Olive Pests and Agri-Chem & IPM Control Options.

Significant pests of the olive tree canopy:

The three most common and potentially destructive insect pests found in Australian olive groves are:

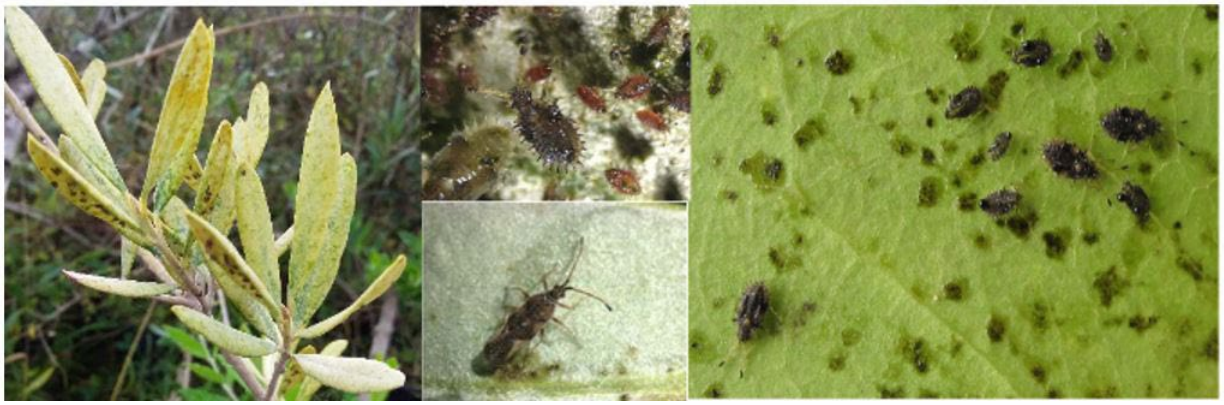
Black Scale *Saissetia oleae.* Frequently associated with Sooty Mould

Black Scale is frequently associated with Sooty Mould

Access the following IPDM resources in the AOA Resources Library:

- IPDM Resources (OL17001) Olive Black Scale Fact Sheet by Robert Spooner-Hart et al (2020).
- IPDM Resources (OL17001) Field Guide (Second Edition) by Robert Spooner-Hart et al (2020) – Sooty Mould, p61.
- IPDM Resources (OL17001) Black Scale Tutorial by Robert Spooner-Hart et al (2020)
- Managing Black Scale in Olives, Fact Sheet (AOA 2016).
- Management of Black Scale and Apple Weevil in Olives (RIRDC 12/019) by Sonya Broughton and Stewart Learmonth.
- Management of Black Scale and Apple Weevil in Olives (Review December 2019) by Sonya Broughton and Stewart Learmonth.
- Pest Management in Olives (Black Scale and Apple Weevil) (AOA Webinar August 2021) by Alison Mathews:

Olive Lace Bug_*Froggattia olivinia*



Major infestations of OLB can defoliate olive trees

Access the following IPDM resources in the AOA Resources Library:

- IPDM Resources (OL17001): Olive Lace Bug Fact Sheet by Robert Spooner-Hart et al (2020).
- IPDM Resources (OL17001) Olive Lace Bug Tutorial by Robert Spooner-Hart et al (2020)

Management of Olive Lace Bug by Dr Vera Sergeeva (OliVera).

Weevils_Apple Weevil, Curculio Beetle (*Otiorhynchus cribricollis*) in inland NSW, SA & WA **Garden Weevil** (*Phlyctinus callosus*), mainly in WA.

Apple weevil adults climb the olive tree to feed at night creating a typical scalloped leaf appearance.

Biology and damage: Apple weevil / Curculio Beetle is the major weevil pest in olives, where it is more of an issue in nursery stock. Adults are nocturnal and flightless, emerge from the ground in summer and climb trees to chew leaf margins, creating a typical scalloped appearance. Severe infestations can damage growing tips, and reduce yield, especially in

young trees. Eggs are laid in the trees, and emerging legless white-bodied larvae fall to the ground where they may feed on plant roots.

Access the following IPDM resources in the AOA Resources Library:

- IPDM Resources (OL17001): Weevils Fact Sheet by Robert Spooner-Hart et al (2020).
- IPDM Resources (OL17001) Apple Weevil Tutorial by Stewart Learmonth (DPIRD WA 2020).
- Management of Black Scale and Apple Weevil in Olives (Review December 2019) by Sonya Broughton and Stewart Learmonth.
- Pest Management in Olives (Black Scale and Apple Weevil) (AOA Webinar August 2021) by Alison Mathews:

Management of Black Scale and Apple Weevil in Olives (RIRDC 12/019) by Sonya Broughton and Stewart Learmonth.

Other less common pests of olives found in Australia:

Armoured Scales *Hemiptera: Diaspididae*, includes:

Parlatoria scale

Circular black scale

Red scale

Latania scale

Hard scales do not secrete honey dew and therefore are not associated with sooty mould

- Red scale, *Aonidiella aurantii* (most common)
- Oleander scale, *Aspidiotus nerii*
- Ross's black scale, *Lindingaspis rossi*
- Circular black scale, *Chrysomphalus aonidum*
- Parlatoria scale, *Parlatoria oleae*

IPDM Resources (OL17001): Field Guide (Second Edition) by Robert Spooner-Hart et al (2020) – p22.

Ants *Hymenoptera: Formicidae*.

Ants are often associated with black scale infestations which they protect from predators in order to continue harvesting the honey dew excretions.

IPDM Resources (OL17001): Field Guide (Second Edition) by Robert Spooner-Hart et al (2020) – p21.

Olive bud mite, *Oxycenus maxwelli.*

The leaf curling on new tip growth is characteristic of olive bud mite.

IPDM Resources (OL17001): Field Guide (Second Edition) by Robert Spooner-Hart et al (2020) – p34.

Olive Bud Mite, University of Florida 2016.

Queensland Fruit Fly *Bactrocera tryoni.*

Q-fly damage on Volos c.v. in the Hunter Valley April 2021

The Queensland fruit fly (Q-fly) *Bactrocera tryoni*, is occasionally reported damaging olive fruit. Q-fly is endemic to Queensland and the coastal parts of New South Wales, including the Hunter Valley. Fruit is damaged by oviposition, which can prematurely ripen fruits or cause them to fall. This damage also predisposes fruit to fungal rots. There are commercially available baits (Cue-lure, methyl eugenol) used to trap males, mainly for monitoring, and baits for female flies but these are likely to have limited effect, especially in seasons of high fly populations.

According to olive industry entomologist Associate Professor Robert Spooner-Hart *"this season is likely to be a shocker for fruit flies in many crops. The high rainfall/ humidity experienced in the Hunter Valley in 2021 has resulted in high Q-fly populations, with olives being one of the fruits still around at this stage in the season. In particular it is the large-fruited table olive varieties that seem to be most attractive/susceptible."*

Note: A similar risk to olives exists in regions that are subject to incursions of the Mediterranean Fruit Fly (Med-fly) *Ceratitis capitate,* (which is endemic in WA).

Major horticulture production regions located along the Darling and Murray Rivers in NSW, Victoria and in SA enjoy status as fruit fly free zones (for both Q-fly and Med-fly). This provides significant economic benefit to producers through the movement of fruit to interstate and overseas markets without the need for expensive fumigation / disinfestation.Hence quarantine authorities, and industry in these states dedicate significant resources to controlling fruit movement and people into these production areas in order to maintain area freedom status. Unfortunately, from time to time outbreaks do occur and fruit movement restrictions, and eradication processes are then put in place to eradicate the pest.

Other infrequent pests reported on olives:

IPDM Resources (OL17001) Field Guide (Second Edition) by Robert Spooner-Hart et al (2020):

- African black beetle – p20
- Cicadas – p27
- Grasshoppers / locusts – p30
- Green vegetable bug – p31
- LBAM – p33
- Rutherglen bug – p39
- Thrips – p41

Exotic pests of olives not yet established in Australia:

The following 3 serious pests of olives are not yet established in Australia:

Ref: [20]High Priority Exotic Pests and Diseases of Olives in Australia (*OliveCare®* News).

Olive Fly *Bactrocera oleae.*

Processing of olive fly infested fruit in the endemic Mediterranean regions results in olive oil with the 'grubby' defect.

IPDM Resources (OL17001): Field Guide (Second Edition) by Robert Spooner-Hart et al (2020) – pg 67.

Olive Growing (El Cultivo Del Olivo), 5th edition, RIDC, AOA, Chapter 14 'Pests'

Olive Moth *Prays oleae.*

IPDM Resources (OL17001): Field Guide (Second Edition) by Robert Spooner-Hart et al (2020), p69.

Olive Bark Beetle *Phloeotribus scarabaeoides.*

Here WE go again. Olive Bark Beetle invades California by Ben Faber UCANR 2017.

High profile Emergency Plant Pest (EPP) detections in the NEWS:

Note: Whilst constantly in the NEWS – the following exotic pests which potentially can impact on many horticultural crops in Australia, are **NOT** relevant to the olive industry!

These include: **Brown Marmorated Stink Bug or BMSB** (*Halyomorpha halys*), **Fall Armyworm** (*Spodoptera frugiperda*), and **Serpentine Leafminer** (*Liriomyza huidobrensis)*

Olive IPDM Best Practice:

Access the following IPDM resources in the AOA Resources Library:

- IPDM Project Resources and how to access them by Robert Spooner-Hart et al (2020).
- Olive IPDM Best Practice Manual - by Robert Spooner-Hart et al (2020).

The recommended approach to pest and disease management for olives is integrated pest and disease management (IPDM). Based on ecological principles, it encourages reduced reliance on pesticides through the use of a number of control strategies in a harmonious way to keep pests and diseases below the level causing economic injury. It came out of the realisation that too heavy reliance on pesticides (particularly those with broad-spectrum activity) can cause major problems, notably:

- effects on human health and safety
- environmental contamination
- pesticide resistance in target and non-target organisms
- resurgence of secondary pests
- plant damage or yield loss (phytotoxicity)
- residues on fruit and products, with national and international consequences.

There is also general community concern about the use of pesticides, particularly on foods, especially those, such as olive products, reported to provide health benefits. The major components of IPDM systems are:

- Practice good grove hygiene – don't carry pests and diseases into and through the grove
- Identification of pests, diseases and natural enemies
- Monitoring of pests, diseases, damage and natural enemies
- Selection of one or more management options on the basis of monitoring results and action thresholds, from a wide range of pesticide and non-pesticide options
- Use of selective pesticides targeted at the pest or disease—for instance, pesticides that will interfere least with natural enemies, targeted only at infested trees or parts of trees.
- Continuous review of management success, and incorporation of new information and techniques.

IPDM programs commonly utilise or support biological control provided by natural enemies such as predators, parasites, insect diseases and non-pathogenic antagonistic or competitive

microorganisms. These natural enemies may be encouraged or introduced onto groves.

Programs invariably involve cultural control strategies to minimise pest and disease entry and their spread in space and time. Cultural controls include protocols of entry to and movement around farms; sanitation (practices to prevent the spread of pests and diseases by removing diseased/infested plant material and by decontaminating equipment); manipulation of the field environment to discourage pests and diseases, such as maintaining optimum plant health, opening tree canopies to increase air movement and reduce humidity; eliminating of alternative hosts for pests; or growing nectar- and pollen-producing plants within the grove or surrounding areas to encourage natural enemies. IPDM may also involve the use of tolerant or resistant plant varieties, where available. Chemical pesticides, whether conventional or organically acceptable, are used judiciously and thus play a supportive role.

Remember that 'happy trees are healthy trees' - pests and disease outbreaks may indicate your olive grove is under stress – humid weather, water stress, soil nutrient deficiencies, tree canopy out of control, natural beneficial organisms present in low numbers, etc.

According to Dr Vera Sergeeva (Olivera), *"plants suffering a nutrient stress will be more susceptible to pests and diseases, while adequate crop nutrition makes plants more tolerant of or resistant to pest or disease. Healthy trees, early spotting of hatching insects and thorough early spray treatment can help growers beat olive lace bug. Grove monitoring is essential.*

OLB does not "just happen"; OLB hibernates in and around the grove as adults and eggs in protected places. In spring the eggs hatch and go through several wingless stages (instars) before turning into the winged adults which spread across the grove and lay more eggs. The full life cycle is short, only 12 to 23 days, so growers have to move quickly to stop them." Dr Vera Sergeeva (Olivera): http://olivediseases.com/biography/

Pest Control – IPM in Operation:

- Olive Lace Bug (OLB) as an example
- Three main ideas to try:
    1. Natural resistance of the olive tree
    2. Encourage natural predators
    3. Spray, carefully, if you must

Natural Resistance of the Tree

- A healthy tree rejects pests
    - Even if the neighbouring tree is covered in OLB
- Give tree help: Stress makes it vulnerable
    - Enough water: Adequate nutrition (including Mg)
    - Pruning:
        - Cut back branches touching the ground
        - Open up trees: Reduce humidity and stress the pests! Sprays also penetrate better
        - Note: Opening up trees doesn't work for trees that are straddle harvested.
    - Protect grove with hedges: Space between tree blocks?
- Healthy soils make for heathy trees
    - Increase soil carbon to improve soil biological activity, nutrient availability and water retention
    - Growers are reporting good results using Bioactive Soil Solutions on sandy loam soil.

Encourage Beneficials

- Make beneficials (predators and parasitoids) welcome: Understand threats
    - Insects and birds: Where is OLB coming from?
    - Ensure food supply for beneficials (interrow vegetation)
- Break up dense monoculture: New thinking
    - Plant flowering shrubs and plants as hosts
    - Import Beneficials: But they don't like dust
    - Ground cover, hedges – clean air, barriers to OLB
    - If you spray, treat hot-spots: Beneficials survive
- Manage alternative hosts

Spray carefully, if you must spray:

- Understand pest and disease life-cycles:
    - Monitor the grove regularly
        - At least monthly – preferably weekly
        - Monitor priority blocks and sub-blocks (previous issues or high value)
        - Record monitoring data and recheck for effectiveness after

management treatments

- Spray if really necessary? Healthy trees, few problems?
- One Spray enough? Can you limit to spot-sprays?
- Catch early – sprays will be more effective

- Understand the Spray and its effect:
  - Is it legal in your state?
  - Does it kill beneficials – even if it is organic?
  - When do you spray again – do observe critical life cycle times and resistance management strategies.

Approved Agri-chemicals for use on olives:

Always use chemical control options in accordance with permit / label conditions:

Access chemical permits information here.

Always regularly monitor weather conditions and groves for pest and disease symptoms.

Rotate available chemical control options as part of a resistance management strategy.

Olive Lace Bug *Froggattia olivinia.*

As at 1st July 2022 the following formulations are approved by the Regulator for use on olives for the control of Olive Lace Bug *Froggattia olivinia.*

Group 1B: Acetylcholinesterase (AChE) inhibitors (Organophosphates)

- **PER13999 (Version 6) Dimethoate** Permit to 31 March 2022: contact and systemic **Group 1B organophosphorus insecticide**,

  Permit: http://permits.apvma.gov.au/PER13999.PDF

  Maximum of 4 applications per season. Withholding Period: 42 days.

  Note: Also permitted for control of Green Vegetable Bug and Rutherglen Bug on olives (not usually a problem).

Group 3A: Sodium channel modulators (Pyrethroids)

- **PER81949 Esenvalerate (Sumi-Alpha-Flex)** Permit to 31 December 2023: broad spectrum **Group 3A synthetic pyrethroid insecticide**,

  Permit: https://sumitomo-chem.com.au/sites/default/files/literature/per81949.pdf

  Use: Maximum of 4 applications per season. Withholding Period: 14 days. Demonstrated efficacy but disruptive to beneficials.

- **PER81870 Pyrethrum (Pyganic)**: Permit to 31 Oct 2019, broad spectrum **Group 3A organic pyrethroid insecticide**, (organic certified),

  Permit: http://permits.apvma.gov.au/PER81870.PDF

  Use: Maximum of 2 consecutive sprays. Withholding Period: 1 day - *trial work*

currently underway for label registration.

Group 4A: **Nicotinic acetylcholine receptor (nAChR) competitive modulators (Neonicotinoids)**

- **PER14897 Clothianidin (Samurai)** Permit to 31 March 2023: systemic **Group 4A neonicotinoid insecticide**,

  Permit: http://permits.apvma.gov.au/PER14897.PDF

  Use: Apply one spray only at the nymphal stage. Withholding Period: 56 days

- **PER 89943 Trivor Insecticide (acetamiprid + pyriproxyfen)** Permit to 31 January 2024, **Group 4A (Neonicotinoid) and Group 7C (Insect Growth Regulator)** for OLB and Scale

  Permit: https://permits.apvma.gov.au/PER89943.PDF

  Use: Maximum of 2 applications per season. Withholding Period 28 days

Group 4D: Nicotinic acetylcholine receptor (nAChR) competitive modulators (Butenolides)

- **Registered: Flupyradifurone (SIVANTO)** - (Xylem mobile) foliar contact agent and in soil systemic **Group 4D butenolide systemic insecticide– IPM compatible**.

  Label:
  https://websvr.infopest.com.au/LabelRouter?LabelType=L&Mode=1&ProductCode=84727

  Use: Maximum of 2 application per season. Withholding Period: 14 days.

Group 7C: Juvenile hormone mimics (Pyriproxyfen)

- **PER 89943 Trivor Insecticide (acetamiprid + pyriproxyfen)** Permit to 31 January 2024, **Group 4A (Neonicotinoid) and Group 7C (Insect Growth Regulator)** for OLB and Scale

  Permit: https://permits.apvma.gov.au/PER89943.PDF

  Use: Maximum of 2 applications per season. Withholding Period 28 days

Organic and other "soft" control options for OLB:

- **PER14414 (Natrasoap®) fatty acids - K salt** Permit to September 2023: Contact agent.

  Permit: http://permits.apvma.gov.au/PER14414.PDF

  Use: Apply at the first nymphal instar stage and repeat 7-10 days apart. Withholding Period: Nil

  Note: Many growers report that Natrasoap® and its equivalent - potassium salts mixed with oil products to be ineffective.

- **Potassium carbonate and potassium bi-carbonate** are foliar nutrients that may have **incidental contact agent** pest control properties.

- **Horticultural spray oils** are simple, easy to use safely, and are kinder to beneficial

insects, but they do depend on the spray fully "wetting" the instars and insects. Since the instars and insects live on the underside of olive leaves, the spray equipment must be set up carefully to saturate the undersides of the leaves right across the tree.

Label:http://websvr.infopest.com.au/LabelRouter?LabelType=L&Mode=1&ProductCode=59092

Note: Paraffinic and vegetable oils (including olive oil) - contact agents - potential low toxicity organic options - however there are implications for use of vegetable oils on EVOO fatty acid profile.

- **Biologicals** including the native green lacewing *Mallada signata*

  Technical: https://bugsforbugs.com.au/wp-content/uploads/Tech-sheet-Lacewings-150920.pdf

  Orders: https://bugsforbugs.com.au/product/lacewing/

  Note: The native green lacewing *Mallada signata* is commercially available. [1]Robert Spooner hart says he *"has several times observed in the field lacewing larvae attacking nymphal stages of OLB (including with carcases on their back). But this has been rare, and I have been through many populations of lace bug with no obvious signs of predation, except for occasional spiders".*

OLB Pesticide Options & Resistance Management:

If the same or similar pesticides are regularly used on a crop there is a risk that the pest will become resistant to these chemicals, as a consequence their efficacy declines.

A resistance management strategy involves the rotation of use of approved pesticides from difference chemical groups – hence the need to have approved alternative control options available.

CropLife Australia Insecticide Resistance Management Strategies. Fungicide Activity Group Table (Valid as at 10 June 2020)

IRAC Mode of Action Classification Scheme (Issued March 2020).

Suggested resistance management strategy for the control of olive lace bug:

(Assuming the Australian olive industry has legal access to the above Group 1B, 3A, 4A, 4D, 7C pesticides)

- **DO NOT** apply consecutive sprays of solo products containing **Group 4A**, consecutive sprays include mixtures containing **Group 7C** pesticides.
- **Consecutive application** includes from the end of one season to the start of the following season.
- **DO NOT** apply consecutive sprays of solo products containing **Group 1B, Group 3A**, **Group 4D** pesticides.

- **Rotate** use of products from **Group 1B, Group 3A, Group 4A or Group 4D** pesticides, as well as pursuing other soft / biological control option.

Control of Black Scale *Saissetia oleae*

Currently the following formulations are approved by the Regulator for use on olives for the control of Black Scale *Saissetia oleae*

Group 4A: **Nicotinic acetylcholine receptor (nAChR) competitive modulators (Neonicotinoids)**

- **PER 89943 Trivor Insecticide (acetamiprid + pyriproxyfen)** Permit to 31 January 2024, **Group 4A (Neonicotinoid) and Group 7C (Insect Growth Regulator)**

  Permit: https://permits.apvma.gov.au/PER89943.PDF

  Use: Maximum of 2 applications per season. Withholding Period 28 days

- **Control of Use Vic Only**: **Bayer Confidor 200 SC Insectcide, Group 4A Insecticide (neonicotinoid),**

Group 4D: Nicotinic acetylcholine receptor (nAChR) competitive modulators (Butenolides)

- **Registered: Flupyradifurone (SIVANTO)** - (Xylem mobile) foliar contact agent and in soil systemic **Group 4D butenolide systemic insecticide– IPM compatible**.

  Label: https://websvr.infopest.com.au/LabelRouter?LabelType=L&Mode=1&ProductCode=84727

  Use: Maximum of 2 application per season. Withholding Period: 14 days.

Group 7B: Juvenile hormone mimics (Fenoxycarb)

- **Registered fenoxycarb (Insegar): Group 7B insect growth regulator**,

  Label: https://www.syngenta.com.au/product/crop-protection/insegar-wg

  Use: Maximum of 2 applications per season. Withholding Period 56 days

Group 7C: Juvenile hormone mimics (Pyriproxyfen)

- **PER 89943 Trivor Insecticide (acetamiprid + pyriproxyfen)** Permit to 31 January 2024, **Group 4A (Neonicotinoid) and Group 7C (Insect Growth Regulator)**

  Permit: https://permits.apvma.gov.au/PER89943.PDF

  Use: Maximum of 2 applications per season. Withholding Period 28 days

- **Registered pyriproxfen (Admiral), Group 7C Insecticide**,

  Label: https://sumitomo-chem.com.au/sites/default/files/sds-label/admiral_adv_label_0.pdf

  Use: Maximum of 2 applications per season. Withholding Period: 7 days

Organic and other "soft" control options for Black Scale:

- **Biological control options:** Black scale has been the subject of biological control projects in the Australian citrus industry since 1902. From 1902 to 1947, 24 species of beneficial insects (22 parasites, two predators) were released for its control.
- These included *Metaphycus anneckei* in 1902 from South Africa and *M. helvolus* 1943–47 from the USA. From 1998 to 2003, *M. helvolus* and *M. lounsburyi* were released in citrus as part of a Horticulture Australia Ltd-funded project.
- Surveys as part of a Rural Industries Research and Development Corporation project in WA showed that the egg predator, *Scutellista caerulea,* is most common. *M. helvolus* and *M. anneckei* are poorly established.
- The effectiveness of *S. caerulea* is limited, because populations build up too late to prevent scale outbreaks.
- Establishment of *M. helvolus* and *M. lounsburyi* in olives is recommended. However, there may be problems in obtaining insects commercially for release.
- **General predators** such as lacewings and ladybirds also feed on black scale.
- **Ant control** is required where growers are interested in pursuing biological control, as ants harvest honey dew from black scale, and protect the scale from parasites and predators.
- **Potassium carbonate and potassium bi-carbonate** are foliar nutrients that may have incidental contact agent pest control properties
- **Horticultural spray oils** are simple, easy to use safely, and are kinder to beneficial insects, but they do depend on the spray fully "wetting" the instars and insects. Since the instars and insects live on the underside of olive leaves, the spray equipment must be set up carefully to saturate the undersides of the leaves right across the tree.

  Label:http://websvr.infopest.com.au/LabelRouter?LabelType=L&Mode=1&ProductCode=59092

  Note: Paraffinic and vegetable oils (including olive oil) - contact agents - potential low toxicity organic options - however there are implications for use of vegetable oils on EVOO fatty acid profile.

Note: There are currently no approved chemical control options for **Armoured Scales.**

However under Victorian control of agri-chemical use legislation, Victorian olive growers have broader use options.

Suggested resistance management strategy for the control of black scale:

Assuming the Australian olive industry has legal access to the above Group 4A, 7B and 7C pesticides

- **DO NOT** apply consecutive sprays of solo products containing **Group 4A**, consecutive sprays include mixtures containing **Group 7C** pesticides.
- **Consecutive application** includes from the end of one season to the start of the following season.
- **Rotate** use of products from **Group 4A, Group 7B and Group 7C** pesticides, as well as pursuing other soft / biological control option.

Control of Curculio Beetle / Apple Weevil (*Otiorhynchus cribricollis*)

Currently there is one chemical approved and one pending approval by the Regulator for use on olives for the control of Curculio Beetle / Apple Weevil:

Group 3A: Sodium channel modulators (Pyrethroids)

- PER14791 Ver 3 Alpha-cypermethrin (Dominix) Permit to 30 November 2021, Group 3A Insecticide,
  Permit: http://permits.apvma.gov.au/PER14791.PDF
  Use: Maximum of 2 applications per season to trees of fruit bearing age. Butt drench only. Withholding Period: N/A

Group TBC:

- *DC163 (BCS – coded product)*, ***Group TBC*** *Insecticide .*

  Hort Innovation project ST17000 in progress to generate data for control of **Apple Weevil (Curculio Beetle)** in olives. Project completion expected in March 2022.

Non-chemical control options for Curculio Beetle / Apple Weevil:

Prune to keep branches from touching the ground; Barrier - a sticky barrier applied in a band around the trunk will stop the insects moving into the tree; fluffy Dacron trunk bands with and without "hot chilli" help exclude weevils from the canopy.

Control of Olive Bud Mite *Oxycenus maxwelli*

There are currently no approved chemical control options for **Olive Bud Mite** *Oxycenus maxwelli*.

Group 23: Inhibitors of acetyl CoA carboxylase

- **Pending: New Label Registration: Spiromesifen (Oberon) Miticide / Insecticide, translaminar, systemic, IPM compatible Group 23 Insecticide.**

  Hort Innovation project ST19020 (AgVet grant) was contracted in June 2019, the project completion timeframe is Dec-2023 for a new registration to control **Olive Bud Mite** in olives.

  Label: https://s3-us-west-1.amazonaws.com/agrian-cg-fs1-production/pdfs/Oberon_2_SC_CA__HI_InsecticideMiticide_Label4e.pdf

  Use: Likely maximum of 2 applications per season. Withholding Period 30 days

However under Victorian control of agri-chemical use legislation, Victorian olive growers have broader use options.

Organic and other "soft" control options for Olive Bud Mite:

Wettable sulphur has proven effective when applied before olive flowers bloom, but damage to the tree can occur at temperatures above 32.2°C. For high temperatures, dusting sulphur is safer to use than wettable sulphur.

- **Horticultural summer oils** should be considered and may be less disruptive to natural enemies because they have a shorter residual time than sulphur products. Oils should be applied to well-watered olive trees when the temperatures are cooler.
- **Natural enemies** of the olive bud mite have been reported but are not known in the United States. In Australia, some phytoseiid mites, like *Euseius elinae* (Schicha), prey on the olive bud mite. Also, lady beetles (*Stethorus* spp.) act as a biological control. In Argentina, a stigmaeid mite, *Agistemus aimogastaensis,* was discovered as a predator of the olive bud mite (Leiva et al. 2013).

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Control of Ants *Hymenoptera: Formicidae*.

Currently there are two chemicals approved for the control of Ants in olive groves.

Group 1B: Acetylcholinesterase (AChE) inhibitors (Organophosphates)

- **PER14575 Chlorpyrifos (Lorsban)** Permit to 31 March 2025, **Group 1B Insecticide**, Permit: http://permits.apvma.gov.au/PER14575.PDF
  Use: Apply to ground and a butt treatment. Maximum of 2 applications per season to trees of fruit bearing age. Butt drench only. Withholding Period: N/A.

  Note: Also approved for control of African Black Beetle and Light Brown Olive Moth (LBAM) on olives (not usually a problem).

Group 7C: Juvenile hormone mimics (Pyriproxyfen)

- **Registered Pyriproxyfen (Distance Plus Ant Bait®), Group 7C Insecticide**, Label: https://sumitomo-chem.com.au/sites/default/files/sds-label/distance_plus_0217.pdf
  Use: DO NOT apply directly to crop plants. Apply to inter-row areas only. DO NOT exceed 3 applications per year and a minimum of 3 months between each treatment. Withholding Period: N/A

Organic and other "soft" control options for Ants:

- Ants can be deterred from climbing the trees with the use of a sticky band traps. High populations of ants may interfere with the predators and reduce their performance.
- Ants are frequently associated with Black Scale infestations. High levels of ant activity on trees often indicate significant populations of honeydew- producing insects. Ant activity can therefore be a useful indicator of which trees to check more closely for these and other pests. An exception is that ant activity may be high during flowering when the ants are attracted to nectar.

Note: There are many other approved baits to control ants in non-cropping areas eg around sheds and other buildings:

Control of Queensland Fruit Fly *Bactrocera tryoni.*

Unfortunately, there are no chemical control options directly available. The permit for dimethoate on olives has been extended to the end of March 2022, but does not include fruit fly on olives, (withholding period 28 days). Industry has a new product, Trivor® that is permitted in a number of crops for fruit fly suppression, but at this stage not for fruit fly on olives - it is only permitted for olive lace bug and scales (withholding period 28 days). Samurai® (currently permitted for olive lace bug) is legal for fruit fly in a number of other fruit crops, but its long withholding period of 56 days would exclude use for olives around the harvest period.

Legal options control include using baiting with protein hydrolysate/yeast autolysate mixed with the human-safe safe insecticide Spinosad: https://bugsforbugs.com.au/product/naturalure-trade-fruit-fly-bait/ (also see spinosad label), or mix protein hydrolysate/yeast autolysate with maldison (these are is trunk treated, and must not contaminate fruit) . Also, you should monitor earlier in the season (say mid-late summer) for presence of fruit flies with fruit fly traps- however, these only attract male flies, so aren't effective for control.

Biosecurity and reporting:

On-farm biosecurity best practices play a pivotal role in maintaining Australia's reputation for producing high quality products. Olive growers should have in place on-farm biosecurity action plan outlining critical measures to protect their crops from pests and diseases.

Biosecurity risk management, AOA 2019

AOA requests olive growers to regularly monitor their groves for the above exotic disease symptoms in the coming fruit season and report any findings to the usual biosecurity agency in your state or via the Exotic Plant Pest Hotline: 1800 084 881. This will put you in contact with your state or territory department of agriculture or primary industries**,** who will ask some questions to help understand the situation, such as:

- what was seen (describe the pest or send a photo) and when was it first noticed
- where it was found and what it was on
- how many pests are present/how infected is the crop
- how widely distributed it is.

Every report will be taken seriously, checked out and treated confidentially.


We hope you never meet Toules' dastardly cousin.
PROTECT YOUR INVESTMENT
If you find them
... or see these
DO THIS
Email photos and details to AOA
ceo@australianolives.com.au
PHONE PLANT PEST HOTLINE
1800 084 881

END