

# Planting Cotton In Fields With Heavy Glyphosate-Resistant Palmer Amaranth Pressure



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The question has been asked how to manage fields with heavy infestations of glyphosate-resistant (GR) Palmer amaranth that will be planted to cotton. Moreover, what are the key differences in managing heavy GR Palmer pressure in Roundup Ready Flex, Liberty Link or WideStrike cotton?

In looking at growing Roundup Ready Flex cotton in a heavily infested Palmer pigweed field, the basic idea is to overlap residual herbicides starting 30 to 15 days before planting. Good choices here would be dicamba plus glyphosate plus Valor or Reflex. The rates and timing of these applications are dictated by the Valor and Reflex labels. Those two herbicides will vary on when they can be applied due to tillage, soil type and rainfall so be sure to refer to the labels. However, having either Valor or Reflex applied preplant should provide residual control through early emergence. Then within a couple days plus/minus of planting, apply Gramoxone + either Cotoran or Caparol. It is absolutely critical that the cotton emerges without GR Palmer and that is why Gramoxone is needed with near planting applications. Then about 10 to 14 days after planting come back with glyphosate + Dual Magnum at this timing. Then start running hooded applications of Cotoran + MSMA or Caparol + MSMA if the cotton is small or Direx + MSMA for a little larger cotton (>12") and move to Gramoxone + Valor once cotton is >20" tall. Provided you get some timely precipitation that activate these herbicide applications weed control should be in pretty good shape.

However, if Murphy's Law comes into play and planting is delayed, then the Valor or Reflex will not be effective. Moreover if no precipitation occurs to activate the near planting and early post applications, you may end up with a lot of Palmer emerging with the crop. Fields that have irrigation can be the difference maker in these situations as the pre applied herbicides are assured of being activated with irrigation. In looking at Chris Main's OVT data we have a number of good RR Flex varieties that really need to be planted in TN if nothing more than to spread out our genetic risk. Fields with center pivots would be good locations to plant these varieties. On the other hand, dry land acres with no good post options if the residual herbicides fail are not ideal choices for Roundup Ready Flex cotton. The hooded applications can remove the Palmer from the row middles but the Palmer in the rows will have to be removed by hand. Depending upon the density of the Palmer, this may or may not be feasible.

Liberty Link cotton would be the best choice

to be planted in fields with intense Palmer amaranth seed banks. As with the system above, it starts with glyphosate + dicamba + Valor or Reflex 30 to 15 days before planting. Then within a couple days plus/minus of planting, apply Gramoxone + either Cotoran or Caparol. Then about 10 to 14 days after planting come back with Liberty + Dual Magnum. That first Liberty application should control Palmer up to about 4" tall. However, if it is larger than 4" then regrowth may occur. As a result, if the Palmer is 4" or larger, plan to come back with a sequential application of Liberty no later than 14 days after the initial spray. Sequential Liberty applications spaced 10 to 14 days apart have consistently controlled Palmer in the 4 to 8" range. Please note that with two applications all the Liberty that can be used on that field has been utilized. Stopping at two over the top Liberty applications and moving to directed or hooded applications of other herbicides make a lot of sense from a resistance management perspective. Directed or hooded applications of some of the combinations mentioned above like Direx + MSMA or Gramoxone + Valor would be good choices here.

Of course, utilizing Liberty in fields with a lot of Palmer increases the odds of finding that rare Palmer that is resistant to Liberty. However, I feel better about these situations in cotton as opposed to soybeans as the outlined herbicides I mentioned above represent 5 different herbicide modes of action that are all effective on Palmer. This is a much more sustainable system than what is being used in Liberty Link soybeans.

Planting WideStrike cotton and utilizing Liberty over it to control escaped Palmer is another option which many have gone to over the last couple of years. As we have seen in research one application of Liberty on WideStrike cotton typically does not cause much injury. One Liberty application may be enough for fields with scattered GR Palmer amaranth. However, in fields with blow out GR Palmer pressure Dual Magnum is needed tankmixed in with the first Liberty application and the first application often needs to be followed up with another Liberty application to provide adequate control. In our research we have seen WideStrike cotton set back at times with these types of practices. University of Tennessee OVT results this year indicate that the new Liberty Link cotton appear to be performing with the WideStrike and Roundup Ready Flex varieties. The increase likely hood of injury to WideStrike cotton when managed for heavy GR Palmer pressure coupled with better performing Liberty Link cotton lead me to believe that in 2012 utilizing Liberty on Liberty Link cotton would be a better fit in fields with heavy GR Palmer pressure. Δ

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