# At-Planting Herbicide Considerations For Cotton And Soybean In 2010

**DR. DONNIE MILLER, DR. DANIEL STEPHENSON, AND DR. BILL WILLIAMS**

**WINNSBORO, LA.**

**Residual Herbicide Use at Planting** An extremely positive attribute to the herbicides glyphosate and glufosinate, used in a Roundup Ready or Liberty Link weed control system, respectively, is that both can exhibit excellent activity on weed species larger in size than what is recommended for optimum activity on individual labels. Unfortunately, this can also be an extremely negative attribute to each herbicide. Delaying herbicide application for the sake of having a greater population present to get more "bang for the buck" with a single application can allow weeds to compete with emerging crops. Early season weed competition in both soybean and cotton can result in reduced yield with little impact often observable prior to harvest. In addition, application to larger weeds can result in reduced control of less-sensitive species with glufosinate (pigweed, goosegrass, and broadleaf signalgrass) and glyphosate (morningglory species, hemp sesbania, and prickly sida). This in turn can lead to increased weed seed-bank populations in the soil due to continued seed production and negate long term weed management efforts.

Although weed resistance to glyphosate has not been scientifically documented in Louisiana to date, the fact is that various weed populations have proven difficult to control with the herbicide in some cases (amaranths, ragweed, and Johnsongrass). This "practical" resistance is becoming a larger issue and although attributable to spraying weeds that are too large in some instances, a "red flag" should go up whenever control failures exist. Resistance issues in other states have led to increases in herbicide management costs of 40 to 50$/A with additional herbicides needed or complete field abandonment. The economic impact of weed resistance is also realized in decreased value of the transgenic technology, as weeds previously controlled in the system become less and less susceptible, and potential decreased land rent value.

Use of residual herbicides in today's transgenic world of soybean and cotton production can result in positive benefits including reduced early-season weed competition through prevention of weed germination in early crop development stages and weed resistance management through introduction of alternative modes of action to glyphosate or glufosinate. To achieve maximum activity from residual herbicides, proper activation of the material must occur. Activation is placement of the herbicide in the soil region that maximizes opportunity for herbicide uptake by the emerging weed seedling. Herbicide activation is accomplished through rainfall/irrigation or mechanical incorporation. Most labels will call for a rainfall or irrigation amount of 0.5 inches or greater, preferably in one event. Mechanical uniform incorporation of the herbicide in the top 2 to 3 inches will adequately activate most herbicides. The majority of herbicides soil applied at planting will require mechanical uniform incorporation preferably within 7 to 10 days after application if rainfall is not received.

Below is a brief discussion of some of the relatively newer compounds available for preplant use in soybean in 2010, a number of which have been evaluated by LSU AgCenter Weed Scientists. Please refer to individual herbicide labels for plant-back intervals, precautions/restrictions, soil type and rates, and special requirements/uses (ie reduced rate application in planned PRE/POST programs, incorporation instructions, activation requirements, notes for maximum control of selective species etc.). Herbicide labels can be accessed at the following website: http://www.cdms.net/LabelsMsds/LMDefault.aspx?srchPdt%20=%20&t. A table summarizing replant intervals to field corn, cotton, grain sorghum, soybean, and wheat following application of most pre-plant herbicides also follows.

**Newer Herbicides for 2010**

**Authority First (soybean):** Authority First combines the active ingredient sulfentrazone (Spartan herbicide) and cloransulam-methyl (FirstRate herbicide). This product is labeled for control of pigweed (Amaranths), morningglory (suppression on pitted), 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 6.45 oz/A (soils 3 percent organic matter or less) to 8 oz/A (soils greater than 3 percent organic matter). Do not apply to soils classified as sands with organic matter less than 1 percent.

**Authority MTZ (soybean):** Authority MTZ combines the active ingredient sulfentrazone (Spartan herbicide) and metribuzin (Sencor or Lexone herbicide). 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). On soils with Ph greater than 7.5, use rate should not exceed 12 oz/A. Research has shown excellent activity at the rate of 14 ounces product per acre, which provides an equivalent rate of 5 oz/A metribuzin. The herbicide label should be consulted for listing of metribuzin-sensitive soybean varieties.

**Axiom DF (soybean):** Axiom DF combines the active ingredient flufenacet and metribuzin (Sencor or Lexone herbicide). The herbicide controls barnyardgrass, crabgrass, foxtail species, goosegrass, and fall panicum. Will provide suppression of seedling johnsongrass, broadleaf signalgrass, pigweed species, prickly sida, Pennsylvania smartweed, and waterhemp. Use rate range is 7 to 13 oz/A. The herbicide label should be consulted for listing of metribuzin-sensitive soybean varieties.

**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. 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. In non-STS or RR/STS soybean, do not apply within 14 days before or after application of an organophosphate insecticide. 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.

**Gangster (soybean):** Gangster is a multipack combination of the active ingredients flumioxazin (Valor SX) and cloransulam methyl (FirstRate). Labeled for control of morningglory species, pigweed species, Palmer amaranth, prickly sida, smartweed, copperleaf, and wild poinsettia. Suppression of barnyardgrass, large crabgrass, giant foxtail, goosegrass, panicum, and broadleaf signalgrass can be expected. Use rates range from 3 to 3.6 oz/A. The 3 oz/A rate is equivalent to applying 2.5 oz/A Valor SX and 0.5 oz/A FirstRate.

**Prefix (soybean):** Prefix combines the active ingredient s-metolachlor (Dual Magnum) and Reflex (fomesafen). Provides control of barnyardgrass, crabgrass, foxtail species, goosegrass, seedling johnsongrass, pigweed species, wild poinsettia, and smartweed species. It provides partial control of morningglory species, yellow nutsedge, and prickly sida (teaweed). Use rates range from 2 to 3 pt/A depending on soil type.

**Sharpen (soybean):** Sharpen contains the active ingredient saflufenacil. This product shows good activity on pigweed species, morningglory species, Palmer amaranth, waterhemp, and prickly sida (teaweed). Use rate is 1 oz/A.

**Valor XLT (soybean):** Valor XLT combines the active ingredients flumioxazin (Valor SX) and chlorimuron ethyl (Classic). Weeds controlled with this herbicide include copperleaf, prickly sida, pigweed species, morninglory species, palmer amaranth, smartweed, and wild poinsettia. Suppression of barnyardgrass, large crabgrass, broadleaf signalgrass, goosegrass, and panicums can be expected. Use rate ranges from 3 to 5 oz/A. Δ

*DR DONNIE MILLER: Associate Professor, LSU AgCenter*

*DR. DANIEL STEPHENSON: Assistant Professor, LSU AgCenter*

*DR. BILL WILLIAMS: Associate Professor, LSU AgCenter*

**Plantback intervals for at-planting soil applied herbicides in soybean and cotton**

| Herbicide | Corn | Cotton | Grain Sorghum | Soybean | Wheat |
|---|---|---|---|---|---|
| Authority First | 10 mo[1] | 18 mo | 12 mo | 0 | 4 mo |
| Authority MTZ DF | 10 mo, 4 mo[2] | 12 mo | 18 mo, 12 mo[2] | 0 | 4 mo |
| Axiom DF | 0 | 8 mo | 12 mo | 0 | 4 mo |
| Boundary 6.5 EC | 8 mo | 8 mo | 12 mo | 0 | 4.5 mo |
| Canopy[3] | 9/10 mo, 18 mo | 10 mo,18 mo | 10 mo, 18 mo | 0 | 4 mo |
| Command 3 ME | 9 mo | 0[4], 9 mo | 9 mo | 0 | 12 mo |
| Cotoran 4L/Fluometuron | 8 mo | 0 | 9 mo | 9 mo | 3 mo |
| Enlite | 9 mo | 9 mo | 9 mo | 0 | 4 mo |
| Envive[5] | 10 mo, 18 mo | 10 mo, 30 mo | 10 mo, 18 mo | 0 | 4 mo |
| FirstRate | 9 mo | 9 mo | 9 mo | 0 | 3 mo |
| Fomesafen[6] | See label | 0 | 10 mo | 0 | 4 mo |
| Gangster | 9 mo | 9 mo | 9 mo | 0 | 3 mo |
| Lorox DF/Lorox L | 0 | 4 mo | 0 | 0 | 4 mo |
| Microtech | 0 | 0 | 0 (treated seed) | 0 | See label |
| metolachlor/s-metolachlor[7] | 0 | 0 | 0 | 0 | 4.5 mo |
| Outlook | 0 | Next spring | 0 | 0 | 4 mo |
| Pendimethalin[8] | 0 | 0 | Next year | 0 | 4 mo |
| Prefix | 10 mo | 1 mo | 10 mo | 0 | 4.5 mo |
| Pursuit/Pursuit Plus | 8.5 mo | 18 mo | 18 mo | 0 | 4 mo |
| Scepter | 9.5 mo | 18 mo | 11 mo | 0 | 3 mo |
| Sharpen | 0 | See label | See label | See label | See label |
| Spartan 4F | 10 mo | 12 mo | 10 mo[9] | 0 | 4 mo |
| Staple LX/Pyrimax 3.2 L | 9 mo, 10 mo[10] | 0 | Not next season | 10 | 4 mo |
| Synchrony XP[11] | 7 mo | 8 mo | 9 mo | 0 | 3 mo |
| Trifluralin[12] | 12 mo | 0 | 12 mo | 0 | 4 mo |
| Valor[13] | 1 mo | 1 mo | 1 mo | 0 | 1 mo |
| Valor XLT[5] | 10 mo, 18 mo | 10 mo, 30 mo | 10 mo, 18 mo | 0 | 4 mo |

[1]18 month replant interval if 6.45 to 8 oz/A was applied to soils with organic matter 1.5 percent or less and pH > 7.

[2] Field corn can be planted 4 months after application at 14 oz/A or less. Grain sorghum can be planted 12 months after application at 20 oz/A or less.

[3]18 month replant interval for rate greater than 3.5 oz/A and pH > 7. Field corn can be replanted in 9 months given Canopy rate does not exceed 6 oz/A.

[4]Refer to label for Requirements for Planting Time section.

[5]Longer replant intervals must be observed for soil pH 7 or greater.

[6] Fomesafen is the active ingredient in herbicides such as Dawn, Reflex, and Rhythm.

[7]Metolachlor or s-metolachlor (see specific label for active ingredient contained) is the active ingredient in herbicides such as Dual Magnum, Cinch, Me-too-lachlor, Stalwart, Parrlay, Parallel, and similar commercially available herbicides.

[8]Pendimethalin is the active ingredient in herbicides such as Prowl 3.3 EC, Prowl H2O, Pendimax 3.3 and similar commercially available herbicides.

[9]18 month replant interval for rates above 8 oz/A.

[10]If applied on a band (not exceeding 50% row width) and thorough soil mixing occurs, a 9 month replant interval must be observed. If rate does not exceed 3.8 oz/A total broadcast, a 10 month interval should be observed without additional soil mixing beyond normal in your particular production system.

[11]See label for additional replant notes.

[12]Trifluralin is the active ingredient in herbicides such as Treflan HFP and Trifluralin 4 EC and similar commercially available herbicides.

[13]One inch rainfall must be received in addition to replant interval. Intervals are for rates of 2 oz/A or less.