

as many years as warranted to understand when and in what environments, a supplemental application of nitrogen can produce positive economic results.



There is one new component to this procedure for 2017. We plan to add a nitrogen rich strip to as many of the locations as we can and have a drone with the appropriate sensor(s) fly the field to help the participant determine whether they will get a return on their fertilizer investment.

The use of drones could make

the decision of adding nitrogen to a wheat crop a much easier one, once the research gives growers a clearer understanding of how this is accomplished.

Data that the coordinator will collect:

- Stand counts at the one to two leaf stage
- Rain data at the site
- Growth stage of the topdress application
  - The ideal timing is the boot stage with the head near the top of the plant but not out. Once there is a rain event in the forecast and your crop is jointing (you can feel nodes along the main stem) then you can stream on the fertilizer.
- Yield and grain quality data

To minimize burning on the leaves from the fertilizer we require everyone to use streaming nozzles. Last year, we were fortunate to get nozzles and nozzle bodies donated from TeeJet. Applying the nitrogen in the evening when conditions are cooler and when the wind is weak will also help to minimize leaf burn. Minimal nitrogen can be taken in through the leaves so timing the application close to a rain event gives a chance for the fertilizer to be moved into the soil and taken up by the roots. We also were fortunate to get a urease inhibitor donated so

that everyone can protect the urea portion of the 28% for about 12 days. The participant needs to make sure that the sprayer tank is clean and calibrated. The rate for the 28% UAN is 10 gallons per acre. The urease inhibitor rate may change with the brand being used. In 2016, the rate of the product we used was 1.5 quarts per 2000 pounds of 28% UAN.

## 2.) Seeding Rate Study

When a grower is trying a new variety on their farm, they have to trust whatever information they can find about how to manage the variety. The wheat breeders have told us they often get questions from growers on optimum seeding rate for various varieties. This is why we are focusing on seeding rate, both for recently released varieties and whichever ones are most popular in Northwest Minnesota at that time.

This will be the second year for this trial. The grower participants need to know the number of seeds per pound for the lot of seed they plan to use for the trial because it requires three seeding rates of 1, 1.5 and 2 million live seeds per acre. They need to be planted in wide enough strips in the field to fit the combine header down comfortably and for at least three replications. It is not required to randomize the rates but if the field has any topography, randomizing is important to try to control some variability.

Data that the plot coordinator will collect:

- Stand counts at the one to two leaf stage at least three times in each of the plots
- Head or spike counts
- Lodging, overall and the degree, taken just prior to harvest
  - Each treatment will be given a score between 1 and 9, 9 being completely flat.
- Yield and grain quality data

