Frost-Damaged Corn

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Many areas of the state experienced a killing frost on the night of Oct. 2. This ended a roller-coaster season to grow corn here in Centre County.

Later-planted corn in many areas had not completely matured. At our Rockspring Research Farm, a 109-day hybrid planted on April 28 had reached black layer but the same hybrid planted on May 15 was only at the half milk line stage of maturity.

The same hybrid planted on June 1 was only at one quarter milk line. This late maturity was due to several factors: a cool growing season, a full season hybrid, and delayed planting.

What will happen to this corn and how should we manage it? Generally, frost will cause a rapid drydown of silage corn and will need to be harvested quickly to avoid silage that is too dry. Sugars will also be expressed from the leaves and can be lost from the plant with subsequent rainfall events, lowering the quality of the silage.

If corn is very immature, and not even dented, then it may still be too wet for silage and harvest will need to be delayed.

This is another situation where moisture testing is critical. Immature corn often has a bit more frost resistance and may not be completely killed by the first frost. This can complicate the situation and make moisture estimation more difficult.

The potential for these frost damaged crops for grain depends on the stage of maturity and the intended use of the grain. Estimates of potential grain yield loss because of frost/freeze injury at the soft dough stage are about 55 percent if the whole plants are killed and 35 percent if only the leaves are killed. At the full-dent stage, when a kernel millk line is just noticeable, loss figures are estimated to be 41 percent and 27 percent for a full and partial kill respectively.

At the half-milk-line stage, losses are reduced to about 12 and 6 percent for the same situations. (Carter & Hesterman, 1990).

Corn frosted at half milk line can still produce reasonable quality grain, but often there will be a extended drydown period. Corn that is killed prior to half milk line can experience some significant reductions in test weight. This lower test weight corn can be discounted in grain markets, but can be utilized effectively as high-moisture corn or as dried shelled corn that is fed to dairy or beef cattle.

Producers that anticipate significant amounts of low test weight corn should plan now for alternative marketing plans and later harvest of these crops.

CORN TALK
Farm Calendar

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Wednesday, December 10

Ag Service School, Somerset Oakhurst Tea room, contact Don Fretts, (724) 438-0111.

Thursday, December 11

Ag Service School, Holiday Inn, Williamsport, contact Tom Murphy, (570) 433-3040.

Wednesday, December 17

Ag Engineering Workshop for Ag Professionals, Hampton Inn, Chambersburg, thru Dec. 18, (717) 840-7408.

2004

Monday, January 19

Lime Fertilizer Conference, State College, thru Jan. 20, contact Lisa Crytser, (814) 865-2543.

Friday, January 30

Pennsylvania Corn, Soybean, and Tillage Conference, Grantville, contact Lisa Crytser, (814) 865-2543.

On-Farm Program Working To Get Answers

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A relatively new program in the College of Agricultural Sciences is the On-Farm Research Program directed by Ron Hoover.

Hoover works with our agents and producers to develop effective on-farm research trials that answer some timely questions. Although Hoover works with a number of different crops, corn research is an important part of his program.

He has been working to evaluate the effectiveness of zone till relative to no-till production with some farmers, and also comparing zone till to conventional tillage with other farmers. Hoover has tillage demonstrations on four farms this year in Susquehanna, Fayette, Wyoming, and Erie counties.

Hoover has also been focusing this year on a multilocation evaluation of the new corn rootworm Bt hybrids. He has coordinated seven trials around the state in Bradford, Centre, Lycoming, York, and Lancaster counties. At each of these sites, corn rootworm damage has been assessed and yield data is being collected from farm scale plots.

Preliminary indications are that not all sites had severe rootworm damage, but in general the transgenic hybrids provided excellent control. We are finding damage on the roots of some of the transgenic plots and are trying to determine the conditions where this damage is most likely. As a result of Hoover's efforts, in conjunction with our extension agents and some of our colleagues in industry, we should have an excellent dataset on this issue to share with producers this winter.

If you have questions on corn production that you think could be developed into an effective on-farm project, contact Hoover at (814) 865-6672. Hoover can network with our agents and specialists and may be able to help develop some funding opportunities for good projects. Hoover can also help to make sure you get some meaningful results with a minimum of hassle associated with conducting the trial.