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ND GENESIS

ND Genesis

ND Genesis was developed by North Dakota State University and offers farmers in the Midwest a variety that is moderately susceptible to Fusarium head blight (scab), pre-harvest sprout, and leaf diseases. This variety also provides excellent plumpness across many environments and lower protein under drought and heat stress conditions when compared to other 2 row varieties. This protocol is for rainfed ND Genesis.

The following agronomic, yield and quality, pathology and botanical information on ND Genesis is based on the best available data (ABI Global Barley Research, SmartBarley, US Wheat and Barley Scab Initiative, North Dakota State University, and the Fusarium Head Blight Prediction Center). However, it is up to each farmer to interpret the validity of the contained information and assess how it relates to their own barley growing operations.

Drought Sensitivity: ND Genesis has approximately a 3% yield advantage over AAC Synergy in water stress trials, while greater plumpness makes it better at maintaining malting quality under water stress. ND Genesis maintains lower protein than AAC Synergy in water stress trials [1].

Maturity: ND Genesis has a medium length maturity similar to AAC Synergy, but later than Tradition or Lacey. It typically heads approximately 65 days after sowing [2].

Lodging and Straw Length: ND Genesis lodges 10% more than AAC Synergy, and in general is more susceptible to lodging than Tradition or Lacey. ND Genesis is tall, with an average height of around 28.5 inches. It is approximately an inch taller than AAC Synergy [1]. Plant growth regulators containing the active ingredient Trinexapac-ethyl significantly reduced lodging [1].

Nitrogen Rate – Yield, Protein, Lodging and Moisture:

This Nitrogen recommendation may vary region to region with soil type, temperature, and rainfall. Please use this information as best fits your region. We advise to consult your agronomist if you have any further questions.

Yield: ND Genesis optimized yields between 114-144 lbs/ac total N (Soil test Nitrogen + Rotational Crop credit + applied). ND Genesis demonstrated that over application of nitrogen did not add substantially to yields for a grower. For example, the gain in yield between 80 and 120 lbs/ac nitrogen applied was 5.2 bu/ac. This indicates that the additional 40 lbs/ac n applied will not likely result in substantial ROI for growers [1].

Protein: ND Genesis is 0.6% lower protein than AAC Synergy and is in general a lower protein variety compared to other varieties in the Midwest. For every 10 lbs of nitrogen applied, ND Genesis increased its protein by 0.06%. Based on 2 years of data, our recommended nitrogen rate for yield optimization (129 lbs/ac n) would deliver a protein percentage of 12% [1].

Lodging: Lodging scores increased by 56% when total nitrogen rates range of 141-169 lbs/ac when compared to lower total nitrogen rates. Applying nitrogen within this range drastically increases a farmer's risk to lodging with ND Genesis [1].

Moisture: ND Genesis had 1.25% higher moisture than AAC Synergy, which can force late harvest times. Higher nitrogen rates were associated with higher moistures, so preventing over-application of nitrogen with ND Genesis is critical to controlling moisture levels [1].

Seeding Rate – Yield, Lodging, and Maturity:

Yield: The recommended seeding rate for yield with ND Genesis is 1 million seeds/ac [1]. Higher seeding rates beyond 1 million seeds/ac did not add more yield, and therefore no ROI to growers [1].

Lodging: While lodging increased with higher seeding rates in general, lodging had ~20% more variability at seeding rates greater than 1 million seeds/ac. This indicates that lodging is more unpredictable at higher seeding rates [1].

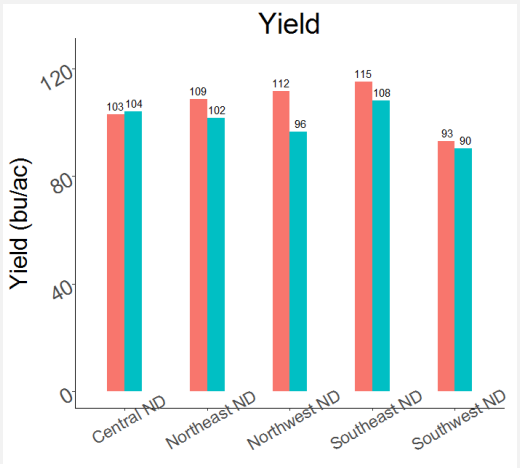
Maturity: Higher seeding rates reduced maturity times. However, the benefits of shorter maturity time were not significantly different between 1 and 1.3 million seeds/ac, indicating that benefits from shorter maturity do not require the highest seeding rates and can be achieved at 1 million seeds/ac [1].

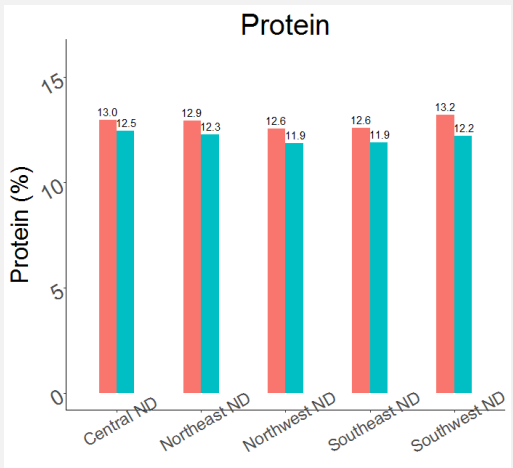
Fusarium Head Blight Management (FHB) – Timing of Application: When applying a single fungicide application to control FHB, the optimal time is at early full head emergence around Feekes 10.5 of the main stem. [3] When possible, apply a fungicide after the first tillers have emerged from the boot so that both the main stem and early tillers receive fungicide coverage [2].

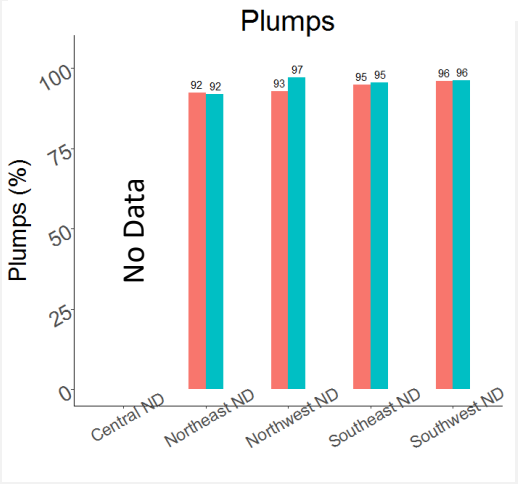
FHB Management – Crop Rotation and Residue Management: Planting barley into fields that were previously growing broadleaf crops significantly reduces DON levels compared to corn or small grains. Implement residue management as necessary to decrease risk for FHB [3].

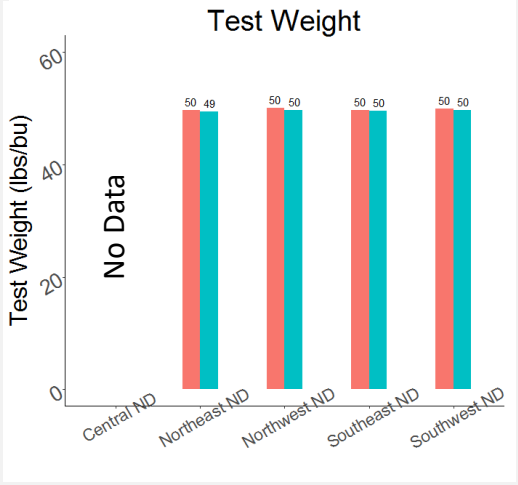
FHB Management – Integrated Management: No single method to control FHB is 100% effective. To have the best chance to reduce high DON levels, an integrated approach is recommended. This includes three major decisions: 1) choosing a moderately resistant variety, 2) using appropriate crop rotation and tillage type, 3) applying the Triazole family of fungicides at correct times [3].

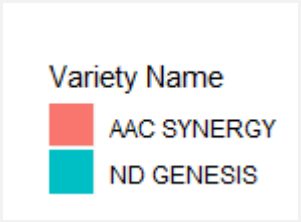
ND Genesis











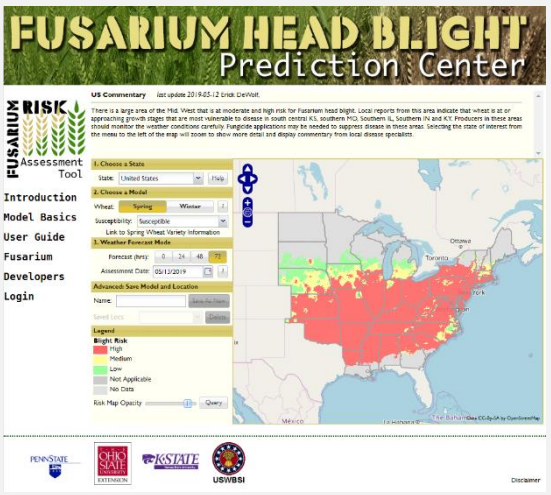
Disease	Resistance Rating
Spot blotch	
Net blotch net form	
Net blotch spot form	
Fusarium head blight	
Pre harvest sprout	
Bacterial Blight	

Moderately Susceptible — Resistant

Susceptible — Moderately resistant

Resources Available to American Farmers:

Since 1990, FHB has cost American farmers more than $3 billion. In response, the US Government, Universities and private industry have invested heavily in preventing FHB. The following internet links provide you access to important management tools and information. 1) Information regarding best management practices, chemical control options, and variety resistance ratings can be found at (https://scabsmart.org/); 2) FHB risk forecasting tools can be found at: (http://www.wheatscab.psu.edu/). You can receive text alerts that can alert growers to weather conditions which are conducive to FHB infection, allowing sufficient time to provide proactive chemical applications at: (https://scabusa.org/fhb_alerts).



Above: Example of free map you can get daily from the Fusarium Head Blight Prediction Center (http://www.wheatscab.psu.edu/). Predictions of risk from FHB in your region can be generated up to 72 hours in advance using weather models [4].

Updated February 2021

Data sources: [1] ABInBev Research and SmartBarley Data; [2] North Dakota State University. 2019. Barley Production. https://www.ag.ndsu.edu/crops/barley; [3] US Wheat and Scab Initiative. 2019. https://scabsmart.org/; [4] Fusarium Head Blight Prediction Center. 2019. http://www.wheatscab.psu.edu/

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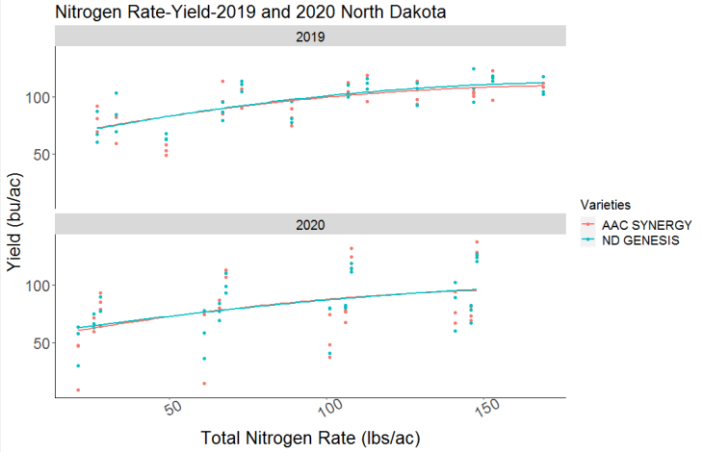
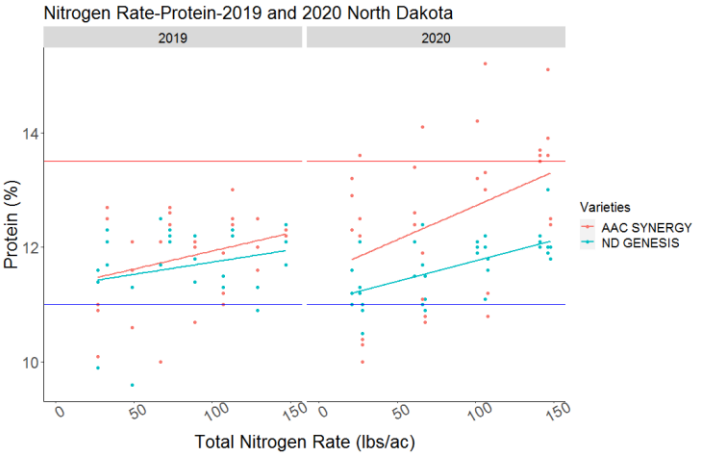
These graphs represent the balance between yield, protein, and lodging. Farmers must take all of these into account when considering nitrogen application rates. While there was limited risk from too high of protein in our data for ND Genesis across higher N rates, the risk from lodging increased drastically. Additionally, the diminishing returns from nitrogen to yield should be considered in the economics of farm operations. Most importantly, this information indicates the importance of soil tests prior to planting to optimize fertility on a farm. The difference between good yield-good quality and good yield-bad quality is only 30 lbs/ac of nitrogen.



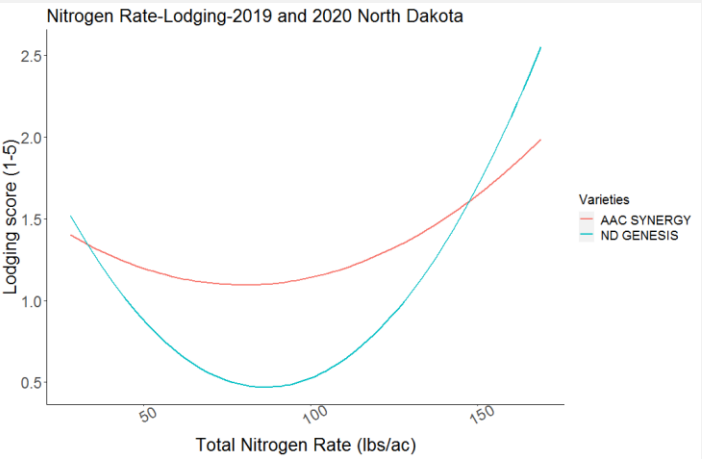
Nitrogen Rate - Yield

Yield response to total N (applied + soil test + Rotational crop credit). When total nitrogen rates are above 129 lbs/ac, there was a diminishing return to yield while also increasing risk of lodging. There is limited ROI for growers past 129 lbs/ac total N but increased risk of reduced yield due to lodging.



Nitrogen Rate - Protein

Protein response to total N. Top horizonal red line indicates maximum accepted protein levels (13.5%), and blue horizonal line indicate minimum protein specification at malthouses. ND Genesis inherently has lower protein across total N ranges than many other varieties, including AAC Synergy. While this means it is unlikely to go over protein specification due to N application, the risk from lodging is drastically greater in the past 141 lbs/ac total N.



Nitrogen Rate - Lodging

Lodging score's relationship to total N.
Lodging increased by 56% when total nitrogen rates were between 141-169 lbs/ac when compared to lower total nitrogen rates.

Updated February 2021

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