

Don't Let the 2009 Crop Kill You

DEALING WITH THE HAZARDS OF A HUGE CROP WITH QUALITY PROBLEMS

Be very careful when handling the 2009 crop! The crop we harvested last fall likely will generate a higher number of injuries and fatalities due to grain entrapments, for a number of reasons.

There exists a strong correlation between the larger corn crops we have witnessed in the past three to four years and the increasing number of fatalities. There were nine deaths in 2007 and 10 deaths in 2008 around commercial (off-farm facilities). There were high numbers of fatalities at the farm level during the same period,

BIN ENTRY
Wayne Bauer



as well.

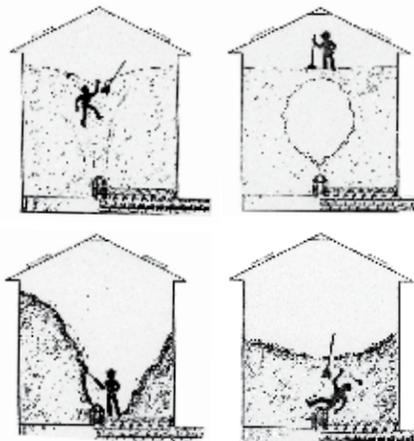
Contributing Factors

Dr. Charles Hurburgh Jr., professor of agricultural and biosystems engineering at Iowa State University, suggests these high incident rates may be related to larger corn crops that have been harvested in the last four years. Other factors may be pushing these number higher, also. Dr. Hurburgh

shares the following points:

1. Moisture levels at harvest are increasing.
2. Longer maturity is a means to

Grain Entrapment Prevention



increase corn yields. Drying is cheaper than yield loss in the field.

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3. Biotech and fungicides keep the corn crop greener for a longer time, for greater yield.

4. More acres per farmer cause a spread-out harvest.

5. Panic factors increase, as conditions and weather deteriorate.

6. Organizations are understaffed, as older, experienced employees leave the grain industry.

7. Corn is stored locally for longer periods of time, to meet the needs of ethanol facilities.

8. Since much of the corn is being shipped to local ethanol facilities by truck, the blending opportunities are much more limited.

Dr. Hurburgh expects these trends to continue.

For example, a farmer can increase his profit by growing corn with five days longer maturity vs. the cost of drying it another five points.

“There is a clear correlation between quality and safety in the production and handling of grain,” he says. “Safety programs and Qual-

A combination of hot spots, crusting grain, fines in the center of the bin, and stalks and pods stuck to the walls, along with frozen chunks, will tempt workers to enter bins in an effort to rectify these problems.

ity Management Systems (QMS) are closely connected. Safety is understanding the best management practices and procedures and following them.

“The overall concept of linking personal and public safety with quality management practices and systems has potentially a huge value for the industry. Quality management is the preventive maintenance for safety and other regulatory and legal problems.”

To avoid becoming a fatality statistic, follow established safety procedures, and do not take shortcuts.

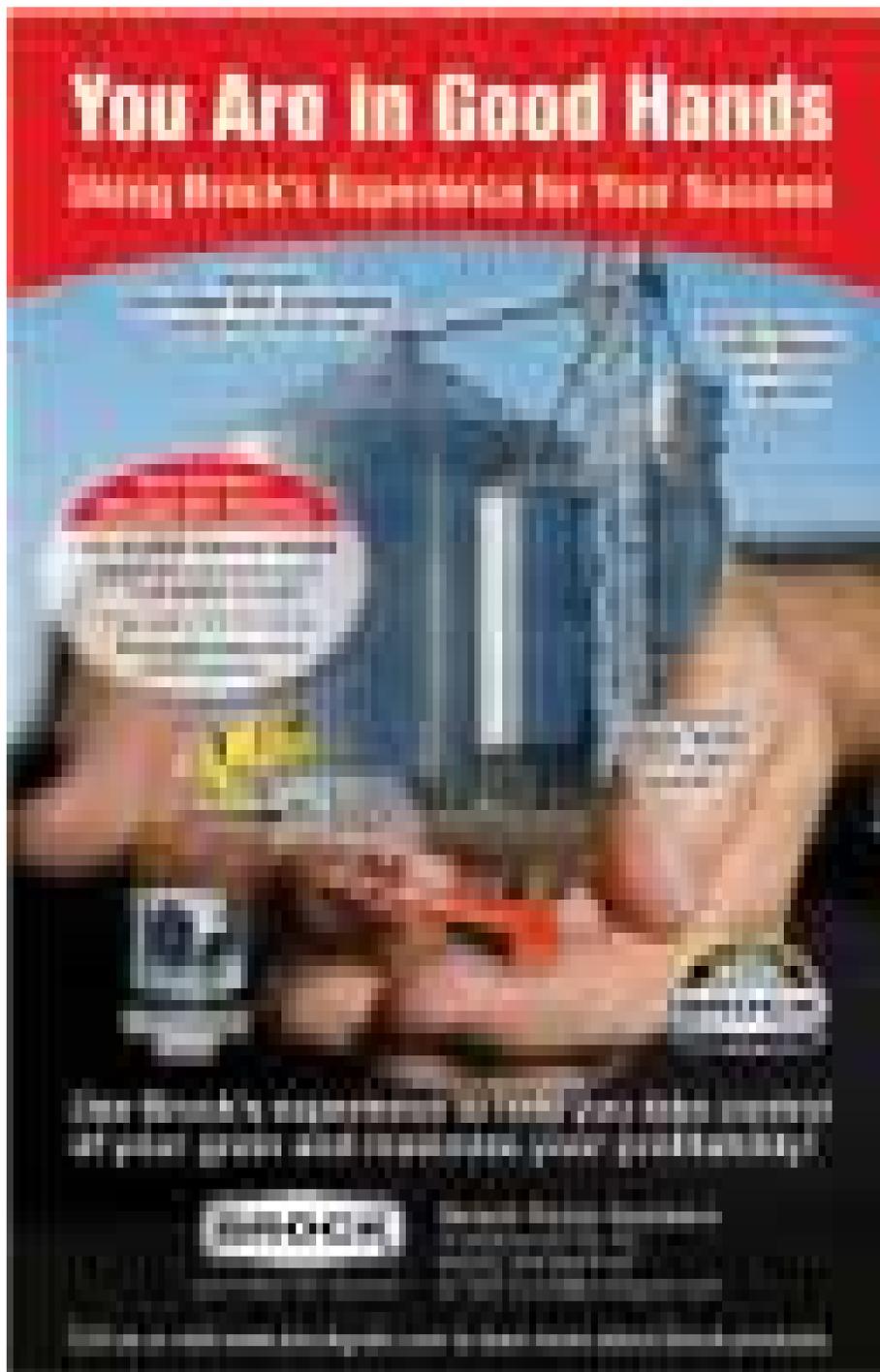
Harvest Conditions

The 2009 corn crop was planted much later than normal last spring. In many parts of Indiana, Illinois, and Iowa, the corn crop was planted three to four weeks behind normal time lines. It was estimated that 90-95% of the corn crop in the Eastern Corn Belt was not planted until June 10. The late planting period was followed by a cool July and August. This combination of late planting followed by a cool summer caused the corn crop to mature six to eight weeks behind schedule.

The Illinois crop typically is harvested by Nov. 1. This point in the harvest was not reached until mid-December 2009.

Drying the corn and soybean crops was a real challenge. Extra trash in dryers was a huge problem. Dryer fires were quite common and moisture controllers in many dryers were less effective at these high moisture levels.

According to projects made by Randy Sheley at The GSI Group, “We used three to five times the normal LP due to cool temperatures and high moisture levels. ▶



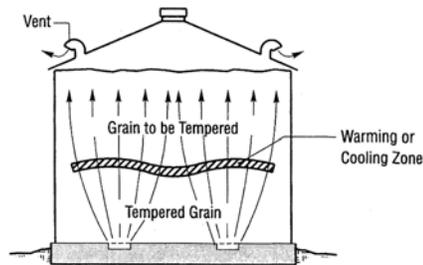
We removed 5.7 billion gallons of water from the drying corn vs. 1.8 billion gallons normally removed.”

Drying capacities were exceeded by the flow of extremely wet and immature corn. This grain was put into storage at higher temperatures and moisture levels than normal. In many cases, it also contained more trash, FM, and some mold, as it went into storage. Light test weights compounded the handling issues.

Storage Quality

There are heightened concerns about the quality of grain in storage for the balance of this year. Concerns will focus on moisture variations, vomitoxin, and other problems. The stored grain needs to be monitored closely by pulling samples, watching temperatures closely, coring bins, and making sure the quality is holding up.

The grain industry is seeing increased levels of grain spoilage in storage. Spoilage was a contributing factor in two incidents that occurred in mid-January. Two farmers were entrapped in a farm bin in Lucknow, ON, Canada Jan. 18, and another farmer



At an industry aeration standard of 1/10 cfm per bushel for coarse grains, it takes about 120 hours for a cooling front to move through a grain mass. Illustration courtesy of Iowa State University.

was entrapped in a bin in Napoleon, OH Jan. 20.

According to Eli Troyer of AgriDry, some storage problems that will occur in grain bins will include more potential for hot spots, crusting grain, fines in the center of the bin, and stalks and pods stuck to the walls. A combination of these problems, along with frozen chunks, will prevent the grain from flowing freely through the loading and unloading systems, thus tempting workers to enter bins in an effort to rectify

these problems.

As mentioned in past grain entrapment prevention classes and articles, we also need to look at future design parameters that will foster a *zero entry mentality*. We need to stress quality and safe management practices that reduce the number of times employees have to enter the storage spaces.

However, the conditions under which the corn and soybean crops were harvested in the fall of 2009 will create more problems than normal. As mentioned a spike in the number of grain entrapments and fatalities around grain facilities is expected in 2010. *Don't become one of these statistics!*

Grain Conditioning Principles

Following sound principles of grain conditioning is critical to minimizing spoilage, especially in a year like 2009. Kevin Miles with Rolfes@Boone and Troyer both emphasize:

- A properly designed aeration system is important in minimizing problems.
- Keep velocities low and air movement dispersed as evenly as possible through the entire mass, to achieve complete coverage.
- Minimize the amount of fines and trash. Evenly spread any that are present. The cleaner the grain, the better. Core all bins.
- Keep the temperature in the grain mass as uniform as possible. The last thing you want is to turn your aeration fans on and off when running a cooling cycle through the mass. In most cases, it will take four to five days to move the front through the entire grain mass. With a common airflow of 1/10 cfm per bushel, it will take 120 hours to move a front through the entire grain mass. If your aeration system will deliver 1/7 cfm per bushel, it will take 84 hours to move the front completely through. Higher airflows will move the front through more quickly, but the cost per bushel will be higher.

In short, the 2009 crop will continue to cause problems, as we attempt to move it through the system. Be careful! *Don't let the 2009 crop kill you!*

Wayne Bauer is safety and security director of Star of the West Milling Co., Frankenmuth, MI; 989-652-7026.

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