



Using Hail or Green Snap Injured Corn for Silage

Corn injured by hail or green snap and can be harvested for silage; however, there are some factors that should be considered.

Nitrates

Although immature corn can be relatively high in nitrates, it is usually not a problem when the corn is harvested as silage. Cutting the silage crop at 8 to 12 inches above the soil line, should minimize nitrate issues. However, if there is a concern, a sample should be submitted to a testing laboratory for analysis. Even if the nitrates are relatively high it can still be fed without problems as about half of the nitrates are broken down or destroyed during fermentation. Even if the silage is slightly high in nitrates it can be blended with other low nitrate feed such as alfalfa hay and corn.

Harvest Date

Time of harvesting will vary depending on the stage of maturity and severity of hail. It is usually advisable to wait for at least a week after the hail injury before starting harvest. The main reason for waiting is to allow the corn plant to dry down to a more favorable moisture level. To allow for the best fermentation, the silage should have less than 67% moisture content (33% dry matter) for storage in an upright silo. If being placed in a bag, moisture content should be no more than 70%. An immature corn plant contains about 75 to 76% water (24 to 25% dry matter) and if harvested at this stage, severe seepage will occur, resulting in poor fermentation and high dry matter fermentation loss. It is usually advisable to allow the plant to dry down unless the stalks are damaged to the point that lodging becomes a problem. Because the silage may have a relatively low level of fermentable carbohydrates, silage fermentation enhancements (additives) may be advisable. Corn with hail damage usually reaches physiological maturity earlier and takes longer to drydown.

Yield Expectations

Yield potential depends on the severity of the hail damage. Data indicates that the leaves comprise approximately 15 to 20% of the dry matter, if the ears are relatively well developed. Consequently, this may give some indication of yield potential if the leaves are stripped and the remainder of the plant is relatively intact. If the ears are not well developed, then the leaves may account for up to 40% of the dry weight.

What about Common Smut on the Ears if Harvest is Delayed

Common smut will usually develop on the ears where hail damaged the end of the ears and exposed some of the grain, it is not toxic and will have no impact on consumption.

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Impacts on Quality

Data from Pennsylvania State University indicates when 25% defoliation occurs at the early dough stage, a reduction in yield of about 15% is possible with an overall dry matter content higher than non-injured corn. At 100% defoliation, a reduction in yield is about 41% and dry matter content is similar to non-injured corn.

Moisture Level

In addition to stage of maturity at the time of harvest, moisture content is one of the most important factors that determines quality. Silage cut above 70% moisture content tends to increase clostridia in the forages. The clostridia use up the proteins and soluble sugars, producing butyric acid that reduces the quality of the feed. This higher moisture content feed can cause acidosis in cattle.

There are lots of moisture testers on the market today. Some are electronic, others have probes, and some cook the moisture out of the feed and leave the residue to weigh for accurate dry matter.

A general moisture testing procedure is the Squeeze Ball Test. Using a handful of chopped material, form a ball squeezing the material hard for 30 seconds. If you squeeze water out of the feed, it is above 75% moisture. If no water comes out when pressed and the material holds a tight ball and some moisture remains on your hand, it is from 65 to 70% moisture. If the ball comes apart slowly, it is close to 60% moisture. Under 50% moisture, the ball springs apart and does not stay together. Below this level (50 to 55%), the moisture is getting marginal for good fermentation.

Sources: Saxe, C. 2007. Managing forage in silo bags. University of Wisconsin Extension. <https://fyi.uwex.edu/forage/files/2014/01/ManageSiloBags-FOF.pdf>. Rush, I. G. Feed value of hail damaged corn. Beef Cattle Handbook. <http://www.iowabeefcenter.org/bch/FeedingHailDamagedCorn.pdf>. Roth, G. and Antle, M. Effects of hail damage on corn silage Yield and quality. Pennsylvania State University Extension. <https://extension.psu.edu>. Lauer, J. 2012. Nitrate toxicity issues in barren corn. University of Wisconsin Extension. <http://corn.agronomy.wisc.edu/AA/A107.aspx>. Web sources verified 8/24/18.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. **ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.**
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