



Grow & Tell Field Day 2025

Growing a community and improving lives through agriculture.



406-600-5205

2150 South 14th Rd | Ballantine, MT 59006

www.north40ag.com



Plot Details

Plot

- Winter plot planted on October 16th
- Spring plot planted on April 11th
- Dryland
- No fertility applied
- Residual:
 - 57 lbs/ac of N
 - 124 ppm of P
 - 586 ppm of K

Application Trial

- Sugar and Ensoil Algae applied on May 13th
- Sugar applied at 2 lbs/ac
- EnSoil Algae applied at 8 oz/ac

 NORTH40Ag	Total Precip. (inches)	Average Temp. (°F)
January	0.72	20.30
February	1.14	8.50
March	1.02	41.70
April	2.93	45.70
May	2.33	56.80
June	2.70	64.50
Total	10.84	

Winter Plot



P919 Barley

- Beardless
- Headed out May 25th, 7 days after rye
- Very winter hardy
- Very palatable
- Above average lodging resistance



Valor Barley

- Beardless
- Headed out May 25th, 7 days after rye
- Excellent winter hardiness
- Aggressive spring growth
- High quality & protein



Hazlet Rye

- Medium plant height
- Headed out May 18th
- Excellent winter hardiness
- Very good lodging resistance



Willow Creek Winter Wheat

- Awnless
- Headed out June 13th, 26 days after rye
- Excellent winter hardiness
- High quality forage
- Fine stemmed



MT Cash Winter Wheat

- Awnletted
- Headed out June 10th, 23 days after rye
- Excellent winter hardiness
- Good straw strength



Gainer Triticale

- Awned
- Headed out May 28th, 10 days after rye
- Very good winter hardiness
- Short plant height
- Excellent leaf to stem ratio



Exp. 209 Triticale

- Experimental variety
- Awnless
- Headed out June 3rd, 16 days after rye



Exp. 206 Triticale

- Experimental variety
- Awnless/Awnletted
- Headed out June 3rd, 16 days after rye



Showtime Triticale

- Awnless
- Headed out June 3rd, 16 days after rye
- Very winterhardy
- Medium plant height
- High tillering
- Prostrate fall growth habit



Flex 719 Triticale

- Awnletted
- Facultative
- Headed out June 6th, 19 days after rye
- Moderate plant height
- Good straw strength
- Good early seedling vigor



Austrian W. Peas/ Flex 719 Triticale

- Headed out June 6th, 19 days after rye
- Winter peas fix N that is more readily available than other legumes



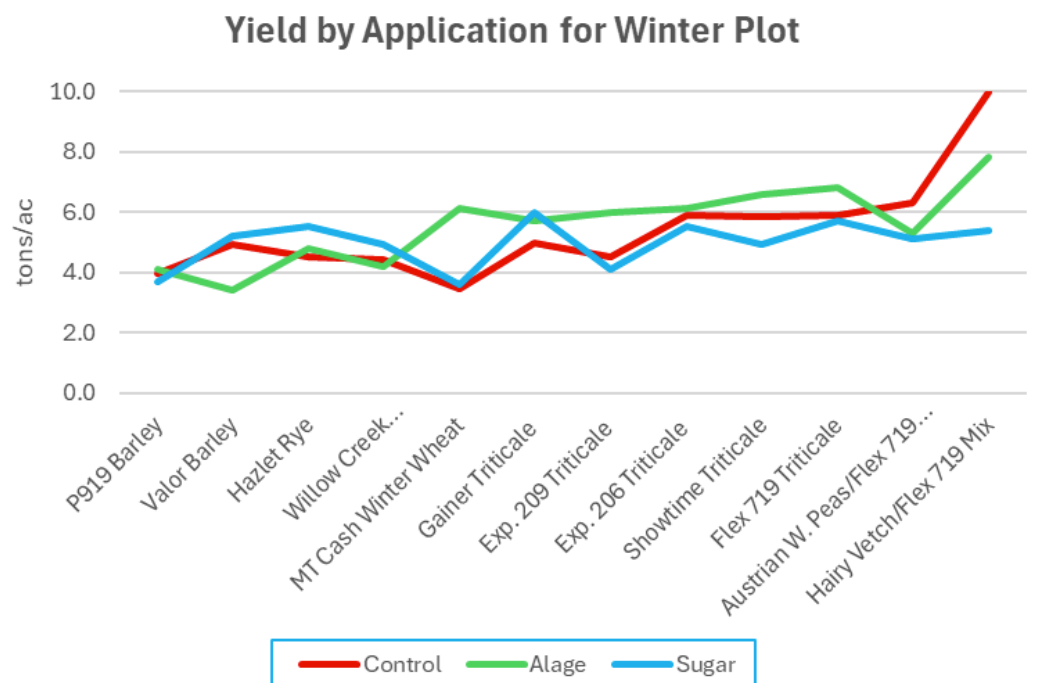
Hairy Vetch/ Flex 719 Triticale

- Headed out June 6th, 19 days after rye
- Hairy vetch is a viney and climbing legume
- Vetch increases protein

Winter Yields

Yield (tons/ac)	P919 Barley	Valor Barley	Hazlet Rye	Willow Creek Winter Wheat	MT Cash Winter Wheat	Gainer Triticale
Control	4.0	4.9	4.5	4.4	3.4	5.0
Algae	4.1	3.4	4.8	4.2	6.1	5.7
Sugar	3.7	5.2	5.5	4.9	3.6	6.0
Average	3.9	4.5	4.9	4.5	4.4	5.6
Yield (tons/ac)	Exp. 209 Triticale	Exp. 206 Triticale	Showtime Triticale	Flex 719 Triticale	Austrian W. Peas/Flex 719 Triticale	Hairy Vetch/Flex 719 Triticale
Control	4.5	5.9	5.8	5.9	6.3	10.0*
Algae	6.0	6.1	6.6	6.8	5.3	7.8
Sugar	4.1	5.5	4.9	5.7	5.1	5.4
Average	4.9	5.8	5.8	6.1	5.6	7.7

*The Hairy Vetch/Flex 719 Triticale mix yield seemed unusually high, so we double-checked it and confirmed it at 10 tons/acre. While this aligns with reports that adding hairy vetch can significantly boost biomass and protein, we still want to be cautious in how we present the results, since performance can vary depending on conditions.



Spring Plot



Lavina Barley

- Beardless
- Headed out June 16th
- Good early seedling vigor
- Excellent hay quality
- Average protein
- Excellent standability



MT Cowgirl Barley

- Beardless
- Headed out June 16th
- Tall plant height
- High performing forage, wide leaves
- Extended grain fill period



Monida Oats

- Medium plant height
- Headed out June 28th, 12 days after barley
- High yielding
- Good lodging resistance
- A trusted variety across MT



Hayden Oats

- Medium plant height
- Headed out June 28th, 12 days after barley
- Average straw strength



Otana Oats

- Relatively-tall plant height
- Headed out June 23rd, 7 days after barley
- Moderate lodging resistance



Rushmore Oats

- Medium-tall plant height
- Headed out June 18th, 2 days after barley
- Good seedling vigor
- Good standability



Gunner Triticale

- Awnless
- Facultative
- Headed out June 30th, 14 days after barley
- High leaf to stem ratio
- Great straw strength
- Excellent grazer



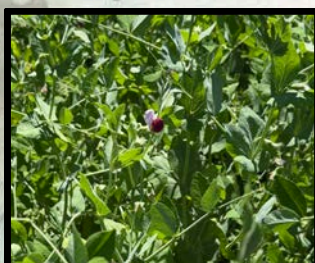
Kicker Triticale

- Awnless
- Facultative
- Headed out June 23rd, 7 days after barley
- Good straw strength



Flex 719 Triticale

- Awnletted
- Facultative
- Headed out June 23rd, 7 days after barley
- Moderate plant height
- Good straw strength
- Good early seedling vigor



4010 Peas

- Flowered June 28th, 12 days after barley
- Excellent forage quality
- For optimum tonnage seed with a small grain



Oats/Peas/Barley Mix

- Headed out June 16th
- Barley produces more tillers than oats
- Monida oats mature slightly later than Lavina barley



Cool Diversity Mix

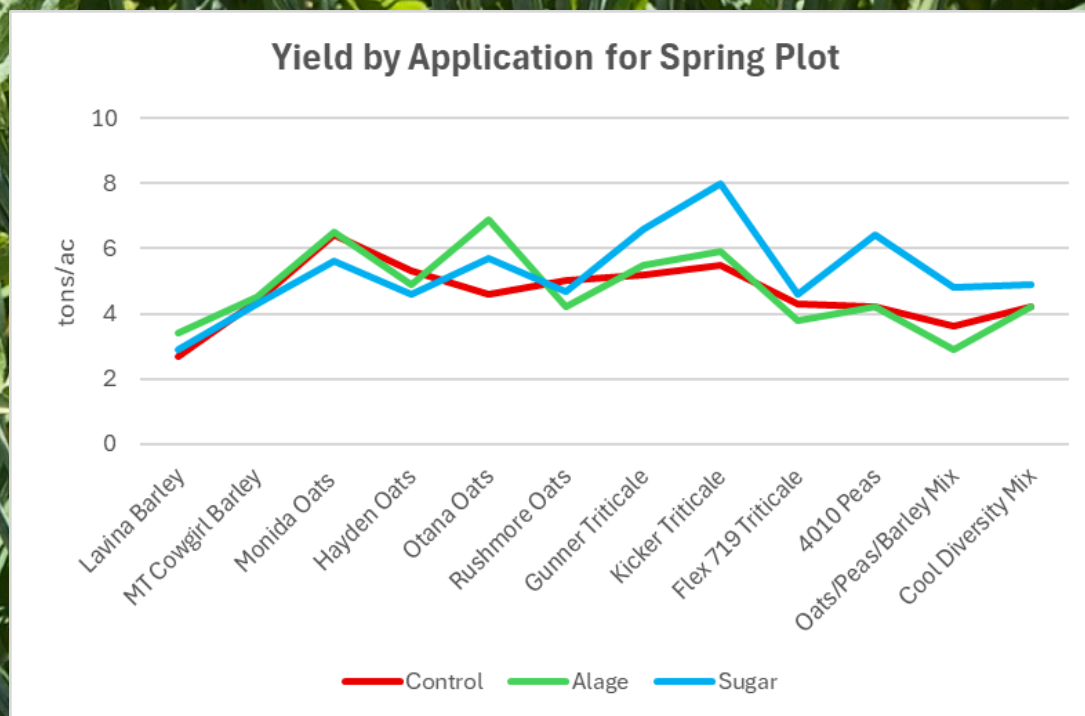
- Headed out June 16th
- 9 species mix:
 - 4010 Peas, Faba Beans, Chickling Vetch, Monida Oats, Lavina Barley, Collards, Turnips, Flax, Phacelia

Spring Yields

Yield (tons/ac)	Lavina Barley	MT Cowgirl Barley	Monida Oats	Hayden Oats	Otana Oats	Rushmore Oats
Control	2.7	4.4	6.4	5.3	4.6	5.0
Algae	3.4	4.5	6.5	4.9	6.9	4.2
Sugar	2.9	4.3	5.6	4.6	5.7	4.7
Average	3.0	4.4	6.2	4.9	5.7	4.6

Yield (tons/ac)	Gunner Triticale	Kicker Triticale	Flex 719 Triticale	4010 Peas	Oats/Peas/Barley Mix	Cool Diversity Mix
Control	5.2	5.5	4.3	4.2	3.6	4.2
Algae	5.5	5.9	3.8	4.2	2.9	4.2
Sugar	6.6	8.0	4.6	6.4	4.8	4.9
Average	5.8	6.5	4.2	4.9	3.8*	4.4

*The yield for OPB is typically higher. The lower yield observed may be due to a seeding issue.



SPECIES INFO

Triticale

- Hybrid of wheat and rye
- Produces large forage yields
- Planted at a slightly higher rate than comparable forages due to its decreased tillering ability
- Both awnletted and awnless varieties are available

Cereal Rye

- First thing to be ready in the spring for grazing/haying
- Fibrous roots that help break up compaction
- Known nutrient scavenger
- Not recommended to plant in dryland rotations dominated by wheat production

Peas

- Good nitrogen fixer (10-40 lbs./ac./year)
- Adds protein to forage
- Relatively low C:N ratio
- Rapid growth that aids in suppressing weeds
- Purple flowers that attract pollinators

Barley

- Good for high salinity areas
- High C:N ratio
- Provides early competition against weeds
- Winter barley is new to the area, so there are still some unknowns on how it will overwinter

Winter Wheat

- Grain yield is lower than other forage varieties, but provides excellent forage
- Has the potential to produce a lot of biomass
- Forage quality is best when harvested in boot or just after head emergence

Oats

- Some allelopathic effects that hinder the germination of many weeds
- Offers great forage and erosion control
- Dense, fibrous roots that help build soil structure

Snapshots from the plot



Sugar Application

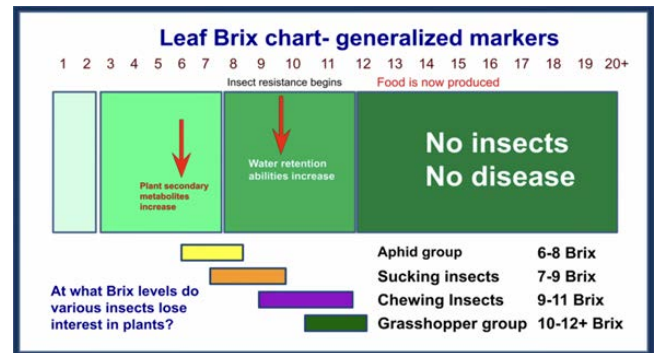
The concept of sugar beet sugar solution application is increasing plant Brix levels, leading to a healthier more productive plant. While this approach hasn't been extensively studied, the concept is straightforward—providing an external sugar source helps strengthen the plant, making it more vigorous and resilient. Healthier plants are also less appealing to many insect pests, which tend to avoid feeding on strong, nutrient-rich crops.

Brix Measurement

Brix is the measurement of sugar in plants and is closely related to a plants' overall health! As Brix values increase, it reflects more efficient photosynthesis and energy production within the plant. In fact, at certain Brix thresholds, some insects will actually stop feeding on the plant, making it a useful indicator not just of plant vitality, but also of natural pest resistance.

Algae Application

The idea behind EnSoil Algae includes decreasing the need for synthetic fertilizers. By boosting chlorophyll levels, the algae is supposed to enhance photosynthesis, which contributes to healthier, more productive plants. It is also supposed to support greater soil microbial diversity and help crops stay greener longer, promoting overall plant resilience throughout the growing season. It has no tank-mixing restrictions, making it easy to incorporate into any application program.



Regarding Brix levels, the trial data was inconclusive, likely due to the timing of the application and not enough replication. Additionally, variability in the refractometer may have affected the accuracy of the Brix measurements.

Yield Trends to Applications:

- Among the winter triticale varieties, all responded well to algae except for Gainer, which matures earlier and showed less response.
- Interestingly, the highest yields in the winter mixes came from the control plots with no sugar or algae applied.
- Spring barley appeared to respond better to algae, while spring triticale, spring peas, and spring mixes showed a stronger response to sugar.

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