Corn Drydown Rates

Choosing the corn moisture content for harvest is often an economic decision that weighs excess harvest losses against the energy costs for drying corn. Other factors, such as stalk strength or the presence of ear rots, should also be considered when determining the target harvest date. Harvesting early may be a good practice since field losses can increase when harvest is delayed, as well as when the crop dries down after maturity. Since energy costs are currently lower than in past years, growers may find it even more advantageous to harvest corn early this season.

Corn Maturity and Drydown

When corn reaches physiological maturity or black layer, it is around 30% moisture. There are many factors that can affect how quickly corn dries down in the field after reaching maturity. Warm, dry weather can speed up the drying rate, whereas wet and cool weather can slow it down. Additionally, late-planted and full-season corn products tend to dry more slowly.

In general, it takes about 30 growing degree units (GDUs) per point of moisture to dry corn from black layer to 25% moisture content. After reaching maturity, typical drying rates may range from 0.4% to 0.8% loss of moisture content per day. Rates of drydown vary depending on temperature and moisture levels. Typically, the rate of moisture content loss continues to decrease as temperatures cool and days get shorter. Studies from Purdue University show this relationship, where 0.5% moisture content is lost in a day when the mean GDU accumulation is 12, and 0.75% moisture content is lost in a day when the mean GDU accumulation is 22 (Table 1).

Knowing the grain moisture content at maturity can help predict grain moisture at different potential harvest dates. A year with wet weather and delays in planting may result in slower field drying of corn. However, if enough growing degree units (GDUs) accumulate, the drying process may be hastened. Other factors may also come into play if harvest is delayed. For example, corn could have developed a shallow root system because of the early-season moisture. In addition, conditions may have been conducive for additional moisture from rainfall.

Delaying harvest until corn dries down to 17% to 19% moisture content can save on artificial drying costs. However, as corn dries down in the field there is greater potential for excess harvest losses from stalk lodging and ear drop. Most harvest losses are mechanical, caused by kernel shattering or corn never getting into the combine. Allowing corn to drydown in the field could lead to excess harvest losses, as much as 2 to 8% above the normal level with a timely and efficient harvest.

If stalk lodging or ear drop problems are observed, harvest timing will be more critical to maximize yield potential. Time should be taken to watch crop condition in the field in an effort to balance field drydown with harvest losses.

Table 1. Average rate of grain moisture content loss in relation to average daily heat accumulation

<table>
<thead>
<tr>
<th>Mean Daily GDU Accumulation during drydown</th>
<th>Grain Moisture (%) loss per day</th>
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</thead>
<tbody>
<tr>
<td>12</td>
<td>0.5</td>
</tr>
<tr>
<td>17</td>
<td>0.6</td>
</tr>
<tr>
<td>22</td>
<td>0.75</td>
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</tbody>
</table>

Data compiled from Purdue University Agronomy Research Center.


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