



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

Website: www.nswweedsoc.org.au

Seminar Papers

WEEDS – WOE to GO IV

Wednesday

6 September 2006

Metcalf Auditorium

State Library of NSW

Macquarie Street, SYDNEY

Sponsors



NSW DEPARTMENT OF
PRIMARY INDUSTRIES



Collated / Edited by
Dr Stephen Johnson
& Bob Trounce

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THE WEED SOCIETY
OF NEW SOUTH WALES Inc.

ACKNOWLEDGMENTS

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Welcome to speakers and delegates

Warwick Felton (President)

Summary of the day's presentations

Mike Barrett

Collation and preparation of proceedings

Stephen Johnson

Bob Trounce

The committee thanks all who took part and attended the seminar and particularly the speakers for their presentations and supply of written documents for these proceedings.



THE WEED SOCIETY OF NEW SOUTH WALES Inc.

SEMINAR SERIES: WEEDS WOE TO GO IV

“Poisonous and Allergenic Plants Where are they?”

Date: Wednesday 6th September 2006

Location: The Metcalfe Auditorium The State Library of NSW Macquarie Street Sydney

Time	Topic	Speaker
9.00 – 9.30 am	REGISTRATION & MORNING TEA	
9.30 – 9.40 am	Welcome	Warwick Felton
9.40 – 10.30 am	Weeds that make you sick	Rachel McFadyen
10.30 – 11.20 am	Poisonous, prickly, parasitic, pushy? Prioritising weeds for coordinated control programs”	John Virtue
11.20 – 11.30 am	break	
11.30 – 11.50 am	Parietaria or Asthma Weed Education & incentive project	Sue Stevens
11.50 – 12.10 am	Pretty but poisonous	Ros Shepherd
12.10 – 12.30 pm	Over the fence	Andreas Glanznig
12.30 – 13.45 pm	LUNCH	
1.45 – 2.15 pm	Australia’s weed risk assessment (WRA) system	Belinda Riddle
2.15 – 2.45 pm	The NSW <i>Noxious Weeds Act 1993</i> & weed risk assessment	Stephen Johnson
2.45 – 3.15 pm	Plant poisoning in the real world	Genevieve Adamo
3.15 – 3.30 pm	Summary	Mike Barrett

SEMINAR SERIES: WEEDS WOE TO GO IV

“Poisonous and Allergenic Plants Where are they?”

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Further reading

The following paper has been included in the Appendix for further reading

Trounce, B. (2000). *Poisonous Plants in the Garden*, 3rd edition. Agfact P7.1.1. New South Wales Department of Primary Industries, Orange. 12 pp.

WELCOME

**Warwick Felton
President
Weed Society of New South Wales**

The Weed Society of New South Wales was founded in 1966. Other States followed and in 1978 the Council of Australian Weed Science Societies (CAWSS) was established to coordinate the activities on a national basis. This year New Zealand became affiliated and CAWSS is now the Council of Australasian Weed Societies (CAWS).

The aims of the Societies are:

- To promote a wider interest and understanding of weeds, their management and control.
- To provide opportunities for those interested in weeds to exchange information and ideas based on research and practice.
- To encourage investigation into the management of weeds.
- To cooperate with organisations engaged in weed management in Australia and overseas.
- To collate, publish and disseminate information relating to weeds and their management.

The Weed Society of New South Wales has a voluntary executive committee that meet six times each year to plan activities. It also circulates a quarterly newsletter “*A Good Weed*” to the members containing topical articles about weeds, details of functions and activities, abstracts from seminars, and a list of recent publications. The Society supports education and training by sponsoring annual awards to students at the University of Sydney, University of New England, and Charles Sturt University, and travel scholarships for successful applicants to attend conferences or to undertake a study tour.

The “Weeds Woe to Go IV – Poisonous and Allergenic Plants” seminar is one of several functions the Society has convened in 2006. An expert panel of speakers has been assembled to discuss some of the poisonous plants that occur in Australia, how priorities are established for control, the process of educating the wider community, and on risk assessment and legislation. I welcome their participation on this most important topic.

I trust all attending this seminar will benefit from the information presented and the following discussions.

I would like to thank organising committee, Lawrie Greenup, Mike Barrett, Bertie Hennecke and Luc Streit for the time and effort they have generously given in organising this function and to other members of the executive who have assisted.

WEEDS THAT MAKE YOU SICK

Rachel McFadyen

Director

CRC for Australian Weed Management

Weeds can make us sick in three ways – if we eat them, if they get into our food chain, or through their pollen blowing around. The first problem is covered by Ros Shepherd: my talk deals with the other two.

The problem of poisonous plant chemicals in our food chain is not generally understood and the risks are not properly appreciated. Many poisonous weeds are avoided by cattle because of their bitter taste, but may be eaten in small amounts in hay or when other feed is scarce. Important poisonous substances fall into several categories – cardiac glycosides in milkweeds and others, sesquiterpene lactones in parthenium and annual ragweed, and pyrrolizidine alkaloids (PAs) in many plants including *Senecio* species (fireweed, ragwort). These poisonous substances pass directly into milk and other products, including offal (liver especially) though not usually into muscle meat. The risk to humans depends on how much finds its way into the human food chain. The issue is not usually acute poisoning, because humans rarely eat enough to make them immediately sick. Stock may die from acute poisoning but that takes them out of the human food chain: the problem is sub-lethal poisoning of stock where the poisons go into the food chain via milk or meat. PAs are also present in honey where bees are using nectar from ragwort, Patterson's curse, or similar weedy plants. Grain is often contaminated with weed seeds especially heliotrope, which leads to PAs in eggs and chicken meat. Cardiac glycosides are not known to have any cumulative effects, but both sesquiterpene lactones and PAs, if taken in low doses over a long period, are known to cause serious long-term liver and other problems. As the effects may take years to develop, often neither the individual nor the treating doctor suspects that the cause may be poisonous alkaloids taken in through meat, milk, eggs or honey over a long period. Furthermore, there is an assumption that, because of pre-sale bulking of milk and honey with unaffected supplies, no-one is likely to consume toxic amounts (ANZFA 2001). However farming and rural communities may use local honey, meat from local butchers and milk, chickens and eggs from their own animals. Unfortunately any unusually high level of chronic liver disease (including cancers) in rural areas is invariably blamed on pesticides and no effort is made to measure intake of these plant poisons. There is an urgent need to establish a system to monitor the levels of these chemicals in food, on a national and a regional level.

The issue of allergic hayfever and asthma caused by plant pollens is much better understood but is still under-reported. Doctors and sufferers are generally aware that grass pollens can be allergy triggers, but may not know that pollen from olives, privet, ragweed, amaranthus and other weeds is also a major cause of allergic hayfever. As a result, patients may not be tested for these substances, and the problem is never properly addressed. Cross-reactivity is also a major issue – people allergic to olive pollen will also react to privet (in the same plant family). Cross-reactivity within the daisy family (Asteraceae) is also common, and individuals sensitised by ragweed will also react to parthenium, Noogoora burr, commercial sunflower and ornamental species such as chrysanthemum.

As usual, everything depends on the dose – the bigger the pollen load, the greater the problem, and weeds can be so locally abundant that, during their flowering period, they are responsible for more than 50% of the pollen in the air (Agashe and Alfadil 1989). If this repeats year after year, susceptible individuals become increasingly affected, resulting in situations such as in Orange, where 20% of the town's population were suffering hay fever for

two to three months every year when the privet was in flower, or much of central Queensland where more than 10% of residents suffer from parthenium allergy (McFadyen 1995). Hay fever and itchy eyes are often the first symptoms, but this may worsen to become asthma or allergic bronchitis, while a smaller proportion of sufferers develop skin conditions such as eczema or allergic contact dermatitis (Kloot and Burry 1983). This is a particularly common reaction to plants in the daisy family or Asteraceae, and can be so serious that people have no option but to leave their jobs and move out of the district completely.

In summary, certain weeds are already causing significant human health problems, all directly linked to the local abundance of the particular weed (pollen, odour, seeds). As weeds increase their abundance and range, these problems will also increase. As well as improved weed management, we also need increased monitoring of these health problems.

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- Australia New Zealand Food Authority. (2001). Pyrrolizidine alkaloids in food. Technical Report Series No. 2, Canberra, ACT.
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POISONOUS, PRICKLY, PARASITIC, PUSHY?

PRIORITISING WEEDS FOR CONTROL PROGRAMS

John Virtue
Senior Weed Ecologist
Department of Water Land & Biodiversity Conservation, South Australia
and CRC for Australian Weed Management

There are around 3,000 plant species currently considered to be “weeds” somewhere in Australia. In addition, there are more plant species waiting to naturalise amongst the pool of around 27,000 exotic plant species that have been introduced to Australia (Virtue *et al.* 2004). With so many species it is clear that we need to prioritise weeds for control programs, whether you are working at the local, regional, state or national scale.

How to prioritise?

There are two fundamental considerations in deciding whether to embark on a control program for a particular weed. Firstly, does the weed pose a serious enough threat, or risk, to the economy, environment and/or society? Secondly, would coordinated control be feasible given the current status of the weed and the resources available to tackle it? The Cooperative Research Centre for Australian Weed Management (Weeds CRC) has sought to foster standardisation of the process of prioritising weeds, through the publication of a protocol on post-border weed risk management (WRM) in collaboration with Standards Australia (Anon. 2006). A logical, six step process has been developed, based on the Australia/New Zealand standard for risk management (AS/NZS 4360:2004):

- 1) *Establish the Weed Risk Management Context.* The context in which weed risk management is to occur is defined, by identifying goals, geographic and land use scope, stakeholders, existing policies and legislation, resources and the tangible outcomes and outputs sought from engaging in the WRM process. A representative steering committee is established to drive the WRM process.
- 2) *Identify Weed Risk Candidates.* Weed species candidates for detailed assessment are selected, from existing lists and new and potential naturalisations.
- 3) *Assess Weed Risks.* Comparative weed risks are analysed using the three key criteria of invasiveness, impacts and potential distribution. Invasiveness is a relative index of the rate of spread of a weed. Impacts are the economic, environmental and social effects of weeds. This is where poisonous and allergenic attributes are considered. Potential distribution is the total area at risk if a weed were to spread uncontrolled.
- 4) *Assess Feasibility of Coordinated Control.* Comparative feasibility is analysed using the three key criteria of current distribution (i.e., how widespread the species is), costs of control (e.g., searching for the weed, accessibility, herbicide treatment) and persistence of the problem (e.g., seedbank longevity, tolerance of control measures, whether still cultivated).
- 5) *Determine Weed Management Actions.* Comparing weed risk versus feasibility of coordinated control prioritizes and categorises weed species for various management actions. These actions include preventing entry, eradication, containment and development and extension of targeted control techniques.
- 6) *Implement Weed Management Actions.* This is the transition from planning to doing, with specific actions implemented for priority weeds.

Weed Risk Assessment Systems

The post-border WRM protocol (Anon. 2006) does not prescribe a particular prioritising weed risk assessment (WRA) system, but rather details the essential elements that should be addressed in such systems. There are several prioritising WRA systems in use in Australia,

developed in South Australia, Victoria and Queensland. Separate to these is the “Weed Risk Assessment System” (Pheloung *et al.* 1999), which is used to predict potential weediness at Australia’s border. The original weed prioritising system in Australia was that developed for Weeds of National Significance (WoNS) (Thorpe and Lynch 2000, Virtue *et al.* 2001).

The WoNS process had the key criteria that are given in the post-border WRM protocol (Anon. 2006), but did not keep risk and feasibility scores separate. Economic, environmental and social values were also considered but data was difficult to obtain for some species/criteria. There was a specific impacts question “*Does the weed adversely affect the health of native and/or domestic animals due to physical injuries, poisoning or allergenic reactions?*”, which would have contributed to parthenium weed, *Parthenium hysterophorus*, and lantana, *Lantana camara*, becoming WoNS due to their toxicities.

The South Australian Weed Risk Management System (Virtue 2004) seeks to avoid problems with valuation by determining priority weeds within different land uses. Human health impacts are of most concern in the urban landuse, whilst livestock poisoning issues are most relevant to the grazing landuse. The system has a simple additive/multiplicative scoring system for weed risk and feasibility of containment and has been applied at the state and regional levels in South Australia.

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ASTHMA WEED EDUCATION AND INCENTIVES PROJECT

**Sue Stevens
Asthma Weed Project Officer
Randwick City Council**

Asthma Weed is a serious noxious weed in the Sydney Metropolitan region. Known botanically as *Parietaria judaica*, Asthma Weed is also known as Sticky Weed, Pellitory and Kirribilli Curse. This weed can grow just about anywhere and in any conditions. It is common in urban bushland, gardens, lane ways and in brick and rock walls.

Asthma Weed is related to stinging nettles, and the sticky hairs on the plant's leaves and stem may produce a skin rash in sensitive people who come into contact with the plant. The pollen of Asthma Weed may also trigger hay fever, conjunctivitis, rhinitis and asthma. This problem is magnified by the fact that Asthma Weed can flower most of the year. The plant's ability to flower most of the year in Sydney also contributes to its ability to spread and invade new areas rapidly.

Asthma Weed is a perennial herb that grows to approximately one metre high. It has soft green, oval-shaped leaves with pointed ends, 2 cm to 8 cm long. Leaves are arranged alternately along pink or red stems. Flowers are very small, light green in colour, and clustered along the stems. Flowers, leaves and stems are covered with fine sticky hairs that will stick to skin, clothing and animal fur. Roots are red and woody on older plants. Seeds are dispersed by wind, water and by attaching to clothing, animal fur, and in soil and mud attached to tyres and machinery.

An Asthma Weed Education and Incentives Project is currently underway in the Sydney Metropolitan region. The project aims to increase the community's identification and awareness of Asthma Weed and to assist residents to remove any plants on their properties. The project involves a range of strategies, including:

- educational displays at various locations around Sydney,
- media releases,
- posters,
- road signs,
- training workshops for council staff and residents,
- distribution of brochures, bookmarks and flyers by councils, and
- the distribution of Asthma Weed Incentives Kits to residents.

At the same time, all the councils involved will continue their strategic Asthma Weed control programs on public land. Eighteen Councils in the Sydney region are currently targeting Asthma Weed through this project.

The Asthma Weed Project has received funding assistance from the Natural Heritage Trust (NHT) through the Sydney Metropolitan Catchment Management Authority (SMCMA) and Sydney Weeds Committees.

POISONOUS AND ALLERGENIC PLANTS – WHERE ARE THEY?

Ros Shepherd
Weed Society of Victoria
PO Box 987, Frankston 3199.

Most plants have developed some form of defence mechanisms to survive the browsing effects of animals, such as thorns in roses or urticating hairs as in stinging nettles. However many plants have evolved a chemical defence against the animals and insects that are their natural predators, and these plants include many of the ‘pretty’ plants grown in gardens.

Poisonous plants are usually only poisonous to humans if consumed in large quantities, and often only if eaten by young children. Some of our food crops are poisonous if eaten uncooked, the process of heating renders some of the poisonous substances less harmful.

Many plants have showy flowers or vegetation which has become favoured by gardeners, however this sort of display often evolved as a warning signal that the plant may have other properties. The showy scarlet autumn foliage of *Toxicodendron succedaneum* is a good example as are the seeds of *Abrus precatorius*.

What are poisonous plants?

Poisonous plants cover all plants forms, from bulbs to trees, from common garden plants such as *Nerium oleander* to the less common *Convallaria majalis* and *Kalmia latifolia*; they include garden escapes such as *Gloriosa superba* and *Ligustrum lucidum* and common weeds such as *Moraea flaccida* and *Conium maculatum*. Not all poisonous plants are introduced, there are a number of species of *Cycas* that are common garden plants, whose seeds are poisonous and carcinogenic, while many plants encountered in the bush either have stinging hairs such as *Dendrocnide excelsa* or poisonous seeds such as *Abrus precatorius*, one of Australia’s most poisonous plants, whose seeds are only poisonous when ingested crushed rather than whole.

Poisonous plants can be categorised as Very poisonous, Poisonous, Allergenic and Irritants, and in some cases a plants can contain chemicals for more than one category, thus *Ranunculus scleratus*, known as poison buttercup, is considered very poisonous as well as an allergenic and an irritant plant. In many cases all parts of the plant are considered poisonous, especially the fruit, but in many cases the roots, as in *Helleborus* species, and tubers, for example the corms of *Iris* species and green potatoes are poisonous.

Chemicals in plants

Plants belonging to the same genus usually contain the same chemical properties, thus *Solanum* species mostly contain the glycosides solasonine, solamargine and solanine and the alkaloids solasodine and solasodamine while some species have a more specific alkaloid such as soladulcidine found in *Solanum dulcamara*. The families Apocynaceae and Thymelaeaceae contain a number of plants that are considered to be very poisonous, the most common genera in Apocynaceae being *Allamanda*, *Casacabela*, *Neium* and the South African *Acokanthera*, used by some indigenous people to poison their arrows, and *Strophanthus speciosus*, another South African plant extremely poisonous but rather rare; and in Thymelaeaceae the commonest garden plant is *Daphne*. The toxins of Apocynaceae vary and include cardiac glycosides mainly olerandrin and neriin while the cardiac glycosides in Thymelaeaceae are mainly ouabain, strophanthin, inoetine and acocantherin.

Some garden plants are considered fatal, but are not very common in Australian gardens, *Strophanthus speciosus*, *Oenanthe crocata*, hemlock water dropwort, native of Europe which contains the toxins oenanthotoxin and terpenoid phellandrene, *Veratrum album*, false hellebore, native of Europe and North Africa with the toxins helleborin, helleboracin, and a number of steroid alkaloids and *Hyoscyamus niger* henbane, native to central and southern Europe containing cyanides, and a number of tropane alkaloids including hyoscyamine, scopolamine, hyoscytrin and atropine. Many gardens are removing these plants as they are considered so poisonous.

Symptoms

Most of the symptoms of poisoning by plants are nausea, vomiting, dizziness, weakness, headache, often abdominal pain and diarrhoea. And then recovery. However when very poisonous plants are concerned these symptoms continue and develop into an irregular pulse, difficulty breathing, fever, disorientation, convulsions and even coma and death from heart failure and respiratory paralysis. Death is the extreme case scenario and is not very common. To get to this stage a person has to usually ingest a large amount of the specific part of the plant that is poisonous; usually this does not occur, rather a child eats part of the plant and feels sick.

There are however a number of plants that cause allergenic and irritant reactions, the symptoms being reddening and blistering of the skin, and allergic dermatitis, as with *Toxicodendron succedaneum*, also rashes which occurs with many plants that have a milky sap such as *Plumeria rubra*, frangipani. People who work in the cut flower trade are at risk from many of the plants they handle, a number of these are irritants and allergenic such as *Alstroemeria aurea* and most plants belonging to Liliaceae.

Conclusion

Even though some of the plants mentioned are considered poisonous or even very poisonous that is not sufficient recommendation for plants be removed from gardens. Plants should be treated with caution if poisonous, and the poisonous part removed carefully and disposed of. One garden show did recommend that all *Helleborus* species be removed as they are classified as very poisonous and the poisonous properties of *Zantedeschia aethiopica* have been included in a reason for that plant to be declared in Western Australia, however caution not panic is recommended when handling all garden plants.

Reference

Shepherd, R. C. H. (2004). Pretty but Poisonous – Plants Poisonous to People. An Illustrated Guide for Australia. R .G. and F .J. Richardson, Meredith, Australia.

WEED PROOFING AUSTRALIA: A WAY FORWARD ON INVASIVE GARDEN PLANTS

**Andreas Glanznig,
Senior Policy Adviser
WWF-Australia**

Australia has the challenge of working out an effective, least cost solution to tackling the invasive garden plant problem – which accounts for 70% of Australia’s environmental and agricultural weeds. We have a superb opportunity to work out this solution in a strategic and systematic way so that that all stakeholders go into a change process with their eyes open and are able to participate in an ordered transition.

The starting point is the need to recognise that most garden plants in trade have no weed history and can be considered environmentally safe. This creates an opportunity to encourage a transition of the garden plant market towards the majority of low risk plant species.

Many garden plant species currently being traded, however, are or have the potential to cause serious harm to farmers, the agricultural industry, areas of high conservation value and the broader environment. In short, these invasive plants present a clear strategic risk to Australia’s agricultural profitability and our natural assets, and as such warrant concerted action by governments, industry and the community to mitigate this risk and facilitate a transition toward a prosperous garden plant market based on low-risk plants.

It is important to also recognise that the existence of these high risk plants in Australia’s garden plant market is a legacy of Australia’s quarantine regime that existed before the mid-1990s that focussed on contaminants and a relatively small number of serious agricultural weeds. These plant species would not be able to be legally imported into Australia today.

A policy package is needed that strives to achieve a 2015 vision of a prosperous garden industry built on the sale of low-risk garden plants, encouraged by an empowered and enabled community that wants to reduce their weed spread risk footprint.

The policy package needs to deliver the following outcomes by 2010:

Environmental

- Only new low risk plant species are legally permitted into Australia by 2006
- No high risk garden plants are traded, focussing on those yet to naturalise or become widespread
- Increase in detection and eradication of new high risk garden plant incursions

Social

- Australians are empowered and enabled to reduce their weed spread risk
- In major cities and towns, individuals able to join community-expert networks to detect and eradicate new high risk garden plant incursions
- Garden industry supports, and is enabled to play a significant role in reducing Australia’s weed spread risk
- Garden plant species that present a high risk of demanding significant Australian community group effort to restore bush and land are removed from sale

Economic

- Garden plant species that present a high risk (and potential and/or actual cost) to Australia's agricultural industries are removed from sale
- Garden plant species that present a high risk (and potential and/or actual cost) to government agencies responsible for managing national parks and other crown lands are removed from sale
- Garden businesses unduly financially impacted by the policy receive one-off transition reimbursement where appropriate (i.e. significant loss in market value of existing Plant Breeder Rights)
- New market demand created for low-risk garden plants.

This can be achieved through a **10 point policy package**:

- 1. Close Australia's front door to new weeds**
- 2. Give garden industry and communities certainty about the weed status of garden plants**
- 3. Better understand the extent and risk from continued trade in invasive garden plants**
- 4. Build knowledge about sterile garden plants and the dynamics of invasiveness**
- 5. Build garden industry understanding about the risks and costs associated with invasive garden plants, and capacity for positive action**
- 6. Mobilise the garden industry to respond positively to the invasive species challenge**
- 7. Protect garden industry leaders and reduce transaction and compliance costs by establishing a streamlined national regulatory framework**
- 8. Phase out supply and trade of high risk invasive plants nationally**
- 9. Encourage gardeners to increase product demand for low risk garden plants**
- 10. Mobilise communities to search and destroy new infestations of escaped invasive garden plants**

August 2006

AUSTRALIA'S WEED RISK ASSESSMENT (WRA) SYSTEM

Belinda Riddle
Senior Plant Scientist
Biosecurity Australia

Biosecurity Australia formally adopted the Weed Risk Assessment (WRA) system in 1997 as the primary method for assessing the weed potential of new plants. This system is now used to assess all new propagable plant imports whether they enter Australia as seeds, nursery stock or tissue culture regardless of their intended end use. The Australian Government Department of Environment and Heritage and a wide range of stakeholder groups has endorsed the system. The implementation of the WRA system is a component of the Australian National Weeds Strategy and was funded by the Natural Heritage Trust.

The WRA process is a three tiered system. The first tier determines whether a plant is already naturalised or widely distributed in Australia, and not official control. Plants that are not already present or permitted then proceed to the second tier. The second tier consists of a questionnaire which evaluates the weed risk of plants using 49 questions about the plants' biology (including toxicity), climatic preferences, reproductive and dispersal methods, and known weed history. Depending on the score generated importation of the plant is *permitted*, *rejected* or prohibited pending *further evaluation*. Plants that require *further evaluation* proceed to the third tier of assessment. The WRA also indicates if a plant is more likely to be a weed of agriculture or the general environment. It does this by generating a sub-score based on grouped characteristics common to other weeds of these ecosystems.

The WRA process is a scientifically-based transparent system that is consistent with international requirements of the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement)—one of the agreements under the auspices of the World Trade Organisation (WTO). The WRA system aims to permit all non-invasive plants into Australia while stopping potentially invasive plants. In the past nine years approximately 53% of the 2,800 species assessed have been *accepted*, 27% *rejected* and the remainder require *further evaluation*. The idea of pre-screening imports is backed by studies in Australia, which determined approximately 65% of naturalised plants were deliberately introduced as ornamentals.

The Permitted Seeds List

Biosecurity Australia has recently undertaken a review into the permitted seeds list (Schedule 5 of the *Quarantine Proclamation 1998*). The aim of the permitted seeds list review is to replace current genus level listings from Schedule 5 of the *Quarantine Proclamation 1998* (the permitted seeds list) with species, from within those genera, which are present in Australia and not under official control. This will enhance Australia's favourable pest and disease free status by ensuring that species not already present in Australia are not permitted entry without undergoing a weed risk assessment to determine their weed potential in Australia.

THE NOXIOUS WEEDS ACT 1993 AND WEED RISK ASSESSMENT IN NSW

**Stephen Johnson
NSW Department of Primary Industries
Locked Bag 21, ORANGE NSW 2800**

There were a number of changes in the latest amendment of the *Noxious Weeds Act 1993* (the Act) and Weed Control Order 19. This summary covers some of the Act amendments, Order 19 declarations, the weed management now needed and new species declarations. It also briefly covers Weed Risk Assessment (WRA) processes in NSW and conformity between NSW and Federal legislation.

As a candidate for noxious weed declaration, a plant must have a negative impact on the economy, community and/or environment of NSW, as well as a reasonable and enforceable means of control. The benefits and costs of declaration need to be carefully evaluated since they impose legal control requirements on the community.

The amended Act objectives result in far more proactive management (supported by five new weed control classes). In particular this is directed at preventing the establishment of new weeds, and restricting the spread of, or reducing the area of, existing weeds. Class 1 and 2 prohibited weeds are not present or have limited distribution in NSW, or regions of NSW respectively, and need to be eradicated from the land. Regionally controlled Class 3 weeds are not widely spread but are likely to spread further and need to be fully and continuously suppressed and destroyed. Locally controlled Class 4 weeds are widespread weeds, are likely to spread further, and need to be managed according to measures specified in a plan published by the Local Control Authority (LCA). A Class 4 plan enables a large amount of flexibility in management so long as the objectives of the class are not exceeded. Class 5 plants are restricted plants that are likely to spread within or from NSW. Class 1, 2 and 5 weeds are notifiable which means, among many other requirements, that its sale is prohibited. Explicit restrictions on sale also apply to some Class 3 and 4 weeds.

There are at least three legislative mechanisms available to manage plants which cause poisonous or allergenic impacts. The *Public Health Act 1991* (section 5) is probably the most suitable and flexible legislation for acting on general public health risks, while the *Local Government Act 1993* (section 125) also allows councils to take action against a public nuisance. While there are also valid reasons for declarations of such species under the *Noxious Weeds Act 1993* (section 8), such declarations should only be done in support of other legislation. This position partially recognises that weed managers are not human health specialists. Under the *Noxious Weeds Act 1993*, plants that are of concern solely as human health issues can only be listed as Class 4 weeds. This is the only Class with an objective to reduce the threats to human health. Underlying such a declaration are the facts that these weeds are widespread and capable of further spread. Plants that have a negative impact on the economy and/or environment as well as the community may be declared in other Classes.

Most weed species previously declared remain in Order 19. A small number of species were removed following requests from LCAs and as a result of species reviews. In contrast, a total of 52 new taxa were declared for the first time in Order 19. Although many of the Weeds of National Significance were previously declared, all taxa are now banned from trade and distribution. A number of species previously declared under the now repealed *Seeds Act* were incorporated as Class 5 weeds (a total of 26 weed taxa). Good progress is also being made on reviewing species on the National Environmental Alert list with eight of the most threatening

species to NSW now declared and others identified for future review. New species declarations also occurred from requests lead by LCAs and from NSW DPI reviews, for example, nine new and emerging aquatic weed taxa were declared.

The current NSW WRA process assesses both the risk a weed poses as well as the intent of an LCA to control the weed. This process has been reviewed and a new system is currently being implemented. The risk assessment component of the new WRA system will be similar to the South Australian Weed Risk Management system, which is, in turn, is the basis for the National Post-Border Weed Risk Management Protocol (Virtue *et al.* 2006). This should enable both information and resource sharing between State and Territory governments. The future NSW WRA system will review various factors involved with weed risk (invasiveness, impacts and potential distribution) and the feasibility of control (control costs, current distribution and persistence).

The principles outlined in the Protocol are broadly consistent with those employed in the Weed Risk Assessment system (the 'Pheloung' system) currently employed by Biosecurity Australia. It is important to note however that the aim of the two systems is quite different. The Post-Border Protocol aims to assess the risks and prioritise the management of weeds once they have become established in Australia. In contrast, the aim of the 'Pheloung' system is to assess the risks associated with, and to prevent the entry of high risk invasive species. Hence while there is conformity in the broad principles and processes used to assess weed risk at a Federal and State level, and while both systems provide important but distinct lines of defence against weed entry and invasion, the systems have quite distinct purposes.

It is important to note that the use of the 'Pheloung' system is made by jurisdictions that have natural quarantine boundaries, for example, Australia and Hawaii, and in Australia by the governments of Western Australia and Tasmania. Where more porous borders exist, States and Territories have largely relied on two mechanisms to restrict weed entry and the risks associated with these weeds. The first mechanism is Federal government legislation which has been used to restrict the entry of potential new weeds. The recent Federal review of the Permitted Seeds list will therefore help strengthen state weed control efforts. The second mechanism is the reliance of many Australian States and Territories on a prohibited or 'black' list, also commonly known as a noxious or declared list. Although this reactionary approach has been questioned by some (Csurhes *et al.* 2006), greater political will is required to achieve legislative consistency in species declarations across Australian jurisdictions.

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PLANT POISONING IN THE REAL WORLD

Genevieve Adamo
NSW Poisons Information Centre

The NSW Poisons Information Centre is a 24 hour emergency telephone service which provides assessment of and advice on poisonings of all types. We answer calls from NSW, ACT, Tasmania, and NT during business hours, and the whole of Australia after hours. The service has been operating for 40 years and is based at the new Children's Hospital at Westmead. Funding is provided by the NSW Dept of Health, via the Children's Hospital.

We provide advice on poisonings of all kinds including:

- drugs, both legal & illegal
- pesticides
- herbicides
- chemicals
- household items
- bites and stings
- plants

In 2005 we took over 108,000 calls. Approximately 70% of our calls are from members of the general public, and 30% from health professionals, i.e. doctors, pharmacists, triage nurses etc. Of total calls, 45% relate to poisonings of children, 51 % adults, and 4% are some enquiry regarding an animal. These figures have remained relatively stable over the last few years.

Of these 108,000 calls 1170, approx 1%, were with regard to a plant poisoning. In contrast to our general calls, the majority of calls about plants (68.2%) are regarding children.

Over 50% of calls regarding plants were about unidentified or non-toxic plants, leaving relatively few cases of confirmed poisonings with toxic plants. Those we are most concerned about are those causing serious or potentially life threatening symptoms.

- Angels Trumpet
- Castor oil Bean plant
- Deadly nightshade
- Foxglove
- Lantana
- Oleander, pink & yellow
- White cedar

Fortunately calls about these are rare.

Due to the generally bad taste of toxic plants, most are only small ingestions resulting in little if any toxicity. Occasionally we see the intentional ingestion of one of these toxic plants. This can be either for recreational use (anticholinergic plants, goldcap mushroom) or it may be suicidal (infusions of oleander).

The most common identified ingestions are oxalates (i.e. elephants ear, arum lily), usually small ingestions and easily relieved with milk, and capsaicin (chilli) which is nearly always an exposure in the kitchen.

Of all calls relating to plant poisonings less than 0.6% were in or referred to hospital, indicating the low level of serious poisonings. This compares to 28% of all calls which are in

or referred to hospital, and even if we just look at all ingestions by children, 16% are in or referred to hospital.

In the case of a serious poisoning, a patient will be referred to hospital, and if necessary a consultant toxicologist will be contacted. He or she can offer assessment and treatment advice over the phone to the treating doctor. These consultants are Emergency Medicine Specialists with post graduate training in toxicology. They must hold a staff specialist position in a major teaching hospital and run a toxicology service at that hospital.

Another group of plants about which we receive calls are palms containing thorns. The mechanical injuries caused by these thorns can lead to more serious complications if not removed completely. As they are often quite long spines it is not uncommon for a portion of the spine to be left embedded in the skin which will cause an inflammatory reaction, This is a particular problem if the thorn enters near a joint (commonly in the hand), resulting in a synovitis of that joint. These must be removed surgically to prevent such complications.

Although not plants, mushrooms are also cause for concern for us at the Poisons Information Centre. There are a large number of inedible mushrooms which will cause gastrointestinal irritation, and a small number of much more toxic species. These may cause renal and hepatic damage and neurological symptoms. Of our 237 calls about mushroom ingestions last year 32 (13.5%) were in or required hospitalisation.

To us at the Poisons Information Centre plants pose a fairly small threat resulting in very few actual poisonings, yet the herbicides so commonly use to eradicate them is a far more real problem. Glyphosate is a very common and toxic herbicide, and although responsible for only 452 exposures last year, 6% of these required hospitalisation. Paraquat is extremely toxic, but strong safety requirements have minimised exposures, yet one third of these exposures require hospitalisation.

In summary, although we do have some very poisonous plant in Australia, their natural warning systems of bad taste and spikes etc., plus public awareness of their dangers has meant we do not see the serious poisonings of which these plants are capable.

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NSW Poisons Information Centre Annual Report 2005

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Plants and Fungi Poisonous to People in Queensland, QLD PIC and QLD

Health and Environmental Protection Agency 2005

THE SEMINAR'S CHAIRPERSONS

Warwick Felton President, Weed Society of New South Wales

Warwick has been a member of the Society for over 30 years and on the executive for over 20 years serving as President in 1987, 1988, 2005 and 2006.

He was a Senior Research Scientist, NSW Department of Agriculture (NSW DPI) working at Agricultural Research Centre Tamworth in the areas of crop agronomy, no-tillage farming systems, weed management, and herbicide application technology. Warwick spent 40 years in research and retired recently.

Warwick has received numerous awards in recognition of his contribution to weed science including AgQuip Land Inventor in 1991, Brownhill Cup in 1991 for contributions to Conservation Farming, Council of Australasian Weed Societies medalist in 1992, Excellence in Engineering Awards in 1992 and 1993 and the NSW Agriculture Staff Award in 1998.

Currently, Warwick is a member of the Advisory Board for the Faculty of Agronomy and Soil Science at the University of New England.

Mike Hood Editor, 'The Good Weed'

Michael has been a member of the Society for many years, almost since its inception, with a few years of non-membership in the late 1960's. He has been on the Committee for around 20 years and has served terms as President and Secretary and is currently the Newsletter Editor.

After graduating from Sydney University in agricultural science Mike worked for Agserv/Geigy in Sydney and Shell Research in England for six years on herbicide and weed control R&D. He then worked for a short time as a farm management consultant in Condobolin before starting up the contract research consultancy Agrisearch Services in 1970 based in Orange.

Over the next 30 years Agrisearch grew to over 35 staff with offices in all States except Tasmania and Western Australia working for chemical companies, seed companies, the rural industry research corporations and other groups. During this time Mike took time off to take a M.Sc. in plant science from the University of London. (Wye). In 2000, in association with several others, Mike established the analytical laboratory Agrisearch Analytical, based in Sydney. He often works as an expert witness in litigation cases, many of which involve aspects of weeds and weed control.

Jim Swain Treasurer, Weed Society of New South Wales

Jim worked in the agricultural chemical industry until retiring from Ciba-Geigy in 1997 as the Research and Development Manager. Since that time he worked as a part time consulting working on a number of projects for the crop protection industry.

He has been actively involved with the Weeds Society of NSW Inc for many years serving as a committee member, as President for the period 1978 to 1980, Secretary from 2002 to 2005 and, is currently the Treasurer.

He is a board member of the Australian Institute of Agricultural Science and Technology (AIAST) where he is the chair of the National Accreditation and Personal Development Program committee.

Jim is a Life Member of Croplife Australia, a Fellow of the Australian Institute of Agricultural Science and Technology and a Council of Australasian Weed Societies medalist.

Mike Barrett
Public Officer, Weed Society of New South Wales

Mike joined the Society in 1970 and has served on the committee for a number of years, holding the executive positions of President (1975 to 1976) and Public Officer. On a National scene he has acted as Secretary/Treasurer for the Australasian Council of Weed Societies and was on the organising committee for the 1979 Asian Pacific Weed Conference

Mike worked for ICI Rural Division for over 20 years and was involved in a number of research and development projects, including aerial application of herbicides, infra-red photography, sod-seeding, weed control in lucerne and in the NSW state rail system.

Over the last few years he has been actively running his consultancy business working mainly in the area of Plant Breeders Rights (PBR), chemical training and horticultural consulting.

THE SEMINAR'S SPEAKERS

Warwick Felton
President
The Weed Society of New South Wales

Warwick has been a member of the Society for over 30 years and on the executive for over 20 years serving as President in 1987, 1988, 2005 and 2006. He was a Senior Research Scientist, NSW Department of Agriculture (NSW DPI) working at Agricultural Research Centre Tamworth and has received numerous awards in recognition of his contribution to weed science. Currently, Warwick is a member of the Advisory Board for the Faculty of Agronomy and Soil Science at the University of New England.

Dr Rachel McFadyen
Chief Executive Officer
Cooperative Research Centre for Australian Weed Management

Rachel McFadyen is the Chief Executive Officer of the Cooperative Research Centre for Australian Weed Management. The Weeds CRC has scientists across the nation and Rachel, though based in Brisbane, spends much of her time travelling. Rachel's background is in biological control of weeds of the tropics and sub-tropics, and she has worked on parthenium weed and annual ragweed among others.

Dr John Virtue
Senior Weed Ecologist
Animal & Plant Control Group
Department of Water Land & Biodiversity Conservation
South Australia
and
Cooperative Research Centre for Australian Weed Management

Dr John Virtue is the Senior Weed Ecologist with the Department of Water, Land & Biodiversity Conservation, South Australia. He is also Task Leader: Weed Risk Evaluation in the Weeds CRC's Weed Risk and Incursion Management research program. John's key work areas are weed risk assessment systems, branched broomrape (a parasitic weeds subject to a national eradication campaign) and asparagus weeds (including the WoNS bridal creeper). He has a PhD on weed management in tea tree plantations through the University of Sydney, and grew up in Cowra in central west NSW.

Sue Stevens
Asthma Weed Project Officer
Randwick City Council

Sue Stevens has been involved in weed control in urban bushland and community revegetation projects since 2001. She is currently completing her Master of Natural Resources at UNE, researching small bird habitat in the urban landscape.

Sue is currently working as Asthma Weed Project Officer, based at Randwick Council in Sydney's eastern suburbs, where Sue also works facilitating Bushcare and Landcare volunteers.

Ros Shepherd
Consultant/Author

Ros Shepherd is the Secretary of the Weed Society of Victoria and some time ago a research officer at what used to be Keith Turnbull Research Institute, Frankston. There she worked as an entomologist on the biological control of weeds. Since retiring she has spent most of her time trying to keep the Society in order and travelling around taking pictures of weeds.

Andreas Glanzig
Senior Policy Adviser
World Wildlife Fund-Australia

Andreas Glanzig is WWF-Australia's Senior Policy Adviser. He is a biodiversity conservation policy specialist, and leads WWF's invasive species policy and advocacy team. He sits on the boards of both the Weeds CRC and the Global Invasive Species Program, and is member of the Australian Government's National Weed Advisory Group

Belinda Riddle
Senior Plant Scientist
Multilateral, Invasive Species and Germplasm Team
Plant Biosecurity and part of
Biosecurity Australia

Belinda is a Senior Research Scientist and is part of the Multilateral, Invasive Species and Germplasm Team. She has worked for Biosecurity Australia for five years and manages the Weed Risk Assessment team.

Dr Stephen Johnson
Weed Ecologist
New South Wales Department of Primary Industries

Stephen is an executive member of the Weed Society of New South Wales and is currently both the Vice-president and one of two Council of Australasian Weed Society delegates.

Stephen has worked as a Weed Ecologist for the NSW Department of Primary Industries for the past 18 months. One of his roles in this position is the risk assessment of potential noxious weed species. Stephen also conducts reviews of declared weed species and is responsible for advising management and Ministerial advisory groups of technical and scientific information relating to weeds. Prior to this, Stephen spent nearly nine years as a Research Ecologist/Agronomist investigating the biology and management of a range of annual and perennial weed species in Australian cotton farming systems.

**Genevieve Adamo
Pharmacist & Poison Information Specialist
Poison Information Centre
Children's Hospital Westmead**

Genevieve Adamo is a pharmacist and Poisons Information specialist. After working in community pharmacy for 10 years, she completed further training in Poisoning & toxicology. She has since been working at the NSW Poisons Information Centre.

**Mike Barrett
Consultant and Public Officer, Weed Society of New South Wales**

Mike joined the Weed Society of New South Wales in 1970 and has served on the committee for a number of years, holding the executive positions of President (1975 to 1976) and Public Officer. He worked for ICI Rural Division for over 20 years and was involved in a number of research and development projects, including aerial application of herbicides, infra-red photography, sod-seeding, weed control in lucerne and in the NSW state rail system. Over the last few years he has been actively running his consultancy business working mainly in the area of Plant Breeders Rights (PBR), chemical training and horticultural consulting.

APPENDIX

AGFACTS
AGFACTS
AGFACTS



NSW Agriculture

Poisonous Plants In The Garden

Agfact P.7.1.1, third edition 2000
Bob Trounce, Weeds Agronomist
NSW Agriculture Head Office, Orange



All parts of the oleander are poisonous, as well as smoke from the burning wood.

There are a range of garden plants that are considered poisonous. Their potential danger varies; some causing nausea and vomiting while others are highly toxic and can kill. Small children are at particular risk, especially from coloured berries and petals and leaves that look succulent. However, as most poisonous plant parts taste unpleasant, they are



All parts of the arum lily are poisonous, especially the flower.

seldom swallowed.

Therefore few children are poisoned and deaths are rare.

It is a wise precaution though to teach children never to eat seeds, berries or other plant parts without first asking an adult.

TREATMENT

If poisoning occurs or is suspected, get medical attention promptly or call the Poison's Information Centre on 13 1126. If going to a hospital, take a piece of the plant for identification.



Seed pods of the wisteria can cause gastric pain and vomiting if eaten.

Agdex 647

The following list includes popular garden plants capable of causing problems. Some commonly occurring weeds and other plants are also included.

TOXICITY GUIDE

* Mildly toxic — mild symptoms may occur if a large quantity is eaten.

** Toxic — causes discomfort and irritation but not dangerous to life.

*** Highly toxic — capable of causing serious illness or death.

Table 1. Poisonous Trees				
Common name	Botanical name	Description of Plant	Poisonous parts	Symptoms
*bird of paradise plant	<i>Caesalpinia gilliesii</i>	Shrub with fern-like foliage, yellow pea flowers with red stamens, and pods 8–10 cm long.	Pods, seeds	Gastroenteritis
***bitter almond (also apricot, cherry and peach)	<i>Prunus amygdalus</i>	Small deciduous tree with oval leaves, pink blossom and small fleshy fruit.	Seed (kernels), if more than 10 eaten.	Vomiting, purging, collapse.
**black bean (Moreton Bay chestnut)	<i>Catanospermum australe</i>	Large, spreading, evergreen native tree with glossy pinnate leaves. Orange flowers in summer are followed by large, boat-shaped woody pods.	Seeds	Purging and vomiting, sometimes dizziness.
**false acacia (black locust)	<i>Robinia pseudoacacia</i>	Deciduous tree with compound leaves and flowers. Sharp spines on stems.	Pods, seeds, bark, leaves.	Gastroenteritis
**golden chain tree	<i>Laburnum anagyroides</i>	Deciduous tree with large, oval leaves and chain-like racemes of yellow pea-flowers.	All parts, especially seeds.	Nervous symptoms, vomiting, spasms, convulsions.

Common name	Botanical name	Description of plant	Poisonous parts	Symptoms
*privet (large-leafed and small-leafed)	<i>Ligustrum</i> species	Naturalised and cultivated evergreen shrubs–small trees. Dark green leaves, opposite on stem; small, white, heavily-perfumed flowers and black “berries”.	Fruit — large numbers only.	Gastric irritation (purging, vomiting and pain). Perfume causes respiratory allergies.
**rhus	<i>Toxicodendron succedaneum</i>	Small, deciduous tree. Compound leaves, brilliantly coloured in autumn. Clusters of papery seeds.	Skin contact with all parts, especially sap. Smoke also allergenic when wood is burned.	Dermatitis (skin irritation and rashes) varying in severity. Possible blistering and swelling. Chronic systemic illness.
***white cedar	<i>Melia azedarach</i>	Native and cultivated deciduous tree. Purplish, perfumed flowers. Fruit small and yellow.	Fruit (6–8 sufficient to kill small child).	Nausea, spasms, insensibility.

Common name	Botanical name	Description of Plant	Poisonous parts	Symptoms
***angel's trumpet	<i>Datura</i> species	Large-leafed shrubs with large, trumpet-shaped, white, pendulous flowers. Fruit is a spiny capsule.	Seeds, flowers.	Dilated pupils, delirium, excitability.
***bushman's poison (wintersweet)	<i>Acokanthera oblongifolia</i>	Stiff, dark green leaves. Clusters of tubular flowers, white, tinged pink. Purple berries, like small plums.	All parts.	Purging, dizziness, heart disturbance.
Naturalised and cultivated tall shrub with large, five-lobed green leaves turning to red. Fruit pea-sized and shiny with soft spines.	<i>Ricinus communis</i>		Seeds. Eating only 2–3 can cause death.	Burning sensation in mouth and throat, abdominal pain and purging.

Table 2. Poisonous Shrubs				
Common name	Botanical name	Description of plant	Poisonous parts	Symptoms
*cotoneaster	<i>Cotoneaster</i> species	Cultivated shrub with oval leaves and red or orange berries.	Berries (large numbers only).	Mild gastroenteritis — vomiting and agitation.
***daphne	<i>Daphne odora</i>	Small shrub with fragrant pink and white flowers.	All parts, especially berries.	Burning sensation in mouth and stomach, vomiting and purging, collapse.
***golden dewdrop (skyflower, pigeon berry)	<i>Duranta repens</i>	Small shrub with fragrant pink and white flowers.	Fruit, bark.	Sleepiness, high temperature, rapid pulse, convulsions.
*Jerusalem cherry (Madeira winter cherry)	<i>Solanum pseudocapsicum</i>	Small shrub, with tapered leaves; small, white star-shaped flowers and orange berries. Can be a weed.	Leaves and possibly green fruit.	Muscular weakness.
***lantana	<i>Lantana</i> species	Naturalised and cultivated shrub with prickly stems and leaves. Clusters of colourful flowers (varying colours). Purplish-black berries.	Green fruit (toxicity varies from plant to plant).	Gastrointestinal irritation, jaundice, muscular weakness.
***oleander	<i>Nerium oleander</i>	Tall woody shrub with long, pointed, leathery-textured leaves, and pink, red or white flowers.	All parts and smoke from burning wood. Poisoning rare as plant tastes foul.	Vomiting, abdominal pain, dizziness, convulsions, irregular pulse, collapse.
**pencil plant	<i>Euphorbia tirucalli</i>	Stiff shrub with pencil-like branches and no apparent leaves. Milky sap present.	Milky sap.	Sap in eyes causes severe irritation and temporary blindness. Blistering in mouth and other soft skin areas.
**poinsettia	<i>Euphorbia pulcherrima</i>	Tall shrub with large red or yellow winter flower bracts.	Leaves, sap, seeds.	Delirium, gastroenteritis. Sap injurious to eyes, mouth.

Table 3. Herbaceous Perennials And Bulbs				
Common name	Botanical name	Description of plant	Poisonous parts	Symptoms
***Arum lily (calla lily)	<i>Zantedeschia aethiopica</i>	Dark green, fleshy leaves and stems. Flower-spike a large, white, funnel-shaped spathe surrounding a yellow spadix (central column).	All parts, flower particularly so.	Swelling of tongue and throat, Acute gastritis and severe purging which can lead to exhaustion and shock.
*bulbs (for example daffodils, jonquils, belladonna lilies, gloriosa lilies, hyacinths, bluebells).	<i>Narcissus pseudonarcissus</i> , <i>N. jonquilla</i> , <i>Amaryllis belladonna</i> , <i>Gloriosa superba</i> , <i>Hyacinthus</i> spp. <i>Wahlenbergia</i> spp.	Dormant bulbs produce fleshy, strap-like leaves in winter and flowers in spring.	Sap, bulb.	Vomiting, purging. As taste is so unpleasant, it is unlikely that much will be eaten.
***cunjevoi (elephant's ears)	<i>Alocasia macrorrhiza</i>	Large, light green, fleshy leaves and stems. Similar to arum lily.	All parts.	Painful irritation, burning and swelling of tongue and throat. Severe gastric irritation.
**elephant's ears (taro)	<i>Colocasia esculenta</i>	Large, dark green leaves and fleshy stems.	All parts.	Local irritation and swelling, gastric and respiratory symptoms.
***foxglove	<i>Digitalis purpurea</i>	Velvety leaves in rosette formation at base of long stem. Flowers mauve, white or purple bells to 5 cm.	All parts.	Action on heart muscle, nausea, breathing difficulties, disturbed pulse, drowsiness, convulsions.
***gloriosa lily (glory lily, climbing lily)	<i>Gloriosa superba</i> , <i>G. rothschildiana</i>	Climbing lily, leaves pointed and curled at tips, large red/orange spidery-lily flowers.	All parts, particularly roots.	Tingling, numbness of lips, tongue, throat and skin; giddiness, respiratory distress, irregular heartbeat.
*hyacinth	<i>Hyacinthus</i> spp.	(see under bulbs)		

Table 3. Herbaceous Perennials And Bulbs				
Common name	Botanical name	Description of Plant	Poisonous parts	Symptoms
**lily-of-the-valley	<i>Convallaria majalis</i>	Small, cool-climate plant with paired leaves to 20 cm and small, perfumed, bell-shaped flowers.	All parts.	Nausea dizziness, irregular heart action.
**naked ladies	<i>Amaryllis belladona</i>	Bulbous plant with pink, lily-type flowers on long stems appearing before the dark green, strap-shaped leaves.	All parts suspect.	Vomiting, purging

Table 4. Poisonous climbing plants				
Common name	Botanical name	Description of Plant	Poisonous parts	Symptoms
*Carolina jasmine (Carolina jessamine)	<i>Gelsemium sempervirens</i>	Dark green leaves and yellow flowers.	Roots, nectar, flowers.	Nausea, dilation of pupils, muscular weakness.
*wisteria	<i>Wisteria sinensis.</i> <i>W. floribunda</i>	Deciduous climber with mauve or white pendulous flowers in spring.	Seeds, pods.	Gastric pain, vomiting, purging.

Table 5. Poisonous Miscellaneous Plants				
Common name	Botanical name	Description of Plant	Poisonous parts	Symptoms
**burrawang	<i>Macrozamia species</i>	Native and cultivated palm-like plant producing large cones with red or yellow seeds.	Seeds.	Nausea, vomiting, muscular weakness.
**dumb cane	<i>Dieffenbachia species</i>	Indoor plants with large, variegated leaves.	All parts.	Irritation and burning of mucous membranes, copious salivation and swelling.
***some mushrooms and toadstools	Several species	Fungi, usually growing in grassland or under trees. Consists of stalk and cap.	All parts.	Drowsiness, dizziness, hilarity, vomiting, hallucinations.

Table 5. Poisonous Miscellaneous Plants				
Common name	Botanical name	Description of Plant	Poisonous parts	Symptoms
**rhubarb	<i>Rheum rhabonticum</i>	Cultivated garden plant. Large leaves and reddish stems.	Leaf-blades (leaf-stalk edible when cooked).	Nausea, vomiting, purging.
Table 6. Poisonous Weeds				
Common name	Botanical name	Description of Plant	Poisonous parts	Symptoms
***apple of Sodom (devil's apple)	<i>Solanum sodomaeum</i>	Branching low shrub, covered with prickles, leaves lobed, purple flowers and yellow fruit.	Fruit	Gastroenteritis, dizziness, confusion, hallucinations.
*blackberry nightshade	<i>Solanum nigrum</i>	Native weed. Small white flowers and black berries	Leaves, green berries.	Mild gastroenteritis
***cotton bush (swan plant)	<i>Gomphocarpus fruticosus</i>	White flowers. Fruits balloon-like, covered with soft, green spines. Seed has tuft of light green hairs.	All parts. Seedlings more toxic than mature plants.	Gastroenteritis
***deadly nightshade	<i>Atropa belladonna</i>	Upright plant with large oval leaves, purple flowers, and black berries.	All parts.	Nausea, dilated pupils, uncoordinated movements, heart and respiratory symptoms.



Golden chain tree (*Laburnum anagyroides*). All parts of the tree are poisonous, especially the seeds.



Narrowleaf privet (*Ligustrum sinense*). Perfume and pollen causes respiratory distress for susceptible people. Ingestion of a large number of berries can cause pain and vomiting.

Table 6. Poisonous Weeds				
Common name	Botanical name	Description of Plant	Poisonous parts	Symptoms
**green cestrum	<i>Cestrum parqui</i>	Shrubs with pale yellow, tubular flowers. Berries black when ripe. Often a weed.	Green berries	Hallucinations, elevated temperatures.
**pellitory	<i>Parietaria judaica</i>	Perennial with fine hairs on stems and leaves. Stems 30–60 cm branching from woody rootstock. Leaves ovate to lanceolate, 1–4 cm and prominently veined, flowers small and greenish in summer. A weed of rocky foreshores and sandstone soils.	Pollen. Leaves/stems.	Asthma, rhinitis, conjunctivitis. Contact allergy with skin.
**petty spurge	<i>Euphorbia peplus</i>	Soft, green, oval leaves, inconspicuous greenish–yellow flowers, milky sap.	Milky sap	Blistering and irritation of mouth and stomach mucosa, vomiting and purging.
*privet	<i>Ligustrum</i> species	See under <i>Trees</i>		
**snow-on-the-mountains (ghost weed)	<i>Euphorbia marginata</i>	Upright branching weed to 30 cm with green-white leaves, white flowers and green fruits.	Milky sap.	Burning and irritation of mouth and stomach mucosa, vomiting and purging.
*stinging nettle	<i>Urtica</i> species	Leaves in pairs, covered with rigid stinging hairs.	Stinging hairs, not toxic, but an irritant.	Skin irritation, pain.
***thornapple	<i>Datura stramonium</i>	Naturalised and cultivated annual herb. Large white bell-flowers, spiky fruit, black seeds.	Seeds, leaves.	Intense thirst, increased temperature, abnormal behaviour, convulsions.
**tree tobacco	<i>Nicotiana glauca</i>	Naturalised shrub, yellow flowers	Leaves, flowers.	Foul taste restricts intake so symptoms usually mild. Loss of balance, heart disturbance.

Members of the following two families, both commonly represented in the garden, share similar poisonous properties.

Euphorbiaceae family

This plant family includes several garden trees and shrubs and a number of weeds, all of which have milky sap. This sap is very irritant to soft skin surfaces, particularly eyes and the mucosa of the mouth, throat and stomach. Temporary blindness, burning and blistering can occur. Gastroenteritis is often an additional symptom

Some frequently-occurring members of the family are:

- poinsettia (*E. pulcherrima*) — see *Shrubs*.
- pencil plant (*E. tirucali*) — see *Weeds*.
- petty spurge (*E. peplus*) — see *Weeds*.
- snow-on-the-mountains (*E. marginata*) — see *Weeds*.

Solanaceae family

This large plant family includes the potato, tomato, capsicum, some ornamental plants and a number of weeds.

While some ripe fruits and potato tubers are edible, other plant parts, particularly leaves, green berries and green potato tubers, contain toxins. Symptoms of poisoning include gastroenteritis, muscular twitching, shivering and convulsions. Some plants of the Solanaceae family that may be encountered in the home garden are:

- belladonna, deadly nightshade (*Atropa*

belladonna) — see *Weeds*.

- green cestrum (*Cestrum parqui*) — see *Weeds*.
- angel's trumpet (*Datura* species) — see *Shrubs*.
- thornapple (*Datura stramonium*) — see *Weeds*.
- tree tobacco (*Nicotiana glauca*) — see *Weeds*.
- Blackberry nightshade (*Solanum nigrum*) — see *Weeds*.
- Jerusalem cherry, Madeira winter cherry (*Solanum pseudocapsicum*) — see *Shrubs*.
- apple of Sodom (*Solanum sodomaeum*) — see *Weeds*.

This is not a complete list of all plants grown in New South Wales and considered poisonous. Those mentioned are plants most commonly found in home gardens or growing wild in natural bushland.

FURTHER INFORMATION

Further assistance with identification of plants is available from the Royal Botanic Gardens, Sydney.

Further information is also available from the reference book, *Poisonous Plants of Australia* by S.L. Everist.



Ingestion of portions of daffodil and many other common garden bulbs cause vomiting.



Poinsettia (*Euphorbia pulcherrima*). Leaves, sap and seeds are poisonous. Sap can burn eyes and mouth.



Green cestrum berries can cause hallucinations and elevated temperature.



Pelitery or asthma weed flowers over a long period. Pollen causes respiratory difficulties with a large percentage of the population.



Petty spurge — milky sap causes blistering and irritation of mouth and stomach. Vomiting is common.



Castor oil (*Ricinus communis*). Seeds can be attractive to young children — 2–3 seeds can cause death.

Table 7. Botanical Names Index

Botanical Name	Common name	Page	Botanical Name	Common name	Page
<i>Acokanthera oblongifolia</i> (syn <i>Carissa spectabilis</i>)	wintersweet	3	<i>Gloriosa superba</i> , <i>G. rothschildiana</i>	gloriosa lily	5
<i>Alocasia macrorrhiza</i>	cunjevoi, elephant's ears	5	<i>Gomphocarpus fruticosus</i>	cotton bush	7
<i>Amaryllis belladonna</i>	belladonna lily, naked ladies	6	<i>Laburnum anagyroides</i>	golden chain tree	2
<i>Atropa belladonna</i>	deadly nightshade	7	<i>Lantana</i> species	lantana	4
<i>Caesalpinia gilliesii</i>	bird of paradise tree	2	<i>Ligustrum</i> species	privet	3
<i>Castanospermum australe</i>	black bean, Moreton Bay chestnut	2	<i>Macrozamia</i> species	burrawang	6
<i>Cestrum parqui</i>	green cestrum	8	<i>Melia azedarach</i>	white cedar	3
<i>Colocasia esculenta</i>	elephant's ears, taro	5	<i>Nerium oleander</i>	oleander	4
<i>Convallaria majalis</i>	lily-of-the-valley	6	<i>Nicotiana glauca</i>	tree tobacco	8
<i>Cotoneaster</i> species	cotoneaster	4	<i>Parietaria judaica</i>	wall pellitory	8
<i>Daphne odora</i>	daphne	4	<i>Prunus amygdalua</i>	bitter almond	2
<i>Datura</i> species	angel's trumpet	3, 8	<i>Rheum rhaptonicum</i>	rhubarb	7
<i>Datura stramonium</i>	thornapple, jimsonweed	8	<i>Ricinus communis</i>	castor oil plant	3
<i>Dieffenbachia</i> species	dumb cane	6	<i>Robinia pseudoacacia</i>	black locust, false acacia	2
<i>Digitalis purpurea</i>	foxglove	5	<i>Solanum nigrum</i>	black berry nightshade	7
<i>Duranta repens</i>	golden dewdrop, skyflower, pigeon berry	4	<i>Solanum pseudocapsicum</i>	Madeira winter cherry	4
<i>Euphorbia marginata</i>	snow-on-the mountains	8	<i>Solanum sodomaeum</i>	apple of Sodom	7

Botanical Name	Common Name	Page	Botanical Name	Common Name	Page
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<i>Euphorbia pulcherrima</i>	poinsettia	4	<i>Urtica</i> species	stinging nettle	8
<i>Euphorbia tirucalli</i>	pencil plant	4	<i>Wisteria</i> species	wisteria	6
<i>Gelsemium sempervirens</i>	Carolina jasmine, Carolina jessamine	6	<i>Zantedeschia aethiopica</i>	Arum lily	5



A rhus tree in autumn foliage. Rhus and Chinese pistachio are often confused. Most of the rhus tree's compound leaves end in a single leaflet whereas most pistachio leaves end in a pair of leaflets. Rhus foliage droops and the leaflets fold along the midrib producing a boat-like shape. Pistachio leaves do not droop and are flatter.

DISCLAIMERS

The information contained in this publication is based on knowledge and understanding at the time of writing (2000). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date, and to check currency of the information with the appropriate officer of NSW Agriculture or the user's independent adviser.

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