Factsheet

Organic Arable Production - Crop Rotations

An effective crop rotation can help reduce or eliminate the need for chemical pesticides, herbicides and fertiliser by:

- Meeting the nutritional requirements of a sequence of crops
- Building up soil fertility by means of grass/clover leys and green manures
- Limiting the spread of diseases
- Controlling weeds
- Providing a break to pest lifecycles
- Keeping nutrient loss to a minimum

A good rotation is the only effective control for key soil-borne diseases, such as take-all (Fusarium), blue mould (Penicillium) and root rots (Pythium). The rotation should allow the longest possible period between growing the same family of crops on the same land. Soil Association standards require a minimum of three seasons between consecutive crops of potatoes, alliums and brassicas.
For potato cyst nematode control a 5 year rotation is necessary before a potato crop returns to the same land.

A suitable rotation should take into account the following basic principles:

- Shallow-rooting crops following deep-rooted crops
- High root-mass crops following low root-mass crops
- Weed-susceptible crops following weed-suppressing crops
  Nitrogen-demanding crops following nitrogen-fixing crops

You will probably need to top green manures before ploughing them in. Shallow plough prevents burying your topsoil too far into the soil profile, though of course root crops such as potatoes require deeper ploughing. If good soil and weather conditions allow it may be possible to establish cereals with more minimal tillage. Ploughing can still be needed for weed control, particularly between cereal crops where it helps black-grass control. Summer fallows also help with cleaning weedy fields. (See "Arable – Weed control" factsheet for more detailed information on weed control)

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Examples rotations
These are illustrations only and will not suit all situations. Rotations 1 and 2 only suit fertile sites with low weed burdens whereas 3 suits more marginal sites.

	1	2	3
	Light-medium soils with root crops	**Light-medium soils no root crops**	**Lower fertility soils or with livestock**
Year 1	Fertility building: e.g. grasses / clovers / diverse leys	Fertility building: e.g. grasses / clovers / diverse leys	Fertility building: e.g. grasses / clovers / diverse leys
Year 2	Potatoes	Winter wheat	Fertility building: e.g. grasses / clovers / diverse leys
Year 3	Winter wheat with winter cover crop of grazing rye/vetch or Westerwolds	Winter oats or rye, with winter cover crop of grazing rye/vetch or Westerwolds	Fertility building: e.g. grasses / clovers / diverse leys
Year 4	Spring beans	Spring beans	Winter wheat
Year 5	Winter wheat with winter cover crop	Winter wheat with winter cover crop	Winter barley or oats
Year 6	Spring barley under-sown with grass and clover mix	Spring barley under-sown with grass/clover mix	Spring cereal under-sown with grass/clover
Extra info	Requires a range of cultivation depths from deep for potatoes to more shallow for cereals and pulses. Non-inversion tillage may be considered for establishment of the cover crops.		More use can be made of fertility building leys by livestock or is more suitable for sites with lower fertility status.

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Triticale can be substituted for wheat in a rotation; it tillers well and is a good weed suppressor. The demand for triticale was traditionally more limited than feed-wheat, but it now commands prices in line with the other main organic cereals grown for feed. It can be a very good home-grown crop to feed stock on farm.

Other publications in the arable series

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