GRASSLAND DEVELOPMENT CENTRE
CANOLFAN DATBLYGU TIR GLAS

Institute of Grassland and Environmental Research / Sefydliad Ymchwil Tir Glas ar Amgylchedd
Plas Gogerddan, Aberystwyth, Ceredigion, SY23 3EB Tel: 01970 823026 Fax: 01970 828357
Project Manager: Heather McCalman

313.01 WEED CONTROL IN ORGANIC GRASSLAND

The approaches to weed control in organic farming include the use of crop rotations, fallowing, stale seed beds, competitive crops quick to establish, topping, alternating cattle and sheep grazing and alternating grazing and hay/silage making. Ways to tackle some of the important weeds in organic grassland are outlined below.

DOCKS

Understanding how they 'work' helps to control them. Once established they develop a deep tap root with forked branches. They spread by root fragments which enable rapid re establishment, and by seed which remain dormant in the soil for 60-70 years. Docks thrive in bare soil and open swards, that typically occur in slurry systems, silage cutting, cattle grazing and non competitive crops.

Use a many pronged approach to control docks that includes:

<u>Prevent seeding</u>

- Cut silage leys before docks head
- Top grazing fields before flowering

<u>Reduce establishment</u>

- Undersow a ley into a competitive cereal
- Avoid crop drilling at peak dock germination (March/April and September/October) so consider crops like stubble turnips sown in mid summer
- Care with slurry applications to avoid sward damage and ensure an even spread
- Avoid poaching
- Bastard or full fallowing

<u>Prevent plants maturing</u>

- Intensive sheep grazing of young seedlings. Use on/off grazing to avoid sward damage; do not graze continuously
- Hand weeding or 'spudding'

<u>Killing or weakening tap roots and seeds</u>

- Compost manure thoroughly to kill seeds
- Repeated cultivation and dragging roots to the surface for desiccation may be an option in dry areas and for established docks. Attention to detail needed to not make the problem worse!

Docks are nutritionally mineral rich and the deep roots can help soil structure. The high tannin content may help to reduce incidence of bloat.

RAGWORT

Ragwort is toxic to cattle, sheep and horses and is very palatable when cut and dried. There are four main species typical of extensive grassland, and prevalent on light, low fertility soils and on grassland that is over or undergrazed. Marsh ragwort is adapted to heavy soils. A biennial with a rosette in the first year that flowers in the second, but often behaves as a perennial in farmland. Each plant produces 150000 seeds with a 70% germination rate. Seeds can remain dormant in the soil for 20 years. Ragwort is a deep rooting plant that regenerates if not completely removed.

Prevention

- Maintain a dense vigorous sward
- Controlled grazing - maintain optimum sward heights for animal production
- Maintain soil indices with appropriate slurry/manure or fertiliser to promote grass and clover growth
- Good drainage - check outflows and mend broken drains

Control

<u>Short term</u>

Pulling before cutting for hay and silage:

Must be done before flowering
Pulls easier following rain - soft ground
Remove all the plant if possible
Wear gloves
Remove and burn plants
Repeat annually for at least two years

Cutting:

Limits seed production but may stimulate side growth and regrowth
Cut and remove plants at least twice a year
Follow by ploughing

<u>Long term</u>

Ploughing:

Most effective way to kill established plant but ragwort will reappear without continued prevention
Re seed with a competitive rapid establishing grass ley or crop, and graze in the first year.

THE LAW

Docks, thistles and common ragwort are injurious weeds and are specified in the Weeds Act 1959. DEFRA has powers to serve clearance notices but will only do so where agricultural production is directly affected. On roadside verges and waste land, local authorities should be contacted.

THISTLES

Several species invade grass and arable land, with creeping and spear thistle the most common.

Creeping thistle

Spreads rapidly by creeping roots, which remain dormant in adverse conditions. New shoots are produced each spring from whole or fragmented roots. There are few true seedlings. Thistles occur in an open un-competitive sward and with undergrazing when the thistle is growing, and overgrazing in the winter and early spring. Common on sheep farms.

Control

- Maintain soil fertility
- Grazing - lightly in winter and spring followed by close stocking with cattle in May-July
- Cutting - for silage when thistle at early growth stage, moderate N (slurry/clover) will help
- Topping - grazing swards twice a year with the cutters set low to remove all shoots and their leaves, and when in flower and plant reserves at their lowest
- Cultivating - work as deep as possible and repeatedly to exhaust any roots not destroyed. BEWARE, a single cultivation that breaks up the roots may increase the number and vigour of the shoots. Ideally bare fallow to eradicate
- Winter cultivation with inter-row crop or competitive arable/forage will reduce infestation

Other thistles

Spear and Marsh thistles are biennials spread by seed.

Spear thistle has a deep tap root and a rosette and should be dug below ground when at young stage or cut just before flowering to just above ground level before rain so the stem and plant will rot.

Control dwarf, musk, and welted thistle in the same way.

Marsh thistle thrives in wet acid soils. Improve drainage, lime and prevent seeding by pulling or cutting.

Thistle broomrape parasitises a range of thistles and is a rare and protected plant

RUSHES

Associated with poor drainage, but also grow in free draining high rainfall areas. Soft rush, the most common species, has small tufts of brown flowers and grows on wet soils and shallow peats. It is a perennial that forms clumps by creeping rhizomes. Spongy root mass stops water flowing to drains. Produces large numbers of seeds that lie dormant for long periods and cause a rapid infestation in weak or disturbed swards.

Hard rushes are less widely distributed (calcareous clay soils) and form open tussocks ignored by grazing animals.

Prevention and control

Remove plants and reduce seedling establishment

- Improve drainage
- Soil improvements (lime and permitted fertilisers) to increase sward competition - but can result in vigorous rush growth if not combined with appropriate cutting and grazing
- Avoid breaking up the sward by poaching or overgrazing as it gives the seeds a chance to germinate
- New soft rush seedlings can be prevented from growing by trampling and by competition from an aggressive sward. Do not graze with cattle when there is a risk of poaching
- Cut or graze to improve sward. Remove rushes and prevent seed dispersal. Reseeding after ploughing, drainage, and/or deep cultivation will help to eradicate rushes

VALUE OF WEEDS

Negative effects are well recognised but the benefits of some species include:

- Deep rooting types improve soil structure and activity
- Ground cover and green manure to minimise erosion
- Insect life and bird life depend on some species
- Allelopathic effects

Weed control in organic systems aims to balance weed and crop species for sustainable production and wildlife benefits.

CHICKWEED

An annual that spreads by shedding seeds which also accumulate in the seed bank. Can form large patches that smother new sowings and fills bare spaces in older swards. It grows rapidly and is very competitive especially in wet conditions, and will continue slow growth during the winter. The high moisture content of chickweed makes it difficult to ensile or to dry in hay.

Control

- Graze out by short periods of heavy stocking with cattle or sheep, preferably with adults to minimise risk of digestive upset following high intake in youngstock
- Rake out with a grass harrow
- If present in autumn, it should be controlled to avoid production loss from sown species the following year
- Minimise open areas caused by winter kill, grass smothered by slurry, or poaching or the chickweed will spread

Further Information

Address: GDC, IGER Plas Gogerddan, Aberystwyth, Ceredigion SY23 3EB
Phone: IGER, Grassland Development Centre, 01970 823026/823058
Email: gttp.iger@bbsrc.ac.uk, webpage: http://www.iger.bbsrc.ac.uk

The Grassland Development Centre, based in IGER, is managed by the Welsh Assembly Government as part of Farming Connect.