Wisconsin Crop Manager

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Using High-Input Systems for Soybean Management Increases Yield but Not Profitability

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Increased soybean commodity prices in the last 10 years have generated inter- est in developing high-input systems to increase yield. However, little peer- reviewed information exists about the effects of input-intensive, high-yield management on soybean yield and profitability, as well as their interactions with basic agronomic practices.

In 2009, the United Soybean Board funded a study called the "Kitchen Sink Project" to begin examining some of these questions. The research was con- ducted in six states (Arkansas, Iowa, Kentucky, Louisiana, Michigan, and Min- nesota) from 2009 to 2011. While there were several projects within this study, one of the main projects focused on row spacing and a "kitchen sink" approach to input use. The "kitchen sink" treatment included additional soil-applied fer- tilizer, seed treatment fungicides and insecticide, seed-applied inoculant, foliar fertilizer, and foliar fungicide. To read more about the "kitchen sink" project and others, please follow the link below:

http://www.coolbean.info/library/documents/SB_HighInputSystems_2016_FINAL_3.pdf

Winter Wheat and Alfalfa Disease Management Videos

Damon Smith, Wisconsin Extension Field Crops Plant Pathologist

If you would like to view the winter wheat and alfalfa disease management videos, please click the videos below:

Damon Smith, Wisconsin Extension Field Crops Plant Pathologist, talks about in-season fungicide use on winter wheat. He also talks about the three key crop development stages for scouting wheat fields:

Damon Smith, Wisconsin Extension Field Crops Plant Pathologist, talks about in-season fungicide use on alfalfa crops:

Wisconsin Fruit News: Volume 1 Issue 1– April 18, 2016

Introducing the Wisconsin Fruit Newsletter

Janet van Zoeren, Christelle Guédot, and Amaya Atucha

Welcome to the first installment of the Wisconsin Fruit News! This bi-weekly installment will allow us to highlight research regarding our state's fruit crops, inform you of worrisome new pest alerts, and discuss upcoming events and opportunities. Each issue will be divided into six main sections: General Information, Berry Crops, Cranberries, Grapes, Tree Fruits, and a Calendar of Upcoming Events. The General Information section will contain pest alerts and other information pertinent to all fruit crop growers. For example, in two weeks there will be an article reminding everyone how to calculate and use growing degree days on your farm. The sections pertaining to each of our key fruit crops in Wisconsin (Berry Crops, Cranberries, Grapes, and Tree Fruits) will report more in-depth on plant development, insect pests and diseases, recent research and other information relevant specifically to each of these fruit crop groups. The last section of each newsletter will be a Calendar of Events for the upcoming months. Be sure to check that out and stay informed of upcoming workshops, grower meetings, conferences, and other opportunities.

The newsletter will also be posted onto our Wisconsin Fruit website, available at www.fruit.wisc.edu. There you will also be able to search by category or tag, to find crops and/or subject material of interest to you on a particular day. Additionally, you will also able to view our newsletter through the IPM Toolkit application, which was created through the University of Wisconsin's Integrated Pest and Crop Management program (http://ipcm.wisc.edu/apps/ipmtoolkit/). Simply download the app, and enter our RSS newsfeed URL (http://fruit.wisc.edu/feed).

To view the full newsletter, please follow the link below:

https://fruit.wisc.edu/wp-content/uploads/sites/36/2016/04/WFN-v1i1-April18-2016.pdf

Enjoy!

Corn Agronomy – Looking ahead to 2016: Plant density decisions

I have been receiving many questions this year regarding the "correct" plant density for corn. Growers are concerned about 2016 production economics and one input they are looking at is seeding costs related to plant density in the field. The optimum plant density is influenced by both seed cost and grain price. As seed costs increase and/or grain price decreases the "correct" plant density shifts lower.

Every year since 1982, plant densities have been increasing by about 300 plants/A. Seed costs during the 1980s were about $20/A and plant densities were a little over 20,000 plants/A. Today seed costs are over $100/A with USDA-NASS plant densities around 30,000 plants/A. Today a typical 80,000 (80K) count bag of seed costs $300/bag, so each 1000 plant/A adjustment means $3.75/A.

The best way to approach the decision to determine the "correct" plant density for a field is to **find the plant density where the maximum yield (MYPD) occurs**. Figure 1 shows 10-yrs of data from Arlington experiments that tested corn grain and silage response to harvested plant density. In this example, the grain MYPD occurs at about 39K. **The economic optimum (EOPD) is about 4K to 5K less than the MYPD**. However, you can be within 95% of MY at about 29K indicating how "broad shouldered" the plant density response is (a 10K swing = $37.50/A at $300/80K bag). When the cost of production and ultimate economics are not favorable like this year, you may want to think hard about going after MY, but make sure you are above 29K.

On the silage side it is more difficult to find the EOPD. I have always approached the silage EOPD from the Milk per Acre measure, but that does not take into account seed costs. So in the attached example, Milk per Acre is maximized at 45K. I would think that you need to sub-

tract 4K to 5K to get at the silage EOPD. It will fluctuate widely with milk price and given the outlook for this year you may want to lower the plant density 8K to 10K. Again you are still within 95% of maximum Milk per Acre above 29K.

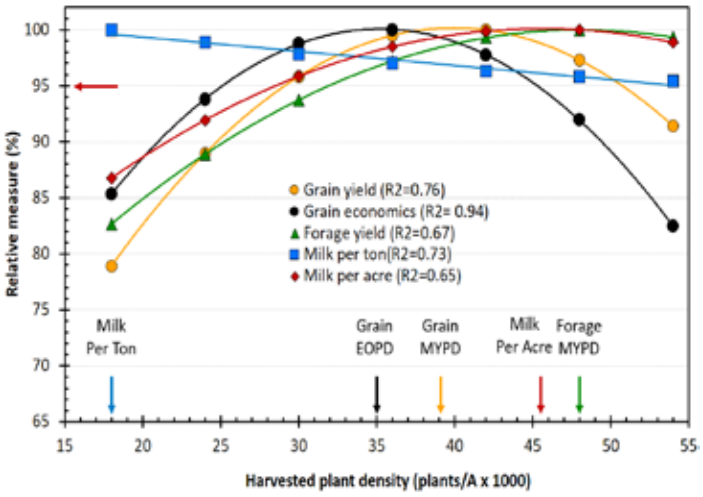

Figure 1. Relationship between corn plant density and grain yield, economic optimum, forage yield, Milk/Ton, and Milk/Acre. Data are derived from Arlington during 2005 to 2014.

Every hybrid and every field likely has different MYPD and EOPD values. Breeders are constantly improving standability of corn hybrids, so the MYPD has been increasing every year by about 400 plants/A. In addition, environment and management style will influence these values (i.e. drought versus a normal year). This relationship indicates the ability of the corn plant to compensate for discrepancies in plant density, but it is highly influenced by grain/silage/milk prices and input costs. It also says a few things about the implications of variable rate seeding.

Corn Agronomy – Looking ahead to 2016: Planting date decisions

We started planting corn on April 14. Recent planting progress statistics from USDA-NASS indicate that corn planting is progressing slowly in the northern Corn Belt. Only 1% of corn acres had been planted in Wisconsin as of April 17.

The date that produces maximum corn grain yield varies by field, tillage practice, hybrid and latitude. Every year since 1991 we have established a planting date experiment at Arlington, WI. On this farm, if you could plant all of your corn on one date and wanted to maximize yield, then the best date would be May 1 (Figure 1). As expected, we have observed a step increase for yield every decade. However, the maximum yield planting date has not shifted much (April 28 to May 4). The economic optimum is going to be earlier than these dates, because typically earlier planted corn is drier at harvest. The planting date "window" when we can be within 95% of the maximum yield is between April 18 and May 16. Grain yield decreases 0.5 bu/A per day on May 15 and accelerates to 2.5 bu/A per day on June 1.

For southern Wisconsin we typically recommend to begin planting anytime after April 20 as long as field conditions are fit. For northern Wisconsin anytime after April 30 is appropriate. Soil temperature is not a consideration after these dates. However, we do pay attention to the short-term weather forecast. If cold, wet conditions within 48 to 72 hours of planting are predicted, it is prudent to wait until weather is more favorable. We lost trials at Seymour and Fond du Lac in 2006 when we planted ahead of a snow storm; the only corn that survived was over the drain field. This phenomenon is called **imbibitional chilling**. There is not a lot of field data to support this practice and it has only happened to us twice over the last 20 years. The challenge as to when to begin planting, is what to do between April 10 when insurance coverage starts and the typical April 20 (southern) and April 30 (northern) start dates. Soil temperature is a good guide during this period. Corn doesn't grow much when temperatures fall below 50 degrees F.

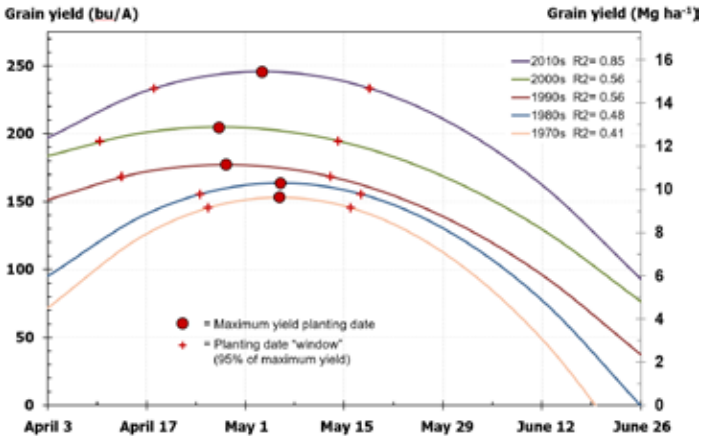

Figure 1. Corn grain yield response to planting date by decade at Arlington, WI. The 1970s included data from experiments conducted during 1974, 1976, 1977, and 1978; 1980s included 1980 and 1981; 1990s included 1991 to 1999; 2000s included 2000 to 2009; 2010s included 2010 to 2015.

Vegetable Crop Update April 15, 2016

Amanda J. Gevens, Associate Professor & Extension
Vegetable Plant Pathologist

The 3rd issue of the Vegetable Crop Update is now available. Click on the link below to view this update.

http://ipcm.wisc.edu/download/vgu/April-15-2016.pdf

UW-Madison/Extension Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Sean Toporek, and Ann Joy

The PDDC receives samples of many plant and soil samples from around the state. The following diseases/disorders have been identified at the PDDC from April 9, 2016 through April 15, 2016.

Plant/Sample Type, Disease/Disorder, *Pathogen*, County

Soil
Alfafa Soil, Aphanomyces Seedling Blight, *Aphanomyces euteiches race 2*, Lafayette
Soybean Soil, Soybean Cyst Nematode, *Heterodera glycines*, Dane

For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu.

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