

Australian phytosanitary treatment application standard for dimethoate dipping treatment

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Contents

1	Introduction	4
1.1	Scope	4
2	Requirements	5
2.1	Treatment facility	5
2.2	Treatment equipment.....	5
2.3	Chemical	5
2.4	Concentrate testing.....	5
2.5	Dip preparation	6
2.6	Dip tank volume	6
2.7	Dimethoate concentration	6
2.8	Dip mixture preparation chart.....	7
2.9	pH	7
2.10	Topping up program.....	7
3	Procedures.....	8
3.1	Pre dipping treatments.....	8
3.2	Dip mixture preparation.....	8
3.3	Product preparation	8
3.4	Product immersion	9
3.5	Topping up.....	9
4	Verification of treatment.....	10
4.1	Frequency of sampling	10
4.2	Collection of the sample	10
4.3	Storing and packaging the sample	10
4.4	Treatment failure.....	11
5	Phytosanitary security measures.....	12
5.1	Phytosanitary security.....	12
5.2	Residue testing.....	13
6	Documentation.....	14
6.1	Procedures.....	14
6.2	Records.....	14
	Glossary	15
	References	16

1 Introduction

The objective of phytosanitary treatment is to prevent the introduction or spread of regulated pests. Effective phytosanitary treatments are critical to managing Australia's plant biosecurity risks and safeguarding trade. The Australian treatment application standards ensure that treatments:

- are carried out in a consistent and effective manner
- reach the required efficacy every time they are applied

This treatment application standard applies to the use of dimethoate dipping treatment as a phytosanitary measure for imported product as well as exported and domestically traded product.

Dimethoate dipping uses chemical at a specific concentration for a specific period of time in order to mitigate the risks of certain pests.

Dimethoate dipping is used primarily for products that are hosts of internally feeding pests such as fruit fly.

Important: where chemicals are applied, they must be registered in Australia for the particular use and must be used in accordance with its current registered label or permit conditions issued under the Australian Pesticides and Veterinary Medicines Authority (APVMA). The use of chemicals must also comply with various state and federally administered legislation.

1.1 Scope

This standard provides guidance on the effective application of dimethoate dipping as a phytosanitary measure for regulated pests on plant products for human consumption.

This standard is the baseline for the application of dimethoate dipping in trade with and within Australia. Additional requirements may apply to trade with some countries.

The following is out of scope:

- specific import requirements
- operational instructions including requirements for premises registration, certification, approval of arrangements, etc.
- work health and safety requirements for chemical handling

The import requirements for trade with Australia can be found on the department's website at www.agriculture.gov.au. The Biosecurity Import Conditions (BICON) database contains the requirements for imports to Australia and the Manual of Importing Country Requirements (MICO) lists known conditions for exports from Australia. The specific State and Territory Department of Agriculture websites for domestic trade can be found on the relevant state websites.

2 Requirements

2.1 Treatment facility

2.1.1 Responsible certifying authorities must have mechanisms in place to ensure the treatment facility meets requirements to effectively deliver dimethoate dipping. This may include registration, approval arrangements by third parties or other measures.

2.2 Treatment equipment

2.2.1 Dipping equipment must be structurally sound with appropriate phytosanitary security in place. It must be fit for purpose and have measures in place to prevent infestation of product.

2.2.2 Dipping equipment must be designed and operated to ensure product remains fully immersed in the treatment mixture for a duration of not less than 1 minute once all air bubbles have ceased.

2.2.3 Dipping equipment must regularly checked to ensure it continues to operate effectively and remains free from soiling, malfunction, blockages, damage or excessive wear.

2.3 Chemical

2.3.1 Registered chemicals must be used in accordance with the instructions included on the product's approved label or applicable permit including any first aid, safety, protection, and storage and disposal directions.

2.3.2 The dimethoate concentrate must be in date.

2.3.3 The concentrate must be stored at temperatures below 40 °C (when temperatures rise above 46 °C, for even 1 day, the active ingredient degrades).

2.3.4 A system must be in place to ensure or verify that temperatures do not exceed 40°C in the chemical storage area.

Note: Following the requirements in this procedure does not absolve a treatment facility from the responsibility of ensuring compliance with the use label or permit conditions or for ensuring that treated product does not contain a pesticide residue above the Maximum Residue Level (MRL) for the importing country.

2.4 Concentrate testing

2.4.1 The chemical concentrate used should contain 400 g/L dimethoate as their only active constituent.

2.4.2 The concentration of the active constituent (dimethoate) must be verified prior to first use of every new batch number. This must be done by submitting a sample of the concentrate to an approved laboratory for analysis.

2.4.3 The results must be provided to the responsible certifying authority within 24 hours of receipt, unless an alternate timeframe is specified by the responsible certifying authority.

2.4.4 If the concentrate levels are lower than 400g/L adjustments must be made to the amount of concentrate added when preparing the dip mixture.

Note: it is recommended where batches with the same batch number are received on different dates the individual containers should be tested. This is to control for different storage and transport conditions of the same batch.

2.5 Dip preparation

2.5.1 The treatment operator must prepare a fresh dip mixture immediately prior to first use.

2.5.2 The ability to maintain the specified chemical concentration for the duration of the treatment and for the amount of product treated must be demonstrated by way of analysis of the dip mixture.

2.5.3 A new dip must be prepared every 24 hours or more frequently as required.

2.5.4 Keeping a dip mixture for periods longer than 24 hours will only be permitted where it is demonstrated, by analysis of the chemical mixture, the ability to control and maintain concentration for a specified longer period.

2.5.5 Professional advice (laboratory/manufacturer) must be sought if using any additives in the dip solution. Additives can accelerate the degradation of the active chemical concentrate over time.

2.6 Dip tank volume

2.6.1 The amount of water required for the treatment must be measured accurately.

2.6.2 Where the tank is used as the water measure:

- the tank must be calibrated for tank volume using a calibrated flow meter
- permanent volume indicator marks must be made on the inside of the tank, or on a sight tube or sight panel on the outside of the tank, or by some other device which clearly and accurately indicates the maximum mixture level and any incremental volumes used
- volume indicator marks must include the volume in litres required to fill the tank to that level

2.6.3 Where the tank is used as the water measure and the tank is damaged the tank may need to be recalibrated.

2.6.4 Where a flow meter is used for each dip preparation the flow meter must be calibrated annually, unless otherwise specified by the responsible certifying authority.

2.6.5 Where an alternative for water measurement is used the treatment provider must demonstrate the accuracy of the procedure.

2.7 Dimethoate concentration

2.7.1 The treatment operator must calculate the required amount of dimethoate concentrate to ensure a final solution of 400 ppm.

2.8 Dip mixture preparation chart

2.8.1 A dip mixture preparation chart or similar must be kept in close proximity to the dipping equipment.

2.8.2 The chart must provide the following details:

- the total volume in litres of the dip tank when filled to the maximum mixture level mark
- the volume in millilitres (mL) of concentrate required to achieve 400 ppm of dimethoate in a full tank of made up dip mixture
- the volume in millilitres (mL) of a concentrate required to achieve 400 ppm of dimethoate in a made up dip mixture for incremental volumes or topping up volumes used
- identify the tank if more than one tank is used on site
- the printed name and signature of the person responsible for the chart's preparation and date of preparation

2.9 pH

2.9.1 The dimethoate dip mixture shall be maintained at a pH below 7.0 to prevent breakdown of the chemical.

2.9.2 At the commencement of each treatment, the dip mixture must be checked to ensure correct pH by testing with a pH tester. After measuring the pH, the treatment operator must determine if a pH buffer is required. An acidifying buffer may be used to achieve and maintain an acceptable pH level.

2.9.3 The treatment operator must record dip pH checks including:

- person conducting check
- date and time of check
- result
- corrective action taken, if any, for example type of buffer added and quantity

2.10 Topping up program

2.10.1 When using topping up as a means of maintaining dip volume and/or concentration, a documented topping up program must be developed.

2.10.2 The topping up program must state:

- the frequency of topping up based on the quantity of product treated or time
- the quantity of concentrate and water required to be added

2.10.3 The topping up program being used must be effective in achieving and maintaining a dip concentration within +/- 6 percent of 400 ppm. This must be demonstrate by way of dip mixture analysis.

3 Procedures

3.1 Pre dipping treatments

3.1.1 Product can be treated with water or other chemical treatments prior to dipping with dimethoate provided any chemical/water remaining on the product does not affect the concentration of the dip mixture.

3.1.2 The direct addition of chemicals to the wash water or carriage of chemicals on product that raise pH or otherwise destroy the pesticide must be avoided.

3.1.3 Where product has undergone pre-dip washing or chemical treatment, a topping up program may be required to maintain the dip mixture concentration within the required tolerance.

3.2 Dip mixture preparation

3.2.1 The treatment operator must measure the required amount of chemical needed to achieve 400 ppm of dimethoate for the required volume of mixture.

3.2.2 The chemical must be measured using a suitable, clean and graduated measuring vessel. Suitable measuring vessels include plastic or glass measuring cylinders or syringes.

3.2.3 The required amount of concentrate must be added to the dip tank in accordance with the manufacturer's directions on the label.

3.2.4 The required amount of potable water is added to the tank based on the measuring systems defined in section 2.6.

3.2.5 The chemical must be completely diluted in the water by mixing for a minimum of two minutes before commencing the dip operation.

3.3 Product preparation

3.3.1 Product for dimethoate dipping must be clean and free from soil before dipping to avoid fouling the dip mixture and restricting or reducing contact of the chemical with the product surface.

3.3.2 The application of waxes or oils prior to treatment is prohibited.

3.3.3 The treatment must be the last process prior to packing, that is, there will be no other washing, cleaning by brushes or fungicide treatments permitted.

3.3.4 Fumigation as a reconditioning treatment post inspection is allowed, provided the product is completely dry of the dipping solution.

3.3.5 The treatment operator must ensure all product is placed into appropriate dipping containers. These containers must be made from a material that allows adequate circulation of the dip mixture over and around the product. Appropriate dipping container include plastic crates, wooden slatted or open metal bulk bins or perforated plastic buckets.

3.4 Product immersion

3.4.1 The container is to be placed into the dip, ensuring that all product is fully immersed and fruit does not float from the container. A mesh lid or other device may be required to ensure all product remains fully immersed during dipping.

3.4.2 The treatment time begins after full immersion and once all air bubbles cease. An accurate timing mechanism capable of measuring time to the second must be used for timing fruit immersion.

3.4.3 The product must be full immersed for the required treatment period for the product type.

3.4.4 The container is then removed from the dip and the pesticide mixture allowed to drain.

3.4.5 The process is repeated until all product has been treated.

3.5 Topping up

3.5.1 During dipping operations, the concentration of the chemical mixture must be maintained within +/- 6 percent of the required concentration at all times and in accordance with any endorsed topping up program. For 400 ppm that is +/- 24 ppm.

3.5.2 During the dipping process it may be necessary for the treatment operator to top up the dip mixture to maintain dip concentration and/or volume. This is done by adding the required volume of water and the required volume of concentrate to the dip mixture as determined by the topping up program.

3.5.3 The required amount of concentrate is added to the dip tank prior to topping up with water (if required) to assist mixing of the chemical and the water.

3.5.4 The required volume of water (if required) is added to the dip tank using a graduated measuring vessel or a liquid metering device, or use incremental volume marks marked on the side of the dip tank.

3.5.5 The tank mixture must be thoroughly mixed for a minimum of two minutes before recommencing the dip operation to ensure the chemical is completely diluted in all of the water.

3.5.6 Any topping up during the dipping process must be recorded.

4 Verification of treatment

4.1 Frequency of sampling

4.1.1 The ability to achieve and maintain dip concentrations must be verified by analysis of samples of the dip mixture by an approved laboratory.

Industry sampling

4.1.2 Test samples regularly taken. The sampling regime will be determined by the responsible certifying authority.

4.1.3 When taken, dip samples must be collected:

- at cessation of treatment or
- after the maximum allowable quantity of product is treated for a dip mixture

4.1.4 Additional dip samples are required when using a topping up program and should include a sample of a dip mixture taken immediately prior to and after topping up the mixture according to the documented topping up program.

4.1.5 The results must be forwarded to the responsible certifying authority within 24 hours of receipt unless an alternative timeframe is specified by the responsible certifying authority.

Sampling by the responsible certifying authority

4.1.6 The responsible certifying authority and/or importing authority may determine additional sampling requirements. These samples will be taken by the responsible certifying authority.

4.2 Collection of the sample

4.2.1 Samples of a minimum of 200 mL must be taken from the centre of the dip tank and placed in a clean and new glass sample bottle with a secure watertight lid.

4.3 Storing and packaging the sample

4.3.1 Samples must be:

- secure from tampering
- stored under refrigeration
- dispatched within 24 hours of collection to minimise losses in chemical concentration
- be kept cool during transport

4.3.2 Samples must be packaged to prevent damage in transit and comply with any hazardous chemical packaging and transport requirements.

4.3.3 Samples must be accompanied with the following information:

- treatment facility name and contact details
- trade name of concentrate (brand name)

- batch number of chemical
- total volume of mixture (litres)
- volume of chemical concentrate added to mixture (millilitres)
- name and amount of any other chemicals added
- date and time the mixture was prepared
- sample number as marked on the bottle
- level of product wetness immediately prior to treatment (dry, moist, dripping wet)
- date and time sample was collected
- total volume of chemical mixture at time of sampling (litres)
- quantity of product treated up until sample collected (kilograms)

4.4 Treatment failure

4.4.1 The treatment may be deemed to have failed if any of the following occurs:

- the concentration of the chemical is lower than 376 ppm

5 Phytosanitary security measures

Phytosanitary security of product during and after treatment is vital.

Confidence in a treatment is based on the treatment being effective against the regulated pest/s and that the product has been adequately safeguarded against infestation, reinfestation and loss of integrity or identity.

Responsible certifying authorities will ensure that treatment facilities have sufficient phytosanitary security in place, and that the identity and integrity of each consignment can be maintained, as part of ensuring that facilities are fit for purpose.

5.1 Phytosanitary security

The most common methods of securing product against pests include:

- using a secure area with product segregation and traceability
- using secure packaging
- a combination of both

5.1.1 Procedures must be in place to identify and segregate treated product and allow for movement without the risk of it mixing with any other product.

5.1.2 The procedures must cover all processes that pose a phytosanitary security risk to the treated goods including receivals, storage and dispatch. The procedures must enable consignments to be linked to a specific treatment and be traced back to a packhouse and grower, if required.

5.1.3 If product is treated in bulk and packed post-treatment the entire pathway, including transport and packhouse, must be established and maintained as free from regulated pests.

5.1.4 Packing must commence as soon as practicable after treatment. Prior to packing product must be allowed to dry to a state where no water is dripping off the product. Ensure label requirements are met for handling treated fruit.

5.1.5 After treatment, product must be secured against reinfestation as soon as is practical.

5.1.6 Treated product must be kept in secure conditions to prevent infestation by regulated pests when:

- stored at the treatment facility
- transported from the treatment facility

5.1.7 After treatment all product must be identified as 'treated' for identification and traceability purposes. Labels must be clear and visible on pallets/bins/crates.

5.1.8 Any cartons or other packaging materials that were used to store and transport untreated product must be checked for pests and contaminants and cleaned, if necessary, prior to the re-packing of treated product into those cartons. If live pests are found the packaging must not be used for treated product.

5.2 Residue testing

The responsible certifying authority/importing body reserves the right to take a fruit sample for the purpose of residue testing prior to export to confirm the application of the treatment. Prior notice may not be given to the client that a consignment has been selected for residue testing. The client will be informed at the time the sample is taken.

6 Documentation

6.1 Procedures

6.1.1 The following documents must be kept and made available to the responsible certifying authority when requested:

- treatment procedures
- phytosanitary security procedures

6.1.2 Procedures must reflect current practices and be compliant with this standard.

6.2 Records

6.2.1 The following records must be kept and made available to the responsible certifying authority when requested:

- all records pertaining to dip mixture preparation, top up mixture preparation and product treatment including:
 - the date of dip mixture or top up mixture preparation
 - the time of dip mixture or top up mixture preparation
 - volume of concentrate used (millilitres)
 - total volume of the made-up dip mixture or top up mixture (litres)
 - pH of mixture
 - the trade name of the concentrate used and used by date
 - the date the dip mixture was discarded
 - the date of treatment
 - treatment commencement time
 - treatment completion time
 - the type of product treated
 - the volume of product treated
 - the identification of the treatment operator
 - all records pertaining to the results of the analysis listed under *4.1 Frequency of sampling*
- Any additional records required by the responsible certifying authority or importing country

6.2.2 All records must be retained from a minimum of 2 years, unless otherwise specified by responsible certifying authority or importing country.

Glossary

Approved laboratory	A laboratory approved by the National Association of Testing Authorities (NATA) or a State or Commonwealth Department of Agriculture
Import requirements	Specific phytosanitary measures prescribed by an importing country, including Australia, concerning consignments moving into that country
Product	The plant product to be treated
Responsible certifying authority	The National Plant Protection Organisation (NPPO) and State/Territory Departments of Agriculture and potentially any other party approved under the authority of the NPPO or State/Territory Departments of Agriculture
Treatment	Official procedure for the killing, inactivation or removal of pests, or for rendering pests infertile or for devitalization. [FAO, 1990, revised FAO, 1995; ISPM 15, 2002; ISPM 18 2003; ICPM, 2005]
Treatment operator	The person in charge of performing the treatment

References

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