INDUSTRY'S ROLE IN DEVELOPMENT OF PESTICIDES

R. H. F. Dade

Jacksonville

The introduction of the so-called synthetic organics into the pest control field has greatly increased the number of industries directly or indirectly concerned with the production of insecticides. Some thirty years ago when I entered the insecticide field in Florida there were not more than a dozen items of insecticides and fungicides of economic importance. Most of these materials reached the grower in the package of the basic producer. Labeling procedure was simple. We knew the crops on which to use 2, 3 or 4 pounds of Lead Arsenate to a hundred gallons. We had residue tolerance for various crops, and the spray hands knew Lead Arsenate and Nicotine were poison and Oil Emulsion was not.

Practically none of the present day organics is of value as an insecticide or fungicide in its basic chemical state. We think of DDT as an insecticide, but it is valueless to the farmer until it has been processed into usable form.

Some basic producers go through all the processes and market products ready for use by the farmer. Others take only one step from the basic chemicals and process them into concentrates for use by blenders, while many other chemical producers make only the basic material and leave the processing responsibility up to others.

The insecticide industry, as a whole, has been very careful about introducing new materials on a broad scale. The usual procedure was to carry a new product through laboratory and greenhouse tests then field tests on a fairly broad scale, limited sale under supervision and finally general sale.

DDT was about the first of the new insecticides, followed closely by BHC. These products require a lot of Chlorine and Chlorine producers naturally became interested, and developed many other chlorinated hydrocarbons in their research work. The phosphate esters interested another group of chemical producers, and the numerous organic fungicides still another. Today, therefore, we have a wide variety of industries doing tremendous amounts of research having a direct bearing on the insecticide and fungicide industry.

Experiment stations, Federal Scientific workers and research staffs of commercial companies are coming up daily with new uses and improved variations of older materials, completely new pesticides and certain combinations which show promise. Progressive growers haunt these people to learn what is new. Often these growers find out where the new promising material can be obtained and launch a full-scale use before production is out of the pilot plant stage. If results look good other manufacturers get on the band wagon and away we go.

I think that Parathion, with which most of you are familiar, is a concrete example. Not much publicity was given this product by its major producer. It was known to be very poisonous, but it was hoped that ways of processing and using could be developed so it could be handled with reasonable safety. The first warnings about DDT were to be extremely careful in handling. In fact, for nearly a year after it was released for agricultural uses, major insecticides manufacturers sold it only for use under close supervision. Nobody got hurt, so when growers were told that Parathion was poisonous, many thought it was another case of being over cautious. A demand for Parathion products swept the country—and the world.

It is only human nature for producers and processors to supply this existing demand if they have the material, and plenty is available.

There seems to be no great residue problem with Parathion as it breaks down fairly rapidly and apparently is not cumulative in the human system. The problem is in field use and in processing plants.

As I mentioned previously the insecticide industry today embraces many other industries, which a few years ago, we did not consider even remotely connected with insecticides. Most of these manufacturers today are concerning themselves with insecticide problems, even though in many cases they produce only the raw chemicals. This cooperation through dissemination of information extends down to the final blender and in some cases clear to the grower. However, the grower looks to the man whose name is on the package, and in the case of most formulations, he is the local dust blender. This man has a great responsibility to see that his formulations are properly labeled, securely packed and adequate precautions are given in the case of hazardous materials. The grower also has a responsibility to his spray or dust crews, and to the public which consumes his product. He should find out the minimum dosage of a pesticide to give desired results and keep to this. Excessive residues can thus often be avoided. He should not take a chance with applications of poisonous materials later than recommended. I have known growers to use DDT on cabbage a few days before cutting, when it is definitely prohibited after heads begin to form. He should not use a material which has definitely been prohibited in certain cases. The spraying of dairy cattle with DDT is a case in point. It is still being done, although cattle growers are warned that DDT accumulates in the fat and shows up in milk.

Finally, in the case of hazardous materials the grower should see that his spray hands are instructed in handling and provided with any necessary devices to reduce the hazard to a minimum.

No group can consider itself entirely blameless in the premature sale and improper use of the new materials. However, by close cooperation, we shall be able to take advantage of these wonderful new pesticides with a minimum of hazard to anyone. If we don't, we're likely to find ourselves back in the old Bordeaux Mixture and Lead Arsenate days.

AN INTERPRETATION OF THE CAUSE OF RESISTANCE TO WETTING IN FLORIDA SOILS

I. W. WANDER,

Citrus Experiment Station,

Lake Alfred

The inability to readily wet soils which have been planted to citrus, especially through the ridge district, has been recognized for many years. This phenomenon is also to be found in gardens, lawns and noncultivated areas and is not confined to groves. This resistance to wetting varies in degree and is usually greatest in an uncultivated area such as found under a tree, although often middles which have been thoroughly cultivated exhibit considerable water repellency. Several reports[2,3,6] have discussed this property but little information is available regarding a cause or reason for these sandy soils to be water repellent. Since maximum utilization of irrigation or rainfall is dependent on uniform distribution of water through the soil it is important to understand and correctly evaluate this phenome non.

During the rainy seasons of the past three years, 1947, 1948 and 1949, differences in the amounts of water repellent soil were noted in a group of plots of grapefruit which had received different fertilizer treatments for the past 10 years. The relative amounts of water repellent soil were estimated by placing a drop of distilled water on soil samples taken from beneath trees and observing the time required for absorption. This was done by taking samples to a six inch depth with a stainless steel tube 1 inch in diameter, turning the sample tube upside down and placing the drop of water on the exposed soil surface. If the drop of water did not soak into the soil within 10 seconds, the soil was listed as water repellent, and, vice versa, easy to wet. Eighty ex-