

Little Accord on Fertilizer-Pesticide Mixtures

Five point program of public information and economic study recommended for ag chemicals industry

SPRING LAKE, N. J.—Combinations of fertilizer and pesticides are so economical from the grower's standpoint that many in the agricultural chemicals industry feel that every effort should be made to iron out the technical and legal problems concerned with their application and manufacture. The fertilizer industry, on the other hand, feels that there are no advantages for it in the practice of mixing the two. This was the picture of the situation as it was developed in a panel discussion at the National Agricultural Chemicals Association's 20th anniversary meeting here from Sept. 9 to 11.

Up to this point, fertilizer-pesticide mixtures have involved only the use of soil sterilants and fumigants. Probably most of the present use for these products is in the growing of corn, where soil insects such as the cut worm and root-worm are a big problem. These mixtures have been demonstrated to be entirely practical and economical, said Eugene P. Ordas of Velsicol Corp. during the discussion. The farmer seems anxious and ready to use the combination products because of the savings in application cost. Dr. Ordas discussed some of the technical problems involved, pointing out that we must have more information on the persistence of the pesticide in the soil, its effect on the availability of the nutrients, probability of off-flavor or crop residue, effect on soil organisms, and others.

Speaking for the fertilizer industry's side of the story was Charles T. Harding of Virginia-Carolina Chemical. He said

that it was his frank opinion and also of many others in his industry that the farmer should employ some other means of applying his pesticides than the fertilizer-pesticide route. He did admit that such a practice would offer the farmer several advantages—application economy, reduced danger to the farmer of handling poison and contaminating other farm supplies, and a more even distribution of the insecticide. On the debit side, however, he saw many more disadvantages, such as the fact that few, if any, fertilizer plants are equipped to do the mixing. The time cycle required for proper mixing would seriously affect the service fertilizer plants are now giving, he said, and the cost of the slow, intimate mixing would, in his opinion, eliminate the advantages a farmer might gain by one application.

From the equipment and plant angle, Mr. Harding said, it would be necessary for fertilizer manufacturers to design new plants especially for this operation, because of the special safety, mixing, and shipping problems encountered. The multiplicity of grades that would naturally follow the practice of incorporating odd amounts of insecticides into the number of grades the industry now offers would present the "greatest storage problem imaginable."

Another disadvantage cited by Mr. Harding is the rapid progress of the agricultural chemicals industry. What assurance, he asked, does the fertilizer industry have that goods made up containing varying quantities of these mate-

rials that are not sold in a given year will be salable in the next season?

Another big problem, mentioned by every one of the panelists, is getting a uniform mix. Such small amounts of insecticide have to be used, in comparison with the volume of fertilizer that it is difficult to get a uniform mix. Consequently, analysis after mixing seldom gives results in agreement with the amount of insecticide introduced.

C. C. Compton of the Julius Hyman Division of Shell Chemical replied to some of Mr. Harding's objections. It was his opinion that the fertilizer industry stands to gain the most if fertilizer and pesticides are mixed. He said that the use of the combination products will improve the results farmers get from fertilizer, because reduced root damage will mean better use of the fertilizer by the plant. He also contended that application savings to the farmer will give the industry a good selling point.

It was the opinion of Rodney C. Berry, Virginia state chemist, that manufacturers of fertilizer-pesticide mixtures would have to comply with the provisions of both fertilizer and pesticide laws. This presents a problem for the fertilizer industry, because most fertilizer manufacturers are not too familiar with state pesticide laws. Also, he said, fertilizer-pesticide mixers would have to comply with the federal pesticide act if their products enter interstate commerce. He called attention to the fact that the Association of American Fertilizer Control Officials and the Association of Economic Poison Control Officials, have passed similar resolutions agreeing that state control officials should not accept a fertilizer-pesticide mixture for registration unless the mixture is recommended by the state experiment station.

Particularly good for this purpose, M. D. Farrar, dean of agriculture at the Clemson Agricultural College, said, are DDT, chlordane, heptachlor, aldrin, isodrin, dieldrin, and endrin, all of which are available in granular formulations, the best formulation for mixing with fertilizers.

L. G. Utter (standing) of Diamond Alkali presided at the panel discussion on fertilizer-pesticide mixtures. Panelists were C. T. Harding of Virginia-Carolina, E. P. Ordas of Velsicol, R. C. Berry, Virginia state chemist, C. C. Compton of Julius Hyman, and M. D. Farrar of Clemson Agricultural College



Information and Economic Study

A five point program of public relations and economic study was prescribed for the agricultural chemicals industry's falling spirits after the past season of stiff competition, price cutting, and high inventory carryover. The prescription came from Lea S. Hitchner, NAC executive secretary. His recommendations:

"A reasonable expansion of our publicity and information program to in

On the Cover

One of Man's Oldest Foods

FISH HAVE been an important source of man's food since time immemorial. Other sea foods, such as oysters, clams, crustaceans of various sorts, have been used also. But there is a considerable amount of life in the sea which is not used for food. Partially because it was not economically practical and partially because not enough was known about some of these forms of sea life, they have not come into our diet. Changing economics, new knowledge and techniques, and the great pressure for more food for an increasing population might possibly change this situation to bring new marine products into use in the future. Another possible source of increased food is fish farming or fish husbandry which now is being stuided.

form the public of the facts pertaining to pesticide hazards.

"A modest expansion of our information program for the purpose of assembling data on the economic importance to the grower of pesticides.

"A program for the improvement of the quality of our materials and the possible establishment of standards (not standardization), with particular reference to physical characteristics, analytical methods, maintenance of quality in storage, and the like.

"The development of a cooperative promotional program in the world markets to publicize American pesticides.

"A study of economic factors pertaining to the industry which would include time of purchase, warehouse and storage customs, and credits."

He said he felt that these recommendations must be put into effect and effectively carried out before the "industry can get into a healthy position."

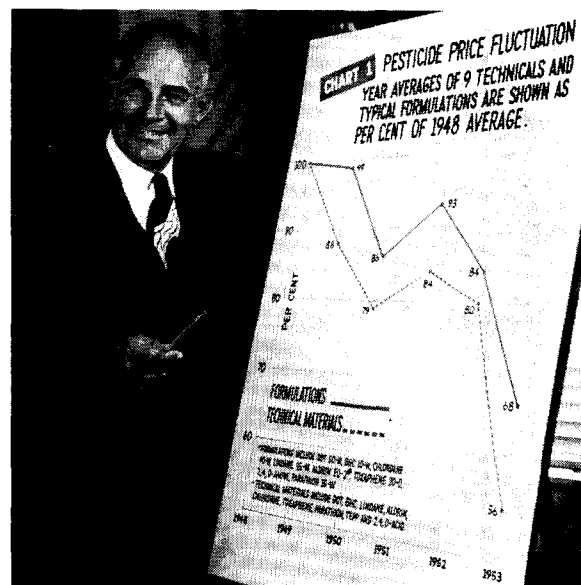
The economic status of the industry was discussed by Arthur W. Mohr, president of California-Spray Chemical and outgoing NAC president. Although he said that he was of the opinion that more pounds and gallons of agricultural chemicals have been sold this year than during the 1952 season, profits for the most part have vanished. He frankly termed the past season as one of price war, brought on by overproduction. He had prepared a chart (see photograph) which showed the falling prices received for the technical materials and formulations of popular pesticides, choosing the prices received in 1948 as 100%

Looking into the future, he said that it was hard to be optimistic, chiefly because of the industry's high inventory requirements in relation to sales, product liability, and indications of acreage allotments on certain crops next year. He said he felt that the industry's high inventory requirements, in comparison with those of the chemical industry as a whole, and product liability are factors which should bring industry a greater return on its sales dollar, because of the higher risks involved. He said he saw little chance of betterment until some of the excess manufacturing capacity is converted to the manufacture of other chemicals with better profit potential.

Fungicide Future

Fungicide research is coming of age, according to George L. McNew, managing director of the Boyce Thompson Institute for Plant Research. Much work still needs to be done on plant fungi, he said, but at the present time, it is possible to write out some chemical specifications for the ideal fungicide. The requirements, as he sees them, are:

Choice of a basic nucleus which is relatively inexpensive to synthesize. This nucleus should be chemically reactive or else be capable of bearing a reactive grouping. The toxaphore grouping must be exposed so it will react with a vitally important cell constituent such as the enzymes. The toxaphore must be protected from excessive detoxification by cell secretions by proper substituents which regulate electron density and other factors. The group must be capable of penetrating the fungus spore. It may be necessary to add a lipid-solubilizing group as a strategically located substituent. The lipid-solubilizing group must be selected carefully so it will not promote excessive penetration of foliage and fruit. The molecule must be photostable and otherwise persistent through



Arthur W. Mohr of CalSpray discussed the industry's economic status in his NAC presidential address. Chart shows price drops in the past few years

all sorts of weather conditions. The chemical must be formulated according to its chemical attributes so it may be deposited in an economical, enduring film.

Basic studies of the past few years have demonstrated these requirements, Dr. McNew stated. If such fundamental work does not continue, he said, and development work by empirical testing goes on alone, the program will eventually become unprofitable as standards of performance in fungicides increase and expenses such as for toxicological research are added to the cost of development. He said there is a great need, as evidenced by the \$2 billion dollar loss annually from plant diseases, for fungicides, and the rewards are enticing, but industry must plan beyond its immediate future if it is to realize its potentials.

Antibiotic Spray Useful Against Apple Blight

MADISON, WIS.—The successful use of antibiotics for the treatment of blight disease in apples was one of the major presentations at the meeting of the American Institute of Biological Sciences here Sept. 6 to 10.

Robert N. Goodman of the University of Missouri reported on the results of research on the use of combination sprays of terramycin and streptomycin in the control of fireblight, a disease of apples.

Dr. Goodman reported that up to the present time no adequate control methods have been available for fireblight, which is a bacterial disease particularly

active against apple trees of the Jonathan variety.

The terramycin-streptomycin mixture was administered by inoculation into the trunk of greenhouse plants which had previously been inoculated with the disease organism applied to the leaves. Within 24 hours the disease was under control, indicating that not only was the antibiotic mixture effective against the blight but that it could also be transported within the plant system.

Subsequent field trials with the antibiotic formulation applied as a spray