



Sweeping pink beans for Lygus

Increasing losses from certain insect pests and mites incurred by pink and red bean growers in the Sutter Basin area of northern California—reportedly in excess of \$100,000 in sales returns alone during the 1956 season—resulted in studies of the problem during the 1957 and 1958 seasons.

Fields of Sutter Pinks, Standard Pinks and California Reds were examined at weekly intervals starting when the plants were approximately 25 days old and continuing until harvest. Surveys of the fields were made by taking a number of sweeps with a standard insect net as well as examining individual plants at random and recording the injurious and the beneficial insects present. At harvest time a sample of the beans was taken and examined for insect damage. The injury caused by lygus bugs and worms could be detected readily.

During the growing season the presence and relative abundance of lygus bugs could be detected by sweeping. A single, forceful pass of the net—about 8"–10" deep into the foliage—across two rows of beans constituted one sweep. Ten sweeps in one area of the field constituted a series and a minimum of five series were taken in sampling the population in a given field. If well scattered, 5–10 series totaling 50–100 sweeps give a satisfactory and reproducible estimate of the relative abundance of lygus bugs. All adult lygus bugs and nymphs taken were tabulated.

The same sweep technique will detect larvae of the corn earworm—*Heliothis zea*—as soon as they hatch and appear on the foliage but is not practical for determining their relative abundance. Sweeping will not detect the larvae after they have left the foliage and entered the pods. Attempts to correlate numbers detected in sweeping with damage at harvest have been disappointing.

Pests of Field Beans

insect and mite damage to pink, red beans investigated in Sutter Basin area

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A number of caterpillars, in addition to the corn earworm, were detected by sweeping or examining plants: the western yellow striped armyworm—*Prodenia praefica*; the bean lycinid—*Strymon melinus*; the salt marsh caterpillar—*Estigmene acrea*; and the alfalfa semi-looper—*Autographa californica*.

Other plant feeding pests encountered were several species of tetranychid spider mites; onion thrips—*Thrips tabaci*; flower thrips—*Frankliniella occidentalis*; leaf miner—*Liriomyza pictella*;

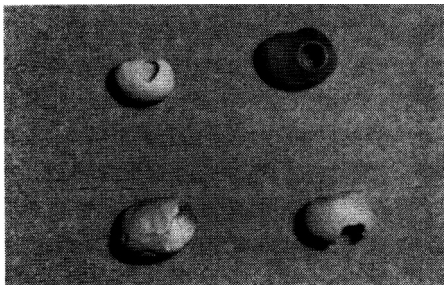
over and above that necessary to control the corn earworm.

Notably absent as a pest, at least during the 1957 and 1958 seasons, was the destructive bean pod borer—*Etiella zinckinella*—found in small numbers on baby limas but not on pinks or reds in the Sutter Basin area, fortunately, because no chemical control for the pod borer is known.

Lygus bugs are nearly always present in blooming—or older—fields and at times may be more important than the corn earworm. If it were not for the corn earworm it would be possible to sweep fields and permit those with low lygus populations to remain untreated or else delay treatment so that one insecticide application would be certain to be all that was needed.

Feeding by lygus bugs on the bloom causes blossom drop and on the seed a necrosis, pitting or distortion which is characteristic. The whitish or brownish necrotic spot beneath the skin is diagnostic.

Corn earworm damage to pink bean



western spotted cucumber beetle—*Dibrotica 11-punctata*; leafhoppers and *Empoasca* spp.

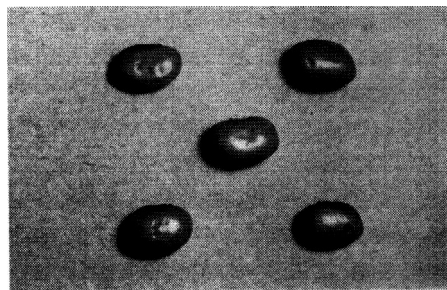
After becoming well established in the field, the bean plants in the Sutter Basin area are frequently attacked by heavy, migrating swarms of onion and flower thrips. Occasionally the thrips are abundant enough to cause cessation of plant growth. The pest situation at such times may or may not be complicated by the presence of heavy numbers of leaf miners and leafhoppers.

Later in the season—normally beginning at about the time of bloom—both lygus bugs and corn earworms appear. These are the most important pests and generally are the ones which must be controlled to produce a quality product.

Usually in the Sutter Basin it is the larva of the corn earworm which does most of the bean damage attributed to worms. This same pest is responsible for most of the worm damage on tomato, milo, and corn in that area.

Other species of caterpillars may confine their feeding to the bean foliage or contribute a small amount of damage to the harvested bean. Seldom are they abundant enough to warrant a treatment

Lygus injury to California red bean.



Feeding spots on the bean are less extensive and far less noticeable on pink and red beans than they are on a white bean like the blackeye. As a consequence small feeding spots are not objectionable and often can only be noted and confirmed under magnification by removing the skin from the seed.

To determine the presence of insect pests and—in the case of lygus bugs—their relative abundance, bean fields should be checked at weekly intervals. When the lygus count reaches a level of one per sweep or when small corn earworm larvae first appear in the net—whichever occurs first—the fields should be treated, provided bloom or young

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