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An Overview of 1981 Pome Fruit Fungicide Reports

Of the 43 pome fruit reports in volume 37 of *Fungicide and Nematicide Tests, Results of 1981*, 38 are of domestic and five of international origin; 39 involve apples and four involve pears. Of the reports relating to pear, three deal with efforts to control pear scab with sterol-inhibiting (SI) fungicides and one shows phytotoxic effects of streptomycin on young pear trees.

Apple reports include results of 36 separate field tests, three postharvest tests, and three greenhouse tests. Field test reports contain 286 treatments, including 136 involving SI compounds.

The vast interest in SI fungicides (bitertanol, CGA-64251, fenarimol, prochloraz, triadimefon, and triforine) in the 1981 apple fungicide reports is due to their broad spectrum of control, which generally includes the major early season diseases, ie, scab, rusts, and powdery mildew. The strong eradicative action of these compounds permits reexamination and reduction of the commercial spray schedule. Although some SI fungicides show activity against sooty blotch, fly speck, Brooks spot, and the rots, their comparatively short residual life appears to limit their applicability for "summer disease" control at the low rates that control early season diseases. Other concerns include the potential for resistant strain development and for growth regulator effects on apple foliage and fruit. Tests of tank mixtures and split-season applications of fungicides with different modes of action provide a base for these types of use patterns in case resistance to these or other fungicides develops. Further exploration may be required to determine the application and weather conditions that result in expression of phytotoxicity. The pome fruit disease control spectrum of the SI fungicides and some of these concerns were summarized in a workshop published in the December 1981 issue of PLANT DISEASE (pp. 981-1013).

Of the 286 apple treatments reported, 43 involve tank mixes of fungicides with different antifungal modes of action, 31 involve split-season applications of different fungicides, and 42 involve efforts to increase the activity of registered or experimental compounds with spray tank adjuvants. New formulations designed for improved shelf life, handling, and efficacy were tested in 24 treatments. Of the 65 treatments directed at reducing the required number of spray applications, 52 were applied on a preset schedule based on calendar days or tree phenology and 13 were based primarily on postinfection applications.

Many of the apple fungicide tests reported were directed at goals beyond just comparison of experimental and registered materials. These included tests of the effects of inoculum density and planting density on disease control, spray application methods, fungicide retention and vapor activity, spray water pH adjustment, fungicide benefits assessment, fruit finish effects, and control of benzimidazole-resistant organisms by nonbenzimidazole fungicides.

Control data are reported for 12 fungal diseases of apple: scab (25 reports), powdery mildew (17 reports), sooty blotch and fly speck (10 reports), rust diseases (7 reports), several fruit rots (5 reports), Brooks spot (2 reports), and frogeye leaf spot (1 report). Also reported are data on control of fire blight, mites, and Golden Delicious leaf blotch, a physiological disease. Phytotoxic effects of treatments on apple fruit finish or foliage are also reported in 18 of 42 individual tests. The disease spectrum and distribution of 1981 apple reports are similar to those of 1980.

Most (92%) of the treatments were delivered with a handgun as dilute applications to the point of runoff. The uniformity of this application method helps eliminate some of the variations among tests. The method is better adapted to small plot (single-tree replicate) tests than is concentrate application with commercial airblast sprayers. More data from tests simulating commercial airblast application of new fungicides are desirable, however, and hopefully these will be obtained under experimental-use permit testing in commercial orchards. The need for larger plot size because of increased spray drift and the greater variation in inoculum density with larger plot size hinder the establishment of airblast application tests. Airblast application testing of experimental fungicides is limited by legal constraints and the cost of purchasing fruit treated with unregistered pesticides.

Fruit pathologists show "accountability" to the fruit industry of their regions by selecting apple cultivars for fungicide test purposes based on both the commercial importance of the cultivar and its susceptibility to diseases. Rome Beauty was the most popular cultivar for fungicide testing (45% of the reports), mainly because of its susceptibility to many diseases, including scab, powdery mildew, rusts, and summer diseases. Delicious and Golden Delicious, the most important cultivars on a commercial basis nationally, appeared in 36 and 38% of the reports, respectively. They are moderately susceptible to most diseases and somewhat prone to spray injury. McIntosh, which is commercially important in the Northeast and highly susceptible to scab, appeared in 26% of the reports. The inclusion of 11 relatively minor cultivars in one or more fungicide tests was based on their local commercial importance and disease susceptibility.

Few first reports of new compounds have appeared during the past 2 years. An undisclosed experimental Uniroyal compound, UR-A815, has shown some potential as an apple fungicide for control of scab, rusts, and powdery mildew and has given adequate fruit finish at the rate of 150 mg a.i./L. This rate also gave fair control of sooty blotch and fly speck under light to moderate disease pressure. Two other experimental compounds, BAS 9018 and FMC 63440, failed to control these diseases adequately at the rate of 120 mg a.i./L.

APS *Fungicide and Nematicide Tests* continues to be an excellent compilation of data comparing individual compounds for control of the major pome fruit diseases. Contributors usually inform the reader about the suitability of the compound for fruit disease control in their test area, and the reader can adapt this information to his own conditions. Collection and comparison of such data throughout the period of development of a new compound can aid agricultural advisors in formulating recommendations that often must go beyond a straightforward control recommendation to meet a specific problem. The lack of data on treatments applied by commercial-type airblast spray equipment, however, makes it more difficult for the advisor to predict the outcome of concentrate fungicide applications at reduced rates. Companies developing new compounds should be encouraged to continue to support small-plot airblast tests of compounds under experimental-use permits, so that rates can be adjusted for tree volume and density rather than just for treated area, eg, rate per acre.

Dr. Yoder is editor of the pome fruits section of Fungicide and Nematicide Tests, *William C. Nesmith, Editor, published annually by the New Fungicide and Nematicide Data Committee of The American Phytopathological Society. Copies of current and past volumes may be obtained from Richard E. Stuckey, Business Manager F & N Tests, Plant Pathology Department, University of Kentucky, Lexington 40546.*

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