

tillage

Catch crops yield multiple benefits... if you get them in early

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That cover crops reduce nutrient loss is beyond doubt. Multi-year research in Teagasc has proven that a mustard cover crop reduced mean soil solution nitrate concentrations by over 70% compared to no cover, under both reduced tillage and conventional ploughing. A cover crop can help to reduce phosphorous run off over the winter.

There is little nitrogen benefit to following crops from non-leguminous cover crops such as mustard. However, experiments with leguminous cover crops, clover for example, suggest that they reduce the fertiliser nitrogen requirements of succeeding crops.

Cover crops can also make a valuable contribution to soil organic matter and help to improve soil structure even if progress is gradual.

While there is a cost to establishing cover crops, this can be recouped if they can be grazed by livestock which is also an excellent way to recycle nutrients provided infrastructure like fencing and water are available.

Legislation

Recent changes to the Nitrates Directive require farmers in Carlow, Cork, Dublin, Kildare, Kilkenny, Laois, Louth, Meath, Offaly, Tipperary, Waterford, Westmeath, Wexford and Wicklow to shallow cultivate or sow a

crop within 10 days of baling straw or within 14 days of harvesting. A minimum of 20% and a maximum of 25% of cereal land on each holding shall not be subject to shallow cultivation post-harvest.

While there is no requirement to sow a cover crop, some farmers may choose to do so once the ground is cultivated. Farmers in the Agri-Climate Rural Environmental Scheme (ACRES), who have selected the cover crop option, are required to sow a cover crop before 15 September.

ACRES

Many tillage farmers entered ACRES and as part of their plan selected the catch crop option.

ACRES mandates that the seed mixture must consist of at least two species from the prescribed list. The minimum seed rates are outlined in Table 1. Including three or more seed species will extend the functionality of the mix.

Where this approach is followed, at least two seed species from the prescribed list above must be selected using at least the minimum rates. Any additional species may be used at whatever rate the participant deems appropriate.

This guidance is equally valid for those not in ACRES.

The catch crop must remain in place from the date of sowing until 1 January. After this date, light grazing or incorporation is permitted. No intensive strip grazing or zero-grazing is allowed.



Sam Deane.

FARMER EXPERIENCE: SAM DEANE

Sam Deane, who farms in partnership with his father, Jim, has no stock and is growing spring beans in a field that has been in tillage for over 40 years.

"Up until 10 years ago, the field grew a fairly intensive rotation which included sugar beet and cereals. Our aim now is to gradually improve soil organic matter and soil structure through no-till and catch crops.

System evolution

"We have evolved to a system which includes no-till and straw incorporation followed by a catch crop. We like a mixture of mustard, which has deep roots and phacelia, which has shallower rooting. Together, these increase soil organic matter and improve soil structure.



Our aim now is to gradually improve soil organic matter and soil structure through no-till and catch crops

Sam says catch crops require attention to detail if they are to thrive.

"We will drill and then roll afterwards to give them a good chance to get going. We think carefully about the coming crops when choosing catch crops... for example, if we are thinking we might grow oilseed rape in two or three years' time, we won't use brassicas to prevent the risk of club root"

Drill

Catch crops are sprayed off at the end of January and Sam says the catch crop residue allowed him to get in at the end of February to drill this year's spring bean crop.

Sam concludes by saying he believes the catch crops are already helping to improve rooting down the profile.

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Cover crop species

It is very important to select cover crop species that suit the rotation. Growers of beans and peas should avoid legumes in their cover crop mixtures and growers of oilseed rape should avoid brassicas. Recent occurrences of clubroot in oilseed rape have been linked to brassica cover crops.

Other considerations are winter hardiness and end use.

Farmers who intend to graze cover crops with livestock should consider brassicas like fodder rape or leafy turnip.

Sowing date

Early sowing is essential to achieve good autumn growth.

An experiment in Teagasc Oak Park examined biomass production from three sowing dates: early – 30 July, target – 18 August and delayed – 8 September.

Two cover crops were used: mustard which is a fast-growing non-legume and hairy vetch, a winter hardy legume.

There was a linear reduction in the amount of biomass produced as sowing date is delayed. The mustard lost 2t DM/ha for each three-week delay in sowing.

Another notable point from the experiment was that there were virtually no weeds produced on the 30 July sowing date.

Between 40% and 60% of the biomass was weeds on the 8 September sowing date due to lack of competition from the cover crop.

Growers may be concerned with a large volume of biomass as they try to establish crops in the following spring but in this experiment all of the plots were successfully ploughed without the need for other interventions.

Grazing cover crops

Grazing of cover crops can increase economic return and is an effective way of recycling nutrients from stock which may leave excreted nitrogen for the subsequent crop.

However, there are a few important considerations. Firstly the infrastructure, water and fencing, must be in place.

Soil structural damage is possible, therefore grazing with sheep on light well-structured land is preferred and good grazing management is important to minimise poaching.

Shallow, reduced-cultivation sites may have a better livestock bearing strength but grazed cover crops may

Figure 1: Cover crop sowing date experiment

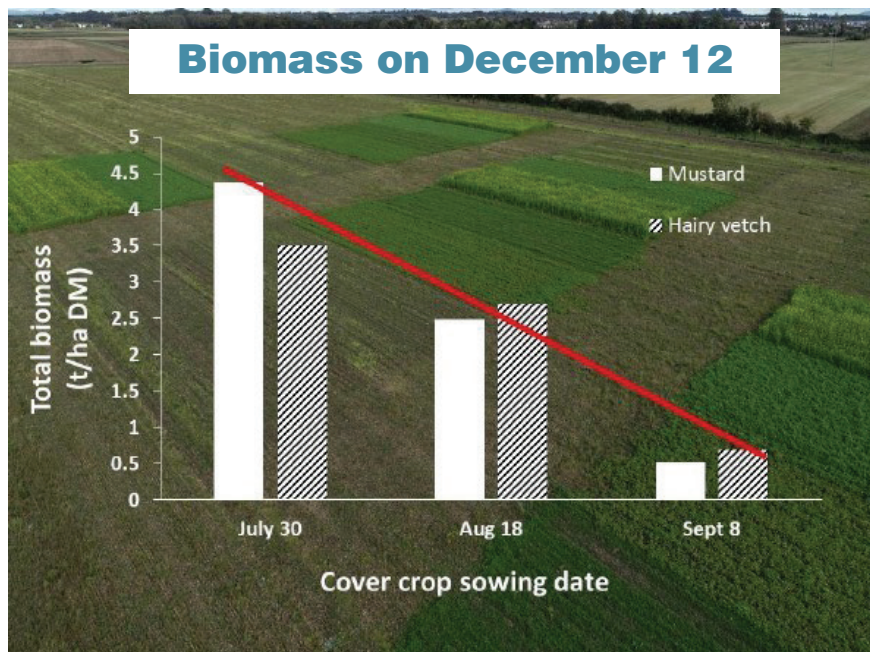


Table 1: List of prescribed catch crops

Catch crop species	Seed rate kg/ha	Catch crop species	Seed rate kg/ha
Buckwheat	30 – 40	Rye	60 – 75
Crimson clover	10 – 15	Tillage Radish	4 – 6
Berseem clover	10 – 15	Vetch	15
Forage/fodder rape	4 – 5	Leafy turnip	4 – 6
Mustard	8 – 10	Peas	40 – 50
Oats	60 – 75	Beans	70 – 90
Black oats	30 – 40	Linseed	15
Phacelia	4 – 5	Red clover	8 – 10
Sunflower	10 – 15		

(Lower value is the minimum seed rate to comply with requirement)

Table 2: Cover crop groups from ACRES prescribed list

Cereals/grasses	Brassicas	Legumes	Others
Oats	Forage/fodder rape	Crimson clover	Buckwheat
Black oats	Mustard	Berseem clover	Phacelia
Rye	Tillage radish	Vetch	Sunflower
	Leafy turnip	Peas	Linseed
		Beans	
		Red clover	

force the use of deeper cultivation post grazing. Farmers must comply with conditionality requirements, including GAEC 4 and GAEC 6.

You must maintain a grass/vegetated buffer strip of at least 4m along water feature boundaries where non-grass forage crops are being grazed in-situ.

They must also provide an adequate lieback area, which is always accessible to grazing livestock. The lieback area must be grassland.

The available lieback area must be at least equal in area to the adjacent non-grass forage area, e.g. 5ha of fodder rape will require at least 5ha of lie-back.