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Research Opportunities Open In Feeds, Fertilizers, Pesticides

Growth regulators, surfactants in fertilizers, folia-applications, trace elements, areas needing research . . . Association of Economic Poisons Control Officials may change name to Pesticide Control Officials

WASHINGTON.—The search for plant growth regulators may eventually stumble upon compounds that will stimulate plants to use the available energy and nutrients more efficiently, resulting in increased growth or altering plant metabolism so that more of the desired end products can be produced. This was the opinion K. Starr Chester of Battelle Memorial Institute expressed before the meeting of the Association of Economic Poison Control Officials here Oct. 17.

Dr. Chester outlined a number of possible and startling developments that may come from present research in the field of agricultural chemicals.

In the case of plant growth regulators, Dr. Chester said a theoretical development might be a chemical to induce a decrease in the ratio of zein to other corn proteins. Zein is deficient in the essential amino acids, which are present in other corn proteins.

Some other hopefuls mentioned by Dr. Starr would be: chemicals that would cut down the leafy top growth of plants, driving the plants' energy into producing more fruit; chemicals that would keep shrubbery and evergreens down to attractive sizes; chemicals to dwarf legumes so that they could serve as soil builders and not choke out the grasses or corn with which they are planted;

Russell Coleman (standing), National Fertilizer Association, discusses outlook for fertilizers. Listening are Bruce D. Cloaninger of Clemson, S. C., secretary-treasurer of the Association of American Fertilizer Control Officials, and Parks A. Yeats of Oklahoma, retiring president



K. Starr Chester of Battelle Memorial Institute looks into the crystal ball for new developments in pesticides

and regulators to delay the flowering of fruit trees so that the likelihood of damage from frost could be reduced.

Dr. Chester said he also believed that the day will come when suitable chemicals will be developed for manipulating the population of soil microorganisms.

In addition to the need for a basic approach instead of the Edisonian approach to new pesticide development, Dr. Chester said he thought a 'bottleneck is our comparative ignorance of the amounts of losses caused by various pests in crops and livestock. For instance, he said, insects and disease cause 35% more destruction to forests than fire, yet we spend \$30 million a year for forest fire control and only a pittance for controlling forest pests.

The meeting of the Association of Economic Poisons Control Officials was one of a week-long series of meetings of official chemists. Early in the week was the meeting of the Association of Official Agricultural Chemists, followed by the Association of American Feed Control Officials, and the Association of American Fertilizer Control Officials.

Name Change. At the meeting of the economic poison control officials, the executive committee proposed that the association change its name to the Association of Pesticide Control Officials. The report was accepted, but the constitution of the group requires that a year pass before the proposal is voted on by

the membership. It is generally believed that the membership will vote for the change.

Trace Elements. At the fertilizer control officials meeting, Aaron Baxter of the Coke Oven Ammonia Research Bureau told the chemists that their job of evaluating trace element compounds will be made more complicated since the emphasis here is placed on slow availability rather than immediate availability. Products such as FTE, Howlite, Colemanite, which provide slow availability, may simplify the problem, he feels, for they will not be as much danger with regard to plant toxicity.

He said also that the trend toward higher analysis fertilizers means that less calcium, magnesium, and sulfur will be applied in relation to the total, nitrogen, phosphorous, and potash. With heavier fertilization, he said, crops will be produced with higher requirements for secondary and trace elements. He feels that the industry must be prepared to furnish these nutrients, either in separate applications or in mixed goods, whichever is most economical to the farmer.

Foliar Applications. The amount of information available on foliar application is somewhat limited; consequently this is a fertile field for research, according to J. B. Hester of Campbell Soup Co., who told of his own experiences in this definitely growing technique of modern agriculture. For nitrogen application, urea is effective on a wide variety of crops, he said, although tolerance varies with the crop. The list of fungicides and insecticides that are compatible with urea is long, he said, which also adds to its desirability.

Surfactants in Fertilizer. Another field which needs research is question of surfactants in fertilizer manufacture. There have been many conflicting reports in this field, said Vincent Sauchelli of Davison Chemical, but it appears that surfactants may have something to offer the manufacturer of superphosphates and mixed fertilizers.

Among the advantages in superphosphate manufacture, he believes, are: a more efficient use of acid permitting a higher conversion with the same rock-to-acid ratio in an equal curing time or quicker curing to an equal conversion; a softer and drier superphosphate easier to handle and requiring less or no blasting; less adherence to equipment and, therefore, less shut down time for cleaning; and the use of higher strength acid which might increase fluorine evolution.

The manufacture of superphosphate, he said, seems to hold out the most promising opportunity for surfactants, but selection of a surfactant should be made on the basis of results which demonstrate it can produce the desired effects.

He cautioned that a fertilizer manufacturer interested in using a commercial

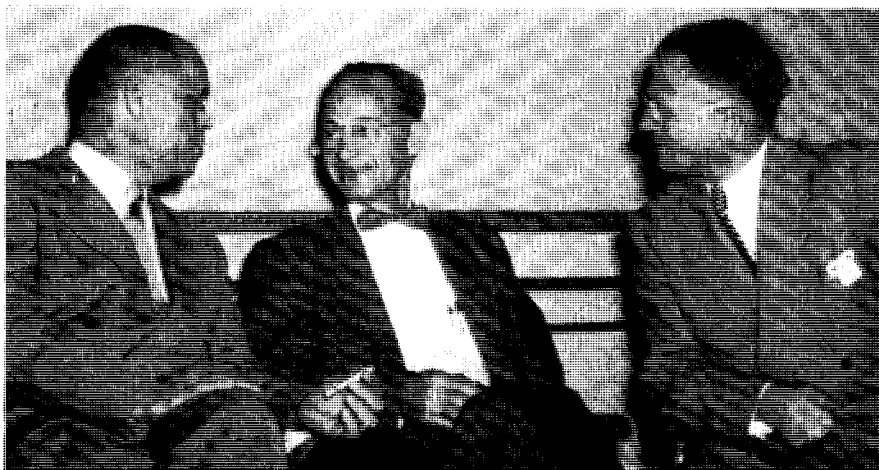


Paul T. Truitt, president of the American Plant Food Council, discusses the outlook for agriculture

surfactant should know the extent to which surfactants already occur as residues in his raw materials; perhaps he may not need additional surfactant and an excess may be harmful. Since the conditions of fertilizer manufacture vary so extensively it is almost necessary for suppliers of surfactants to provide custom-tailored service to each plant.

Feed Standards. The all-important objective to be remembered with respect to animal feeds is that they should produce satisfaction and results on the farm, said H. Ernest Bechtel, director of General Mills' Larro Research Farm. For this reason, many feed manufacturers have resisted the efforts of feed control officials to establish feed standards. It was his opinion that it is difficult at best to revise such standards rapidly enough to keep abreast of the latest feeding information. He cited the case of a swine ration, which a fiber standard would have excluded, but which was shown to be capable of supporting outstanding weaning averages of more than nine pigs per litter. Ultimately, he said, the farmer is the prime loser in such a situation.

J. F. Fudge of Texas, Rodney C. Berry of Virginia, and A. B. Lemmon of California relax together between sessions at control officials meetings



Fats in Feeds. Use of stabilized animal fats in feeds offers the feed manufacturer an opportunity to improve the quality of feeds, in the opinion of H. R. Kraybill of the American Feed Institute Foundation. He pointed out that energy-wise one pound of fat is equivalent to 2.25 pounds of either carbohydrate or protein. From the standpoint of supply, fat offers another advantage, for the 1952 surplus of tallow and grease was about 777 million pounds, while about the same amount of fat would be necessary for the addition of 2% fat to half of the total commercial feed production. By 1957, the available supply of tallow and grease is expected to be about 1.1 billion pounds.

Agricultural Economy. Some indications of improvement were seen by Paul T. Truitt, president of the American Plant Food Council, in a review of the present agricultural climate. On the plus side, he said, was a degree of farm-product price stability, indicated by the fact that although prices received in August by farmers were 13% below those of a year ago, the decline in the last six months was only 2%.

On the minus side, he pointed out, is the surplus problem, which is important because of the sheer bulk. However, he feels, surpluses are more significant with respect to the need for changing farm practices than they are with respect to their size. Another minus factor is the drop in agricultural exports—down 31% in the fiscal year ended June 30, the lowest since the 1944-45 year. This problem, according to Mr. Truitt's guess, will come in for considerable attention from USDA and the next session of Congress. What he termed a "further and long-term minus side problem" is the finding of right ways to use surplus acres being shifted from major crops. Such shift, which may amount to as much as 24 to 25 million acres, will raise problems for the fertilizer industry and control officials.