

Is this the ideal grain crop?

Oat grain is supremely nutritious, the plant is resistant to take-all, it can compensate for a thin stand – and now we discover that oats grown here have an extremely low carbon footprint.

Ciaran Collins,
Teagasc tillage specialist



Oats thrive in Irish conditions and the crop once exceeded 300,000 hectares. Having fallen behind in yield compared to other cereals, and out of fashion, the oat area gradually dropped but has remained relatively stable at its current 27,000 hectares. Spring barley, our largest cereal crop, covered 132,000 hectares in 2023.

Oats is primarily grown for animal feed but there has been growing interest from the gluten-free and health food sectors. This is due to the many health benefits that have been attributed to oats including lowering blood pressure.

The recently developed *Tillage Life Cycle Assessment* has been used to determine the carbon footprint of oats from 28 Tirlán suppliers. The gross carbon footprint was 207 kg CO₂/t which is low by international standards. In warmer countries like Italy and Spain the figure would be closer to 1,000 kg CO₂/t.

When the carbon sequestered by straw incorporation was included in the calculations the figure dropped dramatically giving an average net carbon footprint of 38 kg CO₂/t, with a number of the crops at or below net zero. The marketing potential seems enormous.

To grow high yields of quality oats it is important to understand its agronomy, particularly if you're faced with a thin stand. Like other cereals, oat yields are primarily driven by grain number. But oat yields are more closely related to grain number per panicle (head) rather than the



Experienced and enthusiastic oat grower John Collins, who is Farm Manager at the Cappoquin Estate, Co Waterford, pictured with Teagasc tillage advisor Mark Trimble.

number of panicles.

This is because the oat panicle has a very large capacity to set grains compared to barley and wheat. High numbers of panicles are not needed to achieve high grain numbers. At low plant populations, the panicle on the main stem can have as many as 200 grains and the plant also develops additional panicles on tillers to compensate for a low plant population.

Oats' phenomenal ability to 'compensate' was evident during the winter of 2010/2011 when most oat crops were severely damaged by frost. Despite populations as low as 40-50 plants/m² oat crops recovered to produce acceptable yields. Nonetheless 300-350 plants/m² is still considered the optimum plant population.

Optimum seed rate depends on field conditions, and the thousand grain weight (TGW) of the seed, but a typical seed rate for spring oats is 150kg/ha for seed with a TGW of 40g.

Recent Teagasc research has shown

that winter oats is very responsive to nitrogen application with yield responses up to 185kg/ha N for Husky and Isabel. However, there may be a trade off with increasing lodging risk.

Teagasc research has shown that the most successful reduction in lodging comes from a split plant growth regulator programme with the first application at GS30 followed by a second application at GS32. Active plant growth is essential to achieve successful plant growth regulation.

Low soil fertility

Oats is more forgiving of low soil fertility than wheat and barley but off-takes are high, especially of potassium. Apply P and K in line with soil test recommendations.

Crown rust, mildew and fusarium are the key disease threats. Follow a three spray programme for winter oats at GS30, GS32 and a final fungicide once the panicle is half out at GS45-55. It is important to avoid crop stress with fungicide mixes.

With all of its superb qualities it seems certain that the area sown to oats must inexorably rise.



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