

Getting the most out of faba bean



How stable are faba bean yields?

Variability in yield of spring bean is comparable to spring barley (Figure 1).

One outlier was 2018, where drought impacted development.

Within a season though, bean yield variation can be high if good agronomic practices are not followed.

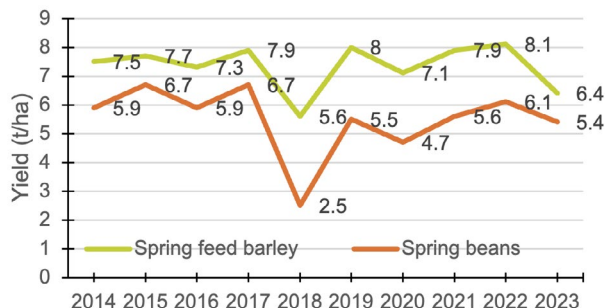


Figure 1. Yield of faba bean & spring barley 2014-2023 (cso.ie & Teagasc report).

Agronomic practices to protect yield potential

Seed rate:

- To calculate seed rate, factor in germination, purity, target plant population and anticipate establishment losses.
- In contrast to lighter soils, heavier soils are associated with higher yields and will minimise yield loss due to dry periods.
- Aim for a target plant population of 25-30 plants/m² for productive soils.
- In low productive soils, especially with late sowing, target population should increase to 40 plants/m².
- Establishment loss can be high (~40%) with poor ground conditions and/or due to bird damage.

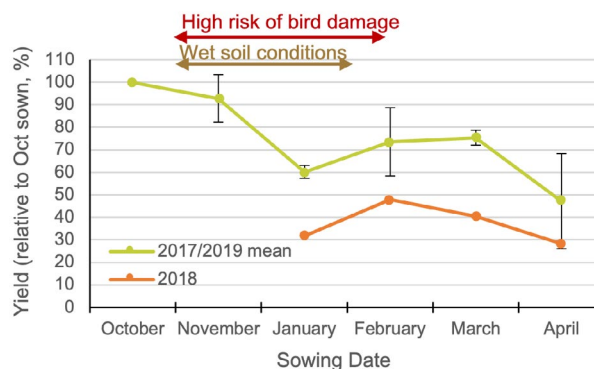


Figure 2. Impact of sowing date on yield. Field trials @Oak Park. Fuego @30±2 seeds/m²

Time of sowing:

- Optimal sowing period for winter beans is mid-October to November.
- Spring sowing window is mid-February to mid-March (Figure 2).
- Drought/high temperatures at flowering and pod setting will reduce yield.
- Early sowing (February) will mitigate this risk if ground conditions allow.

Establishment system:

- Plough-based systems, minimum tillage and strip tillage can be used.
- Beans will compensate for some variation in row spacing.
- Heavy and/or poorly drained soils will have less opportunity for early spring drilling or winter sowing.

PLOUGH ESTABLISHMENT

- Dry ground conditions; Sowing depth up to 30mm
- Poorer soil conditions in winter sowing - risk of soil compaction

PLOUGHING - DOWN SOWN SEED

- Dry ground conditions; Sowing depth variable (200-250mm)
- Risk of uneven emergence and establishment

STRIP-TILL (NO SOIL INVERSION)

- Reduced traffic & labour/ machines; Sowing depth up to 100mm
- Determining soil condition is critical; Higher risk of soil damage in wetter conditions

Sowing depth:

- 25-30mm
Rapid and even establishment. Sufficient cover to avoid herbicide damage but risk of bird feeding.
- ≥40mm
Delayed emergence. No seeds visible to attract birds but risk of picking post-emergence.
- 75-100mm
Delayed emergence. Plants less prone to bird damage due to more developed roots.



Soil fertility and plant nutrition:

- Optimum soil pH is 6.8.
- There is no benefit to applying N at sowing. Dependent on soil index, P and K may be required (Table 1).
- On index 1 and 2 crop vigour, pod number and overall yield is increased when P is incorporated at sowing.

Soil index	P (kg/ha)	K (kg/ha)
1	50	125
2	40	60
3	20	40
4	None	None

Table 1. P and K advice with soil index.

Weed control:

- Glyphosate should be used pre-sowing to lower overall weed burden.
- Pre-emergence herbicide is essential as the post-emergence option (bentazone) has limited utility.
- Pre-emergence control is based on pendimethalin products with >800g/ha a.i. required.
- Imazamox, clomazone and prosulfocarb are potential partners to broaden the weed spectrum.
- Rolling post sowing promotes effect of a pre-emergence herbicide application.



Figure 3. Chocolate spot infection in faba bean leaves.

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**Disease control:**

- Early planting and high plant populations are more susceptible to chocolate spot (Figure 3).
- If required, a fungicide application at the start of flowering and a follow up treatment 2-3 weeks later will provide control (Table 2).
- Under high disease pressure an earlier first fungicide and a third fungicide application may be required, e.g. early planted crops.
- Bean rust, downy mildew and ascochyta blight are also common disease of beans. There is no fungicide for the control of downy mildew.

Active ingredient	Common product	Ascochyta	Bean rust	Chocolate spot
Azoxystrobin	Amistar	..	..	.
Boscalid + pyraclostrobin	Signum	x	..	...
Metconazole	Juventus	x	..	.
Tebuconazole	Folicur	x	..	.
Benzovindiflupyr + Prothionconazole	Elatus Era	x	...	...
X = No control . = Poor control .. = Moderate control ... = Good control				

Table 2. Fungicides for the control of common diseases in faba beans.

Pest control:

- Risk of bird damage is higher from November to mid-February when other food sources are scarce.
- Deeper sowing depths (75-100mm) will decrease that risk.
- Damage caused by pea and bean weevil adults is visible as notching on the leaf margins (Figure 4).
- Pesticide applied at the first sign of notching, if high incidence of the weevil was recorded in previous seasons (PGRO).
- Bruchid beetle develop within the seed and emerge at harvest, leaving a characteristic hole in the bean (Figure 5).
- Adults are the main target of current control attempts.
- Spraying for black bean aphids is required if >10% of the plants in the field are infested (PGRO).
- Aphicide at early flowering or when 5% of plants are infested reduces the risk of virus transmission (PGRO).

PGRO: Processors and Growers Research Organisation, UK



Figure 4. Notching on the leaf margins due to feeding by pea and bean weevil adults.



Figure 5. Damaged seed due to B. beetle: adult beetles emerge around harvest time, leaving a round hole in the bean.

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