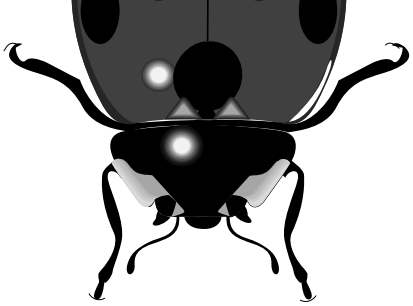

PEST MANAGEMENT & CROP DEVELOPMENT

BULLETIN

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In This Issue

Resources on the Web

As the growing season begins and we await the flurry of activity that comes with planting corn and soybeans, this is a good time to direct you to some Web sites that provide information that supports the articles written for this *Bulletin*. Included in this issue of the *Bulletin* are "directions" to just a few Web sites that might provide valuable references throughout the year. Visit them and bookmark them for easy access throughout 2001 and beyond.—*Kevin Steffey*

Visit the IPM Web Site for Additional Information

The University of Illinois IPM Web site (http://www.ipm.uiuc.edu/) is the repository for a lot of information related to management of insects, weeds, and plant diseases. If you visit this site with any frequency, keep your eyes peeled for changes in design and navigation throughout the year. Our initial site, developed primarily by Mary Winters-Meyer and Susan Ratcliffe in the Department of Crop Sciences, was created to "house" the many IPM educational materials we produce at the University of Illinois. As the site has expanded, we recognized the need for enhancements. Nevertheless, the current site contains a lot of information you might find useful.

At the IPM Web site, you can have access to many educational materials, including publications and video clips. Among the books available are the *Agronomy Handbook*, *Agricultural Pest Management Handbook*, *Illinois Crop Protection Technology Conference Proceedings*, and *Insect Management & Insecticide Evaluations*. Currently the most recent editions of some these books have not been "loaded" onto the Web site, but they will be soon. An exception is *Insect Management & Insecticide Evaluations, 2000*, the results of all of our insecticide efficacy trials conducted last year. John Shaw, director of this program, has compiled articles that focus on control of alfalfa weevil, corn rootworms, European corn borer, grape colaspis, soybean aphid, white grubs, wireworms, and other insects.

You also can check out information by category:

- Field Crops, Urban, Medical, Livestock, Fruit and Vegetable
- Soybeans, Corn, Wheat, Sorghum, Alfalfa
- Insects, Weeds, Plant Diseases

The site contains too much information to discuss in detail in the *Bulletin*, so check it out for yourself. Again, the arrangement and appearance of the information at the IPM Web site will be changing this year, so keep watching.—*Kevin Steffey*

2001 Corn & Soybean Classic Presentations on the Web

Many of you are aware of the series of University of Illinois Corn & Soybean Classic meetings we initiated during the winter of 1998. Extension specialists at the University of Illinois developed these regional meetings to deliver the most current information about crop production and crop protection to producers and agribusiness professionals throughout the state. In January 2001, we conducted Classic meetings in the following cities: Champaign, DeKalb, Rock Island, Mt. Vernon, Collinsville, and Springfield. More than 1,100 people attended the meetings.

As a result of one telephone call to Bob Hoeft, Extension specialist in crop fertility in the Department of Crop Sciences, we decided to record the presentations to make them available to people who were not able to attend. Todd Gleason and John Tubbs, with Information Technology and Communication Services in the College of ACES, taped all 10 presentations at the DeKalb meeting and synchronized the audio with the Power Point slides for presentation on the Web. Following are the titles of the presentations and the speakers who delivered them:

- Transgenic Hybrids, Seed Treatments, and Soil Insecticides: Making Sense of Soil Insect Control—*Mike Gray*
- Grape Colaspis in Corn and Aphids in Soybean: Will There Be a Repeat Performance in 2001?—*Kevin Steffey*
- Emerging Weed Problems in Illinois—*Aaron Hager*
- Is There a Yield Penalty from Postemergence Soybean Herbicide Injury?—*Christy Sprague*
- Evaluation of Market Advisory Services—*Darrell Good*
- Put N and P in the Crop, Not the Water—*Robert Hoeft*
- Stalk Quality, Yield, and Corn Hybrids: Was the "Nightmare" of 2000 a Fluke?—*Emerson Nafziger*
- Corn Diseases in 2000—*Dean Malvick*
- Soybeans: Got Disease? It's Not a Good Thing—*Suzanne Bissonnette*
- Temperature, Residue, and Yields from Different Tillage Systems—*Bill Simmons*

You can listen to and watch these presentations at the Department of Crop Sciences Web site, http://www.cropsci.uiuc.edu/. At the site, scroll down to "Research, Outreach, and Extension Programs" and click on "Extension Publications, Classics & New Info." Under "Recent Bulletins from Crop Sciences Extension," click on "Corn and Soybean Classic Publications." Click on 2001 to get to the list of presentations. Click on the "Real Player" icon to bring up the presentation. If you do not have Real Player installed on your computer, you will be instructed about how to install it.

We intend to continue with this type of information delivery for the annual Classics and other educational meetings. Please visit the site and let us know what you think. All input is welcome.—*Kevin Steffey*

Excellent Photos of the Soybean Aphid

Since last August, we have written many articles and talked frequently about the soybean aphid, *Aphis glycines*, that invaded the Midwest last summer. Right now the aphids are overwintering as eggs on buckthorn, *Rhamnus* species, and later in the spring winged aphids (alates) will fly to soybean fields to colonize. Not too far into the near future, many people will be looking for the pest and wondering what to do if they find it.

Everyone knows that the first step in proper management of an insect pest is accurate identification. To help you with this task, I direct your attention to a Web site that includes some excellent photographs of wingless and winged soybean aphids, nymphs and adults, and eggs on *Rhamnus*. The Web site (http://www.inhs.uiuc.edu/cdb/aphid/index.html) is maintained by and the photographs were taken by Dr. David Voegtlin, aphid specialist in the Center for Economic Entomology in the Illinois Natural History Survey. I am certain that as the season unfolds, David will add even more photos to his and other Web sites. So check out the photos to familiarize yourself with these little critters and to hone your identification skills when they are needed this summer.—*Kevin Steffey*

Some Web Resources Regarding Ag Biotechnology

The amount of information about agricultural biotechnology and transgenic crops on the Web is huge, so a sweeping overview of the many sites that address these issues is not practical. However, I was directed to some Web sites that you might find useful for background information and issues-focused reporting.

Peter Goldsbrough and Natalie Carroll at Purdue University had developed a Web site (http://www.purdue.edu/UNS/html3month/001201.Goldsbrough.biotech.html) focused on the basics. The Web site directs you step-by-step through the basic science and fundamental issues surrounding biotechnology.

Bruce Thomas and colleagues at the Seed Biotechnology Center, University of California at Davis, have put together a very useful resource on the Internet that provides information on agricultural biotechnology, with links to informative sites dealing with current biotech feed crops, methods of plant breeding and biotechnology,

transgenic crop traits, U.S. Government regulation of transgenic crops, international governments' regulation of transgenic crops, consumer survey, feeding trials, and future biotech feed crops. Visit this page at http://sbc.ucdavis.edu/outreach/lecture/DairyDayAbstract.htm. There is also a very comprehensive database of published literature on the safety testing of GM foods with some excellent web links at http://sbc.ucdavis.edu/outreach/resource/gm_food_safety.htm.

Finally, a very long report titled "Transgenic Crops: An Environmental Assessment" can be accessed at http://www.winrock.org/Transgenic.pdf. Dave Ervin and Sandra Batie, Michigan State University, completed the study to collect and assess the scientific literature on environmental impacts of transgenic crops. In addition to environmental effects, biosafety regulations and business aspects are addressed.

Obviously these are only a few of the burgeoning number of resources focused on agricultural biotechnology, but they should keep you busy for a while. Happy reading.—*Kevin Steffey*

INSECTS

Just the Beginning for Alfalfa Weevils

The onset of alfalfa weevil activity is off to a slower start this spring than it has been the past couple of years. We do not have maps of accumulated and projected degree-days from January 1 (base 48°F), but observations from the field indicate that alfalfa weevil eggs have just begun to hatch and initial signs of injury are apparent. Omar Koester, Unit Assistant–Crop Systems in Monroe and Randolph counties, found first-instar alfalfa weevils feeding in folded terminal leaves in some alfalfa fields in Randolph County on April 2. His observation suggests that the presence of small alfalfa weevils and symptoms of their feeding (pinholes in tip leaves) are obvious in the southern three tiers of Illinois counties.

A few weeks ago, John Shaw, director of the Insect Management & Insecticide Efficacy Program, sampled an alfalfa field in Champaign County and found numerous healthy alfalfa weevil eggs, suggesting that they survived the winter reasonably well. Although one sample site is not necessarily representative of the situation throughout the state, John's observation is a "heads up" for alfalfa growers everywhere in Illinois.

As you begin to scout alfalfa fields for alfalfa weevils, look first in areas of fields that might warm up early, for example, south-facing slopes and areas of fields with lighter soils. After 300 degree-days have accumulated from January 1, you should be able to find small, first-instar weevils in the folded terminal leaves. These small, yellowish larvae with black heads feed on the leaves, resulting in observable pinholes. This injury is not economic because the larvae are too small to cause significant defoliation. However, by the time alfalfa weevils grow into third instars, they begin to cause more economic damage by skeletonizing the leaves. At this stage of development, alfalfa weevil larvae are bright green with a distinct white stripe along the center of the back.

As temperatures warm up this week and next, expect alfalfa weevil activity to increase rather dramatically. We will begin projecting degree-days next week so we can "predict" alfalfa weevil activity in all areas of the state.—*Kevin Steffey*

Searching for Overwintering Corn Borers

Everyone who is interested in corn production wonders about corn borers at some time during the growing season. In southern Illinois, corn growers have been dealing with relatively heavy infestations of southwestern corn borers for at least the past 3 years. Throughout all of Illinois, corn growers are wondering what happened to European corn borers. And at this time of year, a lot of people wonder how well these borers survived the winter. In issue no. 1 of the *Bulletin* (March 16, 2001), we offered an article, "Will Another Mild Winter Promote Insect Problems?" in which we cursorily addressed the effects of winter weather on European and southwestern corn borers. This time we offer visual evidence.

Ron Hines, senior research specialist at the Dixon Springs Agricultural Center in Pope County, embarked on a survey of southwestern corn borers in Massac County in late March. He took 27 samples (10 corn stalks per sample) and examined the stalks for borer larvae and the cavities they excavated last fall. He found that 87% of the no-till corn stalks had cavities, and 63% of the damaged stalks contained living or dead southwestern corn borer larvae. He found only two living European corn borer larvae in the 270 stalks he examined. Steve Ebelhar, agronomist at the Dixon Springs Agricultural Center, also found some overwintering European corn borer larvae in cornstalks.

Distinguishing between apparently healthy and apparently unhealthy or obviously dead southwestern corn borer larvae is relatively easy. As Ron found, the live larvae were white and plump, whereas the unhealthy or dead larvae appeared at least slightly discolored or completely dark. The cause (or causes) of the larval deaths is unknown, but it's obvious that many of them did not survive the winter very well.

The information Ron gathered from his survey reflects the findings by entomologists from the University of Kentucky. They offered the following commentary in the March 12, 2001, issue of *Kentucky Pest News* (http://www.uky.edu/Agriculture/kpn/kpnhome.htm: "This is the third year that we have conducted such a survey. Unlike the previous two winters, we had a severe cold period in December and January. Survival this winter is less than we estimated last year. Last

year we estimated SWCB survival to be between 20 and 24% in those counties. In Daviess and Henderson counties the rate of survival is about half of what we saw the last two years. In Caldwell County it is considerably less. The average survival rate for Caldwell, Henderson and Daviess counties is 5.8%, 12.2%, and 9.2%, respectively. Why the difference among counties, it may be due to snow cover during the cold period. There was more snow cover in the Daviess and Henderson counties than in Caldwell County."

If you decide to look for corn borer larvae on your own, a simple characteristic that will distinguish between southwestern and European corn borer larvae might help. The prolegs (nonsegmented, peg-like legs on the abdomen) of most caterpillars have hooks, called crochets, on the bottom. On southwestern corn borer larvae, the crochets form an **O**, whereas the crochets on European corn borer larvae form a **C**. This characteristic and some color differences should be sufficient for distinguishing between the two species

As the season progresses, we'll try to keep you informed about survival and emergence of southwestern and European corn borers throughout the state. Remember, all reports are helpful, so don't hesitate to contact us.—*Kevin Steffey*

First Report of Captures of Black Cutworm Moths

Ron Hines, senior research specialist at the Dixon Springs Agricultural Center in Pope County, has reported the first captures of black cutworm moths in Illinois for 2001. On April 3, Ron found five black cutworm adults in his pheromone trap in Pope County. On April 4, Ron captured another four moths in the same trap, for a total of nine moths captured over a 2-day period. As most of you know, the capture of nine or more moths per 1 or 2 days is considered an "intense" capture that triggers accumulation of degree-days for predicting the development of black cutworm. We will offer some predictions of black cutworm larval development in next week's issue of the *Bulletin* to get us prepared for potential infestations in cornfields in southern Illinois.—*Kevin Steffey*

PLANT DISEASES

Seed and Seedling Rot Diseases of Corn and Soybeans

As plans develop for planting corn and soybeans in April and May, it is be beneficial to consider the first wave of diseases that may attack: seed rots and seedling diseases. These diseases can kill seeds and seedlings, reduce plant stands, and significantly reduce yields. This article will briefly cover some key points on the pathogens that cause these diseases, conditions favoring these diseases, and options for management.

Seed and seedling rots (also called pre- and postemergence damping-off) of corn and soybeans are caused by a number of different soilborne or seedborne fungi. Corn "gets by" relatively easily compared to soybeans because *Pythium* is the only common seed and seedling rot pathogen that is known to cause widespread problems in Illinois. Seed and seedling rots of soybeans in Illinois, however, are caused by several different pathogens. The most common and destructive in Illinois are considered to be *Pythium*, *Phytophthora*, and *Rhizoctonia*. *Pythium* and *Phytophthora* are "water-loving" fungal-like organisms. The same species of *Pythium* can infect corn and soybeans, but *Phytophthora* only infects soybeans.

These pathogens have different optimal conditions for infecting plants. *Pythium* and *Phytophthora* infect most readily in very wet to saturated soil conditions, whereas *Rhizoctonia* prefers moist but not saturated soils. The more striking difference among these pathogens is in the optimal temperature for infection. *Pythium* prefers cool soil (50 to 60°F), *Phytophthora* prefers slightly warmer soils (60 to 76°F), and *Rhizoctonia* has most activity in warm soils (over 75°F). Thus, the first pathogen to watch for after planting in most years is *Pythium*. The soft-rot symptoms caused by *Pythium* and *Phytophthora* are very similar and cannot be distinguished without laboratory examination, while the reddish-brown lesions caused by *Rhizoctonia* are easier to recognize.

This bit of background on these pathogens provides reasons why planting date, soil-moisture management, and selective use of fungicidal seed treatments are important for management of the diseases they cause. Plant resistance is also critical for control of *Phytophthora* diseases, but there is no resistance available for *Pythium* or *Rhizoctonia*.

What should you do to control these diseases, and are seed treatments worth the cost? Corn is often not as sensitive to seed and seedling rots as soybeans, so planting corn seed treated with fungicides such as Captan + Allegiance FL or Maxim 4FS + Apron XL (Table 1) at the recommended time when soil temperatures are rising may be enough to keep this pathogen in check. Keep in mind that problems with *Pythium* seed and seedling rot of any crop will be more severe when the soil is cool and wet. Control of these soybean diseases is a bit more complicated. First and foremost, plant good-quality soybean seed that has specific resistance to *Phytophthora*. Look for soybean diseases with specific *Phytophthora* resistance genes such as Rps1a, Rps1c, or Rps1k. Second, plant in warm, dry soil if possible. Since this is often not possible, waiting until May 1 to plant and/or using fungicidal seed

Table 1. Fungicides for seed rots and seedling blights of corn and soybeans.

Crop	*Fungicide common name*	*Fungicide trade name*
Corn and soybean	captan	many
Corn and soybean	fludioxonil	Maxim 4FS
Corn and soybean	metalaxyl	Allegiance-FL and Apron-FL
Corn and soybean	mefanoxam	ApronXL-LS
Corn and soybean	carboxin	Vitavax
Corn and soybean	thiram	many
Soybean	PCNB	many
Soybean	thiabendazole	TBZ

treatments are recommended as good insurance. If you lose much of your stand and need to replant with the same variety into the same location, and the soil has not become appreciably drier or warmer, it is recommended that you treat your seed prior to replanting. For soybeans, Allegiance FL and Apron XL should control *Pythium* and *Phytophthora* for 10 to 14 days after planting, and Rival, Maxim 4FS, and captan should protect against *Rhizoctonia* and other pathogens for a similar period.

In trials conducted in no-till plots in summer 2000 at Urbana, Illinois, Dr. Wayne Pedersen and his research group reported that fungicidal seed treatments increased soybean yields 5 to 6 bushels per acre and corn yields 10 to 14 bushels per acre. Recommended fungicides for control of seed and seedling rot diseases of corn and soybeans are shown in Table 1, and additional information can be found in the *Illinois Agricultural Pest Management Handbook*, which is available for purchase or on the Internet at http://www.ag.uiuc.edu/~vista/abstracts/aiapm2k.html

The control strategies outlined here have been shown to be effective in many cases, but much damage frequently still occurs in Illinois from seed and seedling rots. What does the future hold for improved management of these diseases? Improved control will be based in part on enhanced understanding of the pathogens and diseases. Research is under way at the University of Illinois to gain more answers about these pathogens, diseases, and their interactions with other factors. Future improvements may also come in the way of new seed treatments. New fungicidal chemical seed treatments are being developed, and they will be tested in Illinois when they become available. Biological seed treatments, both fungi and bacteria, are also being investigated at various universities and private companies. They have potential advantages in having longer efficacy than currently available seed treatment chemicals and could prove to be safe for soybeans used as animal feed. To date, biological controls for soybean have proved to be inconsistent and often perform poorly under conditions of high disease pressure. Much work is in progress that may yield benefits for improved control of seed and seedling rot diseases. Until new controls are developed, we must continue to rely on management by planting high-quality seed in soil as warm, dry, and well-drained as possible and by using fungicidal seed treatments.—*Dean Malvick*

WEEDS

Equation Corrections to Issue No. 1

Two errors were made during the editing of equations that appeared in the article "A Roundup of Glyphosates—What Are the Differences?" in issue no 1. The equations appeared following Table 3. Dots were incorrectly added during editing, replacing the equals (=) signs near the end of the last two equations. The correct equations are as follows:

For example, to determine the product rate of Credit equivalent to 0.5625 lb acid equivalent:

$$\frac{0.5625\,lb\,acid\,equivalent}{acre} X \frac{1\,gallon\,of\,Credit}{3\,lb\,acid\,equivalent\,per\,gallon} X \frac{128\,fluid\,ounces}{gallon} = 24\,fluid\,ounces\,of\,Credit$$

For example, to determine the product rate of Roundup UltraDry equivalent to 0.5625 lb acid equivalent:

$$\frac{0.5625\,lb\,acid\,equivalent}{acre} X \frac{1\,lb\,of\,RoundupUltraDry}{0.649\,lb\,acid\,equivalent\,per\,lb} X \frac{16\,ounces}{lb} = 13.9\,ounces$$

Corn and Soybean Herbicide Premixes

Corn and soybean herbicide premixes are (to say the least) numerous and can be confusing with respect to what active ingredients are contained in a given premix as well as the amount of active ingredient applied at a given rate. Tables 2 and 3 list most of the commercially available corn and soybean herbicide premixes, respectively. The application rates listed in the tables are meant to be used as references; for some of these herbicides the application rates will vary depending on soil texture, organic matter, weed species and size, and so on. Always consult the respective herbicide label for appropriate application rates. You can easily change the application rates from those given in the table to whatever rate you choose and, knowing the amount of each active ingredient contained in a given premix, then determine the amount of active ingredient applied for each premix component.—*Aaron Hager and Christy Sprague*

Is Herbicide Carryover a Concern for 2001?

The number of carryover problems that occurred during the 2000 growing season has raised the question regarding what the potential is for herbicide carryover during the 2001 growing season. Looking back to last season, there were numerous reports of fomesafen (Flexstar or Reflex) carryover injury to corn from applications made during 1999. Most of these carryover problems were from late-season Flexstar applications for waterhemp control, followed by early corn planting that resulted in a less than 10-month rotational interval. However, there were a few instances where the recropping interval was met, but there were still problems. In many locations where this occurred, there was generally a lack of sufficient precipitation following herbicide application to allow for herbicide dissipation. However, over the last 9 months throughout most of Illinois, there was generally more precipitation than during the same period in 1999. So does more precipitation during the fall of 2000 mean that carryover will not happen in 2001? The following information describes some factors to consider when assessing the potential for herbicide carryover in the 2001 growing season.

Herbicide carryover is a function of four properties: (1) the herbicide's ability to persist in the soil, (2) the amount of rainfall or soil moisture available for degradation, (3) soil temperature, and (4) soil pH. Although these four factors all influence herbicide persistence, certain factors are more important than others for specific herbicide chemistries.

Table 2. Corn herbicide premixes.

Herbicide	*Components (ai/gal or lb)*	*If you apply/ acre:*	*You have applied (ai):*	*Product equivalents are:*
Accent Gold 83.8WDG	clopyralid = 0.517 lb flumetsulam = 0.191 lb nicosulfuron = 0.065 lb rimsulfuron = 0.065 lb	2.9 oz	clopyralid = 0.094 lb flumetsulam = 0.035 lb nicosulfuron = 0.012 lb rimsulfuron = 0.012 lb	Stinger 3S = 4 fl oz Python 80WDG = 0.69 oz Accent 75DF = 0.25 oz rimsulfuron = 0.012 lb ai
Axiom 68DF	flufenacet = 0.544 lb metribuzin = 0.136 lb	19 oz	flufenacet = 0.646 lb metribuzin = 0.162 ln	Define 60DF = 17.2 oz Sencor 75DF = 3.45 oz
Axiom AT 75DF	flufenacet = 0.196 lb metribuzin = 0.049 lb atrazine = 0.505 lb	3 lb	flufenacet = 0.588 lb metribuzin = 0.147 lb atrazine = 1.515 lb	Define 60DF = 15.68 oz Sencor 75DF = 3.136 oz AAtrex 90DF = 1.68 lb
Basis 75WDG	rimsulfuron = 0.50 lb thifensulfuron = 0.25 lb	0.33 oz	rimsulfuron = 0.01 lb thifensulfuron = 0.005 lb	rimsulfuron = 0.01 lb ai Harmony GT 75DF = 0.11 oz
Basis Gold 89.46WDG	rimsulfuron = 0.0134 lb nicosulfuron = 0.0134 lb atrazine = 0.8678 lb	14 oz	rimsulfuron = 0.012 lb nicosulfuron = 0.012 ln atrazine = 0.759 lb	rimsulfuron = 0.012 lb ai Accent 75DF = 0.25 oz AAtrex 90DF = 0.844 lb
Bicep II Magnum 5.5L	S-metolachlor = 2.4 lb atrazine = 3.1 lb	2.1 qt	S-metolachlor = 1.26 lb atrazine = 1.63 lb	Dual II Magnum 7.64E = 1.32 pt AAtrex 4L = 3.26 pt
Bicep Lite II Magnum 6L	S-metolachlor = 3.33 lb atrazine = 2.67 lb	1.5 qt	S-metolachlor = 1.2 lb atrazine = 1.00 lb	Dual II Magnum 7.64E = 1.31 pt AAtrex 4L = 2 pt
Buctril + atrazine 3L	bromoxynil = 1.0 lb atrazine = 2.0 lb	2 pt	bromoxynil = 0.25 lb atrazine = 0.5 lb	Buctril 2E = 1 pt AAtrex 4L = 1 pt
Bullet 4CS	alachlor = 2.5 lb atrazine = 1.5 lb	4 qt	alachlor = 2.5 lb atrazine = 1.5 lb	Micro-Tech 4CS = 2.5 qt AAtrex 4L = 1.5 qt
Celebrity Plus 70WDG	diflufenzopyr = 0.17 lb ae dicamba = 0.424 lb nicosulfuron = 0.106 lb	4.7 oz	diflufenzopyr = 0.049 lb ae dicamba = 0.125 lb nicosulfuron = 0.031 lb	diflufenzopyr = 0.049 lb ae Clarity 4S = 3.98 fl oz Accent 75DF = 0.66 oz
Degree Xtra 4.04CS	acetochlor = 2.7 lb atrazine = 1.34 lb	3 qt	acetochlor = 2.025 lb atrazine = 1.00 lb	Degree 3.8CS = 2.13 qt AAtrex 4L = 1 qt
Distinct 70WDG	diflufenzopyr = 0.20 lb ae dicamba = 0.50 lb	6 oz	diflufenzopyr = 0.075 lb ae dicamba = 0.188 lb	diflufenzopyr = 0.075 lb ae Clarity 4S = 6 fl oz
DoublePlay 7E	acetochlor = 1.4 lb EPTC = 5.6 lb	5 pt	acetochlor = 0.875 lb EPTC = 3.5 lb	Surpass 6.4E = 1.1 pt Eradicane 6.7E = 4.2 pt
Epic 58WDG	flufenacet = 0.48 lb isoxaflutole = 0.10 lb	12 oz	flufenacet = 0.36 lb isoxaflutole = 0.075 lb	Define 60DF = 9.6 oz Balance 75WDG = 1.6 oz
Exceed 57WDG	prosulfuron = 0.285 lb primisulfuron = 0.285 lb	1 oz	prosulfuron = 0.018 lb primisulfuron = 0.018 lb	Peak 57WDG = 0.5 oz Beacon 75WDG = 0.38 oz
Field Master 4.06S	acetochlor = 2.0 lb atrazine = 1.5 lb glyphosate = 0.56 lb ae	4 qt	acetochlor = 2.0 lb atrazine = 1.5 lb glyphosate = 0.56 lb ae	Harness 7E = 2.29 pt AAtrex 4L = 3 pt Roundup Ultra 3L = 1.5 pt
FulTime 4CS	acetochlor = 2.4 lb atrazine = 1.6 lb	4 qt	acetochlor = 2.4 lb atrazine = 1.6 lb	TopNotch 3.2CS = 3 qt AAtrex 4L = 1.6 qt
Guardsman 5L LeadOff 5L	dimethenamid = 2.33 lb atrazine = 2.67 lb	5 pt	dimethenamid = 1.46 lb atrazine = 1.67 lb	Frontier 6E = 1.94 pt AAtrex 4L = 3.34 pt
Guardsman Max 5L	dimethenamid-P = 1.7 lb atrazine = 3.3 lb	4 pt	dimethenamid-P = 0.85 lb atrazine = 1.65 lb	Outlook 6EC = 18.1 fl oz AAtrex 4L = 3.3 pt
Harness Xtra 6L	acetochlor = 4.3 lb atrazine = 1.7 lb	2 qt	acetochlor = 2.15 lb atrazine = 0.85 lb	Harness 7E = 2.46 pt AAtrex 4L = 1.7 pt
Harness Xtra 5.6L	acetochlor = 3.1 lb atrazine = 2.5 lb	2.5 qt	acetochlor = 1.94 lb atrazine = 1.56 lb	Harness 7E = 2.21 pt AAtrex 4L = 3.13 pt

Table 2. Corn herbicide premixes (cont).

Herbicide	*Components (ai/gal or lb)*	*If you apply/ acre:*	*You have applied (ai):*	*Product equivalents are:*
Hornet 68.5WDG	clopyralid = 0.50 lb ae flumetsulam = 0.185 lb	3 oz	clopyralid = 0.094 lb ae flumetsulam = 0.035 lb	Stinger 3S = 4 fl oz Python 80WDG = 0.69 oz
Liberty ATZ 4.3CS	glufosinate = 1 lb atrazine = 3.3 lb	40 fl oz	glufosinate = 0.313 lb atrazine = 1.03 lb	Liberty 1.67L = 24 fl oz AAtrex 4L = 2.06 pt
Lightning 70DG	imazethapyr = 0.525 lb imazapyr = 0.175 lb	1.28 oz	imazethapyr = 0.042 lb imazapyr = 0.014 lb	Pursuit 70DG = 0.96 oz Arsenal 2AS = 0.896 fl oz
Marksman 3.2L	dicamba = 1.1 lb atrazine = 2.1 lb	3 pt	dicamba = 0.4125 lb atrazine = 0.7875	Banvel 4S = 0.825 pt AAtrex 4L = 1.56 pt
NorthStar 47.4WDG	primisulfuron = 0.075 lb dicamba = 0.399 lb	5 oz	primisulfuron = 0.023 lb dicamba = 0.125 lb	Beacon 75WDG = 0.50 oz Banvel 4S = 4 fl oz
ReadyMaster ATZ 4SC	atrazine = 2 lb glyphosate = 1.5 lb ae	2 qt	atrazine = 1 lb glyphosate = 0.75 lb ae	AAtrex 4L = 2 pt Roundup 3L = 2 pt
Shotgun 3.25F	atrazine = 2.25 lb 2,4-D = 1 lb ae	2 pt	atrazine = 0.56 lb 2,4-D = 0.25 lb ae	AAtrex 4L = 1.13 pt Salvo 5E = 0.4 pt
Spirit 57WDG	prosulfuron = 0.142 lb primisulfuron = 0.428 lb	1 oz	prosulfuron = 0.009 lb primisulfuron = 0.027 lb	Peak 57WDG = 0.25 oz Beacon 75WDG = 0.57 oz
Steadfast 75WDG	nicosulfuron = 0.5 lb rimsulfuron = 0.25 lb	0.75 oz	nicosulfuron = 0.023 lb rimsulfruon = 0.012 lb	Accent 75DF = 0.5 oz rimsulfuron = 0.012 lb ai

Table 3. Soybean herbicide premixes.

Herbicide	*Components (ai/gal or lb)*	*If you apply/ acre:*	*You have applied (ai):*	*Product equivalents are:*
Axiom 68DF	flufenacet = 0.544 lb metribuzin = 0.136 lb	13 oz	flufenacet = 0.442 lb metribuzin = 0.111 ln	Define 60DF = 11.78 oz Sencor 75DF = 2.36 oz
Backdraft 1.5L	imazaquin = 0.25 lb glyphosate = 0.921 lb ae	1.5 qt	imazaquin = 0.094 lb glyphosate = 0.345 lb ae	Scepter 70DG = 2.14 oz Roundup 3L = 0.921 pt
Boundary 7.8EC	S-metolachlor = 6.3 lb metribuzin = 1.5 lb	2 pt	S-metolachlor = 1.57 lb metribuzin = 0.375 lb	Dual Magnum 7.62E = 1.65 pt Sencor 75DF = 8 oz
Command Xtra	clomazone 3 lb sulfentrazone = 4 lb	35.2 fl oz	clomazone = 0.6 lb sulfentrazone = 0.3 lb	Command 3ME = 1.6 pt Authority 75DF = 6.4 oz
Canopy 75DG	chlorimuron = 0.107 lb metribuzin = 0.643 lb	6 oz	chlorimuron = 0.039 lb metribuzin = 0.24 lb	Classic 25DF = 2.56 oz Sencor 75DF = 5.14 oz
Canopy 58.3SP	chlorimuron = 0.083 lb metribuzin = 0.50 lb	7.7 oz	chlorimuron = 0.039 lb metribuzin = 0.24 lb	Classic 25DF = 2.56 oz Sencor 75DF = 5.14 oz
Canopy XL 56.3DG	sulfentrazone = 0.469 lb chlorimuron = 0.094 lb	6.8 oz	sulfentrazone = 0.199 lb chlorimuron = 0.04 lb	Authority 75DF = 4.25 oz Classic 25DF = 2.56 oz
Conclude Xact	bentazon = 2.67 lb acifluorfen = 1.33 lb sethoxydim = 2.0 lb	3 pt	bentazon = 0.5 lb acifluorfen = 0.25 lb sethoxydim = 0.375 lb	Basagran 4S = 1 pt Blazer 2S = 1 pt Poast 1.5E = 2 pt
Domain 60DF	flufenacet = 0.24 lb metribuzin = 0.36 lb	10 oz	flufenacet = 0.15 lb metribuzin = 0.225 lb	Define 60DF = 4 oz Sencor 75DF = 4.8 oz
Extreme 2.17L	imazethapyr = 0.17 lb glyphosate = 1.473 lb ae	3 pt	imazethapyr =0.063 lb glyphosate = 0.552 lb ae	Pursuit 2AS = 4 fl oz Roundup 3L = 1.47 pt
Fusion 2.56EC	fluazifop = 2 lb fenoxaprop = 0.56 lb	8 fl oz	fluazifop = 0.125 lb fenoxaprop = 0.035 lb	Fusilade DX 2E = 8 fl oz Option II 0.67E = 6.7 fl oz
Gauntlet Co-Pak	sulfentrazone = 0.75 lb cloransulam = 0.84 lb	5.33 oz + 0.6 oz	sulfentrazone = 0.25 lb cloransulam = 0.031 lb	Authority 75DF = 5.33 oz FirstRate 84WDG = 0.6 oz
Pursuit Plus 2.9EC	imazethapyr = 0.2 lb pendimethalin = 2.7 lb	2.5 pt	imazethapyr = 0.063 lb pendimethalin = 0.84 lb	Pursuit 2AS = 4 fl oz Prowl 3.3EC = 2 pt
Rezult B&G	bentazon = 5 lb sethoxydim = 1 lb	3.2 pt	bentazon = 1.0 lb sethoxydim = 0.20 lb	Basagran 4S = 2 pt Poast Plus 1E = 1.6 pt
Squadron 2.33EC	imazaquin = 0.33 lb pendimethalin = 2 lb	3 pt	imazaquin = 0.124 lb pendimethalin = 0.75 lb	Scepter 70DG = 2.83 oz Prowl 3.3EC = 1.82 pt
Steel 2.59EC	imazaquin = 0.17 lb imazethapyr = 0.17 lb pendimethalin = 2.25 lb	3 pt	imazaquin = 0.063lb imazethapyr = 0.063 lb pendimethalin = 0.84 lb	Scepter 70DG = 1.46 oz Pursuit 2AS = 4 fl oz Prowl 3.3EC = 2 pt
Stellar 3.1E	lactofen = 2.4 lb flumiclorac = 0.7 lb	5 fl oz	lactofen = 0.094 lb flumiclorac = 0.027 lb	Cobra 2E = 6 fl oz Resource 0.86E = 4 fl oz
Storm 4S	bentazon = 2.67 lb acifluorfen = 1.33 lb	1.5 pt	bentazon = 0.5 lb acifluorfen = 0.25 lb	Basagran 4S = 1 pt Blazer 2S = 1 pt
Synchrony STS 42DF	chlorimuron = 0.318 lb thifensulfuron = 0.102 lb	0.5 oz	chlorimuron = 0.001 lb thifensulfuron = 0.003 lb	Classic 25DF = 0.64 oz Harmony GT 75DF = 0.068 oz

Herbicide Persistence

First of all, it is important to know what products were applied in 2000, how long these products persist, and what rotational crops are sensitive to soil residues. Different herbicides persist in the soil different lengths of time. It is important to know when a product was applied to determine the time the product has been available for degradation. For example, the atrazine label indicates that soybeans can be planted the following year if applications were made before June 10 of the previous year. This rotational restriction was made to ensure that there was sufficient time for atrazine to degrade between application and soybean planting the following year.

Soil Moisture and Temperature

Other factors to consider include the amount of precipitation received following application and soil temperatures. Dry soil conditions generally reduce the rate of herbicide degradation (DNA herbicides, however, degrade more rapidly under saturated soil conditions). Soil moisture is extremely important, especially during the first 2 to 4 weeks after application. If rainfall and soil moisture were not sufficient during this time, dissipation of the herbicide was likely reduced, increasing the potential for carryover. Additionally, lack of soil moisture can result in increased herbicide adsorption to soil particles and organic matter, reducing herbicide availability for degradation. Herbicide labels that include minimum precipitation requirements include *imazaquin*-containing products (Scepter, Squadron, and Steel), *prosulfuron*-containing products (Exceed, Spirit, and Peak), and *clopyralid*-containing products (Stinger, Hornet, Accent Gold). Other herbicides that are affected by low soil moisture include Command, Pursuit, and Lightning. Soil temperature also plays an important role in herbicide degradation. Colder soil temperatures decrease herbicide degradation. That is why certain herbicides such as Scepter and Exceed are not used in the northern regions of Illinois.

Soil pH

Soil pH affects the persistence and degradation of many herbicides. In particular, high soil pH (above 7.0) reduces the dissipation of atrazine and simazine. Also, dissipation of *chlorimuron*-containing products (Classic, Canopy, Canopy XL, and Synchrony STS) is reduced if the soil pH is greater than 6.8, increasing the likelihood of persistence. Dissipation of *prosulfuron*-containing products (Exceed, Spirit, and Peak) is also reduced by high soil pH. Clomazone (Command) dissipation is reduced by soil pH levels less than or equal to 5.9, increasing the chances of carryover to corn the following year.

Concerned About Carryover?

If you are still concerned about the potential for carryover this spring after considering all of these factors and referring to the rotational restrictions for the corn and soybean herbicides listed in Tables 4 and 5, a field or greenhouse bioassay can be conducted to help determine potential carryover problems**.** These bioassays are generally inexpensive and will help estimate the potential for rotational crop injury from herbicide residues. For more information on testing for herbicide residues in soil refer to Chapter 16 of the *Illinois Agricultural Pest Management Handbook.* Another diagnostic tool to help predict herbicide residues in the soil is winter annual weed growth. This could help determine herbicide persistence from differences in soil pH or moisture throughout a field.— *Christy Sprague and Aaron Hager*

Knockdown Decisions for 2001

Warm weather and ample soil moisture will soon allow for significant growth of winter annual weed species (spring weed "greenup") in no-till production fields. Winter annual and early summer annual weeds can cause significant problems, especially when field conditions are not conducive for a timely burndown herbicide application prior to no-till corn or soybean planting. It is not atypical to deal with winter annual weeds ranging from a few inches to more than a foot in height when burndown herbicide applications are made. Proper timing of a burndown herbicide application can often reduce problems later in the season.

Chickweed, henbit, and purple deadnettle are winter annual species that have caused significant planting problems when not controlled properly. There are several herbicides that provide good control of these species. Table 6 contains efficacy ratings for several herbicides and herbicide combinations used in burndown situations to control existing winter annual, early summer annual, and perennial weed species. Other burndown herbicides that are effective in controlling common chickweed and henbit include Basis (corn), and Harmony Extra and Express (corn and soybeans). However, Harmony Extra and Express may not be viable options at this time since there is a 45-day interval restriction between application and planting. Also, keep in mind that several other herbicides used in burndown applications have planting interval restrictions. This is especially important when using 2,4-D or dicamba (Banvel, Clarity) prior to soybean planting (Table 6).—*Christy Sprague and Aaron Hager*

Weed Control in Small Grains

The wheat crop across much of Illinois appears to have made it through the winter reasonably well. While some concerns about the crop still exist, weed-control strategies may soon be considered by producers. The vast majority of herbicide options for weed control in wheat are for control of broadleaf species. Wild garlic, especially in the southern portion of Illinois, is an important nonbroadleaf species that can result in significant economic losses if left uncontrolled.

Table 4. Corn–sorghum herbicide recropping restrictions, months.

Herbicide[a]	Comments	Field corn	Sorghum	Wheat	Oats	Rye	Alfalfa	Clover	Soybeans
Acetochlor and its premixes									
Degree, Harness	acetochlor	AT	NY	4	2Y	2Y	2Y	2Y	NY
Degree Xtra, Harness Xtra 5.6L	w/atrazine	AT	NY	15	2Y	2Y	2Y	2Y	NY
DoublePlay	w/EPTC	AT	NY	4	2Y	2Y	2Y	2Y	NY
FulTime	w/atrazine	AT	NY	15	2Y	2Y	2Y	2Y	NY[b]
Surpass, TopNotch	acetochlor	AT	NY	4	2Y	2Y	2Y	2Y	NY
Atrazine and its premixes; simazine									
AAtrex, Atrazine	pH < 7.2	AT	AT	NY	2Y	NY	2Y	2Y	NY[b]
Bicep II Magnum	w/metolachlor	AT	AT[c]	NY	2Y	NY	2Y	2Y	NY[b]
Bicep Lite II Magnum	w/metolachlor	AT	AT[c]	NY	2Y	NY	2Y	2Y	NY[b]
Buctril + Atrazine	w/bromoxynil	AT	AT	NY	2Y	NY	2Y	2Y	NY
Bullet	w/alachlor	AT	AT[c]	NY	2Y	NY	2Y	2Y	NY[b]
Guardsman, LeadOff	w/dimethenamid	AT	AT[c]	NY	2Y	NY	2Y	2Y	NY[b]
Laddok S-12	w/bentazon	AT	AT	15	15	15	18	18	NY
Liberty ATZ	w/glufosinate	AT	AT	NY[b]	2Y	NY[b]	NY[b]	NY[b]	NY[b]
Marksman	w/dicamba	AT	AT	10	2Y	10	2Y	2Y	NY[b]
Princep, simazine	simazine	AT	NY	NY	2Y	NY	2Y	2Y	NY
ReadyMaster ATZ	w/glyphosate	AT	AT	NY	2Y	NY	2Y	2Y	NY[b]
Flumetsulam and its premixes; clopyralid									
Hornet WDG	w/clopyralid	AT	12	4	4	4	10.5	26[Fba]	10.5[e]
Python	flumetsulam	AT	12	4	4	4	4	26[Fba]	AT
Stinger	clopyralid	AT	10.5	AT	AT	AT	10.5	18	10.5[e]
Isoxaflutole, flufenacet, and premixes									
Balance PRO	isoxaflutole	AT	6	6	6	6	6	6	6
Epic	isoxaflutole + flufenacet	AT	12	12	12	12	12	12	6
Axiom	flufenacet + metribuzin	AT	12	12	12	12	12	12	AT
Axiom AT	flufenacet + metribuzin + atrazine	AT	NY	2Y	2Y	2Y	2Y	2Y	NY?
Imazethapyr and its premixes									
Lightning	w/imazapyr	8.5[f]	18	4	18	4	9.5	40[Fba]	9.0
Pursuit	imazethapyr	8.5[f]	18	3	18	4	4	40[Fba]	AT
Pursuit Plus	w/pendimethalin	8.5	18	4	18	9.5	9.5	40[Fba]	AT
Sulfonylureas and their premixes									
Accent	nicosulfuron	AT	10[d]	4	8	4	10	10	0.5
Accent Gold	nicosulfuron + rimsulfuron + Hornet	AT	12	4	8	4	10.5	26[Fba]	10.5[e]
Basis	thifensulfuron + rimsulfuron	AT	10	4	8	18	10	18	0.5
Basis Gold	nicosulfuron + rimsulfuron + atrazine	AT	10	10	18	10	18	18	10[b]
Beacon	primisulfuron	0.5	8	3	8	3	8	18	8
Celebrity Plus	dicamba + nicosulfuron + diflufenzopyr	0.25	10[d]	4	8	4	12	12	4
NorthStar	primisulfuron + dicamba	0.5	8	3	8	3	8	18	8
Permit	halosulfuron	1	2	2	2	2	9	9	9
Spirit	primisulfuron + prosulfuron	1	10	3	3	3	18[g]	18[g]	10–18[h]

Table 4. Corn–sorghum herbicide recropping restrictions, months (cont.)

[Fba] = field bioassay needed (see label); NY = next year; 2Y = second year; AT = anytime; NY? = Injury may occur if planted next spring.

[a]Other corn herbicides have no significant recropping restrictions, but Banvel, Clarity, Eradicane, and 2,4-D have replanting limits for soybeans.
[b]2Y (second year) if applied after June 10 with high atrazine or Liberty ATZ and after July 1 with Basis Gold.
[c]Concep or Screen seed protectant needed.
[d]18 months if pH ≥7.5.
[e]18 months if <15 inches of rainfall received *and* if soil has <2% organic matter.
[f]Clearfield (CL, formerly IT/IR) designated corn hybrids may be replanted anytime.
[g]Exceed or Spirit: pH <7.8; applied before July 1; rainfall >12 inches within 5 months and >1 inch within 4 weeks of application.
[h]I-70 to I-80: Spirit 10 months, Exceed 18 months or 10 months if STS soybeans. Above I-80: Exceed or Spirit 18 months.

Table 5. Soybean herbicide recropping restrictions, months.

Herbicide	Comments	Field corn	Sorghum	Wheat	Oats	Rye	Alfalfa	Clover	Soybeans
Chlorimuron and its premixes									
Canopy[a]	w/metribuzin	10	12	4	30	30	10	12	AT
Classic	high chlorimuron	9[b]	9[b]	3	3	3	12[b]	12[b]	AT
Synchrony STS	w/thifensulfuron	9[b]	9[b]	3	3	3	12[b]	12[b]	AT
Cloransulam and flumetsulam									
FirstRate	cloransulam	9	9	3	30[Fba]	30[Fba]	9	30[Fba]	AT
Python	flumetsulam	AT	12	4	4	4	4	26[Fba]	AT
Imazaquin and its premixes (Region 3 = north of Peoria)									
Backdraft—Region 2[c]	w/glyphosate	9.5[d]	11	4	11	18	18	18	AT
Backdraft—Region 3[c]	w/glyphosate	18[d]	11	18	18	18	18	18	AT
Scepter—Region 2[c]	imazaquin	9.5[d,e]	11[e]	3[e]	11[e]	18	18	18	AT
Scepter—Region 3[c]	0.5 rate, post	NY[d]	11	Fall[e]	NY[e]	18	18	18	AT
Scepter—Region 3[c]	imazaquin	18	11	18	18	18	18	18	AT
Squadron—Region 2[c]	w/pendimethalin	9.5[d,e]	11[e]	4[e]	11[e]	18	18	18	AT
Imazethapyr and its premixes									
Extreme	w/glyphosate	8.5[f]	18	3	18	4	4	40	AT
Pursuit	imazethapyr	8.5[f]	18	3	18	4	4	40	AT
Pursuit Plus	w/pendimethalin	8.5	18	4	18	9.5	9.5	40	AT
Steel—Region 2[c]	w/pendimethalin + imazaquin	9.5[d,e]	18	4[e]	18	40	18	40	AT
Metribuzin and its premixes									
Axiom	w/flufenacet	AT	12	12	12	12	12	12	AT
Boundary	w/*S*-metolachlor	8	12	4.5	12	12	4.5	12	AT
Domain	w/flufenacet	1	12	12	12	12	12	12	AT
Sencor	metribuzin	4	12	4	12	12	4	12	4
Sulfentrazone alone or plus chlorimuron									
Authority	sulfentrazone	10	10	4	30	4	12	18	AT
Canopy XL[a]	w/chlorimuron	10	10	4	30	4	12	18	AT
Other active ingredients									
Command 3ME	clomazone	9	9	12	16[g]	16[g]	16[g]	16[g]	AT
Flexstar, Reflex	fomesafen	10	18	4	4	4	18	18	AT
Raptor	imazamox	8.5	9	3	9	4	9	18	AT

[Fba] = field bioassay needed (see label); NY = next year; 2Y = second year; AT = anytime.
[a]Midwest states' rate, soil pH <6.8.
[b]Extend 2 months if applied after August 1.
[c]See label for exact area and Region 3 (northern Illinois) full-use rate.
[d]10- to 15-inch annual rainfall is required, or use CL-corn hybrids.
[e]15 months if Scepter/Scepter O.T. sequence, but 9.5 months or NY for CL-corn hybrids.
[f]Clearfield (CL, formerly IT/IR) designated corn hybrids may be replanted anytime.
[g]Cover crops may be planted anytime, but stand reductions may occur. Do not graze or harvest for forage for at least 9 months.

Table 6. Control ratings for herbicides to control existing vegetation in no-till corn and soybeans.

		Winter annual grasses				Winter annual broadleaves					Summer annuals							Perennials				
Herbicide	**Crop**[a]	*barley, little*	*bluegrass, annual*	*brome, downy*	*ryegrass, annual*	*rye or wheat cover*	*chickweed, common*	*henbit/purple deadnettle*	*horseweed (marestail)*	*mustards*	*prickly lettuce*	*foxtail, giant*	*fleabane, daisy or annual*	*lambsquarters, common*	*ragweed, common*	*ragweed, giant*	*smartweed, Pennsylvania*	*alfalfa*	*clover, red*	*dandelion, common*	*vetch, hairy*	**Interval between application and planting**
Balance PRO	C	-	-	6	-	5	8	6	7	8	8	8	-	8	8	6	8	0	0	6	0	C-N/A[d]
Balance PRO + atrazine	C	-	8	7	6	6	9	8	9	8	9	8	7	9	9	9	9	4	6	6	7	C-N/A
2,4-D ester	C&S	0	0	0	0	0	5	5	8	9	8	0	6	9	9	8	7	6	8	8	9	C-N/A, S-7 days (1 pt or less); 30 days (>1-2 pt)
Clarity, Banvel	C&S	0	0	0	0	0	9	7	7	7	9	0	8	9	9	9	9	8	9	7	9	C-N/A, S-14 days (8 fl oz or less); 28 days (>8-16 fl oz)
2,4-D + Clarity, Banvel	C&S	0	0	0	0	0	8	6	8	9	9	0	8	9	9	9	8	8	9	8	9	C-N/A, S-see above restrictions on 2,4-D and Clarity rates
2,4-D + glyphosate	C&S	9	9	9	9	9	9	9	9	9	9	9	6	9	9	9	8	6	8	8	8	C-N/A, S-7 days (1pt or less); 30 days (>1-2 pt)
glyphosate[b]	C&S	9	9	9	9	8	9	7	7	8	7	9	5	8	7	8	7	5	6	5	6	C-N/A, S-N/A
glyphosate[c]	C&S	9	9	9	9	9	9	9	8	9	8	9	6	9	9	9	8	6	7	7	7	C-N/A, S-N/A
Field Master	C	9	9	9	9	9	9	9	8	9	9	9	7	9	9	8	9	6	7	7	4	C-N/A
Gramoxone Max	C&S	7	9	7	7	6	9	8	6	7	6	8	5	8	8	7	6	3	6	4	7	C-N/A, S-N/A
Gramoxone Max + atrazine	C	9	9	8	8	8	9	9	9	9	9	9	7	9	9	9	9	4	7	6	8	C-N/A
atrazine	C	9	9	7	6	6	9	9	8	9	9	7	7	9	9	9	9	4	6	4	7	C-N/A
Marksman	C	9	9	8	5	5	9	9	9	9	9	5	6	9	9	9	9	8	9	7	9	C-N/A
Sencor	C&S	8	-	7	5	4	9	8	6	8	8	5	-	7	7	6	8	3	5	6	5	C-N/A, S-N/A
Canopy	S	7	-	3	7	-	8	8	8	9	9	5	-	9	9	8	9	4	5	7	5	S-N/A
Canopy XL	S	4	4	-	6	-	7	8	8	9	9	6	-	9	9	8	9	3	4	6	6	S-N/A
Authority	S	4	-	-	-	0	-	6	0	-	-	6	-	8	5	5	7	3	0	0	0	S-N/A
Authority + 2,4-D	S	4	-	-	-	0	-	-	8	9	8	6	-	9	9	8	7	6	8	8	9	S-2,4-D rates: 1 pt or less (7 days); >1-2 pt (30 days)

Control ratings: 9 = excellent, 8 = good, 7 = fair, 6 = poor, <5 = unsatisfactory, - = no information available.

[a] Labeled for burndown applications in corn (C) or soybeans (S).

[b] Glyphosate rate 0.375 lb a.e. (see Table 3 of issue no. 1 of the *Bulletin* for a listing of glyphosate formulations).

[c] Glyphosate rate 0.75 lb a.e.

[d] Not applicable = No interval between herbicide application and planting.

Proper herbicide application timing is critical to achieve good weed control. Additionally, all herbicides commonly used for weed control in Illinois wheat also have application restrictions based on the wheat's developmental stages. All of these herbicides have maximum crop-growth stages for application, most indicating applications must be made before the jointing stage. Table 7 contains information about the herbicides labeled for use in small grains. Before making any herbicide application, consult the respective herbicide label for additional information.

As mentioned, wild garlic is a particularly troublesome weed in wheat production. Wild garlic *(Allium vineale)* is a perennial species in the Lily *(Liliaceae)* family. Seedlings are grass-like with hollow leaves that are circular in cross-section. The plant reproduces from seed (rarely), aerial bulblets, and underground bulblets. The aerial bulblets are produced in a cluster at the top of the stem, are surrounded by a papery membrane, and are very difficult to separate from the wheat seed. These bulblets can impart a "garlicy" odor/flavor to wheat during the processing stage and are thus very undesirable. Significant dockage can result if wild garlic bulblets are present when the wheat is delivered to the elevator. Wild onion *(Allium canadense)* is a similar species, except that the leaves are flat and not hollow, it produces no underground bulblets, and the aerial bulb has a fibrous, net-veined outer coating, unlike the thin, membranous outer coating of wild garlic.

Harmony Extra (thifensulfuron + tribenuron) or Harmony GT (thifensulfuron) is often used to control wild garlic in wheat. These herbicides are very effective in controlling wild garlic and can provide control of several other weed species (Harmony Extra will control chickweed, but Harmony GT will *not*), but Harmony Extra will not control wild onion. The label allows Harmony Extra to be applied with liquid fertilizer as the carrier instead of water, but this may increase crop response. Wheat herbicide effectiveness ratings appear in Table 8.

While Peak (prosulfuron) is labeled for use in small grains and is effective on wild garlic, rotational restrictions have greatly limited its usefulness in Illinois. The rotational interval following a Peak application before soybeans are planted ranges from 22 months (north of Interstate 80) to 10 months (south of Interstate 80).—*Aaron Hager and Christy Sprague*

REGIONAL UPDATE

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:

Table 7. Herbicides for use in small grains.

Herbicide	*Crop*	*Maximum growth stage*	*Rate per acre*	*Legume underseeding*
2,4-D amine	wheat, oats	before joint	1/2 to 1.5 pints	yes
Buctril	wheat, oats	boot	1 to 1.5 pints	yes
MCPA amine	wheat, oats	before joint	0.5 to 2 pints	yes - 1/2 pint no - over 1/2 pint
Banvel, Clarity	wheat, oats	wheat - before joint oats - 5 leaf	2 to 4 fluid ounces	no
Harmony Extra or Harmony GT	wheat, oats	wheat - before flag leaf is visible oats - before joint	wheat - 0.3 to 0.6 ounce oats - 0.3 to 0.4 ounce	no
Peak	wheat, oats	before second node is detectable	0.38 to 0.5 ounce	no
Stinger	wheat, oats	early boot	1/4 to 1/3 pint	no
2,4-D ester	wheat	before joint	1/2 to 1 pint	no
Aim	wheat, oats	joint	1/3 to 2/3 ounce	?

Table 8. Herbicide effectiveness on weeds in small grains.

	Susceptibility to herbicide							
Weed	*2,4-D*	*Banvel/ Clarity*	*Buctril*	*Harmony Extra*	*Harmony GT*	*MCPA*	*Peak*	*Stinger*
Winter annual								
Buckwheat, wild	5	9	9	8	8	6	7	8
Chickweed, common	5	7	6	9	6	5	7	N
Henbit	5	7	8	8	7	5	7	N
Horseweed (marestail)	8	8	7	7	5	8	7	8
Lettuce, prickly	9	8	6	8	7	8	7	8
Mustard spp., annual	9	7	8	9	9	9	8	N
Pennycress, field	9	7	8	9	9	8	7	N
Shepherd's purse	9	8	9	9	9	8	7	N
Summer annual								
Lambsquarters, common	9	9	9	9	9	9	7	N
Pigweed spp.	9	9	7	9	9	8	7	N
Ragweed, common	9	9	9	7	5	9	8	8
Ragweed, giant	9	9	8	5	5	9	7	8
Smartweed, Pennsylvania	6	9	8	9	9	7	7	7
Perennial								
Dandelion	9	8	N	6	5	8	5	9
Garlic, wild								
Aerial bulblets	6*	5	N	9	9	5	9	N
Underground bulblets	N	N	N	5	5	N	5	N
Thistle, Canada	7	7	5	7	4	6	7	9

9 = excellent, 8 = good, 7 = fair, 6 = poor, 5 or 4 = unsatisfactory control, N = no control or not labeled.
*2,4-D ester at maximum use rate.

* 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.

East-Central Illinois

The primary field activity to this point has been nitrogen application, with general spring tillage now catching up. A very few fields have been planted with morning 4-inch soil temperatures still in the low 40s. The other major field activity has been burning residue around the ponded areas in fields.

Northern Illinois

Spring field activity has ranged from minimal (some dry fertilizer application, very little tillage work) to nonexistent, north of Route 30. However, 30 miles south of Route 30, anhydrous ammonia is being applied, preplant herbicides are going out, and a small amount of corn has been planted.

Wheat and alfalfa have only recently "greened" up and seem to have survived the winter quite well.

Several Extension educators have black cutworm moth traps scattered throughout the area. We will report any "intense" captures in northern Illinois in future *Bulletins*.

Southern Illinois

Most wheat has received nitrogen fertilizer applications and has begun erect growth, although cool, dry weather has delayed development somewhat. There are some varietal differences in response to late-winter growing conditions. There is some evidence of injury where the snow blew off the fields.

Farmers are preparing for the coming crop season, and some corn has been planted in river-bottom areas. It may be difficult to match or exceed the good corn and soybean yields recorded in many southern Illinois counties in 2000.

Vector Tobacco is contracting with growers for the production of a low-nicotine genetically modified tobacco in southern and southeastern Illinois. The crop will be closely monitored by the company and APHIS but will certainly add diversity to the agricultural landscape.

West-Central Illinois

Dry soil conditions have allowed most of the anhydrous ammonia to be applied. Other tillage operations are taking place, also.

Some corn has been planted in the Springfield area.

Wireworms have been found in bait stations.

Winter annuals, such as shepherd's purse and chickweed, are rapidly growing in untilled fields.

Reports have been received of marginal stands in some wheat fields.

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