

obtained from seeding rates ranging from 29,000 to 58,000/ac. Net return was reduced by about \$52/ac at a plant population of 9,200/ac, due to lower yields.

With conventional tillage and supplemental irrigation, plant stands averaged 57% of seeds planted, final plant height averaged 39 inches, and lint yields averaged 1421 lb/ac. The highest yields were obtained with seeding rates ranging from 44,000 to 87,000/ac, with plant populations in excess of 24,000/ac. The lowest yield was obtained with 14,500 seed (8,900 plants) per acre, which produced 65% of maximum yield. The highest yielding populations also matured about four days earlier than cotton grown at the lowest seeding rates. The cotton crop suppressed weeds most effectively in solid plantings with more than 24,000 plants/ac. Seeding rates ranging from 29,000 to 87,000 seeds/ac produced equivalently high net revenues. In solid-planted rows, net return was reduced \$109/ac with 12,300 plants/ac, due to lower lint yields. In skip rows, net return was similarly reduced \$189/ac with a population of only 8,900 plants/ac. There were no significant price differences for fiber quality due to seeding rate in any row spacing or pattern in either experiment. Results suggest that growth of larger plants under irrigation may increase the capacity of cotton to compensate for lower seeding rates. Across the two fields, however, net returns were more consistently maximized by planting two seeds per foot in skip-rows than by reducing the seeding rate down the row.

► Deciding Which Insecticides To Use In Cotton IPM?

Presented by Dr. B. Rogers Leonard

Research/Extension Entomologist, LSU AgCenter

Presented by Jack Hamilton

Regents Chair in Cotton Production, LSU AgCenter

Introduction

It has become increasingly difficult for consultants and producers to select the proper insecticide use strategy for cotton IPM. In fact, with all the issues affecting treatment efficacy, it is remarkable that cotton producers consistently maintain satisfactory levels of control. Several factors including changes in the pest spectrum, insecticide-resistant populations, novel products with uncommon modes of intoxication, the need for co-application of multiple products, difficulty in post-treatment evaluation of performance, and complete costs of treatments must be considered in the final selection of the most effective insecticides. This paper will discuss common-sense suggestions for product selection and use patterns during 2010.

Considerations for Insecticide Selection and Application Patterns in Cotton IPM

Action thresholds and insecticide recommendations promoted by all state extension specialists should only be considered guidelines and part of the decision-making process in cotton IPM. Selection of the most successful cotton pest management strategy is not an easy process. Numerous operational, environmental, and biological factors interact during the production season, and can greatly influence pests and strategies used for their control. With these factors in mind, several recommendations for the insecticide use strategies are listed below.

- Enlist the assistance of a trained pest management specialist. This person may be a licensed agricultural consultant, extension specialist, CCA-qualified dealer field man, or family member with college education or field experience.
- Plant at least a portion of your acreage to a Bt-expressing cotton variety as a risk management tool to avoid late-season caterpillar pest problems. The Bollgard, Bollgard 2, and WideStrike technologies are proven IPM tools and will usually eliminate the potential of severe yield losses from many Lepidoptera.
- At-planting treatments (seed or soil-applied) are critical to optimize yields with an early maturing crop. The real decision is trying to select the proper product(s). A minimum treat-

ment must provide thrips and cotton aphid management and promote seedling vigor.

- In conservation tillage systems with heavy crop residue, consider an at-planting application of a pyrethroid for preventative control of cutworms. This application is especially justified if green vegetation is present in the field within three weeks prior to planting.

- Multiple applications of insecticides will likely be needed for any cotton field during the entire production year. Developing a logical insecticide use strategy very early in the season can assist producers in budgeting crop inputs and reducing instances of using products that are unlikely to provide satisfactory control.

- Apply foliar treatments to control thrips on cotton seedlings when the need is justified and not when a herbicide treatment is scheduled. Recent research suggests that these sprays are most valuable when thrips are present and cotton seedlings have not developed beyond the second true leaf stage.

- Do not apply automatic applications of any insecticide to cotton based upon calendar date or plant growth stage. Many of the products available are limited by annual allowable rates per acre, and these insecticides may be needed later in the season. Early season exposure to these products can reduce their efficacy when applied later in the year. **Be sure to scout and spray only as needed based upon product labels and in accordance with action thresholds.**

- Scout early and scout often. Early detection of pests and the timely application of the appropriate control tactics can be important to reduce the overall seasonal injury potential and costs of pest management.

- Do not pick a product just because a pest is listed on the label. The list of pests on an insecticide label was developed when the product was first registered and may not be current for applications in a specific region of the US.

- Generics are not always the same product as one listed from a basic manufacturer. Do not be tricked into using a product just because it is cheaper or is suggested to perform as well.

- Rotate insecticides with different modes of action during the season, especially for difficult-to-control pests like the tarnished plant bug. An example pattern for three applications could be 1) acephate followed by (fb), 2) Centric, fb 3) Bidrin.

- Always pick the appropriate rate. Most products used today are extremely dose-sensitive and will not provide satisfactory efficacy if the rates are reduced.

- Although Bt traits are effective against most caterpillar pests, they are not bullet proof and will likely require some oversprays. Pyrethroids are usually the products of choice and should be used when caterpillar survival on fruiting forms exceeds action thresholds.

- Do not retreat with the same product following an incident of unsatisfactory control if insect resistance is suspected. Immediately rotate to a product with a different mode of action and notify the company and local extension specialists.

- Co-applications of insecticides may be necessary. Instances of multiple pests, heavy infestations, and resistant populations may justify the need for two or more products.

- Usually late-season emigrating pest populations are very heavy and may persist for an extended period. This may result in multiple pesticide applications at frequent intervals.

- Re-treatments need to occur as dictated by pest infestations. In those instances of wash-off, incorrect product, improper rate, short-residual, and etc, cotton fields should be re-sprayed as necessary based upon post-treatment pest infestation levels.

Summary

Chemical control strategies remain necessary crop protection inputs for cotton across the Mid-Southern Region. The values of specific treatments should not be underestimated as environmentally acceptable components of an integrated pest management system. Current insecticides were developed for specific uses, and not to address all problems in cotton fields. Pest managers and producers should use all available information and carefully decide on the appropriate course of action. Mistakes in cotton IPM are costly and may not be correctable with currently-available products. **Finally, it is important to recognize that the most expensive insecticide application is one that does not work.**