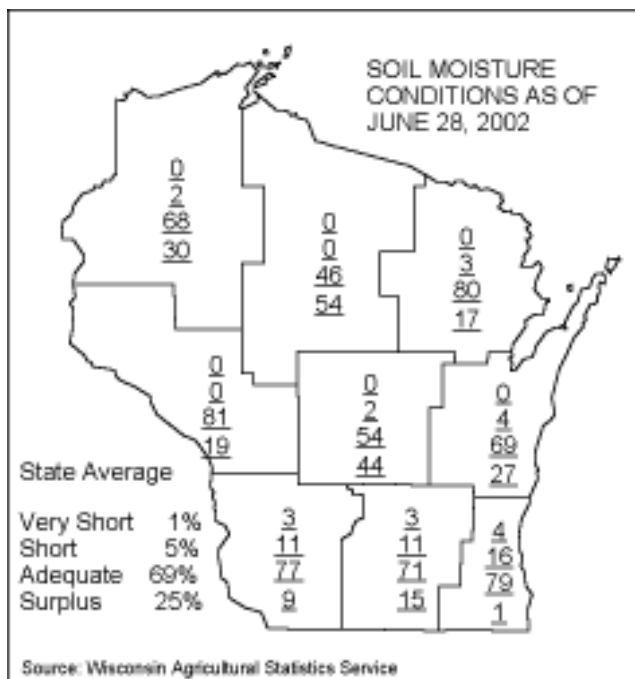


Cooperative Pest Survey Bulletin

Agricultural Resource Management

Bureau of Plant Industry

WI Department of Agriculture, Trade & Consumer Protection, PO Box 8911, Madison, WI 53708-8911 Phone: 1-800-462-2803 Fax: 608-224-4656 Web: Wisconsin.gov



WEATHER AND PESTS

Warm temperatures, up to 8° above normal in some areas, have helped accelerate crop growth. While northern counties reported some crop decline due to excessive soil moisture, growers in southern counties were looking for more precipitation.

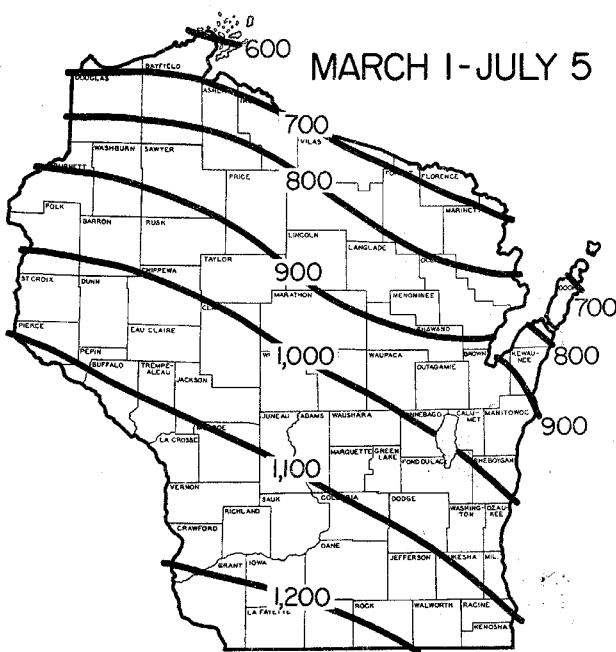
LOOKING AHEAD

A brief forecast of pest-related events growers can anticipate in the upcoming week

Corn rootworm – Historically, trace numbers of corn rootworm beetles often appear in sandy south central corn fields during the week following July 4. The striped Western variant typically emerges before the pale green Northern variant.

Corn earworm – Recent hot weather and the potential for some strong southerly winds signal migratory corn earworm moths will be arriving soon.

Potato leafhopper – Populations seem to be increasing rapidly, with 1st generation nymphs becoming more and more apparent in alfalfa fields throughout the south. As the second cutting of alfalfa progresses, adult leafhoppers will begin searching for other suitable hosts such as new seeding of alfalfa, snap beans, and potatoes.



Historical Average Growing Degree-Days Accumulated Since March 1. (Wisconsin Agricultural Statistics Service)

CORN

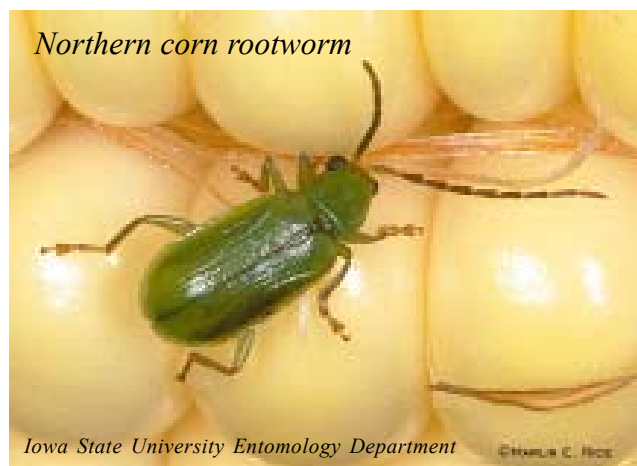
Corn rootworm – Corn producers can anticipate the emergence of corn rootworm beetles in the weeks ahead. This pest becomes active about the same time corn is in the silk stage, usually some time during late July to mid-August, and persists until the first frost. The **western corn rootworm** typically emerges before the **northern corn rootworm**.

Both the adult and larval stages of corn rootworm damage corn plants. Adults weaken plants by feeding on the leaves and corn silks. When population densities are high prior to pollen shed, silk clipping by adults can disrupt pollination. Corn rootworm beetles seem to exhibit a feeding preference toward the particular parts of the corn plant, northern corn rootworms tend to be silk feeders,

while western corn rootworms are more likely to feed on corn foliage. Although adults can cause extensive damage, the injuries caused by the root-feeding larvae are generally more severe. Reduced yields and lodging are two effects associated with larval feeding.

The three species of corn rootworm that occur in Wisconsin are relatively easy to differentiate. Western corn rootworm beetles are striped, while northern corn rootworms have no stripes and are pale green in color. The southern corn rootworm is green with black spots, and tends to be slightly larger in size. **Southern corn rootworm** doesn't occur in large numbers in Wisconsin and is not considered economically important.

Decisions on whether to treat are based on adult populations during the previous growing season. Producers should scout for corn rootworms regularly during the growing season, estimate the density of next year's population, and decide whether applying a soil



Northern corn rootworm

Iowa State University Entomology Department

© CHARLES E. RICE

insecticide next spring is warranted. Treating with a soil insecticide *the following season* is suggested when an average of 0.75 beetles per plant is detected while scouting.

European corn borer – Larval feeding was apparent in grain corn surveyed late last week. Surveys in early-planted grain corn in the south central region of the state revealed up to 44% of the plants infested with small larvae. Two to four larvae per plant were common. Growers should note that the optimum larval treatment period, 800-1100 GDD, is passing rapidly due to high temperatures.

Stalk borer – Infestations were prevalent in the margins of many south central district corn fields where up to 25% of the plants showed signs of feeding injury. The larvae observed late last week were approximately one inch in length.

Corn earworm – Pheromone traps should be in place now.



Southern corn rootworm

Texas A&M University Department of Entomology

Black light trap catches indicate that a few migrants are already present in Wisconsin, but the substantial influx of moths is still to come.

Eyespot – Several fields in the southern tier counties had light levels of eyespot, caused by *Kabatiella zae*. Generally considered a concern of corn in the northern regions of the Midwest, eyespot appears to be emerging as a more common disease of corn throughout Wisconsin, particularly in corn-on-corn situations. Eyespot symptoms may resemble genetic or physiologic leaf spots. Symptoms begin as circular, water-soaked lesions about 1/16th of an inch across, and expand to about 1/8th of an inch, with tan centers and dark brown or purple borders. Lesions are usually surrounded by a yellow halo, most easily detected by holding the leaf to the sky. Lesions usually begin on the lower leaves, and work up the plant. Frequently, a band of eyespot lesions will cross a leaf, grown out from a time where spores were washed into the whorl and caused infection.

Northern corn leaf spot (= Carbonum leaf spot) – Several



Western corn rootworm

Iowa State University Entomology Department

fields in Rock Co. had low to moderate levels of northern corn leaf spot, caused by *Bipolaris zeicola*. Several races of the fungus have been identified; most do not cause significant yield loss on hybrid corn, but may be a concern for seed producers.

Common maize rust – The year's first State Pest Survey observation of common maize rust came in a field in Rock Co. Trace levels of rust were detected on lower leaves throughout much of the field. Rust is seldom a concern for growers of field corn, but can have significant impacts on sweet corn production, with effects upon both yield and quality. Dr. Bill Tracy of UW-Madison states that for every 10% of leaf area damaged by common rust, yield decreases by 6%.

Spores of common rust blow into the state from fields in the south, from as far south as Mexico. A race shift in the last several years has overcome a previously effective host resistance gene, *Rp1-d*. Hybrids with other genes for resistance are becoming available. The disease is favored by moderate temperatures (60-75° F) and heavy dew or high relative humidity.

FORAGES

Potato leafhopper – Production of nymphs is becoming increasingly apparent in alfalfa in the southern counties. Counts ranged from 1.7 to 2.3 per sweep in second growth alfalfa measuring 16-20 inches in height. Adult numbers are also moderate to high in the south central district, with up to 2 per sweep found in some Dane Co. fields. Survey efforts farther north, in Shawano, Marathon and Waupaca Cos. indicate populations remain low, with 0.3 to 0.5 adults per sweep in 8-12 inch fields. No nymphs were swept from the fields surveyed in these counties.

Pea aphid – Counts in alfalfa ranged up to 4.6 per sweep. Beneficial insects that typically keep pea aphid populations in check, such as parasitic wasps, lady beetles and lacewing larvae were abundant in the fields surveyed late last week.

SMALL GRAINS

Leaf rust of wheat – Trace levels of wheat leaf rust were found in a late (milk stage) wheat field in Dane Co. Despite reports of considerable leaf rust this year in the Great Plains, this is the first rust observed on WI wheat this year, and comes too late in the cropping cycle to be of any significance.

Scab of wheat – Wheat fields throughout the southern part of the state are showing low levels of the bleached, sterile heads symptomatic of scab infection. While yield losses to scab are generally a minor concern, the fungi responsible for the disease may produce mycotoxins. These mycotoxins can lead to feed refusal by livestock, and ingestion can cause

muscle spasms, vomiting and other disorders in non-ruminants. Unfortunately, mycotoxin production is not directly correlated with field symptoms.

Crown rust of oats – Reports of crown rust infection on common buckthorn were widespread this spring, but the hot dry weather experienced by the southern part of the state has kept crown rust infection of oats to low levels. Oats across the southern tier are ripening, with only small scattered foci of crown rust infection evident.

Powdery mildew of barley – A barley field in Green Co. had moderate levels of powdery mildew. One of the earliest recorded plant diseases, and one mentioned in the Bible, powdery mildew is considered the most significant leaf blight of barley in Europe. In Wisconsin, it is much less common, as the acreage of barley is sufficiently scattered to prevent much disease buildup. The strain of the fungus (*Erysiphe graminis* f. sp. *hordei*) which infects barley does not infect other small grains or other grasses except wild Hordeums.

Fusarium - This fungal pathogen was causing foliar symptoms on barley in Dunn Co

Septoria- Rye in Pepin Co. was infected.

Helminthosporium tritici-repentis- This pathogen, which causes **yellow leaf spot**, was found on wheat.

VEGETABLES

Late blight of potatoes- Late blight was identified in several potato fields in Waushara County a week ago on Tuesday (6/25) and Wednesday (6/26). There are at least 10 fields in an expanded area between Plainfield and Hancock. For many of these fields there are multiple sporulating lesions on scattered potato plants. All late blight sightings were made by private IPM scouts who reported that the sporulating lesions were often in the lower plant canopy and hidden from easy detection. Current and forecast weather conditions favor sporulation, spore spread and plant infection. A full cycle of the late blight pathogen takes about four days from sporulation through plant infection to sporulation of new lesions. Within the next week we will have a much clearer view of the extent of late blight spread from this most recent round of storms. Additional storms on Tuesday evening and Wednesday afternoon likely added to further disease spread. Given the recent heavy rains in central Wisconsin and rapid accumulation of severity values during the past week, everyone should be scouting their fields for symptoms of late blight even if they employ private IPM scouts for weekly field surveillance. Young lesions appear as small necrotic spots that are collapsed and surrounded by light green tissue. These young lesions are often difficult to find, particularly if they are buried in the canopy. As the lesions quickly enlarge and assume the characteristic round appearance, look for the necrotic (dead and blackened) centers surrounded by

collapsed pale green or pale yellow tissue. Leaf veins do not confine these lesions. Under moist conditions you will find a ring of white mildew (sporangia and sporangiophores) at the margins of necrotic tissue, usually on the undersides of the leaf lesions. It is at this point, when the lesions can be over one inch in diameter, that they become most noticeable. Lesions are also common on stems, leaf petioles and blossom pedicels where they quickly girdle and blacken succulent tissues.

Control measures have been applied in most potato fields for the past three weeks. At the moment, however, spray programs should be intensified to at least treatment every 5 days in those areas within or close proximity to the areas receiving heavy rainfall during the past week. During the past few years, the material of choice has been cymoxanil (Curzate) mixed with either chlorothalonil, mancozeb or metiram. Other excellent products are available including dimethomorph (Acrobat) and propamocarb hydrochloride (Previcur Flex) both tank mixed with chlorothalonil, mancozeb or metiram and zoxamide plus mancozeb (Gavel includes both zoxamide and mancozeb). Given the current rapid plant growth in most fields, bring Gavel into the picture somewhat later in the season when plant growth begins to slow to better take advantage of the retention properties of the Gavel material. Copper-containing materials are available for organic growers and others who choose not to use the materials listed above. Coverage is critical to good control. With the amount of rain arriving this past weekend, it is likely that most of the residual fungicide protection is gone. Reestablishing protective residues on the lower canopy is going to be tough with the amount of foliage that exists on rapidly growing plants. Increasing the number of gallons of water applied per acre, using larger droplets in an attempt to penetrate the canopy and using equipment and pressures that move the leaves as you pass over the plants may open the canopy enough to allow for more thorough coverage.

Potato flooding damage in Central Wisconsin — The recent storms severely damaged some fields in central Wisconsin to the point that water is still standing in sandy fields almost a week after the rain arrived. Plants in waterlogged fields are beginning to die, but it is likely that many plants in these wet areas will survive in a weakened state. From the standpoint of good husbandry and late blight management, it is important to either protect production fields from late blight infection or, if the field is abandoned, apply an effective vine desiccant to reduce the risk of areawide late blight.

Early blight of potato- Early blight is beginning to appear in the earliest planted fields. Recent heavy rainfall will likely accelerate the appearance of symptoms and disease spread. Plants that are nutritionally stressed appear to be more susceptible to infection than plants that are well nourished. Lesions of early blight can be circular, but since early blight lesions are confined by leaf veins most lesions are angular. They also have distinct dark brown / light brown bands

across their surface. Treatment with azoxystrobin fungicide beginning at row close (weeks 1, 3 and 5) alternating with chlorothalonil, mancozeb or metiram and use of these materials for the remainder of the season has provided some of the best overall control of early blight. Treatment midseason with TPTH mixed with metiram or mancozeb has also provided good control of early blight.

HUMANS AND ANIMALS

European earwig – Populations remain very high at some sites, with most of the nymphs being ½ to ¾ grown. Hot, dry conditions are causing them to seek new, dark hiding places and the number of them that are wandering into homes has increased dramatically in the last week to 10 days. Many homeowners are not happy to be sharing space with this form of wildlife!

FOREST, SHADE TREE, ORNAMENTALS AND TURF

Aphids- Found in light to moderate levels on annuals, peppers, spireas and apples at nursery dealers and growers in Washington, Sheboygan, Sawyer, Polk and Jackson Cos.

Ash plant bug- Found on green ash in light amounts at a nursery grower in Jackson Co.

Balsam twig aphid- Found in trace amounts of damage on balsam fir in Jackson Co. at a nursery grower.

Birch leafminer- Found in light amounts on whitespire birch in Jackson Co. at a nursery grower.

Bladder galls- Found on silver maple in light to moderate amounts at a nursery dealer in Washington Co.

Bronze birch borer- Found in moderate amounts on Whitespire Birch in Jackson Co. at a nursery grower.

Cottony maple scale- Found on a Linden in trace amounts at a nursery grower in Waukesha Co.

Eastern spruce gall adelgids- Found on Colorado spruce in trace amounts in Sawyer Co.

Euonymus caterpillars- Found on burningbush in moderate amount in Washington Co.

Fall webworm – A colony was observed on boxelder near Mount Horeb, Dane Co., on July 2. Larvae were in the 3rd instar.

Fletcher scale- Found on runyon yews in trace amounts at a nursery grower in Jackson Co.

Forest tent caterpillars- Found at a nursery grower in Waukesha Co. on a crabapple in trace amounts.

Imported willow leaf beetle- Found at nursery growers in Jackson and Waukesha Cos. in light amounts in weeping willow and laurel leaf willow.

Lappet moth larva- *Phyllodesma americana* was found at a nursery grower in Jackson Co. feeding on whitespire birch.

Leaf curling aphids- Found on autumn purple ash and green ash in light amounts at nursery growers in Jackson and Waukesha Cos.

Leaf galls- Found at nursery growers in Jackson and Waukesha Cos. on linden and river birch, also found on ash in trace levels in Washington Co.

Leafhoppers- Found at a nursery grower in Jackson Co. on Norway maple, Paul's scarlet hawthorn and honeylocust in light amounts.

Leafminer- Found on alder, hawthorn and elm in light amounts at nursery growers and dealers in Washington and Waukesha Cos.

Leaf roller caterpillars- Found on Patmore ash at a nursery grower in Jackson Co.

Oak leafminer- Found on swamp white oak in light amounts in Jackson Co. at a nursery grower.

Pale green weevil- Found on whitespire birch, river birch and Peking cotoneaster at nursery growers and dealers in Milwaukee, Washington, Jackson and Waukesha Cos.

Pales weevil- Light damage found on Scotch pine at a nursery grower in Jackson Co.

Pine spittlebug- Found on larch, Scotch pine and mugo pine at nursery growers in Waukesha and Jackson Cos. In light to moderate amounts.

Root collar weevil- Found on a Scotch pine in moderate amounts at a nursery grower in Jackson Co.

Rose chafers- Found in light to moderate amounts in cherry, river birch, arrowwood viburnum, maple, Patmore ash and potentilla at nursery growers Jackson Co.

Shoot tip sawfly- Found at a nursery grower in Jackson Co. in light amounts on nannyberry viburnum.

Spiny witchhazel aphids- Found on river birch in light amounts at nursery dealers and growers in Milwaukee, Washington, Jackson and Waukesha Cos.

Spittlebug- Found in light amounts in Polk and Waukesha Cos. On Renaissance spirea and fairy rose at nursery dealers.



Spring canker worm- Found in moderate amounts at a nursery grower in Waukesha Co. on purpleleaf plum.

Thrips- Found at nursery dealers on marigolds, verbena and apples in light to moderate amounts in Washington, Sheboygan and Sawyer Cos.

Zimmerman pine moth- Found in moderate amounts in Scotch pine at a nursery grower in Jackson Co.

Alternaria leaf spot- Found on weeping mulberry and dwarf apples in light amounts in Jackson Co. This was also found on roses in Shawano Co. During persisting hot and wet conditions the infections may spread to flowers.

Anthracnose- This disease was detected on swamp white oak in Crawford Co. There are several fungal pathogens that infect young foliage causing anthracnose symptoms. Infections during early development may cause dropping of leaves or may turn large areas of foliage brown and result in a twisted, gnarly look to leaves. Black fruiting structures along leaf veins and in necrotic leaf tissue indicate the presence of fungal pathogens. While the disease is unsightly it will not kill oak trees. Anthracnose was also found on bergenia, river birch and green ash at nursery growers and dealers in light to moderate amounts in Waukesha and Jackson Co.

Apple scab- Found at nursery growers and dealers on apples and crabapples in light to moderate amounts in Washington, Sheboygan, Waukesha, Sawyer and Jackson Cos.

Bacterial blight- Found at nursery growers in Jackson and Waukesha Co. in light amounts on French hybrid lilacs.

Bacterial leaf spot- Found on impatiens, compact American viburnum at nursery growers and dealers in moderate to heavy amounts in Waukesha and Jackson Cos.

Black spot- Found on roses in moderate levels at nursery

dealers and a grower in Waukesha, Milwaukee, Sheboygan, Sawyer and Jackson Cos.

Botryosphaeria- This pathogen caused cankers on white spire birch in Grant Co. The cankers enlarge around branches girdling them. Small black fruiting bodies appear on the cankered bark as tiny black dots. The wood and pith of the branch turns black or brown. Botryosphaeria can affect many different tree species including dogwood, crabapple, pine, oak, rose and willow.

Botrytis- Found on petunia and impatiens in moderate levels at a dealer in Waukesha Co.

Broom rust- Found at a nursery grower in Jackson Co. in light amounts on balsam fir. Spores were being released at the time of the inspection.

Cedar-apple rust- Found on junipers and hawthorns in light amounts in Washington, Waukesha and Jackson Cos. at nursery growers and dealers.

Dothistroma needle blight- Found at a nursery grower in Waukesha Co. in heavy amounts in Austrian pine.

Impatiens necrotic spot virus (INSV)- Found in impatiens in Sheboygan at a nursery dealer.

Leaf streak- Found in daylilies at a nursery grower in Jackson co. in light amounts.

Phomopsis tip blight- Found on spreading junipers at nursery growers and dealers in light to moderate amounts in Washington, Jackson and Waukesha Cos.

Phyllosticta leaf spot- Found in Jackson Co. at a nursery grower in light amounts on amur maple and red maple.

Phytophthora root rot- Found in moderate to heavy amounts on viburnums and evergreen seedlings at a nursery dealer and a nursery grower.

Pine gall rust- Found in moderate levels in Scotch pine at a grower in Jackson Co.

Powdery mildew- Found on roses and alpine current in light to moderate amounts in nursery growers and dealers in Milwaukee, Waukesha, Washington, Sheboygan, Sawyer and Jackson Cos.

Red spot- Found on peony in moderate amounts at nursery dealers in Milwaukee and Waukesha Cos.

Rhizosphaera needlecast- Found in heavy amounts in Colorado spruce in Jackson Co. at nursery growers.

Rhizosphaera pini- Found in light to moderate levels in

balsam and fraser fir in a nursery grower in Jackson Co.

Rose Mosaic Virus- Found on roses in Milwaukee and Sheboygan Cos. at nursery dealers.

Septoria leaf spot- Found at nursery dealers and growers in light amount in spirea, red twig dogwood, pagoda dogwood and purpleleaf plum in Sheboygan, Jackson, and Waukesha Cos.

Shot hole disease- Found on purpleleaf plum and flower plums in light amounts in Sheboygan and Jackson Cos. at nursery dealers and growers.

Sphaeropsis shoot blight- Found on Scotch pine in moderate amounts at a nursery grower in Jackson Co.

STATE/ FEDERAL PROGRAMS

Gypsy moth trapping program - Trappers are continuing to set traps statewide. As of 6/26/02, trappers have set 20,756 (77%) of the expected total of 27,000 traps. Thirty counties are now complete and we expect to be done on or about July 5th. Completed counties are: Buffalo, Calumet, Dunn, Florence, Fond du Lac, Green, Green lake, Jackson, Jefferson, Kewaunee, LaCrosse, Lafayette, Lincoln, Manitowoc, Milwaukee, Oconto, Oneida, Outagamie, Pepin, Price, Racine, Rusk, St. Croix, Sheboygan, Taylor, Vernon, Vilas, Walworth, Waukesha, and Waupaca.

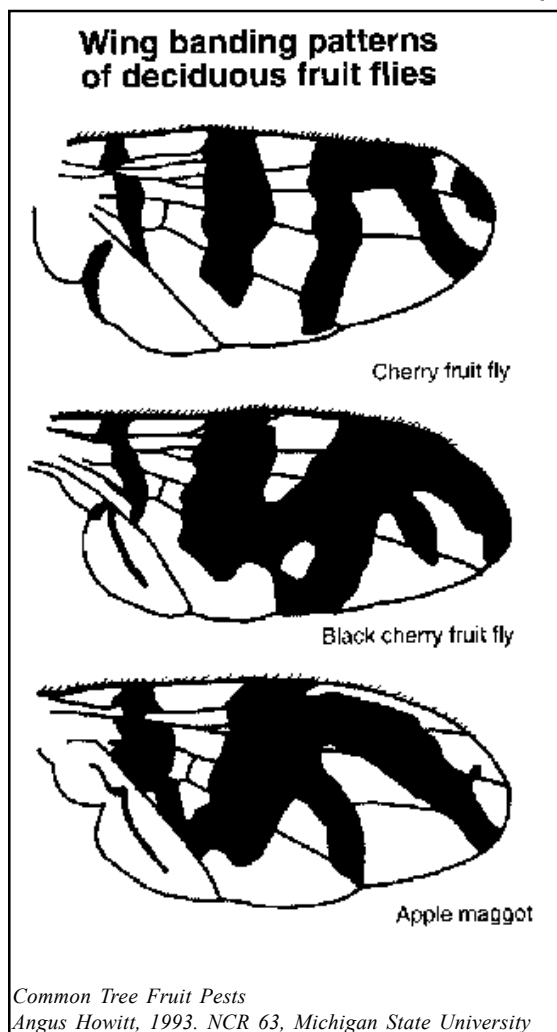
Counties that at least 75% complete are: Brown (78%), Burnett (95%), Chippewa (89%), Clark (96%), Crawford (84%), Douglas (79%), Eau Claire (95%), Juneau (96%), Langlade (92%), Marquette (75%), Pierce (81%), Polk (94%), Portage (90%), Rock (78%), Sauk (80%), Trempealeau (93%), Washburn (98%), Washington (94%), Waushara (86%), and Wood (89%).

Trap check is estimated to start in the south around July 17th depending on gypsy moth phenology reports. Trap check in the north will start about 1-2 weeks later. Trap check will take approximately 3 weeks to complete. Trappers do trap maintenance and count gypsy moths in the trap at each trap location. Traps are replaced if they are missing, full of gypsy moths, or full of debris and can't hold any gypsy moths.

For more information on the gypsy moth program, please call our hotline at 1-800-642-MOTH or visit our website at <http://datcp.state.wi.us> and type 'gypsy moth' in the search box.

FRUIT

Apple maggot – Apple growers should have red ball and yellow sticky traps in place now. The rains forecasted for this week will likely benefit this pest. Research has demonstrated that soil moisture of 20% is most favorable for the emergence of apple maggot flies, while very low soil moisture causes



Using 50°F as a base, degree-days (DD) for apple maggot activity are:

- 900 DD first adult emergence
- 1,100 DD first eggs laid
- 1,600 DD peak adult emergence
- 1,750 DD peak egg laying
- 2,800 DD end of adult emergence

**Data from MSU PETE model, Common Tree Fruit Pests*
Angus Howitt, 1993. NCR 63, Michigan State University

Codling moth – Dissections of untreated Cortland apples yielded 2 second instar larvae per 20 fruits at a site in northern Dane Co. on July 2. One **plum curculio** larva and seven unoccupied tunnels also were found in the same 20 apples.

APPLE INSECT TRAPPING RESULTS

County	Date	STLM	RBLR	CM	OBLR
Richland Co.					
Hill Point	6/25-7/2	196	11	5	1
Crawford Co.					
Gays Mills-W2	6/24-6/30	50	8	3	0
Dane Co.					
Deerfield	6/25-7/1	835	11	0	1
Pierce Co.					
Beldenville	6/27-7/3	500+	0	6	20
Spring Valley	6/26-7/2	778	5	1	3
Jackson Co.					
Hixton	6/25-7/1	45	0	0	1
Fond du Lac Co.					
Malone	6/24-7/1		3	6	9
Adams Co.					
Oxford	6/24-7/1	1410	0	5	3
Marquette Co					
Montello	6/24-7/1	1261	27	2	26
Racine Co.					
Rochester	6/27-7/3	836	18	5	8

pupae to dry up. A high soil moisture content can be detrimental to the pupae as well.

Identification of apple maggot flies can be problematic because another common fruit fly, the **cherry fruit fly** is frequently attracted to the same traps used to lure apple maggot flies. Note the different wing banding pattern of the two flies in the figure above. The **cherry fruit fly** has an eyespot at the end of each wing.

BLACKLIGHT TRAPPING RESULTS

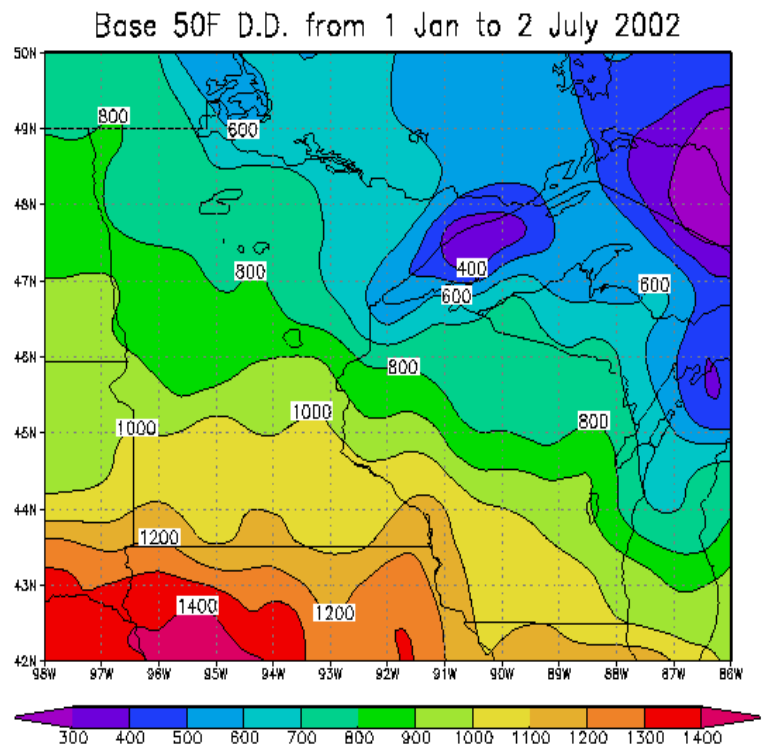
through July 2

Trap Site	Euro. Corn Borer	Army-Worm	Black Cutworm	Vari. Cutworm	Spot. Cutworm	Celery Looper	Forage Looper	Corn Earworm
Janesville	5	89	6	0	0	33	18	0
Oakfield thru 6/26	8	2						
Manitowoc					2	2		
Chippewa	43							

Website of the Week:

<http://www.agday.org/>

National Agriculture Week website. Sponsored by the Agriculture Council of America in Overland Park Kansas. The site is very colorful. Businesses who have “pick your own” places or farm markets may get some promotional ideas, including posters, kid stuff and a button for educating consumers.



<http://bob.soils.wisc.edu/wimnext/tree/arbor.html>