

## Flood Recovery for Grasslands



The unrelenting heavy rainfall over the winter of 2013-14 caused a range of problems to grass leys and pasture and left many farmers facing tough decisions about how to repair the damaged grasslands that they depend on year round to provide fodder and grazing for their livestock.

The good news is that there are various ways to ensure that flooded fields will soon become both economically viable and productive again.

First, it's important to understand the nature of the damage that has been caused by the water, both in the short and longterm.

Prolonged rain causes some soils to become 'capped' which means that the weight of the water falling on the surface has formed a hardened, almost sealed layer of soil. It is then difficult for water to permeate through this layer and the rate of infiltration is reduced, meaning it takes longer for the soil to soak up heavy rainfall. The likelihood of surface runoff therefore becomes much greater, which increases the chances of further flooding in the future.

Some soils became totally waterlogged as a result of very high rainfall last winter. This means that the ground simply cannot soak up any more water, losing its ability to draw it away from the surface and drain it further down into the soil profile. Soils in waterlogged areas that have been affected in this way can be identified by a dark and slimy appearance with a blue/black colouration caused by a lack of oxygen in the soil. This is a serious problem, since it means the ground will not be able to sustain and promote healthy plant growth as we move into the spring growing period.

In many low lying areas, farmland was totally submerged by the floodwaters for several weeks or even months and the floods may still be in evidence even now. As the water recedes, farmers are beginning to see that grass is severely affected by being underwater for so long. Some fields will have a very thin grass covering, made up of deeper rooting grass that may have survived submersion better than other species. Fields sowed with recent leys may have an almost total loss of grass due to the small root structure and lack of available oxygen under water.

As the land begins to dry out, allowing the specific damage to be assessed, the crucial decisions to make are which grasses to sow to repair the damage, and how best to sow them before the turning out of stock or first cut silage.

Generally speaking, fodder plants chosen for wet ground need to be carefully selected. Besides ensuring they can tolerate water-logged soil, the most important criteria is persistence, the total yield over many years being more important than short term gain.

The two main options for many farmers are either to re-sow entire grass leys or over-seed smaller patches of land. This decision generally depends on the extent of the damage and on the soil conditions.

If approximately 50% of the sward is made up of weeds or invading grass species, or if the field has large bare areas with little or no cover, it may be appropriate to re-seed. This usually means ploughing up and cultivating a large area and then establishing a new grass ley in its place. The benefit of this approach is that it creates an entirely new sward containing productive species that offers a high quality crop. The method can also be useful for correcting shallow compaction problems by breaking up the surface of the soil and inverting it.

However, the re-seeding technique is more expensive because it requires several passes with a plough or cultivator and further secondary cultivations with a power harrow and drill to plant the seed. The total inversion of the soil by this technique means that it is not easy to employ this method as a means to repair small areas of an existing pasture, but is far more suitable as a whole field establishment technique.

A cultivation process which requires several passes is also detrimental to the soil structure. This is an important consideration, because a loose fluffy soil may increase the chance of churning up the ground or poaching from stock in wet areas. Also bear in mind that the re-seeding approach can take longer to establish into a useful grazing sward. This is an important issue if pasture is imminently needed for the turning out of stock, as the immature seedling can easily be damaged by animals during the early growth stage.

But the benefits of re-seeding are that the mixes being drilled, such as ryegrass, will be generally higher yielding because they are sown species of modern varieties that are quicker to establish and grow more vigorously than non sown grasses. Reseeding also gives the opportunity to establish new leys with specific benefits, such as drought resistance, or herbal leys for the promotion of healthy animals.

If only small or patchy areas are damaged rather than a whole field, over-seeding may be a better solution. This is a way of adding to what is already there by introducing new and useful grass species into an existing sward. It's done by drilling into pasture without turning the soil over. The process is usually carried out with a grass drill such as the Moore Uni Drill or an Aitchison. Another suitable drill is the Cross Slot drill which places the seed in a pre-made slot in the ground, with little disturbance to the existing sward or by using a comb harrow with seeder attachment or simply a spinner applicator and light

harrow.

Over-seeding is a useful way to keep out unproductive species and weeds by creating competition for new vigorous seedlings. It's also cheaper than a total reseed, firstly because a lower seed rate is generally used and secondly because it requires less cultivation passes. This in turn reduces the amount of moisture lost through multiple cultivation and means it's beneficial to soil structure because the soil remains relatively undisturbed, aiding rain infiltration and drainage as well as improving the root structure of the sward.

As well as helping with flood recovery, over-seeding gives the ideal opportunity to introduce or improve the amount of clover in an existing sward, with the range of benefits that clover brings.

Not only can it increase the drought tolerance of the pasture, but it can also fix nitrogen which aids growth. Red clover can fix higher amounts of nitrogen than white clover and is a useful source for boosting protein in the grassland which makes it especially good for finishing lambs. In red clover swards, care must be taken when grazing sheep pre or post tupping and the plant should be grown rotationally every five years to reduce the problems with soil borne diseases and pests such as rots and eelworm. White clover is longer term, with the small leaf white clovers generally suited to sheep grazing and medium and large leaved strains used for rotational grazing by cattle as well as silaging or cutting. A downside of over-seeding with clover is that it can limit the herbicide choice for weed control.

In the end, the choices made will depend on understanding the particular environment in which the grass is to be grown as well as its end purpose, and discussing this with a seed merchant who can then provide the right species and varieties. This way grasslands that have been turned into temporary bogs and lakes this winter will grow lush and profitable over the spring and summer season.

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