

Introduction

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CONSIDERED ONE of the most important pests of alfalfa by the majority of forage entomologists, the potato leafhopper, *Empoasca fabae* (Harris), can cause serious damage and losses in yields and quality even when present in small numbers. The cause of potato leafhopper injury was finally recognized by Garman (1908) and Osborn (1912), and the injury was common to many crops. In the early 1900s, workers demonstrated that the potato leafhopper damages potatoes, apples, and alfalfa (Jones & Granovsky 1927, Granovsky 1930). The volume of research papers has been vast (Gyrisco et al. 1978), and many notable entomologists have devoted much of their time to studying this pest. This symposium reviewed important historical and current research perspectives. Management of alfalfa pests such as the alfalfa weevil, *Hypera postica* (Gyllenhal), has led to a greater concern for top quality forage and a renewed interest in the effect of the potato leafhopper on alfalfa.

The potato leafhopper is found principally in the eastern and midwestern United States, as well as in parts of Canada and Mexico. Poos & Wheeler (1943) indicate that the list of host plants extends to more than 100 species, and some of these hosts are very important in maintaining populations before leafhoppers move into alfalfa. Beyer (1922) showed that the potato leafhopper breeds continuously on castor bean and poke weed in the Gulf States, including Florida. Many early investigators believed that the leafhopper overwintered in the north, but Poos (1932) in Virginia and Delong & Caldwell (1935) in Ohio were unable to find or overwinter the potato leafhopper. They concluded that the leafhopper overwinters in the south and migrates to the north each year. This concept of spring migration is now widely accepted by entomologists, and research dealing with the path of migration and the timetable has been an important aspect of potato leafhopper research.

The exact nature of potato leafhopper injury remained a mystery for a number of years, and at first it was believed that the yellowing was caused by a virus transmitted by the insect. Later experiments by Granovsky (1928) showed that a virus was not the causal agent. Histological stud-

ies revealed a granulation of the plastids, a clogging and isolation of vascular bundles of suberized and liquefied layers, and a disorganization of the phloem. Smith & Poos (1931) concluded from histological studies that potato leafhopper injury to alfalfa is caused by the mechanical plugging of phloem cells with sheaths of insect origin, which slows translocation from the leaves of the plants.

Details of the life history and description of the potato leafhopper were presented by a number of prominent entomologists of the late 19th and early 20th centuries, among them, Osborn (1912), Fenton & Hartzell (1920), Ball (1924), Poos (1932), and Delong (1928, 1938). Most of their findings remain valid today. Entomologists today have a continuing interest in the potato leafhopper in order to produce good quality forages through proper management of this pest in the alfalfa ecosystem. Because weed infestations are another important factor in this ecosystem some researchers have recently been investigating insect-weed interactions. Lamp et al. (1984) and Oloumi-Sadeghi et al. (1987, 1988) have studied the effect of selective weed control in spring-planted alfalfa on the leafhopper populations and found that the leafhoppers are affected by the presence of grasses and broadleaf weeds.

Research associated with leafhopper sampling, host selection, feeding behavior, migration, population dynamics, damage thresholds, and management of the pest are timely. These topics and others were discussed as a part of this symposium.

References Cited

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