

FACT SHEET

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Weed Control in Grass and Forage Crops



Cranfa Amaethyddol Ewrop ar gyfer
Datblygu Gwledig Ewrop yn Buddsoddi
mewn Ardalooddi Gwledig
The European Agricultural
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Llywodraeth Cymru
Welsh Government

Weeds: Why worry?

Weeds are expensive to grow! In improved grassland they reduce yield and palatability, grazing area, forage quality and sward life and also affect animal performance. Some such as ragwort are poisonous to livestock and people.

There are many ways to minimise weed problems starting with good husbandry e.g. correct soil pH and nutrient levels combined with cultural control including good grazing management, sound crop rotation, topping and alternating silage and grazing. Herbicides can also help and will give satisfactory control in the short term, however, weeds will reappear if not integrated with good husbandry and cultural control.

Prevention is better than cure

Once weeds are established control becomes more difficult as they often spread and create more of a problem, which takes time, effort and money to resolve.

Weeds and the Law

Docks, creeping and spear thistle, and common ragwort are injurious weeds and are listed in the Weeds Act 1959 (UK) and the Ragwort Control Act England and Wales 2003. Ministers have the power to serve clearance notices but will only do so if agricultural production is directly affected. Where these weeds are found on verges and waste land, local authorities should be contacted.

In this fact sheet, ways to tackle some of the significant weeds in improved grassland and forage crops are outlined.

For land in agri-environment schemes or protected by Environmental Impact Legislation, contact your local Welsh Government Office for advice.

New concerns

1. Chemicals

There is increasing concern about the use of herbicides in agriculture from milk and meat buyers and consumers as well as landowners, farmers, government and other bodies working to meet the England and Wales Water Frame Work Directive. The contamination of water is a key issue and unless herbicides are used responsibly their use will be restricted or withdrawn. At the moment the use of twenty six grasses and forage products are under review.

A number of weeds have also developed resistance to some of the chemicals used and there is very little research into products to replace them.

Restricted use or loss of herbicides will lead to increases in the cost of growing grass and clover.

2. Changing weather patterns

The erratic weather is having an effect on the management and growth of weeds; more frequent heavy rainfall events often result in ground being poached enabling weeds to invade and establish.

The higher temperatures and longer growing season experienced in some years also give better conditions for weed establishment and seed set and allow plants to store more energy for quick re-growth the following year.

In addition, wet summers like that of 2012 provide fewer opportunities for farmers to manage weeds by topping or spraying, giving the weeds further chance to spread and/or increase in vigour.

Cost of weed infestations

Table 1 showing the cost of replacing lost grass production on 1ha with high energy concentrates (£270/tonne) as a result of weed infestation.

Weed %	Grass yield tonnes DM/ha		
	7.5	10	14
	Concentrate cost (£)		
5	104	138	143
10	207	276	286

Table 2 showing lost sales £/ha (2012 prices) from 10% weed infestation due to reduction in stock carrying capacity.

	Grass yield tonnes DM/ha		
	7.5	10	14
	Lost sales £/ha		
Milk	188	249	351
Suckled calves	59	78	110
Lambs	75	99	140

Broadleaved weed control in grassland

Weeds often establish due to poor soil and sward management. When weeds are a problem always begin by checking and correcting soil structure, acidity and nutrient status and follow up with improved grazing and cutting management.

Creeping thistle

Effects

- Competition reduces yield: 5% infestation: 0.5t/ha DM loss (Dow AgroSciences).
- Less grazing area with the 'no graze' zone up to 30cm in diameter.
- Increased forage rejection.
- Poor livestock health, for example, Orf infection and spread.
- Lower livestock enterprise profit and viability: roots of one plant can cover up to 5m² in 1 year and up to 80m² in 2 years.

Spread by

- Underground roots: Plants can also germinate from 2.5cm root section if cut or damaged.

Preventing establishment and spread

- Avoid heavy spring and autumn grazing with sheep.
- Improve soil fertility and drainage.
- Increase density of sward;
 - graze May to July: Cattle; continuously at a sward height 7cm
- **Or**
 - cut silage crops when thistle at early growth stage
- Top grazed swards twice a year when thistle is in flower with cutters set low to remove all shoots and leaves.
- Cultivate **deeply and repeatedly** to destroy roots; a single cultivation may increase number and vigour of shoots.
- Herbicides: suitable chemicals in established grassland include MCPA, 2, 4D, chloryralid, fluroxypyr and triclopyr.

Farming Connect Demonstration Farm Project Creeping Thistle Control

- 2 way weed wipe - 67% reduction
- 1 way weed wipe - 60% reduction
- Spot spraying - 23% reduction
- No treatment - 24% increase

Source: IBERS GDC



Images courtesy of HGCA/BASF Encyclopaedia of arable weeds

Spear thistle

Effects

- 1% ground cover results in 1% reduction in grass dry matter (Kingshay 2011).

Spread by

- Wind-blown seed; first year plant is a small rosette, in the second year the plant flowers and sets seed.

Preventing establishment and spread

- Dig out first year rosette.
- Top grazed swards twice a year with cutters set low when in flower.
- Herbicide: established grassland at rosette stage 4-10 leaves and 20cm wide/high. Suitable chemicals include MCPA, 2,4D chlopyralid, fluropypr and triclopyr.



Images courtesy of HGCA/BASF Encyclopaedia of arable weeds

Docks

2 types: Broad leaved and curled

Effects

- 10% ground cover results in 10% reduction in grass DM.
- Yield losses greater in silage than grazing leys as livestock will eat young docks.

Spread by

- Seeds and cut root sections.

Preventing establishment and spread

- Avoid
 - allowing plant to flower and seed
 - bare soils and open swards
 - shallow cultivations; a section of dock root can produce more buds and roots
 - poaching/wheel damage
- Intensive grazing/frequent cutting will reduce vigour.
- Hand weed/top **before** seeds are at milky stage.
- Improve sward density; graze following sward height guidelines.
- Establish new leys using a cover crop and prioritise management for the grass.
- Apply slurry evenly to dry soils to avoid sward damage.
- Compost manures to kill dock seeds.
- Cultivate **deeply and repeatedly** and drag roots to surface, then collect for disposal – don't break up roots and make problem worse.
- Herbicide: in established grassland when actively growing at rosette stage 15 -20cm diameter. Suitable chemicals include MCPA, 2,4D chlopyralid, fluropypr and triclopyr.



Images courtesy of HGCA/BASF Encyclopaedia of arable weeds

Chickweed

Effects

- Reduced grass yield 10 plants/m² reduce ryegrass content by 50%.
- Reduced grass area: can smother grass completely.
- Risk of livestock poisoning: high nitrogen content.
- Affects silage making: high moisture content, difficult to wilt and poorer fermentation.
- 66% of new leys are seriously affected (Dow AgroSciences).

Spread by

- Seed; annual weed can complete 6 life cycles/year and produce around 2,500 seeds/plant.

Preventing establishment and spread

- Aim to establish dense, leafy swards;
 - graze new leys with sheep to encourage grass to tiller and prevent chickweed establishing
 - use field as part of grazing rotation rather than silage to improve sward density
 - once sward density is improved, alternate cutting and grazing
- Check acidity and nutrient levels in soil; likes high potash levels and may indicate high nitrogen and low phosphate and lime levels.
- Harrow out in the autumn and sow grass/clover seed to fill gaps, **topping is not effective**; chickweed spreads below cutting height.
- Mob stock 30-50 ewes/ha (15-20 ewes/acre) for 10 days when ground is dry where chickweed is less than 5% ground cover.
- Use appropriate herbicide when actively growing; in established leys mecoprop p/dicamba can be used.



Image courtesy of HGCA/BASF
Encyclopaedia of arable weeds



Image: © IBERS

Ragwort

Effects

- Potentially deadly to all stock; plants poisonous when fresh, dying, dried in hay and ensiled.
- Reduces grazing area and grass yield.
- Can poison people.

When pulling ragwort wear gloves at all times; the poisonous alkaloids enter the bloodstream via the skin.

(Dr D Knottenbelt, Liverpool Veterinary Research)

Spread by

- Windborne seed. The plant is biennial forming a rosette of leaves year 1 and flowering in year 2.

Preventing establishment and spread

- Remove ragwort from new leys by harrowing lightly in early spring; young ragwort does not tolerate disturbance.
- Create dense vigorous sward; lots of tillers.
- Graze new leys with sheep without poaching.
- Check and correct soil acidity, phosphate and potash levels.
- Graze rather than cut for silage.
- Do not top: topping stimulates "perenniality" allowing it to set seed for an extra year and encourages vigorous re-growth.
- Pull light infestations before cutting for hay or silage and be aware it can regenerate from root fragments.
- Herbicide control is an option but it is not always successful and "half dead" plants are more attractive to stock and must not be incorporated into hay or

silage. Remove stock for at least 1 month when using any chemical treatment;

- weed wipe at stem extension (slow acting)
- overall spray rosette stage late April–early May or autumn if crops to be taken for silage with autumn follow up the next year

- Suitable herbicides for established grassland include 2,4D/MCPA mixes.
- Barrier H citronella is a "natural" chemical treatment; spot treat any time of year - environmentally friendly, quick acting.



Images: © IBERS

Buttercup

Effects

- Reduced grazing yield: Unpalatable.

Preventing establishment and spread

- Buttercups indicate fertility, particularly nitrogen; check and correct acidity and nutrient status.
- Improve drainage.
- Cut to prevent seeding.
- Avoid heavy grazing and poaching.
- Harrow in spring to drag out the creeping runners, gather to prevent re-rooting.
- Herbicides: include 2,4D and MCPA or 2, 4D/MCPA mixes. Lots of products available - be aware - some populations have developed herbicide resistance to MCPA.



Images: © IBERS

Bracken

Effects

- Reduced grazing area.
- Can poison livestock.

Preventing establishment and spread

- Spreads by large rhizomes which store energy, the larger the leaf area the stronger the plant will become. Reduce energy flow from leaves to rhizomes by cutting or bruising mid June and follow up 6 weeks later. Where ground nesting birds are present, delay first treatment until young have fledged.
- Plough and reseed or cultivate with deep tines (2 passes), correct acidity and nutrient levels.
- Disturb litter in autumn to expose the rhizomes; allow frost to penetrate and stock with cattle.
- Spray with herbicide when frond fully expanded and follow up next year. Glyphosate is permitted but will also kill grass sward so reseeding will be necessary.

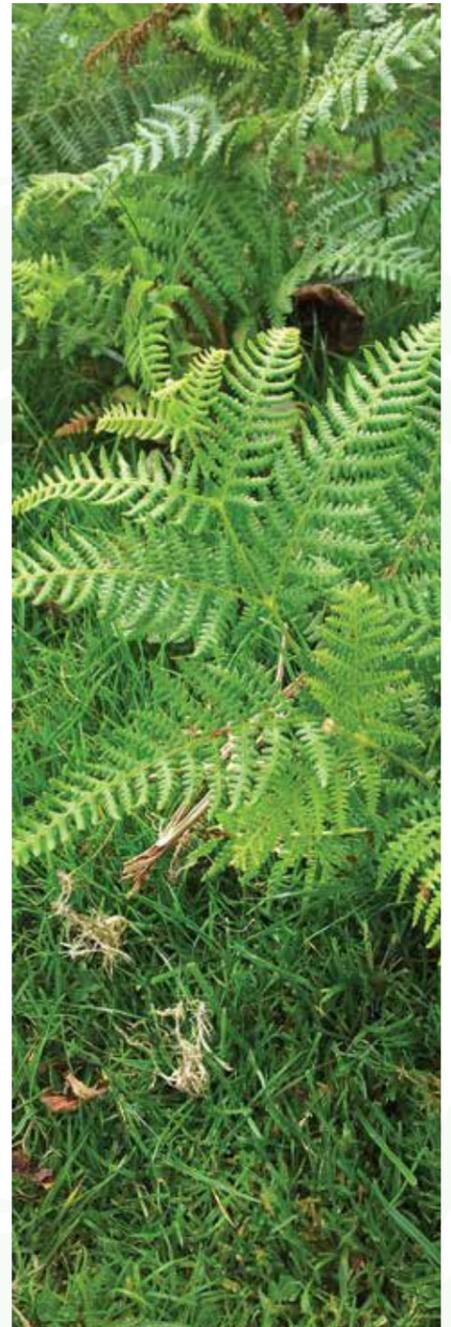


Image: © IBERS

Nettles

Effects

- Reduced grazing area and grass yield means that lost production equals 100% of infested patch.

Preventing establishment and spread

- Mow repeatedly to prevent seeding.
- Dig to remove creeping stems.
- Cultivate.
- Effective herbicides include 2, 4D, 4D chlopyralid, fluroxypyr and triclopyr.



Images courtesy of HGCA/BASF
Encyclopaedia of arable weeds



Image: © IBERS

Success with herbicides

Herbicides can be useful as a “quick fix” and help reduce weed populations long term when integrated with cultural control and improved husbandry.

Always take advice from a suitably qualified person and follow the product label. Approvals are changing all the time, for example, MCPA/MCPA mixtures can no longer be applied with a knapsack sprayer. Remember all herbicides are toxic - it just depends on the dose.

Key pointers

- Treat at right crop and weed growth stage;
 - optimal size for each weed; too big/small - effectiveness will be reduced.
- Active growth will improve control;
 - good growing weather; avoid drought/frosts; rain and diseased plants
- Use correct water volume to ensure spray to weed contact.
- Keep chemicals away from water courses.
- Apply correct dose rate;
 - too much will increase risk to environment
 - too little and effectiveness will be reduced
- Follow advised grazing and/or cutting interval, allowing enough time for product to work and to ensure dying plant does not harm livestock.
- Use a clover safe chemical where maintaining clover levels is important and a chemical approved for new leys when establishing grass.

Weeds of forage crops

In roots and forage brassicas high weed populations compete with the crop for water and nutrients. Weeds can also harbour insect pests and carry disease such as club root. In conventional systems it is common to control weeds in the previous crop, or apply a pre-emergence herbicide after drilling. Crops established by spraying off grassland with a broad-spectrum herbicide and direct drilling into the desiccated sward usually have fewer weeds.

Good husbandry and cultural control will minimise build-up of weed seed in the soil and transfer of the seed to new areas. This is particularly important in organic systems.

Weeds of forage crops

Charlock, redshank and fat-hen

Effects

- Yield losses.
- Charlock and redshank can be poisonous to livestock if eaten in large amounts.
- Fat-hen takes large quantities of nutrients from the soil.

Preventing establishment and spread

Annual weeds: seeds can remain dormant for long periods or germinate immediately.

- Aim to control plant and prevent seeding.
- Prevent the return/introduction of seed from crop seed, straw and farmyard manure.
- Good seedbed preparation is the best method of control followed by inter-row cultivation for root crops;
 - cultivate soil at regular intervals prior to sowing to stimulate germination and use mechanical methods to kill successive flushes of seedlings
 - hoe root crops to reduce bad infestations.



Charlock



Redshank



Fat-hen

Charlock and Redshank images courtesy of Blackthorn arable. Fat-hen image courtesy of IBERS. Cover image courtesy of IBERS.

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