



CSIRO 2/18

Commonwealth Scientific and Industrial Research Organisation Review: Red Imported Fire Ant Scientific Principles and Controls

Summary of recommendations for consideration

Materials that may carry fire ants	Current fire ant movement controls (state and interstate requirements)	CSIRO recommendations
<p>Soil For example:</p> <ul style="list-style-type: none"> • fresh soil • fill • clay • scrapings • other material, not gravels and sands. 	<p>Biosecurity Regulation 2016: Must not move soil outside the fire ant biosecurity zones (the zones), unless authorised under a biosecurity instrument permit.</p> <p>The soil must be disturbed (e.g. turned, crushed, washed or screened) every 21 days while it is stored. The stock should then be disturbed again 24 hours before it is moved from the property.</p> <p>The soil from fire ant biosecurity zone 2 can only be disposed of at a waste facility within zone 2. The soil from fire ant biosecurity zone 1 can be disposed of at waste facility in zone 1 and 2.</p> <p>Soil movement guideline: Inspect the soil two weeks prior to movement and treat any fire ants found by direct nest injection. Then, undertake proactive fire ant baiting.</p> <p>When excavating, the soil should only be taken from a depth of more than one meter.</p>	<p>Disturbance of soil</p> <ul style="list-style-type: none"> • Material-processing methods of chipping, crushing, screening, shredding and washing are likely to be practical mitigation measures. The value of turning soil using earthmoving equipment is doubtful. Disturbance using a “turning” method must be done vigorously to ensure a fire ant queen is separated from her workers, or, to reduce the possibility of worker ants adopting a new queen and building a new colony. This would be difficult for operators and inspectors to assess. Logistics of a complex site and the size of stockpiles will further detract from the feasibility of turning. Moving soil to a secure waste facility within the same zones reduces pest establishment and spread (this is only achieved if the waste facility is secure). <p>Storage of soil</p> <ul style="list-style-type: none"> • A fire ant resistant surface, such as compacted ground (but not sand) treated with chemical is most secure. • Concrete or bitumen are effective if there are no cracks or damage on the surface. Fire ants will build nests in cracks or tears, and beneath or in the soil. • The same as the above applies for plastic sheeting. It must not have tears, holes or gaps.



CS2992 2/18

Excavated soil must be stored appropriately, such as on a fire ant resistant surface (such as plastic 200 microns thick) and receive a 30 cm chemical perimeter treatment.

Or the soil can be kept on compacted ground that has received a chemical barrier treatment (the whole surface) and should be covered, including using a shed, shade cloth or tarpaulin.

Again, stored soil should be disturbed every 21 days, and 24hrs before moving it off site.

Other¹:

Inspection the product.

Property freedom.

Heat treat product

Fumigate product.

- Covering soil prevents airborne alates (young queens) from accessing the carrier, and may reduce the attractiveness of the carrier. It will not mitigate against a migrating colony at ground level.
- Perimeter or barrier chemical treatment is effective, if the chemical layer remains completely intact (no gaps in coverage). Stockpiles that are regularly disturbed using heavy earthmoving equipment are unlikely to have an intact chemical barrier. This method protects against ground ants.

Chemical treatment of soil

- Direct nest injection (DNI) is an effective treatment method, but only for established fire ant nests that are found in or around the soil.
- Using a fire ant bait at a site where the soil is stored will help reduce the local population of fire ants. However, nests that are just newly forming under the ground may not take up the bait.
- Property inspection followed by baiting will increase confidence in a site that has a low number of established fire ant nests.
- Property freedom/inspection by a trained/qualified person will have 80 per cent detection confidence for established nests. Inspections will not detect new, underground nests and, therefore, will not be a reliable stand-alone strategy.

Movement of soil

- Moving soil away from the site within 24 hours of excavation is reasonable from a practical standpoint, but there is no study to support it.

¹ Other may include other controls cited in relevant industry accreditation schemes and state and territory entry conditions such as the Interstate Certification Assurance Scheme (ICA) and BioSecure Hazard Analysis Critical Control Point (HACCP).



CS2992 2/18

- Removing the of top one metre of soil before excavation provides significant protection, and could be extended to soft, loamy or sandy soils.
- If heat treatment is hot enough, it will be an effective method. Heat treatment is a feasible alternative to chemical treatment. However, heat treatment must be applied to the entire store of soil, as fire ant colonies may escape lethal temperatures through movement.
- Fumigation with methyl bromide is effective at killing all stages of fire ants, however it may not be practical or cost-effective.