

Organic Arable Production – Weed Control.

Whether you aim to control your arable weeds entirely without chemical herbicides or are looking to implement cultural and mechanical techniques into your farming system, this guide will show the range of options available.

Don't forget that a low level of weed growth may not be detrimental to crop yield and can even have a beneficial effect in providing host plants for pest predators and pollinators.

Organic weed control methods can be split into two broad areas:

1. Cultural
2. Mechanical

1. Cultural

False seed beds

Commonly used in autumn post-harvest, mainly to help control annual weeds. Cultivate a seedbed and consolidate as soon as possible after harvest to cause weed seeds to germinate. By creating this tilth but delaying planting, weed seed germination is encouraged before the crop is planted. Weeds emerging following tillage are killed by two or more additional shallow cultivations at weekly intervals. The crop is planted immediately after the final cultivation

NOTE: The vast majority of weed seeds germinate from the top 5cm of soil. If using a false seed bed the weed killing tillage should be shallow, less than 5cm so more weed seed is not brought to the surface.

Delayed sowing dates

This allows more weed seeds to germinate and gives more time for weed control cultivation passes. It may reduce subsequent competitiveness of the crop but this can be helped by higher seed rates

Higher seed rates.

An option in cereal crops, high seed rates provide for a closer more-dense crop canopy to crowd out weeds.

Under-sowing

A good example of this is sowing a grass clover ley beneath a spring cereal, either sown at the same time or the ley slightly delayed. The ley creates a dense cover to out compete the weeds. This benefits both the cereal crop and helps keeps the establishing grass sward weed free.

Factsheet



Rotations

Rotational cropping can break the life-cycle of many common problem weeds, such as blackgrass and wild oats. Black grass is reliant on autumn sown crops as it seeds at the same time as the crop; growing a grass break for 2-3 years in a cereal rotation or including spring sown crops removes the conditions for black grass seed to proliferate. Blackgrass seed viability is reduced considerably when left buried in the soil during a grass break for 2 years or more.

Cover crops

Over winter cover crops limit weed development by providing dense ground cover. Some cover crops, like grazing rye, also have an allelopathic effect (where weed germination is suppressed by chemicals released by the crop). To make sure your cash crop germinates well after incorporating these cover crops leave a break of 2 weeks between ploughing and sowing.

Farm Hygiene

Careful cleaning and hygiene will help prevent the spread of weed seed around the farm in combine harvesters, balers, cultivation equipment etc.

Composting farm yard manure

Proper (hot) composting of manure before it is applied to arable crop fields will kill off many weed seeds present in the manure

2. Mechanical

Mowing

Mowing weeds can reduce seed populations and restrict weed growth but must be done before the weed plant sets seed. Repeated mowing reduces weed plant vigour. Some equipment cut the weed but not the crop for example:

- CombCut – combs through the crop and cuts or crushes coarser weed stems leaving behind the thinner crop plants. It has a low Horse Power requirement and is 6-8 m wide for speedy operations.
- The Weed Surfer - 8 or 10 m has a number of 4 blade rotors beneath a metal canopy. It is designed to top off weeds standing proud of the crop such as charlock, wild oats and thistle in cereals. By removing the weed flowers it prevents weed seeds being shed into the crop. The Surfer's adjustable height allows for its use in a variety of crops.

Factsheet



Weeding Harrows

Spring-tine harrows

These are suitable for arable or combinable crops up to 20 cm in height. They work the whole field area including the crop so are only suitable for robust crops such as cereals and beans that are well established and can survive the weeding action. They are relatively cheap and fast to use but the weed kill is unlikely to be 100%. The weeding action of the tines can be made more or less aggressive depending on robustness of crop and weed size. Very wide options of 15 metres or more are available and may be used at fast speed in the correct conditions. Best weeding action is on small broadleaved weeds with a dry fine tilth on light soil types.

Inter-row harrows

With more delicate crops, more resilient weeds, and in heavier soils you may need to use inter-row hoes for good weed control. There are many different manufacturers but most follow a similar design of parallelogram and toolbar. Some system of guidance is required to take the harrow between the crop rows i.e. Steerage. Human error can be removed by employing computer guidance systems which also allow for faster forward speeds. These weeding hoes are able to kill bigger more well established weeds and work in stony and wet soils.

S - tine harrows and deeper cultivation

The S-tine harrow can be used to rake out perennial weed roots such as couch grass, docks, creeping thistle. This physical removal of roots requires them to dry out on the surface before they are killed off. New specialist equipment gives a more complete root removal action. For instance the Kvik-up is a rotary harrow and hoe combination that cuts off the weed root and the heavy driven tines throw the weed roots onto the soil surface to desiccate.

Ploughing

Efficient ploughing buries all the surface trash and buries weed seeds below 5 cm. It works well with weed seeds that are not persistent (as in black grass). Better results are achieved if ploughing is rotational and only repeated every few years. This helps prevent ploughing back up viable seed.

Hand Rogueing

Hand rogueing is only applicable when weeds are just starting to appear in a crop in low populations. This is to prevent the weed from establishing on the farm and is useful for control of weeds such as black grass, wild oats and docks. As with all good weed control methods it needs to be done in advance of them setting seed.

Other publications in the arable series

Rotations

Fertility management

Storage

Pest control

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Date Produced: March 2015