INSECT RESISTANCE IN FORAGE PLANTS

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BECAUSE of the relatively low per acre value of forage crops, cultural methods and the use of resistant strains appear to offer the best means of controlling insects that attack forage plants. The definition of insect resistance that seems to be generally accepted is given by Snelling (30) as "those characteristics which enable a plant to avoid, tolerate or recover from the attacks of insects under conditions that would cause greater injury to other plants of the same species."

References pertaining to this subject were obtained from the bibliographies by Snelling (30) and Platt and Farstad (23). Further information on the most recent developments in this field was obtained by correspondence from a number of the men working on these problems.

Studies on insect resistance in forage plants have been limited to a very few insect species, some of which affect more than one type of forage plant.

POTATO LEAFHOPPER

The potato leafhopper, Empoasca fabae (Harr.), causes widespread damage, especially in the eastern half of the United States, to a wide variety of plants, including apple, potato, clovers, alfalfa, beans, and peanuts. Of all the forage plants, alfalfa appears to be the most seriously damaged by this insect. Jones and Granovsky (19) were perhaps the first workers to demonstrate experimentally that this leafhopper caused the disease-like condition known as "alfalfa yellows." The attack of the leafhoppers causes the leaves to turn yellow, then bronze or purple, and die prematurely. New leaves formed after the attack are much smaller than normal, the internodes of the stems become much shortened, and the whole plant may become stunted. On the older stands the second and third crops are the most heavily infested and the "yellows" may result in increased winterkilling, although tests by Jewett (14) in Kentucky did not show this to be the case there. New stands may be killed outright. Records indicate a measurable reduction in hay yield of from 14 to 50%. Poos and Johnson (26) have shown that the severity of injury is directly correlated with the number of leafhoppers present.

Smith and Poos (28) and Smith (29) attribute the damage to a disease-like injury resulting from the deposition in the vascular tissue of a highly insoluble sheath that probably interferes with the normal

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2Entomologist.

3Numbers in parenthesis refer to "Literature Cited", p. 723. In addition, the following men wrote letters to the author telling of the status of work at their several institutions on resistance of forage crops to insect attack: T. R. Chamberlain, L. G. Jones, C. J. Sorenson, and V. L. Wildermuth.