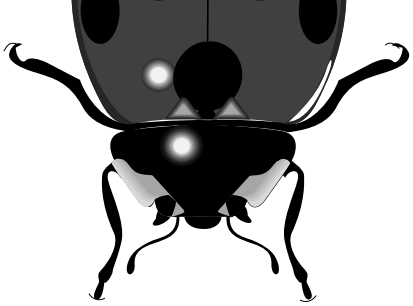

PEST MANAGEMENT & CROP DEVELOPMENT

BULLETIN

FOR IMMEDIATE RELEASE
No. 24/ November 1, 2002

Executive editor: Kevin Steffey, Extension Entomologist

Available on the Web at http://www.ag.uiuc.edu/cespubs/pest/
For subscription information, phone 217.244.5166, or e-mail acesnews@uiuc.edu

In This Issue

North Central Weed Science Society to Meet in St. Louis

The 57th meeting of the NCWSS will occur on December 2 to 5 in the Hyatt Regency Hotel in downtown St. Louis, Missouri. The program is rich in papers and posters with the latest in weed management information. Three symposia for which CCA credits have been requested are planned:

• Glyphosate Resistant Weeds: Status, Prevention, and Management

• Application Equipment and Technology as It May Influence Weed Control in the Future

• Weed Community Shifts

The Industry Section of the NCWSS will have an invited speaker address the topic of "Gene Flow from Genetically Modified Crops: A Multifaceted Problem Spanning Science, Regulation, Trade, and Society." This will occur at their business breakfast meeting on December 5, and 0.5 CEU for CCA credit has been requested. The sections of the conference that will have both papers and posters include Corn and Sorghum, Soybeans and Annual Legumes, Cereals and Oilseeds, Forage and Range, Equipment and Application Methods, and Weed Ecology and Biology.

Registration for the entire conference is $200 for those who preregister and $225 if you register on site. Full registration includes the proceedings of the papers and posters presented, the Wednesday evening awards banquet, and refreshment breaks. One-day registration is $40. To receive registration and hotel room information, contact the NCWSS executive secretary, Robert A. Schmidt, 1508 West University Avenue, Champaign, IL 61821-3133 (phone: 217-752-4241; e-mail: raschwssa@aol.com). You can find additional information on the NCWSS and the program for the December conference at this Web site: http://www.ncwss.org.

(The preceding announcement was written by Dr. Jerry Doll, University of Wisconsin.)—*Aaron Hager and Christy Sprague*

INSECTS

The 2002 Survey for Second-Generation European Corn Borers in Illinois Is Complete

In issue no. 23 (October 4, 2002) of the *Bulletin,* we provided a thumbnail sketch of our annual fall survey for second-generation European corn borers. At that time, extension entomologists and extension educators were in the midst of sampling cornfields in all crop-reporting districts in the state. We have completed our task, analyzed the data, and tabulated our results for your reference. We sampled 10 fields in each of 40 counties in 2002.

Table 1 shows the percentages of plants infested and average numbers of European corn borers per plant for all counties sampled in 2001 and 2002. Table 2 shows the percentages of plants infested and average numbers of European corn borers per plant for all crop-reporting districts sampled in

2001 and 2002. The data from 2001 are provided for comparison with results from the 2002 survey. However, because some counties within certain crop-reporting districts were combined for regional averages in 2001, the averages are not exactly comparable.

A glance at the county data (Table 1) reveals that densities of European corn borers were largest in a band from southwestern Illinois (Monroe County, 3.01 borers per plant) to central Illinois (McLean County, 1.43 borers per plant). Other counties with an average of more than 1 European corn borer per plant were Adams (1.19 borers per plant), Christian (1.03 borers per plant), Effingham (2.29 borers per plant), Logan (2.74 borers per plant), Madison (2.6 borers per plant), Morgan (1.41 borers per plant), and Washington (1.62 borers per plant). In general, the counties in eastern Illinois had very low densities of European corn borers.

The most dramatic decrease of average numbers of European corn borers per plant from 2001 to 2002 occurred in the Northwest and Northeast crop-reporting districts (Table 2). The most

Table 1. Final results of the 2002 European corn borer fall survey by county.

County	*Percentage of plants infested, 2001*	*Percentage of plants infested, 2002*	*Borers per plant, 2001*	*Borers per plant, 2002*
Adams	71.2	64.0	0.58	1.19
Bureau	61.6	88.6	0.94	0.89
Champaign	94.4	18.0	1.59	0.15
Christian	48.4	58.7	1.03	1.03
Clark	26.8	58.0	0.18	0.95
DeKalb	75.6	43.6	1.70	0.86
Effingham	49.2	81.2	1.13	2.29
Franklin	0.4	24.0	0.00	0.28
Fulton	63.2	64.0	0.71	0.77
Greene	25.2	77.6	0.22	0.89
Iroquois	81.6	49.2	1.87	0.47
Jo Daviess	70.4	52.8	2.91	0.97
Kendall	73.2	33.2	3.11	0.55
Knox	14.0	15.6	0.00	0.07
LaSalle	90.4	55.2	1.93	0.80
Lawrence	35.6	56.4	0.27	0.83
Livingston	76.0	31.3	2.23	0.76
Logan	55.6	66.8	1.09	2.74
Madison	18.4	91.6	0.25	2.60
Marion	6.0	41.2	0.03	0.20
McDonough	78.8	52.4	0.63	0.43
McHenry	82.8	40.8	1.91	0.60
McLean	64.8	66.8	0.93	1.43
Mercer	40.4	21.6	0.39	0.28
Monroe	12.4	64.4	0.09	3.01
Montgomery	—*	46.4	—*	0.63
Morgan	75.2	66.8	0.85	1.41
Ogle	48.8	58.4	1.05	0.32
Saline	11.2	25.2	0.05	0.37
Sangamon	73.7	34.0	1.49	0.45
Schuyler	—*	54.4	—*	0.52
Shelby	49.2	61.2	0.66	0.69
Vermilion	47.2	23.2	0.30	0.12
Warren	39.2	48.0	0.34	0.55
Washington	28.8	86.8	0.21	1.62
White	29.6	16.0	0.30	0.05
Whiteside	40.8	10.0	0.99	0.13
Will	77.6	32.4	1.24	0.46
Winnebago	77.2	46.8	2.11	0.79
Woodford	—*	51.6	—*	0.75

*County not sampled in 2001.

Table 2. Final results of the 2002 European corn borer fall survey by crop-reporting district.

Region	Percentage of plants infested, 2001	Percentage of plants infested, 2002	Difference (+, –)	Borers per plant, 2001	Borers per plant, 2002	Difference (+, –)
Northwest	56.5	38.7	– 17.8	1.40	0.56	– 0.84
Northeast	79.9	41.0	– 38.9	1.98	0.65	– 1.33
West	56.9	49.7	– 7.2	0.52	0.60	+ 0.08
Central[1]	—	61.7	—	—	1.64	—
East[1]	—	30.1	—	—	0.38	—
Central and East[1]	69.9	—	—	1.34	—	—
West-Southwest[2]	34.5	62.5	—	0.55	1.17	—
East-Southeast	33.4	59.6	+ 26.2	0.45	0.99	+ 0.54
Southwest[2]	—	75.6	—	—	2.31	—
Southeast	13.7	21.7	+ 8.0	0.12	0.23	+ 0.11
Average	49.3	49.0	– 0.3	0.91	0.95	+ 0.04

[1]Data from the Central and East crop-reporting districts were combined in 2001, so averages of percentage of plants infested and borers per plant from 2001 and 2002 are not exactly comparable.
[2]Data from the West-Southwest and Southwest crop-reporting districts were combined in 2001, so averages of percentage of plants infested and borers per plant from 2001 and 2002 are not exactly comparable.

dramatic increase in average numbers of corn borers per plant from 2001 to 2002 occurred in the West-Southwest and Southwest crop-reporting districts.

A review of the raw data strongly suggests that we should present the data from our surveys in additional ways. Most surveyors indicated that infestations of European corn borers were either absent or relatively heavy in many areas of the state. It is not unusual for data from a county to include a range of 0 to 100% infested plants with 0 to 3 borers per plant. Although we do not know what type of corn hybrid we are sampling during the survey, it is apparent that we are sampling both Bt cornfields and non-Bt cornfields. Consequently, the averages for a given county or crop-reporting district may not tell the whole story.

For example, in Bureau County in 2002, the percentages of plants infested in 10 fields were 0 to 4% (four fields), 24 to 36% (two fields), and >75% (four fields). Densities of corn borers ranged from 0 to 2.88 borers per plant. The average percentage of plants infested and average number of corn borers per plant were 88.6% and 0.89, respectively. Because averages do not tell the whole story for a county or crop-reporting district, we plan to develop frequency distributions for both percentage of plants infested and average number of corn borers per plant to present the data in a different light.

In the near future, watch for the availability of results from annual fall surveys of European corn borers in Illinois from 1943 through the present year. The Web site will be ready soon.—*Kevin Steffey and Mike Gray*

Western Corn Rootworms: The Variant Continues Its Spread

The variant western corn rootworm continued its expansion in Illinois during the summers of 2001 (Figure 1) and 2002 (Figure 2). Surveys were conducted in late July and early August each year by Joe Spencer, Illinois Natural History Survey, and Scott Isard, Department of Geography. They confirmed the presence of western corn rootworm adults in soybean fields in 59 counties of the state.

The greatest densities occurred in east-central Illinois, an area with the largest concentration of rotated corn acres. In 2002, western corn rootworms also were common inhabitants of soybean fields in northeastern counties (Lake County). In issue no. 23 of the *Bulletin,* severe first-year corn rootworm larval damage was reported in Lake County in corn following soybeans as well as in corn planted after wheat. Although western corn rootworms were found far less often in soybean fields in western and northwestern counties, 11 adults per 100 sweeps were collected (2002) from soybeans in Pike County, an ominous early-warning signal that crop rotation may begin to fail as a pest management strategy for this insect species in western Illinois.

Similar survey efforts the previous year (Figure 1) revealed only 0.5 adult per 100 sweeps in soybeans in Pike County. Farmers, even in western and northwestern counties, are encouraged to use Pherocon AM traps (yellow sticky traps) to monitor their soybean fields for variant western corn rootworm adults. If densities begin to approach five adults per trap per day in soybean fields, producers are encouraged to consider the use of a soil insecticide on rotated corn acres.

On-Farm Root Injury Evaluations

In addition to the sweep-net surveys of soybean fields, Jared Schroeder, a

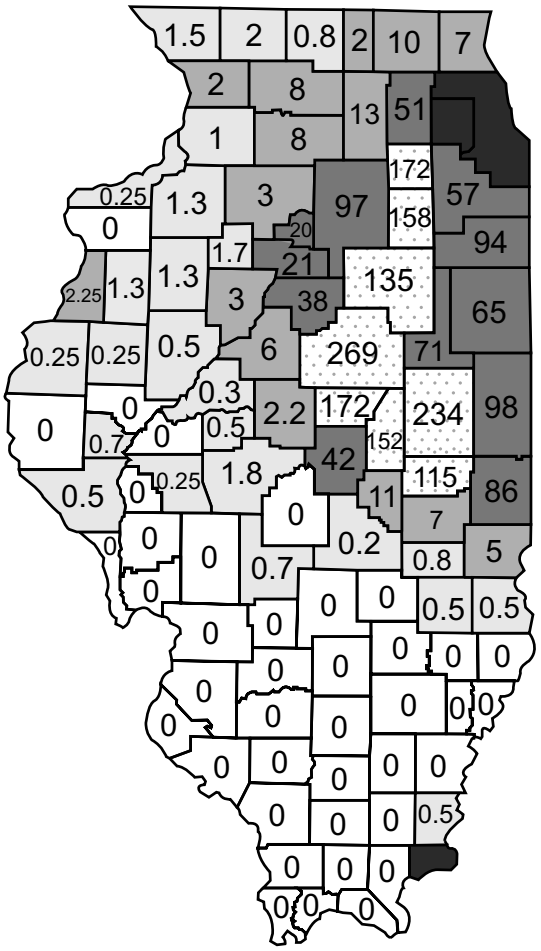

Figure 1. Western corn rootworm adults captured per 100 sweeps in soybean fields during 2001. (Courtesy of Scott Isard, Department of Geography, and Joe Spencer, Center for Economic Entomology, Illinois Natural History Survey.)

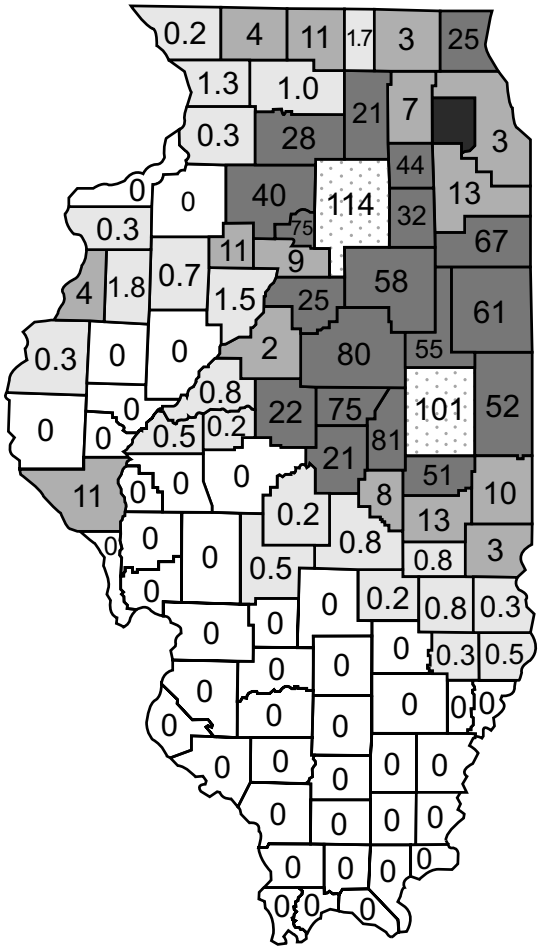

Figure 2. Western corn rootworm adults captured per 100 sweeps in soybean fields during 2002. (Courtesy of Scott Isard, Department of Geography, and Joe Spencer, Center for Economic Entomology, Illinois Natural History Survey.)

graduate research assistant in the Department of Crop Sciences, coordinated an on-farm root-injury evaluation of first-year cornfields (following soybeans) in August 2002. His methodologies were similar to those used by Kevin Steffey and Don Kuhlman in their survey of rootworm larval injury in first-year cornfields during the late 1980s. Their study was conducted to determine the incidence of first-year corn rootworm larval damage in fields affected by northern corn rootworms that were able to prolong their diapause.

They determined that areas of the state characterized by intensive rotation of corn and soybeans had the greatest chance for first-year corn rootworm larval damage caused by northern corn rootworms. In 2002, Jared Schroeder, working closely with IPM and Crop Systems Extension Educators, determined the level of first-year corn rootworm larval injury in 32 Illinois counties (Table 3). In each county, 10 rotated cornfields were selected at random. In each field, 10 plants were selected at random, and the roots were washed and rated for injury on the Iowa State 1 to 6 injury scale.

Similar to the results obtained by Kevin Steffey and Don Kuhlman in the late 1980s (northern corn rootworm first-year corn injury), the greatest concentration of first-year corn rootworm larval injury occurred in east-central Illinois. The percentages of plants with root-injury ratings greater than or equal to 3.0 (some root pruning, never equivalent to one node) for east-central counties were as follows: Champaign—4%, Ford—30%, Grundy—35%, Iroquois—16%, Kankakee—11%, LaSalle—66%, Livingston—22%, McLean—53%, Vermilion—9%, and Will—20%.

Table 3. Results of on-farm first-year corn rootworm larval injury survey, 2002.[a]

East-Central Illinois

County	Number of fields per county	Mean	Standard deviation	Range	Percentage of plants with root ratings ≥3.0 [b]	Number of fields with mean root ratings ≥3.0 [b]
Champaign	10	1.9	0.44	1.0–3.0	4%	0
Ford	10	2.5	0.86	2.0–5.0	30%	1
Grundy	10	2.5	1.03	1.0–5.0	35%	2
Iroquois	10	1.9	0.85	1.0–5.0	16%	1
Kankakee	10	1.9	0.56	1.0–3.0	11%	0
LaSalle	10	3.1	1.12	2.0–6.0	66%	4
Livingston	10	2.3	0.78	1.0–5.0	22%	1
McLean	10	2.6	0.76	1.0–5.0	53%	3
Vermilion	10	2.1	0.45	1.0–4.0	9%	0
Will	10	2.2	0.61	1.0–4.0	20%	1

Central Illinois

County	Number of fields per county	Mean	Standard deviation	Range	Percentage of plants with root ratings ≥3.0 [b]	Number of fields with mean root ratings ≥3.0 [b]
Christian	10	1.9	0.35	1.0–2.0	0%	0
Logan	10	1.8	0.45	1.0–3.0	2%	0
Macon	10	2.2	0.81	1.0–4.0	32%	0
Marshall	10	1.9	0.85	1.0–5.0	10%	1
Mason	10	1.3	0.51	1.0–3.0	2%	0
Peoria	10	1.4	0.53	1.0–3.0	2%	0
Sangamon	10	1.7	0.44	1.0–2.0	0%	0
Stark	10	1.5	0.5	1.0–2.0	0%	0
Tazewell	10	1.5	0.61	1.0–3.0	6%	0
Woodford	10	2	0.19	2.0–3.0	4%	0

Western Illinois

County	Number of fields per county	Mean	Standard deviation	Range	Percentage of plants with root ratings ≥3.0 [b]	Number of fields with mean root ratings ≥3.0 [b]
Adams	10	1.3	0.46	1.0–2.0	0%	0
Brown	10	1.1	0.3	1.0–2.0	0%	0
Fulton	10	1.5	0.51	1.0–2.0	0%	0
Hancock	10	1.7	0.47	1.0–2.0	0%	0
Knox	10	1.8	0.37	1.0–2.0	0%	0
McDonough	10	1.1	0.27	1.0–2.0	0%	0
Mercer	10	1.7	0.44	1.0–2.0	0%	0
Pike	10	1.7	0.47	1.0–2.0	0%	0
Schuyler	10	1.5	0.51	1.0–2.0	0%	0
Warren	10	1.9	0.3	1.0–2.0	0%	0

[a]Courtesy of Jared Schroeder, graduate research assistant, Department of Crop Sciences.

[b]Root-rating scale 1 to 6: 1—no injury, or very slight scarring of root tissue; 2—scarring of root tissue very evident, no pruning (or very minor) of roots; 3—moderate pruning of roots evident, never the equivalent of one node; 4—one node of roots or the equivalent destroyed; 5—two nodes of roots destroyed or the equivalent; and 6—three nodes of roots destroyed or the equivalent.

The frequency of root injury at or above the economic injury index of 3.0 was less in central Illinois counties: Christian—0%, Logan—2%, Macon—32%, Marshall—10%, Mason—2%, Peoria—2%, Sangamon—0%, Stark—0%, Tazewell—6%, and Woodford—4%. Two northern Illinois counties, DeKalb and Lee, had 6% and 14%, respectively, of roots with injury ratings at or above 3.0.

None of the roots from 10 counties located in the western region of the state had been pruned. These counties included Adams, Brown, Fulton, Hancock, Knox, McDonough, Mercer, Pike, Schuyler, and Warren.

Care must be exercised in the interpretation of these root-rating data. For instance, root-injury ratings would undoubtedly have been greater in east-central Illinois if it were not for the common practice of using soil insecticides on first-year corn. These data also seem to suggest that although western corn rootworm adults are beginning to appear in some soybean fields of western Illinois, egg laying in these fields is likely below economic levels at this point in time. Again, we advise producers to use Pherocon AM traps (even in western counties) to make more informed management decisions.—*Mike Gray*

Baythroid 2 Registered for Use on Corn and Soybeans

Baythroid 2, a pyrethroid insecticide (active ingredient cyfluthrin), has been registered for use against insect pests of alfalfa and sorghum since 1997. The United States Environmental Protection Agency (EPA) recently approved the use of Baythroid 2 against insect pests of corn and soybeans. Table 4 provides an abridged list of insect pests for which Baythroid 2 is labeled, with recommended rates of application. Some critical use information is included in the footnotes.

Cyfluthrin, like all pyrethroids, is highly toxic to fish and aquatic invertebrates, so caution should be practiced to avoid drift or runoff into bodies of water. Mammalian toxicity is relatively low—oral LD_{50}s for male and female rats are 1,015 mg/kg and 826 mg/kg, respectively; the dermal LD_{50} for male and female rats is >2,000 mg/kg. Cyfluthrin is very water insoluble (2 ppb). Performance of Baythroid 2 in insecticide efficacy trials has been equivalent to performance of the other pyrethroids—Ambush, Asana, Capture, Mustang, Pounce, and Warrior—used in a similar fashion.

For more information about Baythroid 2, contact your local Bayer Crop Protection representation or Bayer Corporation, P.O. Box 4913, Kansas City, MO 64120; telephone (800) 842-8020.—*Kevin Steffey*

Cruiser Seed Treatment Receives Approval for Use

Cruiser (active ingredient thiamethoxam), a seed treatment that has been under development by Syngenta Crop Protection, Inc., recently received approval from the EPA for use on corn. This nicotinoid insecticide, which is related to imidacloprid (active ingredient of Gaucho and Prescribe), is registered for use on field, pop, seed, and sweet corn. The rates applied to corn seed will be a minimum of 0.125 mg of thiamethoxam per kernel to a maximum of 0.8 mg (field, pop, seed, and sweet corn) or 1.4 mg (field corn only) of thiamethoxam per kernel.

Depending on the rate of application, Cruiser is intended to provide early-season protection of seedlings against injury by chinch bug, flea beetles, seedcorn maggot, southern corn leaf beetle, white grubs, and wireworms. The label also claims suppression of

Table 4. Abridged Baythroid 2 label information for control of insects in corn and soybeans.

Crop	*Insects*	*Rate of application*
Corn[1]	Black cutworm	0.8–1.6 fl oz per acre
	Armyworm, chinch bug, corn earworm, corn rootworm adult, European corn borer, flea beetle, Japanese beetle adult, southern corn leaf beetle, southwestern corn borer, stalk borer, stink bug, webworm	1.6–2.8 fl oz per acre
	Grasshopper	2.1–2.8 fl oz per acre
Soybeans[2]	Cutworm, potato leafhopper	0.8–1.6 fl oz per acre
	Bean leaf beetle, blister beetle, corn earworm, green cloverworm, Japanese beetle adult, looper, Mexican bean beetle, stink bug, woollybear caterpillar	1.6–2.8 fl oz per acre
	Grasshopper	2.1–2.8 fl oz per acre

[1] The preharvest interval (PHI) is 21 days for grain or fodder. The maximum amount of Baythroid 2 allowed per crop season is 11.2 ounces per acre. The maximum number of applications per season is four. Three applications may be applied up to early dent stage. One application may be made between early dent and 21 days before harvest. Baythroid 2 may be applied before, during, or after planting.

[2] The PHI is 45 days. The maximum amount of Baythroid 2 allowed per crop season is 11.2 ounces per acre. The maximum number of applications per season is four.

cutworms at all rates of application. The higher rates of application (1.125 to 1.4 mg of thiamethoxam per kernel, for field corn only) are intended to provide corn rootworm protection in light to moderate infestations and suppression of cutworms. The performance of Cruiser against corn rootworms in insecticide efficacy trials has been similar to the performance of Prescribe. Efficacy data regarding control of the other insects listed on the label are not abundant.

Like imidacloprid, thiamethoxam is systemic. However, thiamethoxam is significantly more water soluble than imidacloprid, which can be a boon or a bane, depending on environmental and soil conditions.

Commercialization of Cruiser will make the seed-treatment market more competitive. At 0.125 mg of thiamethoxam per seed, Cruiser will compete with Gaucho. At 1.25 to 1.4 mg of thiamethoxam per seed, Cruiser will compete with Prescribe. However, the availability of corn hybrids treated with Cruiser has not been determined.

For more information about Cruiser, contact your local Syngenta representative or Syngenta Crop Protection, Inc., P.O. Box 18300, Greensboro, NC 27419; telephone (336) 632-6000.—*Kevin Steffey*

REGIONAL REPORTS

Extension center educators, unit educators, and unit assistants in northern, west-central, east-central, and southern Illinois prepare regional reports to provide more localized insight into pest situations and crop conditions in Illinois. The reports will keep you up to date on situations in field and forage crops as they develop throughout the season. The regions have been defined broadly to include the agricultural statistics districts as designated by the Illinois Agricultural Statistics Service, with slight modifications:

- North (Northwest and Northeast districts, plus Stark and Marshall counties)
- West central (West and West Southwest districts, and Peoria, Woodford, Tazewell, Mason, Menard, and Logan counties from the Central district)
- East central (East and East Southeast districts [except Marion, Clay, Richland, and Lawrence counties], McLean, DeWitt, and Macon counties from the Central district)
- South (Southwest and Southeast districts, and Marion, Clay, Richland, and Lawrence counties from the East Southeast district)

We hope these reports will provide additional benefits for staying current as the season progresses.

Northern Illinois

Soybean harvest is complete for all practical purposes. Rainfall throughout the region over the weekend and Tuesday has slowed corn harvest. Corn harvest throughout the northern Illinois region ranges from 90% complete in the south to about 70% complete in the northern half of the region. Yields are variable as always. For example, Gary Brethauer, Kendall County Extension, reports confirmed corn yields from 40 bushels per acre to nearly 200 bushels per acre for Kendall County. Jim Morrison, Rockford Extension Center, reported an average of 211 bushels per acre for the JoDaviess County corn plot and a range of 166 to 212 bushels per acre for conventional hybrids in several specialty corn hybrid plots.

Soybean Cyst Nematode Screening Clinics/Rootworm Injury in First-Year Corn Discussions, sponsored by U of I Extension, have been scheduled for November 18 in LaSalle County, November 19 in Marshall County, and November 21 in McHenry County. Interested participants are encouraged to contact the host Extension unit office for program locations and times.

Contributing Authors

Mike Gray (m-gray4@uiuc.edu), Extension Entomology, (217)333-6652

Aaron Hager (hager@uiuc.edu), Extension Weed Science, (217)333-4424

Christy Sprague (csprague@staff.uiuc.edu), Extension Weed Science, (217)333-4424

Kevin Steffey (ksteffey@uiuc.edu), Extension Entomology, (217)333-6652

U of I Extension Newsletter Service
University of Illinois
at Urbana-Champaign
528 Bevier Hall, MC-184
905 S. Goodwin Avenue
Urbana, IL 61801

Return Service Requested

The *Pest Management & Crop Development Bulletin* is brought to you by University of Illinois Extension and Information Technology and Communication Services, College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign. This newsletter is edited by Erin Cler and formatted by Oneda VanDyke, ACES/ITCS.

Helping You Put Knowledge to Work

University of Illinois
U.S. Department of Agriculture
Local Extension Councils Cooperating