

# Flood and storm damaged crops



**Cornell University**  
Cooperative Extension

*Dairy Management*  
Dave Balbian  
(518) 312-3592  
drb23@cornell.edu

*Field Crop Management*  
Kevin Ganoe  
(315) 866-7920  
khg2@cornell.edu

## *Dairy and Field Crops Team of Cornell Cooperative Extension*

**Anyone suffering crop damage due to recent floods should contact their crop insurance adjuster immediately if they have crop insurance and also contact their local FSA office to report loss before taking any measure to improve the situation. Make sure you have documented a loss appropriately before losing the evidence of the loss. Failure to document may mean the loss of the ability to make a claim in the future.**

### **Hay and Pasture**

All standing hay and pasture should be removed from the field if possible especially if you are trying to get any growth out of the remainder of the season. It should not be fed or used for bedding. This may be most easily accomplished by harvesting as large round bales. Blowing back on the field using a chopper is a possibility, one to be used reluctantly, if cut short and you feel fairly confident of a lack of debris. Running any of this silt covered material through machinery is likely to cause excessive wear. It would be a good idea to wash/sanitize machinery when done. Also there will be a great deal of dust when working with this material so the use of appropriate dust masks is encouraged.

Keep animals out of flooded pasture areas until at minimum they can be clipped and you have checked for debris. Best if animals are kept out until next spring. Pastures that have had excessive silting and may have had plant loss may need to be reseeded. Legume and grass plants will probably recover from modest amounts of deposited silt, 1-3 inches. Beyond that may mean the need to replant because the plants have been smothered.

### **Corn Silage**

Corn that was underwater and has silt on it may be better used for grain than for silage. This silt or soil may contain clostridium, listeria and coliform bacteria which may negatively affect silage fermentation or the animal health directly. From a forage quality standpoint it may be good to look at the ash (mineral content). The presence of silt will raise the ash content. The Dairy One feed composition library shows that corn silage ash content over the past five years has averaged 4.2% with a normal range between 3.1 and 5.4%. So if plants are higher than 6-7 % ash you are likely seeing soil contamination. Although everything is not known there is reason to believe that elevated ash content may itself be enough reason not to feed this corn; basically you are feeding dry matter that has no nutrient content. It is something you may want to try yourself, actually running a few plants through a chopper and sending a sample to a forage testing laboratory to check ash content. A word of caution: be sure to have minerals and ash content measured via wet chemistry analysis, regardless of the lab you use. The NIR equipment is not calibrated to measure minerals and ash content accurately when feeds are contaminated with silt and soil. You need to have accurate data to make good decisions on this; be sure to ask for wet chemistry analysis on minerals and ash for these critical measures!

If you are going to harvest flooded corn for silage, store it separately so it will not affect good feed. Also you may want to chop very high (leave a high stubble) to reduce the amount of contamination in the feed. This will also reduce the risk of running debris from floodwaters into your machine. Harvest at the proper moisture content. 35% D.M. is still a good target in most instances. Follow good harvest management practices; harvest quickly, pack well, and seal well. Propionic acid products may provide some additional forage stability under

these difficult conditions. Consider the use of a silage inoculant with a reputable lactic acid bacteria inoculant (guideline: the inoculant should provide at least 100,000 colony forming units, or cfu's, per gram of forage). Consider using an inoculant that contains *Lactobacillus buchneri* in addition to another *Lactobacillus* bacterium, especially if forage is drier. *Lactobacillus buchneri* products will often improve forage stability with slow feed out rates, especially during the summer heat. Use forage testing to check your VFA score to see if proper fermentation took place. In addition, you may want ask for a complete fermentation analysis.

	<b>Desired</b>	<b>Average</b>	<b>Normal Range</b>
<b>Lactic Acid</b>	>4	4.763	2.563—6.963
<b>Acetic Acid</b>	<3	2.388	.883—3.893
<b>Lactic/Acetic</b>	1.5-4.0	2.523	0.00—5.375
<b>Propionic Acid</b>	<1	.272	0.00—.698
<b>Butyric Acid</b>	<0.1	.028	0.00—.149
<b>Total Acids</b>	5-10	7.919	4.691—11.147
<b>pH</b>	<4	3.956	3.583—4.329
<b>Ammonia</b>	0.6-1.0	.585	.314—.856
<b>Ammonia N/Total N</b>	10-15	7.053	2.980—11.126

The Dairy One forage testing lab lists the following as average and normal values for corn silage when a fermentation analysis is done:

<b>VFA score</b>	<b>Rating</b>
8-10	Good
6-8	Satisfactory
3-6	Needs Improvement
<3	Poor

- The above value guidelines are for corn silage with no additives or with lactic acid bacteria products added.
- If you use *L. buchneri* products expect higher acetic acid and some decrease in lactic acid levels. Also, do not expect these values to stabilize until several months after feed goes into storage.
- When propionic acid products are used expect propionic acid levels to be somewhat elevated.

There is no experimental information available to validate the following recommendation, but when understanding how the above products work it only makes common sense. Do not scrimp on the application rates of the above mentioned products. Considering the value of corn silage, it may be prudent to actually double the application rate recommended by the manufacturer. There will be no negative effects (other than cost) and the extra material may be enough to tip the scales in your favor toward a good fermentation.

### **Corn Grain**

Dr. Greg Roth at Penn State has put together a series of bullets as a guide to using flooded corn for grain

- Harvesting for grain is likely a better option than for silage where flooding has occurred.
- Combine air filters likely will need to be changed more frequently. Operators should take steps to avoid breathing the dust.
- Harvest when the fodder is dry to help limit the dirt in the grain. Monitor the dirt in the corn coming into the bin and avoid the worst sections of fields.
- Harvesting high-moisture corn at the drier range of acceptable levels could improve the ability to clean dirt

from the corn.

- The expected quality of grain is uncertain and should be monitored. The potential for crop contamination by flood waters could affect the marketability of grain and silage.
- Monitor for sprouting. Some river bottom fields are prone to bird damage and often have some sprouting risk. The flood may exacerbate the problem. Try to adjust the combine to remove most of the sprouted grain.
- Monitor for molds. Corn from flood-damaged fields should be evaluated for grain quality and kept separate if there are indications of molds. Mold and mycotoxin levels can be determined by most feed testing laboratories and used as guidance in marketing.
- The risk of molds and sprouting is likely a function of the exposure to the water and stage of growth. Corn that was under water will have an increased risk for molds and bacterial rotting. This may be more pronounced in corn that was already drying down (<40% grain moisture) and then took on moisture during the flood.
- Monitor for bacterial stalk rots. Fields that remained flooded for more than 12 hours are most at risk for stalk rots.
- The crop may mature more rapidly under these conditions, since corn that has been stressed when near maturity often seems to dry down fast.
- If the grain is deemed unfit for animal use, then it will be necessary to pursue crop insurance claims. If producers expect a claim, they should consult with an adjuster prior to harvest.

Reference:

*Managing Flood Damaged Crops*

by Greg Roth, Glen Cauffman, Erick DeWolf, Jud Heinrichs, David Wolfgang and Craig Altemose.

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

## **Soybeans**

Many of the same issues facing corn are also facing soybeans may be worse given the inability to raise a combine head up to avoid silt and debris and still harvest the beans especially if they are lodged. So if beans are upright and relatively silt free they should reach maturity and be harvestable.

## **Mycotoxin Concerns**

Identifying mycotoxins in feeds and also dealing with them successfully is very difficult most of the time. During these difficult conditions we may find that the mycotoxin risk is also elevated. You may want to run a battery of tests for mycotoxins when you take samples out of the field and also prior to feeding. Be sure you ask for wet chemistry analysis. Do not have them run the quick screen test, as the results may not be totally reliable.

## **Wind damaged, tipped or leaning corn**

When Hurricane Irene came through there were soaking rains that left the ground soft and as the winds whipped through corn began to tip or lean over. This condition should not affect yields, with a few exceptions and the biggest issue will be harvest. At some point corn tipped more towards horizontal than upright may actually have enough root damage to stress the plant and you may see some early senescence. But for the most part corn that is leaning away from vertical will probably if anything be delayed in maturity as the corn plants are on top of one another and not getting as much sunlight. Plants as they get closer to the ground may end up with more soil splashed up on them or plants may come in contact with the ground. You should expect to see more ear and stem rots and to have more late season leaf diseases. Again ash content could become an issue for silage corn if too much soil ends up on these plants.

References:

*Wind Damage Management in Corn*

<http://cornandsoybeans.psu.edu/winddamagemanagement.cfm>

*Leaning Corn and Suffering Soybeans*

<http://bulletin.ipm.illinois.edu/pastpest/articles/200318d.html>