



MONITORING FOR PESTS AND DISEASES IN OLIVE GROVES

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This is No. 2 in a series of 9 tutorials on IPDM in olives

The others are:

1. Principles and practices of Integrated Pest and Disease Management
3. Biosecurity, including pests and diseases not present in Australia
4. Black scale: biology, damage and management
5. Olive lace bug: biology, damage and management
6. Apple weevil: biology, damage and management
7. Anthracnose: life cycle, conditions conducive, symptomatology and damage, and management
8. Peacock spot: life cycle, conditions conducive, symptomatology and damage, and management
9. Cercospora leaf mould: life cycle, conditions conducive, symptomatology and damage, and management

It is an output from the Hort Innovation project OL17001 An Integrated Pest and Disease Management Extension program for the Olive Industry



MONITORING

- Is the most important component of IPDM (see also Tutorial 1 IPDM Principles and Practices of Integrated Pest and Disease Management)
- It is based on sampling, assessment of pests, diseases and/or their damage (including plant stress)
- It can be undertaken by growers, trained employees or pest scouts/consultants, using visual observations in person and/or by remote technology (e.g. drones, robots)
- Weather/climate data can commonly be used to predict likely pest and disease outbreaks



MONITORING

- Groves (or blocks in large groves) should be monitored at least monthly during the growing season.
- Monitor priority blocks (those with history of problems, susceptible varieties/age of plants, or high quality produce) more frequently
- Divide large blocks into sub-blocks. Select several rows within each sub-block. Sample different rows/trees each time, and include more detailed tree inspection
- Examine individual trees from all sides and at all heights using a systematic approach



- Inspect samples of leaves, twigs, flowers and fruit for the presence of pests, diseases or damage and their stage(s) of development using a 10× hand lens or magnifying glass (note: the working distance, [how far away from an object you should hold] a 10× hand lens is typically 2-2.5 cm).
- If a pest or disease is detected, check surrounding trees in the row and adjacent rows to establish the extent of the infestation. This is useful for spot treatment.
- Monitoring after an intervention (such as pesticide application, or release of a biological control agent) will demonstrate its level of success.



RECORDING MONITORING DATA

Record monitoring data including date, and in case of detection of pest, disease or damage, note tree(s) ID cultivar and position, extent of damage, pattern of infection, life stage, any parasitism etc.

Make a note of the **pattern of infection**, which is the association of the disease or pest with

- Terrain (e.g. sheltered or exposed locations, low lying areas)
- Weather and aspect (prevailing wind direction, orientation to sun.
- Tree characteristics (cultivar, age, part of tree affected)
- Cultural practices (irrigation, fertilizers, pesticides, pruning, mulching)

This particularly helps in interpreting the monitoring data



IDENTIFYING PESTS, DISEASES, DAMAGE AND BENEFICIAL SPECIES

- In 2 industry IPDM surveys, growers have indicated they are most confident in identifying common olive insect pests, followed by diseases, and least confident in identifying beneficial species.
- However, identification of the cause from damage symptoms can be difficult, and often requires specialist expertise. This is because similar symptoms may have a myriad of causes, either individually or in combination. For example, conditions that result in unhealthy trees may predispose them to attack by pests and diseases.
- We advise to consult a trained specialist, especially if you are unsure about your diagnosis. The process for doing this is presented later in this tutorial.



The following table **POSSIBLE SYMPTOMS AND CAUSES ON OLIVE TREES** is a guide the common pests, diseases and disorders associated with symptoms on trees or olive products. It should enable you to access further information on the possible causal organisms. This includes output material from this IPDM project, including the revised Field Guide, or tutorials on the key pests and diseases (see slide 2).



POSSIBLE SYMPTOMS AND CAUSES ON OLIVE TREES

	Common name of:		
Symptom	Pest	Disease	Disorder
Leaf yellowing & branch dieback	African black beetle Armoured scales Black scale	Charcoal rot Leaf mould Peacock spot Phytophthora Rhizoctonia Verticillium Wound canker	Tip death
Leaf spots, leaf discolouration & damage	Grasshoppers Lace bug Lt-brown apple moth Rutherglen bug Weevils	Leaf mould Peacock spot	Sooty mould



Common name of:

Symptom	Pest	Disease	Disorder
Leaf fall	Lace bug	Leaf mould Peacock spot	Problems with water and plant nutrition
Flower damage	Thrips	Anthracnose	
Fruit damage and rot	Armoured scale Green vegetable bug Fruit fly	Anthracnose Peacock spot	Apical end rot



	Common name of:		
Symptom	Pest	Disease	Disorder
Stem damage, galls and bumps	Cicadas	Crown gall Olive knot	Sphaeroblasts & oedema
Stem cankers & death		Phytophthora Verticillium Wound canker	
Root rotting and damage	African black beetle (larvae) Weevils (larvae)	Charcoal rot Nematodes Phytophthora Rhizoctonia	Clay panning or root plaiting
Tree blackening	Ants Black scale		Sooty mould



To identify or confirm diagnosis of pests or diseases, the recommended option is to contact the Plant Health Diagnostic laboratory of your State Department of Agriculture (or its equivalent). For information on how to send specimens and associated charges, please see the following links.

NSW: <https://www.dpi.nsw.gov.au/about-us/services/laboratory-services/plant-health>

Qld: <https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/agribusiness/grow-help-australia>

SA: https://pir.sa.gov.au/research/services/crop_diagnositics/horticulture-pathology

WA: <https://www.agric.wa.gov.au/bacteria/ddls-plant-pathology-services>

Vic: <http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/diagnostic-services#crop-health-services>

Tas: <https://dpiptwe.tas.gov.au/biosecurity-tasmania/plant-biosecurity/plant-diagnostic-services>

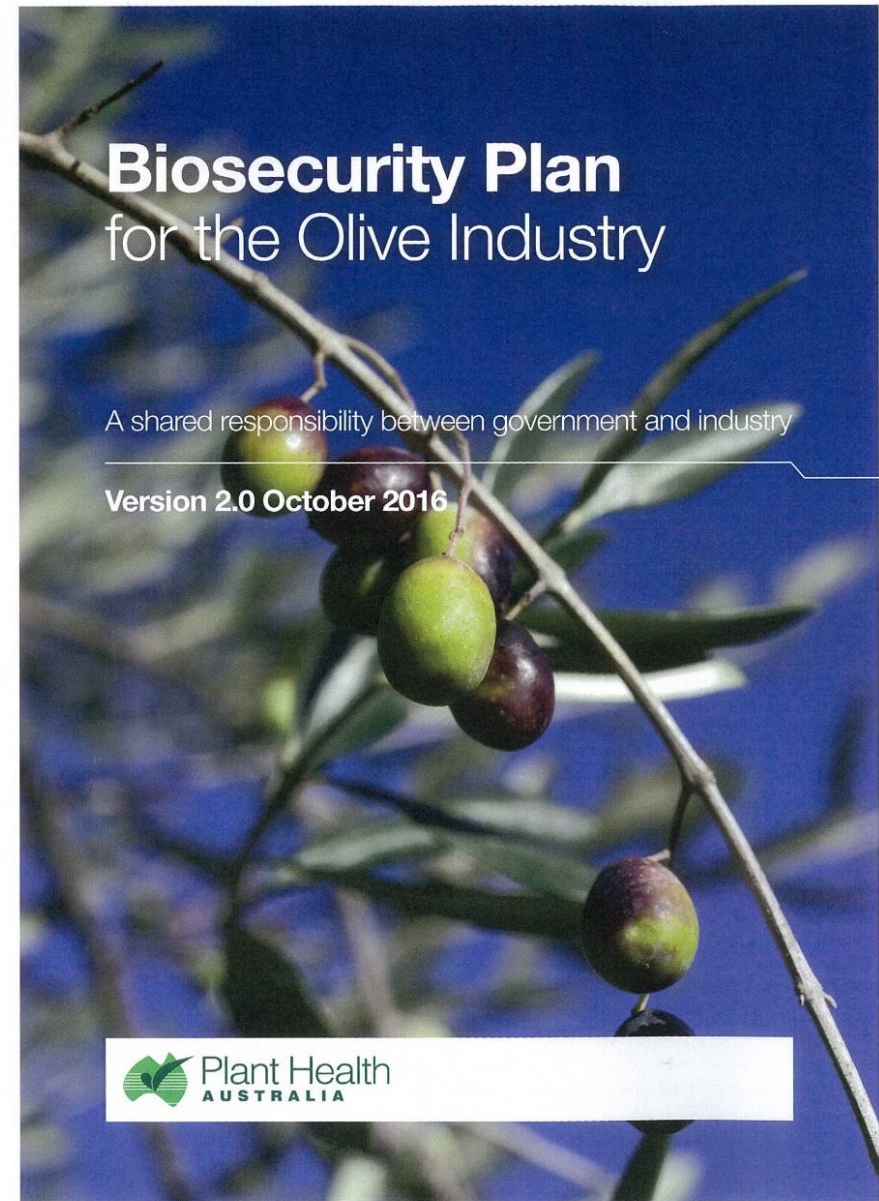


The Biosecurity Plan for the Olive Industry (v2.0) (2016)

was developed by **PLANT HEALTH AUSTRALIA** in collaboration with **government and industry resources and expertise.**

It “outlines key threats to the industry, risk mitigation plans, identification and categorisation of exotic pests and contingency plans”

For a copy, contact PHA on 02 6215 7700 or email admin@phau.com.au.



THE BIOSECURITY PLAN IDENTIFIED 5 HIGH PRIORITY PESTS

- Olive fly (*Bactrocera oleae*)
- Olive moth (*Prays oleae*)
- Leaf scorch (*Xylella fastidiosa* subsp. *multiplex* (with vectors))
- Olive quick decline (*Xylella fastidiosa* subsp. *pauca* (with vectors))
- Verticillium wilt (defoliating strain) (*Verticillium dahliae*)

DETAILED INFORMATION ON THESE PESTS AND DISEASES IS PROVIDED IN THE PEST AND DISEASE FIELD GUIDE AND IN TUTORIAL 3.



- **You should familiarise yourself and your staff with the Exotic Pests and Diseases that pose a threat to the Australian olive industry.**
- **Staff should notify the owner/manager our monitoring immediately they come across unfamiliar damage, or possible pests or diseases.**
- **If you suspect a new pest, call the Exotic Plant Pest Hotline on 1800 084 881.**

**EXOTIC PLANT PEST HOTLINE
1800 084 881**



REVIEW QUESTIONS

- Q1: How frequently should your grove be monitored for pests and diseases?
- Q2: What do you do if you or your staff come across unfamiliar damage or a suspected new pest?



ANSWERS

- Q1: It is recommended groves (or blocks in large groves) be monitored at least monthly during the growing season, and high priority blocks even more frequently.
- Q2: If you suspect a new pest, call the Exotic Plant Pest Hotline on 1800 084 881



QUESTIONS TO CONSIDER AFTER READING THIS TUTORIAL

- What is your monitoring strategy, and your pest and disease recording system? Can it be improved?
- Do you monitor beneficial species, especially known enemies of key pests (such as parasitised black scale, or scale footprints)
- Do you undertake follow-up monitoring after application of control methods such as chemical/organic spray applications, use of biocontrol agents, plant nutrition and soil improvement strategies?



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For more information on the fund and strategic levy investment visit horticulture.com.au

