

Faba bean is a grain legume that has good potential to be grown more widely in Northern Europe. Notable advantages are that it can be grown in both winter and spring, it is nitrogen fixing and has a high nutritional value. It is used for both animal feed and human consumption, and as a break crop in intensive cereal cropping.

Crop Description

Annual crop; the plant is erect with a hollow stem that grows to a height of between 80-150 cm. The fruit are thick pods that encapsulate the seeds.

- **Life cycle:** winter varieties (10-11 months), spring varieties (4-5 months)
- **Protein content:** 27-32% [1]
- **Yields:** winter varieties (5.4 t/ha), spring varieties (2.4 t/ha) [2]

Market Potential

There is a renewed interest in faba bean in northern Europe, and this is reflected in the rapid increase in cultivation area in Denmark. In 2018, the cultivated area was 24,878 ha, almost double compared to the year before [2]. Fava beans can be sold dry, fresh and as flour. There is an established market for animal feed and an emerging one for human consumption [1]. Both markets are promising. In January 2018, seed trading company Scangrain put out a call for faba bean producers. Fava beans have high potential in markets for human consumption, especially in markets where consumers are focussed on local, healthy, protein rich and plant-based food [1]. In particular there is demand for faba beans as a food ingredient. In Denmark, 83% of vegetarians would like faba beans to be included as an ingredient in more plant-based foods [3].



“Renewed interest in faba bean in Northern Europe.”

Challenges

The presence of antinutrients in the seed creates a bitter taste. Further breeding is required to reduce antinutrients.

Diseases and pests: Chocolate spot (*Botrytis fabae*), black bean aphids (*aphis fabae*), leaf spot and bean seed beetle (*Bruchus rufimanus*) are common [1]. Chocolate spot and black bean aphids are the most damaging [2]. Black bean aphids can be more devastating during dry and warm seasons. Birds can be a concern at sowing.

Weeds: There can be high weed competition in spring. In the winter the most common weeds are thistles (*Cirsium*), and in spring *Atriplex patula* and pigweed (*Chenopodium album*).

Recommendations

Land preparation/rotation: Leave at least four years between fava bean rotations [2]

Soil types: Clay soil with good water holding capacity is preferred or sandy soil if there is irrigation. On clay soil pH should range 6.5–7. In clay soil compared to sandy soil, Tiffany and Fuego yields were more than doubled and tripled, respectively.

Sowing dates: Early sowing is recommended due to drought sensitivity. Results from University of Copenhagen field trials show that first week of October for winter faba bean is optimal. Mid-April is recommended for the spring faba bean. The early sowing gave higher yields and greater seed size than the late sowing.

Sowing depth and distances: Sow at 6-8 cm depth, with 40-60 plants/m² and 50 cm between rows [1].

Intercropping: With cereal (wheat, barley) can lower black aphid infestations and improve yields [4].

Trial Results

Table 1. Data from University of Copenhagen field trials under a low input production system in Taastrup, Denmark.

Cultivar	Yield (kg/ha)	Protein (%)	TKV (g)
Alexia	3063	28.4	508
Gracia	3031	28	514
Julia	2876	28.3	485
Colombo	2329	28.8	498
Fuego	2101	27.1	486

The table shows average results in Taastrup over 5 years, however 6.1 t/ha was the maximum yield.

Summary of Benefits

- Improves microbial community, soil structure and N availability (80 kg N/ha)
- Low input requirements (i.e. chemicals, water, energy)
- Existing markets for animal feed and emerging markets for human consumption
- The growing season can be extended by growing winter faba beans

References

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- [2] SEGES (2018) Danskproduceret planteprotein til human konsum. Futurefarming project
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Acknowledgements

With great thanks to Anders Kristian Nørgaard for his valuable feedback.

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Note: Results of Protein2Food trials at Copenhagen University (KU) are in orange. Trials were run from 2015-2019 in Taastrup under a low-input system



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grants agreement No 635727



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