

ENTOMOLOGY

EFFECTS OF MULTIPLE DEFOLIATION EVENTS ON SOYBEAN YIELDS

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"DEFOLIATION THAT OCCURS FROM INSECT PESTS IS NOT COMPOUNDED OVER TIME, OUR CURRENT THRESHOLD OF 20% DEFOLIATION DURING THE REPRODUCTIVE STAGES DOES NOT NEED TO BE LOWERED WHEN DEFOLIATION ALSO OCCURS DURING THE VEGETATIVE STAGES."

Jeff Gore

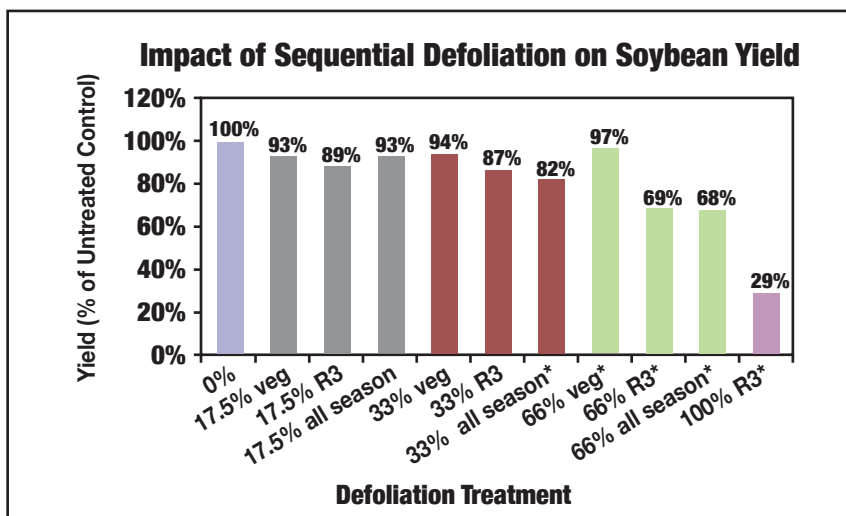
Injury from defoliating insects is responsible for more yield loss to Mississippi soybean producers than other insect pests. In 2014, defoliating insects alone cost Mississippi producers over \$37 million. Current Mississippi recommendations put treatment thresholds for defoliation at 35% pre-bloom and 20% during and after bloom. However, a producer may be required to treat for defoliating pests multiple times during a single growing season. In these situations it isn't known if multiple defoliation events compound to further increase yield loss. For instance, if a pest defoliates a soybean crop 30% during the vegetative stage then another pest defoliates the crop an additional 20% during the reproductive stage. These two events could have a great or no effect at all on each other. The question is whether the latter of the two defoliation events needs to have a lower treatment threshold due to the damage that occurred earlier in the season.

Experiments were conducted during 2015 and 2016 at the R.R. Foil Plant Science Research Center and Delta Research and Extension Center. Trials were planted at 110,000 seeds per acre with 38 inch row spacing using Asgrow 5335 soybean. Plot sizes were four rows wide by 10 feet in length with treatments arranged in a randomized complete block design.

The middle two rows of each plot were hand-defoliated at the specified growth stages and levels. Plants were defoliated weekly, maintaining a constant 17, 33, or 67% reduction in leaflet number throughout the vegetative growth stage, during the entire growing season, or 17, 33, 67, or

100%, once, during the R3 growth stage. An undefoliated control was also included.

Continuous defoliation at any level throughout the vegetative growth stage did not reduce yields significantly below the untreated control. Defoliation levels





One of the hand-defoliated plots within the study at Delta Research and Extension Center.

of 66 and 100% at R3, and 33% and 66% occurring season long resulted in soybean yields significantly lower than the untreated control. No season long defoliation level reduced yield significantly below its respective R3 treatment. These results indicate that defoliation occurring during vegetative growth stage has

little, if any, additional impact on the yield losses that occur from defoliation at reproductive growth stages. These results suggest that the current threshold of 20% defoliation during the reproductive stages does not need to be lowered when previous defoliation occurs during the vegetative growth stage.