When will corn crop be ‘safe’?

It has been a difficult crop-growing season for area farmers. Extended wet weather prevented planting of many fields. Corn that was planted was much later than most years.

Because of the late planting, farmers are concerned that the corn may not mature before the first killing frost. To be “safe,” the corn needs to reach physiological maturity before a frost.

Physiological maturity is when kernels have obtained maximum dry weight. Generally, a black layer will form at the tip of the kernel at maturity. To see the black layer, an individual may have to break the point at the kernel tip. Farmers use the phrase, “their corn is at black layer” to indicate the field is mature and is safe from frost damage.

Kernel black layer typically occurs about 65 days after silking. Silking occurred when the silks first appeared out of the ear husks.

In most years, silking occurs the early part of July, but this year, it did not occur in many fields until mid-August. The kernel maturity by Sept. 10 is often a good indicator whether a crop will mature before frost.

If corn has dented as of Sept. 10, it should be safe from a normal frost date. The normal frost date is around Oct. 10-15. Denting is defined as when the top of the kernels has shrunk-in as a result of the drying effect on the different starches found in the grain.

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Once corn achieves physiological maturity it will normally dry at approximately 3/4 to 1% per day from mid-September to Oct. 1. Generally, corn grain is at 35% moisture at physiological maturity.

By early to mid-October, dry-down rates will usually drop to 1/2 to 3/4% per day. By late October to early November, field dry-down rates will usually drop to 1/4 to 1/2% per day, and by mid-November, probably 0 to 1/4% 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 temperature 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 30 GDDs to lower grain moisture each point from 30% down to 25%. Field drying from 25% to 20% requires about 45 GDDs per point of moisture. In October, we accumulate about 5 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 drydown.

Some seed companies indicate considerably lower GDDs for grain moisture loss, i.e. 15 to 20 GDDs to lower grain moisture each point from 30% down to 25% and 20 to 30 GDDs per point from 25% to 20%.

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

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

Weather conditions the next two to three weeks will set the tone for the fall harvest. Farmers would like above-average temperatures during this time to hasten maturity.

In addition, farmers would like to see a later frost date. Hopefully, Mother Nature will cooperate.

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