When to kill your cover crop?

Thriving cover crops present some difficulties. It's tricky to balance the optimal timing and effectiveness of destruction, with the needs of the following crop

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An earlier-than usual harvest this year allowed many farmers to sow cover crops sooner than normally. Where soil moisture was sufficient, growth has been excellent. However, in areas where dry conditions prevailed at sowing, crops emerged unevenly and remain patchy.

Let's be clear, cover crops are hugely beneficial. In Teagasc trials with spring barley on free-draining, nitrate-susceptible soils, planting mustard reduced mean soil solution nitrate (NO) concentrations by over 70%, compared with leaving land without a cover crop.

Cover crops also protect the soil from heavy rainfall and erosion, while improving water infiltration. Their deep root systems enhance soil structure. As cover crop residues break down they add organic carbon to the soil, supporting long-term soil health and fertility.

Nitrogen in the cover crop may be available to the succeeding crop, but time of destruction and the carbon (C) to nitrogen (N) ratio will impact this.

C:N ratio

Young, leafy cover crops generally have a lower C:N ratio, so they decompose quickly and release nitrogen rapidly after incorporation. Mature cover crops will have accumulated more fibrous material, increasing their C:N ratio.

Fibrous material adds organic matter and improves soil structure, but it can also slow decomposition and temporarily tie up nitrogen, reducing short-term availability for the next crop. Legumes such as clover, vetch, or peas typically have a naturally low C:N ratio. If incorporated while still green and leafy, they decompose rapidly and release nitrogen quickly. However, if allowed to flower and mature, their C:N ratio rises, slowing nutrient release.

Non-legume species such as rye, oats, or mustard tend to have a higher C:N ratio, particularly when left to produce large amounts of fibrous biomass. Early destruction keeps residues softer and more readily decomposable.

Balance

If your priority is short-term nutrient availability for the next crop, earlier destruction may be best. However, beware leaving soil nitrogen susceptible to leaching and volatilisation.

If long-term soil health, organic matter building and weed suppression are the main objectives, then later destruction is best, but this can create challenges in post-cover crop cultivation.

Timing

On balance, earlier termination of cover crops is a better strategy. Terminating cover crops four-six weeks before cultivation (except in the case of direct drilling) of the next crop provides the maximum time for residues to break down, making spring cultivation and drilling easier.

Early termination also reduces disease inoculum, gives residues more time to decompose and lowers the risk of phytotoxic effects from certain cover crop species.

Termination dates must comply with the scheme rules (table 1).

Methods of cover crop destruction

Herbicide

- Spraying off cover crops with glyphosate is the most common approach. This ensures complete kill across a diverse mix of species and allows flexibility in timing.
- It is important to use full rates, because growth and herbicide uptake in cooler conditions in the spring can be restricted. Legumes can be particularly difficult to control. Adding 2,4-D can help.

Mechanical

- Some growers successfully plough down cover crops, with success depending on the amount of biomass present. Discing can also work (if soil conditions allow); the residue needs time to decompose before drilling.

Rolling during frosty conditions is increasingly popular. This can be very successful for non-grass species, however, it might still be necessary to follow up with glyphosate for volunteer cereals and grasses.

Grazing

- Grazing with sheep or cattle is an ideal way to remove cover crops and recycle nutrients. Limitations include inadequate infrastructure, particularly water and fencing, and soil type and weather conditions.

Frost kill

- Cover crop species that are killed by frost (eg buckwheat, forage rape) can reduce reliance on herbicides, but beware of volunteer cereals and grass weeds.

In conclusion, there are significant agronomic and environmental benefits where large cover crop biomasses have established following the early harvest of 2025. Destruction should occur late enough to retain environmental benefits, but early enough to permit good seedbed preparation.

Mark Trimble and Kilkenny farmer Ned Murphy examining a robust cover crop

CASE STUDY: Ned Murphy

Ned Murphy farms in partnership with his wife Bridget and daughters Catherine and Brid, in Dunbell, Co Kilkenny. They grow winter and spring cereals, and oilseed rape.

"I was sowing catch crops for the ACRES scheme and was seeing improvements in soil health; many more earthworms are visible and the soil is easier to cultivate the following spring," says Ned.

"As a result, I decided to increase our area of catch crops. We applied for the Farming for Water EIP catch crops pilot scheme in 2025 and we were approved under the 6A (four-month catch crop) measure. This provides a payment of €229/ha for sowing catch crops."

Because the farm is a Registered Farm Partnership, Ned was able to double the area allowed from 40 to 80ha.Because there is oilseed rape in the rotation, Ned stayed away from brassicas in the cover crop seed mixture and sowed a mix of Berseem Clover, Crimson Clover, Vetch and Phacelia on 23 July, after harvesting winter barley. The mix was sown in ideal conditions, which has led to a large biomass. "In previous years I didn't sow the catch crop until late August or early September, resulting in a much smaller crop," says Ned.

"One particular field slopes towards a tributary of the river Nore, so the catch crop will have prevented surplus nitrogen from the previous crop entering the watercourse, helping meet the objectives of the EIP scheme."

The crop must stay in place until 1 January, so Ned intends to spray off the cover crop with glyphosate around this time and then plough for spring malting barley in mid to late February.

"In years when the cover crop was lighter we used min till to establish the following crop. I will reduce the nitrogen applied to the malting barley by 10 to 15%, because of the high proportion of legumes in the cover crop mixture. On balance, cover crops are certainly good for us."

Table 1: Deadlines by measure

Scheme	Cropping type	Sowing deadline	*Must remain in place until
EIP 6B	Winter cropping	1 August	30 September
EIP 6A	Other cropping	1 September	1 January
ACRES	N/A	15 September	1 January
Alternative to crop diversification	N/A	15 September	1 December

*Destruction dates differ depending on the scheme. Farmers should check specific scheme rules to ensure compliance.