

Flax on the Farm

Marketing, Grading and Seed Quality

A. MARKETING FLAX

Several factors from pre-harvest environmental conditions, to combine settings, to seed storage environment can affect seed quality and consequently the marketing options for flax seed. While the industrial sector continues to be the largest market for flax, the food and feed markets continue to grow.

Market considerations

- Commercial flax seed is typically 10% or less moisture.
- Brown seeded flax can enter the food, feed or industrial markets, while yellow seeded flax is predominantly produced for the food market due to its appealing colour.
- Many food flax buyers are looking for very high-quality flax that has tight specifications for visual appearance. Milling quality flax seed typically has low dockage, has uniform seed colour and size, is not damaged or diseased, is shiny and comes from the high end of No. 1 quality seed. Buyers typically process and clean flax seed further to remove foreign material and damaged seeds. The presence of chaff, especially boll membranes, is an issue when flax seed is packaged for human consumption.
- High dockage and/or heated seed may be acceptable for the feed market.
- Black coloured seeds (e.g. due to variety, frost, disease, heating) may darken the colour and increase the bitterness of flaxseed oil.

To find a list of flax seed buyers go to:

- [SaskFlax](#)
- [Manitoba Flax Growers Association \(MFGA\)](#)
- [Flax Council of Canada \(FCC\)](#)



Don't forget to check on your stored flax seed! Flax seed will continue to respire after harvest for several weeks and therefore requires regular monitoring of temperature and moisture content at the bottom, middle and top of the bin during the first couple of months to detect the first signs of spoilage (e.g. heating, moisture pockets, insect activity). More frequent monitoring is critical if the seed was binned at higher moisture and/or temperature. Refer to the [September edition of Flax on the Farm](#) for more advice on flax seed storage.

B. GRAIN GRADING

- The Canadian Grain Commission (CGC) is responsible for establishing and maintaining Canada’s grain grading system, whereas the Canadian Food Inspection Agency (CFIA) is responsible for maintaining the seed grading system.
- Current designated classes of flax are: brown flaxseed (varieties with brown seed coats) and yellow flaxseed (varieties with yellow seed coats).
- A grade of No. 1 CW (Canada Western) or No. 2 CW can only be assigned to registered varieties of flax in Canada that appear on the [official variety designation list](#).
- The highest grade that grain of an unregistered variety can be assigned is No. 3 CW.
- Grain grading factors are visual characteristics used as indicators of the degree of soundness of a lot of grain. For flax these include: broken seeds, contaminated seeds, damaged seeds, earth pellets, ergot, excreta, fertilizer pellets, fireburnt seed, heated seed, inseparable seeds, odour, other classes of flaxseed, *Sclerotinia sclerotiorum*, soft earth pellets, stones, chemically treated seed and seed with a chemical residue.
- Grain grades are assigned based on an assessment of an official sample for test weight, dockage and the grading factors associated with that commodity. Grades are defined by limits associated with each grading factor, such that the highest grade has the least grading factor issues.

Table 1. Export grade determinants table for flax seed

Grade name	Total removable material %	Foreign material included in dockage				Brown seeded flax	Yellow seeded flax	Damage		
		Ergot %	Sclerotinia %	Stones %	Total including inseparable seeds %	Yellow seeded flaxseed %	Brown seeded flaxseed %	Broken %	Heated %	Total %
No. 1 CW	2.5	0.05	0.1	0.05	1	2	2	13	0.1	13
No. 2 CW	2.5	0.05	0.2	0.05	1.5	3	2	25	0.2	25
No. 3 CW	2.5	0.05	0.25	0.05	2	4	2	35	10	No limit within broken and heated tolerances

Adapted from the Canadian Grain Commission Official Grain Grading (<https://www.grainscanada.gc.ca/en/grain-quality/official-grain-grading-guide/official-grain-grading-guide-2019-en.pdf>)

Harvest Sample Program

- The Canadian Grain Commission’s annual Harvest Sample Program generates harvest and export quality data on the Canadian grain crop.
- Growers who submit samples of flax seed will receive an unofficial grade in addition to the oil and protein content and the iodine value (IV) for the flax seed lot.
- This process serves to provide quality data that is used to promote the high quality of Canadian grain and to aid in the marketing of Canadian grain.

C. SEED QUALITY

Flax seed lots are typically associated with dockage, but several other visual characteristics may also impact the ability to market the seed and the quality of the next flax crop if seeded. Refer to Table 2 for more information on the marketing and agronomy implications of the visual quality of your harvested flax seed.

Table 2. Impact of flax seed quality on marketing and agronomy

Visual characteristic	Cause(s)	Grading factor?	Marketing impact and remediation	Impact on agronomy	Comments
cracked	improper combine settings, seed very dry when combined	Yes	no market impact unless cracks highly visible	seed more prone to microbial attack, may result in oil degradation during storage, may have reduced germination and vigour if planted	large seeded and yellow seeded varieties can be more susceptible, damage not always visible to the naked eye
broken	improper combine settings, seed very dry when combined	Yes	undesireable for food market but easily removed through cleaning	seed will not germinate because embryo damaged	large seeded and yellow seeded varieties can be more susceptible
split	unknown (environmental conditions?)	Yes	no market impact	seed more prone to microbial attack, may result in oil degradation during storage, may have reduced germination and vigour if planted	characterized by the rolling back of the seed coat at the narrow end of the seed such that it looks like a fish's mouth, occurs during maturation of seed, typically only a problem with yellow seed in some years
shrivelled	prematurely aborted or ripened, or colonized by saprophytic fungi	Yes	undesireable for food market but easily removed through cleaning	seed will not germinate because embryo not properly formed	often due to drought or disease (rust, pasmo, Fusarium, root rots, Sclerotinia, stem break and browning), commonly colonized by saprophytic fungi
frosted/scabbed/blistered appearance	high moisture conditions at harvest	No	undesirable for food market, boll tissue may fall off seed once seed begins to dry down in storage, presence of loose membranes in a seed lot can cause issues for packaging for human consumption, a polisher may be able to remove boll tissue		boll membrane (septae) tissue may be attached, rough appearance of seed coat is due to mucilage in seed coat absorbing moisture and causing boll tissue to stick to the seed which removes the shine on the seed coat, no impact on oil quality
grey coloured	Pasmo infection	No	undesirable for the food market, may be able to use colour sorter to remove	may reduce germination and/or vigour or cause seedling blight, boll blight or premature ripening if seeded	
dull black coloured	Alternaria infection	No	undesirable for the food market, can use colour sorter to remove	may reduce germination and/or vigour or cause boll blight or premature ripening if seeded	
moderately shiny black coloured	frost damage to immature seeds	Yes	undesirable for food market, may produce a darker oil with a more bitter taste, can use a colour sorter to remove	may have reduced germination and vigour if planted or may not germinate at all due to damage to the embryo	immature seeds can be damaged by temperatures of -1°C but are more commonly damaged when temperatures dip below -3 to -5°C. Immature seeds may be green or light yellow or light brown in colour and are still soft due to their high moisture content of (>30%).
very shiny dark brown to black coloured	heated during storage	Yes	undesirable for food market but fine for the feed market in limited quantities, will produce a darker oil with a bitter taste	seed will not germinate when seeded	cotyledons inside the seed have an orange to dark brown colour, and seed may have a heated odour to it
dull seed coat	unknown (genetic?, environmental?)	No	may not be desirable for the food market, may be able to restore shine by using a polisher		may be due to mucilage in seed coat absorbing moisture
germinated	high moisture conditions at harvest, genetics	Yes	undesirable for food market	seed will not germinate when seeded	radicle (embryonic root) is visible outside of the seed
bicoloured seeds	unknown (genetic?, environmental?)	No	undesirable for food market, can use a colour sorter to remove		typically only present in low quantities
brown seeds in a yellow seeded lot	improper cleaning of equipment between different coloured seed lots, off-coloured seeds are damaged yellow seeds, genetics, environment	Yes	undesirable for food market, can use a colour sorter to remove	if mixture seeded, the amount of off-type seed will increase significantly with every generation of production	a type of admixture, food market often requires 1.5% or less brown seeds in yellow seeded lots
yellow seeds in brown seeded lot	improper cleaning of equipment between different coloured seed lots, off-coloured seeds are immature brown seeds, genetics, environment	Yes	undesirable for food market, can use a colour sorter to remove	if mixture seeded, the amount of off-type seed will increase significantly with every generation of production	a type of admixture
chaff	improper combine settings	Yes	low levels suitable for the food market, high dockage seed lots can be used for the crush or feed markets, easily removed through cleaning	chaff may act as a source of inoculum for a number of diseases (rust, pasmo, Fusarium, Alternaria, powdery mildew, stem break and browning) if planted with seed	can contribute moisture to seed that was dry when binned, chaff in a seed lot can cause issues for packaging for human consumption
weed seeds	ineffective weed control, herbicide resistant weeds, improper combine settings	Yes	low levels may be suitable for the food market, high dockage seed lots can be used for the crush or feed markets, some weed seeds are easier to remove through sieving than others	if seed lot planted, will contribute to the weed seedbank	common weed seeds in flax seed lots are canola, mustard, cereals, wild buckwheat, cleavers, lady's thumb and wild oats, can contribute moisture to seed that was dry when binned, can be a source of seed storage insect pests

For more information on flax marketing, grading and seed quality contact the following:

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Useful links:

1. Seed Quality:

- [Photos of seed quality issues \(Flax Council of Canada\)](#)
- [Canadian Food Grade Flax \(Flax Council of Canada\)](#)
- [Effect of Fall Frost on Seed Quality \(Saskatchewan Ministry of Agriculture\)](#)

2. Seed Storage:

- [The Process of Grain Aeration \(Ron Palmer\)](#)
- [Crop Storage \(PAMI\)](#)

3. Grain Grading

- [Official Grain Grading Guide-Flaxseed Chapter \(Canadian Grain Commission\)](#)
- [Variety Designation List for Canada Western flaxseed \(Canadian Grain Commission\)](#)
- [Harvest Sample Program information \(Canadian Grain Commission\)](#)