Plant growth, fruiting time, and yield of cotton were studied during four years of research with systemic pesticides on cotton in Kern and Fresno counties.

Systemic pesticides enter a plant through the seed coat or through the root and are toxic to several insects and mites which feed on the foliage of the plant. Two such pesticides—Thimet and Di-Syston—were used in a four-year study.

Both pesticides were applied by preplanting seed treatment and by soil application. As a seed treatment both chemicals were applied at a rate of four pounds of active ingredient per 100 pounds of seed. The seed was planted at the per acre rate typical for the test area. In the soil application the pesticides were applied as granules in the seed drill furrow, at two and four pounds per acre and as a side-dress, several inches away from the seed, at from 1.3 to 7.0 pounds per acre.

Reduced stands were often observed where the pesticides were used, especially when planting was followed by cold, wet weather. Even under ideal growing conditions during one experiment, both chemicals reduced plant emergence. On the sixth day after planting, emergence was reduced from 12,000 plants per acre in the check plot to 6,000 plants per acre in the treated plots. The reduction in emergence probably contributed to final stands being reduced from 51,000 to 47,000 plants per acre. Final stand differences of this proportion do not ordinarily affect yield.

Application of Thimet granules in the seed furrow also caused a slight delay in emergence and reductions in final stand.

Control of thrips, spider mites, and aphids on seedling cotton is usually obtained with Thimet and Di-Syston, regardless of the method of application. However, Thimet has been more effective against thrips and spider mites. During the four years of investigation, the pest control obtained was similar to the results shown in the table.

Seed treatment usually does not give control for more than 6–8 weeks after planting. After that period reinfestation may occur at any time. However, in the case of spider mites several additional weeks of control may be obtained.

Furrow and side-dress applications of systemic pesticides give results similar to seed treatment, although some delay in effectiveness usually occurs. The period of effectiveness may extend beyond that of seed treatment. Quantities of material required for equivalent results by side-dress applications are much greater than with seed treatment.

Control of thrips on cotton through use of Thimet or Di-Syston results in better seedling growth. However, plant damage is often evident as marginal leaf burning on cotyledons and on the first true leaves. Furthermore, plants in untreated areas usually commence to bloom at an earlier date with a corresponding earlier boll maturity date.

Yield results during the four years of experimentation were variable. There was little or no difference in yield between the untreated check plots and seed, furrow, or side-dress treatments. Soil variability was largely responsible for yield variation, but none of the differences was significant.

Thomas F. Leigh is Assistant Entomologist, University of California, Davis, stationed at Shafter.


THOMAS F. LEIGH AND V. T. WALHOOD

Effects of two
Systemic Pesticides
on cotton studied in field tests

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