

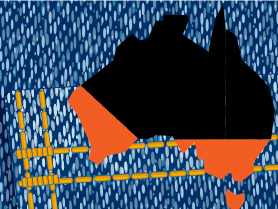
Crop Mites

THE BACK POCKET GUIDE

GRDC

Grains
Research &
Development
Corporation

Your GRDC working with you



INTRODUCTION

Crop mites

Mites are among the most diverse and successful of all invertebrate groups. They are small in size and often go unnoticed, however mites are one of the most important pest groups attacking Australian grain crops. Some species have become more problematic over the last decade as farming practices have changed, and others are proving difficult to control due to tolerance and chemical resistance issues.

There are only a few mite species considered major crop pests in Australia. These are the redlegged earth mite, blue oat mite, Bryobia mite and Balaustium

mite. In addition there are also sporadic pests that occasionally cause crop damage in grains; notably the brown wheat mite and the two-spotted mite (a serious pest in horticulture).

Unfortunately all these mites are relatively similar in appearance and can co-exist in the same area. Incorrect identification between species leads to ineffective control of mite pests in crops and pastures. This guide is designed to assist growers in identifying the most commonly observed mite species found in the southern and western cropping regions.

Redlegged earth mite

DESCRIPTION

- Redlegged earth mites grow to about 1 mm in length.
- Adults have a velvety black body and eight red legs.
- Newly hatched mites are pinkish-orange with six legs and are 0.2 mm long.
- Nymphs develop into mature adults in approx. 4-6 weeks.
- In autumn, over-summering eggs hatch when there is significant rainfall and the mean daily temperatures fall below approx. 21°C.
- Redlegged earth mites can have three generations per season.

CROPS ATTACKED

- Canola, pulses and other legume seedlings are the most susceptible.
- Redlegged earth mites feed on broadleaf weeds, particularly capeweed. They also attack cereals and grasses especially when selective herbicides eliminate preferred hosts.
- Redlegged earth mites are often found in feeding aggregations, of up to 30 individuals.
- Feeding causes silvering or white discoloration of leaves and distortion or shrivelling in severe infestations.



CONFUSED WITH

- Commonly confused with blue oat mites, and sometimes with Balaustium mites and Bryobia mites.
- Redlegged earth mites generally feed on leaf surfaces in large groups unlike other species that tend to feed singularly.

MANAGEMENT

- Snout mites and other predatory mites are occasional natural enemies, especially in established pastures.
- Heavy grazing of pasture paddocks during the spring period will reduce mite population carry-over to the following autumn.
- Removal of weeds prior to sowing crops can reduce populations by destroying their food source, however this will not be as effective in seasons with an early break.
- There are many pesticides registered, although resistance to synthetic pyrethroid chemicals has been detected in some populations. Rotate chemical classes of pesticides.
- Carefully timed applications of chemicals in spring using Timerite® will minimise mite populations the following autumn.



COMMONLY OBSERVED IN GRAINS CROPS

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC

Blue oat mite

DESCRIPTION

- Blue oat mites are 1 mm in length when adults.
- Adults have a blue-black body with a distinctive red mark on their back and eight red-orange legs.
- Nymphs are pinkish-orange in colour with six legs on hatching, but soon become greenish and then blue-black.
- Blue oat mites usually have three generations per season, with each generation lasting 8-10 weeks.
- Over-summering diapause eggs hatch in autumn, stimulated by cold temperatures and adequate moisture.
- There are three blue oat mite species that are pests of grain crops in Australia. A microscope is required to distinguish between species.

CROPS ATTACKED

- All crops and pastures are vulnerable to attack and are most susceptible at the seedling stage.
- Blue oat mites feed on cereals, grasses, canola, field peas, legumes and various weeds.
- Feeding causes silvering or white discoloration of leaves and distortion or shrivelling in severe infestations.



CONFUSED WITH

- Commonly confused with redlegged earth mites, and sometimes with Balaustium mites and Bryobia mites.
- Blue oat mites tend to feed singularly or in very small groups.

MANAGEMENT

- Snout mites and other predatory mites are occasional natural enemies, especially in established pastures.
- Blue oat mites can have a higher tolerance to a range of pesticides. Ensure pesticide sprays are applied at the full registered rates.
- To prevent population build-up, pesticides used at or after crop emergence should be applied within three weeks of the first appearance of mites, before adults start laying eggs.
- Spring spraying using Timerite® is largely ineffective against blue oat mites and is not recommended.



COMMONLY OBSERVED IN GRAINS CROPS

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC

Balaustium mite

DESCRIPTION

- Balaustium mites grow to 2 mm in length and have a rounded red-brown body with eight red-orange legs.
- When fully grown, they are much larger in size than other mites.
- Adults are covered with short stout hairs, are slow moving and have distinctive pad-like structures on their forelegs.
- Newly hatched mites are bright orange with six legs and are only 0.2 mm in length.
- Balaustium mites usually have two generations per season and do not require cold temperatures to stimulate egg hatching. Eggs hatch when there is sufficient moisture.

CROPS ATTACKED

- Canola, lupins and cereals are the most susceptible, particularly at the seedling stage.
- Some broadleaf weeds are alternative hosts.
- Balaustium mites typically attack leaf edges and leaf tips of plants.
- In canola damage is characterised by distorted cupped cotyledons, which may have a leathery appearance.
- In pulses and cereals Balaustium mites cause irregular white spotting or bleaching of the leaves.



CONFUSED WITH

- Commonly confused with **Bryobia** mites, and sometimes with blue oat mites and redlegged earth mites.
- Balaustium mites are generally twice as large as other mites when adults.

MANAGEMENT

- There are no known effective biological control options.
- Early control of summer and autumn weeds within and around paddocks, especially capeweed and grasses, will help to control populations.
- Currently there are no pesticides registered for Balaustium mites.
- Balaustium mites have a high natural tolerance to chemicals and will typically survive pesticide applications aimed at other mite pests.



COMMONLY OBSERVED IN GRAINS CROPS

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC

Bryobia mite

DESCRIPTION

- Bryobia mites (also referred to as “Clover mites”) are smaller than other commonly occurring pest mites, reaching about 0.75 mm in length as adults.
- They have an oval shaped flattened dorsal body that is dark grey, pale orange or olive in colour and have 8 pale orange legs.
- The front pair of legs are much larger; about 1.5 times their body length.
- Nymphs are small with bright red bodies with pale coloured legs.
- There are many species of Bryobia mites found in grain crops in Australia. They are found in high numbers in the warmer months from spring through to autumn.

CROPS ATTACKED

- Bryobia mites prefer broadleaf plants, such as canola, lupins, vetch, lucerne and clover, but will also attack cereals.
- In pastures, Bryobia mites prefer clovers and medics over grasses.
- They feed on the upper surfaces of leaves and cotyledons by piercing and sucking leaf material, resulting in distinctive trails of whitish-grey spots on leaves.
- On grasses, Bryobia mite feeding can resemble that of redlegged earth mites and blue oat mites.



CONFUSED WITH

- Most commonly confused with brown wheat mites and Balaustium mites and sometimes redlegged earth mites.

MANAGEMENT

- There are no known biological control options.
- Crops that follow clover-dominant pastures are most at risk, and should be monitored carefully.
- Early control of summer and autumn weeds, within and around paddocks, especially broadleaf weeds such as capeweed and clovers, will help to control populations.
- There are several pesticides registered for use on Bryobia mites, however higher rates are usually required than for redlegged earth mites and blue oat mites.
- Bryobia mites have a natural tolerance to several chemicals.



COMMONLY OBSERVED IN GRAINS CROPS

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC

Two-spotted mite

DESCRIPTION

- Adults are yellow-green in colour with darker green spots on either side of the body and have eight legs.
- Two-spotted mites are small, reaching only about 0.5 mm in length.
- Nymphs are smaller in size and have six legs.
- The two-spotted mite has multiple overlapping generations. In cooler regions, mites may change into an orange-red over-wintering form.

CROPS ATTACKED

- Various crops, including cotton, maize and soybeans. They are occasional pests of canola and lucerne, and will also feed on numerous broadleaf weeds.
- Two-spotted mites feed on the underside of leaves and are often found clustered in groups near the petiole, leaf blade or in leaf folds.
- Initial symptoms of damage in field crops are a bronzing speckled appearance on the upper surface of the leaf. Fine webbing is visible on the lower leaf surface.

CONFUSED WITH

- Commonly confused with strawberry spider mites, bean spider mites and brown wheat mites.



COMMONLY OBSERVED IN GRAINS CROPS

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC

Brown wheat mite

DESCRIPTION

- Brown wheat mites are globular in shape, red-brown in colour and grow to about 0.6 mm in length.
- They have pale yellow-orange legs. Their forelegs are distinctly longer than the other three pair of legs.
- Nymphs are smaller in size and orange-red.
- Brown wheat mites can be a pest during periods of dry, warm weather.

CROPS ATTACKED

- Brown wheat mites are sporadic pests of winter cereals and are a pest of cotton and some grasses.
- They damage plants by destroying plant cells as they feed, resulting in a stippling of the leaves.
- They have a tendency to feed on the tips of the leaves, causing them to dry out and die. Heavily infested fields present a scorched withered appearance.

CONFUSED WITH

- Commonly confused with *Bryobia* mites, and sometimes with *Balaustium* mites.

PHOTO: FRANK PEARS, COLORADO STATE UNIVERSITY



COMMONLY OBSERVED IN GRAINS CROPS

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC

MONITORING




Monitoring involves the assessment of the health of a crop, the presence of pests and gauging their population levels at regular intervals. This is a critical component of integrated pest management as the identification of pest (and beneficial insects), and their relative densities is used to inform control decisions.

Few monitoring techniques target all pest groups, so combining different techniques is often required for accuracy and effectiveness. The most commonly used techniques to monitor mites are: Visual Assessments; Suction Sampling; Pitfall Traps and Germinating Seed Baits. Inspect susceptible crops from autumn to spring for the presence of mites and evidence of feeding

damage. It is particularly important to inspect crops regularly in the first few weeks of emergence.

Do not inspect crops when it is raining or visibly wet. Monitor regularly and thoroughly. Randomly choose monitoring sites within each paddock, although selecting previously weedy areas and/or along fencelines adjoining pastures are good places for initial inspections.

Monitoring can lead to savings for growers by avoiding pesticides when they are not required, or alternatively, it can help with the early detection of mites before they cause significant crop damage.



Disclaimer: Any recommendations, suggestions or opinions contained in this publication do not necessarily represent the policy or views of the Grains Research and Development Corporation (GRDC) and **cesar**. No person should act on the basis of the contents of this publication without first obtaining specific, independent professional advice. The GRDC and **cesar** will not be liable for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on the information in this publication.

Copyright: © All material published in *The Back Pocket Guide* is copyright protected and may not be reproduced in any form without written permission from the Grains Research and Development Corporation and **cesar**.

Photos: Dr Andrew Weeks, **cesar** Acknowledgements: Peter Mangano, DAFWA

Crop Mites Back Pocket Guide is part of a series of *Back Pocket Guides* published by the GRDC.

July 2012



Dr Paul Umina, **cesar**
T: 03 9349 4723
E: pumina@cesaraustralia.com

GRDC

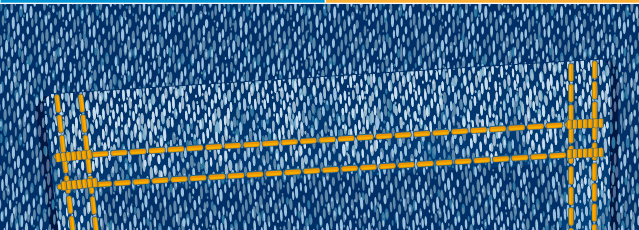
Grains
Research &
Development
Corporation

Maureen Cribb,
GRDC Publishing Manager
T: 02 6166 4500
E: m.cribb@grdc.com.au

GROUND COVER DIRECT How to order
Free phone 1800 11 00 44 Free fax 1800 00 99 88
Email ground-cover-direct@canprint.com.au
Post Ground Cover Direct, PO Box 7456, Canberra MC ACT 2610
For a complete listing of all GRDC publications, go to www.grdc.com.au/bookshop

Production and design by Coretext
T: 03 9670 1168 www.coretext.com.au

coretext



Useful resources

NATIONAL

- pestIQ www.pestIQ.com.au
- GRDC Pest Links www.grdc.com.au/pestlinks
- GRDC Integrated Pest Management Fact Sheet www.grdc.com.au/factsheets
- cesar cesaraustralia.com/sustainable-agriculture

SOUTHERN REGION

- *Crop Insects: The Ute Guide (Southern Region Grain Belt edition)*, copies available at **Ground Cover Direct**

WESTERN REGION

- *Crop Insects: The Ute Guide (Western Region Grain Belt edition)*, copies available at **Ground Cover Direct**

