

Control of rushes

Summary

- Improve drainage where possible
- Check and manage soil pH
- Encourage a dense vigorous grass sward
- Avoid overgrazing in winter, or undergrazing in summer

Using herbicides:

- Spray before ploughing and reseeding
- Use selective herbicides to suppress rushes in land where drainage is not possible

Without herbicides:

- Cut rushes before seeding, remove cuttings, and graze regrowth during dry conditions with cattle, ponies or goats.

Introduction

Rushes are mainly a problem in permanent pasture and rough grazings. They are particularly associated with poorly drained soils and are common in marginal and reclaimed upland areas with high rainfall.

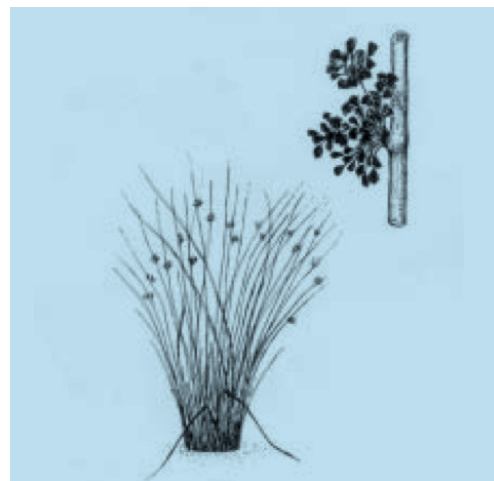
The common or soft rush (*Juncus effusus*) is the most widespread and can be recognised by the dense tuft of brown flowers coming from the side of the stems which contain a continuous white pith when split

Several other species can occur in Scotland e.g. the heath rush (*J squarrosus*) which will be grazed by stock when grass is scarce and the jointed rush (*J articulatus*) which is normally only found on very poor wet soils, not worth improving. The hard rush (*J inflexus*), which can cause poisoning of livestock, is not common in Scotland. They all produce very large numbers of seeds that are widely dispersed by wind.

Ecological value

Rush cover will vary from small patches to large expanses, from sparse to dense and from species rich to species poor, however most areas of rush pasture will provide important breeding and feeding habitat for a range of insects, amphibians, mammals, and many species of birds.

Butterflies such as fritillaries, orange tip, and other insects feed on nectar and pollen from plants such as cuckoo flower, marsh marigold, marsh violets, angelica and valerian. Birds including snipe, curlew and lapwing rely on damp grasslands: snipe and curlew use their long bills to probe into damp ground for earthworms, insects and beetles, whereas lapwings are visual feeders, requiring shorter and more open fields with scattered tussocks or clumps of rushes or taller vegetation. Reed buntings and skylark will feed on insects and seeds; herons, barn owls and hen harriers will also feed on amphibians and small mammals. Water voles, which eat rushes, and brown hare may be found in damp rushy grassland.



Soft rush (*Juncus effusus*) showing growth habit and tuft of flowers



Populations of all these species have declined, many steeply, due to changes in farming including intensification, lack of management, or abandonment, which have resulted in loss of suitable damp habitat and associated loss of plant and insect diversity. Bear in mind that many species require several connected sites for a local population to remain viable, so habitats should be considered in their wider landscape context.

If there are species rich areas with wildflowers, or open water, leave these undisturbed, and avoid cutting rushes during the breeding and flowering season between March and August. Also avoid cutting all the rushes at once, instead aim for some tall and some short patches by cutting on a rotation over about a quarter or a third of the area each year.

Agri-environment schemes offer management payments for wetland and wet grassland, capital payments for cutting rushes and for creating wader scrapes as part of a whole farm/croft plan.

How rush infestations arise

Many soils, even in apparently rush-free areas, contain large numbers of buried viable rush seeds and therefore the risk of infestation is common in grassland. Rushes are prolific seeders and seeds can survive for decades in the soil.

Wet spring weather provides ideal conditions for seed germination where bare patches occur in swards after winterkill or overgrazing and poaching.

Once established, rushes form tight clumps with deep fibrous roots. They become resistant to trampling damage and grazing damage and can tolerate dry conditions, since their dense spongy mat of roots holds water and reduces the effectiveness of drainage. Clumps of rushes will steadily enlarge and spread vegetatively by short creeping rhizomes to form new clumps.

Preventing infestation

Stop rushes establishing by producing and maintaining a dense competitive sward.

Several husbandry measures will help to achieve this:

- Good drainage reduces the risk of sward damage by poaching and minimises the occurrence of wet conditions which suit germination of rush seeds.
- Use of high tillering and persistent grasses in seed mixtures aids good establishment and prolongs sward life.
- Liming and balanced fertiliser use maintains soils fertility and encourages good grass growth.
- The trampling effect and grazing by cattle, goats or ponies can help to prevent rush establishment; however, the use of cattle or ponies should be avoided when there is a risk of poaching.

Control of rushes

Field and soil conditions dictate what can be done to control rushes. For long-term control conditions need to be conducive to the vigorous grass growth that will prevent re-infestation. This might involve drainage, liming and fertilising – all costly operations. Consider whether the benefit of an improved sward justifies the cost.

Drainage is often a factor. Poor drainage may inhibit grass growth and also make control difficult. Heavy machinery for spraying or cultural control may cause unacceptable damage if the ground is wet. In fact often wet soil may preclude use of heavy machin

The evenness of the ground and presence of stones is another factor. Cutting may be difficult in stony or uneven conditions.

Cultural control

Ploughing and re-seeding is the extreme form of cultural control - ploughing must be deep and thorough to be effective. This is an expensive option and is not worthwhile unless drainage and fertility issues are corrected at the same time.

Cutting, if ground conditions allow, is less costly. The type of machine used will depend on what is available locally. Probably the ideal is a machine to cut and remove the rushes - the cut rushes may have a use such as for bedding. In more uneven ground a flail-type machine may be more practical. This has the disadvantage of leaving cut rushes in situ, although the flail does cut the rushes into fragments which may not be too much of a problem for grass growth. If rushes clumps are thick there may be substantial flailed mulch that will smother grass growth.

There have been recent field studies by the Soil Association on the effectiveness of cutting rushes. They have found that grazing with cattle after cutting can help break up root clumps, and that cattle eat young rush shoots thus helping prevent re-growth. <https://www.soilassociation.org/media/7616/rushes-field-lab-topping-notes.pdf>

Chemical control

An overall application of glyphosate to destroy the old sward is a good option prior to ploughing and re-seeding.

Where drainage, ploughing and reseedling is not feasible or economic, short-term control can be achieved by selective spraying, or weed-wiping.

Spraying

Common rush is susceptible to the herbicides, MCPA and 2,4-D. When applied at manufacturers' recommended rates, established rushes will be controlled without damage to the grass. MCPA and 2,4-D are phenoxy herbicide that select between grass and broad-leaved species. They are very safe to grass species, but check or kill a range of broad-leaved species. Clover will be checked or killed and other broad-leaves species in the sward may also be killed, reducing the species diversity of the sward.

If the decision is made to selectively spray the rushes, they should be treated while actively growing and before flowering, from the end of May to early July. Early spraying is easier and small rushes are more readily controlled than mature plants. Where feasible, cutting and removing dead trash a month after spraying will help sward recovery.

Cutting before spraying is not essential but may improve control of old established clumps since young regrowth is more susceptible to herbicides; it can be sprayed when 25-30cm tall about a month after cutting. Cut litter must be removed to prevent shielding from the spray. A follow-up treatment will be needed in the following season to clear up any rushes not fully controlled.

Weed-wiping

An effective alternative to spraying is to use a weed wiper. A glyphosate product such as Roundup is mixed with water and applied to the aerial parts of the rushes above sward height. Grass, clover and other broad-leaved species within the sward avoid being damaged. There are numerous types of weed wiper – hand-held, trailed behind an ATV or tractor mounted. Use the glyphosate dilution rate specified by the weed wiper manufacturer. Treatment should be made when the rushes are actively growing and standing well clear of a tightly grazed sward. Two passes in opposite directions are usually required.

Treatment may need to be repeated to control rushes which were below the level of initial treatment.

Follow-up spot treatment of surviving rushes can be made in subsequent seasons to prevent re-infestation.

Remember that the use of herbicides alone will not give long-term control of rushes and repeat treatments will be required in later years. However, it is useful on land where drainage and other pasture improvement methods are impossible or uneconomic.

Essential follow-up measures

Unless steps are taken to correct the conditions which led to the rush infestation in the first place, re-invasion will quickly follow, since the soils will be carrying a high burden of viable seeds. Improved grassland management is an essential part of rush control, to back up the initial effect of ploughing and reseeding or spraying. Liming and balanced NPK fertiliser use is essential to maintain soil fertility and encourage good grass growth, but changes in grazing policy may have an even greater effect: the aim is to avoid excess winter grazing and poaching, but to graze hard and top if necessary in summer. Introducing cattle, which are less selective than sheep, will also help to prevent re-infestation. Goats will selectively graze out rushes when introduced to rush infested pasture.

Precautions

- The spray operator must have the appropriate Certificate of Competence
- Only use products authorised for the use intended, in a manner prescribed by the authorised label or by an EAMU. There are many brands of glyphosate, MCPA and 2, 4-D available; check that individual products are authorised for the use intended.
- If applying by knapsack sprayer, check that the product is authorised for application by hand
- Always read the label and follow manufacturers' recommendations carefully.
- When spraying take great care to prevent spray drift onto neighbouring crops and vegetation
- MCPA and 2,4-D can contaminate watercourses. Take care to prevent spray entering watercourses and carefully follow any buffer zone restrictions on the product label
- Follow the manufacturers' advice as to appropriate measures for cleaning spray equipment. Make sure spray-tank, line and boom, and wiper equipment, are cleaned out at the end of spray operations. Do not clean on a hard surface where run-off could contaminate watercourses, or store the equipment where it could lead to contamination of water
- Follow the Code of Practice for Using Plant Protection Products in Scotland <http://www.gov.scot/Publications/2006/12/19110050/0>
- For any significant environmental impacts such as drainage works, intensification works on unimproved land, or within designated or sensitive areas such as National Park, an Environmental Impact Assessment may be required under the Environmental Impact Assessment (Agriculture) (Scotland) Regulations 2006.

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