

Wisconsin Crop Manager

Volume 15 Number 22 --- University of Wisconsin Crop Manager --- Aug 7, 2008

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from year to year depending on the specific pattern of rainfall and growing degree days, as well as the length of the fall period.

Table 1. Green manure nitrogen credits¹.

Crop	Growth at the time of killing	
	< 6" ²	> 6" ^{2,3}
lb N/a to credit		
Alfalfa	40	60 – 100
Clover, red	40	50 – 80
Clover, sweet	40	80 – 120
Vetch	40	40 – 90

¹ From UWEX Publication A2809 *Nutrient application guidelines for field, vegetable, and fruit crops in Wisconsin.*

² Reduce credits by 50 lb N/a on sandy, coarse textured soils

³ Use the upper end of the range for spring seeded green manures that are plowed under the following spring. Use the lower end of the range for fall seedings. If top growth of vetch is more than 12" before killing the cover crop, credit 110 – 160 lb N/a.

Late Summer Planting Legumes to Produce Nitrogen Credits for Next Year

Dan Undersander, Department of Agronomy, Carrie Laboski, Department of Soil Science

The high price of nitrogen fertilizer has increased interest in planting a legume crop after wheat or canning crop harvest as a green manure to provide some nitrogen credits for next year's crop. This practice can provide some nitrogen and organic matter as well as increase ground cover to reduce erosion from fields. However, it may not be cost effective.

The following provides some data to help growers decide about options for producing nitrogen credits from late summer planted legumes.

How much nitrogen credits can we expect?

The table 1 below shows the green manure nitrogen credits for several legumes. The nitrogen credit depends on the amount of crop growth and when the legume was planted. Nitrogen credits are 50 lb N/a lower on sandy, coarse-textured soils. Legumes other than those listed below would likely produce a range of N credits similar to those in table 1; however, not enough data exists on N credits to corn from these crops.

It is important to note that crops will perform differently from year to year depending on rainfall patterns, temperature and other considerations as shown by data from Power and Koerner (table 2). Thus **the amount of fall forage dry matter production from August seeded legumes is highly variable**

Table 2. Crop dry weight for plantings in Lincoln, NE

	Aug 7, 1985	Aug 26, 1986
	tons/acre	
Austrian winter pea	0.45	0.35
Hairy vetch	1.40	0.41
Alfalfa	0.47	0.15
Rye	0.57	0.62
Black medic	0.60	0.08
Arrowleaf clover	0.40	0.04

Data from Power and Koerner, 1994, Agron J

If we then consider the seed cost (table 3) and seeding cost (\$15 to \$25/acre) the establishment cost of a legume (other than alsike) will be \$32 to \$69/acre. At nitrogen cost of nearly \$1.00/lb, the legume would have to produce 32 to 69 lbs of nitrogen to break even with fertilizer cost. **The economics of planting a late summer seeded legume for nitrogen credits is questionable for most situations because there is no guarantee that at least a 40 lb N/a credit can be obtained.**

Table 3. Seed cost of potential legumes for late summer seeding

Legume	Seed Cost per lb	Seeding Rate (lb/acre)	Seed cost/acre
Red clover	\$2.70	10	\$27.00
Berseem clover	\$2.10	10	\$21.00
Hairy vetch	\$2.24	20	\$44.80
Alsike Clover	\$1.40	3	\$4.20
Alfalfa	\$5.00	12	\$60
Austrian winter pea	Seed not available		
Medic	Seed not available		

One situation where late summer seeded legumes may be beneficial is where a cover crop is needed to reduce erosion over winter. Any cover crop planted will have some cost so, for example if rye is generally planted as a cover crop, the seed cost is \$15 to \$20/bu rye this year. A legume could be planted for the ground cover at approximately the same cost and then the nitrogen fixed is a bonus. A better possibility may be to seed oats at ¾ to 1 bu/a oats along with the clover to provide rapid ground cover and still have some nitrogen fixing ability from the clover.

August seeding of legumes for nitrogen credits may also be valuable in organic systems where commercial fertilizer is not an option.

How to verify N credits.

If the remainder of the N requirement for corn will be sidedressed next spring, then the pre-sidedress nitrate soil test (PSNT) can be used to verify N credits instead of using values from table 1.

Western Bean Cutworm Reported - Monitor Field & Sweet Corn for Egg Masses and Small Larvae

Eileen Cullen, Extension Entomologist

Summary Points

- Western bean cutworm (WBC) moth flight, egg hatch and larval development underway in Wisconsin.
- Statewide pheromone trap network is recording WBC moth emergence, peak flight and cumulative catch for 2008.
- In field and sweet corn, pheromone traps (a.k.a. “milk jug traps”) help time scouting activities.
- WI DATCP Wisconsin Pest Bulletin reported first egg masses of the season in Marquette County on July 24th.

- Don Genrich, UW Extension Adams County Agriculture Agent, reported half-inch WBC larvae in corn ears August 6th. Field is below threshold of 8% infestation, but 3-4 larvae found in one ear confirmed larval activity in this Adams county field corn field.
- Egg masses and larvae needed for regional research projects on WBC. If you locate infested field(s) please contact Eileen Cullen (cullen@entomology.wisc.edu). We are interested in collecting field samples of WBC. Thank you.

The WI DATCP Wisconsin Pest Bulletin estimated August 1 (Vol. 53, No. 15 <http://pestbulletin.wi.gov/>) that 75% of the season's moth population has emerged in the southwest, south central and west central counties, where accumulations of 1,526 degree days (base 50°F) were surpassed. Pheromone and black light trap counts in these areas should begin to decline noticeably during the first week of August. By contrast, about 25% of the population has emerged in the east central and northern counties and the peak of the flight period will occur during or shortly after the week of August 4th. High trap counts for the week ending August 1st were 118 moths in a black light trap near Sparta in Monroe County and 108 moths in a pheromone trap near Princeton in Green Lake County.

WBC is a late season corn ear pest. WBC has one generation per year, with six or seven larval stages, and overwinters as a full-grown larva, inside a soil chamber. Spring development begins when temperatures exceed 50°F. Larvae pupate in May and moths begin to emerge from soil chambers in late June. Peak emergence in the Upper Midwest is typically between the second and third weeks of July.

The WI DATCP does an excellent job of leading the state’s WBC trapping network. UW Extension county agents and private crop consultants contribute data to WI DATCP as well. All trap capture counts are uploaded to the Western Bean Cutworm Monitoring Network maintained for the Upper Midwest by Iowa State University www.iastate.edu/trap/westernbeancutworm/site.

Western bean cutworm trapping with milk jug pheromone traps began several weeks ago. So far, moths have been caught in Adams, Brown, Columbia, Dane, Dodge, Fond du Lac, Green Lake, Iowa, Jackson, Jefferson, Manitowoc, Marquette, Monroe, Portage, Richland, Sheboygan and Waupaca counties.

Most WBC eggs are laid during peak moth flight during the last week of July and first week of August. In general, the number of moths per trap across these positive counties ranges from 1 to 44 moths since moth emergence. These moth flight numbers are low compared to states west of WI such as IA and NE, more heavily infested in previous years. However, Wisconsin has a hot spot or two of higher trap captures such as Green Lake County where the pheromone trap near Princeton caught 108 moths over several days. For perspective, in western states during WBC outbreaks, hundreds of moths may be captured each night during peak flights. 2008 numbers in Wisconsin are lower than such outbreak levels, but do confirm we have a resident, overwintering population of WBC.

Krista Hamilton, WI DATCP Pest Survey, reported her first WBC egg mass in Marquette County on July 24th. A photo from that Marquette County field is provided here by Mark Moore. Eggs are laid on the upper leaf surface, on the upper part of the plant. Eggs are round are cream colored, then turn purple approximately 24 hours prior to hatch.



Western Bean Cutworm egg mass, Marquette County, July 24 2008.

Photo Courtesy of Mark Moore (Moore Communications)

What does the trap catch mean for corn?

- Managing WBC in corn depends on using the milk jug pheromone traps to detect the intensity and timing of peak flight, because most eggs are laid during this time frame. A heavy flight (so far we haven't seen that in Wisconsin) may require checking the traps several times per week or even daily. You can also use degree days to estimate moth emergence and time scouting activities (see UWEX Publication A3856 link below). Either way, now is the time to be watching field and sweet corn for WBC.
- Trap catch numbers (blacklight or pheromone traps) do not tell you what is happening in a particular field. Trap numbers cannot be used in treatment decisions for fields, rather they are your cue to incorporate WBC into scouting activities.
- Moths prefer to lay eggs in fields close to tasselling. Examine 20 consecutive corn plants in 5 locations in the field to obtain a representative sample of 100 plants. Check the upper 3 or 4 leaves of each plant for presence of WBC egg masses and small larvae. Scout field corn hybrids and processing sweet corn varieties in different stages of development separately. In field corn planted to Bt Corn hybrid with WBC resistance remember to scout the non-Bt refuge.
- Eggs are laid on the upper leaf surface, higher up in the canopy. They will be round (not flat and shingle-like, like corn borer egg masses) in groups of a few to 200, pearly white at first, then turning purple prior to hatch.

- Tiny larvae first feed in the whorl and on the tassel. As second and third instars they move down to the silks, and then as larger larvae into the ear.
- Economic threshold for foliar insecticide treatment is 8 percent of the field with egg masses and/or small larvae. For processing sweet corn, the threshold is reduced to 4 percent.
- Insecticide applications must be timed close to egg hatch and when small larvae are exposed on the tassel and leaf surface. Once larvae have entered the ear, treatment is not effective.
- A note about managing sweet corn—growers tend to have consecutive planting dates of sweet corn, which makes it likely that one or more of the plantings will be attractive to western bean cutworm females.

Fact Sheets and Extension Website available on Western Bean Cutworm

UW Extension Publication A3856. Western bean cutworm: A pest of field and sweet corn

<http://learningstore.uwex.edu/pdf/A3856.pdf>

North Central IPM Center Regional Pest Alert. Western Bean Cutworm.

http://www.ncipmc.org/alerts/wbc_alert.pdf

Western Bean Cutworm Trapping and Short Course Web Seminar (UW Madison Entomology Department, Cullen Lab Website)

<http://www.entomology.wisc.edu/cullenlab/site%20pages/extension/Projects2.html>

Additional Reference

DiFonzo, C. 2008. Western bean cutworm alert. Vol. 4, July 23, 2006. The New Agriculture Network newsletter.

<http://www.new-ag.msu.edu/>

2008 Winter Wheat Performance Test Results

Shawn Conley, Paul Esker, Mark Martinka, and John Gaska

Wisconsin saw a record number of winter wheat acres planted (350,000) in the 2008 growing season, up from the 290,000 planted the previous year. The estimated yield for the 2008 crop is 68 bu/a, down 1.5% from last year. Good soil moisture conditions and favorable temperatures in September and October of 2007 allowed for timely establishment of the wheat crop. Although winterkill due to cold temperature was not

prevalent, ice damage due to record snowfall did cause significant injury to some low lying fields. Spring growing conditions were mostly favorable across the state; however, acres were lost due to extreme rainfall and subsequent flooding across much of the southern part of the state in early June. Cooler-than-normal temperatures in May, June, and July delayed crop maturity, but they also extended the grain fill period for winter wheat. An increase in acres harvested for grain resulted in an estimated record production at 22.4 million bushels, a jump of 20% over the 2007 production of 18.6 million bushels.

Winter wheat yields were variable across our testing locations due to variable rainfall events and disease pressure. Wheat yield at the Lancaster location (66 bu/a test average) was lower than expected due to significantly greater-than-normal rainfall and heavy disease pressure. Wheat yields at Janesville and Chilton averaged 78 and 89 bu/a, respectfully. The Arlington site was abandoned due to ice sheeting that caused significant stand loss.

Results of this test will be available at www.coolbean.info no later than 5 PM. CST on August 7, 2008.



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