Wisconsin Crop Manager

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Nutrient Management Plans Working on Wisconsin Farms

Kim Meyer, NPM Southwest Regional Specialist

The Nutrient and Pest Management Program, in partnership with the Wisconsin Department of Agriculture, Trade, and Consumer Protection, have a new brochure available that highlights farmer's success with nutrient management. Four farmers share their experience completing their own nutrient management plans, including the benefits they received from soil sampling, manure crediting, understanding spreading restrictions, and utilizing Wisconsin's nutrient recommendations. The brochure is available for download from the Integrated Pest & Crop Management website, www.ipcm.wisc.edu or can be ordered for free from the Nutrient and Pest Management Program.

To view the brochure follow the link below:

http://ipcm.wisc.edu/download/pubsNM/DATCP_NM_FINAL.pdf

The Best Corn Planting Dates are yet to Come

Joe Lauer, University of Wisconsin

This article first appeared April 2013.

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To read the full article scroll down to the end of this newsletter.

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Optimum Corn Planting Dates are Later 'Up North'

Joe Lauer, University of Wisconsin-Madison

This article first appeared May, 2013

Optimum corn planting dates vary with latitude. The northern Corn Belt is limited by heat units during the growing season, especially during the spring when cool, wet soils delay planting and during the fall when early frosts kill plants prematurely. Within Wisconsin we often find that optimum corn planting dates are later 'up-north' than in southern Wisconsin and that yield loss accelerates more quickly resulting in a shorter planting window.

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Planting Date Effects on Corn Silage Yield and Quality

Joe Lauer, University of Wisconsin – Madison

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We have written quite a bit about planting date effects on corn grain yield (high moisture and dry corn). What about its effects on corn silage? As planting date becomes more delayed, there is an increased likelihood that fields intended for grain will be harvested for silage, especially if the year remains cool.

To read the full article scroll down to the end of this newsletter.

Wisconsin Pest Bulletin 5/1/14

A new issue of the Wisconsin Pest Bulletin from the Wisconsin Department of Agriculture, Trade and Consumer Protection is now available. The Wisconsin Pest Bulletin provides up-to-date pest population estimates, pest distribution and development data, pest survey and inspection results, alerts to new pest finds in the state, and forecasts for Wisconsin's most damaging plant pests.

Issue No. 1 of the Wisconsin Pest Bulletin is now available at:

http://datcpservices.wisconsin.gov/pb/index.jsp

http://datcpservices.wisconsin.gov/pb/pdf/05-01-14.pdf

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April 22, 2013

The Best Corn Planting Dates Are Yet To Come

This year farmers have been challenged by cool, wet conditions during April. Snow is again forecast for later this week. Even though planting dates seem like they have been delayed, especially compared to 2012, we still have not passed the optimum planting dates for corn. Wisconsin farmers can plant a large number of acres quickly. Since 1979, there have been 5 years when 40% or more of the acres were planted in one week (1981, 1984, 1999, 2000, and 2004). Between May 2-9, 1999 and April 30-May 7, 2000 farmers planted 1.5 million acres in one week (42% and 44% of the acres planted in those years).

At the University of Wisconsin Agricultural Research Station in Arlington, we have established planting date trials since 1974. Multiple hybrids are established as soon as field conditions allow. In many years, snow is still in roadside ditches when the first planting date occurs. I pooled data for full-season hybrids with Relative Maturity ratings of 104 to 108 RM for the last 10 years (2003-2012).

The corn grain yield response to planting date is shown in Figure 1. The planting date producing maximum grain yield during this period is April 28. Yields were within 95% of the maximum yield from April 15 to May 12, a 28-day period. By May 10 grain yield is decreasing 0.9 bu/A per day and then accelerates to 2.6 bu/A per day on June 1. Grain yield risk (the spread of the data points around the regression line) is lowest in April and early May at ± 14 bu/A and increases to ± 45 bu/A in late May and early June.

Year affects the planting date when maximum yield occurs, the date of 95% maximum yield, and the yield loss acceleration during late May and early June (Table 1). The date when maximum yield occurs varies from April 10 to May 3. We were still within 95% of the maximum until April 29, 2005 and May 19, 2011.

Figure 1. Corn grain yield response of full-season hybrids (104-108 d RM) to planting date during 2003 to 2012 at Arlington, WI (N= 208 plots).

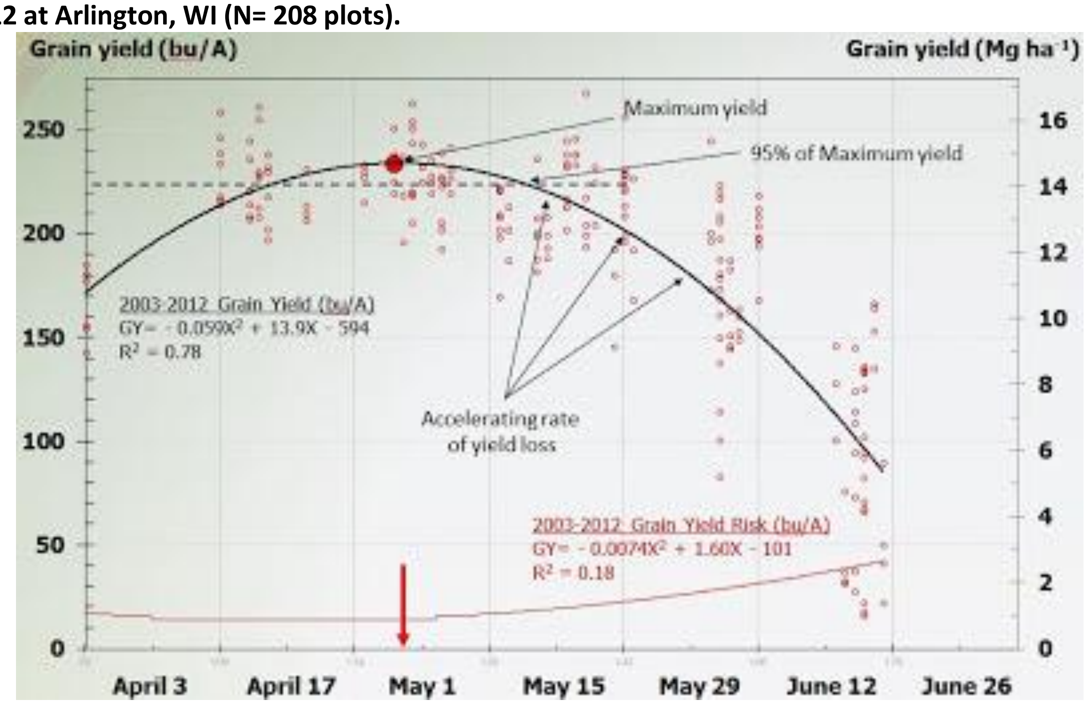

Table 1. Corn grain yield response of full-season hybrids (104-108 d RM) to planting date at Arlington, WI.

Year	N	R^2	Maximum yield Bu/A	Date of: Maximum yield	95% of max yield	Rate of yield (bu/A) loss on: May 10	May 20	June 1
2012	35	0.71	232	May 1	May 16	0.5	1.3	2.1
2011	17	0.80	232	April 30	May 19	0.4	0.9	1.4
2010	17	0.94	267	April 29	May 12	1.2	2.3	3.7
2009	22	0.76	242	April 26	May 12	0.9	1.5	2.2
2008	17	0.95	231	May 2	May 15	0.7	1.6	2.7
2007	17	0.91	225	May 3	May 14	0.9	2.1	3.7
2006	17	0.86	238	April 29	May 11	1.2	2.3	3.6
2005	10	0.87	223	April 10	April 29	0.5	0.5	0.5
2004	15	0.95	230	April 25	May 7	1.5	2.5	3.7
2003	15	0.78	223	April 29	May 15	0.7	1.2	1.9
Average	208	0.78	234	April 28	May 12	0.9	1.6	2.6

Like last year the important thing to remember is patience. Be ready to go so that when field conditions are fit, you are ready to plant. Our standard planting date recommendation is to plant as quickly and safely as possible after April 20 in southern Wisconsin, and after April 30 in northern Wisconsin.

Further Reading: http://corn.agronomy.wisc.edu/Management/L003.aspx
Data Source: http://corn.agronomy.wisc.edu/Research/Default.aspx

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April 29, 2013

The "Double-Whammy" of Delayed Corn Planting

Not all corn farmers and agronomists feel that planting date is a significant yield impact factor. However, in the northern Corn Belt delayed planting not only lowers potential grain yield as described previously, but it can have a significant impact on the economics of corn production. Growing season weather ultimately determines the impact of drying costs on corn production economics. Farmers in the northern Corn Belt often face a shorter growing season with cool, wet conditions and significant snowfall earlier and more often than farmers in the central and southern Corn Belt. During the 2009 production season, drying costs often approached $1.00 per bushel.

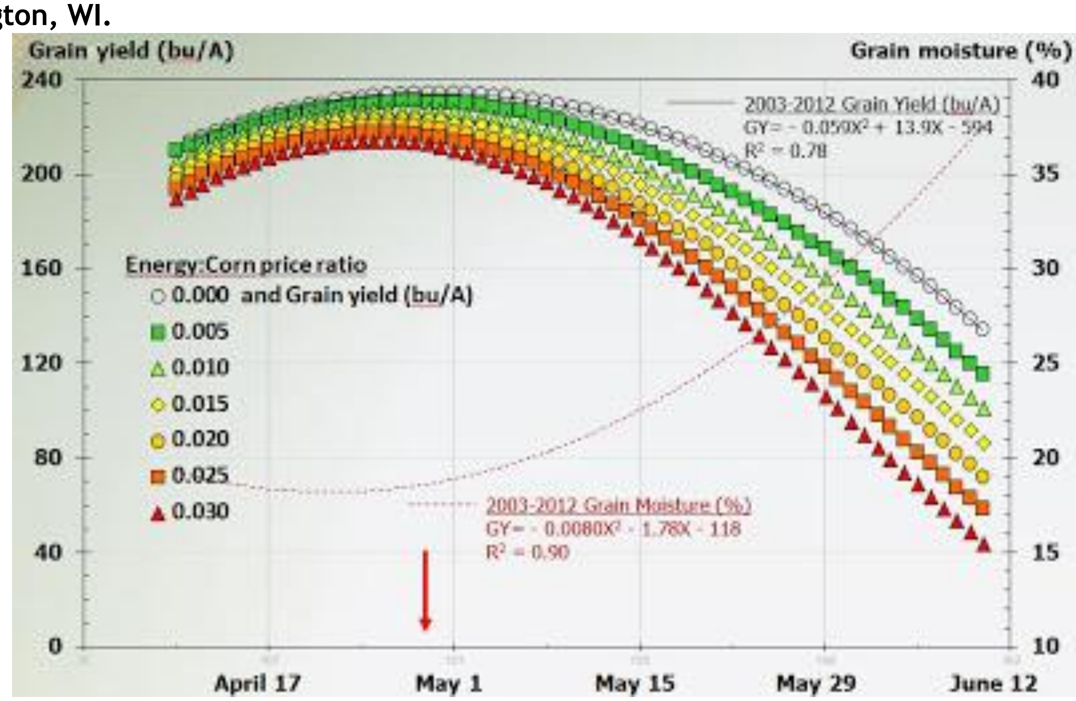
When energy costs are zero, such as for high moisture corn, then farmers only consider yield impacts with delayed planting. Table 1 can be used to calculate the impact of energy costs on corn grain drying using an energy:grain price ratio. As energy price increases the energy:corn price ratio **increases**. As corn price increases the energy:corn price ratio **decreases**. We assume that it takes 0.02 gallons of LP gas to lower a bushel of corn 1% grain moisture (Hoeft et al, 2000; Hallevang and Morey). Over the last few growing seasons LP gas has cost about $1.60 to $2.00 per gallon while corn prices have ranged from $5 to $7 per bushel resulting in energy:corn price ratios of 0.005 to 0.008.

Table 1. Price ratio of Energy:Corn price (i.e. $/point bu÷ $/bu corn). The drying efficiency value used in the table below equals 0.02 gal/point of moisture (Hoeft et al., 2000 p.328 T15.6; Hellevang and Morey NCH-14 Table 4).

Price of Energy (LP Gas)		Price of corn ($/bu)						
$/gal	$/point bu	$2.00	$3.00	$4.00	$5.00	$6.00	$7.00	$8.00
$0.00	$0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
$0.40	$0.008	0.004	0.003	0.002	0.002	0.001	0.001	0.001
$0.80	$0.016	0.008	0.005	0.004	0.003	0.003	0.002	0.002
$1.20	$0.024	0.012	0.008	0.006	0.005	0.004	0.003	0.003
$1.60	$0.032	0.016	0.011	0.008	0.006	0.005	0.005	0.004
$2.00	$0.040	0.020	0.013	0.010	0.008	0.007	0.006	0.005
$2.40	$0.048	0.024	0.016	0.012	0.010	0.008	0.007	0.006
$2.80	$0.056	0.028	0.019	0.014	0.011	0.009	0.008	0.007
$3.20	$0.064	0.032	0.021	0.016	0.013	0.011	0.009	0.008

The energy:grain price ratios described in Table 1 are used to calculate the amount of grain yield that is required to pay for energy costs related to drying with delayed planting date in Figure 1. When the energy costs are zero, then the relationship is the same as the grain yield function described previously. As the energy:grain price ratio increases, it takes more and more bushels per acre to pay for the drying costs. For example, on June 1 the grain yield of a 104-108 d RM hybrid is 169 bu/A and the grain moisture 31%. If the energy:grain price ratio is 0.010, then only 143 bu/A are actually harvested. The difference of 26 bu/A was used to pay for the energy costs to dry the corn to 15.5% moisture.

Figure 1. Remaining grain yield (bu/A) after paying the energy cost for drying at various Energy:Corn price ratios. The regressions for grain yield and grain moisture have been fitted to full-season hybrids (104-108 d RM) grown during 2003-2012 (N= 208) at Arlington, WI.



Farmers manage this situation by switching hybrid maturity, switching to different crops or leaving the field over winter to harvest the following spring once grain has dried sufficiently. All options can have significant impact on profitable corn production.

So whether it is a conundrum or fear-mongering, the fact remains that in the northern Corn Belt we are often limited by our growing season and planting date has a significant effect on corn grain yield and more importantly production economics. It is expensive to produce wet corn and the odds of it happening increase as planting date is delayed.

Literature Cited

Hoeft, R.G., E.D. Nafziger, R.R. Johnson, and S.R. Aldrich. 2000. Modern corn and soybean production. First edition, MCSP Publications, Champaign, IL.

Hellevang and Morey, Energy Conservation and Alternative Sources for Corn Drying. National Corn Handbook - 14.

Further Reading: http://corn.agronomy.wisc.edu/Management/L010.aspx

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May 1, 2013

Optimum Corn Planting Dates Are Later 'Up North'

Optimum corn planting dates vary with latitude. The northern Corn Belt is limited by heat units during the growing season, especially during the spring when cool, wet soils delay planting and during the fall when early frosts kill plants prematurely. Within Wisconsin we often find that optimum corn planting dates are later 'up-north' than in southern Wisconsin and that yield loss accelerates more quickly resulting in a shorter planting window.

The general shape of the planting date response at a location has been described previously. The last time a statewide corn planting date experiment was conducted at numerous locations was during 1991-1994 (Lauer et al., 1999). Full- and shorter-season corn hybrids were planted on five to eight planting dates between April 19 to June 22.

For the northern sites of Ashland, Spooner and Marshfield, the date when maximum corn yield occurred averaged May 12, while the southern sites of Hancock, Arlington and Lancaster were one week earlier averaging May 5 (Table 1). Corn yields were still at 95% of the maximum yield on May 17 in the north and May 12 in the south. By June 1, corn yield was decreasing at an average rate of 2.3 bu/A per day in the north and at a slower rate moving south to Lancaster.

Table 1. Corn grain yield response to planting date of full-season hybrids at various locations in Wisconsin during 1991 to 1994 (derived from Lauer et al., 1999).

Location (North to South)	Full-season Relative Maturity	R^2	Maximum yield Bu/A	Date of:		Rate of daily yield (bu/A) loss on:		
				Maximum yield	95% of max yield	May 10	May 20	June 1
Ashland	85	0.43	131	May 11	May 17	0.9	1.4	2.0
Spooner	85-90	0.55	109	May 11	May 15	0.0	0.8	2.0
Marshfield	100	0.68	147	May 14	May 19	0.5	1.5	2.7
Hancock	110	0.40	175	May 5	May 9	0.9	1.7	2.7
Arlington	110-115	0.57	185	May 7	May 14	0.7	1.3	1.9
Lancaster	115	0.37	179	May 3	May 12	0.9	0.9	0.9

Optimum corn planting dates likely vary with farm, hybrid, field, tillage system and other management factors. In northern Wisconsin, these factors along with latitude result in lower yield potential and when combined with grain moisture and drying costs described previously often makes corn production marginal as we move north.

Further Reading

Lauer, J.G., P.R. Carter, T.M. Wood, G. Diezel, D.W. Wiersma, R.E. Rand, M.J. Mlynarek. 1999. Corn hybrid response to planting date in the northern Corn Belt. Agronomy Journal 91:834-939.

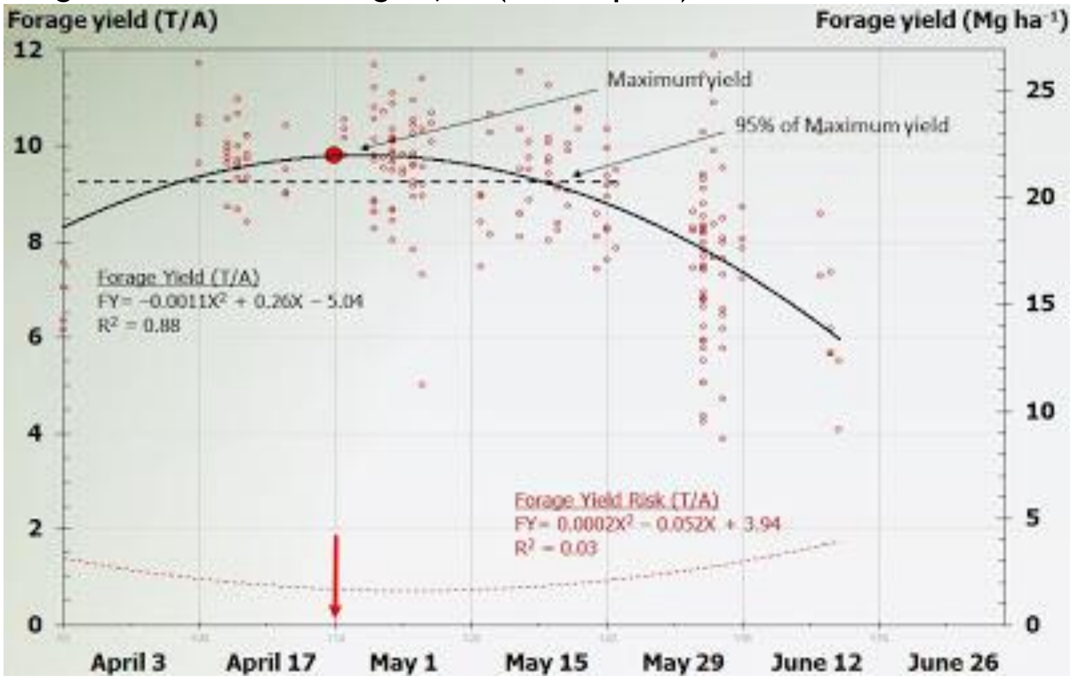
May 2, 2013

Planting Date Effects on Corn Silage Yield and Quality

We have written quite a bit about planting date effects on corn grain yield (high moisture and dry corn). What about its effects on corn silage? As planting date becomes more delayed, there is an increased likelihood that fields intended for grain will be harvested for silage, especially if the year remains cool.

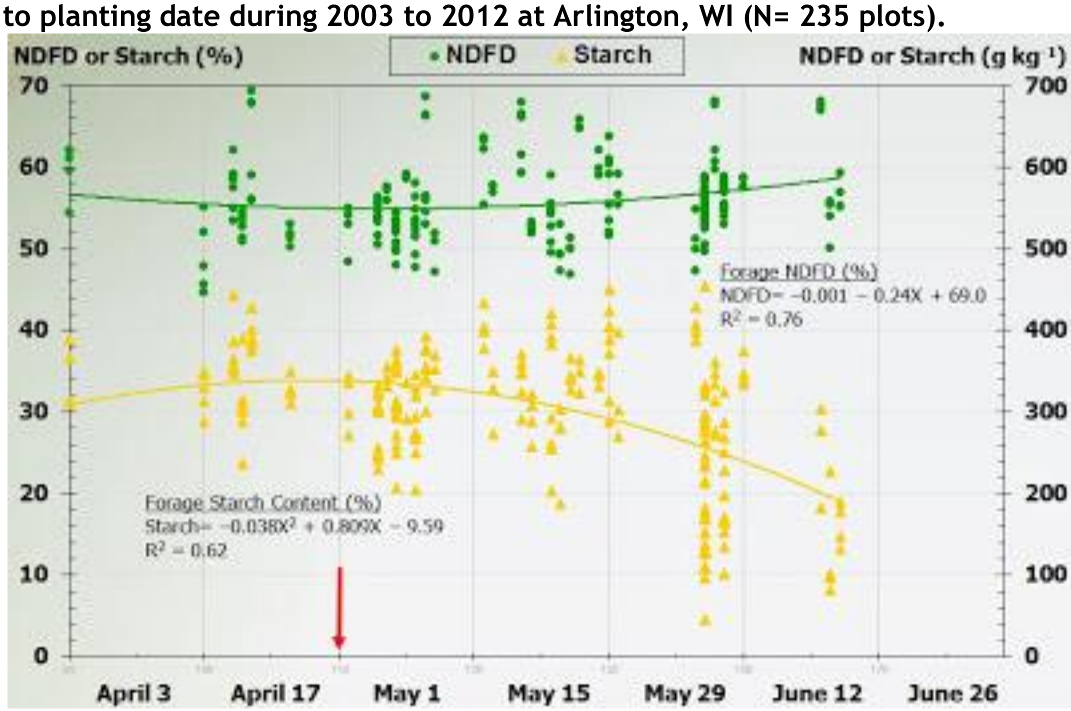
The grain yield response of full-season hybrids to planting date at Arlington for the last 10 years has been described previously. These treatments were established using 8-row plots; four rows were harvested for silage and four rows were harvested later for grain. Figure 1 describes the planting date effect on corn silage yield. The date when maximum forage yield occurs is April 24 nearly 4 days earlier than the date of maximum grain yield on April 28 for these same plots. The relationship is more 'broad shouldered' than what is measured for grain; in other words the planting date window is longer than it is for grain with forage yields still within 95% of maximum yield on May 15.

Figure 1. Corn forage yield response of full-season hybrids (104-108 d RM) to planting date during 2003 to 2012 at Arlington, WI (N= 235 plots).



The size of the plant 'factory' is not affected by planting date. The number of leaves, the size of the stalk, shank and husk is largely genetically controlled. However, starch content is affected by planting date. Thus, the digestibility of the stover and grain pools is different (Figure 2). Digestibility of stover (ivNDFD) is close to a flat line across the range of planting dates tested (although linear and quadratic coefficients were significant). Starch content decreases with later planting dates.

Figure 2. Corn forage ivNDFD and Starch content response of full-season hybrids (104-108 d RM) to planting date during 2003 to 2012 at Arlington, WI (N= 235 plots).



When yield and quality is combined using the Milk2006 performance index, we find that Milk per Ton (quality) is not affected as much as Milk per Acre due to the forage yield impact (Figure 3). The optimum planting date for corn silage when measured using Milk per Acre is the same as it is for grain yield. The difference is that the planting date window is slightly longer for silage than it is for grain.

Figure 3. Corn forage Milk per Ton and Milk per Acre response of full-season hybrids (104-108 d RM) to planting date during 2003 to 2012 at Arlington, WI (N= 235 plots).