

Wisconsin Crop Manager



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WHAT'S NEW

2006 Pest Management Update Meetings

Chris Boerboom, Ext. Weed Scientist

We are announcing the dates and locations of the 2006 Pest Management Update Meetings as an attachment in this issue of the Crop Manager. Please check the dates and locations and reserve a date on your calendar. Registration details are listed at the top of the schedule.

Please pre-register with the host agent as they have to make the meal reservations. Most agents have had to add an additional "walk-in" fee for those who have not pre-registered. We will have many topics and issues to discuss as we review this year, especially with the wide

ranging weather effects (from drought to bumper crops). The speakers at the meetings will be Chris Boerboom, weed scientist, Eileen Cullen, field crop entomologist, and Craig Grau, field crop plant pathologist. Our new extension weed scientist, Mark Renz will also be joining us. His responsibilities will be weed management in perennial crops and the associated problem weeds. These meetings will be an excellent time to meet Mark, welcome him to Wisconsin, and introduce him to weed management challenges that you might be facing. We hope to see you this fall at the meetings and hope your harvest goes well in the mean time.

When Should Field Trials Be “Abandoned”?

Joe Lauer, Corn Agronomist

This is the time of year when growers are evaluating test plots and decisions begin to be made about hybrids for 2007. This year is like many other years ... some trials are better than others. Should data from “poor” trials be used to make decisions for next year’s hybrids? How bad does it have to be before field trial data should not be used? What should we be looking for as we evaluate plots this fall?

I always assume that the people responsible for a trial did the best job they could in designing and implementing the trial and that the trial was conducted to the best of their ability. I am reluctant to discard any trial unless there are biological or physical disturbances that can bias the data. If nothing else, “poor” trials can serve as a valuable replication for calculating multi-location averages.

The chief reason to abandon a trial is when you cannot measure what you are interested in measuring. For example, this year the UW Corn trials conducted at Seymour and Fond du Lac were abandoned because imbibitional chilling reduced stands to densities lower than 5000 plants/A, except over tile drains. Since no plants were growing we could not measure grain yield and the trials were abandoned. This year some trials are affected by drought – stands are good, pest control is good, but plant growth is suffering and the variability seen is due to soil water holding capacity – Should these trials be abandoned? I would argue that drought affected trials should be harvested, the data analyzed, and then a decision made about the quality of the trial. Some signals that “poor” data were collected from a trial include: 1) No hybrid differences detected, and 2) Some statistical criterion suggests unusually imprecise averages.

First, we expect hybrid differences in a trial. That is why we conduct trials. When hybrid differences do not occur, then the variance (standard deviation) was too high and the trial is suspect. Second, some statistical criteria is used such the coefficient of variation ($CV=100*[StD/mean]$) where trials are rejected if the $CV > 10\%$. This is an arbitrary criterion and low trial means are penalized. Other criteria can be calculated to determine the quality of a trial. These trials should not be discarded solely on the basis of low statistical precision. Farmers and agronomists should be allowed to judge for themselves the value of the results. Also, these trials can provide invaluable information and observation when combined over multiple locations.

So now is a good time to get into your fields to plan harvest and evaluate last year’s “experiments.” Some new practices work and fit into your management style, others don’t. Lessons learned producing this year’s crop will help with next year’s crop.

Growers need to monitor fields carefully, and plan harvest schedules to begin with fields where stalk and root deterioration appears worst. Below are some things to check in your fields yet this year for timing harvest, and to consider in your plans for next season. Record information. Keep a notebook or computer file. It is difficult to commit things to memory, especially two or three seasons into the future.

Fall Field Scouting

Check for ear-tip fill. Incomplete ear-tip fill is not necessarily bad. If kernels are filled out completely to the ear tip, plant populations are likely too low for conditions. Expect about an inch of underdeveloped kernels at the ear tip if plant populations are at high enough level to optimize grain yield per acre.

Check kernel development on the ear. Look for differences in how well different hybrids have held up to management practices (i.e. herbicide application, irrigation stress, N stress, etc.) and weather stresses. Early stress from weed competition or low N will reduce kernel row number and kernel number per row. Severe heat and moisture stress during the first seven to ten days after pollination will cause kernels at the tip of the ear to abort. Stress around pollination reduces cell division and potential starch fill causing shallow kernel depth and lighter test weight.

Check the maturity of hybrids in your fields and relate back to planting and emergence dates. Following the rate of drydown using kernel milkline is a good way to predict the order fields should be harvested. In a typical year a common benchmark is that fields should be dented by the first week in September. It takes about 25 days to go from dent to black layer (physiological maturity); about 13 days to get to 50% kernel milk and another 12 days to black layer. Kernel moisture at black layer will average 32 to 35 percent. The tightness of the husk, thickness of the seed coat and daily weather conditions influence the speed of kernel drydown. After black layer formation several hard frosts followed by sunny weather with temperatures in the 80’s and a slight breeze is the ideal drying environment.

Hybrids differ in the time it takes to reach harvest moisture from black layer. A rough estimate is that 15

to 20 GDUs/point of moisture are needed to lower the moisture from 35 to 25 percent. It takes 20 to 25 GDUs/point of moisture to dry the grain from 25 to 20 percent.

Scout for corn standability. Fields that have lodging problems can be identified and targeted for the earliest possible harvest. Look for visible symptoms and test stalk firmness by pinching the lower internodes with your thumb and forefinger. Healthy stalks are firm and can't be compressed. If a stalk can be compressed or feels soft, it is rotted and is a good candidate for lodging.

Check for rapid "die-down." The lower portion of corn plants in some fields deteriorates rapidly. Lower leaves first appear nitrogen-stressed, then turn brown and die. Other factors such as compaction, dry weather, herbicide injury or root pruning by insects can also cause these symptoms. Some of these plants may be experiencing low nitrogen availability due to losses from leaching and/or denitrification following excessive rain. Nevertheless, in most cases it is more likely due to remobilization of nutrients from the stalk to the grain, a sort of "cannibalism." Cool, cloudy days and warm nights produce low levels of photosynthesis (sugar production) during the day with high rates of respiration (sugar breakdown) at night. When the plant's nutrient availability is limited due to low photosynthesis, sugars already produced and stored in the stalk are often "moved-out" (translocated) to help fill the ear. Another factor that might be responsible for rapid die-down is the development of pathogens that cause root and stalk rot. Wet soils and cloudy humid conditions favor these diseases. Corn stalks weakened by remobilization of nutrients to the ear are especially vulnerable to root and stalk rotting organisms.

During combining inventory weed problems. Use a map and list details such as location of broadleaf and grass species, population density of the crop and weed, and response to herbicides. Watch for new weeds. Watch for any weeds that may be developing resistance to herbicides.

Resist estimating yield differences between corn hybrids - measure it. Field variability alone can easily cause apparent differences of 10 to 50 bushels per acre. Make notes about "ease of combining." Test weight and grain moisture can influence hybrid yield. There are "quickie" measures of potential grain yield, but you shouldn't expect much precision with these measures.

In preparation for next year, assess soil fertility levels by pulling soil samples.

Test Plot Evaluation

Scout for pest problems. Hybrid differences for pest resistance and tolerance should be monitored and noted all season, but will be most apparent in the fall.

Counting dropped ears is a good way to measure hybrid ear retention and tolerance to European corn borers.

Check overall plant and ear height as well as husk conditions. Hybrids with husks that loosen as ears mature generally dry down rapidly.

Check for goose-necked stalks. This is often root pruning caused by corn rootworms. Hybrids differ in their ability to regrow pruned roots.

Be extremely wary of test plots that are not replicated, or only have a "check" or "tester" hybrid every five to ten hybrids. The best test plots are replicated (all hybrids repeated at least twice, preferably three times).

Don't put much stock in results from one location and one year, even if the trial is well-run and reliable. Years differ and the results from other locations may more closely match next year.

Don't over emphasize results from one type of trial. Use data and observations from university trials, local demonstration plots, and then your own on-farm trials to look for consistent trends.

Use field days to make careful observations and ask questions, but reserve any decisions until you have seen the "numbers." Appearances can be deceiving.

A few suggestions on how to evaluate test plots:

- Walk into plots and check plant populations. Hybrids with large ears or two ears per plant may have thin stands.
- Break ears in two to check relative kernel development of different hybrids. Hybrids that look most healthy and green may be more immature than others.
- Differences in standability will not show up until later in the season and/or until after a wind storm. Pinch or split the lower stalk to see whether the stalk pith is beginning to rot.
- Visual observation of ear-tip fill, ear length, number of kernel rows, and kernel depth, etc. don't tell you much about actual yield potential. Yield is not a beauty contest. Some "ugly" hybrids are good performers.

Buy hybrids ... don't be sold based on fancy result books and plot signs, flags, streamers, caps, brats, etc. Remember safety as you move into the harvest season this year.

* * *

Grain Equivalents in Corn Silage: An Update on Hybrids

Joe Lauer, Corn Agronomist

Environment significantly affects the amount of grain in corn silage. This year's (2006) drought affected pollination reducing both grain yield and plant stature. Last year's (2005), drought reduced plant stature, but grain yields were at record levels. Following the 2005 growing season, farmers would sometimes talk about corn silage being 'hot' when fed to livestock, meaning that there was too much grain compared to stover (grain equivalents) in the silage.

Dairymen and corn farmers need to understand the grain equivalent relationship when acres are contracted for silage production. This relationship is dynamic and, as we are learning, quite variable to the extent that one predetermined value should probably not be used in contracts. In addition, grain equivalents are used to

calculate loan deficiency payments (LDP) with a value between 7 and 8 bu/T often used for these calculations.

In 2004 and 2005, six corn hybrids were grown at six locations. Hybrid types included bmr, leafy, transgenic, and normal hybrids. Each hybrid was replicated 3 times and grown in 8-row plots, with 4 rows used for silage harvest, and 4 rows used later at grain harvest.

On average, hybrids across locations and years produced grain equivalents of 7.5 bu/T (bushels of grain at 15.5% moisture per ton of corn silage at 65% moisture). The range among environment averages was 2.3 bu/T (min.= 6.3 bu/T, max.= 8.6 bu/T). The range among hybrids for grain equivalents was 6 bu/T (min.= 4.5 bu/T, max.= 10.5 bu/T). Grain equivalents tended to be higher at Arlington and Galesville in 2005 (drought early) than 2004 (normal). The average range among hybrids for an environment was 2.1 bu/T (max.= Rhinelander 2005= 3.6 bu/T, min.= Valders 2004= 1.2 bu/T).

Given the wide range in grain equivalents among hybrids in between and within environments, it is reasonable that dairymen and grain farmers should devise alternative methods for calculating the amount of grain in corn silage. It would be best to negotiate contracts based upon silage quality, rather than grain equivalents or forage yield.

Table 1. Location and year effect on grain equivalents (bu/T) contained in corn silage for six corn hybrids.

Location	Year	Average	Minimum hybrid	Maximum hybrid
bushels of grain (15.5%) per Ton of corn silage (65% moisture)				
Arlington	2004	7.7	6.5	8.3
	2005	8.6	7.8	10.5
Fond du Lac	2005	7.0	6.0	7.5
Galesville	2004	7.2	5.8	8.2
	2005	8.0	7.0	8.8
Marshfield	2004	7.0	5.5	7.7
	2005	6.3	4.5	7.2
Rhinelander	2005	7.7	6.7	10.3
Valders	2004	7.8	7.0	8.2
	2005	7.5	6.5	8.0
Average	---	7.5	6.4	8.5

PLANT DISEASES

UW-Extension/Madison Plant Disease Diagnostic Clinic Update

*Nick Benzschawel, Ashley Bergeron, Emily Church, Amy Gibbs, Ann Joy, Brooke Weber, Catherine Wendt
and Brian Hudelson, Plant Disease Diagnostics Clinic*

The Clinic receives samples of many field, forage, fruit and vegetable crops from around the state. The following diseases are what we identified since August 22, 2006:

CROP	DISEASE/DISORDER	PATHOGEN/CAUSE	COUNTY
Apple	Apple Scab	<i>Venturia inaequalis</i>	Racine
Corn	Anthracnose Stalk Rot Fusarium Stalk/Root Rot Gray Leaf Spot Gibberella Stalk/Root Rot	<i>Colletotrichum graminicola</i> <i>Fusarium</i> sp. <i>Cercospora zeaemaydis</i> <i>Fusarium graminearum</i>	Pierce Pierce Pierce Pierce
Flat Mustard Greens	Black Rot	<i>Xanthomonas campestris</i>	Racine
Onion	Slippery Skin	<i>Pseudomonas gladioli</i> pv. <i>alicola</i>	Waushara
Pear	Black Rot	<i>Sphaeropsis</i> sp.	Dane
Raspberry	Root/Crown Rot	<i>Pythium</i> sp., <i>Rhizoctonia solani</i>	Portage, St. Croix
Soybean	Root Rot Stem Canker	<i>Pythium</i> sp. <i>Diaporthe phaseolorum</i>	Jefferson Jefferson
Tomato	Early Blight Leaf Mold Septoria Leaf Spot	<i>Alternaria solani</i> <i>Fulvia fulva</i> <i>Septoria lycopersici</i>	Outagamie Iowa Iowa

For additional information on plant diseases and their control, visit the PDDC website at <http://pddc.wisc.edu>

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WEEDS

Get Ready for Dandelions This Fall

Chris Boerboom, Extension Weed Scientist

I was at a field day in Chippewa Falls this Tuesday and couldn't believe the carpet of new dandelion seedlings in one of the corn fields. Despite the drought, the dandelions had emerged after the last cultivation and were thick. Dandelions are able to germinate all summer long if weather conditions are favorable because they don't have much seed dormancy. With the droughty conditions, the corn did not canopy well and let plenty of light reach the dandelions so they were not shaded out. This field served as a good reminder to get

ready for dandelions. There may be more of them this fall because of the poor canopy in corn and soybeans in areas of the state.

Fall is generally a better time to target dandelions than in the spring. It's hard to get good consistent control of dandelions in the spring, whether with 2,4-D or glyphosate or other herbicides. The cool temperatures and dandelion's early growth stage combine to keep these herbicides from providing high levels of dandelion control.

No-till corn and soybean fields should be fall scouted for dandelions. In corn, dandelions can be sprayed after silage is harvested with little concern about getting good spray coverage. Even after soybean or corn combining, dandelions can be sprayed with good results. Just let the crop residue settle for week or so to expose more dandelions. Dandelions should also be targeted in old hay fields that are coming out of rotation when no-till or reduced till is planned. It is almost certain that an old hay field will have dandelion. When these hay fields are sprayed-out in the fall, this is an excellent time to kill the dandelions as well.

Whether applied earlier after silage harvest or later after combining, there are good, economical herbicides for fall dandelion control such as Express and 2,4-D. If only dandelions are being targeted, 1 pt/a of 2,4-D LV4 plus 1/6 oz/a Express or 2 pt/a of 2,4-D LV4 are options. I believe straight 2,4-D would provide excellent control of the small dandelion seedlings that I observed at Chippewa Falls, especially after corn silage harvest. The Express/2,4-D combination may be more consistent in the late fall as temperatures get cold. Glyphosate could be added to this combination if there are grasses that need to be controlled and then the Express rate could be dropped to 1/8 oz/a. Additional residual control of winter annual weeds can be gained with the addition of herbicides like Princep or Basis if rotating to corn or Valor or Synchrony if rotating to soybean. The dandelion and winter annual weed control will be greatly appreciated next spring.

Alfalfa might also merit attention this fall. Fall is the best time to spray out old hay fields that are going out of rotation. In the spring, control of alfalfa with glyphosate plus 2,4-D is less consistent. Farmers may also be tempted in the spring to harvest first crop hay and then no-till plant corn. This scenario is frequently a poor choice or even a disaster because either the alfalfa removes too much soil moisture, the alfalfa is not fully controlled, or the alfalfa is not controlled before the corn is planted. Any of these problems may lead to a poor crop of corn. Regardless of the situation, fall is the time to spray out old hay fields and prepare for an early planting of corn next spring.

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The next issue of the "Wisconsin Crop Manager" is scheduled to go in the mail on September 21, 2006.

This and past issues of the Crop Manager are available online at <http://ipcm.wisc.edu/wcm/>. Contact the managing editor (cullen@entomology.wisc.edu) with your suggestions, comments or questions regarding the Crop Manager.

2006 Wisconsin Pest Management Update Meetings

The schedule for the Wisconsin Pest Management Update meetings series is given below. Presentations will include pest management and biology information for Wisconsin field crops. Speakers will include Craig Grau, plant pathologist, Eileen Cullen, entomologist, Mark Renz, weed scientist, and Chris Boerboom, weed scientist.

All meetings start with registration and coffee at 9:30 a.m. Presentations start promptly at 10 a.m. and we will conclude by 3 p.m. Four hours of Certified Crop Advisor CEU credits in pest management were requested for each session. The \$25 registration fee per participant includes the noon meal. Extra packets of materials can be purchased for \$15 each.

Make your reservations with the host agent one week prior to the scheduled meeting date.		
DATE	LOCATION	HOST AGENT
Monday November 6	<u>Sparta</u> Colonial Bowling Center On Hwy 16, just west of Hwy 27, on west side of Sparta	Bill Halfman Monroe County Extension Room 1 14345 County Hwy B Sparta, WI 54656 (608) 269-8722
Tuesday November 7	<u>Bloomer</u> Ruby's Roadhouse Northwest corner of HWY 53 and 40 interchange at Bloomer	Jerry Clark Chippewa County Extension Courthouse Rm. 13 711 N. Bridge Street Chippewa Falls, WI 54729 (715) 726-7950
Wednesday November 8	<u>Marshfield</u> Belvedere Supper Club 2 miles north of Marshfield on Hwy 97	Matt Lippert Wood County Extension P.O. Box 8095 Wisconsin Rapids, WI 54495-8095 715-421-8440
Friday November 10	<u>Fond du Lac</u> Rm 113 University Center, UW-Fond du Lac Hwy 41, exit east on Hwy 23 for 3 miles, north on University Drive, continue right when entering campus	Mike Rankin Fond du Lac County Extension 227 Admin/Extension Bldg. 400 University Dr. Fond du Lac, WI 54935 (920) 929-3170
Monday November 13	<u>Platteville</u> Governor Dodge Convention Center On Hwy 151, just west of Hwy 80 in Platteville	Ted Bay Grant County Extension P.O. Box 31 Lancaster, WI 53813-0031 (608) 723-2125
Tuesday November 14	<u>Arlington</u> Public Events Building Turn west at sign for Ag Research Station on Hwy 51, about 2 miles north of DeForest	Randy Zogbaum Columbia County Extension P.O. Box 567 Portage, WI 53901-0567 (608) 742-9682
Wednesday November 15	<u>Green Bay</u> Rock Garden (Comfort Suites Hotel) Hwy 41, take Hwy 29 (Shawano) exit, east to frontage road and north one block	Kevin Jarek Outagamie County Extension 3365 W Brewster Street Appleton, WI 54914 (920) 832-5119
Thursday November 16	<u>Janesville</u> To be announced in future advertising; call for location	Jim Stute Rock County Extension 51 S. Main Street Janesville, WI 53545-3978 (608) 757-5696