

Crop protection practices in Tasmania

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Contact details:

Tasmanian Agricultural Productivity Group
304 York Street
Launceston TAS 7250
Ph. 03 6331 5369
www.tapg.net

Tasmanian Farmers & Graziers Association
TFGA House
PO Box 193
Launceston TAS 7250
Ph. 03 6332 1800
www.tfga.com.au

CropLife Australia
Locked Bag 916
Canberra ACT 2601
Ph. 02 6230 6399
www.croplifeaustralia.org.au

Overview

Restrictive or selective banning of registered pesticides could mean a loss of around 20 % annually from the State's agricultural production and food related industries

Pesticides - herbicides, insecticides and fungicides - used as part of an integrated crop management approach to sustainable agriculture, provide economic, environmental, human health and social benefits to Tasmania.

- Pesticides deliver economic benefits to farmers by ensuring profitable yields, enhancing cost efficient farming practices and decreasing the loss of produce during transport and storage.
- Environmental benefits of pesticides are realised on farm through the control of invasive weeds, pests and diseases, improving soil conservation and water retention.
- Pesticides play a role in protecting the health of the broader community by guaranteeing the ongoing availability of high quality fresh fruit and vegetables, and other basic food commodities at affordable prices.
- Economically viable farmers are more likely to stay on the land, which in turn supports the development of rural businesses, maintaining towns and social infrastructure.

A recent Tasmanian Agricultural Productivity Group report found that agriculture and its related food industry in Tasmania contributes \$2,980 million to the Tasmanian economy, 16 per cent of Tasmania's gross state product and 20 per cent of the state's employment each year. The total food related revenue generated from crops alone is \$1,160 million per annum. This revenue is underpinned by the availability of cost efficient pesticides.

Restriction or selective banning of registered pesticides could conservatively mean a loss of more than 20 per cent of Tasmania's agricultural value. This would have a significant flow on effect to employment, service provision and the vitality of rural towns across the state.

All pesticides sold in Australia are approved and registered by the Australian Pesticides and Veterinary Medicines Authority. An approval is the end result of a rigorous, science based assessment of the potential risks involved in the use of each specific product, including potential risks to human health and safety, and to the environment. Pesticides must only be used as directed on the approved label.

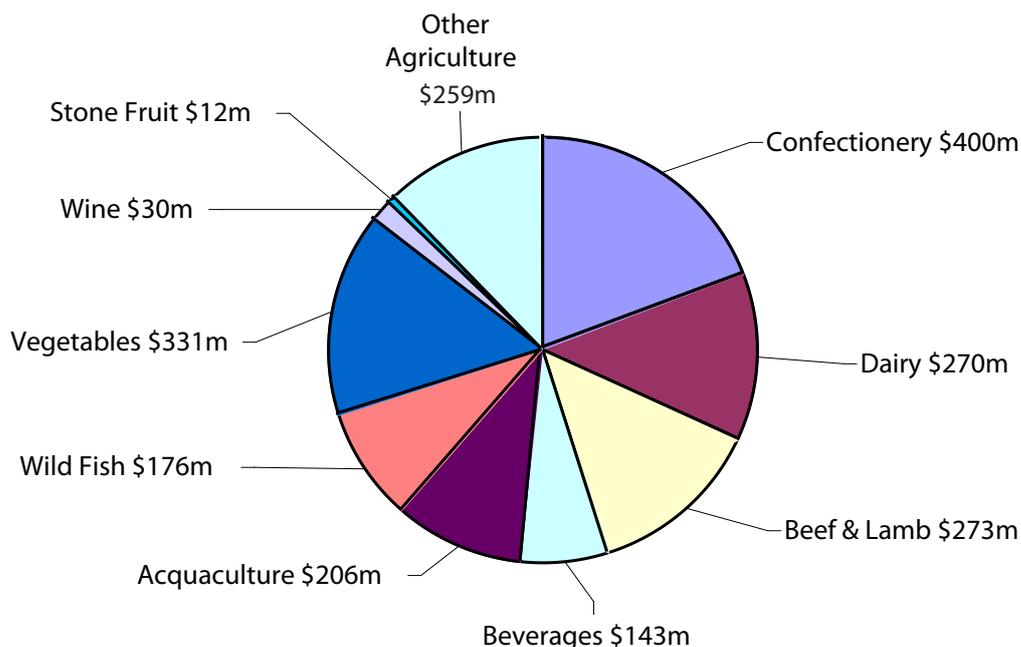
The contribution of agriculture to the Tasmanian economy

The value of Tasmanian agriculture and the downstream food industry is \$2,980 million per annum

A recent Tasmanian Agricultural Productivity Group and Tasmanian Farmers & Graziers report on the contribution of agriculture to the Tasmanian economy found:

- Agriculture is a critically important contributor to the Tasmanian economy both in its own right and because other industries depend on it.
- The manufacturing and service sectors that utilise farm outputs are very significant contributors to gross state product and employment.
- The direct or farm gate contribution of agriculture is around 5 per cent of gross state product, and 6 per cent of total state employment.
- When agriculture and its related input and output sectors are combined, the contribution of the “farm dependent economy” increases to almost 16 per cent of gross state product, and 20 per cent of state employment.
- Despite its ups and downs, farm output has increased at a compound rate of 4.7 per cent per annum over the past 20 years.
- The value of agriculture to the state’s food industry (2002-03) can be summarised as:

Farm gate and beach point value	\$ 944 million
Packed or processed value	\$2,100 million
Total food revenue (net of imports)	\$2,980 million



What are pesticides and why are they used?

By controlling insects, bacteria, fungi and weeds, pesticides help farmers produce higher quality goods, be more productive and be competitive in world markets

Many insects, bacteria, fungi and weeds are pests because they attack or compete against crops and damage stored food.

These pests and diseases can significantly reduce crop yields, reduce the quality of crops, render crops unmarketable, increase the toxicity of potential food products and cause losses after harvest.

Herbicides, insecticides and fungicides are collectively called pesticides. Pesticides are used by farmers to control pests and diseases and therefore keep crops and our food healthy.

The losses caused by pests and disease during food production and post harvest storage will be variable but substantial losses are likely to occur without protective measures. The potential for loss can vary from crop to crop, year to year and location to location. Factors such as climatic conditions, cultivation techniques, crop rotation practices, past agricultural practices, mechanical weeding and choice of seed varieties will also influence the number of pests and the incidence of diseases that may infest the farm.

Pesticides enable farmers to use land efficiently to produce healthy and abundant crops . As a result, farmers obtain a greater financial return from their production. Viable farming enterprises have a positive financial flow on effect into their local communities. For society overall, such enterprises guarantee our food security and provide high quality food that is affordable for consumers.

International research has found that pesticides can increase crop yields by about 40 per cent. This means that pesticide use increases the value of Australian food production by about \$13 billion each year. In Tasmania, the conservative estimates by agronomists is of a yield benefit across the major crops grown in the state of about 20 per cent.

The benefit of pesticides to Tasmanian agriculture

If the use of registered pesticides is restricted in Tasmania, it could mean a major loss of agriculture and food value to the state

Agricultural crops are host to many insects, bacteria, fungi and weeds that may cause an economic loss if left untreated.

Pesticides are developed to act on the specific pest or disease and eliminate, or at least reduce to an acceptable level, the infestation.

Collar rot, powdery mildew, downy mildew, sclerotinia and alternaria are diseases that commonly affect Tasmanian agricultural crops. Diseases spread in a logarithmic manner, and when left untreated, they can infect and destroy the whole crop.

Some susceptible crops are treated with a protective pesticide that is applied early in the growing cycle or to the seeds to prevent disease development. Protecting the crop against disease early during the growth cycle ensures rapid growth and development of above and below ground plant components. If a disease is detected through crop monitoring at a level that requires treatment, a curative regime will be put in place.

Cut worm, diamond back moth, cabbage white butterfly, aphids and nematodes are the major insect pests in Tasmanian crops. Snails and slugs are also a common problem. Insects damage the physical appearance of a crop and can result in the crop being rejected by processors and consumers.

Weeds invading Tasmanian agricultural crops include the common brassica weeds, fat hen, nighshade, patterson's curse, cleavers, pink weed, hogweed, poppies (wild in poppy crops and both wild and alkaloid in pea crops) and grass weeds. Weeds compete with crops for sun, nutrients and water.

The manual or mechanical control of weeds in some crops is uneconomical, ineffective and inefficient. Herbicides make weed control more effective and economic, resulting in productivity and quality gains. Herbicides are sometimes only needed during the crop establishment phase, such as with potatoes and plantations. In other crops such as carrots, peas and poppies, weeds are a problem throughout the growth cycle and herbicides may be applied a number of times.

Across Tasmanian horticultural industries crop losses of upwards of 20 per cent could apply without the use of the pesticides that are currently available. This has an immediate cost to producers and has flowon effects to processors, service industries and local communities. The end result is an increase in the cost of food for consumers and potential health impacts if the affordability of fresh fruit and vegetables decreases.

In individual crops, the losses can be substantial enough to make the growing of the crop uneconomic in Tasmania. For example:

- The 2005 crop value of peas in Tasmania was \$13.3 million based on an estimated annual production of 32,600 tonnes. Loss of access to the main pesticides for peas would mean significant losses in yield as a result of weeds (estimated 15 per cent) and disease infection through collar rot (up to 50 per cent) and downy mildew (estimated 20 per cent). Conservatively, losses of yield from different sources will be at least 15 per cent, causing a loss in farm gate value of at least \$2 million.
- The total value of potato production at the farm gate is estimated at \$96 million with in the order of 415,000 tonnes produced. Weed contamination in potatoes can result in 20 per cent loss of yield. Diseases such as target spot, rhizoctonia and late blight can each contribute upwards of 10 per cent losses if left unchecked. This equates to losses at a minimum of \$10 million in farm gate values.
- Poppies are host to several diseases that may cause an economic loss to the crop if left untreated. Weeds too can have an impact. During the establishment stage, weeds can smother the early seedlings and can significantly reduce the quality of the crop if they are present at harvest. In 2005 the total direct value of the poppy crop was some \$50 million. Without the availability of disease and weed control there could be a loss in the order of 20 per cent across the industry.

Pesticides are a tool of integrated crop management

Pesticides are just one of a number of tools used by farmers to prevent and manage pest and disease infestations as part of an integrated crop management approach

Many farmers in Tasmania use an integrated crop management (ICM) approach to optimise growing conditions and so maximise crop yields and financial return. An important component of ICM is the prevention of pest and disease infestation through the use of various farming practices and protective regimes, regular monitoring of the crop for pests and diseases and only introducing curative programs when infestation reaches threshold levels.

Integrated crop management incorporates:

- good plant and soil nutrition as healthy plants are less susceptible to plant diseases
- the use of cultural methods such as crop and paddock rotations, stubble retention, separating rows of crops to encourage air flow, which reduces fungal diseases, ground preparation and the timing of sowing
- matching crop varieties to soil type or using varieties with tolerance or resistance to key pest or disease organisms
- monitoring of the weather and the irrigation schedule as both have a marked effect on pest and disease development, and can influence their spread and severity
- monitoring of soil moisture levels to achieve balanced irrigation levels and minimise the spread of any pests and diseases
- ensuring that planting stock is free of disease
- the use of informal and formal threshold levels that determine whether the pest is at a level that will cause economic damage and therefore requires treatment
- the introduction of beneficial predators and parasites when appropriate
- preventative control programs that include pesticides
- curative control programs that include pesticides.

Pesticide safeguards

All pesticides used in Australia are subject to rigorous testing before being approved for use

There is a number of controls in place to ensure that the safety of people, animals and the environment are protected while still allowing Tasmanian farmers to use pesticides. These safeguards are:

- the registration and approval process for pesticides
- the control of their use by the Tasmanian Government
- the establishment of maximum residue limits
- testing for residues
- reporting to government of unintended or unexpected effects of pesticides on humans, animals or the environment
- industry based quality assurance programs and codes of practice
- stewardship by pesticide manufacturers, distributors and users.

Registration of pesticides

Before a pesticide can be legally supplied, sold or used in Australia it must be registered by the Australian Pesticides and Veterinary Medicines Authority (APVMA).

Each pesticide product submitted to the APVMA for registration undergoes detailed scientific assessment in four critical areas before it can be approved. These areas are:

- human and animal health and safety
- environmental safety
- efficacy (that is, does the product work when applied as proposed on the label)
- impacts on international trade.

In evaluating products, the APVMA is required by Commonwealth legislation to take full account of the nature of the product, the scientific quality of the data, comments from relevant Commonwealth advisory agencies, State and Territory departments and other stakeholders, including the public and the proposed registrant of the product.

The APVMA also has a permit scheme in place that allows for the legal use of pesticides in ways that are different to the uses set out on a product label. Obtaining a permit requires the applicant to satisfy the same criteria as for registration.

Registration can also be required for biological and natural products if the product claims to control a particular pest or disease or to have beneficial effects.

Pesticides are not registered forever. The APVMA has an on going program that reassesses older pesticides to ensure that they meet today's standards for safety and efficacy. In addition, the APVMA has the legislative power to review specific products if possible or unexpected problems are identified with their use.

Information on the registration process can be obtained from the APVMA at www.apvma.gov.au.

Control of use

State and Territory governments regulate the use of pesticides after they have been sold. These regulations cover:

- basic training requirements of users
- licensing of commercial spray operators
- residue monitoring
- arrangements to enforce the safe use of pesticides, including the use of codes of practice, spray drift guidelines, user awareness raising initiatives and the transport and storage of pesticides that may be designated as dangerous goods.

Information on Tasmanian control of use regulations can be obtained from the Department of Primary Industries and Water at www.dpiw.tas.gov.au.

Establishment of maximum residue limits

There are Australian Standards for pesticide residues, called maximum residue limits (MRLs). The MRL is the highest concentration of a specific residue that is legally permitted in a food or animal feed. These Australian Standards are set out in the Australia New Zealand Food Standards Code.

The APVMA, in conjunction with Food Standards Australia New Zealand, ensures that MRLs are set at levels that are acceptable for both long and short term human exposure in the diet.

MRLs help to monitor that pesticides have been used as directed on the approved label. If an MRL is exceeded, it usually indicates that the pesticide has not been used correctly and does not normally indicate a public health or safety concern.

The Tasmanian Government regulates which registered pesticides can be used in the state and can place restrictions on how and when they are used

Maximum residue limits help monitor that a pesticide is being used as directed on the approved label

In addition to precise measurement and application in accordance with the label instructions, growers also abide by withholding periods (the period of time between application and harvest) to minimise the risk of residues rising above the MRL.

The APVMA and Food Standards Australia New Zealand have further information about MRLs at:

www.apvma.gov.au/residues/mrl_standard.shtml
www.foodstandards.gov.au

Testing for pesticide residues

Modern technology enables scientists to detect minuscule amounts of pesticides or any breakdown products that remain in or on a product. The Australian Government has declared that residues are not a health hazard at the low concentrations at which they are legally permitted.

The National Residue Survey, which is a regular program of testing for residues, shows that 99.9 per cent of food produced in Australia has no detectable residues or is below the MRL. Any food with residues in excess of the MRL is investigated by government agencies and appropriate action implemented.

In addition to this government testing, many commodity groups, food processors, food manufacturers and retailers that source food from Tasmania monitor produce for residues.

For further information about the National Residue Survey see www.daff.gov.au.

The Tasmanian Government monitors waterways and streams across the State for pesticide residues. The list of pesticides monitored includes those most commonly used in agriculture and forestry. Other pesticides have been chosen for monitoring due to their high toxicity or their potential mobility in the environment. Results from the monitoring so far paints a good picture about water quality and responsible pesticide use with results well within the health guidelines. The health guideline refers to the level to which the occurrence of a pesticide in drinking water may be consumed life long without risk to health.

For further information on the monitoring program see www.dpiwe.tas.gov.au/new.

Australian Government research shows that 99.9 per cent of Australian foods tested have no detectable residues or are below the maximum residue limits

The Tasmanian Government monitors waterways and streams across Tasmania for pesticide residues

Adverse Experience Reporting Program for Agricultural Chemicals

The APVMA investigates any report of an adverse experience that occurs after the use of, or exposure to pesticides

The APVMA has established an Adverse Experience Reporting Program (AERP) for Agricultural Chemicals to further facilitate the responsible management of pesticides. The reporting and investigation of adverse experiences involving pesticides will help the APVMA ensure that products on the market remain safe, effective, are of acceptable quality, are used in the best possible way, and that instructions and warnings on labels are appropriate.

All members of the community are encouraged to report any adverse experience that has occurred after the use of, or exposure to pesticides. Reports received by the APVMA are assessed to determine whether or not the adverse experience is related to the use of, or exposure to the product. Based on the assessment, certain risk mitigation strategies or corrective actions may be required.

Further information on the AERP and APVMA reporting of adverse experiences can be obtained from www.apvma.gov.au.

Quality assurance programs and codes of practice

Quality assurance programs and codes of practice ensure farmers use pesticides correctly

Quality assurance is a system of self regulation that has been incorporated into successful farming operations to ensure that they meet best practice quality and safety standards. Many commodity groups, food processors, retailers and other fresh food handlers require farmers to comply with their own quality assurance programs. These include the farmer or contractor being appropriately qualified to handle pesticides, paddock records showing what pesticides have been used to control what pests or diseases, the dates of application to ensure the legal use of pesticides and that withholding periods and timing windows have been adhered to in accordance with the label specifications.

Some industry sectors have developed and introduced codes of practice to improve standards and application techniques.

Information on quality assurance schemes operating in Tasmania can be obtained from Tasmania Quality Assured at www.tqainc.com.au.

Stewardship protects people and the environment by reducing the risk of any unintended effects of pesticides

Stewardship

Pesticide manufacturers and farmers are committed to stewardship of their products and the land. Stewardship protects people and the environment by reducing the risks of any unintended effects of pesticides.

Pesticide manufacturers either collectively or individually undertake a range of activities to ensure that their products are developed, used and disposed of appropriately.

The vast majority of pesticide manufacturing companies operating in Australia participate in these stewardship initiatives:

- The Agsafe Guardian program – the national accreditation scheme that ensures that premises where pesticides are manufactured, stored or sold and staff operating at these sites comply with regulations relating to the storage, handling, transport and provision of professional advice in relation to pesticides and fertilizers.
- **drumMUSTER** – the national program that collects and recycles empty, cleaned, non returnable plastic and steel pesticide containers preventing their build up on farms. This initiative has diverted 11,000 tonnes of plastic and steel from landfill Australia-wide and 71 tonnes from landfill in Tasmania.
- ChemClear® – the program that collects unused and unwanted registered pesticides. This prevents the accumulation of unwanted products in the community, therefore protecting farm workers and the environment.

Farmers are Australia's frontline environmentalists and as such embrace eco friendly farm practices and innovative technology to enhance and protect their land holding and thereby the nation's natural resources.

Many Tasmanian farmers participate in the **drumMUSTER** and ChemClear® programs, as well as obtaining training and accreditation in the use of pesticides through programs such as *ChemCert*.

In addition, pesticide application equipment is being continually modified to improve pesticide application effectiveness and reduce wastage. Tasmanian farmers are very advanced in the uptake of new application technology.

Information on stewardship can be obtained from Agsafe at www.agsafe.com.au and *ChemCert* at www.chemcert.org.au.

For further information

Registration of pesticides, labeling of pesticides, Maximum Residue Limits, Adverse Experience Reporting Program for Agricultural Chemicals

State information, regulations and licensing

National Residue Survey

Pesticide manufacturing, formulation and distribution

Quality assurance programs

Training for pesticide users

Farm safety

Farmer organisation

Stewardship programs

Contact

Australian Pesticides and Veterinary Medicines Authority
Ph. 02 6272 5852
www.apvma.gov.au

Department of Primary Industries and Water
Ph. 1300 368 550
www.dpiw.tas.gov.au

Chemical Management Unit 1300 368 550
Spray Information & Regional Unit 1800 005 244

Australian Department of Agriculture, Fisheries and Forestry (DAFF)
Ph. 02 6272 3446
www.daff.gov.au/nrs

CropLife Australia
Ph. 02 6230 6399
www.croplifeaustralia.org.au

Tasmanian Quality Assured
Ph. 03 6424 6612
www.tqainc.com.au

ChemCert
www.chemcert.org.au

Workplace Safe
Ph. 1300 366 322 (Tasmanian callers)
Ph. 03 6233 7656
www.workplacesafe.tas.gov.au
www.farmsafe.org.au

Tasmanian Farmers & Graziers Association
Ph. 03 6332 1800
www.tfga.com.au

Agsafe
Ph. 02 6230 4799
www.agsafe.com.au



TAPG Contact Details:

**Rowena Bell
Executive Officer
304 York Street
Ph: 6331 5369
Launceston 7250
Rowena61@bigpond.net.au
www.tapg.net**