

TENNESSEE SOYBEAN PRODUCTION HANDBOOK

CHAPTER 9:

Soybean Weed Management

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Soybean weed management technology continues to change. The use of herbicide-tolerant crops (HTCs) in weed control programs has been a big driver to this change in soybean in two ways. First, the almost universal adoption of Roundup Ready and later XtendFlex soybeans made weed control much easier at first. Second, when resistance to those herbicides became widespread, weed management became much more complex.

A recent example of this is the evolution of dicamba resistance in Palmer amaranth. In 2016, cotton and soybean growers were offered new technologies, expanding in-crop herbicide options including dicamba. Within three years of commercialization, dicamba use in these crops had increased ten-fold, and growers began to report Palmer amaranth escapes in west Tennessee dicamba-tolerant cotton and soybean production systems.

In 2020, Palmer amaranth seed was collected from eight Tennessee locations where growers witnessed poor control following dicamba. Plants grown in the greenhouse from these Palmer amaranth seeds escaped dicamba at 1, 2 and 4 times the labeled rate. There were 15 to 26 percent Palmer amaranth survival rates exhibited by five populations to the labeled dicamba rate in the greenhouse. These findings were reinforced when research on three

of those populations in the field in 2021 showed just 55 percent control with the labeled dicamba rate and 69 percent control with 2 times the labeled rate.

An integrated weed management approach where cultural practices are used with multiple effective modes of action are necessary to achieve consistent weed control in the years to come. Examples of some of these cultural practices include, but are not limited to, narrow rows to promote early shading; a wheat stubble, winter cover crop or old crop residue mulch to help suppress weeds; proper herbicide selection, application and timing; and selection of a recommended, fast-growing soybean variety.

One of the oldest cultural weed control practices is crop rotation. A rotation with corn is even more valuable now, particularly when the development of weed biotypes resistant to herbicides is considered. Producers are encouraged to continuously evaluate results and costs of weed control programs on a field-by-field or farm-by-farm basis. You may be using the most effective economical program already. On the other hand, you may need to make some critical changes on certain fields. For soybean weed control recommendations, please see the latest edition of “Weed Control Manual for Tennessee,” PB 1580.



Fig. 9-1. Soybean infested with glyphosate- and PPO-resistant Palmer amaranth in 2011. Source: Steckel, 2011



Fig. 9-2. Palmer amaranth escaping dicamba and glyphosate in 2020. Source: Steckel, 2020.

REFERENCES AND RESOURCES

Steckel, L., et al. 2022. "2022 Weed Control Manual for Tennessee." UT Extension, PB 1580.
https://utcrops.com/wp-content/uploads/2022/04/PB1580_2022_DCFLS.pdf



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