Managing Wet Soybeans in a Late Harvest

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Abstract
As of October 14, 2018, Iowa soybean harvest was only about 20\% complete, making it the latest soybean harvest on record. This was caused by the prolonged heavy rains in September and early October. As a result, field losses, abnormally high harvest moisture content and moldy/weathered soybeans are all issues this year.

Disciplines
Agricultural Science | Agriculture

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October 18, 2018

As of October 14, 2018, Iowa soybean harvest was only about 20% complete, making it the latest soybean harvest on record. This was caused by the prolonged heavy rains in September and early October. As a result, field losses, abnormally high harvest moisture content and moldy/weathered soybeans are all issues this year.

Mold in the Field

Soybeans that have molded in the field have essentially lost their shelf life. They should be dried, preferably with air or very low heat addition, then marketed as soon as possible. Oil rancidity has started and likely will continue. An initial examination by shelling pods may look worse than justified, however. Often soybeans that have been weathered or molded in the field will appear somewhat better (lower visual damage) after a period of aeration. Surface mold and moldy pods may be removed by the combine. At an elevator or processor, most forms of mold or discoloration will Grade as Total Damage, for which 2% is allowed in US No. 1 soybeans and 3% in US No. 2 soybeans. Processors will discount at rates based on their markets for soybean meal and oil. River terminals (export) will probably adhere to the Grade limits because exported soybean will always be Graded by USDA-FGIS personnel. Each market may have an upper limit for acceptance. Crop insurance carriers can explain the effect of quality discounts and field losses on settlements. Be sure to get samples for adjustment purposes at the field, before placing in storage. The always needs to be clear proof of loss in the field.

Some examples of mold and related field losses:
Storage and Handling

Refer to the maximum storage time table for corn and soybeans below to estimate storability based on temperature and grain moisture content. Example, if soybeans harvested at 15% moisture sit at 60°F for six weeks, approximately one-half of their storage life is used up. If they are then dried to 13% moisture and held at 50°F, they have a maximum of (1/2 x 16) 8 months of storability remaining before they are likely to drop by
one U.S. grade. Generally soybeans have storage properties of corn about 2% points wetter (15% moisture soybeans = 17% moisture corn in storage properties). The table values are reduced sharply if the soybeans have already molded in the field.

<table>
<thead>
<tr>
<th>Temperature °F</th>
<th>13%, 11%</th>
<th>14%, 12%</th>
<th>15%, 13%</th>
<th>16%, 14%</th>
<th>17%, 15%</th>
<th>18%, 16%</th>
<th>24% N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>150</td>
<td>61</td>
<td>29.0</td>
<td>15.0</td>
<td>9.4</td>
<td>6.1</td>
<td>1.3</td>
</tr>
<tr>
<td>50</td>
<td>84</td>
<td>34</td>
<td>16.9</td>
<td>8.9</td>
<td>5.3</td>
<td>3.4</td>
<td>0.5</td>
</tr>
<tr>
<td>60</td>
<td>47</td>
<td>19</td>
<td>9.2</td>
<td>5.0</td>
<td>3.0</td>
<td>1.9</td>
<td>0.3</td>
</tr>
<tr>
<td>70</td>
<td>26</td>
<td>11</td>
<td>5.2</td>
<td>2.8</td>
<td>1.7</td>
<td>1.1</td>
<td>0.2</td>
</tr>
<tr>
<td>80</td>
<td>15</td>
<td>6</td>
<td>2.9</td>
<td>1.6</td>
<td>0.9</td>
<td>0.9</td>
<td>0.06</td>
</tr>
</tbody>
</table>

*Based on 0.5% maximum dry matter loss—calculated on the basis of USDA research at Iowa State University. Corresponds to one grade number loss; 2-3% pts of Total Damaged seeds

We will be no better than average in 2018

Air drying is best if possible. In Iowa, an airflow of 1 cfm/bu will dry to about 18% moisture soybeans. Normal October air conditions in Iowa will dry beans to 12-13% moisture. Addition of heat will dry to much lower levels; soybeans are very sensitive to air humidity. Because harvest is late, there is a possibility that air drying will not be completed in the fall. If this happens, either market the grain or cool it below 30F, with the expectation of resuming drying in the early spring.

For bin dryers, very little heat is recommended. Stirring devices that control overdrying in corn may create splits and remove hulls. In continuous dryers, limit the grain temperature to 120F or less. Heat causes cracking and removal of hulls. Gas fired burners are well known for fire potential in soybean drying. Hulls ignite easily; the soybeans are 20% oil, which then are very difficult to extinguish.

The potential for in-field drying is diminishing daily. At the same time, field loss will increase from split pods and molded soybeans. Field loss will not be captured in production records. It may be best to harvest soybeans as soon as possible regardless of moisture, and even if bins previously identified for corn have to be used temporarily. Also, estimate the cost of drying the wet beans on the farm and then delivering compared to the current price and shrink deductions at the local market.
For additional information on soybean drying, please see publication PM1636, Soybean Drying and Storage.

**Moisture Measurement and Shrink**

Normally moisture testers and yield monitors are quite accurate in measuring soybean moisture. Moisture meter inspection data show that differences among tests are often less than 0.25% points. However, wet soybeans are not often tested. The meters at an elevator or processor are checked annually by the State of Iowa. The new USDA meter technology that is widely used in trade is as accurate in high moistures as in lower moistures 13% and below. Check and correct your yield monitor or hand-held meter reading against the buyer’s meter on at least three samples of wet beans.

Since yield monitor data is now reportable as a measure of production for crop insurance, it is very important to recalibrate the weight measurement every year according the manufacturer’s instructions. Production records are subject to audit; documented moisture and weight calibration would be part of any audit. This year’s corn and beans have different characteristics than last year; including calibration data from this year’s crop will be especially important to ensure accuracy.

Soybeans are normally sold on moisture standard of 13%. In a normal year, most soybeans would be delivered at lower moisture than 13%, so moisture level would not influence either the price or the listed bushels on scale tickets, warehouse receipts, settlement sheets or insurance production records. In 2018, the weight adjustment for grain with moisture content over 13% will be important.

The weight loss for the water in drying to 13% is 1.15% percent moisture, regardless of starting moisture other quality conditions. Typically in any grain drying and handling situation about 1% of dry matter is lost due to breakage, dust, spillage and other sources. For example, 16% soybeans would shrink by (3*1.15+1.0) = 4.5% if dried to 13% moisture and placed in storage. Any shrink deduction larger than that is a discount or discouragement to delivery of wet beans. However, if the weight itself is reduced more than actually experienced, records that rely on accurate statements of bushels would be affected, such as warehouse receipts, crop insurance APH calculations, and the tariff compensation payments. Iowa grain dealers are required to post their weight shrinkage scale, and to use the same scale for all grains (eg corn and soybeans).

If you anticipate delivering significant amounts of wet or damaged soybeans, check closely with your soybean merchandiser about the specifics of their dried weight calculations, and about their damage discounts, which may change quickly due to processor response. Most
farmers purchase multi-peril crop insurance on their soybeans annually. Three additional steps to take when soybean quality concerns emerge include:

1. Contact your crop insurance agent within 72 hours. The insured could be eligible for a quality adjustment as a part of insurance coverage. The minimum damage for loss is 8% for soybeans, 10% for corn. These are levels that would make the grain Sample Grade (not within the numbered Grades). An adjuster will likely be assigned and/or samples will need to be collected in-field, in the bin and prior to delivery to the market. The in-field samples are the most critical is establishing settlement amounts. Consider using an Official FGIS grading agency for determinations.

2. Keep good records at harvest. This includes yield monitor data (calibrated with documentation), scales on grain carts, or scale tickets. These records are deemed “soft records” by the Risk Management Agency. These same records can be used for the new Farm Service Agency (FSA) Market Facilitation Program (MFP) payment. Should a crop insurance loss occur, then “hard records” such as grain bin measurements, warehouse receipts, or settlement sheets would be required.

3. The revenue protection crop insurance that most Iowa farmers utilize provides a guaranteed price for an insured’s Actual Production History (APH) bushels. For 2018, the guarantee is the insured’s APH bushels times the level of coverage elected times the spring projected price of $10.16. Provide production evidence to your agent as soon as soybean harvest wraps up so potential indemnity claims can be determined. This same information can be provided to the FSA when applying for an MFP payment. You need not wait until corn harvest wraps up to file production evidence for soybeans.

This is a stressful harvest that could have several issues needing resolution. Use good communication skills when working with your ag service providers.

Summary

Conditions of the 2018 soybean crop are very unusual. Harvest went from potentially abnormally early to the latest on record in just over a month. In-field quality has decreased, harvest losses have increased, and high moisture beans present both a handling and marketing challenge. ICM News will provide updates as needed.

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Crops:
Corn  Soybean

Tags: soybean quality  mold damage  marketing  crop insurance

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