

Buckwheat Production in Manitoba



January 2021

Harvesting

Swathing

- Much of the yield is determined by seed development in the primary seed cluster.
- Yield increases rapidly in the last two weeks of growth, and therefore swathing should be delayed as long as possible.
- Dessication weakens the stem and causes lodging. Do not dessicate buckwheat.
- Swathing is recommended when 75 to 80 % of the seeds have turned brown or black. The best way to determine this is to pull a few plants and turn them over to judge seed color change.
- If a light frost occurs, (top third of crop canopy or less), flowering will be stopped and crop yield may be improved as seed fill progresses. If a hard frost occurs (more than the top third of the crop canopy), swathing should begin as soon as possible. Where possible, try to swath the crop before a heavy frost.
- Buckwheat shatters easily upon maturity, and if it is left standing for direct combining, wind can cause serious losses.
- Shattering losses can be minimized by swathing when the crop is damp and by matching reel speed with ground speed.

Combining

- To minimize shattering, ensure that the pick up speed equals ground speed.
- Combine adjustments are important to minimize the dehulling of seed; therefore, use a cylinder speed of 600-800 rpm, concave of 1/2 to 5/8 of an inch at rear. If seed is dehulling, increase concave size or lower cylinder speed.

Yields

- The ten-year, long term yield average for buckwheat reported by Manitoba Agriculture Services Corporation (MASC) is 17 bus/a.
- Under good management and with improved varieties, a yield of 30 bus/a is a realistic aim in buckwheat production. Yields vary from season to season because buckwheat is sensitive to weather.
- MCVET reports a 33 bus/a yield average for the check variety Koma over 21 sites years of testing.

Storage

- A moisture content of 16 % or less is necessary for safe storage of buckwheat.
- To maintain the quality of buckwheat, it should be stored at low temperatures and low humidity.
- When buckwheat needs to be artificially dried, care should be taken so that the temperature is not raised too quickly or too high. Temperature should not exceed 43 Celsius.
- As buckwheat ages, testa (groat inside the hull) oxidizes and turns reddish brown and flavour and aroma disappear. The primary market for buckwheat is Japan, which buys only new crop seed; therefore, it is important to not mix old and new crops

Sources

Guide to Buckwheat Production in Manitoba (1997)
 Manitoba Field Crop Production Guide (2001)
 Seed Manitoba 2016
 Wikipedia

Manitoba Buckwheat Growers Association

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Buckwheat

Buckwheat produced commercially in Manitoba is common buckwheat, *Fagopyrum esculentum* Moech. Tartary buckwheat, *F. tataricum*, is a related species considered a noxious weed in Western Canada. Buckwheat is a broadleaf plant that belongs to the Polygonaceae family, but because it is handled in the same way as a cereal it is usually classed with cereals. Buckwheat has triangular seeds.

Field Selection

Buckwheat grows well on light or medium textured soils. Currently grown large buckwheat seed varieties require a growing season of approximately twelve to fourteen weeks. It is sensitive to cold and is damaged or killed quickly when temperatures fall much below freezing. Avoid fields that contain very high levels of soil nitrogen since this can cause crop lodging.

Variety Selection

Only large seed varieties are recommended for production. Seven varieties are available. The table below lists the currently available varieties and performance in Manitoba tests (Source 2020 Seed Manitoba Guide).

| Variety | Yield | Site | Days to | Height | 2017 | | |
|-------------------------------|---------|------------|-----------|-----------|---------------------|-----------------------|---------|
| | % | Years | 50% Bloom | | Average | 2017 Yield: % of Koma | |
| | Check | Tested | +/- Check | +/- Check | Yield | Dauphin | Hamiota |
| AC Manisoba | 115 | 21 | -3 | -2 | 123 | - | - |
| AC Springfield | 116 | 23 | -1 | -5 | 119 | 114 | 120 |
| Horizon | 123 | 14 | - | - | 122 | 111 | 116 |
| Koma ~ | 100 | 23 | - | 0 | 100 | 100 | 100 |
| Koto ~ | 120 | 23 | -2 | -3 | 119 | 113 | - |
| Mancan | 108 | 21 | -2 | -6 | 117 | - | - |
| Manor | 111 | 4 | - | - | - | - | - |
| CHECK CHARACTERISTICS | | | | | Koma | | |
| | | | | | (bus/acre) | 46 | 43 |
| Koma | 31 | 23 | 47 | 45 | CV% | 5.1 | 8.9 |
| | lb/acre | site years | days | inches | LSD% | - | - |
| | | | | | Sign Diff | No | No |
| ~ Plant Breeders Rights apply | | | | | Seeding Date | 09-Jun | 9-Jun |
| | | | | | Harvest Date | 10-Oct | 11-Oct |

Seeding Buckwheat

Treatments

- Buckwheat is sown late, when soil temperatures are higher, and seedlings will emerge quickly. As a result seedling diseases are not common.
- One seed treatment is registered for the control of general seed rots (Dividend XL RTA).
- Cruiser 5FS seed treatment is registered for the suppression of wireworms.

Dates

- Buckwheat is susceptible to frost in late spring and early fall. To maximize yields, buckwheat should be planted early June after the risk of frost has passed. Generally June 1 to June 20.

Rates

- A plant population of 13 to 17 plants per square foot is considered optimal. Seed 36 to 48 lbs per acre to achieve an optimal plant stand. Use thousand kernel weight (TKW), seed germination and emergence rates to determine the optimum seeding rate for your variety. Buckwheat has the ability to branch out and compensates well for thinner plant population.
- Seeding by plant population example: desired plant stand = 15 plants per square foot, TKW = 30 grams (depends on variety), germination = 95 %, expected seed survival = 90 %.

$$\text{Seeding rate} = \frac{15 \times 30}{.95 \times .90 \times 10} = 52 \text{ lbs/acre.}$$

Depth

- Seed 1 to 2.5 inches deep. Seed should be placed only deep enough to reach moisture to obtain rapid and uniform emergence.

Fertilizer recommendations

- Soil sample and test for available nutrients before applying additional nutrients

| Buckwheat to be grown on | Nitrogen (N) | | Phosphate (P2O5) | | Potash (K2O) | | Sulphur (S) | |
|---|--------------|-------|--|-------|---|-------|--|-------|
| | Lb/a | kg/a | Lb/ac | kg/ha | Lb/ac | kg/ha | Lb/ac | kg/ha |
| Following legume breaking | 0-20 | 0-20 | Maximum 20 lbs/a (22 kg/ha) P2O5 should be placed with the seed. 30-40 lbs/a (34-45 kg/ha) if placed away from the seed. | | Sands, sandy loams and organic soils are frequently low in available potassium. On these soils apply 30-60 lbs/a (34 to 67 kg/ha) of potash K2O | | Sulphur deficiency may occur in many soils in any area of the province. Apply sulphate sulphur at 15 lbs/a (17 kg/ha) when required. | |
| Following grass and grass-legume breaking | 20-40 | 22-45 | As above | | As above | | As above | |
| Following stubble | 40-60 | 45-67 | As above | | As above | | As above | |

- Any nitrogen in excess of 6lbs/a (7 kg/ha) , phosphate in excess of 18 lbs/a (20 kg/ha) P2O5 and all potash and sulphur should be placed away from the seed to avoid injury.

Weeds

- Although buckwheat is a competitive crop when established, weeds can reduce both yield and quality of buckwheat. Care must be taken to avoid problems with weeds and volunteers from the previous crop.
- Perennial weeds should be controlled in the crop year previous to the year in which buckwheat is grown so that no weeds are inherited.
- Since buckwheat is sown late, there is ample opportunity to control problem weeds with herbicides or cultivation before seeding.
- Currently there is only a grass killer (Poast Ultra, PHI 85 days) registered for use on buckwheat. There are no broadleaf herbicides currently registered for use on buckwheat.

Insects

- Cutworms in the spring, lygus bugs in the summer and grasshoppers later in the season can cause economic damage to buckwheat. Control threshold for cutworms is 1/2 per square foot (3-4 per square meter). Control threshold for grasshoppers is one per square foot (7-12 per square meter). Coragen is registered to control cutworms and grasshoppers, refer to the current edition of the Guide to Field Crop Protection for details.
- Damage by flea beetles has been noticed on buckwheat seedlings but do not appear to be cause for economic concern.
- Lygus bugs are known to feed on buckwheat. The most abundant species of Lygus bug on buckwheat in Manitoba is the tarnished plant bug, *Lygus lineolaris*. Lygus bugs feed on plant sap. Yields can potentially be reduced mainly by feeding from the nymphs at the flowering stage. This feeding can result in decreased seed weight, flower and seed numbers, and increased percentages of dry flowers and shriveled seeds. Alfalfa plant bugs (*Adelphocoris lineolatus*) may also be present on buckwheat, although their densities are generally too low to warrant concern. Lygus bug populations can be monitored using a sweep net. Economic thresholds for Lygus bugs on buckwheat are not available.
- Matador 120 EC is registered for the control of armyworm. Refer to product label for details.

Diseases

- Downy mildew is the most prevalent disease in buckwheat fields in Manitoba. All varieties are susceptible to downy mildew. The disease can be seed borne, and it can over winter in dead parts of infected buckwheat plants. No assessment of economic damage caused by this disease has been reported in Manitoba. There are no foliar fungicides registered for this disease.
- Rhizoctonia root rot can affect seedlings during a prolonged cool, wet period.

Pollination

- Buckwheat has an indeterminate inflorescent (flowering) habit. Flowers are usually white and formed in dense clusters at the end of branches or arising from the axils of leaves.
- Buckwheat requires cross-pollination and pollination is done by insects.
- Many insects serve as pollinators but honey bees can perform the service while produce a dark honey often valued by consumers. Although less than one hive per acre is common, two hives per acre or more in the field are suggested to provide bees to pollinate buckwheat, which produces nectar only in the morning. Leaf cutter bees pollinate buckwheat well also.
- The seed of common buckwheat is a fruit, an achene. The triangle-shaped seeds are green until they are physiologically mature, and then the hull turns brown or black.