Department of Employment, Economic Development and Innovation

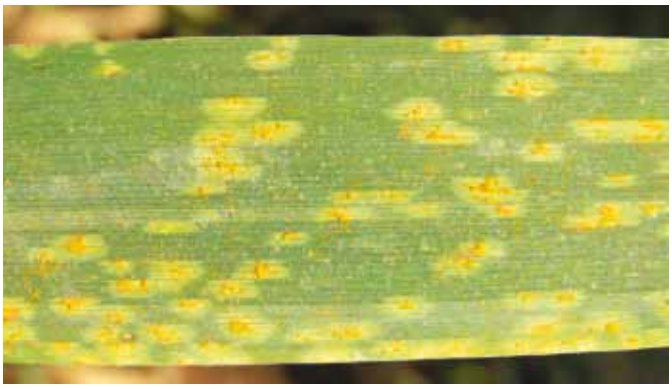
Forage oat variety guide 2012

Forage oats is the main winter forage crop in Queensland, due to its ability to produce good quality feed when most pastures are dormant. Many farmers rely on oats to fatten livestock during the period from autumn to early spring. The use of improved varieties and better management practices are the key factors to increasing the level of productivity of oat crops. This guide discusses the recommended management practices for growing oats for forage, and strategies to minimise leaf rust infection. The current varieties of forage oats available for commercial sale in Queensland are described in the table on the last page.

Leaf rust was a significant disease in forage oat crops again in 2011. Disease inoculum levels are high and the potential remains for further major outbreaks in 2012. Growers should be aware of the potential for forage yield loss in leaf rust-infected crops. Farmers should also manage crops to reduce yield loss or select resistant oat varieties.

Leaf rust (*Puccinia coronata*)

- The symptoms are small, light orange–yellow pustules, appearing about 7–10 days after infection.
- Leaf rust mostly occurs on leaves and leaf sheaths, but also occurs on stems. It is seen first on the lower leaves and then spreads to the upper canopy.
- This disease is most severe under mild temperatures and moist conditions, e.g. early autumn and early spring after wet, overcast conditions.
- This disease will build up very quickly on susceptible varieties. It will complete its life cycle and re-infect every 2–3 weeks.
- Resistant varieties are available, but new varieties are often overcome by new pathotypes or races of leaf rust. Many different races of leaf rust are present in Australia and each race will often occur only on one variety.
- Spores are windborne, can spread large distances through the air and will survive over summer on volunteer oats and wild oats.
- Leaf rust can dramatically reduce forage yield, hasten maturity and reduce forage quality and palatability.



Leaf rust on oats

Stem rust (*Puccinia graminis*)

- The symptoms are large, dark red–brown pustules, appearing about 7–10 days after infection.
- Stem rust mostly occurs on stems, but will also appear on leaves and seed panicles.
- This disease is most severe under warm temperatures and moist conditions, and infection levels are highest in late spring and summer.
- Spores are windborne, can spread large distances through the air and will survive over summer on volunteer oats and wild oats.
- Stem rust will cause major yield loss in seed crops of forage oats and hay crops of oats. However, stem rust is less important on grazing oats since it occurs late in the growing season after most of the crop has been consumed.
- No resistant varieties are available—all varieties in Australia are susceptible. As with leaf rust, many different races of stem rust are present in Australia and each race will often occur only on one variety.

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Stem rust on oat leaves

Stem rust on oat stems

Tips on managing leaf rust in oats

- Tebuconazole (e.g. Folicur) and propiconazole (e.g. Tilt) are registered for control of leaf rust and stem rust on forage oats in Queensland. No information is available on economic thresholds for fungicide application in forage oats, but fungicide control is more likely to be economically viable in higher value crops, e.g. seed crops and high-quality hay crops.
- Select a variety with good resistance to leaf rust (see the table on the last page).
- Avoid planting too early (before mid-March) or too late (after June). Very early plantings (January to early March) of susceptible varieties should be avoided to minimise the risk of leaf rust infection.
- Losses from leaf rust can also be reduced by grazing or cutting rust-infested crops before the disease becomes severe. For instance, if leaf rust is obvious on the lower leaves of the canopy, crops should be grazed or cut regardless of growth stage.
- Control out-of-season oat plants and wild oats. Leaf and stem rust spores survive on these plants between seasons and provide a continual source of inoculum for outbreaks each year.
- Plant in wider rows to produce an open canopy and reduce losses from trampling.
- Maintaining good soil and crop nutrition with nitrogen minimises the effects of leaf rust.

Other diseases of oats

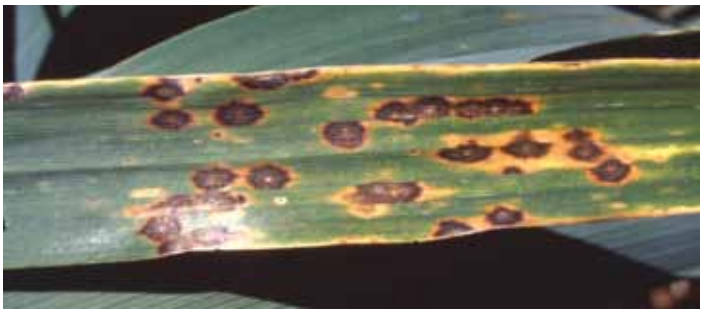
Bacterial blight (*Pseudomonas syringae*)

- Initial symptoms are light-green, water-soaked oval spots.
- Spots will develop into brown, water-soaked blotches (sometimes halos) or brown, elongated stripes.
- Stripes and blotches can merge to cause leaf crimping and leaf death.
- The disease spreads by raindrop splash or mechanical means, and survives on seed and plant stubble.
- Bacterial blight is controlled by grazing to remove infected plant tissue (seed treatment is not effective).

Bacterial blight on oats

Septoria blotch (*Septoria avenae*)

- Symptoms first appear on leaves as small, dark-brown spots.
- Spots develop into larger, oval-shaped blotches, surrounded by light-brown margins.
- Infection may spread to the leaf sheaths and stems resulting in lodging.
- The disease appears in autumn and spreads rapidly in cool, rainy weather.
- The disease spreads by raindrop splash or mechanical means, and survives on plant stubble.
- Septoria blotch rarely causes yield loss, but will reduce visual quality of hay.



Septoria blotch on oats

Barley yellow dwarf virus (BYDV)

- BYDV is a viral disease, spread by aphids, which can cause significant yield loss in susceptible varieties. BYDV is more common in northern NSW than in Queensland.
- The disease is favoured by mild, moist autumns, which allow aphid populations to build up.
- The stems, leaves and roots of infected plants become stunted and leaves turn light pale green in colour with reddish tips. Later in the season, panicles have a blasted appearance with white and sterile florets. BYDV most often occurs as ‘hotspots’ in a forage oat crop.

- Insecticidal seed dressings can be used to control aphids in the seedling stage and reduce BYDV infection. Control of other aphid hosts and good crop nutrition will prevent infection and reduce yield loss.

Barley yellow dwarf virus on oats

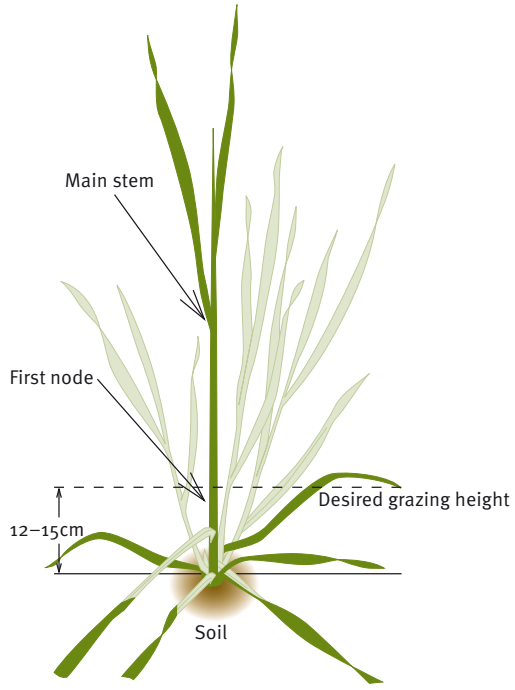
Red-tipping

- Red-tipped leaves in oat crops are usually a symptom of nutrient deficiency most commonly associated with low levels of nitrogen, but also with phosphorus, potassium, zinc, or sulphur deficiency. Red-tipping is not a symptom of rust infection.
- A reddish or purplish colour appears on the tips of mature leaves, and affected plants are slightly stunted and less palatable for livestock. Red-tipping tends to occur over large areas of the crop where fertiliser application has not been adequate.
- Red-tipping can be avoided by good crop nutrition.
- Red-tipping can also be confused with BYDV. Red-tipping is more common than BYDV in Queensland.

Red-tipping in oats

Tips on growing oats for forage

- Intermediate and late maturing varieties remain vegetative until late in the season and provide a longer duration of grazing for livestock.
- Optimum planting time for forage oats is from mid-March to June in southern Queensland, and early April to June in Central Queensland. Planting too early or too late can reduce forage yield.
- The recommended planting rates are 40–60 kg/ha in southern Queensland and 25–40 kg/ha in Central and western Queensland. Planting rates should be adjusted for germination, seed size and percentage establishment in the field. There are approximately 50 000 seeds per kilogram, but always check the seed container for the correct seed size and germination rate.
- The optimum soil temperature for the germination and establishment of oats is between 15 °C and 25 °C. Avoid planting into warm or hot soils as soil temperatures above 25 °C will reduce emergence. Avoid planting before the start of April in Central Queensland.
- Oat seed is best sown at 5–7.5 cm depth, in rows spacing 18–25 cm apart, into moist soil in a well-prepared seedbed.
- Ensure the crop receives adequate fertiliser and weed control. Nutrition requirements and fertiliser rates are similar to those recommended for wheat. An application of nitrogen after grazing (20–40 units of nitrogen per hectare) will increase the speed of plant recovery, reduce tiller death and increase overall forage yield.
- If possible, first grazing should occur when secondary roots are well established and before stems begin to elongate.
- Where possible, only graze down to the height of the lowest stem node—about 12–15 cm (5–6 inches) above ground level. Avoid hard grazing as this can remove the growing points and delay subsequent regrowth (see figure below).



Recommended grazing height for forage oats

More information

For more information contact the Department of Employment, Economic Development and Innovation (DEEDI) on **13 25 23** or visit www.deedi.qld.gov.au

Forage oat varieties available for commercial sale in Queensland and northern New South Wales in 2012

Variety	PBR	Released/sold by	Year of release	Early growth habit	Speed to grazing[1]	Maturity	Reaction to[2]	
							Leaf rust	Stem rust
Leaf rust–resistant varieties								
Aladdin	(P)	DEEDI/Heritage Seeds	2012	Semi-erect	Medium/quick	Late	9	1
Drover	(P)	Pacific Seeds	2006	Intermediate	Medium	Medium/late	9	1
Leaf rust–susceptible varieties								
Dawson	(P)	Pacific Seeds	2008	Erect	Quick	Medium	1	1
Genie	(P)	DEEDI/Heritage Seeds	2008	Erect	Quick	Late	1*	1
Graza 51	(P)	Seedmark	2007	Erect	Quick	Medium/late	1	1
Graza 80	(P)	Seedmark	2005	Erect	Quick	Late	1	1
Moola	(P)	DEEDI/Cultivar Marketing	1998	Erect	Quick	Late	1	1
Nugene	(P)	DEEDI/Heritage Seeds	2000	Erect	Quick	Late	1	1
Outback		Seed Distributors	2005	Erect	Quick	Medium/late	1	1
Panfive		Panorama Seeds	1990	Erect	Quick	Medium/late	1	1
Riel	(P)	DEEDI/Cultivar Marketing	1993	Erect	Quick	Late	1	1
Taipan	(P)	Pacific Seeds	2001	Erect	Quick	Late	1	1
Targa	(P)	DPIPWE (Tas)	2000	Intermediate	Medium	Late	1	1
Volta	(P)	DEEDI/Heritage Seeds	2003	Intermediate	Quick	Medium	1	1
Superseded varieties								
Algerian		Industry & Investment NSW	1918	Intermediate	Medium	Medium	2	1
Coolabah		Industry & Investment NSW	1967	Intermediate	Quick	Early	1	1
Culgoa II		DEEDI/Cultivar Marketing	1991	Prostrate	Slow	Medium	2	1
Graza 50		Pioneer Hi-Bred	1994	Erect	Quick	Medium/late	1	1
Graza 68		Pioneer Hi-Bred	1998	Erect	Quick	Late	1	1
Minhafer		DEEDI	1962	Erect	Quick	Early	1	1
Mortlock		DAF (WA)	1983	Erect	Quick	Early	1	1
Sual		Industry & Investment NSW		Intermediate	Medium	Medium	2	1
Warrego		Pacific Seeds	1999	Intermediate	Medium	Medium	2	1

Notes

Disclaimer: Inclusion of a variety in this table does not constitute an endorsement or recommendation of this variety by the Department of Employment, Economic Development and Innovation.

(P) Cultivars displaying this symbol are protected under the Plant Breeders Rights Act 1994. Unauthorised sale of seed of these varieties is an infringement under this Act.

[1] Speed to grazing varies with planting date—ratings based on mid-March to April planting.

[2] The numerical scale indicates levels of field resistance to leaf and stem rust in Queensland and northern New South Wales:

- 9–7 (High) Highly resistant, forage yield unlikely to be reduced
- 6–5 (Medium) Moderately resistant, some yield loss may occur in favourable conditions
- 4–3 (Low) Moderately susceptible, moderate yield loss may occur in favourable conditions
- 2–1 (Very low) Highly susceptible, substantial yield loss may occur in favourable conditions

*There were isolated reports of a new pathotype of leaf rust in northern New South Wales in 2010 that may infect Genie. In the absence of this pathotype, Genie will appear at least moderately resistant.

Acknowledgement

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