

**PROGRESS REPORT
TO
NORTH CAROLINA SMALL GRAIN GROWERS ASSOCIATION, INC.**

TITLE: NCSU Small Grains Extension & Outreach Program

LEADER(S): Angela Post

DEPARTMENT(S): Crop and Soil Sciences

REPORT:

Objectives were to:

1. Continue to develop a comprehensive set of extension and teaching materials for small grain producers, ag agents, consultants, and industry representatives.
2. Outreach and education through the Small Grains Short Course and additional training events for agents and producers.

Agent training

Advanced and Basic Trainings are typically offered near the time of topdressing. Unfortunately, for this season those events were not held due to restrictions surrounding COVID-19. We developed a plan to continue to serve agents through individualized training and virtual materials where possible.

This year, the small grains program participated again in the Statewide Agronomic Program Team for Grains. This is a collaborative effort between corn, wheat, and soybean extension specialists to educate field crops extension agents in North Carolina. We hold a monthly Zoom session with field crops agents attracting 30 to 35 agents every month. We ask agents to submit problems from the field, pictures, and other concerns for us to address as a group each month. The sessions are recorded for agents to go back to if they want to revisit the learning opportunities. These sessions have led to several on-farm site visits to assess grower issues and make recommendations.

December 4, we held the first ever Winter crops meeting and invited Dr. Sean Connely, Small Grain and Soybean Specialist at University of Michigan, to speak to producers about how to evaluate multiple years of variety trial data in conjunction with local weather data. This program gave us a lot to think about for both specialists and agents alike.

In May, we held an ALL grains zoom training about how to assess freeze injury in corn, wheat and soybean, which attracted 62 participants statewide. This was a hot topic following two very late freeze events that impacted all three grain crops around the state.

Current publications have been posted on the small grains website, distributed to agents at the small grains short courses, and distributed to growers at the NE Ag EXPO field day. As data is processed for 2020 additional factsheets and materials will be posted to the portal.

During 2019-20, we completed individual agent training for 18 agents during whistle stop tours at 9 locations and on-site training during farm visits.

We were able to supply two additional counties with GreenSeekers this season, Rowan and Orange. Currituck County also requested one, which we will provide. However, the devices are currently backordered. In 2018-19, we trained agents across the state on how to use the GreenSeeker and provided kits which included GreenSeeker to 9 regional agent groups. The Large Scale Examination of Variety Specific Responses to Nitrogen project, which was funded

by NCSGGA, sought to develop a new and better algorithm for use the winter wheat with the GreenSeeker, and agents are starting to assist growers in utilizing nitrogen rich strips in their fields.

Agent training events are normally scheduled for March. Again, COVID-19 caused us to cancel many events that would normally be opportunities for training. In order to most effectively use the projected budget we adjusted to create items that would be useful in the long-term for educating and assisting agents with extension. Three main items are included in this:

- 1) Printing a limited quantity of Small Grains Production Guides \$4,000
- 2) Wheat Variety Selection Tool Databasing Structure \$4,000
- 3) Small Grains Extension Video Kit \$1,800

Small Grains Production Guide:

The Small Grains Production Guide is in revision to be released electronically by October 1, to coincide with the end of the 2019-20 funding cycle. Printed guides will be available later in the fall, though the web-version will be printable if necessary. Many portions of the guide will have paired-video content and we are excited about the release.

Yield Contest Form Update:

In 2020, the updated electronic Wheat Yield Contest form was used exclusively for the first time and all yield contest entries were accepted electronically. This eliminates the need to transcribe entries into an electronic format, minimizing transfer mistakes. For the 2020 harvest season, we received 58 contest entries. The new form also captures two additional pieces of information from growers: whether they use a plant growth regulator in season, and what actual pesticides are being used. This additional data does not affect their ability to place in the contest but does provide valuable information back to our program to share with producers around the state. In August, we will release a yield contest production practices factsheet for 2019-2020.

Virtual Events:

Our virtual events are available on The Small Grains Extension YouTube Channel. You can also find them in the Crop and Soil Sciences Library of Virtual events: <https://cals.ncsu.edu/crop-and-soil-sciences/virtual-events/>

The Small Grains extension team held 10 virtual events in 2020 and released 18 virtual site visits to trials and demonstrations around the state of North Carolina. We also worked in conjunction with Jenny Carleo in releasing several of her separately funded “Hot Topic Video Series” for Small Grains. We are also working on Dr. Heiniger’s Kernel Weight test video as well as other virtual training items such as freeze scouting, small grains quality and malting barley quality.

Variety Selection Tool Update:

The Wheat Variety Selection tool is now live for producers and agents to use. It has five years of Official Variety Testing data, disease and insect resistance data, and images for many of the varieties. It is being continually updated. In Figure 1, we demonstrate a variety comparison from the tool looking at 3 top yielding statewide varieties from 2020. We will test-drive the tool at this year’s Research and Education meeting.

ALL TRIAL GROUPS			
2019	3 trial blocks selected		
Select Data Field	USG 3118	Hilliard	9811
Data Fields			
% Lodging	3.0%	23.8%	13.8%
% of Hilliard	116.7%	100.0%	98.5%
% of P26R41	114.5%	99.1%	97.2%
% Protein	11.2%	11.0%	11.0%
1 Year Yield Rank	1	34	32
2 Year Yield Rank	1	12	5
3 Year Yield Rank		7	
Early Split Nitrogen	29.0	29.0	29.0
FN	409	396	321
GDUs to 50% Head	2,300	2,310	2,310
Head Scab			
2019 > Commercial > Lenoir	MS	MS	S
2019 > Commercial > Rowan	MS	MS	S
2019 > Commercial > Union	MS	MS	S
Head Type			
Height	31.8	34.9	33.0

Figure 1. Example wheat variety selection tool comparison of USG 3118, VaTech Hilliard, and DynaGro 9811.

Wheat Jointing Model Update

Without funding for this project last year, we had to limit the amount of time spent to collect information but still wanted to get a head start on the project. Ten varieties across a range of maturities were selected for evaluation of jointing at one OVT location. The initial study allowed us to troubleshoot the data collection process and collect a starting dataset for a graduate student to begin modeling jointing timing in Soft Red Winter Wheat in North Carolina.

Plant Growth Regulator Testing

We have continued to receive questions about plant growth regulator use in wheat every year near topdressing time. This season we developed a comprehensive testing strategy to look at early and on-time and late applications of Palisade in four differently-maturing varieties of wheat to evaluate differences in response. Our graduate student, Taylor Purucker, executed this work at three locations in North Carolina, and data are still being analyzed.

Grain Quality Analysis Laboratory

Forty-seven (47) samples have been tested for farmers in North Carolina through the Grain Quality Analysis Lab. I am currently working on a quality report summary for these for the 2020 season. An example Analysis Report is included at the conclusion of this Progress Report (Figs. 2 and 2a).

We are again processing approximately 1,400 samples through the laboratory from the official variety testing program and also from the small grains extension program. Over the two seasons we have had the equipment in place, this has saved \$33,800 and generated \$7,760 in third party testing capacity. Also, by processing these in house, we are able to quality control our data more closely as well as control the speed at which data become available for use. Previously, if milling quality information was reported for the NCOVT, it was reported one year after release of yield data for the same samples. In 2019, we released falling number data from two locations: Lenoir and Union Counties. For 2020, the data will be released very soon for Union and Perquimans counties. In addition to the data already released through the NC OVT, we will now include protein and falling number for the harvest year. Ideally, the additional data will be available by the first week of August each year.

Stakeholder Outreach

Several small grain field activities throughout the year are supported through dollars that move directly from the NCSGGA to the counties (Field Days and Whistle Stops). However, travel to these locations by the specialists and associated field staff are budgeted in this grant. Funding through this outreach and extension grant allowed us to support travel to all 9 small grain whistle stop tours as well as 8 winter Grain Production meetings between January and March 2020. We also completed over 30 Individual Farm Visits during the season. Thank you for your continued support of these activities that are so valuable to the stakeholders of our great state.

BUDGET / EXPENDITURE UPDATE:

	Starting	Expense	Description
Funds Awarded	\$25,000		
<u>Expense Category</u>			
Current Services		\$2,503	Meals for events, Extension materials data management, and postage
Supplies and Materials		\$3,984	presentation materials for training in the classroom and field
Domestic Travel		\$1,442	Rooms for Basic and Advanced short courses
Personnel		–	Hourly Wage and Fringe Benefits
Fixed Charges		\$4,000	Subscriptions, software renewal
Total Spent to Date		\$11,929	
Additional Expected to be spent	\$13,071		Travel, summer publications, additional in-service if needed

The remaining balance is expected to be spent by the end of the funding cycle to support extension and outreach activities as we approach fall planting time. Several Small Grain Production meetings are already scheduled for August and early September. Travel to the

county locations will be supported under this grant. The grant will also support summer publication of factsheets and articles from data collected throughout the 2019-20 season. Since many of our traditional in-person training events could not occur due to COVID 19, we used funds that would have been for travel and meals at these events to execute additional items needed for successful extension programming. Also, some hourly wage labor will be utilized for processing grain samples through the GQA laboratory.

Monday, June 8, 2020

NC STATE EXTENSION **Grain Quality Analysis Sample**

Sample Identification Number 420971

County Extension Agent Laura Elmore

Agent Email laelmore@ncsu.edu

Agent Phone Number (704) 878-3155

Grower's Name

Grower Phone Number

Grower E-mail

Farm Address Huntersville , NC , 28078
United States

Crop Wheat

Variety Name CP8550

Average yield for the sample field 70

Is DON analysis requested?

Fig. 2 An example of a Grain Quality Analysis Sample report (page 1)

NC STATE EXTENSION **GQAL Sample Results**

Sample Identification Number 420971



Sample Notes

Sample contains many shriveled and undersized grains. There is also weed seed present in the sample, likely hairy vetch (*Vicia villosa*).

Sample Arrived On-Site	06/12/2020
Sample Ground	06/12/2020
Sample Processed	06/12/2020
Test Weight (lb/bu)	59.1
Moisture (%)	14.0
Protein (%)	8.8
Falling Number (seconds)	385
DON (if requested)	NR

A word from the Lab: We report a Pressure Corrected Falling Number (FN) using the barometric pressure reading at the time the sample is processed. The pressure corrected FN is for an "as-is" moisture basis. Methods for this analysis are outlined in Federal Grain Inspection Service Directive 9180.38

We reserve the right to use submitted samples internally for checking calibration accuracy and for method development.

Fig. 2a An example of a Grain Quality Analysis Sample report (page 2)