

# Growing Flax



November 2021

## Field Selection

Flax grows well on most soils, except those that are poorly drained, and very sandy soils with poor water retention. Avoid following flax on canola stubble, as phosphorus uptake in flax will be reduced. Flax responds well to fertile soils, and is less responsive to synthetic phosphorus fertilizers in the year of application.

## Seeding

### Seeding Date

Sow flax between May 1 and May 31. Early sown flax usually produces the highest yields, oil content and best quality straw. Later seeding may result in taller crop height, at greater risk of lodging or straw management at harvest.

### Temperature

Flax will germinate fastest at soil temperatures above 8°C. Once emerged, the cotyledon stage is the most susceptible to early spring frost, but can withstand temperatures down to approx. -3°C. After the two leaf stage, once hardened off by exposure, flax can withstand temperatures as low as -8°C for a short time (less than two hours).

### Target Plant Stand and Seeding Rate

Target plant stands range from 37 to 56 plants/ft<sup>2</sup>. This is achieved using a seeding rate of between 35 to 42 lbs/acre. Typical emergence for flax is 50 to 60%. If ground is prone to crusting, seeding late, or weed pressure is heavy, consider seeding at higher rates, up to 56 lbs/acre (1 bu/acre).

### Seeding Depth and Spacing

Optimal planting depth for flax is 1 to 1.5 inches. Seed should only be planted deep enough to reach moisture, but never more than 2 inches. If pre-seed cultivation was done, consider packing before or after seeding to achieve good seed-to-soil contact. Flax is most competitive on narrow row spacing less than 8 inches.

## Crop Nutrition

Nitrogen (N), phosphorus (P), and to a lesser degree, potassium (K) and sulphur (S), are important to flax production, but at lower rates than canola, and more similar to those of oats. For specific recommendations on fertilizer rates, get your soil tested. Flax seed is easily injured by seed-placed fertilizer. All N and S fertilizer should be applied away from the seed. If a soil analysis is not used, a general recommendation is given below.

### Flax Nutrient Uptake and General Fertilizer Recommendations

Nutrient	Estimated Uptake	General Fertility Recommendation
N	2.5 – 3 lbs/bu	Apply no N following fallow or legume breaking, zero to 40 lbs N/acre following grass and grass legume breaking and 50 to 80 lbs N/acre following stubble.
P <sub>2</sub> O <sub>5</sub>	0.75 – 1 lbs/bu	Apply phosphate at 30 to 40 lbs P <sub>2</sub> O <sub>5</sub> /acre in a sideband or placed below seed.
K <sub>2</sub> O	1.5 – 2 lbs/bu	On sandy textured or organic soils apply potash at 30 to 60 lbs K <sub>2</sub> O/acre.
S	0.5 – 0.7 lbs/bu	Sulphur is highly variable in a landscape. Apply S at 10 to 15 lbs/acre when required.

Adapted from <https://www.gov.mb.ca/agriculture/crops/soil-fertility/soil-fertility-guide/>



## Special Fertility Considerations

Iron-deficiency chlorosis can occur in flax under cool, wet growing conditions, particularly on calcareous (high lime) soils. Soil compaction and salinity are also contributing factors. Chlorosis symptoms may also be caused by herbicide injury or deficiencies in zinc. The flax variety AC Emerson has shown the greatest tolerance to iron-deficiency chlorosis conditions.

## Pest Management

### Insects

Flax is generally less prone to insect pest issues. In high insect pest pressure years, fields should be scouted regularly and registered pesticides used when pest pressure reaches economic thresholds. Cutworms, potato aphids and grasshoppers are the most common pests to watch out for.

### Weeds

As a non-competitive crop, weeds in flax can reduce yield and quality. Some weed seeds can be difficult to remove, or cannot be cleaned out of flax, and will be considered foreign material and cause downgrading. Volunteer canola, wild mustard, wild oats, wild buckwheat and green smartweed (Lady's thumb) are common species that cause grain downgrading, if unmanaged.

Manage weeds early in the year with pre-emergent herbicide application, coupled with in-crop use of *bromoxynil* or *lontrel* and *MCPA*, followed ~7 days later by Group 1 graminicides under hot, stressful conditions. Beginning with a clean field is key, and time in-crop application between 2 to 4 inches in crop height for best results. Combat high weed pressure using higher seeding rates and earlier seeding dates.

## Harvest

### Swathing and Desiccation

Flax can be swathed when 75% of bolls are brown and rattling. Swathing is preferred to straight combining when the crop is not uniform in maturity, or if weeds are present. Once in a swath, the seed is less susceptible to frost damage. Flax can be desiccated to hasten dry down after crop has reached physiological maturity (75% brown boll). Desiccation can be helpful to manage green weeds and stems, which tend to wrap on rotating parts.

### Diseases

Including flax in a crop rotation is an excellent disease cycle break from most cereal, pulse, and oilseed crop diseases. Pasmus is the most economically important disease of flax in Manitoba. Management is focused on avoiding high moisture in the late summer and fall, using clean seed, and appropriate seeding rates, together with avoiding flax-on-flax rotation, or within a tight rotation window. A three-year gap should be left between flax crops to minimize pasmo inoculum pressure from infected stubble and straw. Foliar *strobilurin* fungicides are a good tool applied at 10 to 50% bloom to protect crop. Fusarium wilt is occasionally an issue, which can be managed by seeding resistant varieties. In cooler, wetter years, fusarium wilt, sclerotinia or powdery mildew may be noticeable.



Symptoms of pasmo banding on flax stems

## Timing

Flax requires 100 to 110 days to reach physiological maturity, depending on seeding date and environmental conditions. Premature crop termination will reduce yield. Immature seeds will turn black, as a result of early frost.

## Combining

Flax seed with a moisture content of 10% can be safely combined without the need for artificial drying. Combines must be adjusted correctly to minimize seed coat damage to flax. Green flax stems can wrap around augers and rotors, interrupting smooth crop feeding.

## Grain Storage

Flax is safe for long-term storage at 8 to 9% moisture or less, but considered dry below 10%. Once put into storage, flax should be cooled on aeration, since the seed continues at a high respiration rate for up to six weeks post-harvest. Warm spots with high dockage can quickly become flash points for grain spoilage in a bin, so continue to monitor stored grain regularly.

## Straw Management

Uncut straw can cause problems in seeding subsequent crops if it is improperly managed, since straw decomposes very slowly. Ensure combine chopper knives are sharp and straw is cut finely for incorporation or harrowing. Dropped straw can be baled and sold, used as a biofuel or insulation. To be sold, straw must be free of weeds and garbage. As a last resort, straw can be burned. Obtain a burn permit by calling 1-800-265-1233.



## Marketing Your Flax

Many primary elevators and specialty grain buyers purchase brown or golden flax, much of it destined for export. Flax is not an open-market traded commodity, so prices vary more widely than for traded-commodity crops, resulting in regional price variability and movement. Some flax buyers offer production contracts, but most flax is grown on speculation, and sold after the growing season, since environment can play a large role in final yield. Flax prices typically range from \$14 to \$18/bushel.

## Contact Us

This fact sheet was developed by the Manitoba Agriculture Oilseed Specialist.

For more information, contact Manitoba Agriculture:

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