

Seed Treatment Stewardship Strategy



Incorporating CropLife Australia's
Seed Treatment Best Practice Guides

Supporting partners



This Strategy is part of CropLife Australia's Pollinator Protection Initiative

Pollinator Protection Initiative

CropLife AUSTRALIA



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Disclaimer

This document exists only to raise awareness of best practice in the use of seed treatments for anyone involved in the seed industry. CropLife Australia accepts no liability for any negative consequences to readers of the Strategy, or any third party or entity affected by the actions of someone following the guidance of the Strategy. Following the Strategy does not eliminate any risk that seed treatments may present to pollinators.



About this Strategy

Seed treatments are an excellent example of how the seed industry and crop protection industry provide Australian farmers with pioneering tools to meet ongoing food security challenges. Seed treatments act as a delivery mechanism for pest and disease management products to improve the production and yield opportunities of the crop. They are specifically tailored to meet farmers' pest and disease control needs while minimising risks to health, safety and the environment.

The Seed Treatment Stewardship Strategy (the Strategy) includes four specific stewardship and best practice guides, which outline measures to reduce risks from dust generated during handling and planting of treated seed and provides guidance on industry best practices to minimise off-target movement of pest and disease management products. The Strategy complements existing strategies for treated seed stewardship like those developed by the Australian Seed Federation and the Rural Industries Research and Development Corporation.



Foreword

CropLife Australia is proud to present the Seed Treatment Stewardship Strategy. This Strategy is part of CropLife's Pollinator Protection Initiative (PPI). The PPI recognises the importance of pollinators for Australian agriculture and the environment. It provides resources to ensure that modern, innovative crop protection products are used responsibly and in a manner that minimises risk to pollinators. The Initiative also provides tools that facilitate improved communication between Australia's farmers and beekeepers.

The PPI is part of CropLife Australia's *stewardshipfirst* program, which takes a whole-of-lifecycle approach to the plant science industry's products. CropLife member companies contribute more than \$13 million a year to stewardship activities, which ensures their products are sustainably managed for the benefit of users, consumers and the environment. The *stewardshipfirst* program includes CropLife's mandatory Code of Conduct for members, its comprehensive Resistance Management Strategies and programs run by CropLife's wholly owned subsidiary Agsafe, which include **drumMUSTER**, ChemClear® and Agsafe Accreditation and Training.

CropLife and its members are committed to providing Australian farmers with the latest, modern, innovative crop protection and agricultural biotechnology tools that allow them to produce high quality food, feed and fibre for Australia and the world. CropLife will continue to operate a world class stewardship program to ensure that these tools are managed properly and responsibly.

Matthew Cossey

Chief Executive Officer of CropLife Australia



Glossary

Active constituent	A chemical that prevents, destroys, repels or mitigates a pest.
Agsafe	CropLife Australia's wholly owned subsidiary responsible for the operation of plant science industry stewardship programs, such as drumMUSTER , ChemClear® and Agsafe Accreditation and Training.
Australian Seed Federation	The peak industry body for the Australian seed industry.
Australian Pesticides and Veterinary Medicines Authority (APVMA)	The Australian Government authority responsible for the assessment and registration of pesticides and veterinary medicines.
Foliar spray applications	The application of liquid chemicals to the leaves of plants.
Food and Agriculture Organization of the United Nations (FAO)	An agency of the United Nations that leads international efforts that aim to reduce and defeat hunger.
Insecticide	A substance or mixture of substances intended for preventing, destroying, repelling, or mitigating insects.
Personal protection equipment (PPE)	Anything used or worn by a person to minimise a risk to the person's health or safety. PPE may include eye, hearing, respiratory, foot, head and body protection. Examples include goggles, gloves, ear plugs and filter respirators.
Pollinator	A living agent that fertilises plants by moving pollen from the male anthers of a flower to the female stigma of a flower. Common pollinators include bees, other insects and vertebrate animals.
Safety Data Sheet (SDS)	A document that provides information on the properties of hazardous chemicals and how they affect health and safety in the workplace. Previously called a Material Safety Data Sheet (MSDS).
Seed flow lubricant	A material added to seed to aid in seed flow in a planter. Such products are added when the seed is loaded into the planter, or may be metered in during planting. Lubricants are generally powders, with talc and graphite being the most common.
Seed treatment products	Chemical pesticide solutions that are applied to seeds before planting, which offer protection against pests, seeds and plant diseases, increased crop vigour, stands and yields.

Introduction

CropLife Australia is the peak industry organisation for the agricultural chemical and crop biotechnology sectors in Australia.

Our members innovate, research, develop, register and produce high quality crop protection products, including seed treatments, for use by the Australian agriculture and land management sectors. Our members are committed to stewardship throughout the entire product life cycle.

In Australia, a risk assessment is conducted on all agricultural chemical products including seed treatments by the Australian Pesticides and Veterinary Medicines Authority (APVMA), during the registration process. This ensures that when used in accordance with label directions, chemical crop protection products present no unacceptable risk to users, consumers or the environment. Stewardship is an essential component in establishing processes and procedures to efficiently manage these products throughout their life cycle. This includes during transport, usage, storage and disposal of unwanted product, empty containers and packaging.

This Strategy applies to on- and off-farm commercial seed treatment operations, and to on-farm farmer applied seed treatments. Indeed, as on-farm operations can present some additional risks, resulting from being potentially less controlled environments and due to factors such as the presence of farm animals, extra care needs to be taken to ensure that seed treatment operations can be conducted safely and sustainably.

Successful stewardship requires collaboration, engagement and support by all stakeholders. Where this occurs, the community can be assured that best practices are being consistently applied for the safety of users, consumers and the environment, including and especially for managing any risks to pollinators.





Importance of pollinators

Pollinators, particularly bees and other insects, are essential to producing a wide variety of high-yielding crops. Farmers rely on pollination services from both wild bees and domesticated honey bees. Global increases in the demand for food mean that bees are being called upon to pollinate more crops than ever before and this trend is set to continue. At the same time, environmental pressures, parasites, viruses and other toxins continue to place increasing stress on bees.

The largest portion of plants produced for human consumption and animal feed in Australia are crops such as wheat, barley and rice, which self pollinate. However, many foods such as almonds, watermelons, pumpkins, canola and avocado are to some degree dependent on pollinators and yield reductions of up to 90 per cent would occur without pollinating insects. While it is difficult to quantify the value of pollination by bees, 65 per cent of horticultural and agricultural crops introduced into Australia since European settlement require bees for pollination. The vast majority of these bees are wild European honey bees that have naturalised into the Australian environment.

Pollinators are also essential to maintaining species diversity and health of the natural environment.

Insecticide treated seed

Some insecticides used on-farm to control insect pests may present a hazard to non-target, beneficial insects, including bees. Research, development and leadership by the plant science industry have facilitated the introduction of modern insecticidal seed treatments which has significantly reduced this hazard by taking the insecticide and incorporating it into a film which coats the seed. This coating is designed to protect the seed from soil pests, but can also protect the developing seedling from sucking pests, as the insecticide from the seed coating is transported into the seed and then into the plant.

This approach has reduced the need for foliar spray applications to crops and therefore the potential for direct exposure of bees and other pollinators. There have, however, been occasional bee health related incidents overseas where dust associated with insecticide treated seed escaped into the environment during the seed planting process. To minimise the risk of exposure, it is important to ensure that at each stage of the seed treatment process, appropriate measures are put in place to minimise off-target movement of chemicals. This in turn, minimises exposure to the environment, pollinators and other beneficial insects.





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A guide for manufacturers of seed treatment products

Seed treatment product application stewardship guide

A guide for on- and off-farm applicators of seed treatment products

Treated seed planting stewardship guide

A guide for farmers and contractors handling and sowing treated seed

Best management practice guide for planting insecticide treated seed

A guide for those involved in planting insecticide treated seed to minimise the risk to pollinators.





Seed treatment product manufacture stewardship guide

A guide for manufacturers of seed treatment products



Manufacture of the seed treatment product

General safety requirements

Manufacturers of seed treatment products should comply with all safety standards and requirements applied for the manufacture of agricultural chemical products. This includes obligations imposed by:

- Relevant workplace health and safety laws
- CropLife Australia Code of Conduct requirements regarding worker safety, and
- The Food and Agriculture Organization International Code of Conduct on the Distribution and Use of Pesticides.

Manufacturing premises and staff involved in handling, transporting and storing chemicals should be Agsafe accredited, or operating to an equivalent accreditation standard. This includes ensuring employees that come into contact with hazardous chemicals are trained, experienced and have access to appropriate personal protective equipment (PPE).

Formulation of seed treatment products

Formulations designed and registered to treat seeds must be manufactured to meet quality standards. The particular properties of the seed treatment product may have an impact on the health and environmental risk associated with any seed treated with the product.



Treated canola seeds - courtesy of Bayer CropScience

Four key criteria should be considered when developing seed treatment products.

- **The stability of each component of the seed treatment product**
Many seed treatments employ a combination of chemical constituents to control diseases and pests.
- **Ease of use for different seed treatment processes**
Seed treatment products should be formulated in a way that allows them to be used in the range of seed treatment processes and equipment regularly used in Australia. For example, during the application process, the seed treatment product should not contribute to build up in the application equipment, transfer equipment or bagging line.
- **The adherence properties of the seed treatment product**
Seed treatment products should be formulated so that they provide even coverage, adhere strongly to seeds, but do not stick to treatment or planting equipment. Polymers may be added to seed treatment products to improve the ability of the product to adhere to seed and minimise the generation of dusts during treatment, transport and planting operations.
- **The colour of treatment products**
Dyes/pigments must be used to clearly mark seeds treated with a seed treatment product. This is done to ensure treated seeds are not mistakenly used for consumption by humans or animals.

Labelling of seed treatment products

Labels for agricultural chemical products are regulated by the APVMA. Labels for seed treatment products must comply with all regulatory requirements for labelling of agricultural chemical products. In addition, labels may also include appropriate statements to alert growers and applicators to the potential hazard that treated seed dust can pose to bees and other pollinators and provide information regarding best management practices to be employed during the planting of treated seed. In the case of professional seed treatment, it is important that such label information is transferred to the grower by means of treated seed labels/bag tags.



Safe storage of seed treatment products

Information about the proper storage of seed treatment products can be found on the product label. Commonwealth, state and territory regulations may impose additional storage requirements that must be followed.

Considerations for storage of seed treatment products include:

- Storage should be in accordance with product label directions
- Products should be stored securely, out of reach of children, livestock, wildlife and unauthorised persons
- Storage facilities should be well ventilated and equipped for adequate containment in the event of spills or leakages from containers, and
- Safety Data Sheets (SDSs) for all treatment products should be stored on-site and readily available.

Safe transport

Care is required for the safe transport of seed treatment products. Loads should be firmly secured on the vehicle to minimise any impact in case of a collision. Documentation for the seed treatment products, including SDSs, should be available with the shipping documentation. Requirements of the Australian Dangerous Goods Code must be followed.

Operators moving seed treatment products should take care during loading and unloading to prevent spills and leaks.



Agricultural chemicals stored in a warehouse - courtesy of Agsafe





Seed treatment product application stewardship guide

A guide for on- and off-farm applicators of seed treatment products



Treating seed and using seed treatment products

General safety requirements

Users of seed treatment products should take care when treating seed to ensure that the safety of workers and others is protected at all times. Instructions for the safe and responsible use of seed treatment products are detailed on the seed treatment product label. Additional information with respect to the hazards of the product can be found on the product's SDS.

To ensure safety, workers applying seed treatments must comply with relevant state chemical certification requirements and be appropriately trained and competent. Procedures for seed treatment operations should be fully compliant with all relevant workplace health and safety laws.

Workers must:

- Ensure seed to be treated is good quality seed, free of dust
- Follow product label instructions for applying seed treatment products
- Ensure that application equipment is calibrated to accurately apply the target rate
- Minimise operator and environmental exposure to seed treatments, treated seed and dust from treated seed
- Wear appropriate PPE, which may include gloves, eye protection and respiratory protection, and
- Observe any precautions prescribed on the seed treatment product label including:
 - The signal heading
 - Safety directions, and
 - Any treatment product use, rehandling precautions or disposal restraints.

Any specific questions regarding the appropriate use of a seed treatment product should be directed to the product registrant or supplier.

Seed dust contains grain/plant material and biological contaminants that may cause adverse health reactions such as allergies and occupational asthma. Dust from seeds treated with seed treatment products may present additional risks based on the toxicity of the seed treatment.

Workers should employ measures that maximise dust extraction before the seed treatment process and minimise dust generation during treatment operations. Minimising the presence of dust reduces the potential exposure of workers and the environment to seed and seed treatment dusts.

Care should be taken to avoid seed and seed treatment dusts, seed treatment products and liquids/machinery washings contaminated with seed treatment products from being accidentally released into the environment. Liquid waste may contaminate waterways, while contaminated dusts may drift and deposit onto non-target locations.

Application of seed coating technologies

The composition of seed coatings may include materials other than the core chemical active constituent. Coatings may include dyes, polymers, water and other materials designed to improve the performance of the seed coating. Care must be taken to maintain the quality of the resultant treated seed in order not to affect germination.

Quality of treatment is dependent upon the composition of the applied material, the application rate to the seed, process conditions, treatment procedures, quality and cleanliness of untreated seed and the application equipment. Each of these quality factors must be controlled to ensure a safe, effective and high quality treated seed, with properties that assist the sound environmental management of the product.



Environmental safety

Environmental safety involves managing seed treatments to minimise the risk to non-target organisms. Sensitive environmental factors to be aware of include, but are not limited to:

- Risks to bees and other pollinators
- The presence and location of beehives
- Risks to water quality, including streams, ponds and rivers, and
- The presence of nearby flowering plants such as weeds and crops.

Appropriate management actions can improve environmental safety and minimise any risk to non-target organisms. Persons conducting seed treatment operations should:

- Seek to minimise off-target movement of pesticide and seed dust from seed treatment operations by:
 - Using high quality seed free from dust, and
 - Avoiding the release of dust into the air.
- Consider the presence of any downwind sensitive areas and the impact of wind speed and direction
- Consider the presence of any nearby managed beehives, flowering crops or flowering weeds and avoid contaminating them with dust from seed treatment operations, and
- Consider nearby waterways and avoid contaminating them with dust. Disposed wash water must not contaminate rivers, streams or other water sources.



On-farm grain auger

Treating seed safely

All personnel engaged in seed treatment must wear appropriate PPE. In addition to regular workplace clothing, persons conducting seed treatment operations should consider additional PPE including gloves, overalls, eye protection and respiratory protection, using the label safety directions as a guide to minimum PPE.

If spills occur, treated seed should be securely covered and collected as soon as possible to prevent exposure to humans, animals and the environment.

On-farm augers used in the seed treatment process should be cleaned after use to prevent contamination of future parcels of grain.

Training

Persons conducting seed treatment operations should be appropriately trained and competent. Workers must be able to read and understand seed treatment product labels and apply appropriate systems to safely handle and use seed treatment products.

Where appropriate, workers should participate in an Agsafe Accreditation and Training program, or an equivalent training program.

Workers should comply with the Australian Seed Federation's *National Code of Practice for the Use of Seed Treatments* with respect to accreditation, training and competency requirements.¹



Assortment of personal protective equipment

¹Australian Seed Federation 2010. "National Code of Practice for the Use of Seed Treatments". Available at <http://www.asf.asn.au/>

Labelling of treated seed

Treated seed needs to be identifiable and as a minimum, should be labelled in accordance with the Australian Seed Federation's *National Code of Practice for Labelling and Marketing of Seed for Sowing*.²

Seed that has been treated with an insecticide treatment product may require additional guidance for users to highlight risks to pollinators.

Sample statements may include:

"Dust generated during planting of treated seed may be harmful to bees and other pollinators. To help minimise the dust generated during planting operations, refer to the 'Best management practice guide for planting insecticide treated seed' available at www.croplife.org.au."

"Any spilled or exposed seeds must be incorporated into the soil or otherwise cleaned up from the soil surface."

"When using vacuum pneumatic sowing machines the exhaust air should be re-directed to the soil and released close to the soil surface."

Equipment washing

All equipment used in treating seed should be thoroughly washed after use to remove residual traces of the seed treatment product. This prevents cross-contamination between different seed lots. All rinse water must be responsibly disposed of.

- Do not discharge rinse water to ground water, surface water or septic systems.
- Minimise rinse water. Wash out equipment only when necessary.
- Re-use rinse water if possible to dilute the next batch of the same formulation. Be aware of the potential for cross-contamination if the new formulation contains different active constituents. Consider the potential for increased concentration of active constituent if significant amounts of rinse water are used.

Storage of treated seed

Treated seed:

- Should be kept in a secure storage facility with restricted access
- Should be protected from direct sunlight and precipitation
- Should be kept out of reach of children, livestock, wildlife and unauthorised persons, and
- Should be stored separate from other grain and seeds.

In addition, commercial facilities storing treated seed should also keep treated seed in a facility that:

- Is well ventilated and temperature controlled, and
- Has adequate lighting.

Treated seed transport

Care is required for the safe transport of bagged and bulk treated seed. Loads should be firmly secured on the vehicle to minimise any impact in case of a collision. All bags used for transporting treated seed should be properly labelled to assist proper management in the event of an accident. Where treated seed is spilled, it should be collected immediately to reduce exposure risks.

Handlers should handle treated seed carefully to minimise dust generation during handling and transport operations. Forklifts and tractors can puncture seed containers causing spillages.



Treated sunflower seeds - courtesy of Syngenta

² Australian Seed Federation 2013. "National Code of Practice for Labelling and Marketing of Seed for Sowing". Available at <http://www.asf.asn.au/>



Treated seed planting stewardship guide

A guide for farmers and contractors handling and sowing treated seed



Using treated seed and planting

General safety requirements

Users of treated seeds should take care to ensure that workplace safety is protected at all times. Workers must comply with all requirements of Commonwealth, state and territory work health and safety legislation.

Treated seed transport

Care is required for the safe transport of bagged and bulk treated seed. Loads should be firmly secured on the vehicle to minimise any impact in case of a collision. All bags used for transporting treated seed should be properly labelled. This assists proper management in the event of an accident. Where treated seed is spilled, it should be collected immediately to reduce exposure risks.

Handlers should handle treated seed carefully to minimise dust generation during handling and transport operations. Forklifts and tractors can puncture seed containers causing spillages.



Beehives next to a canola crop

Environmental safety

Environmental safety involves managing treated seeds to minimise the risk to non-target organisms. Sensitive environmental factors to be aware of include, but are not limited to:

- Risks to bees and other pollinators
- The presence and location of beehives
- Risks to water quality, including streams, ponds and rivers, and
- The presence of nearby flowering plants such as weeds and crops.

Appropriate management actions can improve environmental safety and minimise any risk to non-target organisms. When conducting seeding operations farmers should:

- Seek to minimise off-target movement of pesticide and seed dust from planting operations by:
 - Using high quality seed free from dust
 - Taking care to avoid the release of dust into the air when loading seed into hoppers
 - Avoiding the release of dust into the air during seeding by using a deflector in the case of pneumatic vacuum planting and seeding equipment, and
 - Using seeds with a coating system that minimises abrasion and consequent dust generation.
- Consider the presence of any downwind sensitive areas and the impact of wind speed and direction
- Consider the presence of any nearby managed beehives, flowering crops or flowering weeds and avoid contaminating them with dust from planting operations
- Avoid times of the day when bees are actively foraging, and
- Consider nearby waterways and plan planting operations to avoid contaminating them with dust from planting. Disposed wash water must not contaminate rivers, streams or other water sources.



Filling planting/seeding equipment safely

In addition to regular workplace clothing, all personnel engaged in loading treated seed should wear appropriate PPE including gloves, overalls, eye protection and respiratory protection.

Loading operations should occur at least ten metres inside the field to be planted, avoiding proximity to apiaries/beehives, hedges, water sources or flowering crops and weeds.

When opening seed bags, or when filling or emptying the planter, position your back to the wind to avoid breathing any released dust.

If spills occur, treated seed should be securely covered and collected as soon as possible to prevent exposure to humans, animals and the environment.

Avoid releasing dust that may have accumulated in bags and bulk seed containers during transport. Aim to keep any dust in the treated seed bags by not shaking the bags when filling the planting machine.

Planting/seeding

Planting/seeding equipment that uses pneumatic vacuum metering devices may increase dust exposure to pollinators. Some may have exhaust vents directed into the air which, in combination with high operating pressures, may increase the amount of dust emitted to the air. Operators should install deflector equipment to reduce emission of dust into the air.

Whenever conducting seeding operations, operators should:

- Consider the appropriateness of gloves, eye protection and respiratory protection during seeding operations
- Comply with all label instructions for seeding operations
- Direct planter exhaust downward towards the soil surface when using pneumatic vacuum metering devices for planting/seeding equipment
- Ensure that planting equipment is calibrated according to manufacturer's specifications

- Consider environmental factors, such as wind speed, direction and air temperature, when opening containers, filling and emptying the planting machine, and
- Consider using seed flow lubricants to minimise seed abrasion and dust generation during planting of treated seed. Currently graphite and talc may be used as seed flow lubricants. Avoid excessive use as this may contribute to abrasion of the seed coating.

Users should consider CropLife Australia's *Best management practice guide for planting insecticide treated seed* to ensure that risks to pollinators from seeding operations are properly managed.³

Equipment washing

All equipment used for planting treated seed should be thoroughly washed after use to remove residual traces of the seed treatment product. This prevents cross-contamination between different seed lots. All rinsate must be responsibly disposed of.

- Do not discharge rinse water to ground water, surface water or septic systems.
- Minimise rinse water and wash out equipment only when necessary.

Waste disposal

Consider increasing sowing rate or double planting within a portion of the field at an agronomically acceptable rate to avoid a small amount of excess treated seed. Treated seed intended for storage and use at a later date should be returned to its original container for storage. Unwanted treated seed should not be fed to livestock.

CropLife members participate in industry stewardship initiatives to facilitate the responsible and safe disposal of waste chemical and empty chemical containers. Empty chemical containers should be rinsed and disposed of in accordance with the **drumMUSTER** program. Unused and unwanted chemical product should be registered for collection under the ChemClear® program.

Unwanted treated seed containers should be disposed of in accordance with label directions. Bags which have held treated seed should not be used for any other purpose.

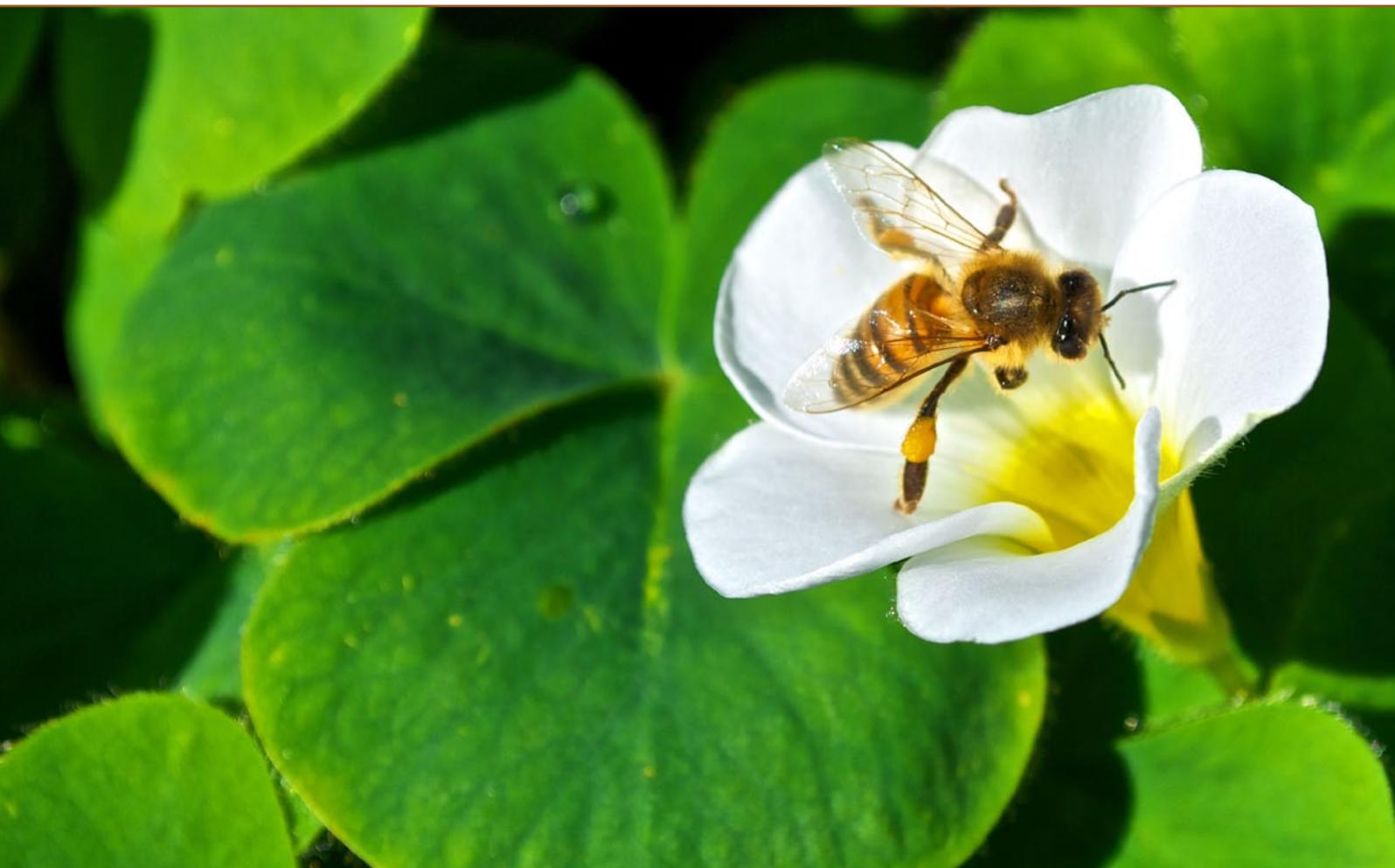
³ CropLife Australia 2014. "Best management practice guide for planting insecticide treated seed". Available at <http://www.croplife.org.au/industry-stewardship/>





Best management practice guide for planting insecticide treated seed

A guide for those involved in planting insecticide treated seed to
minimise the risk to pollinators



Pollinator protection and responsible use of treated seed

Wild and managed pollinators are vital to agricultural production in Australia. Many farmers use insecticides to protect their crop from insect pests. Insecticides can be toxic to insect pollinators, so care must be taken to ensure that desirable insects, such as bees, are not exposed to levels likely to cause harm. Applying insecticides as a seed treatment is one way that farmers can minimise insecticide exposure to off-target organisms, while effectively protecting their crop from damaging pests. However, depending on a range of factors, the process of planting treated seeds may emit dust containing pesticides into the air, placing pollinators at potential risk if they are exposed to the dust.

The following best management practices are provided as a toolbox of options to reduce the risk to pollinators from dust derived from treated seed.

Farmers must at all times follow all label directions. The practices outlined below should be considered in conjunction with label directions to ensure safe, sustainable and responsible use of seed treatment products.

More information on managing the risk to honeybees from insecticides generally is available in the publication *Honeybee Pesticide Poisoning – A risk management tool for Australian farmers and beekeepers*.

Know where beehives are located

Cooperation and communication between growers and beekeepers on the timing of seeding and the location of hives can help reduce the risk of bee incidents. Communication can allow beekeepers to confirm that hives are located upwind of the planting field or in shelter belts, and have access to clean water sources. It can also permit beekeepers to temporarily protect or relocate hives where feasible.

Note that bees can forage more than 5km away from hives.

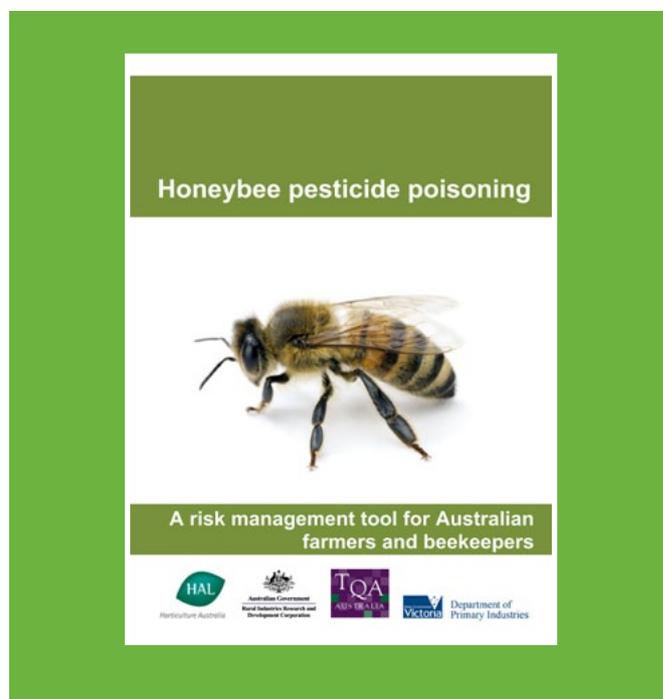
Weather conditions can influence pollinator exposure

Bees forage actively during the day at temperatures between 13°C and 37°C. Bees will also fly to collect water between 8°C and 46°C.

Pollinators can be exposed to treated seed dust when it is carried by air or when it is deposited onto flowering crops, flowering weeds or water. Very dry and windy conditions can favour dust transport, so seeding operations should be avoided during these conditions in sensitive areas.

Where possible:

- Avoid planting insecticide treated seed in dry and windy conditions close to areas where pollinators may be active
- Consider wind speed and direction and avoid planting if bees are foraging downwind, and
- Control nearby flowering weeds before planting to ensure bees are not attracted to the site.



Guide available from Rural Industries Research and Development Corporation - <https://rirdc.infoservices.com.au>



Avoid generating dust when handling treated seed

Follow best practices when handling and loading treated seed:

- Check that treated seed and coating are of high quality: seeds should be clean and the coating should be well adhered to the seeds
- Handle bags with care during transport, loading and unloading in order to reduce abrasion, dust generation and spillage
- Minimise the rehandling of bulk seed through augers and other equipment between treatment and planting in order to reduce abrasion, dust generation and spillage
- Do not load or clean planting equipment near beehives, flowering crops, flowering weeds or hedges
- Load seed carefully into the planter in such a way as to avoid the transfer of dust from the seed bag or bulk seed handling equipment
- Do not shake any loose material or dust from the seed bag into the planting equipment, and
- Avoid emptying final dusty grain from seed silos and bulk seed handling equipment into planting equipment.

Ensure planting equipment best practice

It is important to use planting equipment that minimises spillage and dust emission from the planter, and to follow planting equipment manufacturer directions.

- Follow the directions provided by planting equipment manufacturers and keep up to date on new use practices.
- Regularly clean and maintain planting equipment.
- For planters that discharge dust into the air, including those using pneumatic vacuum seed metering devices, use deflector equipment to reduce emission of dust and the potential for off-field deposit of dust onto flowering crops or flowering weeds.
- When utilising bulk seed handling equipment, consider making machinery alterations to achieve closed system transfer of seed, if this is not already the case, to reduce dust emissions to practically zero.

- Consider using deflector equipment, where appropriate, to reduce emission of dust into the air and off-field deposit of dust.
- Seed flow lubricants may affect the generation of dust during planting - carefully follow use directions.

Ensure proper clean up and disposal

Take care when cleaning up after planting seed and follow local disposal requirements.

- Spilled or exposed seeds and dust must be incorporated into the soil or cleaned up from the soil surface.
- Keep treated seed and dust away from surface water.
- Properly dispose of any dust or treated seed remaining in planting equipment. For example, empty into a container and vacuum any dust remaining in the hopper.
- Do not leave empty bags or left-over treated seed in fields or the environment.
- Participate in collection programs for seed bags where available.

Exercise pollinator-friendly practices throughout the growing season

Bees collect pollen, nectar and water from different sources that could become contaminated with pesticide residue. For example, bees collect pollen and nectar from flowering crops and flowering weeds, as well as water from puddles and moist soil in or beside fields.

- Avoid contamination of plants, soil and water sources that may be used by bees.
- Provide pollinator-friendly habitats - for example, lucerne, clover and wildflowers, away from active fields.

Report suspected pollinator pesticide poisonings

For pollinator poisonings related to treated seed, contact the APVMA on 1800 700 583 or by email: aerp@apvma.gov.au

Pollinator Protection Initiative

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