Wisconsin Crop Manager

Volume 20 Number 8 --- University of Wisconsin Crop Manager --- May 2, 2013

Wisconsin Crop Diagnostic Training Center – 2013 Workshops

Dan Heider, UW-Integrated Pest Management Program

Take time now to register for the 2013 Crop Diagnostic Training Center Workshops. Choose from the July 16th Diagnostic Troubleshooting Workshop where you can practice your troubleshooting skills or the August 9th Crop and Pest Management Workshop covering 5 corn and soybean topics. Utilize our easy and convenient online registration site at

https://www.patstore.wisc.edu/ipm/register.asp

Diagnostic Troubleshooting Workshop

Registration Fee: $60 ($75 after 7/1/13)

CCA CEU's: 4.0 (categories to be determined)

Location: Arlington Ag Research Station

Tuesday July 16, 2013

Topics covered:

This workshop gives you the opportunity to fine tune your crop diagnostic skills in a fun, interactive setting! Small groups rotate through field problems with UW Specialists role playing as farmers. Through digging up plants, asking questions and consulting references participants will diagnose the problem and make a recommendation for correction. Each participant will experience 8 separate diagnostic scenarios.

Crop & Pest Management Workshop

Registration Fee: $60 ($75 after 8/1/13)

CCA CEU's: 5.0 (2.0 Soil & Water, 1.0 Crop Mgmt, 1.0 Pest Mgmt, 1.0 Nutrient Mgmt)

Location: Arlington Ag Research Station

Friday August 9, 2013

Topics covered:

Small grain troubleshooting

Shawn Conley, Extension Soybean and Small Grains Specialist

- Are you prepared to handle all the renewed interest in small grains?
- This session will explore crop management practices and troubleshooting in oats and wheat

Weed management strategies to combat herbicide resistance

Vince Davis, Extension Weed Specialist

- Do you really understand best management practices to delay herbicide resistance?
- This section will give you an opportunity to evaluate multiple weed management programs and discuss their potential at affecting herbicide resistance

Cover Crops aren't just for weed control any more

Matt Ruark, Extension Soils Specialist

- Have you considered using cover crops but don't know where to start?
- What about all the buzz surrounding tillage radishes? Is it hype or reality?
- Evaluate several cover crop species for biomass, soil effects and stand establishment

Fertility programs following a draught year

Carrie Laboski, Extension Soils Specialist

- In light of dry soils and poor crops last year, where is all the nitrogen?
- What can pre-plant or pre-sidedress nitrogen tests really tell us?
- This section will focus on the tools available to customize your nitrogen fertility program

To till or not to till

Francisco Arriaga, Extension Soils Specialist

- Not just whether to till or not, but also what kind of tillage
- Does vertical tillage make sense for you?
- Evaluate tillage effects on residue, soil structure and crop production

Schedule: Friday – August 9, 2013

8:45 - 9:00 registration / introduction & orientation

9:00 - 12:00 sessions 1-3

12:00 - 12:45 lunch (provided)

12:45 - 2:45 sessions 4-5

For additional information, contact Dan Heider at (608) 262–6491 or via email at djheider@wisc.edu.

The "Double-Whammy" of Delayed Corn Planting

Joe Lauer, University of Wisconsin

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.

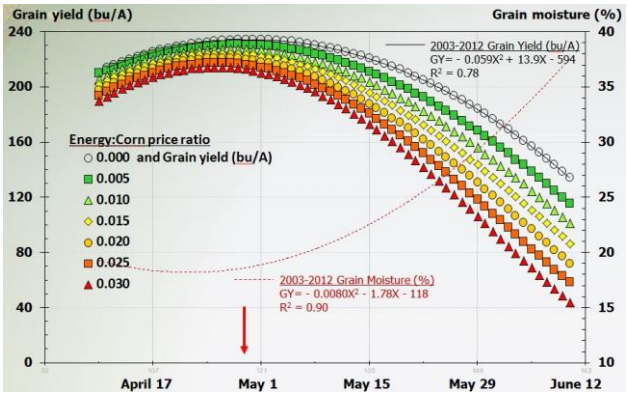
When energy costs are zero, such as for high moisture corn, then farmers only consider yield impacts with delayed planting. Table 1 can be used to calculate the impact of energy costs on corn grain drying using an energy:grain price ratio. As energy price increases the energy:corn price ratio increases. 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.

Maximizing Forage in Winter Injured and Killed Stands, Spring of 2013

Dan Undersander, Forage Agronomist

We are getting reports of significant alfalfa stand damage across Wisconsin and southern Minnesota. The situations vary from low spots only in fields to significant portions of the fields.

I recommend the following:

1) First make sure that "dead" spots are actually dead and not just delayed:
    a. Dig a few plants and check the top 4 inches of the tap root for color and turgor. It should be an off white (like the inside of a potato) and turgid (not ropy). If plants are off white and turgid they are alive and just delayed.
    b. Also check fields that are putting out small shoots. Sometimes the dying plants will produce shoots 1 to 2 inches tall and then die. Again, dig a few plants and look for off-white and turgid taproots.
2) Determine the percentage of field affected and manage accordingly:
    a. If small percentage, simply go over the affected areas with a drill as soon as possible and seed 10 lb/a with a 50/50 mix of Italian (annual) ryegrass and perennial ryegrass.
    b. If a moderate percentage of the field affected and wanting to take first cutting and then reseed – immediately interseed Italian ryegrass (10 lb/a), take first cutting and then seed corn for maximum yield. An alternative in the southern half of the Wisconsin (especially if expecting dry conditions) would be to seed BMR sorghumsudangrass (20 lb/a). Oats should be seeded for forage after Aug 1.
    c. If a large percentage of the field is affected, seed corn or BMR sorghum-sudangrass before July 1 (20 lb/a). Corn will likely produce the most tonnage of any forage. Sorghum-sudangrass is a good choice if you expect dry conditions and/or above average temperatures (like last year). Alfalfa can be seeded into a different field at 10 to 12 lb/a with 6 lb/a tall fescue and 2 lb/a Italian (annual) ryegrass.

Watch for Imbibitional Chilling Injury to Soybean in 2013

Shawn Conley, Soybean and Wheat Extension Specialist

Imbibitional chilling injury is an annual issue associated with field corn but we rarely associate this damage to soybean. Why am I raising this red flag in 2013… many reports of soybean seed containing low seed water content (dependent upon the area where the seed was grown). Bedi and Basra (1993), defined imbibitional chilling injury as sensitivity of seed to a combination of low seed water content and imbibition at cold temperatures. As we all know some of our 2013 soybean seed is of decreased seed quality caused by the drought of 2012. We couple this fact with the current forecast and our eagerness to plant and I foresee potential issues on the near horizon. The challenge for growers and agronomists is the strong genetic predisposition for this phenomenon. Bramlage et al (1979) screened soybean cultivars for sensitivity to imbibitional chilling injury. All were susceptible to some injury but that susceptibility varied greatly. Some showed no injury at 45° F (7 C) whereas others were damaged at 63° F (17 C). This means as your scouting and trying to deduce stand issues your suspect field may look like a train wreck whereas neighboring fields look great.

Lastly I know the question of seed treatments will arise. It is unclear to me the role that todays seed treatments or polymer coatings have in mitigating imbibitional chilling injury. Therefore unless you are absolutely certain you have high quality seed that is 13% moisture with a perfect seed coat I would suggest we just wait a week for warmer weather before we start pounding our seed into this cold wet soil.

Literature cited.

Bedi, S. and A.S. Basra. 1993. Chilling injury in germinating seeds: basic mechanisms and agricultural implications. Seed Science Research. 3:219-229.

Bramlage, W.J., A.C. Leopold, and J.E. Specht. 1979. Imbibitional Chilling Sensitivity Among Soybean Cultivars. Crop Sci. 19:811-814.

Optimum Corn Planting Dates are Later 'Up North'

Joe Lauer, University of Wisconsin-Madison

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: Maximum yield	Date of: 95% of max yield	Rate of daily yield (bu/A) loss on: 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.

Strong genetic differences noted in winter wheat winterkill assessments

Shawn Conley, Soybean and Wheat Extension Specialist

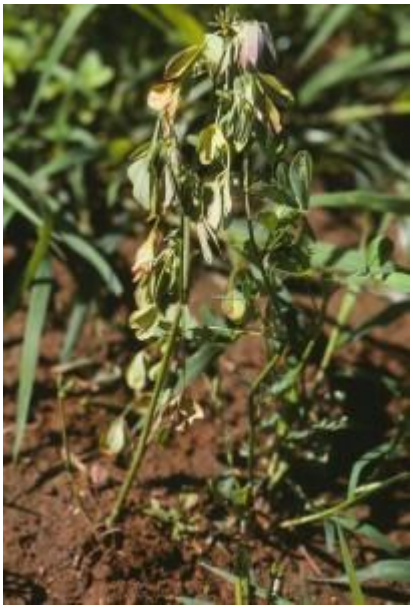
Crop development of the WI winter wheat crop continues at a snail pace (Image 1). In a "normal" year I would be cautioning growers from applying growth regulators in Southern WI. This year we just completed our variety trial winterkill assessments. Crop damage was minimal at our Janesville and Lancaster locations and steadily increased as we moved from Arlington to Chilton. At Arlington percent winterkill averaged 15% with some varieties exhibiting near 70% mortality. At Chilton the average climbed to 25% with some varieties exhibiting near 100% mortality. At both the Arlington and Chilton sites several varieties did perform well and exhibited minimal winter damage. These crop ratings will be published in our 2013 WI Winter Wheat Performance Test Results.

For additional information related to wheat N recommendations and thresholds for destroying wheat stands please refer to:Wheat Stand Assessment: I can tell you if it is alive..too early to say if it is dead!

Damping Off and Root Rot of Alfalfa Caused by Phytophthora and Pythium

Carol Groves, Plant Pathology, UW-Madison, Damon L. Smith, Plant Pathology, UW-Madison/Extension

Pythiums are probably the most common cause of seedling blight and seed rot in alfalfa, destroying seeds before germination or killing seedlings after emergence. *Phytophthora medicaginis* can affect alfalfa plants at all stages of development and is probably the most common root rot pathogen of alfalfa. Damping off and root rots caused by Pythium and Phytophthora are most problematic in acid, poorly drained soils with a high organic matter content, or when prolonged, wet weather follows planting. It is not uncommon for complete stand losses to occur within a few days in low areas of an infected field.



Wilting of an alfalfa plant as a result of Phytophthora root rot. Photo Credit: Craig Grau.

Pythium ultimum and *Pythium irregulare* can infect alfalfa seeds, causing seed blight or rot (pre-emergence damping off),

or they can cause water soaking and eventual death of the roots and stems of seedlings as they emerge (post-emergence damping off). Pythiums also cause damage to mature plants and are often referred to as 'root nibblers' because they destroy the fine roots of plants without causing noticeable decay yet leading to measurable yield reduction. Alfalfa plants infected by *Phytophthora medicaginis* appear stunted, yellow or reddish purple, and may be wilted. Infected taproots have tan to brown lesions, especially where a lateral taproot emerges. Lesions eventually turn black while the center of the root becomes yellow. Affected taproots are often pinched or damped-off immediately below the crown region, resulting in a 'pencil-point' look. When the roots are severely rotted the plants are easily pulled from the soil. Infected seedlings die rapidly, making it difficult to distinguish death caused by Phytophthora from that caused by Pythium. The taproot of Phytophthora-infected plants will be rotted and collapsed at any given point below the soil surface and only the small feeder roots of Pythium-infected plants rot.

To learn more about damping off and root rot of alfalfa, and management suggestions, download a full PDF of this article HERE.

Wisconsin Pest Bulletin 5/2/13

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/05-02-13.pdf

Nitrogen Credits Following Winter-killed Alfalfa

Carrie Laboski, Extension Soil Fertility/Nutrient Management Specialist

As alfalfa is greening up across the state, it is becoming apparent that there is a varying amount of winter-killed alfalfa. Based on the amount of winter-kill in a field, some producers may decide to terminate the alfalfa and plant corn instead. It is important to remember that alfalfa N credits should still be taken for this year's corn crop.

Alfalfa N credits are based on soil texture (medium-/fine-textured or sands/loamy sands), amount of regrowth at the time of stand termination, and number of plants per square foot (Table 1). The method of stand termination (herbicide vs tillage) and time of termination (fall vs spring) do not affect N credits. Where N credits following winter-killed alfalfa may differ from typical stand termination methods is related to decisions surrounding whether or not a first cutting of alfalfa is taken prior to terminating the remainder of the stand. Consider these two scenarios.

1. If the stand last fall was considered good (>4 plants/ft^2) and the field was partly killed over winter and the remaining part will be sprayed out this spring, then it should be considered a good stand for purposes of determining N credits.
2. If the stand last fall was considered good (>4 plants/ft^2) and the field was partly killed over winter BUT a first cutting is taken before spraying, then the stand counts after first cut will dictate N credits.

The same reasoning applies when determining N credits for winter-killed red clover. First-year N credits for red clover are 80% of the alfalfa N credit for similar stands.

If there is concern about estimating N credits after winter-killed alfalfa then a pre-sidedress nitrate test (PSNT) and be used to confirm the N credits. For more information on using the PSNT see Chapter 5 in UWEX Publication *A2809 Nutrient application guidelines for field, vegetable, and fruit crops in Wisconsin*.

Table 1. First-year alfalfa N credits.

	Medium-/fine-textured soils		Sands/loamy sands	
Stand density	>8" regrowth	<8" regrowth	>8" regrowth	<8" regrowth
	lb N/a to credit			
Good (70-100% alfalfa, >4 plants/ft^2)	190	150	140	100
Fair (30-70% alfalfa, 1.5–4 plants/ft^2)	160	120	110	70
Poor (0-30% alfalfa, <1.5 plants/ft^2)	130	90	80	40

Heavy rainfall causes loss of carryover nitrogen on some fields

Carrie Laboski, Extension Soil Fertility/Nutrient Management Specialist

Last week I answered the question: "Are chances for carry-over N diminishing?" The short answer was maybe. Large amounts of precipitation from last fall to this spring provided the conditions necessary to have nitrate leaching, even on medium- and fine-textured soils. Last week only limited soil profile nitrate data was available to evaluate the situation. In the samples collected on two dates from different fields, it appeared that nitrate was moving down in the soil profile, but may not have moved out of the rootzone.

This week we received soil profile nitrate data from 17 locations representing 28% of the locations in the soil nitrate monitoring network that was established last fall to track the potential for carry-over nitrate from the 2012 drought. Table 1 provides data for these 17 locations. It can also be found at: http://uwlab.soils.wisc.edu/soilnitratemonitoring/. At all locations sampled to date, there is less nitrate in the soil profile now compared to last fall. Sites with lower amount of nitrate last fall lost relatively small amounts of nitrate through winter and spring. Nitrate loss was as high as 172 lb N/a at Waterloo (Pella silty clay loam, site 3). On a Plano silt loam at Arlington (site 1) only 36 lb N/a were lost from the top 3 feet of soil.

However 138 lb N/a remain in the profile; which provides an 88 lb N/a credit to this year's crop. Data from the Arlington site clearly show that nitrate has moved from the top foot and into the second foot of soil. Additional rainfall could still leach this nitrate out of the rootzone.

To obtain a N credit from carry-over N using a preplant nitrate test (PPNT), 50 lb N/a must be subtracted from the amount of N in the 3-foot soil profile. Most PPNT sampling is to 2 feet; so the amount of nitrate in the third foot is estimated at the lab. Table 1 shows the actual N credit based on sampling to 3 feet (not all locations were sampled this deep), as well as the N credit based on sampling to 2 feet and estimating the third foot. For samples taken this spring, estimating nitrate in the third foot tends to provide a 10 lb N/a larger N credit on average compared to when samples were taken to 3 feet.

Based on spring profile nitrate samples collected to date, N remaining in the soil last fall after corn harvest has moved through the soil profile. In some cases, all of this N has moved out of the rootzone. In other cases, there is still a substantial N credit from N remaining deeper in the soil profile. As more data is obtained, the soil nitrate monitoring network website will be updated. Consider taking PPNT samples to assess the potential for N credits from carry-over N that resulted from drought stressed corn in 2012. For guidance on taking PPNT samples after a drought, see last week's article titled: "Are chances for carry-over N diminishing? ".

To view Table 1 scroll down to the end of this document.

Follow us on


Table 1. Soil profile N content and N credits from selected sites in the soil nitrate monitoring network. For more detail see: http://uwlab.soils.wisc.edu/soilnitratemonitoring/.

ID	Town	County	Soil Series	Surface texture	Sampling date	Precipitation*	Soil nitrate content					N credit	N credit estimated
							0-1'	1-2'	2-3'	0-2'	0-3'		
						inches	lb N/a						
1	Arlington	Columbia	Plano	silt loam	11/13/12	19.5	83	86	5	169	174	124	191
					4/25/13	11.5	13	78	47	91	138	88	107
2	Sun Prairie	Dane	Ringwood	silt loam	11/13/12	21.3	17	128	40	144	184	134	197
					4/25/13	13.0	23	5	18	28	46	0	0
3	Waterloo	Dodge	Pella	silty clay loam	11/13/12	21.3	148	74	20	221	242	192	235
					4/25/13	12.5	16	38	16	55	70	20	43
4	Coloma	Adams	Billett	sandy loam	11/16/12	22.6	0	15	3	15	18	0	0
					4/26/13	10.2	0	0	0	0	0	0	0
5	Grand Marsh	Adams	Richford	loamy sand	11/16/12	25.8	2	0	2	2	3	0	0
					4/26/13	7.5	4	0	0	4	4	0	0
6	Marshfield	Wood	Withee	silt loam	11/16/12	23.8	19	15	3	34	36	0	5
					4/26/13	4.5	7	4	2	10	13	0	0
39	Portage	Columbia	Ossian	silt loam	11/1/12	20.5	170	35	.	204	.	.	190
					4/16/13	.	13	34	.	47	.	.	32
41	Fremont	Waupaca	Tutsin	Loamy Sand	11/7/12	21	14	0	0	14	14	0	0
					4/16/13	11	4	2	.	6	.	.	0
42	Fremont	Waupaca	Borth	Sandy Loam	11/7/12	21	114	51	17	165	182	132	161
					4/16/13	11	9	40	.	49	.	.	37
43	Fremont	Winnebago	Nebago	Fine Sand	11/7/12	19	78	46	36	125	160	110	118
					4/16/13	11	10	20	.	30	.	.	5
45	Arlington	Columbia	Plano	silt loam	11/14/12	21.5	23	26	.	50	.	.	29
					4/16/13	.	4	5	.	8	.	.	0
46	Lewiston	Columbia	Yahara	fine sandy loam	11/14/12	21.5	29	28	.	56	.	.	36
					4/16/13	.	4	0	.	5	.	.	0
53	Lancaster	Grant	Fayette	silt loam	11/16/12	17.9	32	6	.	37	.	.	1
					4/16/13	.	24	6	.	30	.	.	0
54	Shullsburg	Lafayette	Schappville	silt loam	11/20/12		46	25	3	72	74	24	50
					4/16/13	.	18	21	5	39	44	0	14
55	Shullsburg	Lafayette	Tama	silt loam	11/20/12		20	8	1	27	28	0	0
					4/16/13	.	6	6	4	12	16	0	0
56	Darlington	Lafayette	Palsgrove	silt loam	11/20/12		24	6	0	30	30	0	0
					4/16/13	.	6	5	5	10	15	0	0
58	Steuben	Crawford	Judson	silt loam	11/23/12		34	18	8	52	60	10	25
					4/16/13	.	17	7	21	24	46	0	0

* For fall sampling precipitation is the 2012 growing season precipitation from planting until soil sampling. For spring sampling precipitation is the precipitation, in rainfall equivalents, from fall sampling until spring sampling.