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A Good Weed

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

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#31 April 2004



Maltese Cockspur *Centaurea melitensis*
[Moerkerk M.R. & Barnett A.G. 1998 - More Crop Weeds]

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Weed Research at Tamworth Agricultural Institute

As presented at the Weed Society of NSW Field Day at Tamworth, October 2003

Warwick Felton - Senior Research Scientist & Bruce Haigh - Technical Officer

Research has demonstrated crop rotation is essential for the additional water stored with no-tillage to be utilised. Pulses improve productivity of no-till cropping systems, and can make them more profitable than cultivated fallows. Row cropping pulses and other crops result in more cereal stubble being retained to protect the soil from erosion, and easier management of weeds and diseases. The latter is especially important with chickpea.

Experiments on display at the field day at Tamworth were designed to:

- Quantify the effect of weeds on the yield of chickpea, fababean, and canola, compared to wheat when these are grown under no-till in wide rows.
- Determine how long post-emergence herbicide spraying can be delayed before weeds reduce the yield in chickpea.
- Demonstrate if fertiliser placement influences the competitiveness of weeds.
- Examine weed competition among chickpea varieties.
- Evaluate wheat, barley and triticale as mimic weeds for wild oat.
- Identify differences in tolerance of chickpea varieties to isoxaflutole (Balance).

Summary of Results

- In a year such as 2002 where most of NSW was in drought yields from no-till crops were satisfactory in all experiments at Tamworth as long as weeds were controlled.

- With high chickpea prices such as in 2002 even 1-2 weed/m² can reduce returns by as much as \$50/ha.
- Weeds growing with chickpea for the first 10 weeks after sowing did not reduce yield but became very competitive after this stage.
- Mimic weeds, barley, triticale and wheat, gave a similar yield loss response to wild oats in a weed density study in chickpea.
- Mimic weeds reduced variability in the results compared to wild oats.
- In 2001 wide row planting (64 compared to 32 cm) did not reduce yield of wheat but in the 3 years 2001-3 wide row spacing reduced wheat yield by an average of 11%. There was reduction in yield in wide row chickpea, fababean, or canola, if no weeds were present.
- Weeds reduce yield more when crops are sown in wide rows, and reduced yield 50% more in canola, chickpea and fababean, than in wheat.
- Weeds were less competitive when fertiliser was banded with the crop, and substantially more competitive if banded with the weeds.
- Large differences occurred in the tolerance of chickpea varieties to isoxaflutole (Balance).

The weed competition experiments demonstrated that even with a low weed density, very large losses can occur and highlights the paramount importance of effective weed control in chickpea.

Establishment of mimic weeds was quicker, and more even than with wild oats. The similar relationships for the effect of weed biomass on crop yield for both wild oats and the mimic weeds show the latter can be used very effectively in weed studies instead of actual weeds. Eliminating the confounding effects of volunteer weeds, and weeds emerging at different stages of crop development is a commonly occurring problem in weed competition studies. Using a crop with a growth habit similar to the weed species of interest can substantially reduce variability and allow selective herbicides to be used

to eliminate unwanted volunteer weeds.

Future Research

Weeds are responsible for a large proportion of the variable costs for crop production (often > 30%), and 75% of the pesticide market is for herbicides. The impact of weeds and their control cost billions annually.

It is recommended that future weed research might consider:

- The impact of GM crops on weeds of cropping systems.
- A more comprehensive evaluation of herbicide interactions in new crops particularly pulses.
- Integration of weed management options with precision farming. For example, band spraying, shielded spraying, and herbicide mixtures.
- The value of mapping hard to control weeds.
- Herbicide drift management.
- Further development of reflectance in weed and crop research.

Hedysarum herbicide tolerance trial

As presented at the Weed Society Field Day Tamworth October 2003

Graham Crocker and Tony Cook, NSW Agriculture, Tamworth

(For information only: These herbicides are not registered for use on sulla)

Sulla (*Hedysarum coronarium*) also known as French Honeysuckle, Sweet Vetch, Italian and Spanish Sainfoin is a short-lived perennial legume from the Mediterranean. It is a highly productive, non-bloating, palatable, good quality legume suitable for grazing, hay or silage. It is also reported to have a "by-pass protein" effect giving an extra 10-15% live-weight gain, an anthelmintic effect, increase ovulation rates and reduce fly strike (through reduced scouring).

Seed is not available in Australia but Aokau and Necton can be obtained from New Zealand. Ideally it should be sown in early autumn at 5-10 kg/ha at 1 cm deep into a fine, weed free seedbed. Sulla prefers well-drained alkaline soils and seems to do best on the heavier soils. Early growth is slow as the plants form rosettes and produce long taproots. However, sulla can grow to 1.5 metres in height, but does require strict rotational grazing. Three Australian lines will be released in 2005. This experiment was undertaken to examine the tolerance of sulla to a range of herbicides for the control of broad-leaved weeds.

Sulla cultivar Aokau, sown at Tamworth on the 2nd May 2003 was sprayed with 8 different broad-leaved herbicides on 22nd July 2003. The sulla had from 3 to 7 pinnate leaves at the time of spraying. The treatments were:

Herbicide	Rate/ha
Basagran (480 g/L)	1 and 2 L
Blazer (224 g/L)	1 and 2 L
Broadstrike (800 g/kg)	25 and 50 g
Brodal (500 g/L)	100 and 200 ml
Bromoxynil (200 g/L)	700 and 1400 ml
Spinnaker (240 g/L)	200 and 400 ml
2,4-DB (500 g/L)	2 and 4 L
Lontrel (300 g/L)	50 ml
Unsprayed Control	

An assessment 2 weeks after spraying showed the most damage occurred with Blazer and Bromoxynil followed by 2,4-DB, Brodal and Lontrel, while Broadstrike, Basagran and Spinnaker appeared relatively safe. Three months after spraying the worst treatments were 2,4-DB, Blazer, Bromoxynil, Lontrel and Brodal.

Yields measured on 7th October, 77 days after spraying, ranged in dry matter production from 7650 kg/ha down to 500 kg/ha (Figure 1). The 8 herbicides could be split into 3 groups with Basagran, Broadstrike and Spinnaker reducing yield by about 5-18%, Brodal, Bromoxynil, and Lontrel reducing yield by 33-60%, and Blazer and 2,4-DB by 75-95%.

herbicides applied, with Basagran and Spinnaker being acceptable. All others caused significant damage with 2,4-DB almost completely killing the plants. The effects of Blazer and Brodal were obvious initially but plants did recover. With 2,4-DB the number of dead plants increased over time.

In additional plots glyphosate was applied at 750 and 1500 ml of Roundup Max on the 19th September when sulla was 50-60 cm high. The lower rate was less severe than the higher rate but both caused unacceptable damage, and prevented flowering.

Broadstrike was the safest of the 8

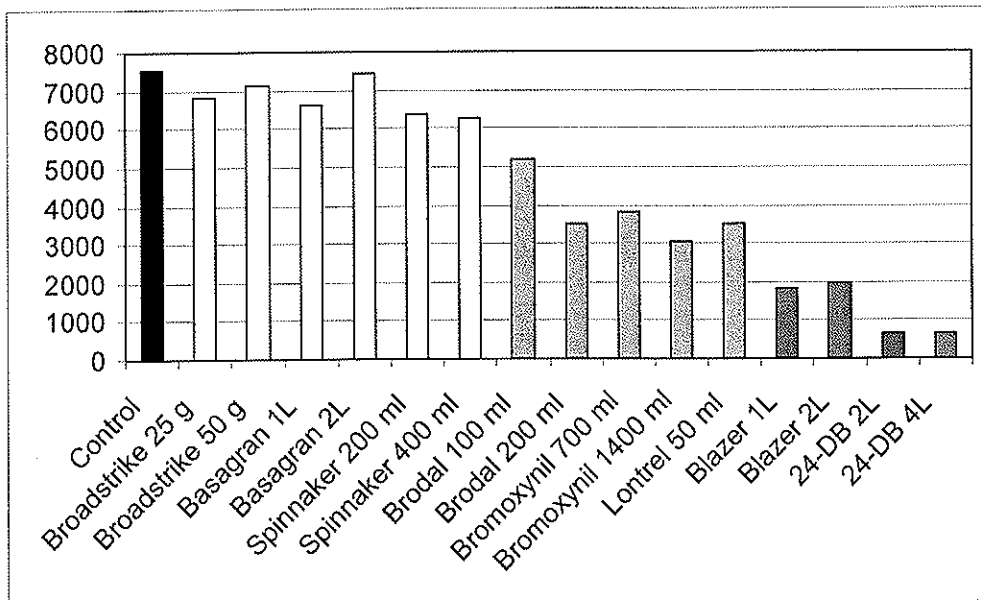


Figure 1. The effect of herbicide on the dry matter production of sulla on 7th October, 77 days after spraying.

New Members

We welcome the following new members;

- Clive Barker, Katoomba, working with the NSW National Parks Service
- Bev Debrincat, Gladesville, working with the International Environmental Weed Foundation
- Scott Vaessen, Griffith, farmer.
- Alex Mackenzie, Homebush South, Senior Horticulturist with Strathfield Council.
- David van Rhyswyk, Honorary member.

Weed Society of NSW Prize for 2003

The winner of this prize for 2003 was Mr. David van Ryswyk studying at the University of New England.

Change of Name for CAWSS

At a recent meeting of the federal body the name was shortened to the Council of Australian Weed Societies from the Council of Australian Weed Science Societies.

Effect of serrated tussock-killing herbicides on trees

M. H. Campbell

56 Green Lane, Orange; formerly NSW Agriculture, Orange, NSW, 2800

When aerially spraying serrated tussock in hill country, it is not possible to avoid applying herbicides to trees. Flupropanate herbicides have little or no detrimental effect on trees whereas

glyphosate herbicides can kill trees when applied at the high rates necessary to kill serrated tussock.

Flupropanate herbicides. When applied at rates recommended to kill mature serrated tussock (1 to 2 L/ha of product with a 74.5% active ingredient), flupropanate has little or no effect on mature eucalypts, wattles, kurrajongs and radiata pine.

In experiments in New Zealand, mature radiata pine trees tolerated rates of flupropanate as high as 9 L/ha. Under these extreme conditions the trees were damaged but more than 90% survived.

In experiments near Braidwood, NSW, where flupropanate was applied at 2 and 3 L/ha to the foliage or to the soil under two-year old radiata pine trees, all trees survived. At the higher rate some leaves were killed on the main stem just below the apical bud one year after application but this did not affect growth rates.

In glasshouse experiments, seeds of radiata pine and five eucalypt species germinated, emerged from the soil and grew unharmed under pre-emergence rates of 2 and 4 L/ha of flupropanate (Campbell and Nicol 1998). Under these conditions the survival of wattle (*Acacia dealbata*) and river oak (*Casuarina cunninghamiana*) seedlings was, respectively, 78% and 85%, 58 days after sowing.

In another experiment, flupropanate applied in the field at 2 L/ha, seven months before sowing, had no detrimental effect on the establishment of aerially sown and direct drilled seeds and planted seedlings of radiata pine, wattle (*A.*

dealbata), and *Eucalyptus viminalis* (Campbell and Nicol 1996). Similar results were recorded when flupropanate was applied at 2 L/ha five to seven months before sowing seeds or seedlings of 15 tree species in seven experiments between 1996 and 2000. The flupropanate was applied in spring so that the serrated tussock would be almost dead and providing little competition when the tree seeds/seedlings were sown the following winter.

Flupropanate has been aerially applied to kill serrated tussock over thousands of hectares of hill country in NSW and Victoria over the past 25 years without any reported damage to trees.

When aerially applied, flupropanate is initially deposited on the tree leaves but later it is washed to the soil by rain where it is taken up by serrated tussock roots. In most cases it will kill the serrated tussock under scattered to moderate densities of eucalypts. Naturally, distribution of the herbicide can be hindered by moderate to dense stands of trees but, with a favourable cross breeze at spraying, acceptable kills of serrated tussock can occur.

Glyphosate herbicides When applied at rates sufficient to kill serrated tussock (4 to 6 L/ha of product with a 49% active ingredient), glyphosate will severely damage or kill mature eucalypt trees. Most eucalypts will tolerate 2.0 to 3.0 L/ha but some species, for example stringy bark and iron bark, will be damaged by these relatively low rates.

Young trees are more susceptible to glyphosate. For example, the percentage survival of nine species of three and five month-old eucalypt seedlings varied from 8% to 44% when sprayed with 0.48 L/ha

glyphosate (Campbell and Nicol 1998). When sprayed with 0.96 L/ha the survival rates varied from 0% to 21%. Seedlings of radiata pine of the same ages had 100% survival at 0.48 L/ha but only 44% survival at 0.96 L/ha.

Conclusions For selective removal of serrated tussock from trees in hill country, flupropanate, at 1 to 2 L/ha, will remove the weed without damaging trees of any age. In addition, some native grasses (kangaroo grass, red grass and poa tussock), introduced grasses (phalaris, cocksfoot, fescue) and all broadleaved plants will tolerate flupropanate at these rates. Annual legumes will also tolerate these rates of flupropanate providing they are applied in spring or early summer. However, wallaby grasses and weeping grass can be severely damaged.

One of the greatest advantages of flupropanate in these situations is that it will kill re-infesting seedlings of serrated tussock for one to three years after application.

When glyphosate is aerially applied it adheres to tree leaves and any serrated tussock shielded from the glyphosate by the trees will not be killed. Almost all useful pasture species that receive glyphosate will be killed if they have green or partially green leaves. Glyphosate has no residual effect and often the result of killing a mature stand of serrated tussock is massive re-infestation by seedlings.

Campbell, M. H. and Nicol, H. I. (1996). Establishing trees on non-arable land to control weeds. Proc. 11th Aust. Weeds Conf., Melbourne. pp.493-6.

Campbell, M. H. and Nicol, H. I. (1998). Tolerance of tree seedlings to pre- and

post-emergence herbicides. Proc. 9th
Aust. Agron. Conf., Wagga Wagga.
pp.276-8.

Grow me instead! -A guide for gardeners in the Greater Sydney district

Reviewed by Lawrie Greenup

Since European settlement many garden plants have become weeds - soursob, Paterson's curse and gorse being examples. Recently, this has increased with some popular garden plants becoming invasive in the bushland of Greater Sydney. This subject was addressed in the Society's seminar - 'Weeds - Woe to Go!' held last year.

The Nursery & Garden Industry NSW & ACT has taken the initiative in publishing an excellent booklet 'Grow me instead!' addressing this issue.

A full colour publication, DL size with 47 pages, it covers a range of subjects, such as, what is weed, the need to protect our bushland and its value, how one can make a difference and how to stop the spread of invasive garden plants.

The main part of the booklet lists 17 commonly grown plants which have become garden escapes with three alternative non-invasive substitutes for each of the escapees. An example is Cootamundra Wattle (unusually a native, but not of the Sydney area), an invasive species, which can be replaced with Coastal Myall, Blue Bush or Sallow/Sally Wattle. For each invasive plant listed under the heading 'Garden Escape', there is a brief note on its appearance, whether it's a native or not, and how it spreads. The alternatives, listed under 'Grow Me

Instead', have brief details about shape, height, and colour, as well as where it can be grown. All species are illustrated with excellent colour photographs taken by professional photographers and the text is clear and simple.

A section is devoted to the aims, obligations and strategies of the Nursery and Garden Industry NSW & ACT in addressing and stopping the spread of invasive garden plants, followed by an extensive list of people and organisation that made the publication possible. Funding was provided by the Federal Government through the Horticultural Limited with assistance from the NSW Government's Environmental Trust.

All in all an excellent and well produced booklet for which Nursery & Garden Industry NSW & ACT should take a well deserved pat on the back.

The publication is available from the NGI NSW & ACT office.

PO Box 3013 Rouse Hill NSW 2155
Ph: 02 9679 1472 Fx: 02 9679 1655

NGI NSW & ACT has asked for people wanting the booklet to send a stamped self-addressed business-sized envelope.

Bush Regenerators Handbook

Reviewed by Lawrie Greenup

Bushland management has been an important activity of the National Trust of Australia (NSW) since the early 1970's commencing with the adoption of the urban bushland restoration methods developed by Joan and Eileen Bradley. Since then the Trust has continuously revised its techniques as new problems

arose. The Bush Regenerators Handbook draws on this history and knowledge.

A 48 page, two-coloured, A4 publication, it is a practical guide for anyone starting or planning to start off in bushland management. It is also a valuable resource for the experienced regenerator. The layout is clear and easy to follow and is well illustrated with excellent line drawing by Virginia Bear.

The publication is divided into three main sections. The first section deals with specific legislation, threats posed to bushland, the value of bushland and general principles to be considered in undertaking bushland regeneration. Planning your project is the title for the second section which provides a step by step guide to how this can be achieved. Establishing aims, researching and compilation of information, assessment of the site, preparation of an action plan, consideration of wildlife and habitat issues and, weed removal strategies are covered. Additionally, this section deals with way in which a voluntary community bush regeneration group can be set-up and run. The final section, the hands-on part of the publication, deals with problem weeds, their method of removal and how to use specific tools and herbicides. The weeds are divided into major categories, such as, small hand-pullage plants, soft leafy plants with underground reproductive parts, woody plants with tap and/or lateral root systems and, climbers and scramblers. The section finishes with information about habitat creation, whether or not trees should be planted, and weeds and native plants which can be confused.

The last few pages provide information about the resources available and includes courses, books, and organisations, as well

as listing brief details of the National Trust of Australia (NSW) history and properties.

The first edition was edited by Peter Wright with contributions from three experienced regenerators, Louise Brodie, Lynne Whiley and Jenny Roxburgh. Louise Brodie, is the editor of the current and second edition.

This valuable resource, which no regenerator should be without, is available from the National Trust of Australia (NSW) for \$16.50 and can be obtained by writing to the National Trust of Australia (NSW) GPO 158 Sydney 2000.

National ethnic biosecurity education and awareness campaign launched

The Australian Government launched a \$300 000 biosecurity and awareness campaign for people from non-English speaking backgrounds (NESB) involved in primary industries. The launch by Warren Truss, Minister for Agriculture, Fisheries and Forestry, took place at the Sydney Markets in February 2004.

The Minister highlighted the need for Australia to do everything it can to defend itself from pests and diseases that could devastate agriculture and have a negative impact on the economy which could, as result, adversely affect the whole community.

The campaign represents the first time the Australian Government has specifically sought the ethnic community's co-operation in this critical area because of the increasing contribution of NESB farmers to overall agriculture, especially in market gardening and horticultural

enterprises that produce significant amounts of fruits and vegetables.

There was a potential for smaller scale market type gardening operations near urban areas to potentially pose a greater risk of being an entry point for pests and disease than the more traditional large-scale farms. The campaign seeks to raise the awareness of ethnic producers to these risks so they can assist in such areas as early identification of suspicious pests and diseases and take immediate action in reporting them to the authorities.

Key messages of the campaign include:

- look for and immediately report early clinical signs of animal disease or plant pests
- check for the origins of material coming on and off farm to assess risk of disease
- create a 'buffer zone' with neighbouring farms
- do not feed food waste to production animals, especially swill to pigs
- if dealing with suspect animals, clean and disinfect afterwards
- use certified 'free from pests' seed and propagation material
- do not bring in plant material of a favourite plant or variety from overseas

Although the emphasis is on pests and diseases, such as papaya fruit fly, white spot in prawns or karnal bunt in wheat, the message to ethnic growers can be applied to the possibility of introducing weed seeds or vegetative material.

The campaign will include resources such as brochures, information sheets, videos, web sites, displays, audio cassettes and posters which will be produced in 10 languages.

“\$5.00 dollar a bunch” small-flowered mallow

In March and April bunches of small-flowered mallow, *Malva parvifolia*, were available at the Sydney Markets Growers' Market for the standard price of five dollars a bunch. It seems everything is sold for \$5!

Although seen as weeds many mallow species have or are still being utilised as vegetables providing essential vitamins, minerals and a mucilaginous texture to food dishes.

Apparently many different types of European mallows were once eaten, especially in Roman cookery, where the leaves were used as a spinach supplement. In addition to the leaves the flowers were used as a flavouring agent and the flat fruits of *M. sylvestris* were eaten, hence its various uses such as bread and cheesecakes, butter and cheese and fairy cheese. Plenty considered mallows a very powerful aphrodisiac, and they were used medicinally as a remedy for colds and sore throats. In Europe mallows gradually fell out of favour and today are seen as no more than famine food.

Mallows were believed to have been some of the most important vegetables in ancient China and are still cultivated in small clumps in fields. They have the advantage of being extremely hardy, remaining green after several degrees of frost, hence one of its Chinese names is winter amaranth. In China and other Asian countries mallows are sown in situ or in a seedbed. Seedlings are planted out when 5-10 cm high, about 30 cm apart, and the leaves, stems or flowers are harvested as needed.

In Australia small-flowered mallow is bought mainly by Chinese and South-east Asians. There seems to be no information about it being grown commercially so it's suspected it is harvested from wild populations.

The young shoots, stems and leaves of oriental mallows are all used for soups or are boiled, steamed or deep-fried as a vegetable. It has a mucilaginous texture and a rich pleasant taste. Flower buds and young leaves can be used in salads or can be used as an attractive garnish. (Source: Joy Larkom's 'Oriental Vegetables - The Complete Guide for the Gardening Cook'). Small-flowered mallow is used in the same way as the oriental mallow species.

Small-flowered mallow has several related species which are cultivated in Australia, including okra *Abelmoshus esculentus*, melukhia *Cichorus olerorius*, and roselle *Hibiscus sabdariffa*. Immature okra pods are used in the famous southern US dish gumbo; meloukhia leaves are used in middle eastern dishes, particularly soups, and roselle buds are used in jams, deserts or as a drink and the leaves as a steamed vegetable. Okra and melukhia have a mild taste and add a mucilaginous texture to stews soups or curries.

If anyone's interested in a niche vegetable try growing small-flowered mallow!

Further Data on The Economic Cost of Weeds to the Nation

The CRC for Australian Weed Management report *The Economic impact of weeds in Australia* provides some robust and useful comparisons. The report shows that the annual cost of weeds in Australia is in the order of \$4,039

million. The estimate includes impacts and control costs in agriculture, costs to manage in natural environments, on public authority and indigenous land. It does not include health, natural resource or urban impacts of weeds. The authors Jack Sinden, Randall Jones Susie Hester, Doreen Odom, Cheryl Kalisch, Rosemary James and Oscar Cacho used data from a range of sources for the five years ending 2001-02 for the analysis. They concede that the estimate undervalues the total economic impact of weeds but is still greater than other resource management issues such as soil acidity, sodicity and dryland salinity. For example health effects such as parthenium weed in the affected parts of Queensland costs \$6.90 per person in the region.

Coming events

21st May 2004

Next committee meeting of the NSW Weed Society, Blue Mountains City Council chambers, Katoomba, NSW. From 12.00 pm. All members welcome.

19-25th June 2004

4th International Weed Science Congress
The International Convention Centre,
Durban, South Africa
Email: sduke@olemiss.edu
Web page:
<http://www.olemiss.edu/orgs/iws/DEFAULT.HTM>

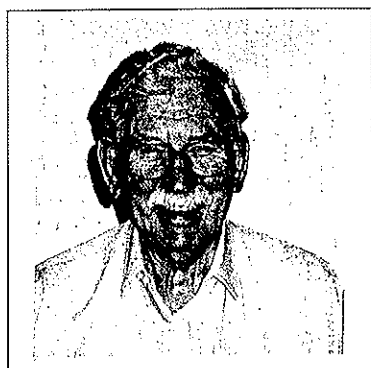
6th-10th September 2004

14th Australian Weeds Conference
Hosted by Weed Society of NSW
and Charles Sturt University
Wagga Wagga
www.csu.edu.au/special/weedsconference

Who's who on the Committee?

Any successful society relies on a small number of volunteers. These people give their time and effort in ensuring the society has goals for it to achieve and is adequately funded. To many members the committee is a group of names, so over the next several issues, we are going to put a face to the committee of the Weeds Society of NSW. This quarter let's look at **Alex McLennan, Alan Murphy, and Bob Trounce**

Alex McLennan has that onerous job of being the Treasurer. He's the money man with all its associated headaches. It's interesting that when nominations are called for Treasurer there is only one nomination - Alex!.



Alex McLennan

Alex has been with the Society for 31 years during which time he has held the position of Treasurer - 17 years, Vice-President - 2 years and President - 2 years. Pretty impressive! In addition, he had time to be the Treasurer for the organising committee of 8th Asian-Pacific Weed Science Society (1979) and Chair of the organising committee of 8th Australian Weed Conference (1987).

At the same time he was involved in the Society's activities he was actively

working to form the Agricultural Technologist of Australasia, being appointed the inaugural Federal President. Since then he has served on the committee of ATA until it merged with the Australian Institute of Agricultural Science & Technology [IAIST]. He has continued to be involved with the NSW Branch and committee.

Alex did war service, serving with the RAAF, after which he underwent training under the Commonwealth Re-Training Scheme. Joining the NSW Department of Agriculture as a Sheep & Wool Officer for a short period, he then moved to Grazcos Co-operative Shearing Company. In this job he became involved with weeds amongst other responsibilities. Following a move to Sydney Alex became the Merchandising Manager, Farmers & Graziers, followed by a period with Anglo Chemical Corporation. During this time he was actively involved in the promotion of spray adjuvants for ground and aerial spraying systems. In a move to NSW Rail as an Agronomist Alex established the use of road rail equipment for weed control along and adjacent to rail lines. Since his retirement from NSW Rail he has worked as a consultant.

Alex married in 1955 and has a son & daughter. In Westleigh, where he lives, Alex seems to know everyone - a reflection of his community spirit.

Alan Murphy is currently assistant secretary. His first employment after graduation from Sydney University in 1961 was with Geigy Australia P/L (1961-1965), mainly conducting research field trials with triazine herbicides in crops and industrial situations. The next 35 years were spent with The Dow Chemical Company and subsidiaries

Dow Elanco and Dow AgroSciences, working on development projects with a wide range of herbicides for weed control in crops, improved pastures and rangeland situations in Australia, and also with soil and space fumigants. Alan is an acknowledged expert on the control of woody weeds.



Alan Murphy

Alan was based in Sydney with Dow except for a period from March 1973 to October 1978 when he operated out of Hong Kong for Dow Chemical Pacific Ltd.; In this position he was responsible for managing herbicide and soil fumigant projects in Japan, Korea, Taiwan, Malaysia, Thailand, India, Indonesia, Philippines, Australia and New Zealand. After returning to Australia he revitalised his external M.Sc.Agr. project and received a M.Sc.Agr. degree from Sydney University in 1987. He retired from Dow AgroSciences in March 2000. Alan played a major role in the development and launch of a number of major herbicides including the Tordon range, Garlon, Verdict, Starane, Gesagard and Eclipse.

Alan has been a member of The Weed Society of New South Wales since 1966 and has the Societies 25 years membership medal that was issued for the period 1966-1991. He has been a

committee member for approximately 20 years including two years as President in the mid 1990's.

Bob Trounce

Bob Trounce is the Society's current President, a position he has held for two years. He has served on the committee since the early 1990's and was Newsletter Editor for three years.

Bob's career commenced in the Soil Conservation Service where he served for one year before attending Wagga Agricultural College. After graduating he had further training at Trangie, Tamworth, and Leeton before being appointed as District Agronomist, Barham. In the mid 1970's he completed a Graduate Diploma in Extension at Hawkesbury after which he took up the position of District Agronomist, Narrabri, a position he held for 5 years. He transferred to The Elizabeth Macarthur Agricultural Institute, taking up the position of Agronomist. Part of Bob's responsibility was to plan an Agricultural Expo for the Australian Bicentenary Celebrations which included a showcase of all major crops grown in NSW. These grown in small plots and followed two years of test planting to determine best sowing times for the display. The Expo was a great success attracting 45 000 people over the 3 days.

In late 1988 Bob became Weeds Agronomist in Head Office (then in Sydney) and moved to Orange in 1992 when NSW Agriculture's Head Office was decentralised. In his current position Bob is responsible for the training of agronomists, processing weed declarations, weed publications and supporting councils and government departments on weed control matters.

On the personal side Bob is married with two boys and four grandchildren. Nancy and Bob hone their agricultural skills by breeding crossbred sheep, chickens and corgi dogs.



Bob Trounce

Current Status of Weed Resistance to Knockdown Herbicides

Syngenta Crop Protection has recently published Volume III of the above series – a 2004 update. Copies may be obtained by calling 1800 057 108.

The main points relating to Australia are:-

- Herbicide resistance is now widespread in annual ryegrass [*Lolium rigidum*] and wild radish [*Raphanus raphanistrum*] in Australia. Resistance in wild oats [*Avena* sp.] is also prevalent but at much lower frequencies.
- Resistance has been found in varying degrees to five herbicide groups – the ACCase inhibitors such as diclofop-methyl, the ALS inhibitors such as chlorsulfuron, the triazines such as atrazine, the bipyridiliums such as paraquat and the glycolic acid synthase inhibitors such as glyphosate

- Annual ryegrass resistance to glyphosate has been confirmed at over 40 sites across NSW, Victoria, SA and WA. At this stage resistance is not widespread.
- Resistance to paraquat/diquat [Sprayseed] is now confirmed in four species in Australia; capeweed [*Arctotheca calendula*], barley grass [*Hordeum leporinum*], wall barley [*Hordeum glaucum*]. Paraquat resistant weeds are most common in old established lucerne stands and have been relatively confined to those paddocks.

Strategies to adopt to avoid the development of resistance are well covered in the booklet. A comprehensive list of references is given.

Budget announces changes to NSW government departments

In the recent budget it was announced that the departments of Agriculture, Fisheries, Mineral Resources and State Forests would be merged into one department, the Department of Primary Industry.

According to the Treasurer this will save \$37 million next year and result in rural NSW having a much stronger voice in government. One can't help wonder if this includes the costs of all those public servants working on adjusting to the new system rather than getting on with their jobs and the costs of not having those jobs done. Also it is hard to see how having only one minister instead of four concerned with so called rural matters allows a much stronger voice.

In addition to these changes the budget announced that the Department of Environment and Conservation [itself a

result of recent amalgamations] will be required to work closer with and to provide more support to the catchment management authorities, Department of Infrastructure, Planning and Natural Resources and the new Department of Primary Industry.

REMINDER

DON'T FORGET THE UPCOMING
AUSTRALIAN WEEDS
CONFERENCE BEING ORGANISED
BY THIS SOCIETY ON BEHALF OF
CAWS

6th-10th September 2004

Wagga Wagga NSW

[www.csu.edu.au/special/
weedsconference](http://www.csu.edu.au/special/weedsconference)

Weed Society Seminar – Weeds – Go to Woe II – New Operating Environments for Weed Control – 17th March, 2004

Reviewed by Michael Hood

This seminar was run by the Society at Hurstville and was very well attended. There were approximately 120 attendees plus 6 commercial or government sponsors present. Full proceedings of the day can be purchased from the Society for \$10 including postage. Please contact the Secretary. As members our thanks must go to the organisers and helpers of whom there were many, but especially Mike Barrett, Bob Trounce, Louise Brodie, John Cameron and Lawrie Greenup.

The programme was designed to cover the many government regulations that weed control managers must comply with in their work, be they private contractors or government or local government administrators or workers. Subjects covered included:-

- the Occupational Health and Safety Act 2000 and OHS Regulations 2001 and other OHS issues [covered by Tony Williams from Workcover],
- the role of the APVMA [Australian Pesticides and Veterinary Medicines Authority – formerly the NRA] in pesticide registration, use permits, the chemical review process and the adverse reporting system [Ron Marks of the APVMA]
- State control of use legislation [David Thompson of the EPA]

A paper was also presented on weed resistance [John Broster, CSU, Wagga].

A highlight of the day was undoubtedly the presentations by 5 people actually involved in running their own businesses or organisations responsible for practical weed control and herbicide use.

A number of these papers will be presented in full in this and coming issues of the Good Weed.

Sponsors adding to the success of the day with displays included Scotts Australia, who were promoting their newly released Sierron herbicide [based on diclobenil] for weed control in landscape ornamentals, DrumMuster, Chemcert, Globe Chemicals and Trading, and BASF Agricultural Products. Workcover also had information available.

For more information on the Workcover requirements the reader is referred to their client information centre on 13 10 50,

their publications hotline on 1800 658 134 or their website www.workcover.nsw.gov.au. This is essential for anyone working as a contractor in weed control.

The APVMA is the body concerned with product registration and in this role it mainly deals with chemical companies. However it has a number of roles affecting contractors and other users. Firstly it is the authority that issues permits for the use of herbicides in situations not covered by a registered product label or allowed by State control of use legislation. To do this permits must either be in place as a result of someone else applying or you must apply yourself. Planning is required as permits can take 6-8 months to obtain, and using a product in a situation not covered by a product registration or a permit is an offence. Information on permits, indeed all areas covered by the APVMA can be obtained from their excellent website www.apvma.gov.au. The APVMA is also concerned with chemical review [re-examination of older chemicals to check if their continued registration can be supported using modern criteria – if not the chemical may be deregistered], and with adverse experience reporting.

The Pesticides Act 1999 became fully operational from 1 July 2000 [Department of Environment and Conservation – formerly EPA] and with maximum penalties for offences being \$60,000 for individuals and \$120,000 for a corporation it is good idea to be fully aware of your responsibilities under this act. The act covers such things as:-

- pesticide drift
- provision of buffer areas
- adequate and appropriate training of operators. All people who use

pesticides in their job or business must now achieve a specific level of competency in pesticide use [eg. ChemCert, Farmcare or SMARTtrain]

- use of appropriate equipment to minimise risks
- storage of pesticides
- record keeping of pesticide usage within 24 hours of use
- notification of intended usage

As mentioned above the five case study speakers focused our minds on these regulations and explained how they affected their businesses or work. Speakers included Andy Cameron from Cameron's Nursery, Eric Hess from Agserv, John Webb from Urban Bushland Management Projects Pty. Ltd., Gary Popple of Hawkesbury River County Council and Peter McMaugh of Qualturf Pty. Ltd.

Weed Society Executive 2003-04

<i>President</i>	Bob Trounce
<i>Vice President</i>	Stephen Johnson
<i>Secretary</i>	Jim Swain
<i>Assist. Secretary</i>	Alan Murphy
<i>Treasurer</i>	Alex McLennan
<i>Newsletter Editors</i>	Michael Hood & Lawrie Greenup

Committee Members:

Mike Barrett Richard Carter (CAWSS President) John Cameron Peter Dowling Warwick Felton Lawrie Greenup Deidre Lemerle Mich Michelmor Louise Brodie Peter Scott Steve Sutherland Rex Stanton (CAWSS Secretary)

Natural Resource Management Ministerial Council Meeting 6 – 16 April 2004

The details of this meeting were provided by CAWSS president David Carter of NSW Agriculture.

Primary Industries, Natural Resources, Environment and Water Ministers from across Australia met in Adelaide on Friday 16 April 2004. This was the sixth meeting of the Natural Resource Management Ministerial Council. Specific issues dealt with by Council are detailed below.

Community Forum

Ministers had their second annual meeting with the Natural Resource Management Community Forum comprising representatives from regional natural resource management bodies, as well as Indigenous representatives and representatives from peak national natural resource management-related organisations such as the Australian Landcare Council.

The Forum provided an opportunity for exchange of ideas regarding regional natural resource management, especially implementation of the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust. Discussion also covered the Forum's key recommendations on issues including regional planning and governance, investment, developing effective partnerships, facilitator support, the role of local government and administrative efficiency.

In subsequent discussion, Council asked Standing Committee to provide them with detailed advice on how to move forward on the key issues raised including piloting greater regional autonomy.

NAP & NHT 2 Implementation Progress Report

Council received a report outlining the significant progress made in implementing regional natural resource management

through the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust. Of particular note is the completion of the accreditation of all regional NRM plans for the National Action Plan in New South Wales, Victoria and South Australia. The Council agreed on the need to complete and accredit the remaining plans in other States as soon as possible.

The Council noted the need to review how plans are performing against their targets and to resolve the issues of matching National Action Plan contributions in those states where it is not yet resolved.

National Action Plan on Salinity and Water Quality – 2002 /03 Annual Report

Council received the National Action Plan Annual Report, which sets out National Action Plan achievements in 2002-03. The report focused mainly on the achievements gained from funding provided prior to the conclusion of investment strategies.

An important element of the report is regional summaries that link investments to the shorter and longer term regional natural resource management targets of the regional plans. Council noted that future reports will also cover the Natural Heritage Trust program and agreed to release the Annual Report Summary on National Action Plan progress.

Annual Scientific and Technical Report – CSIRO and Bureau of Meteorology

Council agreed to the publication of the first annual report from CSIRO and the Bureau of Meteorology providing scientific advice on natural resource management.

Recommendations in the report focus on strengthening knowledge transfer so that the best available science is applied to improving natural resource management through the regional delivery model. Key issues include improving mechanisms for decision-makers to access, analyse and interpret both natural resource data and research based information and coordination of strategic national NRM research and development issues by all

relevant Australian Government, State and Territory agencies.

Council agreed that the report be made publicly available and that Standing Committee provide a report on its review of the principal recommendations.

Bush Tender

John Thwaites, Deputy Victorian Premier and Minister for Environment, Water and Victorian Communities, presented a paper on the recent Bush Tender trials in Victoria, which applies a price auction mechanism to fund native vegetation and threatened species management on private land. Council noted the trial has revealed that the auction approach delivered 25% more native vegetation than a grants (fixed price) scheme.

Bush Tender demonstrates that natural resource management oriented auctions can help governments to efficiently choose between best value suppliers and reduce the cost of natural resource management compared to traditional grant regimes.

Management and Monitoring of Australia's Native Vegetation – Review of National Framework

Council reconfirmed its commitment to the need for native vegetation management. The Council agreed to review and update the *National Framework for the Management and Monitoring of Australia's Native Vegetation* originally endorsed by Council in 2001. In reconfirming their commitment to the need for native vegetation retention, Council members agreed that the review should address the range of costs and benefits of vegetation management, including various management tools such as volunteerism, grants, market-based measures and regulatory approaches.

Salinity Mapping – Review Report

Council announced release of a Review of Salinity Mapping Methods in the Australian Context. The Review was conducted under the auspices of the Australian Academies of Science, and Technological Science and Engineering, involving many eminent Australian salinity scientists. The wider

community and especially regional natural resource managers will now have access to authoritative information on more than 30 different salinity mapping methods, and a clear guide to their best use.

The Review produced a plain language User Guide and a comprehensive Technical Report, outlining the costs and benefits of salinity mapping and explaining the concepts of salinity hazard and risk. Both reports will be accessible via the Internet and in hard copy.

Invasive Species

Council recognised the significant and growing threat posed by invasive species (including weeds, pests and diseases) to both Australian agriculture and the environment. Invasive species are also recognised as a key contributor to biodiversity loss in Australia.

Council noted that significant achievements have been made through stringent border controls and implementation of the National Weeds Strategy. Council agreed, however, that there remained a need to develop a robust national framework for a co-ordinated and strategic approach to preventing significant new invasive species establishing in Australia, and to reducing the impacts of major pests and weeds already present.

Council noted that Standing Committee will investigate and report on options for a national framework for preventative action, early detection, awareness and ongoing control. This work would be done in conjunction with the Primary Industries Standing Committee and a report prepared for Council's consideration in 2005.

Review of the National Red Imported Fire Ants Eradication Program

Council reviewed progress of the red imported fire ant eradication program. Since 2001, when the ant was first detected in Australia (in the Brisbane-Ipswich area), Queensland has been implementing an eradication program with the financial backing of the Australian and all State and Territory governments.

Council noted that after two summers of treatment, the eradication program had succeeded in eliminating fire ants from 97% of previously infested properties. An additional three years of treatment and monitoring are anticipated. Council recognised that it will be necessary to treat and monitor a larger area than originally envisaged, and endorsed an increase in the program's budget of \$37.5 million over the remaining life of the program, subject to the normal financial approval processes required in each jurisdiction.

Cost-Sharing for Management of Four Weed Incursions in Queensland

Council agreed, subject to approval of jurisdictions, to provide funding of \$1.4 million over four years to 2006/07 to eradicate four serious new weed incursions with the potential to damage native and agricultural lands in tropical and sub tropical areas of Queensland. The program involves extensive community engagement to identify infested areas, combined with targeted weed surveys and weed control by the Queensland Department of Natural Resources and Mines.

Cane Toad Control – National Approach

Cane toads are spreading west and south across Australia; their arrival in Kakadu National Park is already having a significant impact on some species. Council directed its Vertebrate Pests Committee to investigate options for a national approach to eradicate cane toads. The Committee is to review the threat posed by the toads, assess the research in place to address the threat, as well as assess the costs and benefits of national action.

Prevention of Crime in Australian Fisheries

Council discussed the initiatives underway to combat crime in Australian fisheries and Australian waters including abalone poaching. The Council discussed the policy and legislative developments underway to deal with increasing criminal activity, including the National Compliance Strategy and the draft National Plan of Action on

Illegal, Unreported and Unregulated Fishing. Council noted that a national approach is required to effectively combat illegal fishing, with consistent and improved compliance provisions. Council agreed to a national study on the extent of organised crime in fisheries and consideration of enforcement responses.

National Biodiversity and Climate Change Action Plan

Council endorsed actions, strategies and timeframes of the draft National Biodiversity and Climate Change Action Plan, which will be the first broad framework document to support adaptation to climate change in Australia.

The Plan is a key action in the National Objectives and Targets for Biodiversity Conservation 2002-2005 and will address a key objective of the National Strategy for the Conservation of Australia's Biological Diversity.

The focus of the draft Plan is on research, integration, and building skills and knowledge. The Plan outlines adaptation approaches to manage invasive species and to reduce the impacts of climate change on marine and estuarine, inland aquatic and terrestrial ecosystems.

National Plan of Action for the Conservation and Management of Sharks (Shark-plan)

Council endorsed a National Shark-plan to address shark conservation and management issues. The plan defines the roles of fishery/environmental agencies and promotes active partnerships between government agencies as well as all stakeholders with an interest in shark resources.

The Council agreed to submit the Plan to the United Nations Food and Agriculture Organisation's Committee on Fisheries as Australia's Shark Plan and to the International Union for the Conservation of Nature given the Plan's relevance to migratory species.

Indigenous Reconciliation Action Plan

The Council endorsed its first annual report on implementation of actions to address Indigenous reconciliation by natural resource management agencies across Australia. The report recommends that jurisdictions undertake further review of products and services already being delivered in partnership with Indigenous communities. In addition, improved opportunities for employment and training in natural resource management and agriculture are also identified as areas for attention.

Landcare and NRM Community Group Insurance

Council noted the review of the National Landcare Program as it related to insurance for landcare and related projects. The Council agreed to terms of reference for a Standing Committee review of commercially available and state supported public liability and personal accident insurance policies available to natural resource management groups in all jurisdictions. The Council agreed to the review being completed in time for consideration at its next meeting.

Water Reform Progress Report

Council noted progress in the development of the National Water Initiative Intergovernmental Agreement and the expectation that the Council of Australian Governments will consider the NWI in mid 2004.

Key NRM Issues – Case Studies

Council received a progress report on a number of case studies into areas of significant natural resource decline - soil acidification, soil quality degradation and biodiversity decline. Ministers noted that Standing Committee will develop recommendations for Council including a National Program to address biodiversity decline.

National System for the Prevention and Management of Marine Pest Incursions

Ministers noted the significant progress made to develop a National System for the

Prevention and Management of Marine Pest Incursions, since its last meeting in October 2003.

Provision of Data for Continental Landscape Assessment

Council expressed support for the collaborative arrangement between the Wilderness Society and South Australia, by agreeing that neighbouring States will share data that will assist South Australia to develop cross-border ecological data sets.

PESTICIDES ACT REGULATIONS AND OTHER LEGISLATION

David Thompson
Pesticides Inspector
NSW Department of Environment & Conservation (formerly EPA)

AGRICULTURAL & VETERINARY CHEMICALS CODE ACT

Pesticides in Australia are registered by the APVMA (Australian Pesticides & Veterinary Medicines Authority). It is illegal to possess, prepare for use or use a pesticide in NSW unless it is registered. Two exceptions have an APVMA permit which approves off-label use, or use a lower application rate than recommended on the label.

PESTICIDES ACT 1999

The Act became fully operational from 1 July 2000. The DEC enforces proper use of pesticides in NSW, after the point of sale. Users must read the label or have it read to them before using any pesticide, and must follow all label instructions.

It is an offence to use a pesticide in a way that causes:

- injury or likely injury to another person
- damage or likely damage to another person's property, or
- harm to a non-target plant or animal.

Maximum penalties for these offences are \$60,000 for an individual and \$120,000 for a corporation. A defence against prosecution is provided where a person takes all reasonable precautions and exercises due diligence when using a pesticide, and the offence occurs due to factors over which the person had no control. Due diligence means determining the risks involved in using a pesticide and taking action to avoid and minimise those risks. Do not use pesticides if harm is unavoidable.

Reasonable actions to ensure that non-target impacts are avoided, for example:

- Make sure that the right chemical for the job has been selected.
- Spray in suitable weather conditions so that spray does not drift outside the target area.
- Ensure that spraying does not take place if people are likely to be downwind of an application and exposed to the spray.
- Obtain all relevant information from the landowner about surrounding sensitive or susceptible areas, and provide adequate buffer areas between the application and dwellings or sensitive areas.
- Provide adequate instructions and training to employees before application is carried out.
- Assess potential risks for harm before application and take steps to minimise risks.
- Use appropriate equipment for the job that minimises or prevents non-target impacts, and ensure that it is well maintained and calibrated.

Do not keep pesticide in unlabelled or inappropriate containers.

Shared liability: everyone involved in the decision-making for the use of a pesticide is responsible for ensuring proper use, and may also share the liability if the pesticide is misused. Any person who causes or permits, by act or omission, another person to commit an offence under this Act may also be guilty of that offence

Vicarious liability also applies: in cases where the person applying the pesticide is an employee of another person, charges can be laid against the employer, as well as or instead of, the employee. A similar liability also applies to a person engaging a contractor where that person has control over the contractor. Company directors may also be personally liable for offences committed by the company. DEC may issue a penalty notice (PN) for less serious offences

Notices

The DEC can direct a person to take clean-up action that will reduce an ongoing harm or risk of harm to health, property, the environment, or trade.

The DEC can issue a prevention notice to a pesticide user where it reasonably suspects that there is or is likely to be a breach of the Act, or where a particular case of pesticide use is likely to pose a threat to human health, property or the environment.

Codes of practice provide procedures to guide pesticide users to ensure that they minimise the risk to others. The Act allows for codes to be formally recognised under the legislation. The court can also take into account compliance with codes when considering whether the user was negligent and in setting penalties.

The Pesticides Implementation Committee is a forum for key stakeholders to provide the DEC with feedback and advice on implementing the Act, particularly on regulations, orders and codes of practice developed during implementation.

DEC provides some information in Arabic, Chinese, Italian, Khmer, Maltese or Vietnamese.

Record keeping Regulation

Commenced on 31 July 2002. Requires all people who use pesticides for commercial or occupational purposes to make a record of their pesticide use. Pesticides also include fumigants, bactericides, rodenticides, dipping fruit or vegetables baiting pests like rabbits, foxes, wild dogs, feral pigs, lures, repellents and pesticides used on animals to control external parasites.

The record must be made within 24 hours of use and kept for three years.

DEC officers may check these records, and penalties may apply if the records have not been kept in accordance with the new law.

People do not need to make a record of use around the home or garden

Market gardeners and other horticulturalists have to make records for all pesticide applications, except for spot spraying in tree crops when using equipment that is both hand-held and hand-powered, and it is further than 20 metres to the nearest property boundary.

For some pesticides, the NRA has set directions on labels that restrict the use of the pesticide in certain weather conditions. If the label of the pesticide mentions weather details such as rainfall, temperature and/or humidity then these will need to be recorded too. Any significant changes during the application will also need to be recorded.

Businesses (such as landscape gardeners and shop keepers), public authorities, landlords and green keepers may not need to record such uses if: they do all of the following things:

- they only use pesticides that are available to everyone for home or garden use, and
- they use the pesticide in small quantities, that is:
 - o they use the pesticide outdoors in quantities of no more than 5 litres/5 kilograms of concentrated product or 20 litres/20 kilograms of the ready-to-use product, or
 - o they use the pesticide indoors in quantities of no more than 1 litre/1 kilogram of concentrated product or 5 litres/5 kilograms of the ready-to-use product, and
- they apply the pesticide by hand or by using hand-held equipment only.

When a group of people working for a public authority work together as a team, the on-site supervisor makes a single record for that team, which includes the names of all users. This applies where pesticides are applied by hand or with hand-held equipment. If non hand-held equipment were used, all users in the team would need to make an individual record. A copy of the record will need to be given to the owner or occupier of the land on which the pesticide was applied if a contractor did the job:

- o on behalf of a public authority, or
- o on a bowling green or golf course, or
- o in agriculture, farming or forestry.

Penalty notice fines for record keeping offences range from \$150 to \$400 for individuals and \$300 to \$800 for corporations. Offences can also be prosecuted

Training

New rules that make training in the use of pesticides compulsory commenced on 1 September 2003. All people who use pesticides in their job or business must now achieve a specific level of competency in pesticide use. Someone who has already done Farmcare, ChemCert or SMARTtrain training is already qualified. This qualification remains valid for five years from the date it was completed

Some non-obvious situations where training is required:

- a landlord or on behalf of a landlord
- as part of aquaculture and forestry operations
- fumigating silos or l
- aying baits
- as part of a business, (e.g. a marina, landscape gardening or wood preservation).

People will need to be trained by 1 September 2005. After 1 September 2005, it will be illegal to employ or engage a person to use pesticides unless that person is correctly trained.

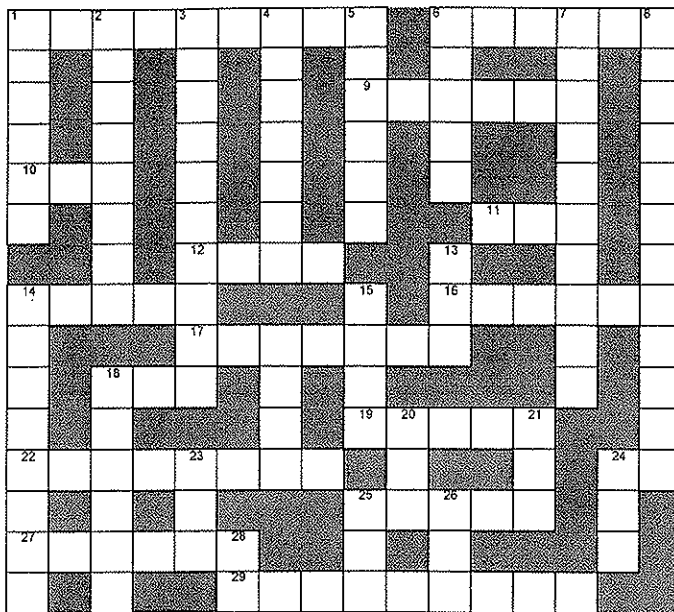
Notification

Likely to multi-tiered, ie there to be some mandatory notification where use is by Public Authorities, or where use is in Public Areas.

Statements of principles for many types of pesticide use have been suggested, and may be adopted into Codes of Practise.

WEEDY CROSSWORD NUMBER 1

Complete, photocopy and send in to the Secretary. The first correct entry received will award the sender with a years membership of the Society.



Across

- 1 Water weed named after a crocodile relative
- 6 W4b weed from Asia. Heavily scented small white flowers. Clusters of blue black berries. Fast growing shrub to small tree. Often found in gardens.
- 9 Parasitic weed
- 10 Barnyard grass is an important weed of rice in this area of NSW
- 11 ...weed. Common weed of cultivation. Named after type of livestock?
- 12 Many weeds spread by
- 14 Knockdown herbicide - trade name.
- 16 Annual or perennial herbaceous plant covered by rigid, stinging hairs containing an irritating fluid.
- 17 Clumpy grass plant. One type an important tableland weed from South America
- 18 ... melon.
- 19 Flat weed, common in western NSW. Forms burrs, harsh to walk on. Colour used in army uniform.
- 22 Water Common floating water weed
- 24 One without the e
- 25 Describes crop infested with unwanted plants
- 27 Plump chook or common weed of cultivation
- 29 Scotch, heraldic, Illyrian, stemless and woolly thistles belong to this genus

Down

- 1 Noxious herbaceous weed causing allergy in many people. Named after the allergy.
- 2 Much branched fast growing shrub from Central & South America
Square brittle prickly stems. Common weed of coastal areas spreading into lower tablelands
More than one.
- 3 Active ingredient in Roundup
- 4 Prickly herbaceous plants. Many types.
- 5 Competitive cropping weed. Pale yellow/white flowers. Cruciferous.
- 6 An Irish melon
- 7 One type of 4 Down. Named after the pattern on its leaves.
- 8 *Ailanthus altissima*. Small tree. Suckers profusely. Green pinnate leaves up to 1 metre long. Native of China. Possibly poisonous to sheep. Noxious in some areas. Name relates to the after-life.
- 13 Writing fluid weed
- 14 Trade name of herbicide containing glyphosate and metsulfuron-methyl commonly used for brush control
- 15 Curled red and broad-leaf are three types of this common weed of moist areas from genus *Rumex*
- 18 All weeds are
- 20 Weeding implement
- 21 Vigorous perennial vine from South Africa with succulent twining stems. Garden escape. Leaves fleshy, hairless. Flowers small, yellow, daisy like. Flowers autumn to spring. Cape ...
- 23 Frozen water
- 24 The wild version is one of the worlds' worst weeds of cultivation.
- 25 Herbicide applicator - ...er
- 26 Flat weed or cats Common weed of cultivation and lawns
- 28 ..ogora Burr *Xanthium pungens*

Name
Address

Present member Y/N

A Good Weed

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