Burndown Considerations For Cotton And Soybean In 2010

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Drier weather combined with warmer temperatures has encouraged the application of pre-plant burndown herbicides on many Louisiana farms. Due to adverse weather conditions during last fall, many fields will still require some bed re-conditioning that may further delay or interfere with burndown applications. In some instances, farmers may apply a herbicide to eliminate green winter vegetation and still need to "dress up" rows. The converse is also possible and some producers may have to perform considerable tillage to remove field "ruts" and completely prepare beds. If this is done well in advance of planting, then herbicide applications either at-plant or very near to planting will need to include some product for rapid termination of green vegetation. It is likely that no one general approach will fit all situations. Although burndown applications for corn should be finishing up, there is still considerable time in front of producers to do a good and timely job of terminating winter vegetation for cotton and soybean.

Winter vegetation growth/dens ties following late fall/early winter tillage on right hand rows compared to tillage conducted earlier in fall. Photo by Donna Lee, County Agent East Carroll Parish, LSU AgCenter.

Conservation tillage practices provide an environment favorable to numerous arthropod pest populations, such as cutworms. Cutworm larvae feed on existing winter vegetation until it is removed or decomposed to a point no longer adequate as a food source. If present at planting, cutworm larvae may threaten stands of emerging crops. LSU AgCenter entomologists recommend that winter vegetation be completely dead at least three to four weeks prior to planting. Cutworms are able to feed on decaying vegetation; therefore, herbicide application five to six weeks prior to planting is preferable. Any labeled pyrethroid insecticide can be used in combination with a burndown herbicide (if it is applied very close to planting), at planting, or just after planting, for cutworms. In-furrow sprays are the least effective method. Application to the soil surface either as broadcast sprays or banded with starter fertilizers are the best treatments. In such cases where insecticide treatment is utilized, burndown applications two to four weeks prior to planting may prove optimum. If swinecress or cutleaf eveningprimrose are the predominate species present, burndown applications four weeks prior to planting must be used due to difficulty in achieving effective control (swinecress), timing for the optimum herbicide and to reduce crop injury potential (example 2,4-D with primrose). Maximum control of other common winter weeds can be accomplished closer to planting (following labeled pre-plant intervals) and allow inclusion of residual herbicides to provide in-season post plant control of weeds encountered early in the growing season.

The necessity of adding ammonium sulfate (AMS) to glyphosate in burndown applications is a frequently asked question. In general, AMS will not "increase" the activity of glyphosate nor will it provide any weed control activity. Considerable research has shown that the addition of AMS will improve the efficacy of spray solutions where "hard water" is used as the carrier. "Hard water" contains high levels of divalent cations such as magnesium and calcium. These cations possess a high "positive" charge. Upon addition to spray solution, AMS dissociates into ammonium and sulfate portions, with the sulfate carrying a high "negative" charge. Since opposites attract, the "negative" sulfate portion binds with the "positive" calcium and magnesium cations in "hard water" and effectively neutralize them in the solution (similar to the salting effect in a water softener). Without AMS in the herbicide and "hard water" solution, the "positive" magnesium and calcium portions would bind to the glyphosate molecule and render it unavailable for activity on weed species. Therefore, the role of the AMS is to make more of the glyphosate available to "do its' job". Little benefit has been observed with addition of AMS to non "hard water", however, no negative effects have been reported either.

Initial Burndown Observations for 2010

Earlier burndown applications in 2010 have appeared to work well, with only a significant delay in overall herbicide activity resulting from the cold temperatures after herbicide application. One positive note regarding the wet, cold winter experienced this year is that the prevailing conditions seem to have had a negative (really positive for farmers) impact on winter weed growth and densities. Another factor that appears to be aiding in this effect is tillage operations performed in late fall/early winter due to rainfall in September/October. These field operations effectively destroyed early emerging spring weeds and the cold winter has maintained lower than "normal" weed infestations. A number of fields seem to have winter weeds that are much smaller in size and number.

This scenario should change now that temperatures appear to be settling into more expected ranges for this time of year. Just a reminder that emerged marestail populations are better controlled with Clarity (8 oz/A) than 2,4-D while the opposite is true where cutleaf eveningprimrose is the predominate species.

The delay in winter weed germination in many fields provides a good opportunity for making residual herbicides a part of your 2010 burndown program. Preliminary research in the LSU AgCenter has shown that a number of herbicides applied in late fall/early winter do a very good job of preventing subsequent winter weeds from germinating (the most effective and consistent form of henbit control). In most cases, such applications keep seedbeds weed-free for a minimum of 120 days after treatment, with some holding until planting. When these herbicides are applied during the spring with warming temperatures, the length of residual control is much shorter due to enhanced breakdown from increased microbial activity in soil. However, residual control will be adequate in most cases to prevent weed germination (winter and summer) prior to planting (six weeks or closer). A number of producers have included products such as Goal 2 XL or Valor in past spring burndown programs to enhance control of existing winter weeds (henbit, primrose etc.) and provide residual control of non-emerged species. These compounds have been added as co-applications to either glyphosate or paraquat with Clarity, 2,4-D, Harmony Extra, or FirstShot.

Below is a brief discussion of newer compounds available for preplant use in soybean and cotton in 2010 (burndown and residual activity) that have been evaluated by LSU AgCenter Weed Scientists. Please refer to individual herbicide labels for plantback intervals, pre-cautions/restrictions, special requirements, and adjuvant recommendations. A table summarizing replant intervals to cotton, field corn, grain sorghum, and soybean following application of most pre-plant herbicides also follows.

Herbicide	Field Corn	Cotton	Grain Sorghum	Soybean
Aim	0	0	0	0
ET	0	0	0	0
Ignite 280 SL	0	0	0	0
FirstShot SG	14 d	14 d	14 d	7 d
Harmony GT XP	0	7 d	0 d	0
Harmony Extra/Harmony Extra SG	14 d	14 d	14 d	7 d
Harmony SG	0	7 d	0	0
Valor	30 d	14 d (1 oz; no-till) 21 d (1.5 to 2 oz/A; no-till) 30 d (2 oz/A or less; conventional till)	30 d	0
Canopy EX	9 mo (1.1 to 1.65 oz/A)	8 mo (1.1 to 1.65 oz/A) 10 mo (> 1.65 oz/A)	9 mo (1.1 to 1.65 oz/A) 10 mo (> 1.65 oz/A	7 d (1.1 to 2.2 oz/A) 14 d (> 2.2 to 3.3 oz/A)
Canopy	9 mo (pH < 7 and ≤ 6 oz/A) 10 mo (pH> 7)	10 mo (pH < 7) 18 mo (pH> 7)	10 mo (pH < 7) 18 mo (pH> 7)	0
Authority MTZ DF	4 mo (≤ 14 oz/A) 10 mo (> 14 oz/A)	12 mo	12 mo (≤ 20 oz/A) 18 mo (>20 oz/A)	0
Sharpen	Consult label	Consult label	Consult label	Consult label
Resolve	0	1 mo (≤ 1 oz/A) 10 mo (1.1 to 2 oz/A) 18 mo (prevailing drought conditions after application in preceding crop)	10 mo (≤ 1 oz/A) 18 mo (1.1 to 2 oz/A or prevailing drought conditions after application in preceding crop)	1 mo (STS soybean and ≤ 1 oz/A) 10 mo (non-STS soybean and 1.1 to 2 oz/A)
Reflex	10 mo	0	10 mo	0
Atrazine	0	Following year	0	Following year
Goal 2 XL	30 d (must receive three 0.25 inch rainfall events or incorporation ≥ 2 inches)	7 d	10 mo	7 d
Clarity	0	21 d (per 8 oz/A or less and 1 inch rainfall/irrigation)	15 d (≤ 8 oz/A)	14 d (≤ 8 oz/A and 1 inch rainfall/irrigation)

Newer Herbicides for 2010

Authority MTZ (soybean): Authority MTZ combines the active ingredient sulfentrazone (Spartan herbicide) and metribuzin (Sencor or Lexone herbicide). It enhances burndown activity and residual control of winter weeds including henbit. This product expressed good activity on pigweed (Amaranths), morningglory, prickly sida (teaweed), groundcherry, hophornbeam copperleaf, smellmellon, yellow and purple nutsedge, and annual sedge. It provides suppression of most annual grasses. The use rates range from 12 to 20 oz/A depending on soil type (see label). Research has shown excellent activity at the rate of 14 ounces product per acre, which provides an equivalent rate of 5 oz/A metribuzin. Higher rates may be needed for applications occurring greater than 30 days before planting. The herbicide label should be consulted for listing of metribuzin-sensitive soybean varieties.

Canopy EX (soybean): Canopy EX combines the active ingredient chlorimuron ethyl (Classic herbicide) and tribenuron methyl (Express herbicide, or the "Extra" portion of Harmony Extra herbicide). It also offers enhanced burndown and residual control of winter weeds such as henbit. It also demonstrates good activity on pigweed and smartweed and provides suppression of annual grasses, annual morningglory, and prickly sida. The use rates range from 1.1 to 3.3 oz/A. When using rates ranging from 1.1 to 2.2 oz/A, a preplant interval of seven days is required prior to planting soybean. Rates greater than 2.2 oz/A require a 14 days as a preplant interval. Higher rates should be used when making applications greater than 30 days prior to planting. Care should be used when applying Canopy EX on soils with a pH greater than 7.5 because the Classic portion may "carry over" and injure crops planted the following year. A 2 oz/A rate of Canopy EX contains 1.9 oz/A of Classic. Always follow label directions.

Envive (soybean): Envive combines the active ingredients of chlorimuron ethyl (Classic herbicide), thifensulfuron methyl (Harmony GT herbicide), and flumioxazin (Valor herbicide) in one pre-mix product. Envive offers the advantage of two independent modes of action, which can aid in weed resistance management. It offers enhanced burndown activity and residual control of numerous winter weeds including henbit. This product expresses strong efficacy on pigweed, morningglory, sicklepod, prickly sida (teaweed), smartweed, and hophornbeam copperleaf while suppressing annual grasses. Use rates range from 2.5 to 5.3 oz/A. It can be applied up to three days after planting. Like Canopy EX, higher rates of Envive may "carry over" when applied to soils with a pH of 7.5 or greater and injure crops planted the following year due to the Classic portion of the herbicide. If a producer wishes to apply Envive on a high pH soil, then Enlite at 2.8 oz/A may be an option. Enlite combines the same active ingredients as Envive except the Classic portion is less. Enlite provides similar performance against the weed spectrum previously listed for Envive.

Sharpen (soybean and cotton): Sharpen contains the active ingredient saflufenacil. It offers burndown activity and residual control of winter weeds. This product shows good activity on pigweed, morningglory, and prickly sida (teaweed). Use rate in cotton and soybean is 1 oz/A. At least 42 days and 1 inch of rainfall of irrigation must occur prior to plating of cotton following an application of Sharpen. Soybean can be planted immediately after application except on coarse soils with organic matter < 2%, where a 30 day application interval must be followed. Δ

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