

Insecticide management for locusts

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1. Application / Scope

- Insecticides are used in the control of locusts and may be applied on the ground or by air in accordance with the policy *Locust response - Insecticides*.
- Land managers, contractors and Local Land Services (LLS) / NSW Department of Primary Industries (NSW DPI) personnel are responsible for ensuring insecticides are transported, handled, stored, used and disposed of according to the relevant legislation and regulations to ensure safety for non-target areas, people and the environment.
- Personnel managing and using hazardous substances must be trained and appropriately accredited to ensure their safety.

2. Abbreviations / Definitions

- EC: emulsifiable concentrate
- EOC: Emergency Operation Centre which may be the State Coordination Centre, Local Control Centre or Forward Command Post
- LCC: Local Control Centre
- LLS: Local Land Services
- NSW DPI: NSW Department of Primary Industries
- NSW EPA: NSW Environment Protection Authority
- PPE: personnel protective equipment
- Public Land Managers: managers of government lands
- SDS: Safety Data Sheet: required for each insecticide; must be less than 5 years since last review; must be provided by insecticide supplier (usually available on line)
- SWMS: safe work method statements
- ULV: ultra-low volume

3. Resources / Equipment

- Personal Protective Equipment (PPE) according to the insecticide label and safety data sheet (SDS)
- Storage facilities that comply with WorkCover NSW requirements
- Manual handling equipment
- Spray equipment eg booms, misters and boomless jets
- Appropriate forms and equipment for accurate calibration and application

4. Warnings

- Use of insecticides can result in undesirable impacts. A risk assessment must be undertaken before every insecticide spray application in order to assist in reducing the likelihood of negative consequences.
- Insecticides can only be distributed to landholders who meet the criteria in this procedure.
- NSW DPI and LLS must monitor their insecticide use and order new stocks in a timely manner.
- Only appropriately trained personnel are permitted to handle and use insecticides.

- Safety equipment including PPE required in controlling risks from hazardous substances, will be provided and must be regularly inspected, serviced, maintained and used accordingly.
- Always read and comply with the product label, permit and SDS.
- Refer to the safe work method statements (SWMS) listed:
 - *Driving vehicles*
 - *Manual handling – stores*
 - *Property visits.*
- Risk assessments must be undertaken before personnel use insecticides. Refer to the following risk assessments:
 - *Insecticide application for locust control*
 - *Use of spray units for the delivery of insecticide for control of locusts.*
- Hazardous substances risk assessments for each relevant insecticide must be completed.

5. Procedure

5.1. Safety

- Comply with requirements from the policy *Locust response – Insecticides*.
- Personnel must supply a copy of the insecticide SDS and permit (if applicable) every time an insecticide is issued to land managers and/or contractors, and ensure the label is intact.
- Personnel must read and understand the SDS, risk assessment, permit and label prior to handling an insecticide. Appropriate resources (eg PPE) must be available or accessible prior to use.
- Personnel must be monitored for insecticide exposure symptoms - refer to the SDS for symptoms.
- A suitable (current) first aid kit must be available in emergency operations centres and in all vehicles.

5.2. Health Surveillance

Health monitoring for NSW DPI and LLS personnel involved in handling and application of chemicals must be performed in accordance with the NSW Trade & Investment procedure - *Health Monitoring*.

- Base line testing must be carried out prior to use and with at least 30 days free of exposure to any other organophosphate.
- This is followed by regular tests during the period of use, usually in the middle and the end of a campaign.
- Detection of excessive cholinesterase depression will result in removal of the individual from exposure to allow the enzyme to regenerate.
- Intermittent use of organophosphates over 2–3 days, with a gap of a month or more between exposures to organophosphates, is unlikely to require health surveillance, unless symptoms of exposure develop. However, more extensive use of four days or more within a week and for several weeks continuously will require health surveillance.

5.3. Insecticide selection

Selection of insecticide may be influenced by factors including but not limited to: permit for purpose, storage and transport requirements, container sizes, cost, buffer zones, availability, operator safety, efficacy, harvest withholding period, grazing/feeding withholding period, export slaughter intervals and biological and environmental issues.

5.4. Supply and issue of insecticide

5.4.1. Supply to LLS from bulk stores

Insecticides are purchased by NSW DPI, placed in centralised stores and supplied to LLS for issue to land managers.

LLS must record transfers of insecticide from the licensed insecticide contractor or another LLS office in the *Chemical Storage Inventory & Order* form or similar.

LLS may request insecticide from NSW DPI by completing a task request form. Information must include – contact person, street address of LLS pesticide depot and insecticide amount

and type (number of cartons or boxes x number of containers in the carton or box x volume of container eg 4x4x2.5L Fenitrothion = 16 containers of 2.5L Fenitrothion). To minimise transport costs, a minimum of one pallet should be requested.

5.4.2. Supply to land managers

Personnel are responsible for:

- Inspection, verification and recording locust reports prior to issue of insecticide. Where inspection is not possible, the reason for non-inspection must be documented using the *Landholder Consultation Record*. Reasons may include large outbreaks or verified other locust reports in the area.
- Supplying insecticide without charge to LLS ratepayers when criteria in Table 1 have been met.

Note: Insecticide will NOT be issued for spraying crops or pastures, only locusts of sufficient density as per Table 1.

- Providing advice of the insecticide transportation requirements prior to collection. Insecticide transport must be in accordance with the label, permit and SDS.
- Checking that the issued container is correctly labelled, undamaged and not leaking.
- Issuing the oldest insecticide first. Check the batch number or date of manufacture.
- Completing the *Landholder Consultation Record* form and issue the required information.
- Advising the land manager to read and adhere strictly to the label, SDS and permit. If it is known that the land manager cannot read, the information should be read to them or it should be arranged for someone to read the label to them in each case where the insecticide is used.
- Completing the relevant chemical forms.

The label on some insecticides allows for both ground and aerial application. Ultra Low Volume (ULV) insecticide can be issued by LLS to landholders for aerial control at their own cost.

Table 1: Minimum target criteria for insecticide issue

Age	Activity	Minimum Density	Comment
Nymphs ≥ 2nd instar	Sub bands	31-80 per m ²	If mixed with bands & pose a considerable risk to other properties. Not for <i>Metarhizium</i> .
Nymphs ≥ 2nd instar	Banded	80+ per m ²	Optimal time to treat.
Adults (all species)	Roosting adults	11-50+ per m ²	If not roosting at time of inspection, land manager must demonstrate knowledge of the roosting habit, and give assurance of roosting density (which is supported by the adult density at time of inspection).
Spur throated locusts	Nymphs	≥ 20 per m ²	

5.4.3. Issuing *Metarhizium*

Consider the following prior to issuing *Metarhizium*:

- alternative insecticides options
- band density of nymphs must be > 80 per m²
- risk to adjoining properties or to the regional program if left untreated
- use of multiple insecticides eg 25% of target area to be sprayed with *Metarhizium* and 75% by another insecticide
- movement of the band target from the sensitive site to an area where alternative insecticides can be used without causing further significant economic or environmental damage
- area of organic accreditation (eg a particular crop, paddock or the whole farm)
- evidence of accreditation (or the process of accreditation) available

- *Metarhizium* product (eg. SC/ULV) and package quantity (eg. 500ml/14L) most suitable for the control program. Eg, for a 30ha band target, would 4L of ULV or 40 x 550ml SC packs be most appropriate?

For specific details on applying *Metarhizium* to organic properties refer to *Spraying locusts with Metarhizium*.

5.4.4. Insecticide supply to public land managers

Public land managers may purchase insecticide from their local LLS or from a rural supplier for control of locusts on public lands.

The LLS Officer will approve the purchase in consultation with the Local Control Centre (LCC). The *Issue of Insecticide to Public Land Managers* form will be completed and forwarded to the LCC, and the public land manager may be invoiced for the insecticide.

Consideration may be given to supplying a public land manager with insecticide where nymphs are directly transiting across public lands from one ratepayer property to another (for example over a roadway).

5.4.5. Records

LLS must have accurate records of insecticide on hand, received, transferred and issued using the *Chemical Storage Inventory & Order form*.

LLS must supply the insecticide depot locations and contact details to NSW DPI.

Documents and registers must be maintained and reviewed regularly.

Records for any agricultural insecticide including ordering, manifest, safety, training, use, maintenance and calibration of equipment, biological or environmental monitoring and disposal records must be retained as evidence of legislative compliance. These records must be made available to workers, auditors, emergency services personnel (eg fire brigade), Office of Environment and Heritage (OEH) and WorkCover upon request.

5.4.6. Storage

Storage must comply with the requirements of WorkCover NSW Codes of Practice:

- *Safe use and storage of chemicals (including pesticides and herbicides) in Agriculture*
- *Managing risks of hazardous chemicals in the workplace.*

Storage facilities must have minimum features to store Class 6.1 PG III and have appropriate signage. Refer to the *Insecticide storage shed safety checklist* to monitor compliance with storage requirements.

Storage is limited to locations with appropriate insecticide storage facilities at LLS and NSW DPI facilities, approved landholder's properties and licensed commercial premises.

The most amount of chemical that can legally be stored at a storage facility capable of storing this larger amount is 1000kg or 1000L. Storing quantities greater than 1000kg or 1000L means that a specific Australian Standard needs to be observed and WorkCover will need to be notified. All other facilities must only store what the chemical storage area can legally store at any one time. This relates to all chemicals and not just locust chemicals.

Licensed commercial premises can store quantities as defined by their licence.

Ensure insecticides are stored according to the label requirements and separated from non-compatible chemicals. Insecticide must be kept within the appropriate temperature range to maintain viability.

Document and implement an emergency plan for the insecticide storage facility that includes access to SDS, emergency equipment (eg correct fire extinguishers, spill kit), training for

emergencies, clean up procedures and first aid kit.

5.4.7. Temporary field locations (for insecticide distribution to landholders)

LLS/NSW DPI may create temporary depots for insecticides at a remote site; the following criteria must be adhered to.

- A maximum limit of 1000kg or 1000L of insecticide can be kept at any field depot at one time. However, it is strongly recommended that only the required amount of chemical be stored at temporary field locations. All excess chemical is to be transported back to the LLS/NSW DPI chemical storage facility as soon as possible.
- An authorised person must take responsibility for the field depot and personally hand out insecticide to land managers.
- A LLS/NSW DPI Officer must inspect and verify that the proposed field depot complies with the *Safe use and storage of chemicals (including pesticides and herbicides) in Agriculture* Code of Practice requirements prior to issue of insecticide to the field depot.
- The person issuing the insecticide must keep a register (*Chemical Storage Inventory & Order* form and *Chemical Issue* form) of how much insecticide has been issued to whom and when. These forms are to be returned to the LLS (weekly) to coincide with LLS reporting requirements to NSW DPI.
- The person issuing the insecticide must complete the *Landholder Consultation Record*.
- The LLS is to keep records of where and when these field depots are active.

5.4.8. Storage at remote airstrips

Where possible, aerial spray companies should use their own or other facilities to store and load spray planes, or trucks to load planes at remote airstrips. Where this is not possible, for instance in the sparsely populated western areas, a temporary airfield insecticide storage depot may be set up. If temporary insecticide storage is established, the following requirements are mandatory.

- A temporary lined bund must be constructed using locally available resources.
- The storage must be greater than 10m from a dwelling.
- The storage must be greater than 15m from the property boundary.
- The storage must be greater than 5m from a fuel depot.
- A maximum of 1000kg or 1000L may be at the store at any one time. However, it is strongly recommended that only the required amount of chemical be stored at remote airstrips. All excess chemical is to be transported back to the LLS/NSW DPI chemical storage facility as soon as possible.
- An airfield spill kit must be available at all times when insecticide is in the store; this includes a broom, a 20L drum with large mouth lid, 15kg of sand or agricultural lime, shovel, chemical resistant gloves and goggles or face shield (refer to appropriate SDS).
- A temporary fence must be constructed around the temporary storage.

5.4.9. Transport

All persons transporting insecticide must comply with label directions, *Safe use and storage of chemicals (including pesticides and herbicides) in Agriculture* Code of Practice; *Dangerous Goods (Road and Rail Transport) Act and Regulation*; and *WHS Act and Regulations* requirements during transport. Insecticides classified as Dangerous Goods (Classes 2, 3 or 6) are covered by special conditions when being transported.

Bulk transport of insecticide will routinely be conducted by licensed contractors. NSW DPI and LLS personnel may transport insecticide between LLS depots and end users.

NSW DPI and LLS personnel transporting chemicals:

- should not carry more than 615kg or 615L of locust insecticide on any one vehicle at one time; (i.e. 1 x 44 gallon drum = 205L and 3 of these fit safely on a pallet for transport, hence 205 x 3 = 615).
- must have appropriate safety equipment (as required in the SDS) in case of a spill/accident;

- must ensure that the load (insecticide) is secured for transport to avoid leaks and spills;
- must not carry 205L or greater drums in utes where the cab/barrier is lower than the load
- must be transported in a compartment separate to the driver and passengers eg tray of vehicle.
- will ensure that loads will not exceed 615kg or 615L for safety purposes. In addition to this, the load capacity of the vehicle must not be exceeded.
- insecticide must not be loaded or accepted if the containers are damaged or leaking or if containers are incorrectly labelled.
- LLS/NSW DPI personnel must not issue landholders with more than 205kg or 205L of locust insecticide on any one vehicle at one time. However, it is strongly recommended that landholders are only supplied the required amount of chemical as in many cases it may be less than 205kg/L. Above these limits it is necessary to seek special advice on the marking of vehicles and other matters. Consult the *Road and Rail Transport (Dangerous Goods) Act 2008* or the NSW Environment Protection Authority (EPA).

Any pollution incidents must be reported in accordance with Part 5.7, Clauses 147-153 of the *Protection of the Environment Operations Act 1997*.

When any insecticide is delivered by a carrier a delivery docket or consignment note (which is acknowledged by the consignee) must be provided to the consignee (eg LLS). A copy must be retained by the carrier. The delivery docket or consignment note should contain the following:

- technical name of product
- class of product
- United Nations number
- Subsidiary Risk Number
- Packaging Group Number
- aggregate net quantity
- number and type of containers
- SDS and permit

All carriers transporting above 1000L of insecticide (excluding *Metarhizium*) MUST have a Dangerous Goods licence and the vehicle must be driven by a person registered with the NSW EPA to drive a vehicle carrying Dangerous Goods.

5.5. Use of Insecticide

5.5.1 Application of EC Insecticides at High Temperatures

At high ambient (air) temperatures (30°C and over) and low relative humidity (less than 45%), emulsifiable concentrates (EC) formulations can become less effective.

At high temperatures water can be evaporated off as the droplet spray falls onto the target. This leaves the insecticide exposed and it will readily vaporise, rendering the spray job ineffective.

To prevent ineffective spraying during warm temperatures, a few simple steps should be followed:

- do not use less than 50L of water per hectare: try to use a higher rate of water (70–80L/ha is recommended)
- increase droplet size – to medium to coarse droplets
- do not use misters unless droplet size can be increased suitably
- try to spray at a cooler time of day, if targets are still suitable.

5.5.2 Application Rate in Aerial Control

The application rate for insecticides appears on the label or on the off-label Permit.

The pilot and aircraft company will supply appropriate equipment for aerial application and

must ensure their spray equipment can deliver the correct rate of insecticide.

The spray pilot will determine the appropriate airspeed and track spacing for spraying.

The spray pilot must correctly calibrate the spray equipment and check calibration regularly.

5.6. Management of Returned/Unused Insecticides

5.6.1 Returned Insecticides

To minimise WHS issues for locust control personnel, insecticides must not be decanted into other containers.

If a landholder receives more insecticide than they require and wishes to return unopened locust insecticide, they should return the insecticide to their local LLS office/depot. Partially used insecticide containers should be retained 'on-farm' and will not be accepted as returns by LLS.

Most insecticide containers do not have a tamper-proof seal. If the LLS Officer considers that the insecticide has not been tampered with, then the unused container may be returned to the insecticide store for redistribution.

5.6.2 Disposal of Empty Pesticide Containers

Follow the label directions.

If no directions are on the label:

- triple-rinse containers (not ULV containers)
- take to drumMUSTER (or equivalent) collection site (not ULV containers)
Note: Containers can only be taken to drumMUSTER if the drumMUSTER logo is on the chemical label. If there is no logo on the chemical label another collection source will need to be used.
- NSW DPI will organise the washing and disposal of ULV drums with a NSW EPA accredited company
- metal ULV drums should be sent back to the central insecticide store using the contracted insecticide transporter.

5.6.3 Notification of Incident

All spills, near misses and injuries must be recorded on the NSW Trade & Investment *Incident Notification Form*.

LLS and NSW DPI personnel must report spills that meet the requirements of and in accordance with Part 5.7 of the *Protection of the Environment Operations Act 1997*. Spills are to be reported immediately to LLS, NSW DPI, the Fire and Rescue NSW, NSW EPA, WorkCover NSW, and the local council. In such situations, the person (individual, corporation or public authority) needs to be satisfied whether or not the requirements under these sections would require notification of an appropriate regulatory authority.

6. References

Policies

- [TI-O-173 Locust response - Insecticides](#)
- [TI-A-140 Work health and safety policy](#)

Procedures

- [Use of PPE](#)

Procedures - NSW Trade & Investment (intranet)

- Health Monitoring
- Hazardous chemicals

- Critical risk control – Hazardous chemicals
- Fact sheet – Managing risks of hazardous chemicals
- Fact sheet – Organophosphate pesticides
- Fact sheet – Personal protective equipment

Forms

- Incident Notification Form (Intranet - on line)
- [Chemical Issue form](#)
- [Chemical Storage Inventory & Order form](#)
- [Insecticide Storage Shed Safety checklist](#)
- [Landholder Consultation Record](#)
- Task request form (WebEOC)
- [Issue of Insecticide to Public Land Managers](#)

[Safety Data Sheets, labels and permits](#)

Risk assessments

- [Insecticide application for locust control](#)
- [Use of spray units for the delivery of insecticide for control of plague locusts](#)

Safe Work Method Statements

- [Driving vehicles](#)
- [Manual handling – stores](#)
- [Property visits](#)

Information

- [Plague locusts, wingless grasshoppers and livestock residues](#)
- [Safe use and storage of chemicals \(including pesticides and herbicides\) in Agriculture, Code of Practice, 2006](#)
- [Spraying locusts with *Metarhizium*](#)

Legislative Acts and Regulations

- [Dangerous Goods \(Road and Rail Transport\) Act 2008](#)
- [Dangerous Goods \(Road and Rail Transport\) Regulation 2014](#)
- [Local Land Service Act 2013](#)
- [Pesticides Act 1999](#)
- [Pesticides Regulation 2009](#)
- [Protection of the Environment Operations Act 1997](#)
- [Work Health & Safety Regulation 2011](#)
- [Work Health and Safety Act 2011](#)

7. Revision History

Version	Date	Section	Details
1	13 Nov 08		For approval
2	18 Aug 09	All 3 4 5.4.1 5.4.3 5.4.5 5.4.6	Update NSW DPI to I&I NSW Include manual handling equipment Include SWMS & risk assessments Clarify insecticide order information on task request Provision of insecticide to public land managers Change amounts for insecticide storage Update insecticide transport requirements
3	16 Aug 10	2, 5.4.1, 5.4.3 5.4.2 6	Remove reference to APO/PDO and PIDF Clarify insecticide supply to landholders Update references

Version	Date	Section	Details
4	24 Sept 10	5.4.2 5.4.2.1 5.4.6 5.5.1 6	Add form to record issue of insecticide New – considerations for issue of <i>Metarhizium</i> Update Act & Regulations Update droplet size Update references
5	14 May 15	All	Reformat and review to include LLS; update for new legislation

Contact Officer: State Emergency Coordinator

8. Appendices

- Nil