Weed control in conventional and organic oats

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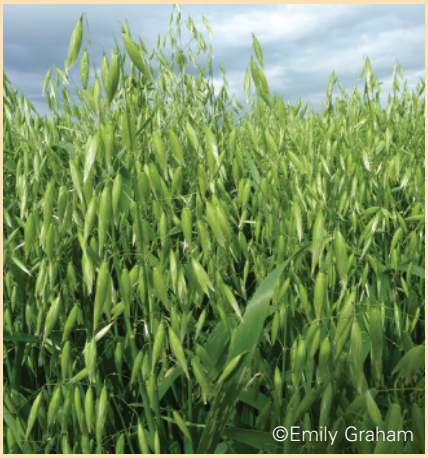
AHDB
CEREALS & OILSEEDS



Latest information

- The UK oat area has been increasing over recent years.
- A spring oat crop adds flexibility to the rotation and can be part of a black-grass control strategy.

Always read product labels, consider your local conditions and consult a professional agronomist, if necessary.

Action

- Grass weed herbicide options in oats are very limited – care should be taken to avoid growing winter oats where resistant and/or large populations of grass weeds are present.
- Spring oats can be used as part of a black-grass control programme, avoiding the peak black-grass germination window but seed rate needs to be high to out-compete the black-grass that does emerge.

Weed control in oats

Weed control in oats is difficult because there is a limited range of herbicides available. Currently, all pre-emergence products are classed as 'Extension of Authorisation for minor use (EAMU)' and most of these apply only to winter oats. Spring herbicide options tend to be targeted at broad-leaved weeds; grass weed options are very limited.

In organic oats, there are three key methods of management that will reduce weeds: weed control during the ley phase of the rotation, the use of stale seedbeds and mechanical weeding in the crop.

Rotation

Winter oats are commonly grown as a break crop for wheat: there can be up to a 15% increase in wheat yield due to the beneficial effect of reducing take-all. Winter oats fit into the rotation well, as they are usually harvested after barley but before wheat.

Spring oats offer the opportunity of a long stale seedbed to help with black-grass control, as most black-grass germinates in the autumn.

There are other benefits in terms of increased biodiversity from overwintered stubble which may fit better into agri-environment schemes and/or conservation grade farming.

The yield penalty observed in growing spring oats compared with winter oats is smaller than for wheat and barley. However, in some areas, ground conditions may not allow spring sowing on a regular basis.

In organic systems, more diverse rotations with a greater proportion in leys will reduce the weed burden in arable crops.

Varietal choice

Taller varieties are generally more tolerant of weed competition but some modern shorter varieties have good weed-supressing ability because of their growth habit. Refer to the AHDB Recommended Lists for more information on varieties (**cereals.ahdb.org.uk/varieties**).

Seedbed preparation

To optimise the activity of pre-emergence herbicides, ensure seedbeds are fine and well consolidated with no large clods that could break open resulting in a prolonged flush of weeds.

A stale seedbed technique is one way of reducing the weed burden. Delaying autumn drilling will result in a greater opportunity to carry out a stale seedbed. This is especially important in organic systems. In addition, pre-emergence herbicides generally have better efficacy with later sowings due to increased soil moisture. Oats can generally be sown up to mid-October without a yield penalty.

Herbicides

Although oats can be competitive against weeds, grass weed herbicide options in oats are very limited and so care should be taken to avoid growing winter oats where resistant and/or large populations of grass weeds are present. In addition, application rates and/or latest timing of herbicides may be different in oats to other cereals, so careful attention to labels is required.

Pre-emergence herbicides

Currently, all pre-emergence products are classed as 'Extension of Authorisation for minor use (EAMU)'.

Active ingredients	Example product	Weeds controlled include	Winter oats	Spring oats
diflufenican	Hurricane	Annual grass weeds, broad-leaved weeds	✓	✓
diflufenican + flufenacet	Liberator	Annual grass weeds, broad-leaved weeds	✓	
diflufenican + flupyrsulfuron-methyl	Absolute	Annual grass weeds, broad-leaved weeds	✓	
flumioxazine	Digital	Annual grass weeds	✓	

- Always refer to the label for product-specific usage restrictions and guidance
- All conditions of use must be adhered to, see **www.pesticides.gov.uk** for details
- Be aware that the use of certain pre-emergence products may restrict the choice of herbicides available post-emergence – always consult the label for the most up-to-date information on tank-mixing or sequencing options
- To maximise black-grass control, always adopt a programmed approach that includes different modes of action and aim to treat when black-grass is at its most susceptible (pre-emergence or small and actively growing)

Autumn post-emergence herbicides

Autumn herbicide options tend to be targeted at grass weeds and broad-leaved weed control. The following products are approved for post-emergence use on oats.

Usage rates may be lower than for other cereals: refer to specific product labels.

Active ingredients	Example product	Weeds controlled include	Winter oats	Spring oats
carfentrazone-ethyl	Aurora 50 WG	Broad-leaved weeds	✓	✓
carfentrazone-ethyl + flupyrsulfuron-methyl	Lexus Class	Grass weeds and broad-leaved weeds	✓	
carfentrazone-ethyl + mecoprop-P	Platform S	Broad-leaved weeds	✓	✓
flupyrsulfuron-methyl	Oriel 50 SX	Grass weeds, broad-leaved weeds	✓	
flupyrsulfuron-methyl + thifensulfuron-methyl	Lexus Millenium	Grass weeds, broad-leaved weeds	✓	
isoxaben	Flexidor	Broad-leaved weeds	✓	✓

Spring post-emergence herbicides

Spring herbicide options tend to be targeted at broad-leaved weed control. Tank-mixing options on oats can be more limited than other cereals and some crop damage can occur. Always consult the label for the most up-to-date information on tank-mixing and sequencing of herbicides.

Active ingredients	Example product	Winter oats	Spring oats
2,4-D	Damine	✓	
2,4-DB	DB straight	✓	✓
2,4-D + MCPA	Headland	✓	
amidosulfuron	Eagle	✓	✓
bromoxynil	Buctril	✓	✓
bromoxynil + ioxynil	Stellox	✓	✓
clopyralid	Dow Shield 400	✓	✓
clopyralid + florasulam	Gartrel		✓
clopyralid + florasulam + fluroxypyr	Galaxy	✓	✓
dicamba + mecoprop-P	High Load Mircam	✓	✓
dicamba + MCPA + mecoprop-P	Field Marshall	✓	✓
dichloprop-p + MCPA + mecoprop-p	Optica Trio	✓	✓
florasulam	Barton WG	✓	✓
florasulam + fluroxypyr	Starane XL	✓	✓
fluroxypyr	Casino	✓	✓
MCPA	Agritox	✓	✓
mecoprop-P	Optica	✓	✓
metsulfuron-methyl	Jubilee SX	✓	✓
metsulfuron-methyl + thifensulfuron-methyl	Finish SX	✓	
metsulfuron-methyl + tribenuron-methyl	Ally Max SX	✓	✓
thifensulfuron-methyl + tribenuron-methyl	Inka SX	✓	
tribenuron-methyl	Thor	✓	✓

Pre-harvest herbicides

- Glyphosate can be used pre-harvest on oats to control perennial weeds and to even up ripening for ease of harvesting (see **www.pesticides.gov.uk** for details)
- Glyphosate should be applied at 30% average moisture
- If applied too early, the yield of secondary tillers may be reduced
- Artificial senescence will greatly increase the speed of combining and straw ripeness for baling

Weed control in organic oat crops

Under organic conditions, weed control in oats is generally easier than in other cereals, due to the competitiveness of oats.

As with conventionally grown oats, varietal choice can make a difference; husked oats are more competitive than naked oats and taller varieties are better at out-competing weeds.

Drilling date

It is important to ensure that the crop is drilled in good time; however, it is more beneficial to drill later into a good seedbed than to drill early into a poor one.

Achieving good and rapid establishment of the oat crop is an essential component of weed control to enable the crop to out-compete early weed growth. The sooner the crop is established, the sooner it can be mechanically weeded.

Stale seedbed

As in conventionally grown oats, a stale seedbed should be used. The importance of this is even greater in organic systems.

Example of a stale seedbed

Mechanical weeding

Many weeds can be removed by mechanical weeding with a spring-tine weeder. This is best started as soon as the crop is strong enough to withstand it (but before the weeds have established) and continued until the crop begins to cover the inter-rows. At this stage, an inter-row hoe may be used, if necessary, until the canopy has nearly closed over.

Mechanical weeding is most effective if done early (November for winter oats) – before the weeds have become established – and this is particularly true for black-grass.

Depending on soil conditions, it may be advisable to do a number of passes with a spring-tine weeder before the onset of winter.

Mechanical weeding may provide an extra benefit to the oat crop by mineralising nitrogen.

Weed control during the ley phase of the rotation

During the ley phase, when legumes (typically grass/clover mixes) are grown, weeds such as creeping thistles and docks can be controlled by mowing/topping just as they approach flowering. For very localised areas, problems with weeds, such as docks, can be addressed early on by removing them by hand but this is only likely to be feasible in very small areas.

Control perennial weeds such as docks in ley phase

Well-established grass ley with low weed population

Bury weeds and produce clean seedbed at end of ley

Further information

Paul Gosling, AHDB
paul.gosling@ahdb.org.uk

Managing weeds in arable rotations – a guide (AHDB, 2014)

Encyclopaedia of arable weeds (AHDB/BASF, 2009)

cereals.ahdb.org.uk/weeds

Project Report 543: Harnessing new technologies for sustainable oat production and utilisation (QUOATS) (AHDB, 2015)

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