

Green covers: get them in early

Plan now and the extra work after harvest will be more manageable.

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Following the recent review of the Nitrates Directive, growers are required to shallow cultivate stubbles after harvest. If you have late harvested crops, you must establish a 6m buffer to protect any threatened watercourses.

Stubble cultivation or sowing of a crop must take place within seven days of baling straw post-harvest. Chopping straw, stubble cultivation or sowing a cover crop should take place within seven days of harvest.

In all circumstances, shallow cultivation or sowing of a crop must take place within 14 days of harvest.

Maintaining a green cover over the winter, whether it comes from natural regeneration or a sown cover crop, brings additional field work at harvest time, but there are many environmental, agronomic and economic benefits.

One of the primary benefits of an over-winter green cover is that it will take up any remaining nutrients after harvest, especially nitrogen. This will help reduce potential nitrate leaching over the winter.

Actively growing plants will improve soil structure and soil drainage, as well as protecting soils from winter rainfall and adding valuable soil organic matter over time.

Nitrogen recovery

A study carried out on the SignPost tillage farms in 2021, where a range of cover crops were sown across a number of farms, showed nitrogen uptakes of 10-64kg N/ha. The autumn of 2021 was very favourable for cover crops and they continued to grow right into October and November.

Figure 1 shows that for a cover crop sown in mid August, 54kg N/ha was recovered, while for the mid September, sowing date N uptake was reduced to 9kg N/ha.



Rye and phacelia sown on 29 August 2021.

Where stubbles were disked and natural regeneration established, 20kg N/ha was recovered.

This shows the importance of sowing date and N uptake by a sown cover crop. Reducing surplus N in the soil after harvest clearly reduces the risk of nitrate losses over the winter.

Different cover crop species have different abilities to recover N. For example, from the 2021 Signpost farm study, a late August-sown cover crop of rye and phacelia recovered 64kg N/ha (see above picture).

On the same site where wheaten straw was chopped, N recovery was reduced to 27kg N/ha. This shows that the straw utilised a proportion of the available soil N over the winter.

Research shows that between 0-40% of the N taken up by a cover crop over the winter will be available to the following spring cereal crop.

Crop yield

The earlier crops are sown, the more tonnes of fresh material they will produce. Figure 2 shows the effect of sowing date on tonnes of fresh material produced for three different sowing dates. Delaying the sowing date by one month reduced the fresh yield from 18.8t/ha to 2t/ha for the Glas mix (see photo on the next page).

It also showed that natural regeneration was better than a late-sown cover crop. Growing large cover crops will provide a larger volume of potential fodder where the crop will be utilised by grazing livestock.

Alternatively, incorporating cover crops into the soil will add soil organic matter and help improve soil health over time. Building soil organic matter is a very slow process, with good cover crops improving soil organic matter by around 0.1-0.2% per year.



Stubble turnip and forage rape sown on 15 September 2021.

Figure 1: Effect of sowing date on nitrogen uptake by standard Glas mix* and natural regeneration 2021.

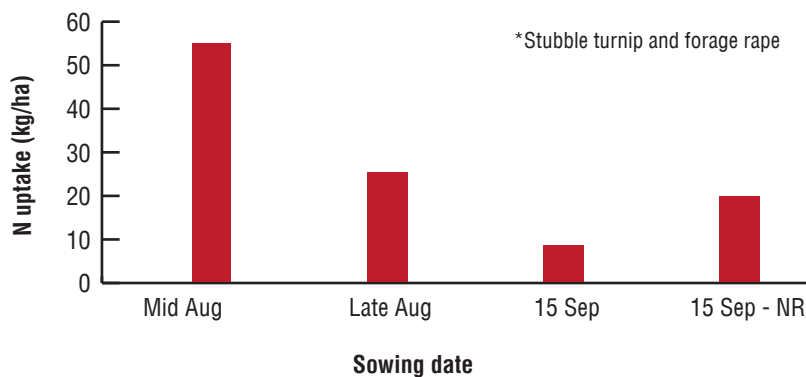
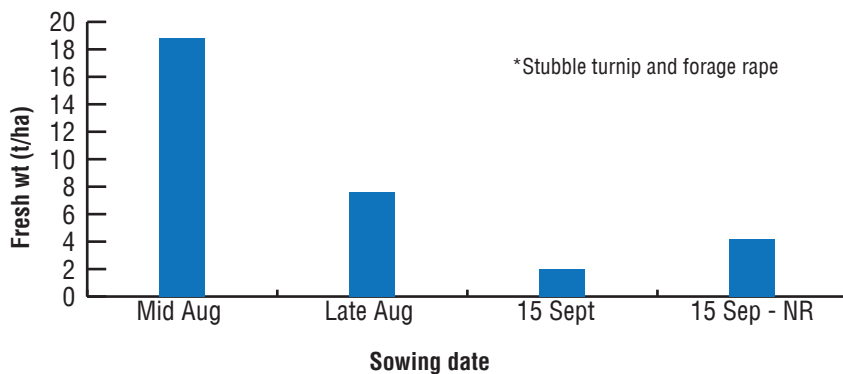


Figure 2: Effect of sowing date on dry matter production for standard Glas mix* and natural regeneration 2021.



Natural regeneration or cover crops?

Natural regeneration is the least costly option and meets requirements for a green cover over the winter. The levels of natural regeneration will depend on a number of factors, such as time of cultivation, the level of volunteer cereals in the field after harvest and their distribution across the field.

Depending on the soil's weed seed bank, shallow cultivation may be beneficial to help reduce the seed

bank. This will depend on weed types. In addition, over-wintered weeds could be adding to the weed seed bank. For example, weeds such as annual meadow grass or chickweed can produce multiple generations of seed in a season.

Natural regeneration containing volunteer cereals will create a 'green bridge' for pests and foliar diseases to the following crop.

These covers should be removed for a minimum of six weeks to break the

green bridge before establishing the following spring crop.

In recent years, there has been a growing interest in cover cropping due to the GLAS scheme.

In addition, farmers improving soil health and exploring alternative crop establishment systems such as min-till/direct drill to reduce labour and production costs have integrated cover crops into the farming systems.

When selecting a cover crop mix, consider seed costs and your crop rotation. For example, where you have oilseeds in the rotation, avoid brassica species such as mustard, radish, rape etc, as they are from the same family and can be a host for diseases such as club root. There are many reports in 2022 of club root in winter oilseed rape crops, which is associated with short-term brassica-type cover crops in the rotation.

Grasses or cereals are also an option, but in a cereal rotation they can be a host for both pests and diseases, plus potential volunteers in the following crop.

Phacelia is a good choice as it is unrelated to most common crops and is relatively easy to remove in spring. Legumes such as peas, beans, vetches and clovers have the potential to fix N and reduce the fertiliser N requirement for the following crop. Legume seed tends to be expensive and must be sown early to aid establishment.

Harvest time is obviously a very busy time of the year. Weather is also a major factor outside of our control and the requirement to cultivate all stubble fields at this time will add extra pressure. Therefore, it is very important to identify the most suitable green cover options for your farm as soon as possible.

Planning your labour and machinery requirements to carry out the field operations as efficiently and safely as possible will help ease the bottleneck.