SCIENTIFIC APPARATUS AND LABORATORY METHODS

A "FOG" OR AEROSOL APPLICATOR FOR DDT

HAVING recently (mid-August) observed a second series of experiments, in the Salt River Valley of Arizona, on application of DDT in an oil fog, we wish to record the method. For the first experiments during April, 1945, the U. S. Navy's "fog generator," then a secret weapon, was released for experimental purposes to Colonel Dale Bumstead, of Tal-wi-wi Ranch, Peoria, Arizona, to be under direction of the authors, acting for the Arizona Agricultural Experiment Station. This generator, manufactured by the Todd Shipbuilding Corporation of New York, produces a remarkable white opaque fog from oil. Since DDT is oil-soluble it was conceived that the fog generator might be readily adapted to peace-time use as an insecticide applicator. Representatives of the manufacturers accompanied the equipment and, during a series of tests and field demonstrations, made and conceived various modifications to produce a more satisfactory fog for the application of DDT in insect pest control work.

The fog best adapted to concealment (the original purpose) is too fine and light for best results in insecticide applications in the field. It billows and rises to heights far greater than required, but does leave a remarkably fine and uniform deposit of minute crystals of DDT on all surfaces of the plants "fogged." Application is rapid. Results of the first experiments on grape leafhopper and on livestock pests and some of the comments of visiting entomologists are set forth in our Mimeographed Report No. 75.[1] Later checks have fully borne out the results therein reported.

Following the spring experiments, the Todd engineers continued their tests, and have now evolved a new machine, specifically for production of insecticidal fog for insect pest control. This machine, while entirely different in appearance from the Navy's generator, uses the same principle in breaking up the insecticidal oil into a fog which has better characteristics for application to field crops and livestock than the obscuring fog for military purposes. The "particle size" is greater, giving a heavier but less opaque fog which, however, deposits the insecticide in a remarkably uniform manner on all surfaces.

Certain simple mechanical changes in the discharging vents have adapted it to better initial distribution from the machine into the crop to be treated. Preliminary checks immediately after the most recent tests indicate better control than in the earlier experiments.

This is, practically, aerosol production on a field scale, and we believe it is destined to rank high as a method of application of insecticides in pest control work. Its adaptability to other than oil-soluble insecticides is yet to be determined.

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ACETONE CO_2 BATHS

THE following statement may be of interest to laboratory workers who have occasion to use acetone-CO_2 baths for low temperature work:

Acetone-CO_2 baths commonly used to cool low temperature receivers present a certain hazard as a result of their tendency to foam. Foaming may be due to too fast addition of CO_2 in preparing the bath, warming of the receiver during distillation, accidental bumping of a CO_2-supersaturated bath and many other causes. Open flames in the vicinity may cause bad fires.

It has been noted in these laboratories that foaming is markedly reduced if a few drops of silicone fluid or a small piece of silicone stopcock grease is added to the bath. As the stopcock grease (advertised as Dow Corning Stopcock Grease) is available at most of the chemical supply houses it would likely be the more convenient material for use in most laboratories. One application should last indefinitely, provided the Dewar flask is not washed out.

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DISCUSSION

NOMENCLATURE OF PROTEOLYTIC ENZYMES

THE nomenclature of certain groups of proteolytic enzymes is in an unsatisfactory state at present and is in need of reform. While this difficulty arises to some extent from a lack of knowledge of the nature and mode of action of these enzymes, it is also due in part to an unfortunate tendency to name different groups of proteinases after representative members. Thus enzymes with optimum activity in acidic solution

[1] Charles T. Vorhies and Lawrence P. Wehrle, "Preliminary Tests of DDT Applications to Crop Plants and Livestock with Navy's Fog Generator."