



Integrated Pest Control

. . . new tactics against grape pests

A commonsense approach to many agricultural pest problems involves combining every available means of control into a single, unified program—within the framework of normal farm operations. Such a program requires a broad, interdisciplinary, and ecological approach. Until recent years, reliance upon a single control measure was satisfactory. Today's increasingly serious and complex problems, associated with pesticides and the rising costs of pest suppression, have made necessary the development of integrated control concepts which are now being put into actual practice in the production of many crops.

The California grape industry, already noted for its progressive outlook, is actively encouraging the development of an integrated control program for insect and mite pests of grapes. In each of the past two years, many businesses and individual donors have contributed financial support for these research projects. This support has accelerated research progress and allowed expansion of the investigations with gratifying results.

Development of this program has been possible through a combination of circumstances starting with the fact that the grape leafhopper, *Erythroneura elegantula* Osborn, is a major and persistent pest of grapes. In 1960, the grape leafhopper (ranked among the 10 most destructive agricultural pests in California) had caused an overall loss to the grape industry estimated at \$8,973,290. Losses continued at a high level in 1961. The leafhopper had not only developed resistance to DDT, but was beginning to resist the newer chemicals. Also, the evidence clearly indicated that pesticides applied for leafhopper control tended to aggravate secondary pest problems, such as mites.

Realizing the need to keep all factors in balance with an integrated control pro-

gram (which was still manageable for farm operators), representatives from all aspects of the grape industry met in 1961 to evaluate the problems. This group included grape growers, representatives from the Agricultural Experiment Station and Agricultural Extension Service, including specialists in chemical and biological control, and in viticulture. They met in vineyards several times during the first grape season of 1961 to informally exchange the knowledge they had acquired from their independent observations. In November of that same year, they presented and evaluated the data formally at a Fresno meeting.

These preliminary reports were significant. Many vineyards, it had been learned, could go untreated through the full season. In other vineyards, the recommended treatments could be safely reduced. Also, the level of leafhoppers required to cause damage was found to be higher than had been expected. Another important factor was the discovery that, under certain conditions, a tiny parasitic wasp which attacks the eggs of the leafhopper was capable of reducing and holding the population of the pest down to noninjurious levels. These general findings resulted in the initiation of the formal research project which has been vigorously pursued ever since.

At the end of the 1964 season, several reports—some of which are included in this issue of *California Agriculture*—hold great promise for the ultimate development of a refined pest control program for grapes. This experience has been another example of the outstanding success achieved by drawing upon the statewide resources of the Division of Agricultural Sciences, working in close harmony with the agricultural industry.—*M. L. Peterson, University Dean of Agriculture, Director of the Agricultural Experiment Station, University of California.*