K-STATE Research and Extension | Wildcat District

FOR IMMEDIATE RELEASE

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Corn Planting - Timing and Rates

FOR IMMEDIATE RELEASE: Corn planting is nearly upon us. However, this year has been much colder and wetter than usual and a delay to planting is expected. Last year, the year before, and on the five-year average, corn planting begins in the southeast the last week of March. However, last year the soil temperatures were a littler warmer and it was sure a whole lot drier. Regardless, corn planting should ideally follow soil temperatures more than calendar dates.

Importance of Temperature

The ideal soil temperature for corn germination is between 55 to 60 degrees. According to the K-State Extension corn production handbook, “Corn emergence at 50 to 55 degrees Fahrenheit may take 18 to 21 days, while at 60 to 65 degrees Fahrenheit, corn emerges in 8 to 10 days. Below 50 degrees Fahrenheit little, if any, germination can be expected.” Even if soil temperatures get to 55 degrees on one warm day, the temperature needs to stay near this level for the germination duration. Corn sitting in the soil for weeks is subject to diseases, insects and a good germination rate is directly correlated with yields in corn. According to the Parsons Mesonet station, last year we had some above 55-degree soil days in late March, but then an early April cold event dropped the temps well below that. This year it looks like we are getting close to good germination temperatures as well, if we don’t get the same cold front event.

The reason for pushing the planting dates so early is to get the full season corn through its tasseling and pollination stage before the summer dry heat. There is some research to show that this is an effective strategy, but there are some differences among varieties. Recently, there has also been some research to show that later planted corn, as late as mid-June, can have comparable yields, sometimes even better yields. This, however, was dependent on the season and how the heat stress and rainfall patterns occurred with later planted corn out preforming when the spring was colder and mid-summer had favorable temperatures and rainfall. Basically, the best corn yields are for those that can predict the future. Unable to predict the future, all I can tell you that NOAA is expecting this summer to be warmer and wetter than usual with an officially declared El Nino in effect.

Importance of Seeding Rate

As stated by K-State Research and Extension cropping specialist, Dr. Ignacio Ciampitti, “The optimal corn seeding rate for any situation will depend on the anticipated environment and how the hybrid responds to that environment.” Some of this environment can be expected, like soil type and fertility, while some of it is unknown, like rainfall. Ignacio explains that if 5% of corn is barren at the end of the season, then the planting rate was too high, while if there are more than 600 kernels per ear and the second ear is contributing to yield, then the planting rate was too low. The planting rates on the southeastern side of Kansas tend to be closer to 26,000 to 30,000 range, which does a reasonable job with lining up with the yield expectations (Figure 1). Figure 1 describes the actual population density, which means the planting rate multiplied by the germination rate. Variable rate applications and seeding rates have given rise to many fields being planted to a number of seeding rates depending on yield expectations on that specific soil quality. Still, a large part of the “yielding environment” depends on climate of that season. Much like the best planting timing, getting the perfect seeding rate means predicting the future. Sources for this article include Dr. Ciampitti’s eUpdate article, KSRE Corn Planting Guide, and the K-State Climate Office weather data library. If you have any questions over corn planting rates, timing, or fertility. Please contact your local K-State Research and Extension office.

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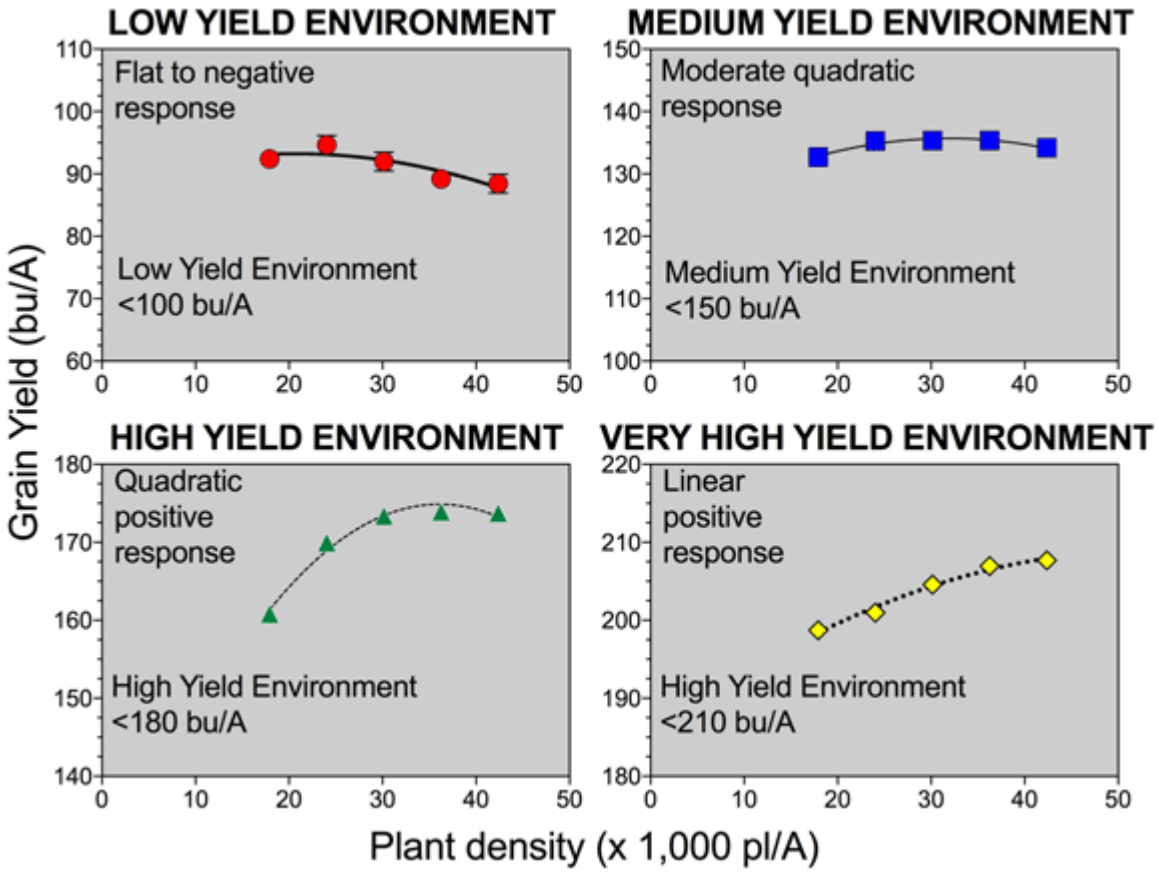

Figure 1. Corn grain yield response to plant density. (Assefa, Ciampitti et al., 2016, Crop Science Journal).

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