

Cover crops – don't miss the opportunity for an alternative source of nitrogen

High production costs in the fertiliser manufacturing industry are causing further concerns about supply and price increases. During the summer, we have seen some significant announcements by key fertiliser manufacturers:

-CF Fertilisers UK, a subsidiary of CF Industries Holdings Inc, is temporarily halting ammonia production at its Billingham Complex due to high natural gas and carbon prices.

-Yara is one of several European chemical companies that have curtailed ammonia production, planning to use imported sources.

-Germany's SKW Piesteritz and BASF cut some production earlier in the year

-Grupa Azoty, Poland's biggest chemicals firm is planning to limit fertiliser production, citing an "extraordinary and unprecedented" rise in gas prices.

Whilst the implications of all these changes are not entirely understood, it could lead to both higher prices and supply issues. Whilst the situation unfolds, it is important not to miss any options for using alternative sources of nitrogen.

One of these potential sources is the use of overwinter cover crops ahead of sugar beet in 2023. However, time is of the essence in getting cover crops established. The optimum window for drilling cover crops is usually as soon as possible behind the combine and before the end of August, but in most situations, it has just been too dry in 2022 to consider doing this. However, recent rain may now provide sufficient soil moisture for germination and establishment and whilst soil temperatures remain favourable, a small window of opportunity exists.

Over winter cover crops can provide a useful source of available nitrogen for following sugar beet crop and BBRO has estimated that they can provide up to an additional 40-70kg N/ha compared to leaving land in stubble. This is about half of the nitrogen requirement of the sugar beet crop.

The ability of cover crops to supply plant-available nitrogen (ammonium-N + nitrate-N) for the following sugar beet crop will depend on several factors. One of the most key factors being the choice of cover crop species. Legumes such as clovers and vetches can fix nitrogen and will be the most effective in increasing soil nitrogen levels, but other species will take-up nitrogen as they produce biomass, releasing some of this later when they are destroyed and decompose. See the chart below as an indication of the levels of nitrogen following different cover crop species. There may also be further gains including nitrogen that has been absorbed and scavenged from the soil which may have otherwise been lost to groundwater.

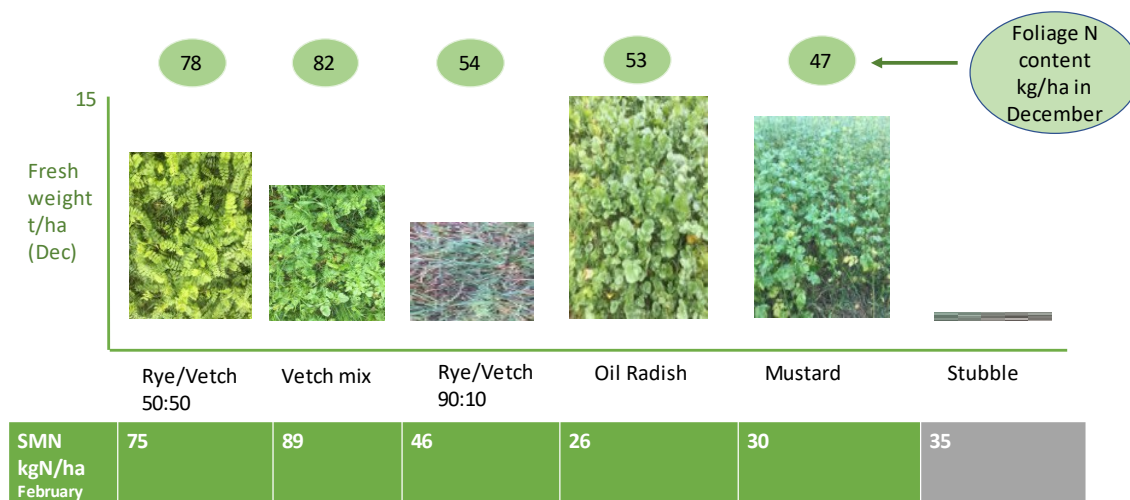


Table 1: Nitrogen content of cover crop foliage and Soil Mineral Nitrogen (SMN) test result in the following February ahead of sugar beet (BBRO/Rougham Estates cover crops strips, drilled 25th August 2017)

Cover crop action plan 2022/3

- Don't delay, target drilling before the middle of Sept whilst soil temperatures remain warm. Ideally, in soils when rain is imminent or there is sufficient soil moisture.
- Focus on legume species such as clover and vetches as these species can fix atmospheric nitrogen.
- Keep the proportion of legumes to more than 50% in cover crop species mixes. The nitrogen content of legumes is typically twice that of other species.
- Soil moisture is key to establishment and with soil moisture being so low this year, it needs to be conserved.
- Keep seed rates high in drier conditions (>30 kg/ha).
- Consider drilling rather than broadcasting the seed so you ensure optimum seed-to-soil contact. Drill to a maximum of 10mm depth.
- Whether you're establishing your crops via direct drilling or after lightly cultivating and then drilling, rolling should follow swiftly afterwards.
- Ensure cover crops are destroyed in the vegetative stage to help optimise nitrogen content in the dry matter and availability to the following beet.
- Cover crops decompose rapidly and release available nitrogen rapidly. Most is released in 4 to 6 weeks after cover crop kill. Ensure a period of more than 5 weeks is left between destroying cover crops and the drilling of sugar beet to break any 'green-bridge' for pests and diseases, and for nitrogen to become available.