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**THE NATURE OF DAMAGE BY NEZARA VIRIDULA (L.) TO
SOYBEAN SEED**

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SUMMARY

Damage caused by feeding at various stages of seed development is described and illustrated.

Damaged seeds of soybeans are sometimes common in harvested crops. Field observations on the Darling Downs of south-eastern Queensland have pointed to the green vegetable bug (*Nezara viridula* (L.)) as a cause of seed damage and deformity in the growing crop. Seed size and shape, however, can be affected by a number of factors during seed set; therefore the particular effect of green vegetable bug required accurate definition. This was achieved by a feeding trial on developing soybean pods under caged conditions.

The trial was commenced at Hermitage Research Station in April 1963 on plants of the variety Early Mamloxi. Cages 2 ft x 3 ft 6 in. and 2 ft high were placed over plants in a field crop which was approaching the full green pod stage. Fifty adult green vegetable bugs were placed in each of two cages and plants in two other cages were sprayed as a safeguard against presence of sucking insects.

After a feeding period of 12 days the cages were removed and all plants were sprayed to kill the bugs. The crop on both sets of plants was then allowed to mature under normal field conditions.

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Yields were hand-threshed and the seed graded into the categories mature undamaged, mature damaged, immature damaged, and very small deformed seeds. Numbers and percentages of seed in each grade are given in Table 1.

TABLE 1

TOTAL SEED AND PERCENTAGE OF UNDAMAGED AND DAMAGED SEED

Treatment	Total Seed	Mature Undamaged (%)	Mature Damaged (%)	Immature Damaged (%)	Very small Deformed seeds (%)
Infested Cage 1	667	56.7	29.2	8.4	5.7
Infested Cage 2	569	59.4	30.7	5.9	4.0
Uninfested Cage 1	664	87.7	0.3	3.0	9.0
Uninfested Cage 2	677	75.8	1.5	16.4	6.3

Total seed production was comparable in all plots. Differences between infested and uninfested plots in the percentages of damaged and undamaged seeds are large and consistent. Since the trial did not commence until the full green pod stage, there are no unusual differences shown by the immature damaged seeds or by the very small deformed seeds.

It was observed that while feeding the bugs injected stylets into the pods in a position overlying the developing seed. The various feeding symptoms on the seed from the infested plots were the same as those shown in field

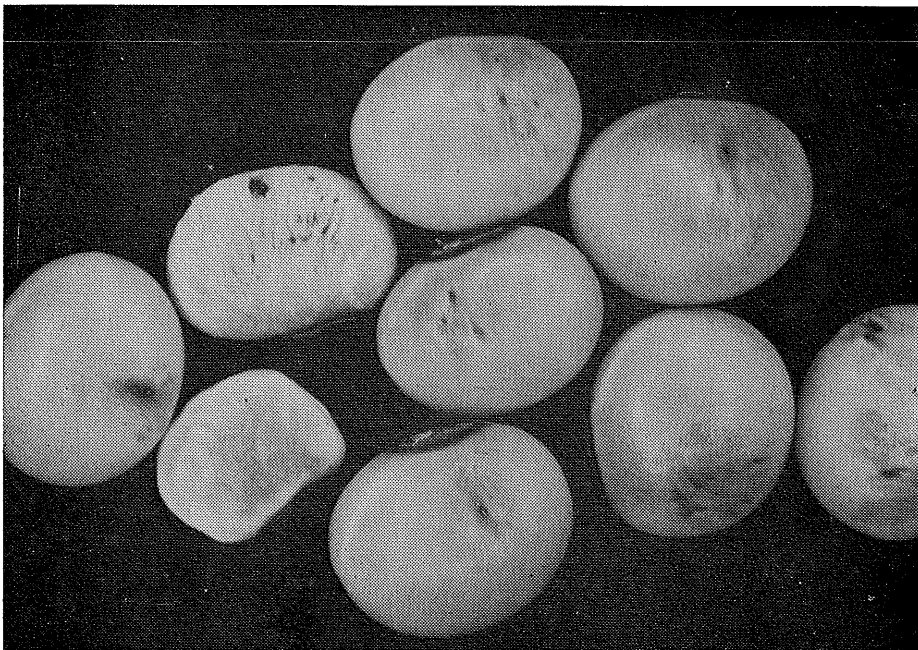


Fig. 1.—Soybean seed showing deformity, shrivelling, unusual surface depressions and black pin-point feeding punctures by the green vegetable bug.

observations. Bugs can occur in field crops at any time until crop maturity. Feeding during the early stage in seed formation can result in shrivelled, deformed and undersized seeds. Pin-point puncture marks are present on the sides of the seed testa. Feeding at a later stage on the larger though still green seed produces a very noticeable black spot located in a depression. While puncturing of the seed by the bug at this later stage produces a more apparent spot, the shrivelling is less pronounced.

Some care is necessary in diagnosing bug damage in soybean crops because many of the symptoms are, at least in part, comparable with those caused by other factors such as drought conditions during seed-setting. Bug damage, however, is readily distinguished on the mature malformed seed by the presence of the typical pin-point punctures in unusual depressions.

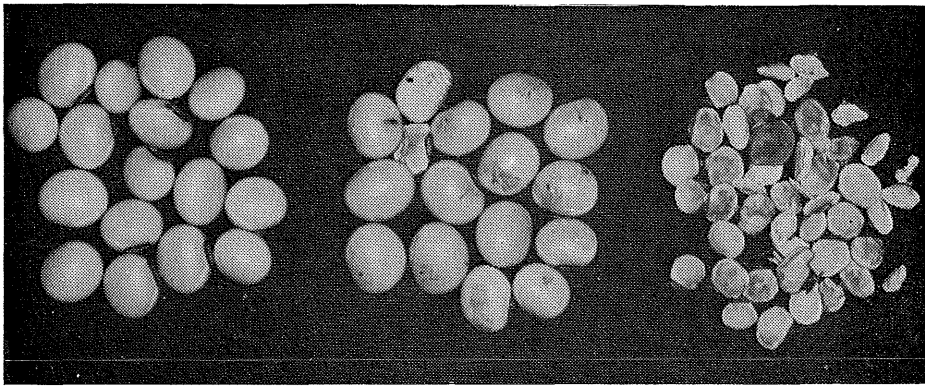


Fig. 2.—Soybean seed showing: (left) undamaged mature seed; (middle) damaged mature seed; and (right) damaged and deformed immature seed.

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