

**SILVERLEAF WHITEFLY CONTROL  
IN COTTON WITH KNACK® INSECT GROWTH  
REGULATOR**

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**Abstract**

KNACK IGR (pyriproxyfen) is an insect growth regulator which was used for silverleaf whitefly, *Bemisia argentifolii*, (SLWF) control in AZ cotton in 1996 under a Section 18 emergency exemption registration. KNACK is a juvenoid and causes inhibition of metamorphosis, embryogenesis, reproduction, and larval development in certain insects. In SLWF, KNACK inhibits egg hatch, either through the females or by direct contact with the egg, and suppresses adult emergence when larvae stages are affected. KNACK also exhibits pronounced translaminar movement in cotton leaves which also leads to inhibition of egg hatch and suppressed adult emergence after SLWF feeding on the lower leaf surface.

Prior to 1996, KNACK was tested by numerous University, USDA, and private contract personnel in small test plots to determine its effectiveness on SLWF. In these trials, KNACK provided effective SLWF control and demonstrated IGR tendencies by reducing nymphal populations of the SLWF while not affecting adult populations and producing mixed results on egg populations. In 1996, under the Section 18 emergency exemption registration, KNACK was tested in grower demonstration trials to determine activity in large plot areas. This paper will report on the results of these trials.

All trials were applied with commercial application equipment and consisted of non-replicated plot areas of 16 acres. Cotton fields were rated weekly at the onset of SLWF populations and sprays were made at threshold levels established by the University of AZ. SLWF adults were evaluated by utilizing a leaf turn method and egg and nymph evaluations were accomplished by gathering leaves in the field and inspecting a leaf disc under a microscope. The 5th main-stem leaf was chosen for all evaluations. Four subsamples were made in each plot with 10 leaves examined per subsample for adults and 5 leaves per subsample for eggs and nymphs. Nine demonstration trials were established. Variables tested were: upland vs. pima variety; conventional vs. air assisted electrostatic sprayer; additive vs. no additive (2 trials); rain immediately after application

vs. no rain; KNACK applied first vs. Applaud applied first in a rotation. Three trials did not include variables.

Data from the trials showed that KNACK provided equally good control of SLWF in both pima and upland varieties of cotton, that conventional equipment was as effective as air-assisted electrostatic equipment, that additives were not necessary with KNACK, and that the length of SLWF control can be shortened with immediate rainfall after application. It was not conclusive if KNACK or Applaud should be used first in a rotation because rainfall aided in SLWF control and a second application was not necessary in either plot. Other observations that were made from these trials and other fields were that KNACK provided in excess of 35 days control, that other insecticides and liquid fertilizers could be safely tank-mixed with KNACK, and that aerial application was as effective as ground application.