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GRDC GROWNOTES™

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GRAINS RESEARCH & DEVELOPMENT CORPORATION

OATS

SECTION 7

INSECT CONTROL

FIELD PESTS | STORED GRAIN PESTS

SECTION 7

Insect control

Damage from field insects is not generally a major factor for oat crops. Mites can be a threat when oats are at the seedling stage, and aphids are able to transmit viruses. Damage from other pests can occur if populations build up. Grain insects are not permitted in export grain or grain for sale, and there is a zero tolerance for insects in export hay. Protecting against field and stored grain pests is therefore critical. [1]

7.1 Field pests

Planning rotations to minimise pest carryover, timely sowing, adequate crop nutrition and good control of weed and root diseases will all assist in reducing the likelihood of crop attack by insect pests.

Check crops regularly throughout their growth for field insects. Control redlegged earth mite and lucerne flea during the seedling stage if necessary. Check for and control aphids from the flag-leaf stage, and later in crops considered high yielding. Aphids can transmit *Barley yellow dwarf virus* (BYDV). If growing susceptible varieties in areas with moderate to high risk of BYDV, then spraying the crop with a synthetic pyrethroid at ~30 days after sowing is advisable.

Correct identification of the insect is critical for successful management.[2]

7.1.1 Cockchafer

Crop stage

Look for cockchafers before seeding.

Description

There are several important pest species, and adults range in size from 5 to 20 mm. Adults are usually brown or blackish beetles. The beetles fly readily and are attracted to lights. Cockchafer larvae are characteristically C-shaped, creamy white grubs 2–25 mm long (Figure 1).

Life cycle

Some species have a long larval stage that extends over 12–18 months. In most species, larvae are active during late autumn and winter. In these species, pupation occurs in spring and adults emerge in early summer. Feeding, mating and egg-laying may occur throughout summer.

Damage

Cockchafer larvae feed underground and some species are serious pests that may cause patches and poor growth in pasture and may slow growth or kill large areas of cereals and lupins. Young plants without extensive root systems are worst affected. The adult beetles are also very destructive because they feed on tree foliage.

1 DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

2 DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

Control

Control of cockchafer larvae is rarely warranted. The pest species in Western Australia cannot be controlled with chemicals after planting because the larvae remain underground. Cultivation, shallow planting and a high seeding rate may help to overcome the problem, which is most serious when early growth is slow. Large populations may be present under young crops and in pasture without causing significant damage.[3]

Figure 1: Cockchafer larvae (left panel) and adults (right panels). (Photos: DAFWA)

[3] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

7.1.2 Desiantha weevil

Crop stage

Look for *Desiantha* weevil larvae before seeding and at seedling stage.

Description

The larvae are white, legless creatures 6 mm long and with orange-brown heads. They remain under the soil and are difficult to locate, although some painstaking digging may reveal the larvae close to plants. The adults are grey-black weevils approximately 5 mm long with the typical weevil snout (Figure 2).

Life cycle

Eggs are laid in autumn and hatch after opening rain, and the larvae commence feeding on young pasture seedlings. When cereal crops are planted into heavily infested paddocks, they are attacked by the larvae, which may be well grown. In spring, the larvae pupate and become adults. Adults are common in spring and summer, hiding under wood or stones; they can be found on cereal heads, where they can be harvested with the grain.

Damage

Desiantha weevil is a sporadic pest of cereal seedlings in southern coastal areas. The larval stage can destroy hundreds of hectares or may affect smaller areas by feeding on underground parts of the seedlings. Plant growth may be slowed or plants may wilt and die, in which case they may be easily pulled from the soil.

Control

Control with chemicals is not possible after planting. The problem is most likely where shallow sand occurs over gravel or clay. Larvae will be larger following summer rain, so crops should be planted early and shallow to minimise attack. Where the pest is confirmed, planting with treated seed at 90 kg/ha is recommended. [4]

Figure 2: Desiantha weevil (Desiantha diversipes) larva (left) and adults (middle and right). (Photos: DAFWA)

[4] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

7.1.3 Cutworm

Crop stage

Look for cutworms before seeding and at seedling stage.

Description

Several species (*Agrotis infusa*, *A. munda*, various other species) occur in Western Australia, and they vary in appearance, but the larvae are all smooth and plump (Figure 3). Larvae of the most common species, the pink cutworm, are grey-green with a pink tinge and are usually found in sandy soils. Larvae of another common species, the Bogong moth, are dark grey. Larvae usually hide by day but they may be found under the surface and often close to a damaged plant. They curl up when disturbed. At times, brown cutworms with a herringbone pattern along the back damage crops. In southern coastal areas, they are more likely than pink or black cutworms to be found on the soil surface by day. The adults of these herringbone cutworms are of various species, and can range from black, through grey to brown. Occasionally, autumn attack by armyworm in cereals resembles cutworm damage. This is significant, because armyworms are harder to kill with insecticides than are cutworm.

Life cycle

Eggs are laid on the soil or on plant material close to the ground. The larvae may grow 50 mm long before pupating and then finally becoming adult moths. Adults are stout-bodied, with a wingspan of up to 40 mm. The forewings are patterned brown or dark grey. Several generations are possible in one season.

Damage

As the name implies, the cutworm chews through plant parts, often felling the plant at ground level. Just two or three large caterpillars would seriously damage a square metre of crop, and almost all crop and pasture plants are susceptible to attack. This is not a regular pest but large areas may be affected.

Control

Weather and food supply are the most important factors determining abundance. Biological control, such as by fungal diseases, may be very successful. Wasp and fly parasites are also very active in preventing more frequent and serious outbreaks. [5]

Figure 3: Cutworm larvae (left panel) and moths (right panel). (Photo: DAFWA)

[5] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

7.1.4 Webworm

Crop stage

Webworms are present before seeding and at seedling stage.

Description

Webworm caterpillars are seldom seen, being above ground level only when conditions are cool and damp and usually at night. They may be in their web-lined tunnels, from which plant parts may be seen protruding. The caterpillars are pale to deep brown with a tinge of the green gut contents showing through. The head appears black or dark brown (Figure 4). Fully grown caterpillars are ~15 mm long.

Life cycle

Caterpillars hatch from eggs laid amongst grass in autumn and they feed throughout winter. Spring and summer are passed in the tunnels as resting-stage caterpillars. After this, the insects proceed through the pupal stage and emerge as adult moths, which are about 10 mm long and may be seen flying in large numbers on autumn nights. By day, they hide in camouflage in dry grass.

Damage

The continual chewing damage of a heavy webworm infestation may destroy large areas of emerging wheat or barley crops. The caterpillars sever leaves or whole plants, which they scatter on the ground or pull into holes near the plants. In pasture, the grass component may be removed from large areas.

Control

The paddock condition in autumn and the weather are important in determining webworm numbers. In a bare paddock or in stubble, eggs will not be laid in great numbers and they will not survive well. Grassy situations favour survival. Cultivations leading to a weed-free paddock over ~21 days destroy the young stages, but reduced tillage cropping methods allow a greater survival. Hot and dry conditions during May and June, resulting in a lack of feed, could destroy most webworms. If ~25% of the plants are being seriously damaged at or just after emergence, spraying should not be delayed; the continued feeding will kill many plants and result in bare ground or thin areas. [6]

Figure 4: Webworm larvae (left) and moth (right). (Photos: DAFWA)

[6] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

7.1.5 Redlegged earth mite

Crop stage

Look for mites before seeding and at seedling stage.

Description

Adult mites are about the size of a pinhead (up to 1 mm). They have velvety black bodies and eight bright orange-red legs. The mites are often gregarious and are found clumped together in large numbers (Figure 5). They disperse quickly when disturbed.

Life cycle

Mites hatch from over-summering eggs during autumn when adequate moisture and sufficiently low temperatures occur. Eggs produced through the growing season are thin-walled and hatch immediately, and several generations may develop over winter and spring. As pastures begin to senesce, the mites produce thick-walled eggs, which resist drying over summer and carry the mite through to the next season.

Damage

Large numbers of redlegged earth mites are commonly found in annual pastures at the break of the season, and they may cause heavy loss of subterranean clover and annual medic seedlings. These species are susceptible throughout the growing season. Normally, mites do not affect grasses or cereals severely. Mites rupture cells on the surface of leaves and feed on exuding sap; affected leaves look silvered, but do not have holes as with lucerne flea attack. Mite damage to seedlings is more severe if plant growth is slowed. This could be caused by cold and/or waterlogging, low seedling density after a false break, low seedbanks after a crop, or if pastures or stubble are being reseeded. Cape weed increases their reproductive potential.

Control

Seed treatment with a systemic insecticide before sowing of pastures or crops protects seedlings from attack. Post-emergent sprays are also effective. Use systemic chemicals if >60% of plants have emerged. If few plants have come up and cotyledons are damaged as they emerge, it is more effective to use a contact insecticide. Hard spring grazing reduces damage. Biological control is being promoted through collection of a predatory mite, the *Anystis* mite, from original CSIRO establishment sites, and spreading them throughout the agricultural region. Establishment of this predator depends on careful handling during collection and transport, and on ensuring areas of adequate dry plant cover in paddocks for shelter over summer. [7]

Figure 5: Redlegged earth mites (Halotydeus destructor). (Photos: left, DAFWA; right, cesar)

[7] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

7.1.6 Balaustium mite

Crop stage

Balaustium mites can be found at seedling stage.

Description

The *Balaustium* mite has a greyish to red body and red legs and is similar in appearance to the redlegged earth mite. If viewed under a magnifying glass or microscope, short stout hairs can be seen covering the body (Figure 6). The adult grows to almost twice the size of redlegged earth mites.

Life cycle

Balaustium mites require rainfall before over-summering eggs can hatch. Newly hatched nymphs have six legs and are orange. Development from egg to adult takes about 5–6 weeks. Several generations can occur each year.

Damage

Although *Balaustium* mites are seen in pastures and occasionally in crops, it was not until 1997 that reports were received of them being an economic pest. Some properties west of Raventhorpe and some in the Esperance area have had cereal, lupin and canola crops severely bleached and wilted to the point of death from this pest. Mites feed on the leaves of plants by probing into the surface cells with their mouthparts and sucking out sap. Reports indicate that crops sown into paddocks that were in pasture the previous year, with high levels of broadleaf weeds (especially cape weed), will be most at risk from mite damage.

Control

In most situations, crops will not require spraying and the mites will cause little or no damage. Early control of summer weeds in paddocks that are to be cropped will prevent buildup of mite populations. Weeds present in paddocks prior to cropping should be checked to determine the numbers of *Balaustium* mites present. If there are very large numbers, incorporation of insecticide with herbicide immediately prior to sowing is a more effective strategy than spraying when the crop is emerging and has very little cover of green material. No chemicals are currently registered for control of *Balaustium* mite. Farmer trials have shown high rates of synthetic pyrethroids can be effective; however, the mites can be difficult to kill. High rates of dimethoate, omethoate, chlorpyrifos and phosmet have been found ineffective in controlling these mites. [8]

Figure 6: Balaustium mite (Balaustium medicagoense). (Photo: cesar)

[8] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

7.1.7 Bryobia mite

Crop stage

Bryobia mites are present at seedling stage.

Description

The adult mites are slightly smaller than a pinhead with a dark grey body and pale red–orange legs. They can be confused with redlegged earth mite and are difficult to separate without the use of a hand lens. However, redlegged earth mites are not usually present until later in autumn because they have a cold temperature requirement before hatching. The front legs on *Bryobia* mites are very long and held in front of the body like a pair of feelers (Figure 7). The body is rounded and plump, but if the mite is starved, its body shape changes to flat on the top and rounded underneath with a flange around the sides.

Life cycle

Adult *Bryobia* mites are active in late spring, summer and autumn. Eggs are present over winter, and they hatch as conditions dry and warm up in spring and early summer. Winter eggs are usually laid in batches, whereas eggs over the dry period are laid singly on backs of leaves of host plants. Nymphs newly hatched have six legs and are bright red, but turn dark-grey in a few days. They moult to a nymph with eight legs, then again to become a third-stage nymph, before finally moulting to the adult stage. One month from egg hatching to young adult is usual. There are several generations per year.

Damage

When in high numbers, *Bryobia* mites have caused severe damage to emerging canola and lupin crops in autumn. Mites feed on the tops of leaves by stabbing into the surface cells with their sharp mouthparts, and sucking out sap. Whitish grey spots result, giving leaves a stippled wilted look. Summer rains followed by warm mild autumns give *Bryobia* mites the best conditions for survival and increase. They do not tolerate cold wet weather but can persist into June following warm autumn conditions. Crops planted into paddocks with a history of summer–early autumn weeds, and experiencing warm dry conditions after crop emergence, are most at risk. Reports of damage have increased since 1995, before which *Bryobia* mites were considered a minor and sporadic pest in some southern districts of Western Australia. They were reported as being a serious pest in central and some northern cropping zones during autumn 1998 and 1999. Minimum tillage, earlier sowing times and tolerance to some insecticides have led to the increased importance of this pest.

Control

Early control of summer weeds in paddocks that are to be cropped will prevent the buildup of mite populations. Weeds present in paddocks prior to cropping should be checked to determine the numbers of mites present. If they are found in large numbers, then incorporation of insecticide with herbicide immediately prior to sowing is more effective than spraying when the crop is emerging and has very little cover of green material. Omethoate is registered for control of *Bryobia* mite in pastures and some crops. Rates of insecticides commonly used to control redlegged earth mite and lucerne flea are not effective against *Bryobia* mites. [9]

Figure 7: Bryobia mite. (Photo: DAFWA)

[9] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

More information

DAFWA: Diagnosing blue oat mite

Crop mites. Back Pocket Guide

7.1.8 Blue oat mite

Blue oat mites are often confused with RLEM. There are four recognised species of blue oat mite in Australia: *Penthaleus major*, *P. falcatus*, *P. minor* and *P. tectus*. Accurate identification of the species requires examination by an entomologist. The four species vary in their geographical distribution in Australia.

Damage to crops and pastures is incurred in the establishment phase. Host-plant preferences vary with the species, as do their life cycles and tolerances to various pesticides. Host plants include black thistle, chickweed, curled dock, dandelion, deadnettle, prickly lettuce, shepherds purse, variegated thistle and wild oat. Cultivated field-crop hosts include wheat, barley, oats, rye, canola, field peas, lupins and linseed.

Description

Adult mites have eight legs and are ~1 mm long with oval, rounded, dark brown to black bodies, bright red or pinkish red legs and mouthparts, and a red spot or streak towards the hind end of the back.

Seasonal development

Overlapping generations of the blue oat mite usually occur between mid-autumn and late spring. Blue oat mites oversummer as aestivating eggs laid in mid–late spring by the second-generation adults. These aestivating eggs are highly resistant to desiccation. They do not begin to develop until late summer–early autumn and they do not hatch until favourable conditions of temperature and moisture occur in the following mid-autumn to early winter. [10]

7.1.9 Lucerne flea

Crop stage

Look for lucerne fleas at seedling stage.

Description

Lucerne fleas usually spring from the plants when approached, using a specialised organ underneath the body. The lucerne flea is a dumpy looking and wingless creature of varied colour, but the larger specimens of 2–4 mm are predominantly green or yellow (Figure 8).

Life cycle

The first soaking autumn rains cause the over-summering egg batches to hatch. Several generations may then develop over the growing period depending on the weather. Eggs are laid in the soil and they usually hatch in a few days. With the onset of warm and dry conditions in spring, the resting-stage eggs, which are able to withstand summer conditions, are laid.

Damage

Pastures, legume crops and cereals may be seriously retarded by the lucerne flea, and seedling death may occur during heavy infestations. Frequently, the green leaf tissues are eaten, leaving a surface of the leaf as a whitish film. From a distance, severely affected areas appear bleached.

Control

The lucerne flea is favoured by heavy soils and cannot live in very sandy situations. It is also dependent on plentiful moisture. Control in crops and pastures may be obtained with systemic or contact insecticides, as for redlegged earth mites. A predatory mite, the *Bdellodes* mite, is present over most of the area occupied by lucerne flea and exerts

[10] K Hertel, K Roberts, P Bowden (2013) Insect and mite control in field crops. NSW DPI Management Guide. NSW Department of Primary Industries, http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/284576/Insect-and-mite-control-in-field-crops-2013.pdf

a useful level of control. Another predatory mite, the *Neomolgus* mite, was introduced by the CSIRO and it has been released throughout the agricultural area. It will extend the range and level of biological control.[11]

Figure 8: Lucerne flea (Sminthurus viridis). (Photo: DAFWA)

7.1.10 Cereal aphids

Crop stage

Aphids are damaging at tillering and from flowering to maturity, and they transmit BYDV.

Description

The corn aphid (*Rhopalosiphum maidis*) and wheat or oat aphid (*R. padi*) cause the greatest yield loss (Figure 9). Wingless females are about 0.2–2.5 mm long. Rice-root aphid (*R. rufiabdominalis*) and grain aphid (*Sitobion miscanthi*) are also found in cereals and may be important as virus vectors.

Corn aphids are dark blue-green to grey-green, often with a fine white powdery dust over the body. Colonies develop within the furled tip of tillers, starting any time from seedling stage to head emergence. Few farmers see them because they are hidden in the furled leaves. Corn aphid probably kills tillers, resulting in fewer heads.

Wheat or oat aphids vary from mottled yellow-green through olive green and dusky brown, to a blackish green. Colonies develop on the outside of tillers from the base upwards, on stems, nodes and backs of mature leaves, starting any time between late tillering and grain filling. Heavy infestations can blacken heads and flag leaves, and these are the aphids most commonly reported by farmers. Wheat or oat aphids are more mobile than corn aphids, and can drop to the soil and crawl to other plants. They cause yield losses probably by reducing grain weight and grains per head. They may also be important in spreading BYDV.

Rice root aphids are similar to wheat or oat aphids, but they can also infest plant roots. They have a reddish patch in the middle of the back, and are most likely to be found in drier agricultural areas. Grain aphids are dusky green with yellow-green tinges, usually found in spring, without developing large colonies. Rose-grain aphids are potentially serious pests, but have not yet reached Western

Figure 9: Oat or wheat aphid (Rhopalosiphum padi) and corn aphid (R. maidis). (Photos: DAF Qld)

[11] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

Australia from the eastern states where they are widespread. They are green spindle-shaped aphids attacking wheat and barley during grain filling.

Life cycle

Winged aphids fly into crops from pasture grasses or other crops and start colonies of wingless aphids. Reproduction is rapid when weather conditions are favourable, leading to population outbreaks. Plants can become sticky with honeydew excreted by the aphids. When plants become unsuitable or overcrowding occurs, winged aphids redevelop and migrate to other plants or crops. They can carry viruses in saliva or on their feeding tubes. BYDV damage is most serious after plant infection early in the season.

Damage

Cereal aphid damage in oats, barley and wheat has no obvious signs or symptoms. Research in medium- and high-rainfall zones has shown that aphids can cause losses up to 30% where crop yield potential is ≥3 t/ha. Damaging populations may develop in 60% of years. Aphids affect cereals by direct feeding on plants, and/or by transmitting BYDV, which affects wheat, oats and barley. Direct damage occurs when colonies of 10–100 aphids develop on stems, leaves and heads from seedling stage through to head filling. The degree of damage depends on the percentage of tillers infested, number of aphids per tiller, and the duration of the infestation.

Control

In southern areas, crops should be checked from late tillering onwards for corn aphids in the furled growing tips, and for wheat or oat aphids on stems, backs of leaves and in the crown. High yielding crops are most at risk. Spraying is worthwhile if 50% of tillers have >10 aphids. Mixed infestations of both aphid species may cause more damage than either species on their own. Crops sprayed before Zadoks growth stage (GS) 30 may need respraying at GS50 or later if aphid numbers build up again. Parasitic wasps, ladybeetles, lacewings and hoverflies can provide useful biological control, mainly by preventing secondary outbreaks. Use of 'soft' insecticides that kill only aphids is advocated. [12]

Thresholds for control

Inspect for aphids throughout the growing season by monitoring leaves, stems and heads as well as exposed roots. Choose six, widely spaced positions in the crop, and at each position examine five consecutive plants in a row. Research is under way into damage thresholds and control options for cereal aphids.

The decision to control aphids on winter cereals depends on the size of the aphid population and the duration and timing of the infestation. Controlling aphids during early crop development generally results in a recovery of the rate of root and shoot development, but there can be a delay. Aphids are more readily controlled in seedling and pre-tillering crops, which are less bulky than post-tillering crops. Corn aphids in the terminal leaf tend to disappear as crops come into head, and other species usually decline in abundance about this time as natural enemy populations build up. Note that because the rice root aphid feeds belowground, it cannot be controlled effectively by non-systemic foliar treatments. [13]

No firm economic thresholds exist (taking into account current costs of control and crop value), but there are thresholds suggested from research in Western Australia and by the Northern Grower Alliance. The Western Australian threshold, based on checking crops regularly from late tillering, is to consider control if the aphid population exceeds 15 aphids/tiller on 50% of tillers.

[12] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

[13] DAF Qld (2012) Insect pest management in winter cereals. Department of Agriculture and Fisheries Queensland, http://www.daff.qld.gov.au/plants/field-crops-and-pastures/broadacre-field-crops/integrated-pest-management/ipm-information-by-crop/insect-pest-management-in-winter-cereals

7.1.11 Armyworm

Crop stage

Armyworms are most damaging from flowering to maturity.

Description

Four species of armyworm occur in Western Australia: the common armyworm, the southern armyworm, the inland armyworm and the sugarcane armyworm. Of these, the common armyworm (*Leucania convecta*) is the most damaging. Moths are stout-bodied, grey–cream, with a wingspan of ~40 mm. The moths fly at night and they are strongly attracted to lights.

Armyworm caterpillars vary in colour depending on their numbers in a crop. At high numbers, they become dark, whereas if the population is smaller, the caterpillars are much paler. Armyworms are about 40 mm long when fully grown and can be distinguished from cutworms and budworms by their large heads and by three prominent white stripes on the 'collar' behind the head (Figure 10). Often they will not be seen because they feed mainly at night; however, their droppings, which look like small green 'square' hay bales, will be obvious on the ground below the crop canopy. Another indicator that armyworms are present is damage to ryegrass seed heads.

Life cycle

Armyworms have three or four generations each year, and on the south coast they survive over summer on self-sown cereals and grasses that germinate with summer rains. In spring, it is about 21 days from when eggs are laid to when the caterpillars reach head-lopping size. Once damage begins, many heads can be lopped in a short time.

Damage

Armyworms are regular pests of coarse grain crops on the south coast of Western Australia and occasional pests in inland areas. Towards the end of spring, when crops are approaching maturity, large caterpillars chew through the stem just below the head, causing the head to fall to the ground. If in large numbers earlier in the season, they may eat leaves and they may be confused with cutworm.

Control

Heatwaves may kill most of the caterpillars. Native parasites can exercise good control, and spraying is not usually required every year. Several wasp parasites including *Apanteles ruficrus* have been released to increase biological control. [14]

Figure 10: Armyworm caterpillar. (Photo: DAF Qld)

[14] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

7.1.12 Australian plague locust

Crop stage

Plague locusts affect crops from flowering to maturity.

Description

Newly emerged nymphs are about the size of houseflies and hop actively. Adults have a characteristic black tip to the hind wing. Swarming locusts are light brown, but solitary individuals may be green or yellow (Figure 11).

Life cycle

Two generations occur annually. Nymphs of the first generation appear when soil temperatures begin to rise in spring. Attainment of adulthood may take 30–55 days depending on climatic conditions. Eggs laid by the first generation require at least 21 days to hatch and will hatch only if sufficient soil moisture is present. Eggs laid by the second generation enter a resting phase, enabling them to overwinter.

Damage

Adult locusts will eat almost any green plant material, but crops most at risk are ripening cereals in early summer, summer pastures and green pasture growth following summer rain. Locust plagues in Western Australia are rarely as severe as the eastern states.

Control

Egg parasites are common but rarely cause significant losses. Several fly parasites are common and the second locust generation is often heavily parasitised. The species is declared under the Agriculture and Related Resources Protection Act and control is obligatory. [15]

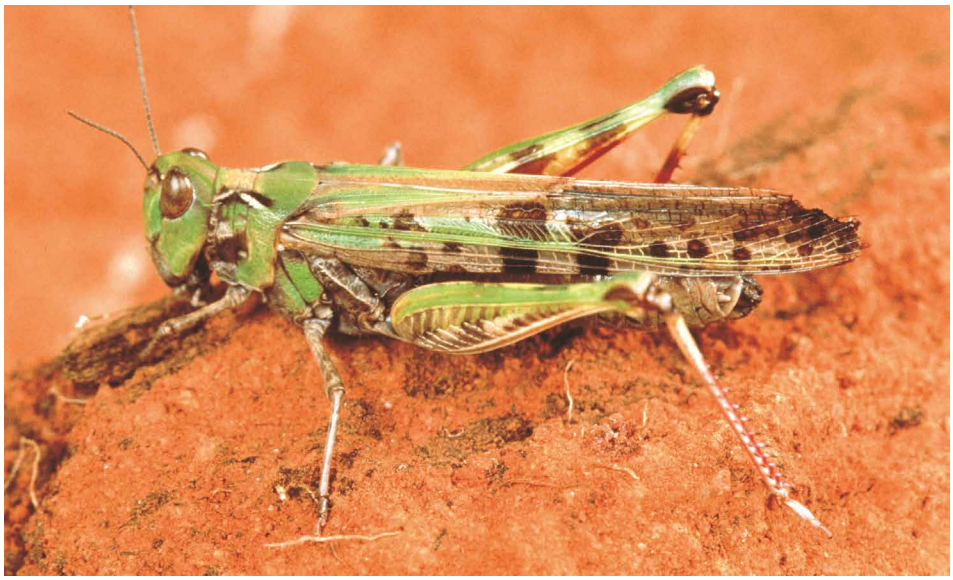

Figure 11: Australian plague locust (Chortoicetes terminifera). (Photo: DAFWA)

[15] DAFWA (2015) Oats: insect pests. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4

7.2 Stored grain pests

Grain insects are not permitted in export grain or grain for sale. Protecting your grain intended for use on-farm from insect attack saves money.

- Even light infestations of weevils can reduce germination of the grain.
- Weevils eat or contaminate food intended for livestock.
- Weevils overwintering in stored grain can re-infest machinery.

Grain stored on-farm will eventually become infested with grain beetles or moths unless specific control methods are undertaken. Good hygiene is critical. Other options include:

- cooling grain with aeration
- fumigating a sealed silo with phosphine-generating tablets
- applying a malathion insecticide
- treating grain by mixing with amorphous silica (e.g. Dryacide®)

Aeration will suppress insect populations but not eliminate them. If delivering grain to a nil-tolerance market, farmers will eventually need to fumigate. [16] See GrowNotes Oats Western, Section 13, Storage.

[16] DAFWA 2015 Oats: insect pests https://www.agric.wa.gov.au/oats/oats-insect-pests?page=0%2C4