Photo: Ben White

Wild oats

(Avena fatua and *Avena ludoviciana)*

Key facts

- Wild oats is a competitive weed and yield losses of up to 80 per cent can occur in wheat when wild oat populations are high (up to 100 plants/m^2)
- A staggered germination pattern enables wild oats to avoid pre-emergent and early post-emergent herbicide applications.
- Herbicide-resistant populations of wild oat are steadily increasing, with resistance to groups A, B and Z becoming increasingly common.
- Attention to detail with farm hygiene will help prevent wild oats being spread across farms.

Two wild oat species (*Avena fatua *and* Avena ludoviciana*) are prevalent across south-eastern Australia, and usually occur as mixed populations. In a favourable environment with no limiting conditions, a patch of wild oats can produce up to 20,000 seeds/m^2. Wild oats host a number of cereal root diseases, and their highly competitive ability can reduce wheat yields by up to 80 per cent.

Wild oats are well adapted to most soil types, although they often occur in fairly distinct patches within paddocks. An ability to stagger germination enables wild oats to persist in annual cropping systems. About 40 per cent of wild oat seeds will germinate during autumn after the 'break of season', and some 10–30 per cent will emerge later during the season. This germination pattern enables some wild oat plants to avoid pre-emergent and early post-emergent herbicide applications. Later-emerging wild oats are still competitive enough to grow and produce seed to replenish the seedbank for following years. Some form of control later in the season (e.g. a hay production or weed seed collection) is needed to reduce the seedbank of wild oat in problem paddocks. A combination of chemical and non-chemical control measures can deplete the seedbank of wild oats in 3–5 years.

Often growers observe the steady increase and spread of wild oats across their farms over a number of years. This is because wild oats can easily spread as a contaminant of seed, hay, vehicles and machinery. Attention to detail with farm hygiene will help prevent the spread of wild oats across farms.

Control options for wild oats

There is a range of control options for wild oats, both chemical and non-chemical (Table 9).

A combination of knockdown, pre-emergent and post-emergent herbicides are often needed to control wild oats because of its staggered germination pattern. Compared with annual ryegrass, herbicide resistance is still relatively low for wild oats, so most chemical options in cereals, break crops and legume pastures remain viable. Herbicide resistant populations of wild oat are steadily increasing with resistance to groups A, B and Z becoming more common as more plants are being tested.

PREVIOUS PAGE: Herbicide-resistant wild oat populations are becoming increasingly common.

LEFT: An integrated control strategy can deplete the seedbank of wild oats in 3–5 years.

Photos: Andrew Storrie, Agronomo Consulting.

Table 9. Expected results of various wild oat control strategies

Control strategy	Control of wild oat weed seeds or plants (%)	
	Most likely	Range
Non-chemical		
Sow weed-free seed	85	50–99
Crop competition	70	20–80
Stubble burning (>4t/ha stubble load)	40	0–80
Early hay production	97	95–99
Grazing	75	60–80
Seed collection at harvest	70	20–80
Farm hygiene (weed-free vehicles and machinery)	80	0–100
Chemical		
Knockdown before sowing	80	70–90
Double-knock before sowing	99	99–100
Pre-emergent herbicides	80	70–90
Selective post-emergent herbicides	80	50–90
Pasture spray-topping	80	70–90
Crop-topping	30	10–50
Chemical fallow	85	75–95

Source: IWM Hub GRDC, expert opinion and grower experience

To preserve herbicide options in the long term it is important to employ an integrated weed management (IWM) approach for wild oats that incorporates non-chemical options.

Non-chemical control options

Non-chemical control

Weed-free seed

Sowing weed-free seed reduces the risk of introducing wild oats to the paddock with crop seed. A professional seed cleaner is a worthwhile investment.

Hay production

Early hay production is one of the most successful strategies to control wild oats. Following up with herbicides or grazing after hay is removed to control regrowth can result in almost 100 per cent control.

Grazing

Wild oats are palatable and non-toxic to stock and provide a valuable source of early winter feed.

Harvest weed seed management

Similar to brome grass, weed-seed collection at harvest varies in its rate of success due to the ability of wild oat to shed a portion of its seed early. Collecting wild oat seed is worthwhile if crops are harvested early. Most captured seed can be destroyed by burning (narrow windrow, chaff pile) or a seed destruction device (e.g. Harrington Seed Destructor).

Further information

- Integrated Weed Management Hub wild oats profile: http://www.grdc.com.au/Resources/IWMhub/Section-8-Profiles-of-common-weeds-of-cropping/Wild-oats

BELOW: Early hay production is one of the most successful non-chemical control strategies available to control wild oats. Photo: Megan Hele.