

Systox on Cotton

systemic insecticide successful in southern California control tests

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Systemic Insecticides such as Systox—when applied to a plant surface—are absorbed and translocated through the plant tissue.

Translocation of systemic insecticides does not necessarily take place from leaf to leaf, but when the material is applied to the upper surface of a leaf it is translocated throughout that leaf, killing mites and aphids on the lower leaf surface.

During 1952 Systox gave outstanding results for control of mites and aphids on cotton when applied both experimentally and commercially. In addition to systemic action, this material has a short initial period of toxicity to these and some other insects through contact and fumigant action. Lygus bug, stink bug, and white-fly populations were reduced somewhat at time of application, but the short period of residual control indicated a lack of systemic-type activity on these insects. There appeared to be little or no reduction in bollworm populations. As a result, other materials must be used for the control of these important cotton pests.

The commercial dosage suggested during the past year was a spray containing six ounces of Systox—1½ pints of the 25% material—per acre. Experiments during the season involved a number of tests in which different dosages were investigated.

Excellent mite and aphid control was obtained with dosages as low as three ounces per acre, with some indication that even slightly lower amounts were effective.

Number per 80 Leaves

Treated Ounces		Mites ¹			Aphids ²	
Sept. 13	per acre	Sept. 16	Sept. 24	Oct. 8	Nov. 13	Nov. 13
Systox	6	4	0	0	0	5
Systox	3	1	0	0	2	11
Check	—	281	237	130	626	137

¹ *Tetranychus bimaculatus multisetis* McG.

² *Aphis gossypii* Glov.

A few days after Systox treatments mite populations were virtually wiped out.

The re-establishment of a mite population, following the breakdown of Systox in the plant system, was slow and in none of the cotton fields in which observations were made was a second treatment necessary. It appears that reinfestation often takes place by an immigration of mites from areas outside the treated fields.

There is undoubtedly some sacrifice of residual activity with the lower dosages of Systox, but in view of the reduced cost and high degree of control obtained in 1952, lower dosages appear to warrant further investigations.

Systox at three ounces per acre gave excellent control of cotton aphids and re-treatment was not necessary. It appeared that the residual activity was reduced somewhat when the material was applied to cotton which had been allowed to wilt in preparation for chemical defoliation.

Both ground or aerial sprays were effective and special equipment was not necessary for control of either mites or aphids. It was noted that aircraft applications of three to four gallons of spray per acre caused some leaf spotting. Although this injury was not serious, it is suggested that five or more gallons per acre be applied where practicable. Thorough field

WARNING

Systox is an extremely hazardous phosphate material, and its use is subject to section 1080 of the state agricultural code, which requires that permits be obtained from the local Agricultural Commissioner. Spray operators must take all precautions not to contact the spray or inhale the fumes, and workers should not enter the field for some time following application.

coverage is desirable because skips either in the field or at the borders may harbor enough mites or aphids to reinfest the field.

The value of Systox as a miticide and aphicide is increased by its apparent low toxicity to a number of the natural enemies of cotton pests. Data obtained from the 1952 experimental fields indicate that of several important beneficial insects, only the minute pirate bug, *Orius tristicolor* (White), is severely affected by Systox. Because *Orius* is an important bollworm egg predator, as well as a mite predator, its elimination might possibly result in an increase of bollworms. There was no indication of such an increase in 1952, however, and it seems quite possible that other beneficial insects which are unaffected by Systox may be capable of keeping bollworms under control in treated fields. Nevertheless, the possibility of complication of the bollworm problem through use of Systox can not be overlooked and it will be carefully studied in future experiments.

Because of its high toxicity and rapid action, Systox can control heavy mite populations, whereas most of the materials used previously were most effective only when applied early in the mite infestation. Incipient populations are often heavily attacked by predators, which at times keep the mites below the economic level. With a highly effective miticide such as Systox available for use if needed, the farmer should be able to ride-out a light infestation, and thus obtain full benefit of natural control.

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Left, Cotton bolls from a treated field. Right, Cotton bolls from an untreated field showing the effect of cotton aphid honeydew which creates a problem at time of picking, ginning and spinning. The black is the result of a fungus which grows on the honeydew.

