potential gene flow, allowing researchers to validate data from previous experiences overseas. A GRDC funded project lead by Dr Rick Roush, Dr Chris Preston and Dr Deirdre Lemerle is conducting research across the NSW and Victorian grain belts.

To study gene flow, canola seed samples (100,000 seeds per sample) were collected between windrowing and harvest (October and November 2008) from three locations in over 50 fields of conventional canola grown near a field of GM canola. These locations were at the edge nearest to the source field, the middle, and the edge furthest from the source field with the locations recorded using a GPS.

To determine whether pollen-mediated gene flow from source to sink fields had occurred, seedlings will be initially screened with a lethal discriminating dose (field application spray rate) of glyphosate. Seed samples will be planted as separate plots under irrigation at the University of Melbourne's Dookie Campus, along with two glyphosate resistant and several susceptible canola controls.

Any survivors will be further tested by a second glyphosate application with the sprayer run at right angles to the first spray. A number of the samples, especially those collected at more than 100 metres from the source field, will be tested via PCR and ELIZA-based strip tests for the Roundup Ready gene construct. This will confirm that the suspect resistant plants contain the GM genes from a Roundup Ready canola variety. This study will measure the actual level of gene flow, and can be compared against legal regulatory tolerances.

The fields will be monitored over the next two years to see if volunteer GM canola is more difficult to control than volunteer conventional canola. This study will provide researchers with field data under Australian conditions across a range of agro climatic zones on the agronomic and logistic aspects of commercial use of GM canola.



*Windrowed canola crop*

### Further information:

- Dr Hanwen Wu (02 6938 1602)
- Eric Koetz (02 6938 1954)

NSW Department of Primary Industries, Wagga Wagga



## Herbicide Resistance: Awareness not enough

MANY producers have a poor understanding of how and why herbicide resistance develops and are yet to adopt integrated weed management strategies that effectively manage it.

Twenty years after herbicide resistance was raised as one of the major management challenges facing future farming systems, this is the feedback from consultants and agronomists in a recent survey by the EH Graham Centre for Agricultural Innovation.

This is a timely wake-up call as we enter an era of GM herbicide-tolerant crops, says Helen Burns, research liaison officer for the Graham Centre.

Last year Helen conducted a preliminary survey of public and private NSW consultants and agronomists to gauge the level of adoption of integrated weed management (IWM) strategies by grain producers in the southern NSW cropping zone, as part of the Graham Centre's GRDC-funded Integrated Weed Management project.

Advisors were asked to comment on their clients' understanding and management of herbicide resistance.

Responses indicated that although awareness of herbicide resistance is generally good and a proportion of producers manage it effectively and have a sound understanding of IWM, many producers do not.

Also, advisors suggested that producers only accept herbicide resistance as a significant issue when they are hit with a resistance "blow out" that clearly impacts on their farming business. Impact on profit is the motivation producers need to adopt IWM strategies.

According to Helen, it is concerning that advisors consider there is "a lot of misunderstanding", that Hoegrass is still being used because it is a cheap option, and poor weed control is often incorrectly blamed on

poor application technique and/or moisture stress.

There are a number of issues that have clouded the herbicide resistance message for southern NSW grain producers. These include:

- Weed management strategies have traditionally focussed on chemical solutions and there is limited information on the cost/benefit of non-chemical strategies and the financial penalties of inaction on herbicide resistance
- Producers are continually looking for a silver bullet, which has been fuelled by the regular release of new formulations of old chemical groups with new names and associated advertising claiming improved levels of control
- In recent seasons many grain producers have had more than enough to worry about without facing complexities associated with managing herbicide resistance.
- Changes in emphasis of southern NSW extension programs from specific herbicide resistance programs to more general agronomy and weed management may have implied that herbicide resistance was no longer an issue in the region
- The message needs revitalising - it is 20 years old and is often preached by out-of-state experts relaying experiences from farming systems considered irrelevant by local producers. Advisors suggest that the IWM message needs to include up-to-date local data, delivered by experts working in local farming systems
- Insidious, chronic problems that evolve over time, such as herbicide resistance, which need on-going vigilance and elevated management skills, require different education and extension strategies to those that promote simple solutions with immediate, easily measured benefit.

### Contact

Helen Burns [helen.burns@dpi.nsw.gov.au](mailto:helen.burns@dpi.nsw.gov.au)

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## The social aspects associated with the continual spread of *Sagittaria* *Sagittaria platyphylla*

*Sagittaria platyphylla* (commonly known as sagittaria) is an aquatic plant introduced into Australia as an ornamental from North America. It has since become widely dispersed in the irrigation infrastructure and many natural waterways of northern Victoria and southern New South Wales. From an irrigation perspective, sagittaria is a problem because it reduces or completely restricts water flow and hence the effectiveness of the water delivery system. In natural waterways, sagittaria competes with native water plants and has the potential to replace natural communities. Dense infestations can substantially alter the flow regime of many tributary streams, dramatically threatening biodiversity and stream health.



**Broad-leaved form of *S. platyphylla***

Sagittaria is an issue across a large geographic area. Within this area, there are many stakeholders who are concerned and affected by the weed. These stakeholders include government departments and agencies, private organisations and individual landowners. Numerous efforts have been made by various stakeholders to prevent the spread of sagittaria.

A Taskforce was established to encourage cross-agency involvement in sagittaria management, its efforts including the development of a strategic plan. A range of literature has been written describing the problem, yet sagittaria continues to spread, causing further environmental, economic and water supply problems.

Effort to coordinate natural resource management programs among Federal and State governments and the community in Australia is not new. Similar to

sagittaria, many natural resource management issues ignore jurisdictional, land tenure and political boundaries. There are a range of examples available of natural resource management issues that have been successfully resolved or managed by utilising a multi-stakeholder, inter- and cross-agency collaborative approach.



***S. platyphylla* present in the Edward River, Deniliquin, NSW.**

Literature has been written documenting technical aspects of the sagittaria problem such as control methods and weed biology. However, no previous studies have been undertaken into the social aspects of the weed control efforts. In light of this, the aim of this research project was to identify the social aspects associated with the continual spread of sagittaria. An exploratory, qualitative methodology was considered most appropriate for this study. Semi-structured interviews were used to collect data. Research participants are as follows:

- NSW Dept of Primary Industries, VIC Dept of Primary Industries
- NSW Dept of Environment & Climate Change, Murray Wetlands Working Group
- NSW Dept of Lands, Parks Victoria
- NSW & VIC Catchment Management Authorities, Murray Darling Basin Commission
- NSW Forests, Rural Lands Protection Board
- NSW Local Control Authorities:, Irrigation Companies:
  - Central Murray County Council, Coleambally Irrigation
  - Wakool Shire, Murray Irrigation Limited

- Jerilderie Shire, Goulburn-Murray Water
- Greater Hume Shire Council, Murrumbidgee Irrigation

The major findings from this research project related to the diversity amongst stakeholders in terms of awareness of sagittaria, involvement in control efforts, factors impacting on involvement, attitude and commitment to the Taskforce and participation in cooperative approaches. Several interviewees did not regard sagittaria as an issue due to ignorance, indifference or an apathetic perception. Presently, only a small group of stakeholders appreciate the seriousness of the sagittaria issue. Despite insufficient resources and technical issues associated with control, the issue will not be resolved until all stakeholders adopt responsibility for the issue. While the existing Taskforce has its limitations, the group appears to be the most suitable approach to resolve the issue, with its capacity to cross institutional boundaries. To improve the Taskforce's effectiveness, it is recommended that:

- (1) a steering committee be established for the Taskforce with the responsibility of making decisions;

(2) an effective communication strategy be adopted as a first step towards encouraging cross-institutional cooperation; and

(3) cooperation between stakeholders be improved to combine resources and expertise in order to more effectively and efficiently manage the issue.

This research project uncovered a range of social factors associated with the continual spread of sagittaria. However, given the complexity of these issues, further in-depth investigative research is warranted.

**Lauren Forrest**  
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## **Serrated Tussock – an integrated weed management experiment**

Serrated tussock is a noxious weed of national significance that is highly unpalatable and invades grasslands and pastures of the cooler areas of south-eastern Australia, including Tasmania. Most farmers in these areas know of this weed and would have to deal with it in some way. Control of serrated tussock in arable areas that are suitable for improved pastures is well known and relatively simple, however control of serrated tussock in native pastures is a much more difficult proposition. This is because areas left to native pastures are often steep and/or inaccessible and are likely to have soils with poor fertility. The economics of sowing pastures in such landscapes is very poor.

MLA has been funding a team of researchers at Charles Sturt University, Orange (Dr Aaron Simmons & Professor David Kemp) and NSW DPI's Orange Agricultural Institute (Dr's David Michalk & Warwick Badgery) to research integrated weed management (IWM) of serrated tussock in native pastures.

A large field experiment at Trunkey Creek on the NSW Central Tablelands is investigating how grazing method (ungrazed, constantly grazed or actively grazed *i.e.* allow a competitive pasture biomass to accumulate prior to crash grazing), herbicide (spot sprayed fluprofonate or tactically applied glyphosate *i.e.* applying glyphosate at a time when non-target grasses are not actively growing but serrated tussock is) and oversowing (native grass seeds or sub-clover and perennial rye) provides the best control for adult serrated tussock plants.

Results to date suggest that fluprofonate is very effective in killing tussock but also has non-target effects on native perennial grasses that reduces the productivity of paddocks. Fluprofonate also increases bare ground. This reduction in perennial grasses and increase in bare ground means once the residual effect of fluprofonate has dissipated serrated tussock is likely to re-establish. The exception to this is for pastures with a dominant red-grass (*Bothriochloa*

*macra*) component as this species is tolerant to fluproponate. Results also suggest that a tactical application of broadacre glyphosate in the height of summer may be able to kill adult serrated tussock plants while having a minimal effect on desirable perennial grasses. Although the kill rate of glyphosate under these conditions is not as high as fluproponate, this method does not produce large areas of bare ground, does not have significant non-target effects (i.e. does not reduce production to the same extent) and the cost of glyphosate is significantly less than fluproponate.

Results also suggest that a pasture that is actively grazed is more resilient to invasion by serrated tussock than constantly grazed pastures. This may be due to constantly grazed pastures having more bare ground. The establishment of serrated tussock on the upper slopes during the drought (06 – 07) was minimal whilst establishment on the lower slopes was significantly higher, and establishment on the lower slopes was associated with disturbance (i.e. more bare ground and broadleaf species). So far, the oversowing treatment has had no significant effects and this is likely to be the result of very poor establishment during the drought.

The field experiment will continue until the beginning of 2009 and will allow the researchers to consider the medium-term effects of the grazing / herbicide / oversowing treatments on serrated tussock infested pastures. Additional seasons of data will be collected on how the treatments reduce the invasion of serrated tussock seedlings.

Another project funded by the Defeating the Weeds Menace program identified pair paddocks (one with a high density infestation and an adjacent paddock with a low density infestation) and interviewed the managers to examine differences in management as well as taking soil samples to examine the level of seed in the soil seedbank.

Results suggest that;

- Disturbance plays a key role in the establishment of serrated tussock. This is consistent with previous work on other weed species. The use of

control techniques such as chipping and spot spraying are going to produce minimal disturbance and therefore reduce the rate of re-invasion.

- Any amount of serrated tussock seed in the seedbank provides the opportunity for invasion to occur and constant and vigilant control that creates minimal disturbance is essential to stop invasion.
- Farmers with high densities of serrated tussock may feel overwhelmed due to a larger number of perceived impediments, even though they may recognise that an absence of control will lead to an increase in density of an infestation.
- The belief that grazing a pasture with sheep will lead to more serrated tussock than if it was grazed with cattle was not supported.

Grower tools are being developed as part of the MLA funded project and these will include an economic model that will allow farmers to see the effect of control scenarios on gross margins and a decision making tool that will step farmers through the decision making process for control in a paddock and outline the rationale for each decision..



*The paired paddock site with high and low serrated tussock densities*  
Image: Allan Adams

For more information on the project contact Dr Aaron Simmons [asimmons@csu.edu.au](mailto:asimmons@csu.edu.au)



## What pesky plant is that?

### *Identification of Environmental Weeds using the new Computerised Key*

An all new workshop is being developed which will aim to provide knowledge and tools to utilise the Environmental Weeds of Australia CD-ROM for plant identification. It was recognised in the 'What does your garden grow?' workshops that plant Identification is a key step in the control of weeds and the protection of valuable native flora. Thus this workshop will assist weed professionals, land and bush carers and trainers to improve their skills in identification of environmental weeds which in turn will assist them to educate the general public in protecting their environment.

The 'What pesky plant is that?' weed identification workshop will show participants:

- how to load the CD-ROM ready for use
- the key features of plants important for identification
- the process of identification using a computerised key
- the requirements for and importance of submitting samples to herbaria for formal identification.
- An easy to use interactive identification and information resource for over 1000 invasive plants.

The workshop will allow participants to utilise the new Lucid3 key which includes over 1,000 major environmental weeds of Australia. On this key they will find:

- Detailed descriptions of weed species
- Links to website information
- Search engine
- A detailed close linked glossary
- Thousands of images

It is believed the Environmental Weeds of Australia key will be an invaluable resource to all those involved with research, training and management of environmental weeds in Australia, especially State and

local weed control officers, Bushcare and Landcare volunteers. This product also provides an extremely valuable teaching resource for students (University, TAFE and Secondary schools). Participants will use the CD-ROM identification tool in a very practical way to distinguish features and taxa. Participants will be asked to bring in fresh samples as a resource for this hands-on workshop. This workshop is to be offered for the first time in 2009 with the aim of assisting weed professionals, trainers and other keen environmentalists in the use of this exciting new tool for weed identification. We will aim to show participants that this wonderful computerised tool is easy to use. And that they do not need to be a computer experts or botanist – all that is needed is a healthy curiosity about the plants in the environment and a willingness to learn.

Annette Beer, Education Officer, Murrumbidgee Rural Studies Centre will facilitate the workshop and is looking for groups within NSW who would like to host a workshop during 2009.

**contact:**

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