

MALT BARLEY PRODUCTION GUIDELINES FOR NORTH DAKOTA

CROP CHARACTERISTICS

- Barley is a cool season grass.
- Yield potential is optimized when barley is planted early, thus allowing the spike to develop when temperatures are cool.
- Matures in 85 to 105 days, depending upon temperature.
- There are spring and winter types. North Dakota produces only spring varieties.
- Barley leaves have large auricles that appear to “hook” around the stem of the plant. This is a distinguishing characteristic of barley.

PLANTING

- Rate: approximately 1.5 to 2.0 bushels per acre (65 to 90 pounds pure live seed per acre, or 73 to 100 kg per hectare). Determining the number of seeds per pound and germination rates provides a more accurate seeding rate. Target plant population is 1.25 to 1.30 million plants per acre, or approximately 30 plants per square foot (300 plants per square meter).
- Date: April 1 – May 15. Barley exhibits frost tolerance, and should be planted as soon an acceptable seed bed can be developed. Plant as early as possible in western North Dakota to avoid high temperatures during flowering and seed development.
- Depth: 1 to 2 inches (2.5 to 5.0 cm)
- Seeds per pound: Barley contains approximately 14,000 seeds per pound. Actual seed counts can vary.

SOILS

- Well drained, medium texture soils provide for optimum growth and yield.
- Barley is salt tolerant and can perform adequately on higher pH soils (7.0 – 9.0).
- Barley is adaptable to a wide range of soil types, and performs well on heavier soils that have high moisture holding capacity.

FERTILIZER

- Nitrogen (N) requirements.
 - Eastern North Dakota: Yield goal (in bushels per acre) x 1.5 = Total N requirement (in pounds per acre).
 - Western North Dakota: Yield goal (in bushels per acre) x 1.2 = Total N requirement (in pounds per acre).
- Phosphorous (P) requirements.
 - In low to medium testing soils, applications of 50 to 70 pounds per acre of a phosphorous containing fertilizer (e. g. 18-46-0, 10-50-0) are typically required.
 - Optimum phosphorous levels can only be determined through use of a soil test.
- Potassium (K) requirements:
 - North Dakota soils are typically high in potassium, and consequently potassium applications are not typically required.
 - Research indicates that application of KCl (potassium chloride) improves straw strength and prevents lodging.
- Soil testing and fertilizer planning is highly recommended for the production of malt barley.

WEED CONTROL

- Barley is fairly competitive and grows rapidly.
- Numerous herbicides are labeled for barley. Consult the Weed Control Guide published by the NDSU Extension Service for a list of herbicides.

CROP ROTATION

- Barley is often rotated with canola, sugar beets, sunflower, safflower, flax, and other broadleaf crops.
- If planting on land that was seeded to legume (soybeans, peas, etc.) the previous year, care must be exercised in nitrogen use to avoid over-fertilization with N, which can result in higher protein and render the crop unsuitable for malting purposes.
- Avoid rotating directly with wheat, since barley and wheat are subject to similar diseases.
- Avoid rotating directly with corn. Corn harbors *Fusarium*, which can cause DON accumulation on the seed and result in discounts or rejection for malting purposes.

DISEASE CONTROL

- Common root rot: Imazalil and triadimenol are registered for use as seed treatments to manage root rot.
- Loose smut: seed treatments containing carboxin should be used to prevent loose smut.
- Rust: barley cultivars vary in their tolerance to leaf and stem rust. Variety selection and crop rotation assist in managing rust. Some foliar fungicides can assist in controlling rust. Consult the NDSU Extension Service Field Crop Fungicide Guide for a list of available options.
- Barley Yellow Dwarf: a viral infection that is delivered from certain species of aphids. Monitor aphid levels and consider spraying an insecticide to prevent infection.
- Scab: caused by fungal organism *Fusarium graminearum*. Scab infects the head and can cause sterility of florets. The accumulation of the mycotoxin deoxynivalenol (DON) on the seed can render barley unsuitable for malting purposes. Highly resistant varieties are not available.

INSECT CONTROL

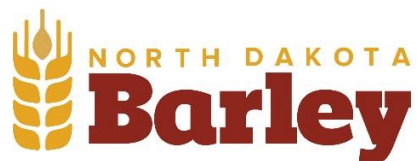
- Aphids, army worms, thrips, and grasshoppers are some of the insects that can affect barley. Consult the NDSU Extension Service Insect Control Guide for insects and treatment options.

HARVEST & STORAGE

- Malting barley is commonly swathed to facilitate drying and prevent additional stem breakage.
- Utilize manufacturer guidelines when setting the combine for cylinder speed, fan speed, and sieves.
- Store at 13.5% moisture or less.

MALTING VARIETIES COMMONLY PRODUCED IN NORTH DAKOTA

- 6 row: Legacy, Lacey, Tradition, Drummond, Stellar-ND, Celebration.
- 2 row: Conlon, Pinnacle, Genesis.



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Note: the information contained herein for information purposes only. The production practices outlined provide a general guideline for malting barley production in North Dakota, and do not necessarily apply to any given farming operation.