

# APPLICATION OF PEST PREDICTIVE TECHNOLOGY FOR WIDELY SCATTERED APPLE GROWERS

## Final Report

Apple production lends itself to IPM approaches because intensive management including regular applications of pesticides to control insects, mites, and diseases are used, and because there are new technologies available to reduce pesticide use. Widespread adoption of disease and insect predictive technology in the southern and midwest regions would help to make apple production more competitive with other regions, while reducing pesticide usage and easing potential risks to user and environment. The widely scattered growers in the mid-south and midwest need to become self sufficient in implementing the IPM approaches that will work best in their orchards.

The general objectives of the proposal were to develop an educational approach in Kentucky and Iowa which will convince apple growers that new pest predictive technology will benefit them, and to teach the growers how to use the new systems.

The specific objectives are listed below, and the extent to which these objectives have been reached is discussed with each objective.

a) Establish disease and insect predictive systems in strategically selected orchards in Kentucky and Iowa. Through other grants, electronic and mechanical instruments will be purchased for this purpose. IPM scouts will be hired to maintain and monitor the pest predictive instruments.

In Kentucky, apple IPM with environmental and pest monitoring and scouting was implemented in 17 orchards. The details of this program are presented in the attached report, entitled "1992 Kentucky Apple IPM Scouting Program Report." In Iowa, eight growers participated in an experimental fire blight management program. The enclosed report "Using MARYBLYT in Iowa Orchards in 1992" provides details of that IPM approach.

b) Demonstrate predictive systems to Kentucky and Iowa apple growers using annual statewide meetings, hands-on workshops, and field days.

Growers were introduced to the apple IPM programs during statewide fall and winter meetings. Growers in Kentucky who signed up for the IPM program participated in an apple IPM workshop on February 11, 1992, for a day of classroom instruction. Subsequent workshops emphasizing hands-on field experience were held in the orchards of IPM participants March 30 and 31, May 6 and 7, and June 25 and 26, 1992. These workshops provided training for growers and scouts by Extension Specialists, and provided all participants the opportunity to share apple IPM concerns and experiences. Similar approaches were used in Iowa through educational meetings and field days.

c) Monitor and analyze the risks/benefits of using predictive systems. Fruit quality, pesticide usage, pest losses, and costs will each be examined. The year-to year reliability of the predictive technology will also be determined. An Extension Technician will be hired to make these analyses.

An Extension technician was hired to coordinate and implement the 1992 apple IPM program and to analyze the risks/benefits of apple IPM in Kentucky. The details of this effort are presented in the attached report, entitled "1992 Kentucky Apple IPM Scouting Program Report." In Iowa, technical help was used to coordinate the apple fire blight prediction and control demonstration. The enclosed report "Using MARYBLYT in Iowa Orchards in 1992" provides details of that IPM approach. With only two years of apple IPM experience in both Iowa and Kentucky, it would be premature to conclude that these approaches are reliable over many years. Nevertheless, preliminary data indicate that IPM for apples works, it saves growers money, and reduces pesticide usage.

d) Prepare educational materials such as written literature and a videotape to aid growers in deciding whether to and how to utilize predictive systems.

Printed training materials appropriate to Iowa and Kentucky were developed. The "Kentucky Apple Crop Scout Manual" and the "IPM for Commercial Apple Growers: Apple Management Options" (Iowa) publications are enclosed.

A videotape, "Integrated Pest Management for Apple Growers" (17:35) produced by Iowa State University communications specialists is also enclosed. Extension Entomology, Plant Pathology, and Horticulture specialists from both Kentucky and Iowa (with suggestions from other specialists throughout the midwest) developed a script which was edited by the Iowa Communications Specialist.

e) Determine to what extent growers in each state have adopted the new technology, and the benefits derived.

Growers in Kentucky and Iowa generally adapted well to IPM approaches to managing their apple orchards. The details are presented in the attached reports, entitled "1992 Kentucky Apple IPM Scouting Program Report," and "Using MARYBLYT in Iowa Orchards in 1992." For 1993, Kentucky apple growers previously involved with IPM are enthusiastic about enrolling in a scaled-down (due to lack of funds) IPM program and many growers not previously involved with IPM are also signing up. IPM in 1993 will involve significantly more growers than in 1992. Thus, growers are recognizing the benefits of IPM and are adopting the new technology.

f) Make the educational materials developed for Kentucky and Iowa available to Extension and IPM programs in other midwestern and southern states.

The videotape "Integrated Pest Management for Apple Growers" (17:35) produced through this grant was sent to state Extension Communications Specialists (3/4" sub-master copies) and Extension Fruit Specialists (1/2" VHS copies) to copy, distribute and use as they wish. Specialists from the following midwestern and midsouth states now have the videotape: Arkansas, Illinois, Indiana, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, and Wisconsin. The videotape was shown in late 1992 at the annual Midwest Fruit Specialists Conference, and has already been used for educational programs at statewide fruit grower conferences.

The IPM manuals from both states were presented at the Midwest Fruit Specialists Conference, and arrangements were made for specialists from other states to obtain copies for adaptation in their own states.