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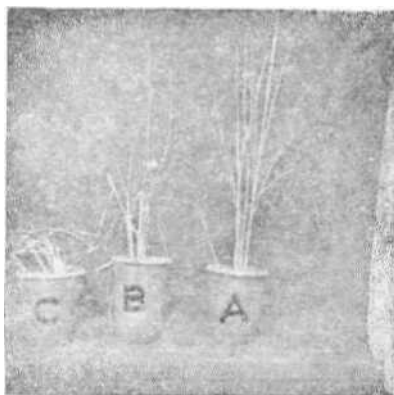
OCCURRENCE OF *NILAPARVATHA LUGENS* (STAL.) (DELPHACIDAE: HOMOPTERA) AS A SERIOUS PEST OF PADDY IN KERALA

The paddy leaf hopper, *Nilaparvatha lugens* is listed as a minor pest in different paddy growing areas in India. But a devastating incidence of this pest was noted in Kanniyakumari District of Tamil Nadu in 1972 and the paddy grown in vast areas in the southern districts of Kerala was severely damaged by this pest in 1973. In many fields the damage was so heavy that the crop was totally abandoned by the cultivators. In heavily infested fields 10 to 15 mature insects and 200 to 300 immature forms could be seen, clustering around the tillers of each clump, just above the water level. Their preference to remain on the inner tillers of the clump rendered them inaccessible to insecticides applied in the field in routine schedules. In many areas the incidence was unnoticed in early stages and the crop had been irrecoverably damaged by the time the pest was detected.

Paddy, in all stages of growth was found susceptible to the leaf hopper attack. The incidence in early stages resulted in a general yellowing of the sheath and leaf, from outer to the inner side, followed by the drying and withering of the plants. The attack in later stages resulted in the nonfilling of grains. The improved varieties, particularly when given a close planting and heavy doses of nitrogenous fertilizers, suffered most from this pest. The congenial microclimate below the dense canopy of leaves in such fields caused a rapid multiplication and consequent flare up of the pest. The results of some preliminary investigations on the biology of the pest, nature of damage caused and control are reported here.

For studying the biology, the insect was reared on two weeks old seedlings planted in paper cups and kept in glass cylinders, the upper end of which were closed with muslin cloth. The females thrust the eggs in longitudinal rows at the midregion of the outer leaf sheaths where the thickness was maximum. The egg laying sites could be located as brown patches on the sheaths caused by the discolouration and death of plant cells in the area, possibly due to some toxins introduced. The egg is club-shaped with a slight bend towards the narrow end. Each female laid about 200 eggs and they hatched in 6 to 7 days. The nymphs passed through 5 instars and emerged as adults in 15 to 17 days. Four to five generations were completed during a cropping season.

The nature of damage was assessed by liberating 2 pairs (males and females) of the insect on one month old potted paddy plant enclosed



in 1' X 6" muslin cloth cage spread over a cylindrical iron wire frame. Two to three days after the emergence of the nymphs (from the eggs laid by the females introduced) the outer sheaths and leaves of the plants turned yellow. In another two days the inner leaves became yellow while the outer leaves started drying up. (Fig. 1 B.) The symptom was so caused due to the feeding of the nymphs first from the outer sheaths and later from the inner sheaths. The injury done to the sheaths, possibly due to some toxins, might have obstructed the flow of nutrients to the leaf blade and resulted in the death of the latter because the insect was seldom seen feeding on the leaf blade. Within a couple of weeks the whole plant dried up and withered (Fig. 1 C).

A preliminary field trial was conducted to evolve a suitable control measure against the pest. B. H. C. 10% dust, carbaryl 0.2%, suspension and emulsions of parathion 0.05%, phosphamidon 0.04%, formothion 0.1%, fenitrothion 0.05%, ekalux 0.05%, orthene 0.1%, endrin 0.04% and thiodan 0.04% were applied in plots marked out in a well infested field adopting a randomized block design. The results were assessed in terms of pre and post treatment population of the pest as assessed by the number of insects on 3 clumps collected at random from each plot. The clumps were cut at the bottom below the water level and the tillers were carefully inserted into a polythene bag with least disturbance to the insects on them. The tillers were spread out on black paper and the leaf hoppers (nymphs and adults) on them were counted in the laboratory using a hand lens. Significant reduction in the insect population was noted in plots treated with B. H. C. 10% dust at the rate of 35 Kg. per hectare and Carbaryl 0.2% spray.

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