

For Release: May 13, 2020
LoAyne Voigt, Renville County Agent

County Agent Update

OPTIMUM SEEDING RATES OF SPRING WHEAT

Optimum seeding rates are always so hard to determine. In the following articles Joel Ransom, NDSU Extension Agronomist does an excellent job of addressing concerns regarding seeding rates for both spring wheat and corn.

I occasionally get questions about the optimum seeding rate of new wheat varieties. After several years of research on the potential interaction between varieties, seeding rates and environments, the answer is, unfortunately, it depends. The optimum seeding rate can vary somewhat from variety to variety but also from environment to environment. I have developed the following guidelines, based on the results of this recent research that I use when formulating seeding rate recommendations:

1. First, it is important to use seed numbers per acre not bushels per acre for the basis of a seeding rate. Seed weight varies considerably between seed lots. If you seed by weight without taking into consideration seed weight, you may be under-seeding or over-seeding without knowing it. Information on the number of seeds per pound can be found on seed tags or can be calculated by counting a thousand seeds, weighing them on a kitchen balance and doing some simple math.
2. Start with a base seeding rate of 1.5 million seeds per acre, which was the average economic optimum rate over environments and varieties.
3. For environments where yield will likely be less than 50 bu per acre, reduce the seeding rate by 100,000 seeds (i.e. 1.4 million seeds).
4. For varieties that are rated 5 or higher for straw strength, reduce the seeding rate by 200,000 seeds per acre.
5. For higher yielding environments (> 50 bu per acre) and when using a variety with good straw strength that produces few tillers, increase the base rate by 100,000 per acre. These seeding rate recommendations are for the number of live seeds so you will need to adjust for the germination of the seed lot. In our research plots we observed that on average about 15% of the seeds did not establish seedlings. Accordingly, there is no need to adjust seeding rates upward to accommodate seedling mortality, unless for some reason you feel mortality rates will be higher than the 15% mentioned above.

OPTIMUM SEEDING DATES AND PLANTING RECOMMENDATIONS FOR CORN

There was no report of corn planting in the most recent USDA-NASS report. The five-year average for this period is about 7%. The optimum period for planting in corn is during the first two weeks of May. This is narrow window given the likelihood of rain or cold or wet soils precluding planting during some of those days. Over the last 10 year, typically only about 50% of the corn acres are planted by the May 15th; last year we reached the 50% mark on May 23rd. After May 20th, we recommend a switch from a full season hybrid to an earlier maturing hybrid. Last year illustrated the risks of staying with a full season hybrid when planting is delayed, as many late-planted full season hybrids

did not reach maturity before the end of the season resulting in low test weights and very wet corn.

Because corn is a warm season crop, it does not grow when temperatures are below 50 degrees. It is not uncommon for soil temperatures to be below 50 degree in early May. Though we accumulate very few corn growing degree days in early May, most seasons planting in early May will result in better yields and an earlier maturing crop than waiting for a period of sustained warmer soil temperatures. The relationship between planting date and final yield for the state is not very strong.

One risk of planting in early May is that of imbibitional chilling injury to the seed. This injury can cause reduced stands and variable emergence timing. It most often occurs when the seed imbibes water that is less than 50 degrees shortly after planting. Seeds that are planted into cold soils that do not warm up above 50 degrees during the first 24 to 36 hours after planting, or if planted into soils receives a cold rain or snow shortly after planting.

Planting date is not the only determinant of yield and in fact only explains little of the yield in the above graph. This means that regardless of planting date management and weather after planting will determine ultimate yield. Establishing a uniform stand is a critical practice in developing a foundation for high yield. In addition to soil moisture and temperature, planting speed, and crop residues have been shown to impact corn emergence. Crop residues influence soil temperature (and uniformity of emergence), so make sure trash managers are working and properly adjusted. Seeding depth can also play a role in emergence variability. Seeding at 1.5 to 2 inches is generally recommended, but if the soil surface dries out, don't be afraid to plant deeper if it places the seed in uniform moisture.

Currently (May 6, 2020) the soil temperatures at the Mohall NDAWN station are 47 degrees in black dirt and 48 degrees under sod.