

Three Years' Experience with Batch Spray Treating of Beet Seed

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The Spreckels Sugar Company has processed and spray treated more than one and one-half million pounds of seed during the past three seasons. This accomplishment is a testimonial to a cooperative development program which combined the efforts and ideas of Experiment Station specialists, mechanical engineers and the too often unpraised operators of seed processing stations. Experience had proved that growers were doing an unsatisfactory job of seed treating with makeshift equipment in the field. Dust treating, prior to issuing seed at a central point, creates a dust hazard and most fungicidal materials are either toxic or skin irritants.

Preliminary experiments, conducted jointly with the Plant Pathology Division of the University of California, indicated the feasibility of spraying fungicides on beet seed and possible elimination of many of our seed treating problems. Dr. L. D. Leach² contributed the pioneer work in proving the effectiveness of fungicide suspensions sprayed onto sugar beet seed.

The original spraying equipment, which consisted of two Batch Spray Treaters, one installed at Woodland, California, and one at Spreckels, California, was designed by A. A. Armer³. Some minor alterations have been made each season to improve our seed coverage and to reduce clogging of nozzles. In order to make improvements as rapidly as possible different approaches have been used at each plant with the same objectives in view. At the Woodland plant improved seed coverage has been obtained by slightly changing the shape of the mixing drum and adding a third nozzle to the spray manifold (Fig. 1). Increasing the speed of the spray pump has provided an optimum pressure range.

The changes at the Spreckels plant consist of one additional nozzle on the spray manifold and complete elimination of the pump by use of a compressed air supply to maintain the desired pressure on the spray liquid (Fig. 2).

The materials used in the batch spray application of fungicides were developed by the U. S. Rubber Company's Naugatuck Chemical Division. Continued improvement by this manufacturer of his product has eliminated earlier objections to characteristics of abrasiveness and inability to remain in suspension. The product now furnished us by the XJ. S. Rubber Company labeled "Phygon Paste—55 percent dichloro naphthoquinone—'Micronized'" can be readily kept in suspension by use of an agitator in the storage tank. This material with its small particle size lends itself to the use of smaller nozzle orifices and thus provides a longer spraying period with better

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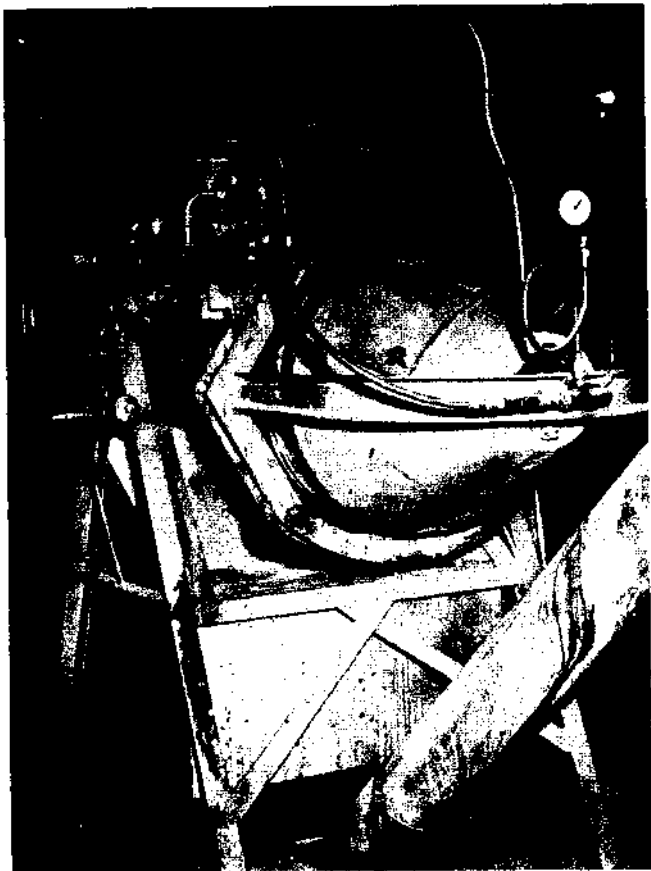


Figure 1. The Woodland spray treater after rebuilding. Changes included a conical end on the drum for better seed mixing and a 200 percent speed increase on the gear pump.

coverage. With the original Phygon Paste, the spray mixture contained 1 part Phygon Paste, 1 part beet molasses, and $\frac{2}{3}$ part water. This material was applied at the rate of one quart to fifty pounds of seed. With the improved material the molasses has been eliminated entirely, and at present a mixture of 1 part Phygon Paste to 20 parts of water is applied at the same rate with very satisfactory results.

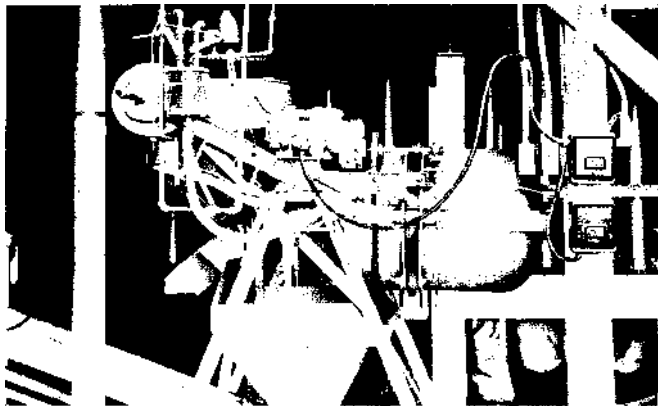


Figure 2. The Spreckels seed treater after rebuilding. Spraying pressure is obtained by admitting compressed air to the metering chamber for spray fluid.

Batch spray treating of beet seed has proved to be an indispensable addition to a seed processing plant. Some of the advantages are:

1. Seed is furnished to growers ready to plant, dust-free, and properly treated with selected fungicides, insect repellents, or combinations of both.
2. The dust nuisance is eliminated in the processing warehouse and the operators are protected from toxic or skin irritating materials.
3. Accurate metering of both seed and treating materials can be accomplished by unskilled operators.
4. Seed returned by growers is acceptable for credit due to its good storage characteristics.
5. The batch method of treating synchronizes well with associated processing operations, and accommodates itself to a wide range of seed rates.