

February 20, 2019 Advisory Board Meeting
NDSU-Hettinger Research Extension Center
Agronomy Update – John Rickertsen
2018 Research Projects

Variety/Hybrid Performance Trials:

Twenty two yield trials were conducted on the following crops. (average yield)

<i>Winter Wheat (30 bu)</i>	<i>Field Pea (17 bu)</i>	<i>Canola (550 lb)</i>	<i>Safflower (1561)</i>
<i>Spring Wheat (49 bu)</i>	<i>Chickpea (1507 lb)</i>	<i>Carinata (200 lb)</i>	<i>Sunflower (2931 lb)</i>
<i>Durum Wheat (37 bu)</i>	<i>Lentil (1306 lb)</i>	<i>Flax (23 bu)</i>	<i>Corn (110 bu)</i>
<i>Barley (83 bu)</i>	<i>Dry Beans (1288 lb)</i>		
<i>Oats (97 bu)</i>	<i>Soybean (30 bu)</i>		

2018 NDSU releases: “ND Hammond” brown seeded flax, “ND18008GT” glyphosate tolerant (RR1) soybean, “ND Eagle” small green lentil. I am currently serving on the NDSU Variety Release Committee as the western REC representative.

Off Station Yield Trials:

Trials were located at Scranton, Regent and Mandan with HRSW, Durum and Barley variety trials. These trials are located with farmer cooperators and with the USDA-ARS Northern Great Plains Lab at Mandan. Crops tested were spring wheat, durum wheat and barley.

Plant Breeding Nurseries:

Nurseries were planted for the following breeding programs.

<u>Program</u>	<u># of nurseries</u>
NDSU Spring Wheat	5
NDSU Field Pea	2
NDSU Lentil	1
NDSU Canola	1
NDSU RR1 Soybean	1
Syngenta Spring Wheat	1
Regional Spring Wheat	1
Regional Barley	1

Soybean Row Spacing and Population:

A study was initiated at Hettinger, ND in 2018 with nine seeding rates, 20,000 to 180,000 in 20,000 increments in both drilled (7”) and row (30”) configuration. The results showed that seeding rates of 100,000 – 180,000 were not significantly different in yield and even the extremely low rate of 20,000 yielded 70% of the 100,000 - 180,000 seeding rates. For seed protein and oil content, as seeding rate increased, oil content decreased and protein increased. At the very lowest population, seed size increased and test weight decreased, but there was no significant difference in the 40,000 to 180,000 rates for seed size or test weight. Plant height was not significantly different among any of the treatments. Row spacing showed no effect on yield, test weight or height, but 7” rows had slightly smaller seed size and slightly lower oil content than 30” rows.

Nitrogen Relationships of Soybean in Southwest North Dakota:

In cooperation with Dickinson REC, a study comparing inoculation and nitrogen application on soybeans. Two cultivars were be planted at two populations of 80,000 and 160,000 plants per acre. Four N management strategies used were a control of no inoculant and no N added, no inoculant and 30 lbs of N added through urea, inoculant with no N added, and inoculant with 30 lbs of N added through urea. There were no yield differences among all the treatments, but there was significant differences in nodulation between the inoculant and no inoculant treatments. Funded by ND Soybean Council, applied for funding in 2019.

Management of Fusarium Root Rot of Field Peas and Wheat with Crop Rotation:

This project seeks to evaluate crop rotation strategies as a tool for managing existing problems with Fusarium root rot of peas and for preventing the buildup of Fusarium root rot of peas where the disease is not yet a problem. Findings from the fifth year of this project, demonstrate that the cropping intensity of field peas impacts root rot severity and field pea agronomic performance. At Carrington in a field with a long history of field pea production and documented problems with root rot, rotating out of peas for three years reduced root rot severity by 18 to 27% (incidence 83 to 97%) and increased field pea yield by 9 to 10 bu/ac relative to growing peas every second year. At Hettinger in a field where peas were grown for the first time in 2014 as a part of this study and no previous history of field pea root rot, root rot incidence remained low across all treatments averaging 7 to 10% in 2018 but root rot severity and field pea yield appeared to be influenced by the intensity of broadleaf crop production. Differences in Hettinger were not statistically significant but were observed independently across root rot and yield metrics, increasing the likelihood that they were caused by the crop rotation.

Rotation sequences. **Crops for 2018** **Crops for 2019**

- (1) field pea / spring wheat
- (2) field pea / spring wheat / spring wheat
- (3) field pea / spring wheat / spring wheat / spring wheat
- (4) field pea / spring wheat / flax / spring wheat
- (5) field pea / spring wheat / canola / spring wheat
- (6) field pea / spring wheat / barley / canola / spring wheat / corn

Effect of Planting Date & Maturity on Disease (FHB) of Durum:

Study with plant pathologist at Williston REC looking at four durum varieties at three planting dates (4/27, 5/16, 5/25) for visual fusarium head blight ratings and DON levels in grain. Because of dry conditions, fusarium was not present in 2018. The middle (May 16) date had the highest yields. Funded by SBARE, will continue in 2019.

Other Agronomy Studies:

HRSW seed treatment, barley cover crop/intercrop, carinata seeding rate, carinata planting date.

New Research for 2019:

Hybrid spring wheat seeding rate, funded by Syngenta.

White wheat breeding nurseries for NDSU spring wheat program, five year grant from Ardent Mills.

Presentations and Outreach:

- County Crop Improvement meetings at Reeder, Regent and Taylor. February 2018.
- Western Crop & Pest School, Williston. March 2018.
- Hettinger REC Crop Tour. July 2018.
- Dewey County, SD Crop Tour. July 2018.
- Variety plot tours at Scranton & Regent. July 2018.
- Friends & Neighbors Day, USDA-ARS Mandan. July 2018.
- Hettinger & Dickinson Cover Crop Tours. October 2018.
- Western Dakota Crops Day. December 2018.

Hettinger REC summer crop tour will be on July 9, 2019