

Buckwheat is a high-quality protein grain crop that used to grow in Denmark. Field trials at University of Copenhagen found that it grows well in Danish conditions. It is used for food and often is made into gluten free flour that can be used in pasta and noodles. Famously it is the flour used in soba noodles in Japan. It is also eaten in traditional food in many European countries.

Crop Description

Buckwheat has triangular seeds which grow as single seeds in a hard shell. The plant is branching and has a long flowering season. It grows to 75-150cm.

- **Life cycle:** 4-5 months
- **Protein content:** 14-18%, of which 73% can be absorbed [1]
- **Global yields:** 847 kg/ha [2]

Market Potential

Buckwheat production in Denmark is currently low, and it has decreased from 43 ha in 2017 to only 7 ha in 2018 which was a dry year [1]. Global production is mainly located in Russia and China [3]. Buckwheat's adaptation, good yields (table 1) and the growing consumer trend for alternative grains, gives potential to the crop. This is especially notable as it is gluten free and can therefore be addressed for celiac. Currently flour, grain and mixes for bread can be found in Danish supermarkets. In Denmark, 71% of vegetarian consumers would like buckwheat to be included in more plant based foods [4].



“With the growing consumer trend for alternative grains, buckwheat could have a growing market.”

Challenges

During the project trials at the University of Copenhagen, buckwheat did not have notable problems with pest and diseases, although it can be affected by root rot (*Pythium ultimum*), mildew and thistles. Buckwheat is vulnerable to herbicide, and mechanical weed control is recommended [3].

Recommendations

Land preparation/rotation: Light tilling should begin in April, this should be done twice to prepare the soil for sowing.

Soil types: Buckwheat can be grown on all soil types and is tolerant of poor quality, sandy and acidic soils [1].

Sowing dates: Sowing in May is recommended. Soil must be above 8°C [3].

Sowing depth and distances: Sowing depth at 2-3 cm and a sowing density of 80 kg/ha [3].

Harvesting: The time to harvest depends upon the cultivar. It should be harvested when 75% of seeds are hard and brown, note that it does not mature evenly [3]. Maturation occurs normally in late August or early September. Because the plant is bushy it is best to cut it on high stumps.

Threshing: It should be dried immediately after harvest and left for 10-14 days. The husk can then be easily removed.

Fertilization: Buckwheat requires minimal fertilisation. Nitrogen fertilisation can increase weed pressure and that can reduce the yields [3].

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)
Panda	1810	28.7	13.7
Kora	1792	27.3	12.4
Mancan	1779	23.2	14.1

The table shows average yields over 5 years in Taastrup, however maximum yields reached 5.1 t/ha.

Summary of Benefits

- High quality protein in grains [1].
- Due to the long flowering time of buckwheat, it is beneficial to bees and improving biodiversity [3].

References

- [1] SEGES (2018) Danskproduceret planteprotein til human konsum. Futurefarming project
- [2] Food and Agriculture Organization of the United Nations. (2019). FAOSTAT Database.
- [3] Jacobsen, S.E (2015) *Dyrkningsvejledning: boghvede*. Glutenfri økologi fra muld til mund, GUDP Project.
- [4] Dansk Vegetarisk Forening (2019) Økologi præferencer i det vegetariske forbrugersegment.

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



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