



PEST MANAGEMENT & CROP DEVELOPMENT

BULLETIN

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WEEDS

Postemergence Herbicide Applications: Timings and Tank-Mixes

Postemergence herbicides are integral to an integrated weed management program. Applying herbicide after crops and weeds have emerged allows you to identify the weed species present and assess the infestation so you can tailor herbicide selection for each field. Compared with soil-residual herbicides, postemergence herbicides minimize interactions with factors associated with soil (such as soil texture and organic matter content), but they tend to magnify interactions with prevailing environmental conditions. To achieve weed control with postemergence herbicides, the herbicide must come in contact with the target, be retained on the leaf surface prior to absorption into the plant, be able to reach the site of action within the plant, and, finally, induce some phytotoxic response. If for any reason one or more of these steps is restricted or limited, the level of weed control can be expected to decline.

The goal of a postemergence weed management program should be to remove weed interference from the corn crop before the weeds reduce corn grain yield. The key to success is determining when the weeds should be removed via application of the postemergence herbicide(s). Unfortunately, no one can accurately predict which specific day after planting or emergence that weeds begin to reduce corn yield. Weed scientists generally suggest an interval, based on either weed size (in inches) or days after crop/weed emergence, during which postemergence herbicides should be applied to avoid yield loss from weed interference. The interval for corn is often recommended to be before weeds exceed 2 to 4 inches in height. If weeds are allowed to remain with the crop past this size range, the risk of yield loss substantially increases. Apart from preserving crop yield, another advantage of removing weeds at these suggested sizes is that small weeds are usually much easier to control than large ones.

Tank-mixing two or more postemergence herbicides can provide several advantages over single-product applications. Perhaps one of the most obvious is that the spectrum of weeds controlled can be broadened. Before the adoption of glyphosate-resistant crops, tank-mixing postemergence herbicides was common. Grass-control herbicides were often tank-mixed with broadleaf-specific herbicides to create a "one-pass" tank-mix. Tank-mixes generally have been less common in the past decade, as glyphosate alone has been an effective product for control of many broadleaf and grass weed species. However, with the occurrence of glyphosate-resistant weed populations and weed species inherently less sensitive to glyphosate, it will become increasingly common to tank-mix products with glyphosate to control these challenging species. In glyphosate-resistant corn, tank-mixing growth regulators (such as dicamba or 2,4-D) or HPPD inhibitors (such as mesotrione, topramezone, or tembotrione) with glyphosate can improve control of glyphosate-resistant waterhemp and other tough-to-control broadleaf weed species, such as morningglory and giant ragweed. Be sure to follow all label restrictions and additive recommendations when tank-mixing postemergence herbicides.

The labels of most postemergence corn herbicides include application restrictions based on a maximum corn size (specified as corn height, leaf or collar number, or sometimes both). For product labels that indicate a specific corn height *and* growth state, be sure to follow the more restrictive of the two. If these restrictions are not followed, quite often there can be substantial injury to the crop that may lead to yield reductions. Adverse environmental conditions (such as prolonged periods of cool air temperatures) can sometimes result in corn plants that are physiologically older than their height would suggest, so be sure to accurately assess plant developmental stage (leaf/collar number) in addition to plant height. Also be sure to follow the

more restrictive corn growth stage listed when two or more products are tank-mixed. For example, glyphosate can be applied broadcast to glyphosate-resistant corn through the V8 stage or until corn is 30 inches tall when applied alone, but only to corn 12 inches tall when tank-mixed with atrazine.

Corn plants under stress conditions may be more prone to injury from post-emergence herbicides. Stress can arise from a number of factors, including cool temperatures and wet soils. Be sure to consult the product label when selecting spray additives to include with postemergence herbicides. Many labels suggest changing from one type of additive to another when the corn crop is under stressful growing conditions.—*Aaron Hager*

PLANT DISEASES

Update on a Wheat Disease Survey in Illinois

The high levels of rainfall received in Illinois this spring have created favorable conditions for wheat diseases. A survey was initiated last week to determine the impact of diseases on wheat fields in the state. Nine counties in southern Illinois have been surveyed so far (Clay, Gallatin, Jefferson, Pope, Randolph, Saline, Washington, Wayne, and White), with preliminary results presented in **Table 1**. A more complete picture of how diseases impacted the 2009 wheat crop will be available once the survey is complete.

Leaf blotch caused by the *Stagonospora nodorum/Septoria tritici* complex is present on the flag leaves throughout southern Illinois fields, with average incidence ranging from 76% to 100% of flag leaves affected. Leaf rust has been found in only a very small portion of the fields surveyed so far, with 0% to 56% of leaves affected, at very low severity levels. Head scab (*Fusarium head blight*) has been present in every field surveyed so far, with average incidence ranging from 17% to 100% of the heads affected. Glume blotch also can be found in every field;

average incidence ranges from 50% to 92% of the heads affected.

What can I do now? Most wheat fields in Illinois are now past the stage of applying any disease control treatments. A few fields in northern Illinois may have not yet reached the early flowering stage (Feekes growth stage 10.5.1). Some fungicides can be applied at that stage to give protection against head scab and foliar diseases. The current map on the *Fusarium head blight risk assessment tool* website (www.wheatscab.psu.edu) shows low risk of head scab in northern Illinois.

In fields with high levels of head scab, it is important to increase the fan speed on the combine at harvest. A higher fan speed will blow more of the scabby kernels out the back of the combine, which may reduce any discounts applied at the elevator for low test weight and high deoxynivalenol (DON) contamination.

What can I do next year to manage head scab? The best practices for managing head scab are done prior to planting, such as choosing a variety that has some resistance to the disease. Information about the level of head scab resistance in some wheat varieties is available at vt.cropsci.illinois.edu/wheat.html. Another management step is deciding where to plant winter wheat. When planting into a field with a lot of corn stubble on the soil surface, the risk of head scab will increase, as it is likely that the stubble will already be infested with the fungus that causes head scab (*Fusarium graminearum*, aka *Gibberella zeae*). The final step in managing head scab is to apply a fungicide if conditions have been favorable for developing the disease.—*Carl A. Bradley*

CROP DEVELOPMENT

Replanting Soybean Is No Easy Decision

Corn planting was 82% complete and soybean planting 34% complete as of May 31, as reported by the USDA

NASS Illinois Weather and Crops Report. That was up from 62% and 12%, respectively, the previous week. Last week I wrote about scouting for potential soybean emergence issues and seedling blights, what to expect, and what to look for within the first two weeks of planting. I didn't elaborate on information that may affect a replant decision. A decision to replant takes into account many factors, including the availability of seed with equal quality and yield potential for a given field, the time you have to replant in relation to planting and/or spraying other fields, and keeping and managing the stand you have vs. the stand you hope you'll get the second time. And there is some emotion involved in having a "failed" stand establishment as well, so replanting is not an easy decision.

There are no clear-cut rules on balancing all of these factors, but before you consider terminating a partial stand, make certain you are sure how many plants per acre you have and consider how uniformly distributed they are. The data I presented in issues 6 and 7 of *the Bulletin* (May 1 and 8, 2009) could serve as a guide to help you assess what to expect from your population and needed final stand. For instance, the planting date data in issue 6 would indicate you are losing roughly half a bushel of soybean yield potential per day of delay in June. The seeding rate data in issue 7 would indicate that an evenly spaced seeding rate of 50,000 plants per acre will produce 91% and 90% of expected yield from seeding 100,000 and 150,000 seeds per acre, respectively. So with all other factors considered equal, if you seeded 150,000 seeds per acre on June 1 and expected 60 bushels per acre yield but achieved a stand of 50,000 plants per acre, you might still expect 90% yield potential, or 54 bushels per acre. However, if you eliminated the stand and replanted 150,000 on June 12 and achieved a full stand the second time, your yield potential would still likely be reduced to 54 bushels per acre due to the delay in planting. Looking at the numbers, in many cases I find it

Table 1. Incidence and severity of leaf and head diseases in southern Illinois wheat fields in 2009.

County	Fields surveyed	Leaf blotch		Leaf rust		Head scab		Glume blotch	
		Incidence ^a	Severity ^b	Incidence ^a	Severity ^b	Incidence ^a	Severity ^b	Incidence ^a	Severity ^b
Clay	5	85.2	19.6	1.6	0.3	17.6	4.9	68.0	14.3
Gallatin	3	86.7	7.4	16.0	.6	56.0	22.1	52.0	3.7
Jefferson	3	88.0	6.2	13.3	0.2	34.7	8.5	58.7	2.3
Pope	1	100	6.3	0	0	56.0	24.6	56.0	3.5
Randolph	3	77.3	3.3	4.0	0.1	41.0	9.5	50.7	1.8
Saline	1	100	26.0	56.0	1.8	100	27.8	80.0	9.0
Washington	5	76.8	16.2	0.8	0.2	44.0	15.4	53.6	11.0
Wayne	5	86.4	20.4	1.6	0.3	32.8	9.7	85.6	21.1
White	3	97.3	9.8	1.3	0.1	65.3	14.5	92.0	7.0

^aIncidence: % of flag leaves (leaf blotch and leaf rust) or heads (head scab and glume blotch) affected.

^bSeverity: % area of flag leaf or head affected.

hard to justify terminating an existing stand.

If you can identify and rectify a low-stand situation early, particularly if the low stand is not uniform, one idea is to plant more seeds into an existing stand. There is no good guideline for how far apart soybean plants can be in their growth and development before the later ones may compete with the earlier plants like weeds, but done within a couple of weeks of the original planting date, this practice could prove successful. If your decision is to simply maintain a low soybean population, one of the biggest considerations is increasing your efforts to scout for weeds and eliminate weed competition. The lower the soybean plant stand, the longer it will take to achieve canopy closure, so there will be a longer period for weeds to take advantage of light, water, and nutrients to establish and compete with your soybeans. An extra application of postemergence herbicide to protect the yield in a low stand may be more economically viable than the cost and time to replant for a “fuller” stand.

Hopefully these comments on incorporating yield expectations to seeding rate, yield expectation to planting delay, and increasing weed management efforts in low stands will offer some guidance to those making this difficult decision. — *Vince M. Davis*

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.

East-Central Illinois

What a difference two weeks can make. Many farmers in the area have gone from barely started to almost done planting. Farmers hit the fields hard last week, giving up on the ponded areas and planting around them.

Rains were spotty until this week and now the ponds are full to the brim again. Most ponds have yet to be planted for the first time. Some have been replanted once and will have to be evaluated again.

Corn that doesn't have wet feet responded well to the sun and heat last week and has started to grow quickly. Corn size varies from 10 inches to just spiked.

The first soybeans are just starting to emerge.

Northern Illinois

Several rainfall events Sunday evening through Tuesday have halted field work in most of the region. Corn planting ranges from complete in the northwest to 85% or more complete in some eastern areas of the region. Corn emergence looks good for the most part, but some corn planted the week of May 11 struggled to emerge, and there are a few fields with less-than-ideal populations. To date there have been no reports of cutworm damage, in spite of multiple intense black cutworm flights recorded in April.

Soybean planting ranges from 80% or more complete in the northwest to lower amounts in the eastern portion of the region.

Wheat looks good except for thinner stands in some field areas due to standing water and ice last winter.

Limited alfalfa was harvested this week. Pastures look good throughout the area.

Southern Illinois

A few days of dry weather followed by thunderstorms remains the continuing saga in the south. All crops are showing the effects of too much water.

Corn planting progress and development are extremely variable and have been influenced by both storm tracks and individual field drainage. Corn growth ranges from unplanted to V6. Much of the upland area on the western side of the region that was planted in early May has now been replanted and is approaching V2. Some soybeans have been planted but are showing the effects of wet conditions.

Wheat is beginning to turn color. In some cases this may be normal maturation, but flat, poorly drained fields are showing large areas where the crop is simply dying. While it seems that wheat heading was somewhat delayed earlier this spring, overall crop development has now caught back up. This shortening of the grain-fill process typically does not promote high yields. There have been some reports of armyworms being found in areas where the wheat has lodged.

There have been several reports of stem and foliar diseases affecting the second cutting of alfalfa. Given the delayed first cutting and the continuing wet weather, this shouldn't be too surprising.

West-Central Illinois

The nice weather has provided a good opportunity for farmers to get back into the field for 4 or 5 days after last week's rain. In the region, corn planting ranges from 80% to 100% completed. Many corn fields are emerging, and corn growth stages vary from emerging to V4. Nice weather for planting continues to be followed by heavy rainfall, making compaction and stand counts an issue this year. Due to the late planting and emergence, many producers will not replant. There have not yet been many reports of insect problems.

The nice weather has allowed soybean planting to progress rapidly, with probably about 25% to 50% now in the ground. Fields that got planted near the beginning or middle of May have their first trifoliate leaf. Like corn, some soybean fields had crusting problems, but emerged stands will be sufficient.

Wheat is flowering to mostly pollinated throughout the region, with some areas in the southeastern portion reporting uneven height. For the most part, flag leaves look good, with some scattered symptoms of barley yellow dwarf virus and the early signs of rust. Lower plant leaves are showing symptoms of leaf spots.

Oats are close to or at flag leaf. Farmers are trying hard, but a lot of hay and

alfalfa fields still need cutting due to wet weather. Those that have been cut are giving excellent yields.

In wet fields along streams and waterways, some soil erosion as well as deposition has been of concern. Early in the week more storms dropped up to 6 inches of rain in some areas of the region.

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