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WEED BURNDOWN PRIOR TO SOYBEAN PLANTING

Today's ESPS used for soybean production in the Midsouth will likely be linked with using herbicides to kill existing vegetation [burndown] before planting. Timely application of these burndown herbicides is critical for control of targeted weeds to mesh with intended planting date.

Weather conditions in the spring can delay timely herbicide burndown of winter vegetation prior to intended soybean planting time in the Midsouth. This potential delay requires special consideration if 2,4-D or dicamba are planned as part of the burndown mix in fields where early planting of soybean is planned, and a strict waiting interval is required to avoid crop injury.

Important items that deal with burndown scenarios before planting soybeans have been posted on the Mississippi Crop Situation blog site and the Arkansas Row Crops blog site. The following linked articles are appended below.

"Burndown Scenarios for Mississippi Soybean" by Dr. Jason Bond, MSU-DREC Research/Extension Weed Scientist, and Dr. Trent Irby, MSU Extension Soybean Specialist. In this article, the authors provide potential herbicide treatments for "No burndown herbicide applied to date", "Burndown has been applied, but an additional application is required", and "Planting after April 15".

"Auxin Herbicide Plantback Restrictions" by Dr. Bond. In this article, Dr. Bond includes a table of Plantback Restrictions [days before planting] for 2,4-D ester formulations applied in burndown applications prior to planting various crops grown in Miss.

"Preplant Intervals for Auxin Herbicides in Mississippi" was posted by Dr. Bond. In this article, Dr. Bond discusses and presents plantback restrictions that must be observed when either 2,4-D or dicamba are part of the burndown mix, as well as the different preplant intervals to be observed based on the formulation of 2,4-D that is used.

"Winter Weed Questions Already" by Dr. Tom Barber, Arkansas Extension Weed Scientist. Dr. Barber provides details about which herbicides/herbicide combinations can be used to control various weed species that will be present on a given site, as well as soybean plant-back cautions when certain herbicides are used.

Click here to access the latest Weed Management Guidelines from Midsouth states that include tables that provide weed control ratings for the various herbicides that can be applied for burndown prior to planting soybeans.

Producers are urged to check out these resources for guidelines that can be used to ensure the avoidance of problems that may result if burndown herbicides that conflict with intended planting date or herbicide technology of selected varieties are used.

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The following articles from the Mississippi Crop Situation blog site were posted in 2015 and 2016. Their content provides concise guidelines for preplant foliar applications of herbicides to kill existing weed vegetation prior to soybean planting. Notice that many of the listed herbicide options should be considered in combination with intended soybean planting date.

Burndown Scenarios for Mississippi Soybean

mississippi-crops.com, Mar. 27, 2015, Dr. Jason Bond, MSU-DREC Research/Extension Weed Scientist, and Dr. Trent Irby, MSU Extension Soybean Specialist

Spring burndown has been challenging this year because of excessive rain and cold temperatures. As the optimum planting window for soybean approaches, careful consideration should be given to herbicide options for burndown or cleanup prior to planting. This can be difficult because several different scenarios combining prior burndown and potential planting dates exist.

Field where no burndown has been applied in 2015.

First, consideration should be given to the targeted planting date. Regardless of the current weather pattern, planting during mid-April has been optimum for soybean in Mississippi. Fields that are projected to be **planted between now (March 27) and April 15** may fall into one of the following categories:

No burndown herbicide applied to date:

In this case, a combination of herbicides and multiple applications will be required for a clean seedbed at planting. Unfortunately, since no burndown herbicide has been applied and the targeted planting date is rapidly approaching, the list of herbicide options for postemergence control is much smaller due to factors such as weed size/density and/or plantback restrictions. However, application of a residual herbicide remains an option. The efficacy of residual herbicides will be reduced when applied to fields with dense vegetation because the herbicide does not make it to the soil surface. Application of a residual herbicide 7 to 14 days prior to planting offers a higher probability of receiving an incorporating rainfall that ensures the herbicide is working when the crop is planted and reduces the soybean injury potential.

Potential treatments for general burndown in this scenario are as follows:

Glyphosate plus 2,4-D at 0.5 to 1.0 lb AE/A. Close attention should be given to 2,4-D formulation, application rate, and actual planting date. See the below article.

Glyphosate plus Sharpen at 1 oz/A. This treatment may be applied up to planting in fields that do not contain coarse-textured soils with <2% organic matter. Sharpen rate may be increased to 1.5 oz/A; however, 14 days is required before soybean planting.

Glyphosate plus Canopy EX at 1.1 to 2.2 oz/A. Canopy EX offers postemergence and residual weed control. However, it carries soil texture, organic matter, and pH restrictions that should be followed.

Glyphosate plus Firstshot at 0.5 to 0.8 oz/A. Depending on weed spectrum, Firstshot at 0.8 oz/A will likely offer better weed control than Firstshot at 0.5 oz/A. However, the planting restriction increases from 1 to 7 days if application rate exceeds 0.5 oz/A.

Glyphosate plus a variety of residual herbicides. A list of these can be found in the 2015 Weed Control Guidelines for Mississippi (MSU-ES P1532).

Paraquat-based treatment. Multiple applications of paraquat at 0.75 to 1.0 lb AI/A will be required in fields with no prior burndown. Temperature, application volume, droplet size, and choice of tank mix herbicide will influence the efficacy of paraquat-based treatments.

Burndown has been applied, but an additional application is required:

In fields where burndown herbicides were applied last fall or during the clear weather in February, it is likely that weed escapes, regrowth, and/or new emergence is now the primary problem, and herbicide requirements will vary depending on these factors. Another issue in this scenario is whether tillage (rehip,drag beds, etc.) will be required prior to planting. A rule of thumb is to wait 4 to 6 days between herbicide application and tillage if possible.

Potential treatments for general burndown in this scenario are as follows:

Glyphosate alone or glyphosate plus Firsthot. This treatment should be applied where the current weed infestation is not severe and tillage is required.

Paraquat plus metribuzin (or prepackaged mixtures containing metribuzin). Mixing paraquat and metribuzin will enhance control of emerged species and provide residual weed control.

Planting after April 15:

If targeted soybean planting date is after mid-April, most burndown herbicide treatments are still an option. An important consideration in this scenario is that the residual herbicide component of a burndown application made now will likely not persist through soybean planting and emergence. Therefore, an additional application of a residual herbicide is recommended at planting.

Potential treatments for general burndown in this scenario are as follows:

Glyphosate plus dicamba and/or 2,4-D. A minimum accumulation of 1 inch of rainfall followed by a 15-day waiting period is required when applying dicamba in fields to be planted to soybean. More information on burndown with dicamba and 2,4-D can be found in the below article.

Glyphosate plus dicamba and/or 2,4-D plus a residual herbicide. The residual herbicide is important in fields where no tillage will be performed from time of application until planting.

Glyphosate followed by tillage. Many winter weeds are currently too large to be adequately controlled with tillage. However, in fields where glyphosate-resistant Italian ryegrass and/or horseweed are not problematic and the field was not prepared previously, tillage/land prep following a glyphosate application could serve a dual role and save some money.

Because of the geographic area on which soybean is planted in Mississippi, planting dates, soil texture, topography, and cultural practices vary widely. Often this means that burndown herbicide programs for soybean must be addressed on a field-by-field basis. Additional information is available in the 2015 Weed Control Guidelines for Mississippi.

Auxin Herbicide Plantback Restrictions

mississippi-crops.com, Mar. 17, 2015, Dr. Jason Bond, MSU-DREC Research/Extension Weed Scientist

This year has started off much like 2013 and 2014 with several weeks of cold, wet weather in Mississippi. Until this week, essentially no burndown herbicide applications have been made since early- to mid-February. Particularly with corn, growers are ready to plant, but the field requires a burndown. This necessitates discussion on plantback restrictions for 2,4-D and dicamba prior to planting corn and soybean.

Labels for different formulations of dicamba (Clarity, Banvel, etc.) are fairly consistent on plantback restrictions. Dicamba may be applied to fields that will be planted to corn at any time until planting. Once corn is planted, dicamba applications should be avoided until after corn emergence. In fields that will be planted to soybean, the dicamba plantback restriction is strict. The Clarity label states, *"following application of Clarity and a minimum accumulation of one inch of rainfall or overhead irrigation, a waiting interval of 14 days is required for 8 fluid ounces per acre, and 28 days is required for 16 ounces per acre. These intervals must be observed or crop injury will occur."* The key point is the rainfall total is required before the clock begins between dicamba application and soybean planting. Cotton may be planted 21 days after dicamba, and grain sorghum and rice may be planted 15 days following dicamba.

The 2015 Weed Control Guidelines for Mississippi (MSU-ES Publication 1532) lists 56 formulations of 2,4-D that are labeled for application in the state. Many of these are only labeled for application to turf, ornamentals, forages, etc. However, there is a multitude of 2,4-D formulations labeled for application to agricultural fields. Agricultural 2,4-D products can be formulated as acid, amine, or ester formulations.

Even though all 2,4-D labels do not contain the same wording, there is continuity concerning plantback restrictions among the labels for 2,4-D products commonly sold this time of year by the distributors in Mississippi. **The plantback restrictions in Table 1 are for ester formulations of 2,4-D.**

Table 1. Plantback restrictions for 2,4-D ester formulations applied in burndown applications.							
Herbicide	Distributor	Rate	Corn	Cotton*	Grain Sorghum	Rice	Soybean
		lb/A	----------Days before planting----------				
Barrage HF	Helena Chem. Co.	0.5	7	30	29	30	7
		1.0	14	30	29	30	15
Havoc LV-Six	Jimmy Sanders	0.5	7	30	29	30	7
		1.0	14	30	29	30	15
Salvo	Crop Prod. Services	0.5	7	30	29	30	7
		1.0	14	30	29	30	15
Shredder LV4	Green Point AG	0.5	7	30	29	30	7
		1.0	14	30	29	30	15
*The rotational crop restriction for cotton following an application of 2,4-D is incorrect in the 2015 Weed Control Guidelines for Mississippi (MSU-ES Publication 1532). The restriction should be 30 days rather than 3 months as listed in the Weed Control Guidelines.							

As a general rule, 2,4-D ester is more effective for control of some winter annual weed species including curly dock. Furthermore, ester formulations should be applied when daytime temperatures are <55 to 60 F. When daytime temperatures are consistently >55 to 60 F, then amine formulations should be utilized. If an **ester formulation** is utilized, the plantback restriction for soybean is 7 days following 2,4-D ester at 0.5 lb ae/A and 15 days following 2,4-D ester at 1.0 lb ae/A. If an **amine formulation** is utilized, the plantback restriction for soybean planting is 15 days following 2,4-D amine at 0.5 lb ae/A and 30 days following 2,4-D amine at 1.0 lb ae/A. Therefore, caution should be exercised when matching a 2,4-D formulation to the cropping scenario.

2,4-D labels can be frustrating to decipher. Use caution when making applications of auxin herbicides. Better to be safe and read the label of the product that is actually going into the sprayer than to be sorry and suffer consequences from herbicide drift or carryover. Keep in mind that any burndown application of glyphosate plus 2,4-D and/or dicamba will work slowly, even with the warmer weather. If burndown has been delayed and the field is ready to plant, consider changing the burndown to a paraquat-based application.

Preplant Intervals for Auxin Herbicides in Mississippi

Dr. Jason Bond, MSU-DREC Research/Extension Weed Scientist--Mar. 2016

Every year is unique, and 2016 has brought its own unique set of challenges. Conditions have been poor in the Mississippi Delta over the past 10 days. There are fields with emerged corn that seems to be doing well, there are fields with failed stands of corn that will require replanting, and there are fields that have not been touched since harvest in 2015. The time for using auxin herbicides for burndown in Mississippi is growing short. Observing the preplant intervals for 2,4-D and dicamba prior to planting corn and soybean is important.

Labels for different formulations of dicamba (Clarity, Banvel, etc.) are fairly consistent on preplant intervals. Dicamba may be applied to fields that will be planted to corn at any time until planting. Once corn is planted, dicamba applications should be avoided until after corn emergence. In fields that will be planted to soybean, the dicamba preplant interval is strict. The Clarity label states, *"following application of Clarity and a minimum accumulation of one inch of rainfall or overhead irrigation, a waiting interval of 14 days is required for 8 fluid ounces per acre, and 28 days is required for 16 ounces per acre. These intervals must be observed or crop injury will occur."* The key point is the rainfall total is required before the clock begins between dicamba application and soybean planting. Cotton may be planted 21 days after dicamba, and grain sorghum and rice may be planted 15 days following dicamba.

Dicamba injury on soybean.

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Havoc LV-Six	Jimmy Sanders	0.5	7	30	29	30	7

		1.0	14	30	29	30	15
Salvo	Crop Production Services	0.5	7	30	29	30	7
		1.0	14	30	29	30	15
Shredder LV4	Green Point AG	0.5	7	30	29	30	7
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[1] The rotational crop restriction for cotton following an application of 2,4-D was incorrect in the 2015 Weed Control Guidelines for Mississippi (MSU-ES Publication 1532). The restriction should be 30 days rather than 3 months as listed in the Weed Control Guidelines.

As a general rule, 2,4-D ester is more effective for control of some winter annual weed species including curly dock. Furthermore, ester formulations should be applied when day-time temperatures are <55 to 60 F. When day-time temperatures are consistently >55 to 60 F, then amine formulations should be utilized. If an **ester formulation** is utilized, the preplant interval for soybean is 7 days following 2,4-D ester at 0.5 lb ae/A and 15 days following 2,4-D ester at 1.0 lb ae/A. If an **amine formulation** is utilized, the preplant interval for soybean planting is 15 days following 2,4-D amine at 0.5 lb ae/A and 30 days following 2,4-D amine at 1.0 lb ae/A. Therefore, caution should be exercised when matching a 2,4-D formulation to the cropping scenario.

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« Arkansas soybean market report for December 30, 2019 – January 3, 2020 Arkansas corn market report for January 6-10, 2020 »

09 JAN 2020

Winter weed questions already?

Author: Tom Barber, Extension Weed Scientist

By Tom Barber, Extension Weed Scientist

The New Year is here and with it comes new hope that this growing season will be much better than 2019. This year we have already started in somewhat better shape (at least prior to the upcoming monsoon) with a much higher percentage of fields that are ready to plant. With the warmer temperatures it is easy to see winter vegetation taking over in many fields, especially in the southern part of the state. Several calls have come in for burndown programs to stay ahead of these winter weeds and hopefully get an early start on the season. Keep in mind herbicides are not very effective in cold (below freezing) temperatures. Daily high temperatures the day of application and 3-4 days following application should be in the mid to upper 50's with lows not falling below freezing for best activity. Through numerous conversations it seems we may have 2 predominant scenarios this spring for winter weed burndown and field prep.

The first scenario includes fields that were harvested early and either worked in the fall, or left for no-till, that are in pretty good shape. I really don't like to start talking burndown programs until February but if temperatures warm, some fields will be haired over by then. If you are planning on making a January / February burndown application on these fields that are ready to plant, include a residual in the tank with glyphosate and 2,4-D. Residual herbicides last longer in our colder months of January, February and March, and may hold winter weeds back until the first of April. Several options exist (see 2020 MP44) depending on crop that is to be planted on the acre. Flumioxazin (Valor1.5-2.0 oz/A) is a great choice for this application timing because it is fairly economical, will provide residual control of most of our troublesome winter annuals and any crop can be planted in 30 days. If planting to corn or STS/Bolt soybean, Leadoff (1-1.5 oz/A) is an economical option and may add increased control of glyphosate-resistant ryegrass if you're lucky (some populations are resistant). The down side to using these residuals early is bed erosion on ground that is already hipped up, so weigh all options before making that decision.

The second scenario involves some function of tillage that will be required before the crop can be planted. Depending on the tillage to be done, most if not all fields should be sprayed with a high rate of glyphosate (40oz/A Roundup Powermax equivalent) prior to working the ground. Many learned the hard way last year when fields were re-grown with winter weeds 3 days following the Kelly tool or other tillage practice. This can cause issues because bluegrass and other weeds will form large root balls that will create problems when floating or pulling beds.

Rainfall plays a big role in how effective tillage is at killing weeds with any implement, generally the drier the better for several days following tillage allows the roots to dry down and die. Rainfall following tillage or too much moisture and the winter weeds will take root and be tougher to control the next time. You may ask why such a high rate of glyphosate? Glyphosate alone is hit or miss with a lot of our winter weeds, but in the last 3-4 years we have seen reduced control of bluegrass (Poa annua) in some areas. No doubt cold temperatures, rainfall, cloudy days, poor application, and water quality issues play a role in success or failure, but generally a higher rate can overcome many of these issues. Broadleaves are in general easier to control with tillage, but can still slip through so if broadleaves are large, add 2,4-D to the tank. The idea is to keep it as cheap as possible, especially if you plan to till.

Glyphosate-resistant Italian ryegrass is another key reason to start thinking about a timely burndown. Earlier application timing is better with this weed in most scenarios. I have been surprised in the number of cases where rimsulfuron (Leadoff) has controlled ryegrass effectively because there are many populations of ryegrass in Arkansas resistant to the ALS chemistry. If Leadoff is not an option, or hasn't worked in the past, clethodim (Select Max 16oz) or paraquat (Gramoxone 40oz) are the only other options for control. The bigger the ryegrass, the more applications it will take to kill it. The problem with Select this time of year is that it is very slow, even when temperatures climb to 50^{o} F.

Regardless of which scenario you are in, early (January/February) burndown applications or tillage usually results in a second application prior to planting if residuals are not used. Every scenario is different, so match the herbicide program to the situation. New versions of the MP44 are hot off the press, so be sure to pick one up at your local county extension agent office.

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Wishing all a safe and prosperous 2020!

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