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## Nozzle Wear, DED Are Topics at Illinois

### Custom Spray Operator's Training School

More than 30 papers were presented to midwestern sprayers who gathered at Urbana, Ill. for the 18th Illinois Custom Spray Operator's Training School, Jan. 26-27. Reports were given by university weed control researchers, and municipal and Ill. Natural History Survey workers. New techniques were described for agronomic weed control, and equipment maintenance was a major concern.

#### Spray Pattern, Output Change with Nozzle Wear

"The abrasive action of sprays causes wear on nozzle tips," E. L. Knake, Associate Professor of Weed Extension, University of Illinois, Urbana, told the spray operators. He explained that changes in the volume sprayed, or distribution pattern caused by abrasion, may damage adjacent plants, cause residue problems, and increase application costs.

Knake described tests conducted to determine the amount of wear and the efficiency of new and used spray nozzles. In the laboratory, he said, new and used nozzles were tested by using pure tap water in a device oper-

ated at 30 lbs. per sq. inch (PSI). Water from each nozzle was collected in beakers, measured, and recorded in terms of milliliters per minute. Spray distribution patterns were also determined.

"Since wear on the nozzle tip changes the spray distribution pattern," Knake concluded, "nozzle tips should be replaced periodically. Our test results indicate that brass nozzle tips should be replaced after each tip has been used for approximately 100 acres, to maintain the desired spray pattern.

"Since output from brass nozzles increases rapidly with wear, it is important to regularly calibrate spray equipment. Our study along with others show a possible 10% increase in output after 250 gallons of spray have passed through a nozzle tip.

"The output of the new brass nozzle tips that were checked was quite consistent, and their distribution pattern was satisfactory. However, periodic replacement should be considered a wise investment, since the distribution pattern of both liquid and wettable-powder formulations change considerably with



U. of Ill. extension entomologist H. B. Petty (right) previews program of the 18th Annual Custom Spray Operators School held recently on the university's campus. From the left are Ken Caldwell, Creston, Iowa, custom spray operator; Dr. J. B. Claar, director of U. of I. Co-operative Extension Service; entomologist Jim Paullus, Rochelle, associated with the Del Monte Co., and Petty.

wear." Stainless steel tips may be used to good advantage, he pointed out. They cost more, about \$1.50 compared with 50¢ for brass tips, but they are more resistant to wear and would not need to be replaced as often as brass tips.

#### **DED Stopped in Route**

"Dutch elm disease, one of the most destructive diseases of trees in the United States, kills thousands of elms annually," J. C. Carter, Head, Illinois Natural History Survey, Plant Pathology and Botany Section, reported to the attentive spraymen. "In the Champaign-Urbana, Ill. area, it has killed over 78% of the elms since 1951.

"Healthy elms," he explained, "within 25 feet of diseased elms frequently become infected by transmission of the DED fungus through grafted roots. This transmission of the fungus can be prevented by injecting Vapam into the soil. One part Vapam to 3 parts water is placed in holes 15 inches deep and 6 inches apart in a band between the diseased and healthy trees. One-half cup of the Vapam solution is placed in each hole. In the treated zone, Vapam kills roots, and therefore the DED fungus can not pass from tree to tree through their roots."

The Illinois Natural History Survey recommends methoxychlor for the control of elm bark beetles which carry the elm disease fungus. It suggests a 12% solution of insecticide if applied with a mistblower, or a 2% solution if sprayed with a hydraulic sprayer. Also, sanitary measures for the removal and destruction of all elm material in which elm bark beetles can colonize are recommended.

#### **Grasslands Book Revised**

The 707-page book, "Forages: The Science of Grassland Agriculture," contains material on all aspects of grasslands production. Completely revised, it is now available from the Iowa State University Press, Ames, Iowa. Price is \$8.50 per copy. The work has won international recognition for its educational value.

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