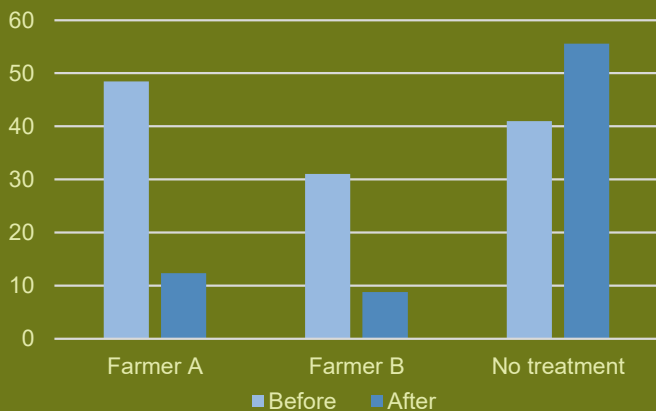


What we learned

Rush Cover in Trial Fields Over Time (%)



Treating rush reduces its cover, while not treating rush allows it to spread rapidly. Farmer A treated their rush for three years reducing it from an average of 48% to 12%. Farmer B reduced theirs from an average of 31% to 9% over two treatment years. The fields receiving no treatment experienced an expansion of rush from 41% to 56% cover.



Before and after - the same field in 2017 and 2020

Liming – Liming doesn't kill rush but boosts the existing sward. Treated fields produced a diverse, robust set of grasses and other plants which livestock prefer. No preference for type of lime was found, but piled lime can be spread in a muck spreader, whilst powdered lime is best spread by a contractor. Remember soil tests should inform lime application. Plus, only a limited amount of lime can be spread in any year, and it may take several years of application to raise the soil's pH.

Aeration – Success is dependent on the right ground conditions; fields should be moist but not too wet or dry. Aeration can improve surface drainage, increase the area accessible by a tractor and can make a field more attractive to livestock. But aerating a field when it is wet can create lines of rush where new plants have germinated in the holes.

Techniques Tested By Farmers

Rush control requires time and effort. It's all about trial and error with different fields responding in different ways. Management over many years can reduce rush cover but is unlikely to eradicate it. It is important to work out what suits your land, machinery and farming calendar.

Cutting, baling and weed wiping - Mowing breaks up rush tussocks, baling removes old seed and thatch promoting strong grass regrowth, and weed-wipe works well on young growth. Re-growth must be long enough after the cut for the weed-wiper to be effective. This is a more time-consuming method which one farmer swore by but the other struggled with. Their land and equipment was less suitable, and they were busy shearing when the rush needed cutting. This farmer resorted to a weed-wipe only method and much preferred it.

Weed-wiping directly into tall rush works - on the re-growth after a mid-summer cut or when directly applied to tall tussocks. If applying directly, it is more effective to weed-wipe in both directions. This was the most cost-effective method for dense rush; cutting dense rush can take a long time and damage machinery. Direct treatment is useful when there has been no good cutting weather and reduces damage to fields by minimising the use of machinery.

Follow the herbicide instructions – Lower ratios of herbicide to water wasn't effective. Use the recommended proportion with a well-maintained and properly set up weed-wiper to get the best kill rate. Double check calculations to save chemicals, fuel and effort in following years.

Weed-wiping only is best followed with a flail or top – Rush may die and rot over the winter or a thick thatch of dead rush may remain. Flailing or topping the thatch can open the sward and allow grass to grow, reducing bare ground that can be susceptible to new rush growth. Taking the thatch off will also make the field more attractive to wading birds.

Cut and graze (with or without a weed wipe) – Livestock are encouraged to take regrowth where rush is thin (i.e. no big tussocks) and cover in a field has been reduced to roughly 30% or less. Cows, ponies and horses all ate re-growth after a cut. Sheep don't like rush but struggle to avoid it when it is mixed with competitive grass re-growth after it has been treated.

Positive Outcomes

Uses for rush – There is local demand for baled rush as bedding within the livery trade, or it can be used for cattle bedding. Rush appears to be more absorbent than straw and is a good sustainable substitute. It is only cost effective to bale if most of the necessary machinery is already available. We left bales for a year to let seeds decompose, so that the manure did not increase new growth.

Lapwing love it – Lapwing, Curlew and Oystercatcher need gently sloping grassy fields with a varied sward for breeding. Many fields in the trial hadn't had breeding waders for years. After rush treatment, wading birds began breeding on fields the year after, but two years after thin strands of re-growth caused the birds to abandon the fields. Treatment is best followed by a flail or top late in the season or early in the spring to remove any litter to be beneficial to birds - even in years where no weed-wiping is needed.



Managing rush and looking after birds - As waders are ground nesting birds, early summer field operations can disturb breeding and destroy nests. Rush treatment should take place after 15th July. Only in dense and unmanaged rush may an earlier cut be possible. Check your Environmental Stewardship agreement for the earliest permissible cutting date and speak to Natural England if you have concerns.

Together we can manage land and maintain good water quality - The use of chemicals on water catchment land comes with a risk to raw water quality, but monitoring processes are in place to detect undesirable chemical presence prior to water treatment. With a vigilant approach, chemical control of rush can be done safely and effectively. Good practice involves ensuring appropriately licensed chemicals are used in the manufacturers' recommended quantities by trained / certified operatives using correct delivery methods. Consider ground and weather conditions during application to not impact nearby watercourses. Water companies offer advice and guidance to ensure the impact to water is minimised.

What is the problem?

Many in-bye fields have become dominated by soft rush with aerial imagery showing the presence of rush increasing by 82-174% in the West Pennine Moors between 2005 and 2018. This has been attributed to:

- Changes in weather patterns, warmer summers and mild winters
- Changes in field use - meadows turning to permanent pasture
- Increase in the weight of new farm machinery



- Changes in livestock and stocking rates, i.e. large-scale move from cattle to sheep
- Lack of field drain maintenance
- End of grants for lime
- Lower input farming encouraged by Environmental Stewardship schemes

What we did

Natural England worked with two farming families to carry out a simple rush control trial, supported by the EU LIFE project, Natural Course. Each family put forward three rush-infested in-bye fields to the trial and three different treatments were applied.

Treatment 1: Cut and weed-wipe only.

Treatment 2: Cut and weed-wipe with lime

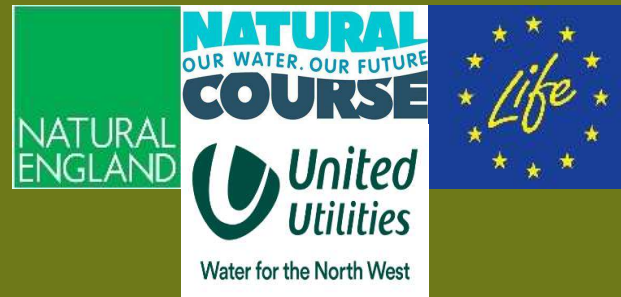
Treatment 3: Cut and weed-wipe with aeration.

One family carried out an additional treatment involving cut and weed-wipe, lime and aeration on a fourth field.

Natural England staff recorded the rush cover in each field before treatments were applied and monitored changes through annual surveys. The project experienced complications, but all involved learned lots about rush control.

We would like to thank you for your efforts to control rush because effective rush control significantly improves the habitat for ground-nesting birds over time.

We hope that the information within this leaflet can help to inform your ongoing management.



For more information about this project, email karen.rogers@naturalengland.org.uk

For more information about Natural Course please visit www.NaturalCourse.co.uk or follow Natural Course on twitter (@natural_course)



Project Rush Control

Soft rush likes wet and acid conditions, has a shallow root system and can spread from the root or from the large number of seeds the plant produces annually. An infestation reduces the capacity of fields and increases stocking rates on remaining areas of grass.

