

**MEMO**

**RE: Flooded Soybeans Near Harvest**

TO: County ANR Agents

FROM: Chad Lee and Jim Herbek

DATE: September 27, 2006

Soybeans in several areas of Kentucky received excessive rain and were submerged either partially or completely for a while. In most cases, the soybeans had reached maximum seed weight and were drying down for harvest.

Determining yield losses from flooded, mature soybeans is extremely difficult and no accurate prediction will likely be made. We know that flooding is not a good thing for soybeans, we just can't say how bad it may be. Below are several things that could occur along with suggestions on management.

**Possible Scenarios from Flooding**

1. Sprouting in the pod. Soybean seeds that have dried below 50% moisture and imbibe water to rise back above 50% moisture can germinate. Aside from getting the water off of the field as quickly as possible, there is nothing a farmer can do to prevent the germination of seeds in a pod.
2. Shattering. Once these plant dry out again, shattering of the pods is a very good possibility. With the thought of shattering, most farmers will be tempted to harvest these soybeans as soon as the seeds have dried enough for harvest. Harvesting these soybeans early must be weighed against some of the other things that might occur in the field.
3. Saprophytic fungi. The moist, dead soybean plant material is a good host to saprophytic fungi. These could discolor some soybean seeds. They could cause clouds of black dust during harvest. Scout the fields to see if the fungus has gotten to the seeds. If the fungus is not on the seed, then you may want to harvest these as soon as possible to prevent any additional seed damage. If the seeds have been infected with a fungus, then deciding when to harvest becomes more difficult. Some of the other scenarios presented here may help in that decision. These soybeans should be kept separate from soybeans harvested from dry or clean fields.
4. Lodging of plants. This lodging most likely will occur from the rapid movement of water into or out of the field. These plants will likely be covered in mud and silt, so some seeds will be lost to the ground. The remainder will be difficult to harvest with a grain table. Lodged plants in contact with the soil or covered with mud, silt and debris will probably result in increased deterioration of the seed and poor seed quality. The farmer cannot prevent these soybeans from lodging. Harvesting will be very slow and harvest losses are very likely in this situation.
5. Silt and mud. Flooding brings water and soil. As the water recedes, the soil is left on the plant material. The silt can delay drying out of the plants and will create some very dusty soybeans at harvest. Moreover, it will cause extra wear and tear on the combine harvesters. If the soybeans are standing and the farmer can wait, it would ideal to harvest these soybeans last, so as to keep the combine relatively clean for fields of soybeans that were not flooded. .

6. Grain Quality. Monitor each field for grain quality prior to harvest. Flooded fields will most likely have reduced seed quality affecting marketability. Depending on the extent of damage, this may result in heavy dockage or unacceptability at elevators.

7. Soybeans not Mature. Late planted soybeans that had not reached physiological maturity (R7) and were flooded for more than 24 hours, will most likely not survive, resulting in pre-mature death of the plants. In these cases, you can expect reduced seed quality (green and off-color seed, shriveled and smaller seed). The extent of seed quality damage will be dependent on the plant reproductive stage when flooding occurred. Fields with considerable green foliage (R5 to early R6) would be of greatest concern for reduced seed quality. Monitor each field to determine if harvest is a feasible option.

### **Suggested Management**

1. Separation. Soybean seeds harvested from flooded fields should be kept separate from soybeans harvested in other fields. Seed quality may be reduced in flooded fields. Mixing soybeans from flooded fields with soybeans from dry fields could reduce the quality of the overall load of soybeans.

2. Harvest order. Above are some conflicting situations on when to harvest flooded soybeans. On the one hand, flooding will probably increase lodging and shattering. Both are reasons for harvesting the fields as soon as possible. On the other hand, dust and silt are reasons for harvesting these fields last. Fungi, depending in the severity could go in either category. Final harvested yield in flooded soybean fields is likely reduced; we are not sure by how much. Harvesting flooded soybeans could take longer, especially if plants have lodged, are muddy or dusty from silt and/or fungi. If multiple fields of soybeans are ready to harvest at the same time, consider harvesting the better, dry fields first. Harvest yield losses were not reduced in these fields and they can be harvested quicker than the flooded fields.

4. Heavily damaged fields. For soybean fields that received extensive flood damage and will likely result in considerable harvest yield losses or very poor seed quality, then pursuing crop insurance claims (if it is an option), may be the best choice.

3. Scout the fields. To determine the extent of flood damage and harvest order, these fields will need to be scouted. Deciding which fields to harvest first will depend on the situation for each farmer. County extension agents are available for help in making these decisions.

#### *Related Information:*

Penn State

Managing Flood Damaged Crops (corn silage, corn and soybeans)

(Greg Roth, et al. 2006)

[http://cornandsoybeans.psu.edu/flood\\_damaged\\_crops.cfm](http://cornandsoybeans.psu.edu/flood_damaged_crops.cfm)

and

Management of Pre-Harvest Flood Damaged Corn and Soybeans

(Tom Murphy, et al. 2005)

<http://crops.confex.com/crops/2005am/techprogram/P4612.HTM>

*The Capital-Journal* (Topeka, KS) article from Oct. 2005 that quotes a farmer (“I have a \$500 repair bill from the dirt” (for combine/bearings after harvesting flood-damaged soybeans).

[http://findarticles.com/p/articles/mi\\_qn4179/is\\_20051114/ai\\_n15855697](http://findarticles.com/p/articles/mi_qn4179/is_20051114/ai_n15855697)

Texas A&M AgNews (Dec. 10, 2002)

“Cold weather and flooding in some areas have caused Southeast Texas farmers to wrap up their soybean harvest, leaving soybeans in the field due to damaged pods and moisture content, said Dale Fritz of Bryan, district Extension director.”

<http://agnews.tamu.edu/dailynews/stories/CROP/Dec1002a.htm>

Ohio State

Flooding Injury to Soybeans – Anne Dorrance, 2006

<http://corn.osu.edu/index.php?setissueID=140>

from article by Matthew Sullivan, et al. in *Crop Science Society of America* (41:91-100, 2001)

<http://crop.scijournals.org/cgi/content/full/41/1/93>