Beet Seed Decortication with a Commercial Huller

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Among the steps directed toward an ultimate mechanized program of sugar beet production, the processing of seed has become a necessity. The decortication of beet seed is a further step toward the goal of complete mechanization.

In April, 1947, it was decided that decorticated beet seed would be issued to growers for the ensuing crop year. Various manufacturers of seed-processing equipment were approached and samples of whole seed were submitted for processing. After the products obtained from each of the manufacturers' machines were analyzed, it was decided that the Forsberg Seed Huller would most closely meet the requirements. It must be realized that other machines also had possibilities, but time did not permit further experimentation with these machines.

The Forsberg Seed Huller is manufactured by Fred Forsberg and Son, Thief River Falls, Minnesota. This machine consists of a rubber-lined, tapered cylinder rotating in a rubber lined, tapered chamber. The seed follows a helical course through the anular space between cylinder and chamber. A 5-horsepower motor is required for the operation of this machine, which includes a suction fan and dust separator.

Decortication is accomplished by the action of the cylinder rubbing and rolling the seed against the outer liner. Radial clearance between the cylinder and liner ranges from zero to three quarters of an inch. Clearance is determined by an axial screw adjustment on the outer chamber.

Before entering the huller, the whole seed is first reduced by a shearing machine employing a steel cutting wheel with the shear bar clearance set between .110 inch and .164 inch, depending on the size of the individual seedlot being processed. From the shearing machine the seed passes into the Forsberg Seed Huller, then to the cleaner, screened in size between 7/64 inch and 10/64 inch, and finally to air classification.

The capacity of this machine varies from 300 to 700 pounds of whole seed per hour. This range is due to variation in size of seedballs of individual seedlots, speed, and clearance setting of the cylinder.

Heretofore, the capacity of the cleaner has been the limiting factor in determining the hourly rate of seed processed. This is no longer the case as the cleaner will handle the total capacity of the Forsberg Seed Huller.

The life of the rubber on the cylinder is approximately 40,000 pounds of seed, while the life of the rubber liners is approximately 150,000 pounds

[1]Spreckels Sugar Company.

of seed. Foreign articles, such as rocks, wire, etc., will cause sufficient damage to require the replacement of the above materials at more frequent intervals.

The speed of the cylinder apparently affects the germination. It was found that high speeds reduced germination whereas moderate speeds of 800 rpm or below gave no significant differences in germinations of the processed seed as compared to the original seed.

Overall recoveries have been slightly increased by the use of the Forsberg Huller. Here again, recoveries also vary with the individual seedlots.

From the results to date, it is evident that:

1. The hourly capacity of the cleaning and grading equipment has been greatly increased, thereby increasing the daily production of processed seed.

2. The resultant product is more dense and more spherical in shape than segmented seed or blends of screened and segmented seed.

3. Satisfactory stands have resulted from the use of this product in precision planters.

4. Operations to date have been commercially successful, yielding a product which has been acceptable to growers.