Grassland weed control

A best practice guide to controlling weeds and protecting the environment




The Voluntary Initiative
Promoting responsible pesticide use

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Grassland weed control

While weed control in arable crops is common practice, in grassland it is far less usual. Survey data suggests that little more than 5% of UK grassland receives a weedkiller in any given year and few grassland farmers treat more than 10% of their pasture in any season.

Even though weed control is a small element of grassland farming it is important that the job is done safely, effectively and with care for the environment.

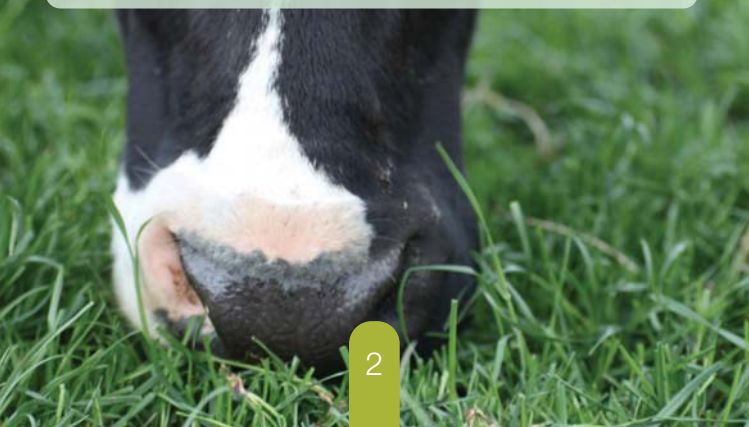
Effective weed control - whether by cultural or chemical means – is an important part of grassland management. Controlling weeds can improve forage yields, quality and longevity. However, a professional approach is vital – both to optimise the benefits of weed control, and also to protect sprayer operators, the environment and the public.

This leaflet aims to help grassland farmers and managers understand:

- The weeds that threaten stock and productivity
- How to improve pasture
- Options for weed control
- The tools available
- Best practice in protecting the environment

This leaflet can only provide general guidance. If you need more information or advice, consult a BASIS registered agronomist or your supplier for information specific to a given farm or field. And always check the product label.

Where weed control is rarely practiced consider whether the job is best left to a qualified contractor with modern NSTS (National Sprayer Testing Scheme) tested equipment and qualified operators who are members of the National Register of Sprayer Operators (NRoSO).



Why control weeds in grassland?

For livestock farmers, grassland offers a valuable and economic source of grazing and conserved forage. Effective utilisation of grassland is key to the profitability of livestock enterprises.

Weed infestations can soon reduce productivity. Trials from the Scottish Agricultural Colleges show that a 10% weed infestation equates to a 10% yield loss.

Weeds can also pose a threat to livestock health. Injurious weeds such as ragwort can result in illness, even death, particularly in equine pastures. Thistles can act as 'hypodermic needles' spreading diseases, such as orf, in grazing sheep and lambs.

Other weeds, such as rushes and bracken, can spread over time. A small clump one year can soon take over significant areas of pasture dramatically reducing the grazing available for livestock.

And for some grassland managers, it is a matter of pride to see pasture that looks well-managed, rather than a mass of unsightly weeds such as docks or thistles. Although in the right place and quantity – these broad-leaved plants are of benefit to farmland birds and insects.

Whatever, you want from your grassland, controlling weeds responsibly will help you achieve your objectives and protect the environment.

What is a pesticide?

In this leaflet the terms herbicide or weedkiller are used, but strictly speaking the legal term for a pesticide is now "plant protection product". This term covers weedkillers/herbicides, fungicides, insecticides/pesticides, plant growth regulators and soil sterilants amongst others.

Keeping weedkillers out of water

Across Europe, there are stringent standards set for the levels of pesticide in water. Drinking water should not exceed 0.1 part per billion – that's equivalent to one stem in 110,000 bales of hay! Sophisticated monitoring, operated by water companies and environment agencies, can detect these minute levels. And where water from farmland feeds into drinking water sources, the water companies may face extra treatment costs to meet the drinking water standard at the tap.

A number of grassland weedkillers are routinely detected in raw water supplies and may face further restrictions unless users take more care about when and where these products are applied.

Pesticides can reach water from farm yards, field drains, run-off, drift and over spray of ditches. That is why it is so important to consider the use of pesticides on grassland. The good news is that pesticide use is just good common sense, not complex decision making. Leaving buffer strips between watercourses and sprayed areas; only spraying when soil and weather conditions are suitable; keeping equipment in good order; and being diligent when it comes to filling and washing down sprayers is what matters.

Best practice involves:

- Using currently approved products recommended by an agronomist
- Keeping pesticides in a locked bunded store
- Using trained operators with current qualifications
- Regularly checking and testing spray equipment
- Filling in areas away from drains and water courses
- Clearing up any spills immediately
- Spraying when soil and weather conditions are suitable, i.e. no risk of drift and soils not too wet
- Leaving buffer strips between watercourses and sprayed areas;
- Cleaning and washing down sprayers at the end of the day.

Tools for the job

Non-chemical techniques can help in managing grassland weeds. For instance, topping and strimming young vegetation can help reduce seeding and weed spread, but it will not prevent yield loss or weed re-growth from infested pasture. Digging up or pulling out individual weeds before they seed can also help.

For large areas, where weeds are limiting productivity, then weedkillers applied by a competent, qualified operator with a well maintained sprayer may be the most effective option. For farms where spraying is only done occasionally, consider if it makes better economic sense to use a good contractor rather than investing in man and machine.

If a farm sprayer is used, it should be tested each year. This will identify any flaws that could lead to leakage or incorrect application. And the sprayer should be operated by someone who is a member of NRoSO. In addition, thought needs to go in to the design and location of the pesticide handling area as well as procedures for dealing with splashes and spills. **Remember**, minute quantities reaching drains can cause excessive pesticide levels miles down stream.

For small areas, options include knapsack or CDA sprayers, ATV-mounted sprayers, weed wipers and weed wands. However, small scale does not mean small risk. The same basic principles apply – the user should be a trained and qualified NRoSO member; the equipment checked and due diligence paid to filling, application and washing out.

Control options

Product purchase and use
Only products that are currently approved for use on grassland should be used to control grassland weeds. Approvals can change and it is important to ensure that any product stored from one season to another is still approved before use. If in doubt check latest approval status with your BASIS registered adviser or at www.pesticides.gov.uk

Professional products are only available from certain outlets and should only be purchased for use by qualified persons, eg those who hold certificates of competence or are members of NRoSO, who understands the need to apply the product in accordance with label instructions; wear appropriate protective clothing and dispose of used containers correctly.

Product choice
Choosing the best product for your needs depends on correctly identifying the main weeds threatening your pasture (see Know the Enemy section). It is also important to distinguish between newly-sown leys – prone to a range of annual seedlings – and established grassland where perennial weeds, such as thistles and docks, can easily become a headache. It is also worth thinking through how you will manage clover as many weedkillers are not clover-safe.

Some products work through contact action – essentially susceptible weeds that have emerged and been sprayed will be controlled. Others enter the plant's tissue and provide 'systemic' control – this is particularly important for deep-rooted weeds as the herbicide will be translocated to the roots as well as green tissue. This is often the best way to achieve long-term control.

Clover can be an important component of grassland, particularly in grazing pasture. However, many popular grassland herbicides will control or damage the clover as well as weeds. Again, check the label and any leaflets to see whether the product is safe to use on swards containing clover.

Other considerations

Spot treatment and weed wipers provides a convenient way of reducing the amount of chemical used and targeting a specific area. Always check the product label to ensure the application method is approved. Weed wipers - usually filled with glyphosate or a selective weedkiller - are particularly useful when weeds such as thistles, rushes and nettles have grown well above sward height.

Application timing
Weedkillers work best on actively growing weeds, which are at a susceptible growth stage. A rule of thumb for annual weeds in newly sown leys is that the smaller the weed, the more effective the control. For perennial weeds, which often have deep roots, it is best to spray at the rosette stage, when weeds have active, healthy new growth.

Grazing intervals – the time that stock must be kept out of grazing pasture after spraying is set out on product labels, especially to avoid animals eating dying or poisonous weeds. Some labels warn not to allow any animals (including domestic pets) into pasture until the spray has dried.

Personal protective equipment (PPE) – the type of protective equipment, eg gloves, faceshields, coveralls etc, also specified on every product label. Often the PPE needed when handling and measuring concentrated product differs from what is required when applying the dilute spray.

Minute residues of some treatments can adhere to plant material and be found in manure resulting from grazing or feeding conserved forage. Again, labels wiil warn where there is such a risk. Always follow the instructions regarding manure management.

For any pesticide, remember there should be appropriate bunded or leak proof storage, properly labelled with precautions in place for fire or spillage. It need not be complex and where only small amounts of pesticide are kept an old chest freezer with a lock fitted is adequate.

Know the enemy:

DOCKS

Broad-leaved dock *(Rumex obtusifolius)* and Curled dock *Rumex crispus)*

What is it:

One plant can produce up to 60,000 seeds, these can remain viable for up to 80 years.

Why control it:

Docks thrive in fertile pasture, but only provide 65% of the feed value of grass from the same area.

Risk factors:

Open swards: from poaching, over-grazing or winter kill all provide space for infestations to start. Weeds establish more readily on grazed land or silage systems and respond well to nitrogen fertiliser.

Treatment options:

Topping is not enough as the deep roots allow them to recover and set viable seeds. Intensive grazing or silage cutting doesn't work as viable seeds survive ensiling and digestion.

Herbicides* such as aminopyralid + triclopyr triclopyr + fluroxypyr +clopyralid; triclopyr + fluroxypyr; dicamba + mecoprop-p + MCPA; mixtures of metsulfuron-methyl with dicamba +mecoprop-p + MCPA or with dicamba + mecoprop-p.

Handy hints:

Docks are best controlled at the rosette stage when leaves are a healthy green and not under stress.

When using translocated herbicides do not cut grassland for at least 21 days to allow the treatment time to work down to the roots.

Herbicides*

The examples are illustrative of the range of products available and are not an exhaustive listing. Discuss with BASIS registered agronomist, read the label and check leaflets to confirm weeds controlled and the expected level of efficacy; some weeds may require 2-3 year programme for complete control.

Know the enemy:

THISTLES

Creeping thistle
(Cirsium arvense)

Spear thistle
(Cirsium vulgare)

What is it:

Creeping thistle is a perennial growing from seed or portions of root as short as an inch.

Spear thistle is a biennial growing from seed, often unnoticed in its first year, due to a small rosette. However, in the second year it can spread vigorously.

Why control it:

Established creeping thistle has extensive underground roots and competes strongly with grass. Spear thistle in the second year can spread to cover more than a square metre of ground, thus posing a serious threat to pasture productivity. Even a low infestation of just 1% will justify treatment.

In addition, thistles can spread diseases such as orf in sheep and lambs.

Risk factors:

Thistles can appear at different times, thus timing of control can be difficult. Over-grazing or poor soil nutrition status can encourage growth.

Treatment options:

Where thistles are at different growth stages, topping is a useful first step in treatment. Usually, thistles in a pasture will have reached a suitable growth stage for treatment 2-3 weeks after topping.

Herbicides* such as aminopyralid + triclopyr triclopyr + fluroxypyr + clopyralid; triclopyr + fluroxypyr; clopyralid + triclopyr + dicamba; mecoprop-p + MCPA, mixtures of metsulfuron-methyl with dicamba + mecoprop-p + MCPA

Handy hints:

Topping and treatment later in the season will ensure herbicides have a lasting effect – often beyond a season.

Treatment two weeks after nitrogen application can improve herbicide uptake.

Know the enemy:

NETTLES

Nettles
(Urtica dioca)

What is it:

A perennial weed that can grow from seed or root portion.

Why control it:

As nettle infestations grow they spread out making pasture unpalatable and reducing the grazing area.

Risk factors:

Poached areas and open swards will encourage nettles to establish.

Treatment options:

Nettles are best controlled when young and actively growing at 15-25cm high.

Herbicides* such as aminopyralid + triclopyr clopyralid + triclopyr, clopyralid + fluroxypyr + triclopyr; dicamba + mecoprop p + MCPA; 2,4-D

Handy hint:

Once established, nettles are rarely controlled by one treatment. Be prepared to treat regularly.

Avoiding weeds
Like it or not the appearance of grassland weeds is more often than not a symptom of poor management: ie poaching, compaction, over or under grazing, bad drainage, poor nutrient status and wrong pH. These are all factors that weaken the sward and make it easy for weeds to germinate and grow.

Know the enemy:

RAGWORT

Common ragwort
(Senecio jacobaea)

What is it:

A perennial plant dispersed by seed and spreading root systems.

Why control it:

Ragwort can be poisonous to stock, especially horses, when it is wilting or dead.

Risk factors:

Overgrazed or bare ground can encourage ragwort establishment.

Treatment options:

Uprooting ragwort is not a reliable option as portions of root will break off and continue to grow.

Herbicides* such as aminopyralid + triclopyr; 2,4-D + dicamba; 2,4-D, MCPA + 2,4-D

Handy hint:

Once sprayed, ragwort is more palatable to grazing animals. Do not graze until treated ragwort has died off completely and been removed from the field.

Rosette stage

The optimum timing for controlling biennial weeds, such as docks, thistles and ragwort, is when they are at the rosette stage. This means application is most likely to be effective during the early autumn of their first year or late spring / early summer in their second year (before flowering).

Know the enemy:

CHICKWEED

Common chickweed
(Stellaria media)

What is it:

The most common annual weed of grassland.

Why control it:

Rapid, prostrate growth means it competes aggressively with grass, leading to significant losses of yield especially when establishing new leys. Up to 25% reduction in silage yield has been recorded.

Risk factors:

Chickweed is often a problem in reseeds. In established pasture, it can quickly colonise bare areas, eg where mowing has 'scalped' the sward.

Treatment options:

Herbicides* such as aminopyralid + triclopyr fluroxypyr + triclopyr; clopyralid + fluroxypyr + triclopyr; dicamba + mecoprop-p + MCPA, dicamba + mecoprop-p.

Handy hints:

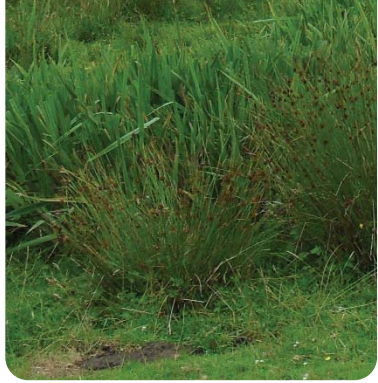
Focus on good and rapid establishment of new swards. Ensure seedbeds are clean and free of perennial weeds. Use heavy roller to ensure good seed: soil contact when sowing.

Avoid over-grazing.

Know the enemy:

RUSHES

Soft rush
(Juncus effusus)



What is it:

A common weed on wet pasture.

Why control it:

Rushes will soon colonise extensive areas of pasture and reduce productivity significantly.

Risk factors:

Poor drainage and acid soils will encourage rush growth.

Treatment options:

Repeated cutting at 4-8 week intervals may give some control; alternatively cutting and then treating the regrowth with a weedkiller may offer additional control. Weed wiping with glyphosate in late summer is a useful option. Rushes can be kept in check by regular topping.

Herbicides* such as dicamba + mecoprop-p + MCPA, MCPA, 2,4-D

Handy hint:

Check drainage and soil pH and consider remedial action if rushes appear in pasture.

Integrated Weed Control
For best results an integrated and long term approach to weed control is usually the best option: look after the grass, avoid making gaps for weeds in the sward, act early to control weeds when numbers are few and hand pulling/mowing and spot treatment can be effective, using mowing to reduce weed vigour, choose the right weedkiller for the weed spectrum and make sure it is applied correctly; expect to re-treat the following year.

Know the enemy:

BUTTERCUP

Creeping buttercup
(Ranunculus repens)

What is it:

A common weed, particularly in new or worn-out pastures.

Why control it:

Buttercup is mildly toxic and stock will not graze it, hence productivity of pasture is reduced.

Risk factors:

The weed will thrive in overgrazed land, especially where drainage and fertility is poor.

Treatment options:

Herbicides* such as aminopyralid + triclopyr dicamba + mecoprop-p + MCPA; 2,4-D; MCPA + 2,4-D

Handy hint:

Manage grazing regimes to avoid overgrazing; and rectify field drainage and nutrient status.

Water protection and grassland weedkillers - check it out

1. Are you getting advice on when and how to use the right product from a BASIS registered adviser? ☐
2. Do you use only approved weedkillers and pesticides? ☐
3. Are weedkillers/pesticides in a clearly marked, bunded lockable store? ☐
4. Is the operator applying the product trained, competent and, where necessary, qualified to do the job? ☐
5. Is the sprayer tested through NSTS regularly? ☐
6. Is the sprayer checked for drips and leaks before filling with chemical? And have nozzle flow rates been checked with a jug test? ☐
7. When filling the sprayer do you make sure there is no chance of leaks, spills or splashes reaching water by using a drip tray, portable bund or a bunded concrete area? ☐
8. Are pesticide containers triple or pressure rinsed and drained before storing them under cover? ☐
9. When spraying, is a 5m unsprayed strip left next to ditches and water courses to ensure there is no risk of drift or overspray reaching water? ☐
10. After spraying, is the sprayer washed down in the field and parked up under cover? ☐

Spray operators and contractors should be able to answer yes to all of these questions.

If you are using a contractor, the operator must hold a certificate of competence and should be a NRoSO member and the sprayer should be NSTS-tested every year.

Further information

In the first instance, talk to your pesticide supplier or consult a BASIS registered agronomist

Websites offering more information:

The Voluntary Initiative
www.voluntaryinitiative.org.uk

Environment Agency
www.environment-agency.gov.uk

Catchment Sensitive Farming
www.naturalengland.org.uk/csf

Health and Safety Executive
www.hse.gov.uk

Scottish Environment Protection Agency
www.sepa.org.uk

National Association of Agricultural Contractors
www.naac.org.uk

Crop Protection Association
www.cropprotection.org.uk

Chemicals Regulation Directorate
www.pesticides.gov.uk

National Sprayer Testing Scheme (NSTS)
www.nsts.org.uk

National Register of Sprayer Operators (NRoSO)
www.nroso.org.uk

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