THE CASE FOR SEED TREATMENT
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Dr. Bunch has asked me to briefly outline the case for seed treatment. Some folks take seed treatment for granted, but when this attitude prevails it is usually because there is not a full realization of the importance of this practice in its widest sense.

To some people "Seed Treatment" means the application of a fungicide to the seeds of a limited number of crops, but a thorough understanding of the entire subject easily puts this phase of processing in its proper light. There should be an understanding of the uses and limitations of present-day chemicals and of new approaches.

For example, there is naturally a desire on the part of all concerned for an effective wide-range fungicide seed treatment which would also be non-toxic and non-harmful. Many companies, including our own, have screened and tested many products but to our knowledge as of today there is nothing in sight that will replace the organic mercuries in their field, nor Thiram and Captan in its field. The only residue tolerance of which we are aware that is allowable on seed is Captan on popcorn and sweet corn. This tolerance is 100 PPM but since 1 oz. of 75% Captan would give about 750 PPM it is evident that there would be difficulty in getting it passed under the food additive laws. Other than this all seed treated with toxic or other harmful substances must be labeled as unfit for food, feed or oil.

Now let me briefly outline the groups under which the various seed treatments fall, also their purpose and their characteristics.

Since the application of fungicides to seed has seniority over other chemical applications, I will mention them first. Incidentally, in 1962 it is estimated that 300 million pounds of fungicide valued at 100 million dollars were used in the United States to help control plant diseases. In spite of the increasing use of fungicides, however, the national loss to farmers and growers was estimated to be 3.8 billion dollars in 1962. Within the seed treatment fungicide group, and also because of its seniority over most other chemicals, are the organic mercuries, which are and have been one of the most versatile of all the fungicides as far as the control of seed-borne diseases is concerned. For example, reading from the label of an organic mercury seed treatment product, we find that it is registered for use on the following seed: wheat, oats, barley, cotton, flax, sorghum, rice, rye, sugar beets, peanuts,

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safflower, corn, beans, soybeans and peas. Other mercurial labels also include small seeded legumes and vegetable seed. Organic mercury was originally used in dust form, but with the possible exception of on-the-farm treating, the ready to use liquid formulations are by far the most common. Even though some of them are registered on a wide range of crops, handling practices and customs in the trade, possibly plus lack of promotion, leave some of the major crops in the U.S.A. treated with something other than mercurials. Thiram and Captan, which are usually referred to as seed protectants and which are available in wettable powder form, are widely used on corn and sorghums. Soybeans, which represent a large acreage, are being treated in ever-increasing quantities. Small seeded legumes such as clover and alfalfa are often treated at the major processor level, and the fungicide as a rule is Thiram or Captan. Vegetable seeds are often treated, as are field beans and peas, and either mercurials or protectants can be used.

Briefly, fungicides, as the name implies, are applied to seed to destroy disease causing fungi on the seed and give the seed and the seedling some protection in the soil. So much for the fungicide treatment. Now let us consider another seed treatment that in many areas can return good dividends to the grower. I refer to seed treatment with an insecticide. Many of the insecticides have repellent action as well as killing action, and they do help considerably in the control of soil inhabiting insects. There are many cases, of course, where insecticides have to be applied either at a heavier rate than can be put on the seed, or mixed throughout the soil, but in many instances the comparatively small expense involved in applying insecticide to the seed is most worthwhile. It is also much more economical than soil application. Aldrin, Dieldrin and Heptachlor are the most commonly used seed treatment insecticides, and they are available in both liquid and powder form. Another field where seed treatment is of great benefit does not even entail the use of a pesticide. I refer to legume inoculation, which is now being considered more as a seed treatment because of the fact that much of it is done at the processor level weeks or months in advance of planting. It involves the application of living bacteria which assure the legume plant the best possible nitrogen fixation and best ability for utilizing free nitrogen from the air.

A pre-inoculation of legume seed can be done, but there are certain precautions that must be observed. It should be remembered that the natural enemy of living legume bacteria is heat or warm weather; therefore, if the pre-inoculation can be done during cold weather, which will help to allow the seed to become cool, and if the inoculated seed is stored in a cool warehouse, the bacteria should remain alive on the seed for several months.

Pre-inoculation of legume seed requires the addition of something
other than the ordinary inoculant such as would be used immediately prior to planting. The pre-inoculant as sold by our company, for example, contains a nutrient substance which helps maintain the life of the bacteria. It also contains a sticker which assures the bacteria adhering to the seed. Other materials for pre-inoculation use a sticker which is designed to keep the air from the bacteria. In pre-inoculation there are two main things to be considered: First, the coolness of the seed from processing to planting time, and, second, a material that is especially formulated for pre-inoculation.

There is considerable interest in some areas and in some crops in the pelleting of seed and in this way fungicides, insecticides, growth stimulants, rodent repellents, etc., can be added.

Seed Treatment with systemic insecticides shows promise on some crops - example, cotton.

Time does not permit me to go into more detail on types of seed treatment, nor does it permit me to spend time on the technical reasons for seed treating, but I do want to give you a cross-section of the practical benefits of seed treatment in short and concise terms. Before doing this, however, I would like to point out in a most positive way that you and your farmer customers or the farmers with whom you come in contact should be aware of the recommendations that are made by your own state experiment stations. There are wide differences in seed treatment, but your local experiment station or county agent will have information on the best treatments to use for each crop. I also urge you to study the labels of each product and to follow the recommendations contained thereon. On any chemical the label should be considered as a factual, concise technical bulletin. The manufacturer must live up to the claims as stated thereon and the processor should follow the directions which are outlined on each label.

Here, then, is the payoff as far as seed treatment is concerned:
Gentlemen, I will rest the case for seed treatment with the hope that I have reaffirmed in all of your minds the fact that the treatment of seed is important, that the field is ever-widening, and that those of you who are in a position to do so will exert even more effort toward persuading all farmers that they should treat all seed, and that they should look into all of the benefits, including fungicides, insecticides and inoculants.