Eng Notes
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High Spoilage Risk for Stored Corn

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The combination of low grain prices, high gas prices, and an unusually warm fall has created a greater-than-normal spoilage risk for stored corn. We have a large amount of corn in storage, and much of the corn is too warm and some of it is too wet for safe storage. Also, some corn is stored in structures and piles where there is inadequate aeration and poor protection from precipitation and soil moisture. Because of the high spoilage risk created by these conditions, stored grain managers should check their bins more frequently than normal to catch mold and insect problems before they get out of control.

Much of the 2000 corn crop was harvested during warm weather and since it was unusually warm for a long time after harvest, there were few opportunities to cool grain to the desired storage temperature range of 20 to 30F. If grain has not been aerated since harvest, it should be aerated as soon as possible. If grain was aerated, but the temperature was greater than 30F during the time that the fan was on, start the fan again and complete another aeration cycle during weather that is colder than 30F. If the bin is not equipped for aeration, feed or sell the grain as soon as possible or move it to a bin that is equipped for aeration. Holding warm grain into cold weather is likely to cause moisture migration which leads to molding, crusting, and possible insect infestation at the top center of the grain mass.

Since outdoor temperatures in the upper Midwest dropped very quickly from warmer than 30F to colder than 20F, some grain probably has been, or will be, cooled to less than 20F. Holding stored grain at less than 20F won't cause any problems during the winter months, but low storage temperatures could lead to condensation on grain kernels if they are exposed to warm, humid air next spring. To reduce the potential for condensation on grain that will be stored until spring or summer, it might be a good idea to aerate super-cold grain again in late winter to bring the storage temperature closer to 30F.

Some of the 2000 corn crop was also stored at moisture levels that are too high for safe storage. The warm fall led to rapid field drying, and to save money, some farmers put corn directly into storage without any artificial drying. In some cases, the corn didn't get quite dry enough and it is now in storage at 16 to 18% moisture. If cooled to 20 to 30F, corn at this moisture can be held through the winter without spoilage, but it should be fed, sold, or dried to less than 15% moisture before spring.

Corn storage recommendations are intended to increase the amount of time that corn can be stored without significant mold or insect problems. To increase storage life, corn should be dried to low moisture, or cooled to low temperatures, or better yet, dried and cooled. For example, corn that is at 18% moisture and 60F, can only be stored

about 60 days before there is significant mold growth. But if you cool 18% moisture corn to 35F, storage time before significant mold growth occurs should increase to about 240 days. Corn at 15% moisture and 60F can be stored about 275 days, and in theory, corn at 15% moisture and 35F can be stored about 1175 days before significant mold growth occurs.

Finally, part of the 2000 corn crop was stored in outdoor piles or in structures that were not originally designed for grain storage. Keep an especially close watch on grain in these situations, because in many cases the grain is exposed to precipitation or soil moisture, and aeration systems (if present), often do not provide uniform airflow. If you see signs of moisture migration, mold, or insects, aerate to try to control the problem and feed, sell, or move the grain as soon as possible.