EGYPTIAN ALFALFA WEEVIL

. . . *population and ecology research*

WARREN R. COTHRAN • CHARLES G. SUMMERS • D. GONZÁLEZ

LOSSES ATTRIBUTABLE TO *H. brunneipennis* are increasing for a complex of reasons, perhaps the most important of which stem from a lack of detailed information on this species. While many studies have been made on the biology of the species *H. postica* in California and other states, there is relatively little basic data on the field ecology of *H. brunneipennis*, which differs significantly from that of *H. postica*.

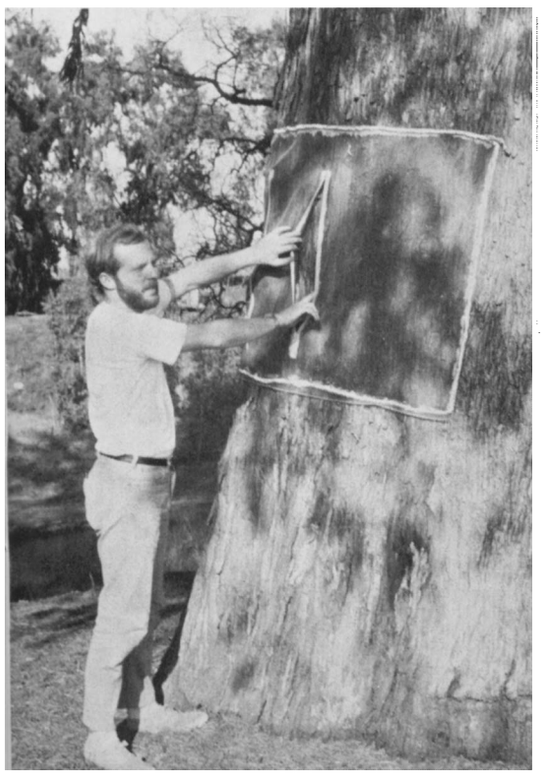
This incomplete understanding of the biological patterns of the Egyptian alfalfa weevil by the growers, and those who advise them, has often resulted in poorly timed insecticide treatments, and inadequate control. In such cases the grower suffers excessive economic losses, including the cost of repeated treatments. In addition, there is justifiable concern about the effects of increased insecticide use against the weevil in consideration of the established integrated control programs now in effect against other major alfalfa pests. For these reasons, the ecology of *H. brunneipennis* is presently being investigated.

Studies of field populations near Davis, Yolo County and Porterville, Tulare County began in the fall, 1970 and are continuing. Selected alfalfa fields in these two areas have been sampled intensively during all stages of the weevil's life cycle. Correlative studies at Davis have monitored patterns of population movement from summer aestivation sites by the use of screen traps placed over sections of Eucalyptus tree trunks (a favorate aestivation site of the insect). The influence of normal cutting, irrigation practices, and of commercial insecticide treatments on populations of the weevil and of certain other important pest and beneficial species is also being investigated.

Throughout this program, three sampling methods (D-Vac, hand-cut square-foot samples, and sweep-net samples) were used. These methods were compared to determine which was the most efficient sampling technique for estimating the absolute numbers of weevils present at a given age-class structure of the population. Such information should allow more efficient control recommendations and better evaluation of results.

Although there is optimism about the results thus far, such population studies should be continued for several years to develop a comprehensive understanding of the significant variation in insect populations associated with the fluctuating field conditions encountered from year to year. However, the data now accumulated already provide important information on key aspects of the field ecology of this insect. This includes the timing of the fall movement of the adults and their associated recolonization patterns of the alfalfa fields, and the subsequent egg-laying and larval developmental sequence, including the contribution of the overwintering fall-laid eggs to the spring larval population. This information has expanded the basis upon which further experiments can now be more effectively designed. Such studies will include analyses of the effect on this insect of growing resistant alfalfa varieties, manipulating cutting practices, timing insecticide applications, and releasing key beneficial species. Such cooperative research efforts hold the key to the eventual establishment of an effective pest-management program for the Egyptian alfalfa weevil.

Screen traps on eucalyptus trees seen above were used in study of adult Egyptian alfalfa weevil migration.



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