



TECHNICAL NOTE – MAY 2019 UNDERSOWING JOHN MORGAN – MGA OFFICE

With June approaching fast, it is time once again to consider undersowing your continuous maize fields to gain the proven benefits of:

- Better **soil retention** (particularly if your fields are sloping)
- Higher levels of **nitrogen retention** than would be allowed by post-harvest-sown cover crops
- Retaining nitrogen that would otherwise be leached from uncropped overwinter stubbles
- Provide **valuable additional forage** for grazing or silage
- A **green field over the winter** months

When? – Undersown cover crops should be sown during early June when the maize crops are at the **4-5 leaf stage**.

Ongoing research continues to explore the potential of establishment of the cover crop at the same time as maize drilling. Independent trial results are rare with yield penalties being observed in some, particularly low fertility soils. Seed rate and cover crop species require further investigation when undersowing at the same time as maize drilling.

What? – Depending on date of drilling: early drilled cover crops (typically 1st week of June) need to be less competitive (e.g. fescue), later drilled crops (second/third week of June) need to establish rapidly (e.g. PRG and IRG).

How much? – UK recommended seed rates vary between **15-19 kg/ha**.

What with? – Broadcast or drill? The majority of evidence in the UK and across Europe suggest that **cover crops should be drilled**, and not broadcast on the surface to increase chance of the undersown crop establishment success. Specialist drills are becoming more

widespread. Be sure to keep cover crop at least **10, ideally 20cm** away from the maize rows to avoid competition.



Specialist Undersowing Maize Drill available in the South of the England

Weed control? – The general principle is to undertake maize **weed control as if the cover crop is not present**. Early treatment of small weeds (MGA advice for many years) will allow reduced chemical rates, lower herbicide costs and less risk of undersown crop being impacted.

Past successes – Farmers from across the country are under sowing their maize successfully.

Early pioneers were led by Catchment Sensitive Farming/Wessex Water in Dorset, and the Wye and Usk foundation on the Welsh borders. More recent converts, (that we know about!) include United Utilities in Cheshire, Anglian Water/ADAS in Lincolnshire and Wessex Water in Wiltshire. Farmer looksee demonstrations are also taking place on other sites across the country. Undersowing is also being encouraged by local catchment-focused grant schemes. Unsurprisingly it is those with a specific interest in reduced nutrient/soil loss who are driving things forward. Less nutrient/soil loss reduces down the 'pipe' water cleaning costs as well as minimising

the impact of agriculture on the water environment. A true win-win!



June undersown drilled perennial ryegrass, Wiltshire 2018 drilled, picture taken January 2019. No maize yield penalty observed.

Financials – When the costs of undersowing are balanced by the direct nutrient savings there remains a cost of grass establishment and the potential of a small yield penalty. These negatives can be mitigated by environment stewardship payments in some catchments.

Extra costs of June Undersowing

Seed – 15 kg/ha of IRG seed @ £2.70/kg = £41

Drilling cost – Varies depending on distance travelled but typically £50/ha

Cost Saved by undersowing

Nitrogen uptake – Typically 30 kg/ha @ £70 pence per kg = £21/ha

Net Cost of undersowing equate to **£70/ha**

This cost may well be nullified if a catchment-based stewardship payment, of say £100/ha, is received or by the value of the additional grass forage if it can be used. One tonne of silage DM would typically be worth £100/tonne.

Non-financial benefits associated with undersowing include:

- Overwintered green stubbles are more attractive than bare maize stubbles
- Nitrogen retained via cover crops need not be taken into account when meeting NVZ record keeping requirements
- Nitrogen supplied from cover crop degradation may boost crop yield above and beyond, often yield limiting, NVZ maximum nitrogen levels.
- Undersown maize crops can be used as cover crops to meet Greening requirements for Basic Payment Scheme
- Undersown cover crops can be treated as grass to obtain the NVZ N loading derogation.