



Miller Hi-Lights™ September 2005 Newsletter

By Bob Miller and Monty Burns

Beginning in mid-August, eastern Iowa generally received some relief from the extreme drought and high temperatures. This was little comfort for those who had irreversible yield loss due to poor pollination or tipping back of ears by that time. In some cases the late rains and morning dews simply encouraged disease development. It is obvious that we have a potential for severe stalk rot in many hybrids. This stalk rot is most evident in highly stressed areas of the field but it quickly could develop in plants where the yields are highest, because the best filled ears will continue to drain the stalk until blacklayer formation. Continue to monitor your fields for stalk rot, because it appears that this year the specific field condition may be as important in determining the stalk quality as the general hybrid stalk quality rating. Waiting for field drying may cost significantly more in field loss due to lodging, than the cost of drying grain.

We have received many questions about why some hybrids look very poor in one field and good in a neighboring field. Spotty rains are one reason, but we think the stage of ear development during the hottest days this summer, was a critical factor. Developing kernels that were less than 1 week old or more than 2 weeks old during our hottest (and driest) period appear to have escaped “tipping back”. This may have been influenced more by hybrid flowering date (due to planting date or hybrid maturity), than by a specific hybrid’s drought tolerance. We also observed considerable rootworm beetle feeding on the later emerging silks in many fields. This often led to a complete cob with few or no kernels. The beetles fed on the pollen as well as the silks, making it impossible to get the adequate pollen onto the silks to insure good fertilization, and consequently no kernels were formed. This is especially important in fields that were either planted later than most surrounding corn, or for late silking plants (often due to late emergence).

We have observed many rootworms in soybean fields this summer. This may be the start of a similar situation to the Illinois fields which have a variant of the Western Corn Rootworm that now lays eggs in soybeans. What concerns us, is the fact that we have observed more Northern Corn Rootworm beetles (the small green beetles) than Western Corn Rootworm beetles in Eastern Iowa corn fields. You may want to scout your fields and consider using a soil insecticide to prevent rootworm feeding on your rotated fields in 2006. Miller Hybrids™ is applying Cruiser Extreme Pac™ to all our AgriSure CB™ hybrids and this will allow you to purchase Force insecticide for about \$11 per acre after rebate.

We have had several questions about corn growth stages during reproductive development. The following chart is a general description of corn growth stages, but you must realize that once a plant dies, (probably due to stalk rot) that plant is physiologically mature immediately.



Stage	Appearance	Days after Silking	Days to Physiological Maturity	Kernel Moisture (%)
R2 (Blister)	Inner fluid clear Kernels white, resemble blister	10 – 14	45 – 51	85
R3 (Milk)	Kernels yellow on outside Inner fluid is milky white	18 – 22	37 – 43	80
R4 (Dough)	Inner fluid is pasty Soft dough – 55% kernels dented Hard dough – 90% kernels dented	24 – 28	31 – 37	70
R5 (Dent)	Nearly all kernels dented Milk line beginning to show	35 – 42	20 – 23	55
	Milk line half way down 90 to 95% final dry weight in kernel	45 – 53	10 – 12	40
	Milk line three quarters down Whole plant moisture about 65%± Silage harvest stage	50 – 59	5 – 6	35%±
R6 (Physiological Maturity)	Milk line at bottom (tip) of kernel Black layer has formed	55 – 65	-	32%±

References: How a Corn Plant Develops, Iowa State University
 Growing Season Characteristics and Requirements in the Corn Belt, National Corn Handbook, NCH-40
 Unpublished sources.

Here is a rough guide to estimate corn yields. Remember that kernel depth and test weight will impact yields, so I would reduce yields by 10 to 15% in drought stressed fields. Extra field loss may occur due to the difficulty of complete shelling of drought stressed ears.

Estimate Corn grain yield prior to harvest:

1. Determine the average number of primary ears in 1/1000th of an acre (refer to the table) from a representative number of locations in a field.
2. Select three to five representative ears from each of the locations and determine the average number of kernel rows per ear.
3. From the same ears determine the average number of kernels per row. As a guide, start counting about an inch from the tip and the butt where the rows are very distinct.

Row Length = 1/1000th acre	
Row Width (inches)	Row Length (feet/inches)
15	34' 10" or 35'
20	26' 2" or 26'
22	23' 10" or 24'
30	17' 5"
36	14' 6"
38	13' 9"



4. Multiply the **average number of ears** x the **average number of kernel rows** x the **average number of kernels per row** x a factor of **.01116** to equal bushels per acre at 15.5% grain moisture.

Corn Yield Estimate example: Let's assume that the average number of primary ears in 1/1000th acre was 28, the average number of kernel rows was 18, and the average number of kernels per row was 32. Then our formula would be: $28 \times 18 \times 32 \times .01116 = 180 \text{ Bu / acre}$

The more counts that are taken the better the estimate will be. To account for variability in ear size related to field variability and sampling error you could deduct 10%. If crop stress has played a significant role in ear development, an additional 5 to 15% or more may need to be deducted, due to low test-weight or difficulty in harvesting all kernels.

To Estimate soybean yield potential, follow these guidelines:

- Estimate the number of plants per acre (measure an area 1/1000 of an acre and count the number of plants within the marked area.)
- Count the number of pods on ten randomly selected plants within the marked area and calculate the average number of pods/plant
- Calculate pods per acre by multiplying plants/acre by pods/plant
- Calculate seeds per acre by multiplying pods per acre by an estimate of 2.5 seeds/pod
- Calculate pounds per acre by dividing seeds/acre by an estimate of 2900 seeds/pound
- Estimate yield by dividing pounds/acre by 60 lbs. per bushel.

The formula is:

$$[(plants/acre) \times (pods/plant) \times (2.5 seeds/pod)] / (2900*60) = \text{Estimated Yield bu. /acre}$$

This formula uses several estimations and therefore may be variable depending on the final number of seeds per pod and seed weight. (Source: Corn and Soybean Field Guide, 1997; Purdue University Coop Extension Service)

Maximizing your harvested grain yield in highly stressed fields requires several precautions:

- 1) Be sure to move stripper plates in close enough to insure no ears escape through the plates. This may require welding or adding inserts to your corn header, if you cannot move the plates close enough together.
- 2) Harvest in a timely matter to prevent header shelling and field loss due to lodging. Remember that your drought stressed field areas will have the lowest grain moisture.
- 3) Harvest in a timely matter to prevent cobs from rotting and to minimize kernel rots.
- 4) Carefully check the loss of grain out the back of the combine and adjust sieves and air flow to minimize loss. It is easy to blow lighter test weight corn over the sieves.
- 5) Frequently reset your yield monitor (one site to help you understand how to properly set and use a grain monitor is <http://agleader.com/>). Be sure your GPS system is correctly working, as maps in a stress year can provide good management tools.



We want to conclude this Miller Hi-Lights™ newsletter by thanking all the prospective customers who have allowed us to explain what our innovative new company has to offer. We value hearing from you and are available to assist you with your agronomic concerns. If you have not been contacted by us yet, please contact us via www.millerhybrids.com or call us at 319-325-6158 (Bob) or (563)-880-8934 (Monty). A key early order discount period (10%) ends September 30. If seed is paid for, you will ensure that the best choice of seed for your farm will be secured, while reserving the right to modify your order at a later date. Yield updates will be posted at our website as they become available. Have a safe harvest!