Integrated Pest & Crop Management

A Six-pack of Tips for Healthy Cotton in 2012

By J. Allen Wrather

I recently heard a cotton farmer confess that the day he planted cotton was the most important day for that crop. If he planted and the weather was warm for the next 1 to 2 weeks, the plants would emerge quickly, the seedlings would develop a robust root system and the plants would grow well all summer. If he planted and the weather turned cold and wet for the next 1 to 2 weeks, the cotton stand would be thin and uneven due to seedling diseases, the roots of surviving plants would be stunted, the plants would grow poorly and mature slowly and yield would be low. Farmers can protect their young cotton crop against seedling diseases that may develop during cool wet weather by following the six steps listed below. I call these six steps a six-pack of tips for a healthy cotton corp.

1.Plant only when the soil temperature 4 inches deep has warmed up to about 65?F by 8:00 a.m. and plant only when at least 7 days of warm and dry weather are predicted.

2.Plant only high-quality seed. Seed quality can be partially judged by the warm and cold germination test results. The seed should germinate better than 80% in the warm test and better than 50% in the cold test. The warm test results are printed on the seed bag, but the results of the cold test are not. Ask your seed dealer about the cold germination test results.

3.Plant in fertile soil. Ensure that soil pH, phosphate and potash levels are proper for new plant growth.

4.Plant on high beds. Seedling diseases are worse when the soil is cold and wet. To minimize seedling diseases, plant on raised beds to maximize drainage and soil temperature. The top of a raised bed is generally warmer than flat soil. Make sure field drainage is adequate to quickly eliminate excess water. Internal soil drainage will be improved if hardpans are broken with a ripper.

5.Have the seed treated with extra fungicides when cotton is planted early in the season, in poorly drained fields, or in clay soils, and certainly in fields where seedling diseases have been a problem in previous years.

6.When planting no-till, equip your planter to move trash away from the row, so the sun can warm the soil around the seed faster.

Following these suggested procedures will give cotton farmers a better chance of producing high yield and profit during 2012. More information is available at your county extension office or on the University of Missouri Delta Center Web Page (www.aes.missouri.edu/delta).

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In This Issue

Pre-plant Herbicide Options for the Management of Glyphosate Resistant Giant Ragweed in Soybean

By Eric Riley and Kevin Bradley

In recent years, glyphosate-resistant giant ragweed has become increasingly problematic in many soybean production fields in Missouri. As spring approaches, giant ragweed seedlings are usually the first summer annual broadleaf weed to emerge and these seedlings usually do so before the typical time of soybean planting (Figure 1). In some areas, giant ragweed seedlings have emerged already.

Figure 1. Giant ragweed seedlings are usually the first summer annual broadleaf weed to emerge and these seedlings usually do so before the typical time of soybean planting in Missouri.

Control of glyphosate-resistant giant ragweed prior to soybean planting is critical to the successful management of this species. By eliminating the initial flush of glyphosate-resistant giant ragweed prior to soybean planting, crops gain a competitive advantage and management of in-crop escapes will be more effective. Our research indicates that successful management of glyphosate-resistant giant ragweed is dependent upon the use of an effective preplant burndown herbicide treatment prior to soybean planting. If glyphosate-resistant giant ragweed is not controlled well with an effective burndown herbicide treatment, our research shows that in-crop applications of glyphosate tank-mix partners will provide poor control of this species in Roundup Ready soybeans. Figures 2 and 3 show results from some of the research we conducted on glyphosate-resistant giant ragweed in 2011. As you can see from these results, glyphosate-resistant giant ragweed control ranged from 28-51% when using standard rates of glyphosate alone, which shows that we cannot use glyphosate alone for the control of this species prior to planting-- especially in locations where glyphosate resistance is suspected. The addition of a growth regulator herbicide, such 2, 4-D or dicamba (Clarity), or the saflufenacil-containing products like Sharpen to the glyphosate burndown treatment provided greater than 84% control of glyphosate-resistant giant ragweed in both locations (Figures 2 and 3). Excellent glyphosate-resistant giant ragweed control was also achieved with preplant burndown combinations of Ignite or Gramoxone plus Clarity (Figure 3). Preplant burndown combinations of glyphosate plus 2, 4-D plus Authority First or Valor SX or Valor XLT provided 98% control of glyphosate-resistant giant ragweed (Figure 2). However, control of glyphosate-resistant giant ragweed was reduced when 2, 4-D Ester was not included with glyphosate and the Authority or Valor products (Figures 2 and 3). Reduced control of glyphosate resistant giant ragweed was also observed with combinations of glyphosate plus Firstrate or Valor XLT due to ALS- and glyphosate-resistance in the giant ragweed populations at these locations (Figure 3).

In Missouri, we have not seen giant ragweed populations with an extended germination pattern as some have reported in eastern portions of the Corn Belt. Ultimately, what we feel this means is that we must eliminate the population that is present prior to planting with multiple, effective herbicide modes of action. If we do so, we are not likely going to see this species as a problem for the remainder of the season.

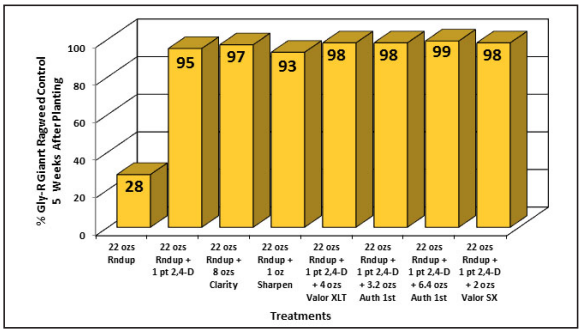

Figure 2. Influence of pre-plant herbicide treatments on glyphosate-resistant giant ragweed control at Monroe County, MO in 2011.

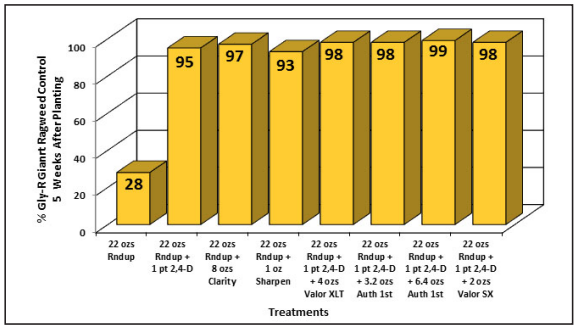

Figure 3. Influence of pre-plant herbicide treatments on glyphosate-resistant giant ragweed control in Randolph County Missouri in 2011.

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Forage of the Month: Small Grains

By Rob Kallenbach

The small grains, primarily wheat and rye, are used extensively in Kansas, Nebraska, Oklahoma and Texas for winter pasture for stocker calves, but they can fit into pasture systems in Missouri as well. If planted around Sept. 1, wheat or rye will produce enough forage for an initial grazing by late November under normal conditions. Wheat and rye continue to grow through the winter, although they grow slowly during cold spells. Rye genera l ly produces 30 to 60 percent more forage than wheat. In a vegetative state, small grain pasture is often more than 20 percent crude protein and 23 to 28 percent acid detergent fiber. Wheat and rye remain in a vegetative state until mid- to late March; as a result, forage quality is fairly constant from November through late February. Rye matures three to four weeks earlier than wheat and thus is hard to manage for high-quality feed after March. In addition, small grain pasture is susceptible to trampling damage under muddy conditions.

Wheat

Collar region

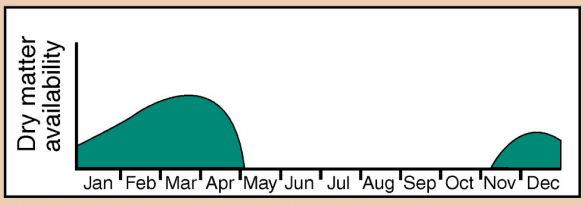
Seed head

Origin: Near East and Europe
Adaptation to Missouri: Statewide

Cereal rye *(Secale cereale* L.*)*
Blade: Leaf bud rolled, ~12 veins, twisted clockwise, pubescent, not shiny green on lower surface.
Sheath: Open, pubescent (slight to very hairy).
Ligule: Short, membranous.
Auricles: Very short.
Seed head: There is one spikelet at each rachis node and two fertile florets in each spikelet.

Oat *(Avena sativa* L.*)*
Blade: Leaf bud rolled. Glabrous with ~12 veins, twisted counter-clockwise.
Sheath: Open, usually glabrous.
Ligule: Long, acute, toothed, membranous.
Auricles: Absent.
Seed head: Open panicle with a single spikelet on each rachis branch.

Wheat *(Triticum aestivum* L.*)*
Blade: Leaf bud rolled. ~12 veins, twisted clockwise, pubescent (slight to very hairy).
Sheath: Open, pubescent (slight to very hairy).
Ligule: Membranous.
Auricles: Short with blunt tips and pubescent.
Seed head: Single spikelet at each rachis node. Three to five florets per spikelet.
Fertilization: 75 lb N/acre at establishment. An additional 40 to 60 lb N/acre can be applied in late February if needed. Phosphorus and potassium to soil test.
Timing of production: 70 percent of growth from Feb. 1 to May 1.
When to begin grazing: When the grass reaches 8 inches in height.
When to cut for hay: Boot stage, typically in late April or early May.
Lowest cutting or grazing height: 4 inches
Fall management: Grazing possible in late fall if a 4-inch stubble is maintained throughout winter.



Yield distribution of small grains in Missouri.

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Soybean Cyst Nematode Management: Take the Test to Beat this Pest in 2012

By J. Allen Wrather

Here is the situation: Soybean cyst nematode (SCN) is the worst pest of soybeans in the U. S. A. including Missouri.

Fortunately, this pest can be managed, but farmers must take steps before planting soybean this year to protect their crop against these nematodes.

The first step is to test the soil for SCN, and this must be done in the next few days. This step must soon be completed so the test results will be available by early- to mid-April, and the information can be used to select varieties for planting this year. University of Missouri Extension Regional Agronomists have information about taking and submitting soil samples for SCN analysis, and more information is available at the University of Missouri web site http://soilplantlab.missouri.edu/nematode.

The second step is to make decisions about crops to plant in 2012. Farmers should plant corn or another crop resistant to SCN in fields that have a high population of SCN. Crop rotation is a great SCN control method because SCN numbers decline during years when crops such as corn, grain sorghum, a forage crop, or cotton are planted. The number of years these crops should be planted before planting soybean again will depend on the number of SCN in the soil. Soybean may be planted in fields that have a low population of SCN in the soil, but farmers should only plant varieties with some type resistance to SCN.

Soybean cyst nematode resistant varieties are available and most yield well. Very few varieties are resistant to all types of SCN so selecting the best variety to plant is difficult. Information about soybean variety resistance to SCN is available at University of Missouri Extension Offices. The University of Missouri Variety Testing web site shows information that was provided by seed companies, http://varietytesting.missouri.edu/soybean/soybean_characteristics_2011.pdf. Visitors to this site should select "Soybean", and then select "Characteristics". Farmers should also ask the representatives for the soybean seed companies they buy from about the best SCN resistant varieties to plant in each field. These are the only useful SCN control methods available.

More information about SCN management is available in the University of Missouri Extension Guide titled, Soybean Cyst Nematode: Diagnosis and Management. This guide is available at http://muextension.missouri.edu/xplor/agguides/crops/g04450.htm.

The Missouri soybean farmer checkoff managed by the Missouri Soybean Merchandising Council funded much of the research by University of Missouri scientists to develop SCN resistant varieties and determine that crop rotation is a great SCN management tool.

Following these suggested procedures will give soybean farmers a better chance of producing a profitable soybean crop in 2012.

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Crop Insurance Update

By Raymond Massey

All crop insurance policies are included in a single plan called COMBO. Within COMBO are yield protection and revenue protection options. With revenue protection, farmers can select the harvest price plan or the harvest price exclusion plan. The deadline to purchase crop insurance for spring planted crops in Missouri is March 15. Insurance settlement price for corn in 2012 is $5.68/bushel; soybeans, $12.55.

Last year, 2,898,071 acres (89% of planted acres) of corn, 4,260,847 acres (84% of planted acres) of soybeans and 497,864 acres (60% of planted acres) of wheat were insured. For 2011 crops, Missouri farmers paid $804,562,766 in premiums and received $769,482,598 in indemnities. Indemnities exceed premiums for corn, grapes, potatoes, and rice in MO.

Two significant changes were introduced this year to corn and soybean policies in Missouri. First, the pilot Biotechnology Yield Endorsement (BE) Program that provided premium rate reductions for producers who planted certain qualifying corn hybrids has ended. It is not going to be extended as a permanent program.

Second farmers can now choose a Trend-Adjusted Actual Production History (APH) Yield Option. Because of improved genetics and production practices, yields have been increasing every year. In Missouri, corn yields have increased about 1.2 bushels per year and soybean yields, 0.37 bushels per year. Until now, farmers' insurable yields have been calculated as the average of the last 10 years of actual production. That means the average was 5 years behind the trend. A quick estimate shows that by choosing the Trend Adjusted Actual Production History Yield option, a farmer could guarantee an additional 6 bushels per acre of corn or almost 2 bushels per acre of soybeans. These estimates are not what individual farmers will experience because the program adjusts their previous APH by their county's historical yield trend. There will be restrictions on who can use the Trend-Adjusted Actual Production History Yield Option. The policyholder's APH database must include at least one actual yield determined in one of the last 4 most recent years. The database must also have at least 4 actual yields within the previous 12 years or the adjustment will be prorated. A change that was in effect for 2011 and will continue indefinitely is the classification of organic production as a recognized practice. This means that farmers who are producing organic crops are able to insure them at a higher price.

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Stripe Rust Damages Some Southeast Missouri Wheat

By J. Allen Wrather

Stripe rust can be a yield-robbing disease of susceptible wheat when the weather is suitable for infection. It was detected in a few southeast Missouri wheat fields in early March and was detected in several southeast Missouri fields by mid March. As of mid March, it has not been reported north of a line from New Madrid to Poplar Bluff. This disease presumably spread to Missouri from the many infected east Arkansas wheat fields during late February and early March. Spread of this disease to other Missouri wheat fields can't be predicted. However, weather predicted for the last few weeks of March will be suitable for this disease to spread.

All wheat fields should be scouted for this disease. The conditions that justify an application of fungicide to wheat for protection against this disease have not been developed for Missouri because this disease rarely develops here.

Symptoms of stripe rust vary because of variety infected. Generally, the pustules are yellow, appear principally on leaves, and are often arranged in stripes on the leaves, see http://agfax.com/2012/03/22/arkansas-wheat-managing-this-years-stripe-rust/.

Farmers that expect high wheat yields, greater than 60 to 70 bu/acre, should inspect each field and consider apply a fungicide to protect wheat against this disease if infection is found in a field. Do not assume all fields are infected. Any of the registered wheat fungicides will work, but propiconazole (Tilt and generics) and tebuconazole (Folicur and generics) are the least expensive and best for stopping infections that have already occurred and stopping new infections. Strobilurin fungicides such as azoxystrobin (Quadris) and pyraclostrobin (Headline) are best for preventing new infections but weak for stopping existing infections. Combination products such as Quilt, Stratego, Absolute, and Twinline are good for stopping both new and existing infections. Prosaro (prothioconazole + tebuconazole) and Caramba (metconazole) are primarily used at flowering time to suppress Fusarium head blight (scab). A second fungicide application may be needed at late-boot stage of growth for other diseases, so don't spend a lot on this early application.

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How well do you know your enemy?

By Kevin Bradley and Brock Waggoner

Last season, we conducted the first year of a two-year survey to identify the most common weed species encountered in Missouri corn and soybean fields, and to better understand the management practices that producers are utilizing for the control of these species. In this article, we will discuss the most common weeds that were found in corn and soybean fields in 2011. In a subsequent article, we will explain our findings as it relates to the management practices that producers are utilizing for the control of these species in Missouri. This survey was primarily conducted throughout the northern half of the state across 50 different locations in 2011, and will be conducted in a similar number of locations throughout the state in 2012.

In 2011, we identified 23 different broadleaf and 10 different grass weed species in the corn fields that were surveyed. The top 10 most common species were waterhemp, morningglory species, yellow nutsedge, goosegrass, cocklebur, foxtail species, fall panicum, prickly sida, horsenettle, and velvetleaf (Figure 1).

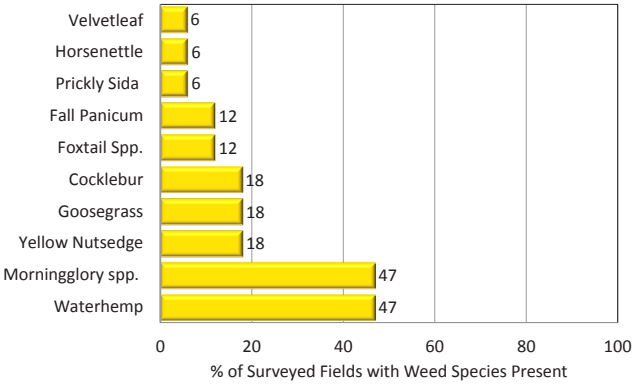

Figure 1. **Ten most common weed species encountered in Missouri corn fields.**

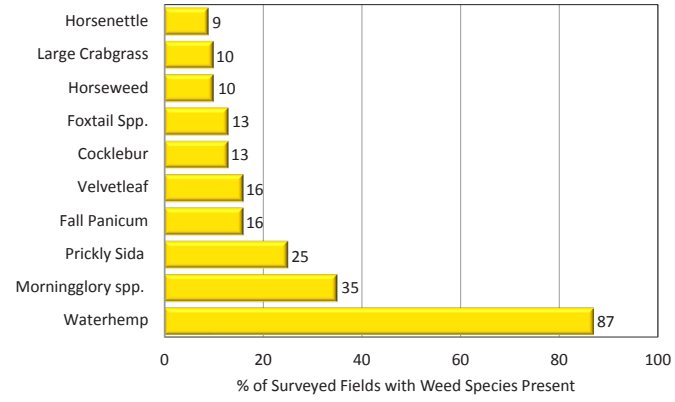

Figure 2. **Ten most common weed species encountered in Missouri soybean fields.**

In the soybean fields that were surveyed there were 51 different broadleaf and 13 different grass weed species. Waterhemp and the morningglory species were again the top two most common species identified, with 87% of the soybean fields containing waterhemp (Figure 2). The other 8 species that rounded out the top 10 were prickly sida, fall panicum, velvetleaf, cocklebur, foxtail species, horseweed, large crabgrass, and horsenettle.

If you are at all familiar with Missouri agriculture, there are plenty of things about the results in Figures 1 and 2 that are probably not all that surprising to you. For example, the fact that waterhemp is our most common species encountered in soybean fields is probably not a big surprise to anybody. However, there are some other species that made these top 10 lists that probably would not have been on those lists 5 or 10 years ago. Although we have no previous weed surveys to compare this data to, one of the species that seems to be occurring with more frequency in recent years is fall panicum. This grass tends to be one of our later germinating species, and as such may escape the timing of our herbicide applications, especially in corn fields. Other weeds on these lists that are likely occurring with more frequency now than in the past include goosegrass and prickly sida.

Whatever weeds you have in your fields, it's important for you to know what they are in order for you to manage them appropriately. If you aren't certain of what weed species you have in your fields, we have an online weed id guide that can help. You can go to: http://weedid.missouri.edu/index.cfm , select whether your weed is a broadleaf or grass weed, and then use the keying system and select the appropriate answer to the remaining questions about your unknown species in order to narrow down the possibilities.

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New Resistant Weed Video Resource Available

Last year we developed a video resource that explains the process of herbicide resistance, including management recommedations, in waterhemp, giant ragweed, and horseweed in Missouri. All of these videos can be viewed at http://weedscience.missouri.edu/video.htm. Also, we do have DVD's of these videos available. If you'd like a copy, email us and we'll be glad to send you one in the mail.

- Kevin Bradley, BradleyKe@missouri.edu

Weather Data for the Week Ending March 30, 2012

By Pat Guinan

Station	County	Weekly Temperature (ºF)						Monthly Precipitation (in.)		Growing Degree Days‡	
		Avg. Max.	Avg. Min.	Extreme High	Extreme Low	Mean	Departure from long term avg.	March 1-31	Departure from long term avg.	Accumulated Since Apr.1	Departure from long term avg.
Corning	Atchison	81	53	88	43	67	+21	2.06	-0.14	*	*
St. Joseph	Buchanan	78	55	83	49	66	+20	4.14	+1.96	*	*
Brunswick	Carroll	77	54	81	48	65	+17	4.15	+1.75	*	*
Albany	Gentry	78	51	84	42	64	+18	2.76	+0.47	*	*
Auxvasse	Audrain	77	54	82	49	65	+17	2.85	+0.05	*	*
Vandalia	Audrain	75	50	82	46	62	+16	2.02	-0.87	*	*
Columbia-Bradford Research and Extension Center	Boone	79	54	82	49	65	+17	4.43	+1.38	*	*
Columbia-Capen Park	Boone	80	51	84	45	65	+16	4.16	+1.23	*	*
Columbia-Jefferson Farm and Gardens	Boone	*	*	*	*	*	*	*	*	*	*
Columbia-Sanborn Field	Boone	79	55	82	51	67	+18	4.07	+1.08	*	*
Columbia-South Farms	Boone	78	55	81	49	66	+18	4.08	+0.99	*	*
Williamsburg	Callaway	*	*	*	*	*	*	*	*	*	*
Novelty	Knox	71	50	79	47	60	+13	2.34	-0.23	*	*
Linneus	Linn	75	52	79	47	63	+17	4.38	+1.89	*	*
Monroe City	Monroe	74	50	81	47	61	+14	2.09	-0.49	*	*
Versailles	Morgan	82	58	86	50	69	+20	4.99	+1.94	*	*
Green Ridge	Pettis	79	56	82	49	68	+20	4.62	+1.84	*	*
Lamar	Barton	79	56	81	47	67	+17	5.83	+2.21	*	*
Cook Station	Crawford	80	52	83	45	66	+16	2.71	-1.19	*	*
Round Spring	Shannon	82	48	86	44	64	+15	2.76	-1.08	*	*
Mountain Grove	Wright	79	54	83	499	66	+18	5.97	+2.00	*	*
Delta	Cape Girardeau	79	55	82	50	66	+15	3.22	-1.15	*	*
Cardwell	Dunklin	80	56	85	53	68	+14	4.24	-0.13	*	*
Clarkton	Dunklin	*	*	*	*	*	*	*	*	*	*
Glennonville	Dunklin	80	56	84	51	68	+16	5.28	+1.32	*	*
Charleston	Mississippi	78	54	83	49	66	+14	4.10	+0.04	*	*
Portageville-Delta Center	Pemiscot	80	57	84	54	69	+16	5.70	+1.66	*	*
Portageville-Lee Farm	Pemiscot	80	57	84	53	68	+15	4.61	+0.61	*	*
Steele	Pemiscot	80	56	87	53	68	+15	4.52	+0.23	*	*

‡Growing degree days are calculated by subtracting a 50 degree (Fahrenheit) base temperature from the average daily temperature. Thus, if the average temperature for the day is 75 degrees, then 25 growing degree days will have been accumulated.

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