



Miller Highlights

September, 2008

As we approach fall harvest, several concerns about the corn crop are evident. These include nitrogen deficiency, tip-backed ears, root rot concerns, potential stalk rot issues, and a lack of enough heat units since planting to mature the crop before an early frost. A severe early morning wind storm in late July led to significant green snap and some root lodging in a belt from the north side of Williamsburg through Hills, Lone Tree and south of Muscatine, especially on corn which was about to tassel. On the positive side, we have generally trapped no or low corn rootworm beetles emerging from first year corn fields and Western Bean Cutworms have been very light in Eastern Iowa in 2008. Leaf diseases have also developed slowly, however Northern Corn Leaf Blight was favored by recent climatic conditions.

Nitrogen Concerns

Our last email commented on the yellow corn issues. These have become more noticeable in recent weeks as many fields are running out of available nitrogen for the plant to uptake. Aerial photos have been taken of many of our customer's fields as a management tool to help understand: 1) where tile are needed, 2) how different application methods, nitrogen sources, and timing worked, and 3) to understand the compaction effect on root development and the ability to take up nitrogen. Certain hybrids appear to handle lower nitrogen conditions better than others as far as leaf color is concerned, but the combine will tell if this translates to yield differences. This is an especially difficult year to accurately compare hybrids, as field variation for nitrogen may make some side-by-sides unfair. In general, it appears Fall application of N, without additional N applied with the planter or side-dressed, did not provide for the complete N needs of corn plants, especially in continuous corn fields. Denitrification and leaching may have depleted 50% or more of the nitrogen applied in some cases and compaction and water logged soils restricted root development in many fields, making some applied nitrogen unreachable.

Disease Concerns

We advised many customers to apply fungicides to their corn-on-corn fields, non-corn borer fields, and to hybrids with less natural resistance to Grey Leaf Spot (GLS) or Northern Corn leaf Blight (NCLB). In general, except for common rust, we saw later disease development in Eastern Iowa in 2008 than normal, potentially making August fungicide applications more effective than those done in mid-July. The relatively cool weather has limited the early development of GLS, but it has favored the NCLB development. The root rot potential is higher than normal this year because of number of days when soils have been wet and the stress many plants are under due to nitrogen stress. Timely harvest is warranted in fields where plants show nitrogen stress, as these plants will have less stalk integrity due to the ear using the stalk as a source of nitrogen when the roots couldn't supply enough. In general, stressed and senescing plants also get more stalk rot.

Insect Concerns

One blessing of the climate this year has been less Western Bean Cutworm pressure. None of our traps caught over 50 moths and the economic threshold is about ten times that amount. It appears that we also had had less survival of Corn Rootworms (CRW) this year compared to last year. The 30 CRW traps customers placed in first year corn revealed only 2 threshold levels, and those were confined to the first 24 rows adjacent to a 2007 corn field. In the August newsletter, I was concerned about silk clipping by CRW on late planted fields, but in



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general this has been minor. A few extremely late planted fields that were flowering in mid-August did have some significant silk clipping and some drier areas in North Central Iowa had some damage. Aphids were evident in some corn fields, but again damage appeared minor. Although we saw significant first generation European Corn Borer (ECB) damage on some refuge fields planted early, it appears at this time that second generation ECB damage has been relatively minor.

Ear Development

In general we had good synchrony between pollen and silk this year, however we have a number of fields exhibiting shorter ears than normal and some fields with less kernel rows than normal.

The number of kernel rows is determined during vegetative developmental stages V4 to V10 and compacted, weedy, nutrient deficient, or waterlogged soil conditions impacted many plants. Planting dates relative to excess rainfall and poor field conditions during specific stages of vegetative development had the biggest role, but there were some hybrid differences.

There are two types of “short ear” hybrids observed this year. The first type never developed florets at the tip of the ear, while the second type aborted the tip kernels due to stress during the first ten days of grain fill. If the florets never developed or if the cobs are very short, it may somehow be related to cold, wet June weather that predisposed the potential number of viable florets per kernel row. Ears with aborted tips may be due in part to cloudy weather (lack of solar radiation for photosynthesis) experienced during flowering and early grain fill. I also believe the lack of oxygen during times of water saturation limited normal uptake of normal nutrients (especially nitrogen) and water. All three of these factors (lack of light, oxygen, and nutrients) caused significant stress either during flowering or early grain fill. This stress may have either prevented the tip silks from being pollinated, or it caused the plant to abort tip kernels in a natural self preservation method, similar to drought conditions. It is often difficult to understand hybrid differences against the backdrop of other factors, however some hybrid effects are evident.

Maturity

As of this newsletter, we are about 110 to 140 heat units behind normal since May 1, and since most corn was planted later than May 1, we need a lot of heat units to mature this crop. One rule of thumb is to add about 65 days to the pollination date until physiological maturity (black layer), but with recent cool weather it may take more days. A frost anytime in September could adversely effect many full-season hybrids and late planted fields. Here is a brief guide of late corn reproductive stages:

Stage	Appearance	Days after Silking	Days to Blacklayer	Kernel Moisture
R3 (Milk)	Kernels yellow outside, milky fluid inside	18-22	37-43	80%
R4 (Dough)	Inner fluid pasty, up to 90% dented kernels	24-28	31-37	70%
R5 (Dent) early	Nearly all kernels dented, start milk line	35-42	20-23	55%
R5 (Dent) mid	Milk line 50%, 90-95% kernel dry weight	45-53	10-12	40%
R5 (Dent) late	Milk line 75%, whole plant 65% moisture	50-59	5-6	35%±
R6 Maturity	Black layer formed, Physiological Maturity	55-65		32%±



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Talk to your Miller Seed Experts: **Jon Meester 319-325-6190 (N. of I80)**, or myself (**Bob Miller 319-325-6158**) for any corn or alfalfa questions. We have attractive prepay options (best by September 20, 2008) for elite corn hybrids with the right traits for your farm. Call us to help you understand the issues related to your fields in 2008.