

Controlling Auxin-Resistant *Palmer amaranth* in Tennessee Cotton and Soybean

Delaney C. Foster, Larry Steckel and Angela McClure
University of Tennessee Extension, Jackson, Tennessee

In 2019 and 2020, reports of weed escapes in Xtend® and Enlist® cropping systems became notably more prevalent in Tennessee. A survey of fields containing escapes showed that 65 percent of the time, the culprit was Palmer amaranth. Greenhouse and field screenings in 2020 confirmed that some Palmer amaranth populations in Tennessee are resistant to dicamba and/or 2,4-D. This publication serves as a guide to controlling Palmer amaranth in Xtend and Enlist soybean and cotton.

The key to a successful herbicide program includes using multiple herbicides modes of action, starting clean and staying clean through the use of a burndown application, residual herbicide(s) behind the planter and timely applied postemergence herbicides.

Preemergence Herbicide Options in Cotton

Product	Herbicide Group	Herbicide	Product Rate per Acre
*Prowl H2O	3	pendimethalin	32-57 fluid oz.
Caparol	5	prometryn	24-32 fluid oz.
Brake	12	fluridone	16 fluid oz.
Cotoran	5	fluometuron	32 fluid oz.
Cotoran + Caparol	5 + 5	fluometuron + prometryn	16-32 + 16-32 fluid oz.
Warrant	15	acetochlor	24-48 fluid oz.

Postemergence Residual Herbicide Options in Cotton

Product	Herbicide Group	Herbicide	Product Rate per Acre
Dual Magnum	15	S-metolachlor	16-21 fluid oz.
Outlook	15	dimethenamid	16-21 fluid oz.
Warrant	15	acetochlor	40-64 fluid oz.
Staple LX	2	pyrithiobac	1.7-3.8 fluid oz.

Timely postemergence applications often occur in a two-pass system. Include two or more residual herbicides during the season, tank mixing different modes of action to combat herbicide resistance. One or more preemergence residual herbicides (listed above) should be included in the first pass, followed by one or more residual postemergence herbicides (listed above). XtendiMax, Engenia and Tavium plus Roundup may be used in a sequential spray in Xtend cotton systems; follow up application 7-14 days later with Liberty if planting XtendFlex cotton. Enlist One plus Liberty has proven most effective on Palmer amaranth in Enlist systems. Postemergence applications should always be made before weed size reaches four inches in height.

*Many residual herbicide rates are dependent on soil type. Always carefully read and follow herbicide labels for rates and soil and plant back restrictions. Other generic brand names may exist that are not listed in these tables as well as other herbicides registered for use in cotton.

The key to a successful herbicide program includes starting clean and staying clean through the use of a burndown application, residual herbicide(s) behind the planter and timely applied postemergence herbicides.

Preemergence Herbicide Options in Soybean			
Product	Herbicide Group	Herbicide	Product Rate per Acre
*Authority Elite	14 + 15	sulfentrazone + S-metolachlor	25-32 fluid oz.
Authority MTZ	14 + 5	sulfentrazone + metribuzin	12-18 oz.
Authority Edge	14 + 15	sulfentrazone + pyroxasulfone	7-9 fluid oz.
Boundary	15 + 5	S-metolachlor + metribuzin	32 to 48 fluid oz.
Trivence	14 + 2 + 5	flumioxazin + chlorimuron + metribuzin	6-9 oz.
Fierce	15 + 14	pyroxasulfone + flumioxazin	3 oz.
Prefix	15 + 14	S-metolachlor + fomesafen	32 to 48 fluid oz.
Zidua	15	pyroxasulfone	3.2 fluid oz.

Postemergence Residual Herbicide Options in Soybean			
Product	Herbicide Group	Herbicide	Product Rate per Acre
Flexstar	14	fomesafen	22-29 fluid oz.
Reflex	14	fomesafen	16-24 fluid oz..
Dual Magnum	15	S-metolachlor	16-21 fluid oz.
Warrant Ultra	15 + 14	acetochlor + fomesafen	48-70 fluid oz.
Zidua SC	15	pyroxasulfone	3.2 fluid oz.
Anthem Maxx	15 + 14	pyroxasulfone + fluthiacet-methyl	2.5-4.5 fluid oz.
Outlook	15	dimethenamid	14-21 fluid oz.
Prefix	15 + 14	S-metolachlor + fomesafen	32 fluid oz.

Timely postemergence applications often occur in a two-pass system. Include two or more residual herbicides during the season, tank mixing different modes of action to combat herbicide resistance. One or more preemergence residual herbicides (listed above) should be included in the first pass, followed by one or more residual postemergence herbicides (listed above). XtendiMax, Engenia and Tavium plus Roundup may be used in a sequential spray in Xtend soybean systems; follow up application 7-14 days later with Liberty if planting XtendFlex soybean. Enlist One plus Liberty has proven most effective on Palmer amaranth in Enlist systems. Postemergence applications should always be made before weed size reaches four inches in height.

*Many residual herbicide rates are dependent on soil type. Always carefully read and follow herbicide labels for rates and soil and plant back restrictions. Other generic brand names may exist that are not listed in these tables as well as other herbicides registered for use in soybean.

W 1008 5/21 21-0232

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating. UT Extension provides equal opportunities in programs and employment.