



# Growing Flax

## Introduction

Flax, *Linum usitatissimum*, is the same plant species as Linseed, but it is grown for its fibre rather than its oil, hence different varieties (with longer stems) are used. There is increasing interest in growing flax in the UK, for use in:

- Textiles (it has lower input requirement and environmental impact than imported cotton).
- Ropes and twine, paper.
- Insulation and building materials
- Aerospace, defence and automotive composites.

As a biorenewable material, flax is an important opportunity to increase longer-term carbon capture through crop production in the UK.

## Establishing a Flax Crop

Flax is best suited to free draining, silty or loamy soils. The crop is spring-sown (mid-March to early April), as soon as conditions permit and soil temperatures have reached 8-10°C, with early drilling key. Flax is frost-sensitive during emergence. Seed rates should be adjusted for germination % and expected % establishment (soil texture and seedbed quality), but a high rate is used to encourage single stem plants. Flax grows best sown directly after tillage into a firm seedbed, with a relatively low drilling speed (6 km/h) for even seed placement. A level seedbed is beneficial for harvest and retting.

## Grower Benefits

- Alternative spring-sown cropping option
- Suits a range of soil types
- Low fertiliser and crop protection input requirement
- Range of uses with diverse markets
- Enhanced carbon capture on farm through biorenewable materials



Image from Elsoms Seeds

## Sowing Parameters for Flax

Typical seed rate	1,800-2,000 seeds/m <sup>2</sup>
Typical sowing rate	115-125 kg/ha
Target population	1,700-1,800 plants/m <sup>2</sup>
Target sowing depth	3cm (4cm maximum)
Preferred row spacing	8-15cm

## Flax Agronomy

**Fertiliser** applications should take account of soil analyses, guidance in publications like the AHDB Nutrient Management Guide, and past experience. Nitrogen requirement is typically low at c. 70 kg N/ha, with 50% or more used by the crop between emergence and 10cm height. Phosphate (40-60kg/ha) is important for initial growth, and potash (up to 140kg/ha) for fibre quality, but as much as 80% of the potash may return to the soil during retting. Tests have shown that foliar sulphur and potash can increase long fibre yield. Also, Zinc can act as a stimulus for root growth and is likely to work best as a seed treatment.

**Pre-emergence herbicides** authorised under minor use extension (EAMU) provide an effective base for weed control when seedbed conditions are moist. There are limited **post-emergence** options for grass or broad-leaved weeds. Mechanical control can be used once the crop is 3cm tall.

**Disease** risks include alternaria, botrytis and septoria (wet seasons), and powdery mildew (dry years), which can be controlled through fungicide treatment at flowering. Soil borne Fusarium wilt is best managed through rotation and tolerant varieties. The main **pest** is large flax flea beetle, causing holes or notches in cotyledons or first true leaves of young plants. Where significant damage is occurring to small plants or under adverse conditions, an approved (or under EAMU) pyrethroid insecticide may be applied.

### Harvesting and Retting Flax

A flax crop takes about 100 days to mature (normally in August). Flax can be cut or pulled depending on the end market.

Retting takes place over a period of 4-6 weeks between July and September. Flax needs to be turned once during this stage.

The flax is then baled.



Image: Elsoms Seeds

## Carbon Capture in Flax

The carbon footprint of intermediate flax fibre (not final product) from farm to factory gate in Europe has been estimated at 349 kg CO<sub>2</sub>e per tonne of fibre (based on mass allocation), with fertiliser and associated N<sub>2</sub>O emissions accounting for half of this. Stored carbon dioxide in flax fibre is estimated at **1,386 kg CO<sub>2</sub>e per tonne of fibre** (Nova, 2019).

## Flax Market and Economics

Flax is currently grown on only a small scale in the UK. However, between 2018 and 2022, European flax production averaged just over 900K t (raw or retted) from 237K ha harvested. About half was grown in France, where raw yields averaged 6 t/ha (FAOSTAT, 2024). In 2023, France produced 140K t of long fibres from 131K ha of flax, equivalent to 935 kg/ha of long fibre, with the average price (across all fibre qualities) ranging from 6 to 8 euros per kg during the second half of 2023 (Alliance for European Flax-Linen & Hemp).

### References

- <https://allianceflaxlinenhemp.eu/en/flax-growing-expertise>
- A Guide to Flax Cultivation, van d Bilt. Translation courtesy of Heather Oldfield, Elsoms Seeds
- FAOSTAT (2023) [Focus on the economic situation of European Flax-Linen and Hemp | ALLIANCE \(allianceflaxlinenhemp.eu\)](#)
- Nova (2019) Carbon Footprint and Sustainability of Different Natural Fibres for Biocomposites and Insulation Material