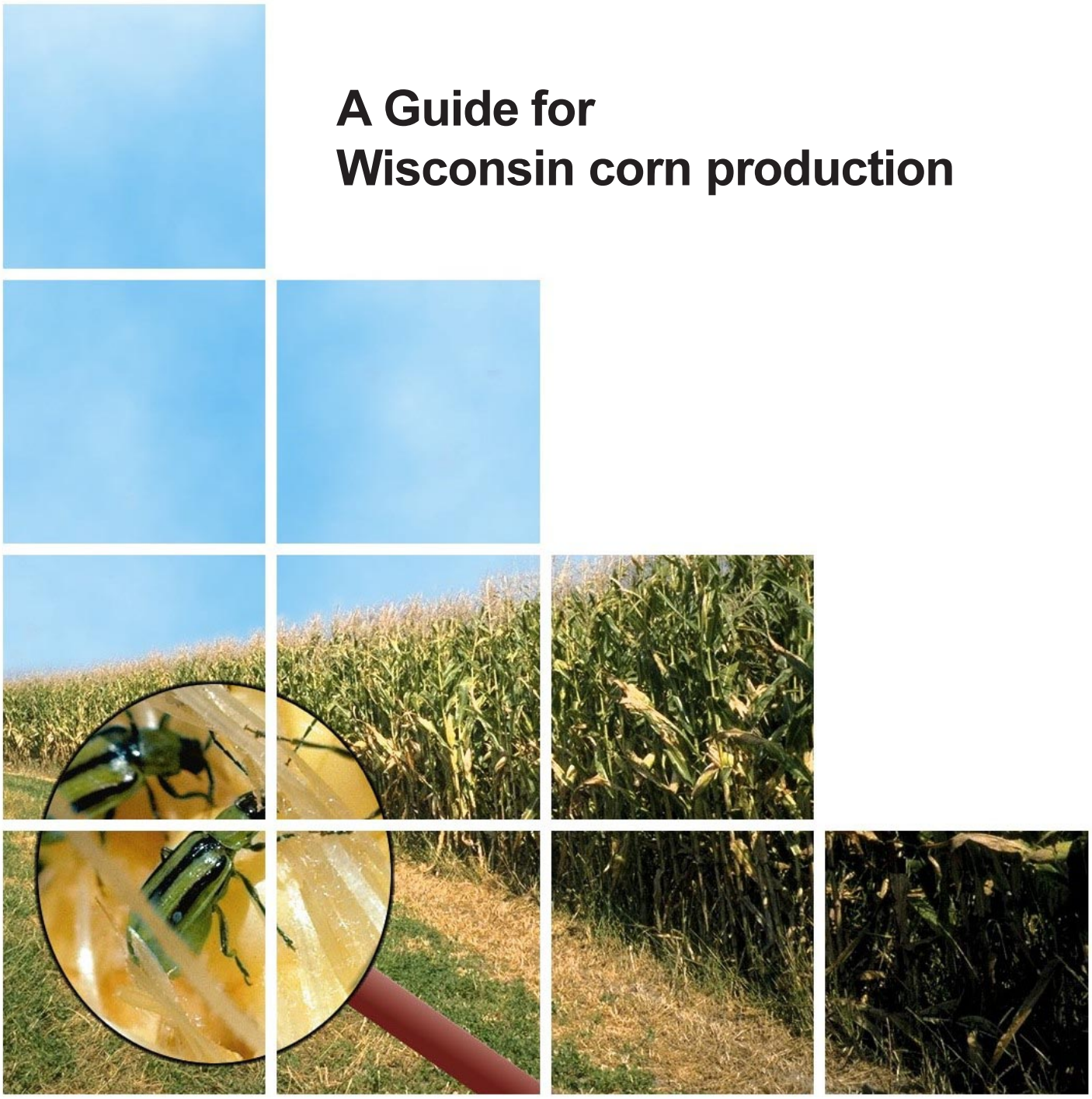
A3547

Corn

Integrated Pest Management Program - University of Wisconsin–Extension, Cooperative Extension Service

Crop Scouting Manual

A Guide for Wisconsin corn production



Scouting Corn: A guide to efficient pest scouting

J. Doll, C. Grau, B. Jensen, J. Wedberg, J. Meyer

Introduction

Field monitoring, or scouting, is the backbone of all pest management programs. Before appropriate pest control decisions can be made, a detailed assessment of pest populations must be obtained. Efficient pest scouting requires a thorough knowledge of pest and crop biology, pest identification and habits, correct sampling methods, and economic thresholds (when available).

The goal of scouting is to give a complete, accurate and unbiased assessment of pest populations. The field scout is the link between the consultant and grower. Scouting report forms must be comprehensive enough so control decisions can be made directly from the report form. These forms not only serve as a record of current pest populations but should be saved by the growers or consultant as part of the field history records.

Scouting Frequency

The frequency with which visits must be made depends on the type of crop grown and pest(s) present or expected. Field visits must be scheduled such that increases in pest populations are detected as soon as economic thresholds are reached.Field corn should be monitored at weekly intervals until pollination is completed, at which time scouting frequency can be relaxed to approximately once every ten days. At this time there is little danger of pest levels exceeding the economic threshold level between visits. The field scouts, however, should always have flexible schedules to allow revisiting problem fields.

Scouting Patterns

Before a scout enters a field an appropriate route must be planned. For efficiency sake, an M-shaped walking pattern is best used on square or rectangular shaped fields. In irregularly shaped fields scouts must keep in mind that they must cover a representative area of the field. Consult Figure 1 for suggested field patterns.

You cannot scout one edge of the field and expect pest populations to be the same in other areas. Do not sample the edge of a field unless it is specifically recommended (i.e. stalk borer or weed scouting). Often pest populations found on the field edge do not indicate what is present in the rest of the field. The exception, of course, is contour strips, where the whole strip can be considered “edge.” When

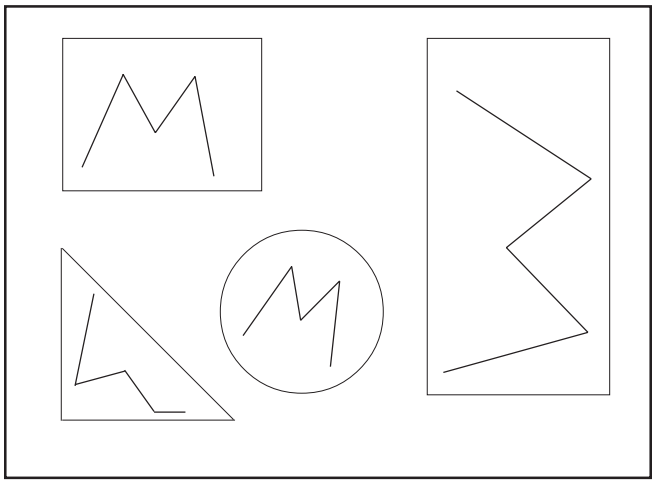


Figure 1: Suggested field patterns

scouting contour strips, walk the middle of the contour and zig-zag back and forth. Each individual strip must be scouted separately because the types of pest found as well as degree of infestation may vary from strip to strip.

The number of times a scout must stop to make specific counts will vary according to the type of pests found and will be discussed later in this bulletin.

For large fields (greater than fifty acres), the scout’s accuracy diminishes to the point where a field of this size or larger should be split into two separate fields. Separate fields according to geography, previous cropping history or soil type.

Field History Forms

Before the scouting season begins, growers should complete a Field History Form (Appendix A). It should contain such information as field location, cropping history, crop yields, pesticide use, fertilizer and lime applications, soil type, soil test records, major pest problems, and anything else that could make scouting more effective.

Scouting Report Forms

Whenever a field is scouted, a field report form (Appendices B or C) should be filled out and a copy left with the grower. Even if damaging levels of pests are not found, farmers are still interested in general crop health and growth stage. These forms should be filled out in triplicate with copies given to the grower, scout supervisor, and a copy should stay with the scout. As scouts prepare to walk individual

fields, they should familiarize themselves with past reports so problem areas can be closely monitored.

Equipment

When monitoring corn a scout should carry the following equipment:

- scout report forms and clipboard pencil(s)
- pocket knife (for splitting stalks and cutworm scouting)
- magnifying glass or hand lens for accurate pest identification
- bags, plastic vials and labels (for collecting plant and insect specimens for future identification)
- mechanical hand counter
- measuring tape

In addition the scout should have available in their vehicle:

- reference materials (in case problems are encountered in the field)
- spade (for digging entire plant for pest identification)
- cooler with ice (to keep unknown weed, insect and disease samples fresh until accurate identification can be obtained)

Stand Counts

Stand counts should be made the second week after emergence. Count the number of plants in 20 linear feet of row from five randomly selected areas of a field. Measure the distance between rows in several locations within the field. Multiply the total number of plants counted in the 100 feet of row by the appropriate conversion factor (Table 1) to determine plant population.

Row Width	Conversion Factor
30 inches	174
36 inches	145
38 inches	138
40 inches	131

For example, if you have counted a total of 145 plants and the row width was 30 inches, multiply 145 (plants) x 174 (conversion factor) = 25,230 plants per acre.

Table 1: Conversion factors to determine corn populations

Weed Scouting Procedure

The first weed survey should occur shortly after corn emergence and continue at weekly intervals until control options are no longer available. Scouts should record the relative weed abundance and growth stages at ten randomly selected sites. When moving between sites always look for pockets of problem weed infestations. Mark their location on a weed map (Appendix D) so growers can spot treat these areas if necessary. Continue adding to this weed map as the season progresses. This map should be as accurate as possible and include field boundaries and other points of reference (i.e. waterways, access roads and buildings).

Scouts can group individual weed populations into these four categories:

Scattered-Weeds present but very few plants within the field. Enough plants to produce seed but not likely to cause economic loss in the current year.

Slight-Weeds scattered throughout the field, an average of no more than 1 plant per 3 feet of row, or scattered spots of moderate infestations. Economic loss unlikely but possible in certain areas.

Moderate-Fairly uniform concentration of weeds across the field. Average concentrations of no more than 1 plant per foot of row or scattered spots of severe infestations. Economic loss likely unless control measures taken.

Severe-More than 1 plant per foot of row for broadleaf weeds and 3 plants per foot of row for grasses, or large areas of heavy infestations. Economic loss certain unless weeds controlled.

We do not have exact threshold numbers on a species by species basis at this time. Common sense and intuition should be the guides to determine the course of action in a given field.

Perennial broadleaves like Canada thistle, hemp dogbane, bindweeds, and Jerusalem artichoke usually occur in scattered patches. Yield loss in these areas can be very serious. The decision of what action is appropriate will be based on the percentage of the field infested, weed and crop growth stage, and distribution pattern of the patches.

In addition to yield losses, certain weeds can interfere greatly with harvest. Bindweeds and giant ragweed are examples of weeds that should be controlled regardless of

their impact on corn yield as they can greatly reduce harvest efficiency and increase machinery repair costs.

A comprehensive weed survey/map should be completed by the end of the scouting season. Growers can then develop a preventative weed control program, if necessary, based on weeds most likely to be present next season.

Corn Disease Scouting

Corn should be monitored for evidence of disease during each field visit. If seedling blights are present during the early season scouting, determine percent of plants infected by looking at 20 plants in each of five randomly selected areas within a field.

For leaf diseases, general remarks should be noted as to crop stage, percent of plants affected, percent of foliage infected, whether the disease is above or below the ear, and the location of the infestation within the field. Stalk rots evaluation should be treated differently. Use either the "squeeze test" (squeezing the lower internodes between thumb and forefinger, if tissue collapses then stalk rots are likely to be present) or the "push test" (pushing the plant 6-8 inches off vertical center, if it breaks between the ear and lowest node then stalk rots are likely present) to determine if plants are infected. Conduct either test on 20 plants in each of five randomly selected areas of a field. Report to grower which of the stalk rots are likely the cause and an average percent infestation. Stalk rot tests should begin about four weeks after tasseling. If a fall scouting is conducted, examine for ear rot infestation. Strip back husks from 10 consecutive plants. Record percent infested and color(s) of mold. Repeat 10 times in a 25 acre field, including representative areas.

Sampling For Corn Nematodes

A nematode assay can be valuable to: 1) confirm a suspected nematode problem or 2) eliminate nematodes as one of several possible causes of poor plant growth.

The best results are obtained when soil and root samples are taken 6 to 10 weeks after planting. Nematode populations at this time appear to correlate best with grain yield. However, late summer or fall samples can also be useful in predicting next year's problems.

Nematode damage to corn often appears in circular or oval pockets in the field. Rarely does an entire field show symptoms. Sample the suspected areas.

There are several ways to take a soil sample for nematode analysis. The following is a general guide.

1. Use a soil probe, narrow-blade trowel or a shovel. Take samples close to plants and to a depth of 8 to 10 inches. Discard the upper 2 inches of soil, especially if it is dry. Be sure to include plant roots.
2. One sample is adequate per 10 acre field or suspected area within the field. Sample soil and roots from 10 plants and mix into one compos ite sample - 2 pints of soil is adequate. Sample from plants in the margins of suspected areas and not from their centers.
3. Place samples in sturdy plastic bags. Fasten the open end securely and accurately label samples. Keep the samples from becoming overheated. Mail samples early in the week to avoid delays in transit.

Corn Insect Scouting

Scouting methods for insects vary according to species present. The following are scouting guidelines for the major insect pests of Wisconsin field corn.

Seed Corn Maggot and Seed Corn Beetles

Scheduled scouting for seed corn maggots and seed corn beetle damage is unnecessary. However, if you find wilted, yellowed or stunted plants during seedling stand counts, or during cutworm or other soil insect scouting activities, check for damage from these insects. If numbers justify it, check 50 plants in 5 randomly selected areas of the field (250 plants) to determine percent damaged plants. Dig up and examine damaged seedlings and search for seeds in areas that have no plants to determine if skips are insect or planter related. Unlike the spotty nature of wireworm damage, damage from these insects will usually cover most of the field.

Wireworms

Like seed corn maggot and seed corn beetles, scheduled scouting for wireworms is not suggested. However, symptoms of their activity may be observed during seedling stand counts or cutworm scouting. If wireworm damage is suspected, check 50 plants in 5 areas of the field to determine average percent of plants damaged. Dig up several damaged plants along with a 4-6 inch core of surrounding soil. Check for wireworms in the soil surrounding the roots, the underground portion of the stem, and in the remains of the seeds (if still present). Search for seeds in areas where plants are missing.

White Grubs

Routine scouting is not suggested. However, damage may be observed during seedling stand counts or cutworm surveys. If signs of white grub damage are found, make counts on 25 plants in 5 areas of the field to determine

percentage of damaged plants. Dig up suspect plants and examine the roots for signs of pruning; search for grubs in the soil immediately surrounding the root zone. Record the percent of damaged plants and number of grubs found.

Stalk Borer and Hop-Vine Borer

Start scouting for plant damage at emergence and until approximately mid-June. Examine 5 sets of 50 consecutive plants for signs of damage and record the percent of plants damaged by each species. Infestations will typically be found in the first 4-6 rows around field margins, grassy waterways, and alfalfa/grass strips. However, damage can be found field-wide if grassy weeds were present the previous year. If the infestation is localized, make detailed maps of infested areas so spot treatments can be made.

Cutworms

As corn plants emerge, check 5 groups of 50 plants. Cutworm infestations are already started by the time corn is planted. Low, wet fields or low, wet areas within fields have a greater probability of attack from black cutworms. Reduced tillage, weed growth prior to tillage, and late planting are also suspected of contributing to cutworm problems. Some Wisconsin farmers have experienced severe cutworm damage in first year corn following spring plowed sod or alfalfa/grass sod.

Check for cutworms on and below the soil surface adjacent to damaged plants. Occasionally cutworms will be found under crop residue, soil clods, or in soil cracks. Count and record the number of damaged plants (leaf feeding, cut, or wilting), the number and size of cutworms and crop stage.

Corn Leaf Aphid

Examine 10 sets of 5 consecutive plants for corn leaf aphids during the late whorl to early tassel emergence stages. The aphids initially will be found in the whorl of younger plants and later on the tassel.

Start scouting for aphids just prior to or during the tassel emergence period. You will, of course, have to pull the whorl leaves, unroll them, and search for aphids.

Because parasites, predators, and diseases will often keep aphids under control, it is important to note and record their presence. Look for lady beetles and lady beetle larvae, lacewing larvae (aphid lions) and syrphid fly maggots. The aphid colonies may have brown or golden aphids; these are diseased or parasitized.

Corn Rootworms

Make three counts of both species of beetles at 7-10 day intervals between mid-July and Sept. 1. Count the total number of western and northern rootworm beetles on 50 plants (10 sets of 5 plants) each time. Do not select adjacent plants at each location; approach plants with caution because the beetles are easily disturbed. Leave a space of about 3-4 plants between each sampled plant.

Count the beetles on the entire plant, including the ear tip, the tassel, the leaf surfaces and behind leaf axils. When approaching a plant, grasp the ear tip firmly with one hand while you use the other to search for beetles on the rest of the plant. When you are ready to examine the silks and ear tip for beetles, open your hand carefully so none of the beetles escape unnoticed. Expose the ear tip as some beetles may be feeding on developing kernels.

The purpose of this scouting is twofold. First, accurate counts are necessary to determine if the silks need insecticide protection against beetle feeding. Because of this, one of the counts must be made at the onset of silking. The second purpose is to determine the potential for rootworm larval damage to corn planted the following year in the field.

European Corn Borer

First Generation. Scouting activity for first generation European corn borer must begin at 700 borer degree days (base 50 degrees Fahrenheit). In southern Wisconsin, this can occur as early as the first week of June .

Examine 10 random sets of 10-20 consecutive plants each. Record the number of plants that show signs of whorl feeding. Dissect one infested plant per set and record the number of larvae found on the leaves or in the whorl. The usual range is 1-5 larvae per plant. More mature larvae (3/8 inch or larger) will be found within the stalk and are no longer susceptible to chemical insecticide treatments. These mature larvae should not be included in the larval counts.

Larvae are susceptible to chemical control for only 7-10 days after eggs hatch depending on temperatures. It is important that scouting visits are timely to make sure that larvae are not feeding within the stalk.

Second Generation Scouting. Egg scouting is necessary after tassels emerge; leaf-feeding is no longer a valid indicator once tassels emerge. Begin to look for second generation borer eggs at 1250 borer degree days (mid to late-July in southern Wisconsin). Examine 10 random sets of 5 consecutive plants each. Egg masses are usually laid on the undersides of leaves. Examine the undersides of all leaves for unhatched masses or the remains of hatched masses. Record the number of egg masses found. When an egg mass is found, record the egg's stage of development according to the following categories:

- White (W) - eggs are newly laid
- Cream (C) - intermediate

- Black head (B) - will hatch in a few hours
- Hatched (H) - remains of an egg mass

Special Problems

When monitoring corn there will be situations when scouts encounter crop injury from unknown causes. When this occurs, it is very important that scouts collect suitable plant samples and gather enough background information to make proper identification possible. Collect a variety of plant samples (including roots) to show a variety of symptoms. Include healthy plants from the same field so comparisons can be made. All samples should be stored in a cooler until the scout has access to a refrigerator. Label each sample with the grower's name, field number and gather as much field history data as possible. Information such as variety, planting date, environmental conditions, pesticide use information (for the field in question as well as surrounding fields), soil type, distribution of symptoms in the field, cropping history, and soil test results are invaluable for making proper diagnosis. Scouts should also carry plastic vials with them in case unknown insects are found. Store the insect samples in a cooler until identification can be made.

References

Whether you are scouting your own fields or someone else's, you are sure to have many questions. Your local county extension agent can serve as an excellent source of information.

The following is a list of suggested reading materials that are available from your local county extension office or from:

Extension Publications
630 West Mifflin Street, Room 170
Madison, WI 53703
Phone (608) 262-3346

- Weeds of the North Central States, North Central Regional Publication (NCR) # 281
- Annual Broadleaf Weed Seedling Identification, NCR # 89
- Herbicide Mode of Action and Injry Symptoms, NCR #377
- A3595, A Simple Method for Predicting Future Weed Problems
- A3615, Avoiding Herbicide Resistance in Weeds
- A2296, Field Crop Herbicide Manual
- Wild Proso Millet Control in Field Crops, NCR # 265
- Controlling Canada Thistle in Field Crops, NCR # 218
- Yellow nutsedge Control in Field Crops, NCR # 220
- Quackgrass Control in Field Crops, NCR # 219
- A 1684, Corn Pest Management in Wisconsin
- A 2994, Nematodes and the Damage They Can Cause
- A 3175, Eyespot of Corn
- A 7800603, Corn Diseases I
- A 7800604, Corn Diseases II
- A 2046, Corn Insects Above Ground
- A 2047, Corn Insects Below Ground
- A 3328, Corn Rootworms
- A3631, Corn Rootworm Pest ID card
- A 1220, The European Corn Borer
- A 3327, The Armyworm
- A 3354, Stalk-Boring Insect Pests of Corn
- Special Report No. 48, How a Corn Plant Develops.

Newsletters

For updates on crop and pest related topics, the following newsletters are suggested. Each is published on a weekly schedule during the growing season.

Wisconsin Crop Manager
Department of Agronomy
1575 Linden Drive
Madison, WI 53706-1597
http://ipcm.wisc.edu/wcm

Wisconsin Cooperative Pest Survey Bulletin
Bureau of Plant Industry
P.O. Bow 8911
Madison, WI 53708-8911

Appendix A: Field History (example)

Grower Information

Grower

Address

Town

Zip

County

Business Phone

Home Phone

Field Location

Township

Section

Field Number

Acres

Field Specifics

Slope (degree and direction)

Drainage

Soil Type(s)

Irrigated or Dryland?

Percent Organic Matter

Field Map

Crop Information

	Variety	Planting Date	Planting Rage	Final Population	Harvest Date(s)	Yield
1st crop						
2nd crop						
3rd crop						
Other comments						

Nutrients

Manure	Date	Load Size	# of Loads	Incorporated?	Type of manure	Temperature

Lime T/A	Date	T/A	Cost	Source of Purchase

Fertilizer	Date	Analysis	Cost	Rate	Source of Purchase
Broadcast Fertilizer					
Starter Fertilizer					
Side Dress Fertilizer					
Other Fertilizer					

Herbicide*

(if atrazine products are legal and applied, additional records must be kept. For details call your local agricultural supply business, county agent, or the Wisconsin Department of Agriculture, Trade and Consumer Protection at (608) 266-2295.)

Materials Used			
Date(s)			
Rate			
Application Method			
Weather /Rain / Temperature			
Weed Problems			

Insecticide			
Materials Used			
Date(s)			
Rate			
Application Method			
Weather /Rain / Temperature			
Insect Problems			

Equipment			
Tillage	Date	Equipment Size	Time Spent
Primary			
Secondary			
Planting			
Cultivation			
Harvesting (type)			
Other			

Soil Tests						
Routine	OM	pH	N	P	K	S
Micro's						
Nitrate Test						
Tissue Test	N	P	K	S	B	Zn
Major Soil Type						

Miscellaneous			
Fungicides			
Seed Treatment			
Foliar Treatment			
Crop Insurance			
Crop Scouting			
Dates			

Appendix B: Corn Pest Management (early season)

Field Map

General Info.

Farmer's name :	Date :	Time : am pm	County :	Field No./ Location :
Crop stage :	Weed height :	Corn borer degree days (Base 50 ^{0}) :		Scout's name :

Weeds

Herbicide program:	PPI	Pre	Post	Date of 1st rainfall of 1/2 or more after herbicide application :
Date applied:				

Plant population

Count plants in 20 ft. at 5 locations. Circle row width. A = row width factors: 30"=174, 36"=145, 38"=138, 40"=131

	1	2	3	4	5	T	
No. of plants							x A = _____ plants per acre

Notes

(diseases, abnormal plants, other insects of importance, etc.)

Cutworms

Sample 50 consecutive plants/set, count worms around all cut plants/set, record predominate instar present.

	1	2	3	4	5	T	
Damaged plants/set							÷ 2.5 = _____% damage
Predominant instar							Instar range _____ Ave. Instar_____

European Corn Borer

1st generation : Sample 10 consecutive plants/set. In each set, count the number of insects on 2 infested plants per set. Instar range I-V.

	1	2	3	4	5	6	7	8	9	10	T	
Damaged plants/set												_____% of plants with whorl feeding
Number of larvae												T/20 = _____ ave. # of larvae / plant
Predominant instar												Instar range _____ Ave. Instar_____
Extended leaf height (10 plants) _____ inches												

Corn Leaf Aphid

Each set consists of 5 consecutive plants. Note beneficial insects.

	1	2	3	4	5	6	7	8	9	10	T	
None-few present (< 50 aphids/plant)												x 2.0 = _____% low
Moderate-high (> 50 aphids/plant)												x 2.0 = _____% mod-high
Tassel covered												x 2.0 = _____% tassel covered

Appendix C: Corn Pest Management (late season)

General Info.

Farmer's name :	Date :	Time : am pm	County :	Field No./ Location :
Crop stage :	Corn borer degree days (Base 50 ^{0}) :			Scout's name :

European Corn Borer

2nd generation : Examine 5 consecutive plants/set for egg masses.

	1	2	3	4	5	6	7	8	9	10	T
White stage											
Cream stage											
Black head stage											
Hatched											
Total divided by 50 = Average egg masses per plant											

Corn Rootwom Beetles

Examine 5 plants/set. Do not chose adjacent plants.

	1	2	3	4	5	6	7	8	9	10	T
Northern corn rootworm											
Western corn rootworm											
Total divided by 50 = Average beetles per plant											

Sweet Corn Traps

Pheromone Traps:

Location(s):

Date / # caught :

Blacklight Traps:

Fall Armyworm

European Corn Borer

Corn Earworm

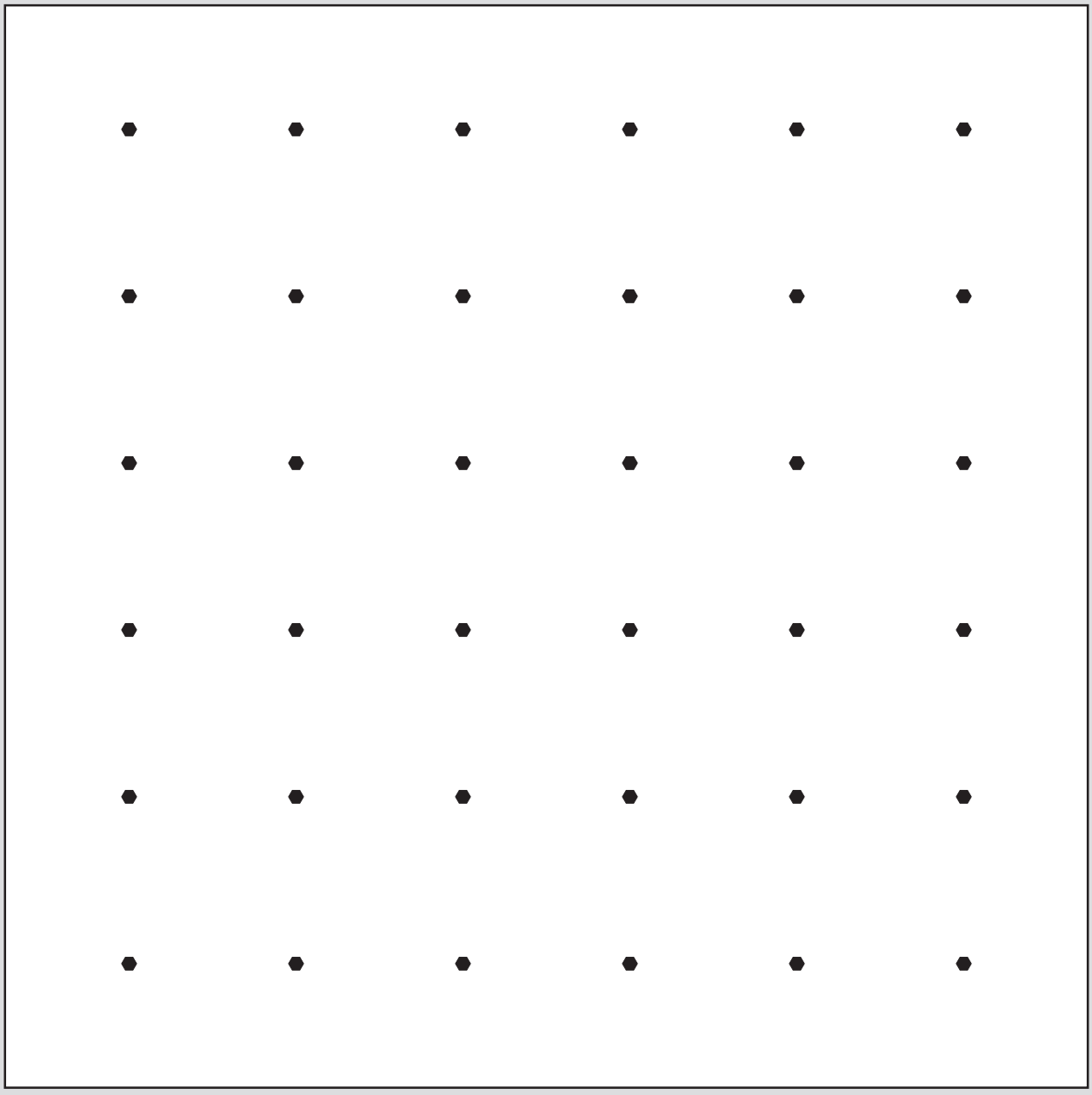
Field Map

Field Notes

Appendix D: Weed Map

General Info.

Farmer's name :	Date :	Crop :	Scout's name :
Field No./ :	Section :	County :	Township :



Date of Application _____ / _____ / _____
Month Day Year

Restricted-Use Pesticide ☐

PESTICIDE APPLICATION RECORD

This form meets ALL federal and Wisconsin pesticide application recordkeeping requirements.

Applicator

Name _____ Business Phone (___) _____

Certification No. _____ (Exp. Date ___ /___ /___) License No. _____

Address _____
Route or Street

_____ _____ _____
City State Zip

Client

Name _____ Business Phone (___) _____

Address _____
Route or Street

_____ _____ _____
City State Zip

Treated Site

Location _____

Specific Crop/Commodity/Structure/Livestock/Other _____

Size/Number _____ Target Pest(s) _____

Pesticide Product(s) Used

Trade Name _____ Manufacturer (optional) _____
EPA Reg. No. _____ Active Ingredient (optional) _____

Trade Name _____ Manufacturer (optional) _____
EPA Reg. No. _____ Active Ingredient (optional) _____

Trade Name _____ Manufacturer (optional) _____
EPA Reg. No. _____ Active Ingredient (optional) _____

Application Information

Time ___ : ___ AM/PM to ___ : ___ AM/PM Mixing/Loading Location _____

Application Rate(s) _____

Total Amount of Each Product Used _____

If you apply a soil fumigant that contains metam sodium, record the following additional information:

Soil Temperature at Depth of 5 to 6 Inches (if you used knife rig injection or chemigation) _____

Time of 1st Inspection ___ : ___ AM/PM Results/Action Taken _____

Time of 2nd Inspection ___ : ___ AM/PM Results/Action Taken _____

Comments (optional): Put additional comments (weather, site conditions, pest population, etc.) on back.

PAT Pesticide Applicator Training University of Wisconsin Extension

March 1994

How to Use the Pesticide Application Record Form

Fill out the relevant sections of this form on the day that you apply any pesticide. Keep the form on file for at least 2 years (3 years if you apply an atrazine-containing product) to comply with all current federal and Wisconsin recordkeeping requirements.

Restricted-Use Pesticide. Put an 'X' in the box in the upper right hand corner of the form if you applied a restricted-use pesticide. This will make it easier to retrieve records of such applications for the USDA if you are requested to do so.

Applicator. To save time, fill out the applicator information before you make photocopies of the form. Write 'NA' (for 'not applicable') on the appropriate line(s) if you are not certified and/or licensed.

Client. Fill out this part of the form if you are a commercial applicator or if you are a private applicator making an application on another person's land, even if only for exchange of services.

Treated Site.

Location. Provide enough information that would allow someone to find the way to the location of the application. For example, if you use a field-numbering system, enter the field number on the form but also have a copy of the farm plan on file where you keep your pesticide records; that way, a person could look at the farm plan and determine how to get to the field in question.

Specific Crop/Commodity/Structure/Livestock/Other. This is the site to which you applied the pesticide. Be specific enough to accurately describe what was treated. For example, 'field corn' vs. 'sweet corn' vs. 'field corn seed' vs. 'stored corn.' Likewise, if you treat a storage structure, such as a grain bin or potato warehouse, be sure to mention whether or not it was empty at the time of treatment. Other examples of sites include dairy cows, chickens, fence rows, barns, and private ponds.

Size/Number. Generally speaking, use whatever units of measurement are mentioned on the label. Examples include acres, feet of row, cubic feet, and number of livestock.

Target Pest(s). Be as specific as you can be; this will help you determine how effective the application was. For commercial applicators, it is especially important that your client know which pests the treatment was intended to control.

Pesticide(s) Used. You can get the requested information from the product label. If you tank mix 2 or more pesticide products, record each product separately. If you use a restricted-use pesticide, even in a tank mix with nonrestricted-use pesticides, put an 'X' in the box in the upper right-hand corner of the form.

Active Ingredient(s) *optional.* Record the common name of the active ingredient that appears in the ingredients statement. (Do not record the complex chemical name that may also appear in parentheses after the common name.) If a product contains more than 1 active ingredient (as is the case with all pre-packaged tank mixes), record the common name of each active ingredient.

Application Information. The application rate is just your calibrated rate (pints or pounds of product per acre, percent solution, etc.) Also record the spray volume applied per acre (or the spray volume used to treat a barn, fence row, etc.) If you apply a tank mix, be sure to record the application rate and the total amount of product used for each product in the mix. The mixing/loading location is where you loaded the pesticide into the application equipment or nurse tank. To record this location, use the same guidelines described above for the location of the treated site; you can write 'site of application' if that was the mixing/loading location as well.

Comments. Although not required by law, additional comments can help you evaluate the effectiveness of the pesticide application. Examples include weather conditions, application equipment, adjuvants, and timing of application (e.g., preplant incorporated or postemergence). Because you will use a separate, photocopied recordkeeping form for each application, you can record optional comments on the blank back of the photocopied form.

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