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# Growing Organic Malting Barley

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# Take Home Points

- The biggest challenge when growing organic malting barley will be producing a **disease-free grain**.

- Growing malting barley requires a lot of attention to detail.

# Prior to Planting

- Secure a market with a malt house or a distillery **prior planting.**
- See the Google Map


**Niagara Malt**

# Prior to planting

- Have a back-up market for grain—i.e. beef cattle.

# Which Seed?

- Use clean seed, free of disease.
- Grow a locally tested variety resistant to disease.
- Don't save your seed!

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# Pick the right field

- Don't follow corn or another small grain-*disease risk*
- Follow buckwheat, soybean, vegetables, or hay crop.


Fusarium Head blight of Wheat
Photo Dr. Gary Bergstrom, Cornell University

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# Pick the right field

- Aggressive tillage can help reduce disease risk.
- Nearby small grain & corn fields can harbor disease.

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# Pick the right field

- Well-drained fields.

- Soil with pH 6.3-7.0.
  - Lime if needed.

# Malting Barley Fertility

- Goal: healthy, disease-free, high-yielding grain with CP 9-12% DM.

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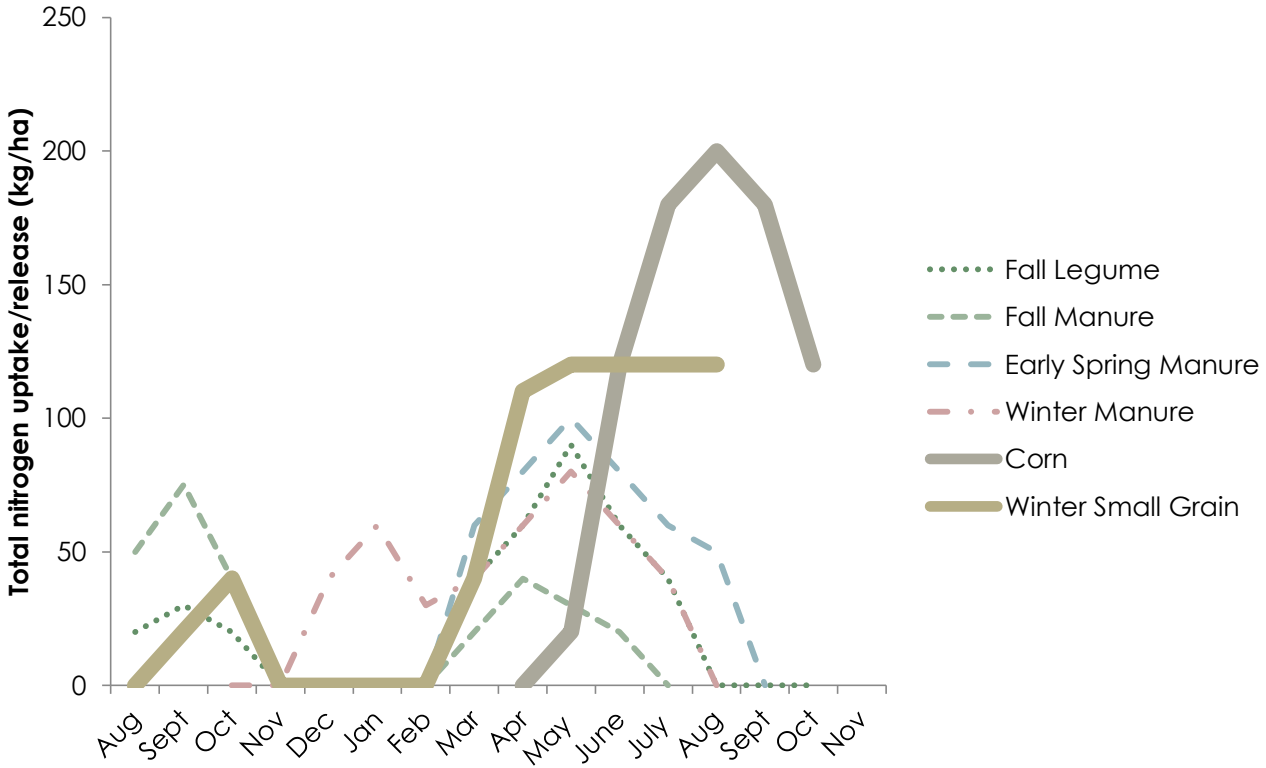
**Modified Table 5.5.1. Fertilizers for small grains.[1]**

| Soil Mgt. Group | Crop | Fertilizer Nutrients to be Added (lb./A) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Nitrogen (N) | | Phosphorus ($P_2O_5$) | | | | | Potassium ($K_2O$) | | | | |
| | | | | *Soil Test Levels[3]* | | | | | *Soil Test Levels[3]* | | | | |
| | | *No Manure* | *Manure* | *Very Low* | *Low* | *Medium* | *High* | *Very High* | *Very Low* | *Low* | *Medium* | *High* | *Very High* |
| I | **Winter barley** | 40–60 | 10–20 | 65 | 50 | 40 | 20 | 10 | 50 | 40 | 20 | 20 | 0 |
| | **Spring barley** | 40–60 | 10–20 | 50 | 40 | 30 | 20 | 10 | 50 | 40 | 20 | 20 | 0 |
| II | **Winter barley** | 40–60 | 10–20 | 65 | 50 | 40 | 20 | 10 | 50 | 40 | 20 | 20 | 0 |
| | **Spring barley** | 40–60 | 10–20 | 50 | 40 | 30 | 20 | 10 | 50 | 40 | 20 | 20 | 0 |
| III | **Winter barley** | 40–60 | 10–20 | 65 | 50 | 40 | 20 | 10 | 50 | 40 | 20 | 20 | 0 |
| | **Spring barley** | 40–60 | 10–20 | 50 | 40 | 30 | 20 | 10 | 50 | 40 | 20 | 20 | 0 |
| IV | **Winter barley** | 50–60 | 10–20 | 65 | 50 | 40 | 20 | 10 | 50 | 40 | 20 | 20 | 0 |
| | **Spring barley** | 40–60 | 10–20 | 50 | 40 | 30 | 20 | 10 | 50 | 40 | 20 | 20 | 0 |
| V | **Winter barley** | 60–70 | 10–20 | 65 | 50 | 40 | 20 | 10 | 50 | 40 | 20 | 20 | 0 |
| | **Spring barley** | 50–70 | 10–20 | 50 | 40 | 30 | 20 | 10 | 50 | 40 | 20 | 20 | 0 |

# Nitrogen Mineralization

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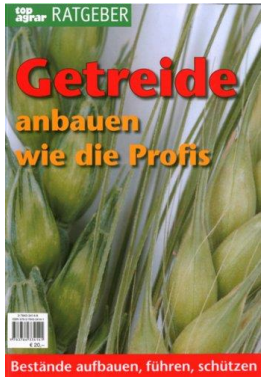
# Tiller Counts

| Soil Type | Sand | Silt | Loam | Clay |
|---|---|---|---|---|
| Tillers/plant | N to apply lb./A | | | |
| 1-3 | 36 | 45 | 45-62 | 53-71 |
| 4-6 | 22 | 31 | 31-45 | 40-53 |
| 6+ | 13 | 22 | 27-36 | 36-45 |




Getreide anbauen wie die Profis: Bestände aufbauen, führen, schützen.

Growing grains like the professionals: Establishing stands, directing, & protecting

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# Nitrogen

- Possible Sources:
  - Manure
  - Hay or legume credit?
  - Organic fertilizer

*~5-10 lb./100 lb. of product*

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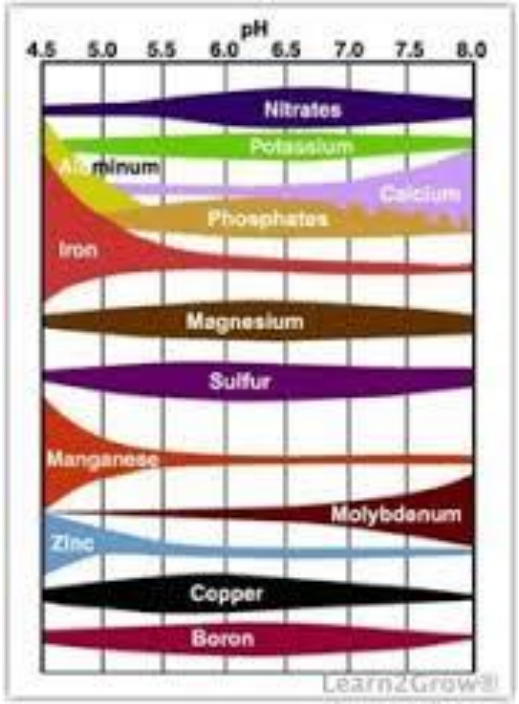
# Phosphorus

- Keep pH 6.2-7.0
  *Max P available*
- Manure/Compost
  *Apply in fall*
- Organic fertilizer
  *~0-5 lb./100 lb. of product*
- Rock Phosphate?
  *P Not available ≥ pH 7.0*
  *More P available < pH 6.0*
  *Sources differ in P availability ~10-20%*

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# Potassium

- $K_2SO_4$
  *50 lb. $K_2O$ + 17 lb. S*
- K-Mag
  *22 lb. $K_2O$*
- Manure
- Organic fertilizer
  *~0-5 lb./100 lb.*

# Barley & Chlorine

- Low sensitivity-tolerate up to 4% DM, some other crops sensitive to 0.5 to 2.0% DM.
- **Chlorine in soil is Cl-,** leaches readily, is ubiquitous (~200 lb./A), & is not toxic. Table salt is NaCl & potash KCl.
- Chlorine gas ($Cl_2$) was used in WWI, does not occur in soil.

# Planting Barley

- Drill 100 lb/A (~2 bu/A) at 1.5 inches
- Winter barley:
  *Sept to early Oct*
- Spring barley
  *March to early April, lose 1 bu/day after April 15th*

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# Weeds and Insects


- Till two weeks prior to planting to germinate weeds.
- Tine or rotary hoe once crop is established.
- Few options for insects

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# Barley Diseases

- No control options available outside of rotation, higher fertility, & varietal resistance.

- Warm, humid climate in western NY very favorable for disease development.

- Biological/organic control products have not been effective in Cornell field trials on small grains.

# Powdery Mildew


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# Barley Stem Rust


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# Loose Smut


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# Barley Net Blotch


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# Ergot

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# Harvest Early

- As soon as you can get in, grain will be ~20% moisture.
- Go slow.
- Dry 5-10 F above ambient temp with indirect heat.

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# Storage

- Need smaller bins, totes, or super sacks.
- Most malt houses do not have on-site storage yet.

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# Take Home Points

- The biggest challenge when growing organic malting barley will be producing a **disease-free grain**.

- Growing malting barley requires a lot of attention to detail.

# Questions?

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