

beans

# Beans mean benefits

With beans there is no need for nitrogen, an increase in the protein payment and alternative options to control troublesome grass weeds – not to mention the boost to the following crop.

**Ciarán Collins**  
Teagasc tillage specialist.



**O**llie Whyte is part of a tillage farming family based near the Naul, Co Dublin. They are enthusiastic about growing beans. “We introduced beans into our rotation three years ago,” says Ollie. “We mainly plough them in, but we will also strip-till and min-till when conditions are right.”

**Fertiliser**

Ollie says that high fertiliser prices this season are part of the attraction. “Beans fix the nitrogen from the atmosphere and also leave nitrogen in the ground after harvest, reducing the need for fertiliser in following crops,” he says.

**Yield and margin**

Some farmers cite yield variability as a reason to avoid beans. But examining the yield data for spring barley and spring beans from 2009-2022

shows us that the yield trend is similar, except for 2018. In that year, beans were disproportionately affected by the exceptionally dry summer.

The 10-year average yield for beans is 5.5t/ha. “Our bean yields range from 5.2t/ha to 7.2t/ha, which we are happy with,” says Ollie.

Teagasc provisional crop margins for 2023 show that beans (€300/t) can leave more than double the margin of spring feed barley.

This is based on the 10-year average yield of 5.5t/ha when a protein payment of €500/ha (may be less depending on the area planted) is included. Spring barley calculations are based on 7.3t/ha and €240/t.

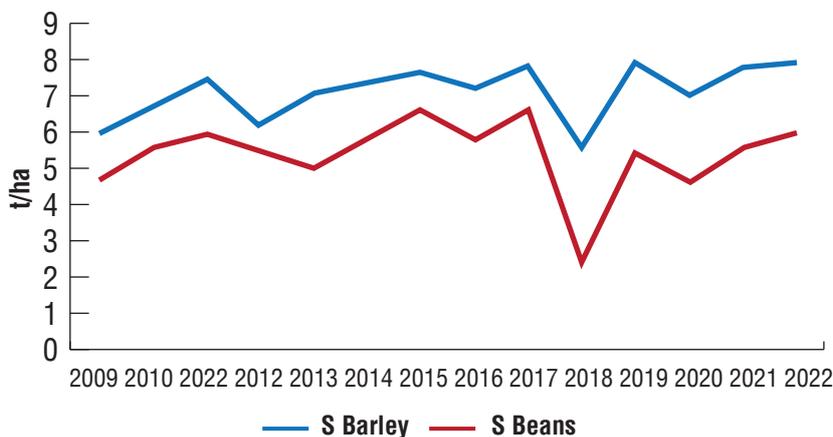
The most striking aspect of the provisional crop margins for 2023 is the increase in costs compared to 2021. The variable costs have increased by 56% for spring barley against only 21% for beans, reflecting the large increase in fertiliser prices.

**Risks**

Crows at planting, a dry summer like



**Spring beans and spring barley yield 2009-2022 t/ha.**



2018, or a wet season where chocolate spot is difficult to control, are all factors that can lead to reduced bean yields.

Generally, beans produce enough flowers for a high yield, but stress from drought, frost and disease can often lead to aborted flowers and reduced pod numbers.

Harvest can be late in wet seasons. Ollie says that beans were harvested two weeks earlier than usual this year, but normally the harvest can run to mid/end September.

**Tips for high yield**

Soil fertility is crucial. Yield will be lower when beans are planted in soils with low phosphorus and potassium indices.

The soil nutrient deficit cannot be



Ollie Whyte.

made up with chemical fertiliser. And don't forget about lime – optimum pH for beans is 6.8.

Beans are more suited to heavier soils. "Our best yields generally come from medium/heavy soils," says Ollie.

"We avoid light soils, mainly to avoid the effects of drought on the crop."

### Establishing beans

Research in Ireland has shown that high yields of beans are achievable when sown in either the autumn or spring. Crows are a major consideration when beans are sown early. Deep planting (10cm/4") helps prevent crow damage. Ideally, emergence should coincide with good growth conditions (mid-March on).

But while sowing in April can de-

## Import substitution

Ireland depends heavily on imported animal feed, especially protein. The demand is for around 900,000t of protein (or 3.1m tonnes of faba bean equivalent). This is mainly satisfied by imported soya, maize distiller's grains and other feed sources, while peas, lupins, soya and forage crops can all make valuable contributions. In the short-term, beans are the most suitable crop to reduce Ireland's reliance on imported proteins.

Since the introduction of the protein payment in 2015, the area of spring beans has increased from under 3,000ha in 2014 to almost 13,000ha in 2020, producing on average 52,000t for the Irish feed industry. The target now is to increase this area to 20,000ha.

### Sustainability

Teagasc analysis of the average tillage

area from 2019-2021 has shown that increasing the area of beans from the current figure of around 10,000ha per annum to 20,000ha per annum could reduce nitrogen (N) requirements by up to 1,619,529kg of N or 6,000t of CAN equivalent.

Legumes have an important role to play in sustainable tillage systems. In addition to enhancing soil N levels and acting as a break in cereal rotations, they are a resource for pollinators, promote soil biodiversity and the overall greenhouse gas (GHG) emissions associated with legumes are low.

The reduction in fertiliser usage also has the potential to positively impact water quality.

"In the past, we saw part of the benefit of beans in the exceptional cereal crops following them," concludes Ollie. "But now the crop is a winner in its own right."

liver good yields, the risk of low yield is greater than with earlier sowing.

Ollie concurs: "You just have to wait until soil conditions are right – the ideal sowing date on our farm is close to St Patrick's Day."

Teagasc trials have shown that plough based, strip-till and direct drill establishment systems can be successful. Many growers opt for direct drilling to lower establishment costs and plant seed deeper, away from crows.

A recent study on seed rates shows that the economic optimum plant populations after field losses for spring beans ranges from 24 to 38 plants m<sup>2</sup> therefore planting 30-40 seeds/m<sup>2</sup> at an 85% establishment rate is sufficient.

Weed control depends on pre-emergence herbicides, as post-emergence options are limited and are effective against a limited range of weeds.

Early-sown crops, especially those sown near the coast, are at high risk of chocolate spot.

The first disease spray must be on prior to the onset of disease, which

can occur before flowering starts.

### Feeding beans

Ag Climatise, the Department of Agriculture, Food and the Marine (DAFM) roadmap towards climate neutrality, emphasises the importance of increasing the proportion of home-grown protein in livestock rations.

The Whyte brothers are finishing 600 cattle every year and are now including beans in the diet.

"We have performance that matches the best and saw weight gains of up to 2kg/day with one high-quality batch of cattle," says Ollie.

### Recognition

Ollie says that there is a lack of recognition for feeding a native, home-grown, GM-free ration. He believes that there should be a premium for beef produced with low carbon footprint, native, rations.

"If there was a premium for beef produced with native ingredients, then this would feed back to the tillage farmer," concludes Ollie.

## Protein aid

The increase in protein aid will be a big incentive for tillage farmers to grow beans in 2023.

Under the new CAP (2023-2027), protein aid has increased from €3m to €7m, which is targeting an area of 20,000ha of protein crops with a payment of €350/ha, which is an increase of €100/ha on the previous CAP.

The payment a farmer receives in any one year is based on the overall

ceiling of €7m, divided by the area of eligible crops grown in that year up to a maximum payment of €583 for beans in 2023.

Eligible crops for the protein payment are peas, beans, lupins, soya and mixed cropping (protein/cereal mix).

The 'protein/cereal mix crop' has a seed mix where protein crop seed accounts for at least 50% of the seeding rate, with the remainder made up of a cereal seed. This will be paid at 50% of the full protein rate.