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How Much Yield Have You Lost?

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Abstract

A combination of low glyphosate prices deterring preemergence applications and a wet June preventing timely postemergence applications has resulted in weeds reaching levels capable of interfering with crop growth and yield potential in fields across the state. While many fields will still be able to be 'cleaned up' when they dry, the lost yield cannot be recovered.

Keywords

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How Much Yield Have You Lost?

by Bob Hartzler, Department of Agronomy

A combination of low glyphosate prices deterring preemergence applications and a wet June preventing timely postemergence applications has resulted in weeds reaching levels capable of interfering with crop growth and yield potential in fields across the state. While many fields will still be able to be 'cleaned up' when they dry, the lost yield cannot be recovered.

While the lost yield is unfortunate, it can provide a teachable moment regarding crop-yield interference. [WeedSOFT 8X](#) is a web-based competition model that can be used to estimate early-season yield losses. All that is required to determine potential yield loss from weed competition is crop stage, estimated weed-free yield potential, weed density and weed size. The model is based on research conducted in the 1990s at land-grant universities across the Corn Belt.

To demonstrate WeedSOFT, weed infestations in two soybean fields outside of Ames were sampled on June 15 by counting weeds in 10 one-square-foot quadrats. The soybean, planted in 30 inch rows, were at the V4 growth stage and had an estimated yield potential of 65 Bu/A. The yield already lost at the time of sampling and if control is delayed until the V5 stage as predicted by WeedSOFT is presented in the following table.

Soybean stage	Giant foxtail		Velvetleaf		Waterhemp		Estimated yield loss	
	#/sq ft	Ht	#/sq ft	Ht	#/sq ft	Ht	Bu/A at V4	Bu/A at V5
Field 1	70	3"	1.5	3"	3.5	2"	6.7	11.9
Field 2	0.5	4"	1.7	5"	0.5	5"	7.4	13.2

Field 1 had a heavy infestation of giant foxtail, and [WeedSOFT](#) estimated that the foxtail and other weeds had already reduced yields by 6.7 bu/A (10 percent). The second field had fewer total weeds, but the weed species present were more competitive than foxtail and also were significantly larger than the weeds in Field 1, resulting in a loss estimate of 7.4 bu/A. It is important to recognize that the specific yield loss relationship between weeds and crops is highly variable depending upon the environment and cultural practices. The estimates made by WeedSOFT are conservative, thus the model is more likely to overestimate than underestimate the yield loss. However, the estimates are based on the best research available and are realistic.

The use of [WeedSOFT](#) can demonstrate the risks associated with total postemergence programs and the value of early-season weed control. The focus for this year should be to select a postemergence program that will effectively control the weeds present in individual fields. For next year, adjust plans accordingly to minimize the risk of losing yield potential to early-season

competition.

Bob Hartzler is a professor of agronomy with extension, teaching and research responsibilities.

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