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Agronomy Advice

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Finishing Strong in 2009: What decisions do we have to make yet for this year's crop?
Field Day Presentation – Pierce and St. Croix Counties

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The 2009 growing season has had record cool temperatures throughout the state. The silking (R1) growth stage is approximately the halfway point for the corn life-cycle. As of August 9, 77% of the crop had silked compared to 86% over the last five years (USDA-NASS, 2009). Normally in the 90-95 day RM zone of Wisconsin, we accumulate 2200 to 2300 GDUs during a growing season (Figure 1).

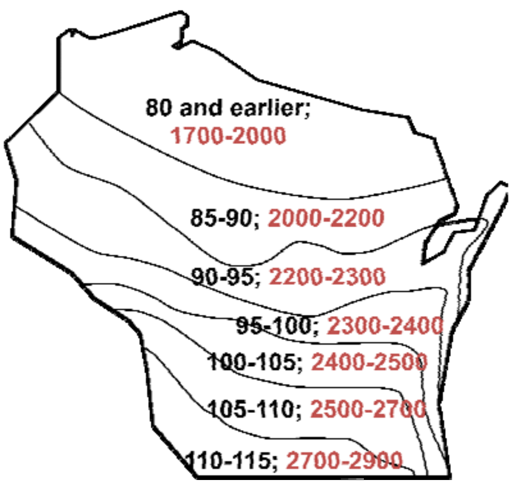

Figure 1. Relative maturity zones (days; GDUs) for full-season corn hybrids planted before May 15.

From May 1 to August 6, the normal (1978 to 2008) GDU accumulation at Marshfield is 1522 GDUs. This year only 1302 GDUs have accumulated. Daily GDU accumulation is from 0 to 36 GDUs per day with an average in early August of 21 GDUs per day. Thus, we are 11-days behind normal.

Once corn silks, approximately 55 to 60 days is required to achieve maturity - R6 black layer (Ritchie et al., 1993). Development during grain filling is influenced by temperature, but not as much as during the vegetative leaf emergence stages. Instead the number of days between pollination and a killing frost influence the time to maturity. So if an average killing frost occurs October 1, then subtracting 55 to 60 days means that the crop must be silking by August 2-7. Silage harvest usually begins around 50% kernel milk which is 42 to 47 days after silking, so silking must occur by August 15-20; but remember that the timing of silage harvest is dependent upon achieving the proper moisture for the storage structure.

Harvest management options for 2009

1) Note silking dates to project calendar days to when a field will mature. Note order that fields silk to plan the harvest queue. It will take approximately 42 to 47 days to get to 50% kernel milk, and 55 to 60 days to get to black layer.
2) Consider selling a greater proportion of your corn acres as silage or high moisture corn.
3) Consider locking in a price for drying fuel.
4) Take the dock for shrink at the elevator.
5) Fine-tune your dryer so that over- or under-drying does not occur. Over-heating the grain in the dryer or filling the bin too fast for drying to occur will increase costs and decrease grain quality reducing profitability.
6) Hire and train the skilled labor that will be required to monitor dryers, fans, augers, and other equipment during the drying process.
7) Consider some field drying if moisture levels are high, but do not let corn stand in the field too long or harvest losses may increase due to ear droppage and stalk breakage from snow and ice.

Getting a Handle on Seed Costs

Early indications are that seed costs will be high again for 2010. Sales pressure is high to "lock-in" hybrids, prices and quantities of seed.

Current UW recommendations for harvest plant densities range between 26,000 and 30,000 plants/A. Corn seed costs are rising for premium hybrids. Currently, corn seed:price ratios range from 0.50 to 1.25 (Table 1). As seed costs increase and/or corn prices decrease, the economic optimum harvest plant density decreases (Figure 2).

For a seed:corn price ratio of 1.0, the economic optimum plant density (EOPD) is 32,800 plants/A and grower return is at a maximum of $171/A for each $1.00 of corn price (Figure 1). If $1.00 is subtracted from the maximum grower return ($171 - $1 = $170), the range in plant density is 29,500 to 36,000 plants/A (error bars). As corn price increases, grower return increases proportionally. For an Excel decision aid, see the Crop Seed Price Calculator at: http://corn.agronomy.wisc.edu/Season/DSS.aspx.

References

Ritchie, S.W., J.J. Hanway, and G.O. Benson, (eds.) 1993. How a corn plant develops, pp. 1-21 pp. ed. Iowa State Univ. Coop. Ext. Serv., Ames.

USDA-NASS. 2009. National Agricultural Statistics Service [Online]. Available at www.nass.usda.gov/index.asp (accessed 12August2009; verified 12August2009). USDA-NASS, Washington, DC.

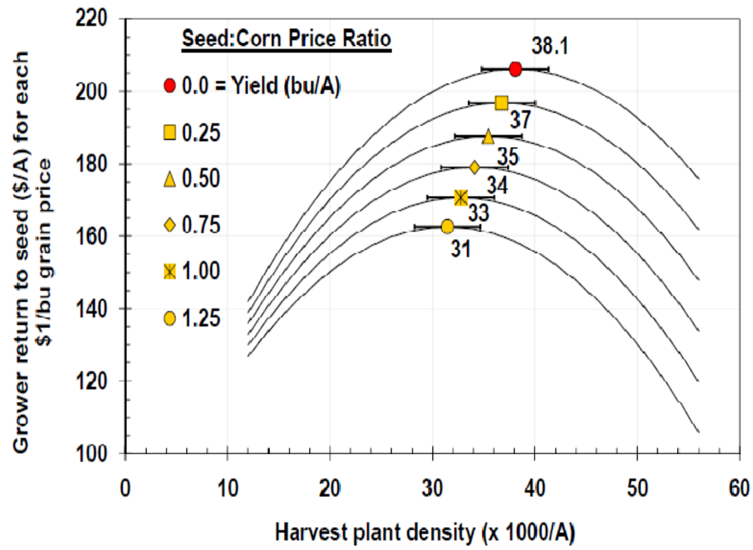

Figure 1. Profitable harvest plant densities for seed:corn price ratios of 0.0 to 1.25 at Arlington, WI. Symbols represent the economic optimum return to plant density (EOPD) and error bars are the low and high ends of the range of profitability (within $1/A of EOPD) at each seed:corn price ratio.

Table 1. Price ratio of seed:corn (i.e. $/1000 seeds ÷ $/bu corn).

Price of seed		Price of corn ($/bu)								
$/80 K bag	$/1000 seeds	$1.00	$1.75	$2.50	$3.25	$4.00	$4.75	$5.50	$6.25	$7.00
$0	$0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
$40	$0.50	0.50	0.29	0.20	0.15	0.13	0.11	0.09	0.08	0.07
$80	$1.00	1.00	0.57	0.40	0.31	0.25	0.21	0.18	0.16	0.14
$120	$1.50	1.50	0.86	0.60	0.46	0.38	0.32	0.27	0.24	0.21
$160	$2.00	2.00	1.14	0.80	0.62	0.50	0.42	0.36	0.32	0.29
$200	$2.50	2.50	1.43	1.00	0.77	0.63	0.53	0.45	0.40	0.36
$240	$3.00	3.00	1.71	1.20	0.92	0.75	0.63	0.55	0.48	0.43
$280	$3.50	3.50	2.00	1.40	1.08	0.88	0.74	0.64	0.56	0.50
$320	$4.00	4.00	2.29	1.60	1.23	1.00	0.84	0.73	0.64	0.57
$360	$4.50	4.50	2.57	1.80	1.38	1.13	0.95	0.82	0.72	0.64
$400	$5.00	5.00	2.86	2.00	1.54	1.25	1.05	0.91	0.80	0.71

What do we do with all of those yield maps?