Most corn in area should be mature by normal frost date

Temperatures have been below normal for the past several weeks. Farmers are concerned these temperatures will delay the maturity of corn.

Some are concerned that they may get caught by an early frost or may have to harvest grain at a higher moisture level. Farmers would have to dry this wetter corn for proper storage, which is an additional production cost.

Dr. Peter Thomison, the Ohio State University Extension corn specialist, addressed these concerns in a recent agronomy newsletter. I have adapted this information for this week’s column.

According to the National Agricultural Statistics Service, as of Sept. 10, 69 percent of Ohio’s corn acreage was in the dent stage, compared with 76 percent for the five-year average. Sixteen percent of the corn acreage was mature, slightly less than the five-year average of 18 percent.

In some areas of the state, corn is considerably behind the five-year average because of late planting (the result of persistent rains that delayed planting or replanting) and cooler-than-normal temperatures in September. This later-than-normal maturation of the corn crop has led to questions concerning the potential for frost damage.

In Ohio, physiological maturity, when kernels achieve maximum dry weight and black layer forms, typically occurs about 65 days after the silks appear on the ears. At physiological maturity, grain moisture is approximately 30 to 35 percent, and frosts have little or no effect on the yield potential of the corn crop.

If corn has dent as of Sept. 9, it should be safe from a normal frost date. Dented is defined as when the top of the kernel has shrank in, as a result of the drying effect on the different starches found in the grain. The normal frost date, greater than 50 percent chance, is around Oct 10-15.

However, if your corn is in the “milk” stage as of Sept. 9, it’s a different story. Milk stage is defined as when the fluid in the kernel has a whitish color. Research has shown that at this time, milk stage corn would have a high probability of not maturing before the normal frost date.

The next development stage, “dough” corn, would have a 50-50 chance to mature depending on temperatures and the frost date. Corn is in the dough stage when the fluid material is not found in the kernel but the tissue is soft like cooking dough.

Even corn at milk and dough stages in early September can reach physiological maturity if the latter part of the month is warmer than normal and the frost date is one to two weeks later than normal. Fortunately, most of the corn in our area has reached the dent stage and should be mature by the normal frost date.

The recent cooler-than-normal temperatures may impact corn drying. Once corn achieves physiological maturity it will normally dry approximately three-fourths to 1 percent per day from mid-September.

Physiological maturity is when kernels have obtained maximum dry weight. Generally a black layer will form at the tip of the kernel at this time. A person may have to break the point at the tip to see the black layer. Farmers will often say their corn is at black layer, meaning it has matured and is safe from frost damage.

By early to mid-October, drying rates will usually drop to one-half to three-fourths percent per day. By late October to early November, field dry-down rates will usually drop to one-fourth to one-half percent per day and by mid-November, probably zero to one-quarter percent per day. By late November, drying rates will be negligible.

Farmers may estimate dry-down rates by using what is called Growing Degree Days (GDDs). To determine the GDD for a day, average the high and low temperatures and subtract 50. If the low temperature is below 50, use 50 for the low reading. Add the GDDs for each day for a specific time period for GDD accumulation.

Generally, it takes about 50 GDDs to lower grain moisture each point from 30 percent down to 25 percent. Drying from 25 to 20 percent requires about 45 GDDs per point of moisture. In October, we accumulate about five to 10 GDDs per day.

However, note that these estimates are based on generalizations, and it is likely that some hybrids may vary from this pattern of dry-down. Some seed companies indicate considerably lower GDDs for grain moisture loss, such as 15 to 20 GDDs to lower grain moisture each point from 20 percent down to 25 percent, and 20 to 30 GDDs per point from 25 percent to 20 percent.

Past Ohio research evaluating corn dry-down provides insight on the effects of weather conditions on grain drying. During a warm, dry fall, grain moisture loss per day ranged from 0.76 to 0.92 percent. During a cool, wet fall, grain moisture loss per day ranged from 0.32 to 0.35 percent.

Agronomists generally recommend that harvesting corn for dry grain storage should begin at about 24 to 25 percent grain moisture. Allowing corn to field dry below 20 percent risks yield losses from stalk lodging, ear drop, ear rot, insect feeding damage and wildlife damage.

Weather conditions the next two to three weeks will set the tone for the fall harvest. The good news is that temperatures are forecasted to be above normal the next two weeks, possibly nullifying the cool temperatures in early September.

Besides having temperatures for grain drying in the field, farmers would like dry conditions to harvest and move the grain from the field. Ideally, they would like most of October to be dry.

We will see if Mother Nature cooperates.

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