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# EC1807 Treat All Seed of Cereal Grains before Planting

J. E. Livingston

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## Treat All Seed of Cereal Grains Before Planting



Cooperative Extension Work in Agriculture and Home Economics  
University of Nebraska College of Agriculture, and the United States  
Department of Agriculture cooperating, W. H. Brokaw, Director, Lincoln.

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Ec1807



E. C. 1807  
TREAT ALL SEED OF CEREAL GRAINS BEFORE PLANTING  
Dec 1948

J. E. Livingston

WHY?

Seed treatment controls all smuts of wheat, oats, barley and sorghum, except loose smut of wheat and barley and smut of corn. The smuts are introduced into the new crop on the seed. By treating the seed that is carrying these smut spores, it is possible to kill the spores and thus control the disease. Occasionally bunt of wheat may be only partially controlled by seed treatment because of contamination of soil with bunt spores at harvest. This will only be a hazard when wheat is replanted in a field, shortly after it was harvested, that has grown a crop with heavy bunt infection. In view of the small cost of seed treatment, this method of disease control is one of the best means of insuring that a good disease-free crop will be produced.

Seed treatment offers more than smut control. With many crops it has been found that more uniform stands result. This benefit varies considerably from season to season, usually being greatest in seasons when the soil conditions are unfavorable for rapid germination and emergence of the seedling.

WHEN?

Seed may be treated at any time prior to planting. It is best, however, to treat from one to several days before planting. This results in better control of smut and alleviates the problem of providing a good dry storage. Experiments have shown that treating may be done safely several months prior to planting provided the treated seed is stored in a dry, well aerated place.

WHAT TO USE?

The chemicals to use will depend somewhat on the crop to be treated. The following materials are recommended and used generally in Nebraska:

WHEAT - New Improved Ceresan, Copper Carbonate. Either material is satisfactory.

OATS - New Improved Ceresan gives the best control of smut. Spergon gives only fair control. Formaldehyde gives satisfactory smut control but requires more skill to use. There is more danger of injuring the germination of the seed when using liquid formaldehyde treatments than when using the dry dust materials.

SORGHUM - New Improved Ceresan, Copper Carbonate, and Spergon all give satisfactory control of kernel smut. In addition Copper Carbonate and Spergon occasionally give as much as 100 per cent increase in stand. The effect varies with the season, time of planting, and the variety. Some varieties respond to seed treatment much more than others and, of course, increase in stand and vigor will be greater when the soil moisture and temperature are unfavorable for the rapid germination and growth of the new seedling.



CORN - Smut of corn is not controlled by seed treatment. Seed treatment of corn is for the purpose of improving the stand and vigor of the plants. Spergon and Arasan have largely replaced the organic mercury materials because there is practically no danger of injury to the germination of the seed when treated several months before planting.

**CAUTION** - All seed treating materials should be regarded as poisonous and handled with care. Although some of the newer materials are not actually poisonous to human beings, they occasionally cause irritation and discomfort to certain individuals.

#### TREATING EQUIPMENT

Figure 1. Seed cleaner and treater in operation.

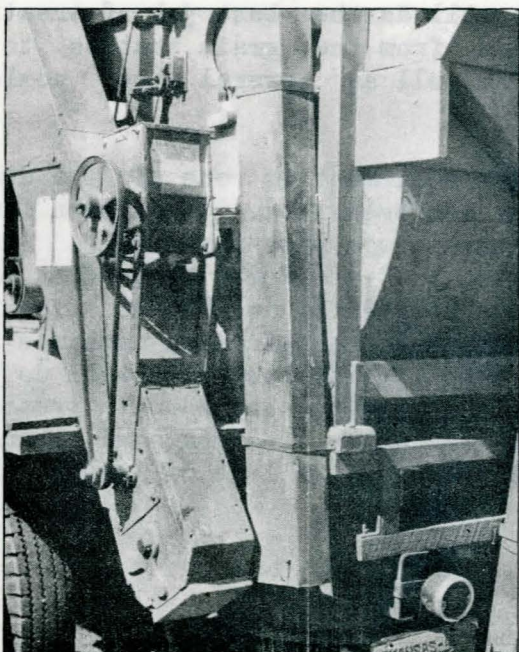


Figure 2. Attachment for automatically feeding the seed treating materials on the grain as the grain is delivered from the cleaner into the loading elevator.



### TREATING EQUIPMENT

There are many types of equipment that can be used for treating seeds. Home-made treaters such as the Gravity and Barrel Treaters give satisfactory results. A cement mixer will also do a good job of mixing. Mixing with a shovel by scooping the grain and treating material over at least three or four times will do a satisfactory job if done carefully and the grain covered 24 hours after mixing.

To accomplish seed treatment on a community-wide basis, the use of portable seed treating equipment, such as shown on the cover and in Figure 1, is necessary. There are several types of portable cleaner and treater combinations that are well adapted for use in Nebraska. There are already numerous cleaners being used in this state and it is easy to attach an automatic dust feeder, such as shown in Figure 2, to add the treating material to the cleaned seed. It is also possible to attach this automatic dust feeder to small grain combines and to small portable elevators. By attaching the feeder ahead of the elevator, the grain and treating material will be well mixed by the time it has been elevated into a wagon or grain bin.

In view of the widespread need for seed treatment in Nebraska, the portable cleaner and treater has a great deal of promise. In western Nebraska there is a need for seed treatment of wheat, in particular, to control stinking smut. It is also very important to treat oats, barley and sorghum to control smut throughout Nebraska. Seed treatment will greatly increase stands of sorghum and also of oats in areas where *Helminthosporium* blight and root rot become established. Portable seed cleaning and treating equipment will do the best job of treating the seed, and will also remove many weed seeds from the grain that is to be planted. This is important with bindweed, as well as several other noxious weeds, being prevalent in the state.

The cost of portable cleaning and treating equipment is one of the drawbacks. However, in states where this equipment has been used, it has been found that on a commercial custom basis treating equipment soon pays for itself. Combination cleaners and treaters will cost between \$300 and \$500, depending primarily on the type of cleaners purchased. If one desired to use homemade equipment, it is possible to purchase one of the automatic dust-feeding machines for about \$25 and attach it to a combine or some type of elevator which will do the mixing. Then, of course, there are the homemade gravity and barrel treaters which can be made for around \$5. For information about treating and cleaning equipment, write the Department of Plant Pathology, College of Agriculture, Lincoln, Nebraska.