

SEED CLEANING EQUIPMENT FOR REMOVING PULP FROM BLACK CHERRY

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In 1968, it was evident that a sizeable crop of black cherry seed was developing. Faced with the job of cleaning seed from most of the plus tree selections in the Black Cherry Seed Orchard Program, we constructed a motor-driven machine to clean the black cherry seeds.

Removing pulp from black cherry fruit is desirable when storing large quantities of seed. Pulp removal also facilitates handling of the seed, and increases and speeds up germination. A food mill has been used in the past for cleaning small seedlots (up to 2,000 seeds) at the Forestry Science Laboratory, Warren, Pa. This method works well for small seed lots, when the fruit is fully ripened. About 2 lbs. of fruit can be cleaned in a single "batch" using this equipment. Depending upon the ripeness of the fruit, it takes about 30-40 minutes to process a single batch of fruit, using the food mill. The worker is continually occupied during this time either turning the crank or rinsing the pulp from the seeds under a stream of water. This

process is a tedious and time-consuming job for large quantities of fruit.

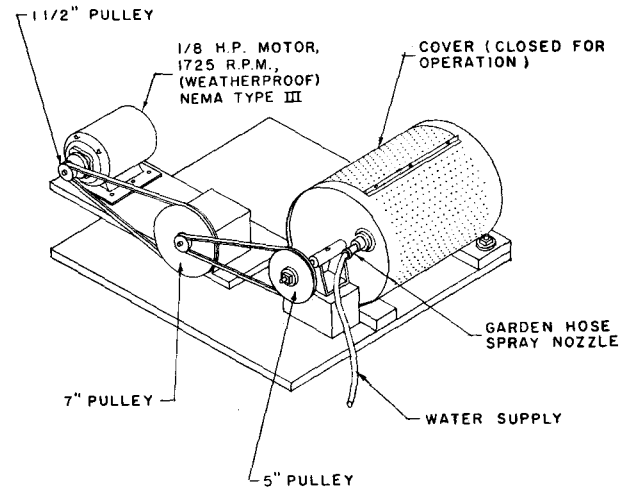
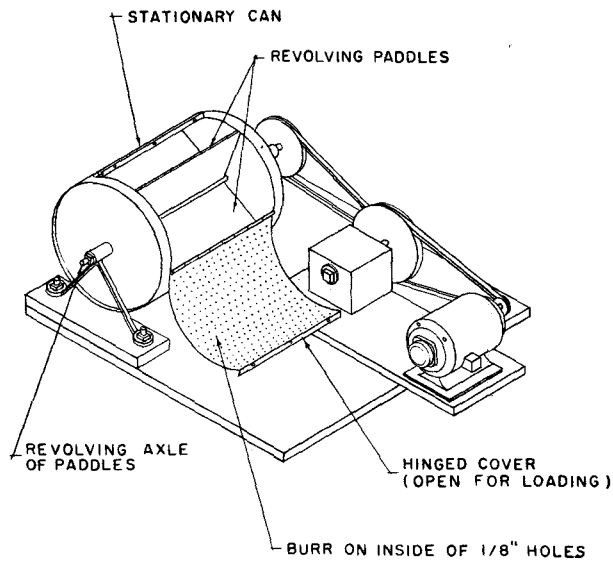
We took a 5-gallon can equipped with a plastic pouring spout in the lid. Several dozen $\frac{1}{8}$ -inch holes were drilled in the side so that the metal burr on each hole was on the inside of the can (figs. 1 and 2).

Four steel paddles were welded to an axle running through the can. Turning the axle caused the paddles to revolve inside the can leaving a clearance of about $\frac{1}{8}$ inch between the edge of the paddles and the inside of the can. A hinged door was cut in the side to permit loading the equipment with fruit. The lid was removed to permit installation of the axle and paddles, then securely fastened, and not removed again.

The paddles were driven by an electric motor. We found that it was necessary to use two pulleys to reduce the r.p.m. of the paddles to a satisfactory speed. While the paddles are in motion, a constant spray of water can be directed inside the can by attaching an ordinary garden hose with a spray nozzle to the plastic pouring spout. The water flushes the pulp through the numerous holes drilled in the can. Approximately 20 minutes of machine

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Figures 1 and 2.—Seed cleaning equipment.

operation were usually sufficient to clean a batch of fruit. The capacity of the machine is about 20 pounds of fruit. While the machine is running, the worker is free to do other work, such as drying, weighing, packaging, and labeling previously cleaned seed lots. To recover the cleaned seeds, stop the machine, open the hinged door, and scoop out the seeds from each of the four compartments, moving the paddles by hand to make each compartment accessible to the open door.

The water stream does not wash all the pulp off the seeds, particularly the fruit skins. These have to be floated off in a bucket of water after the seeds are removed from the machine.

Fruit that is not fully ripe does not clean well by either method. About the same number of seeds are broken by both methods—probably less than 1 percent, although this was not determined by actual count.

The time required to process black cherry seed by this method was about 1/20 of that required by the hand method. About 80 man-hours were required to clean, dry, and package the nearly 800

pounds of fruit collected, which yielded almost 1 million seeds.

Most of the parts of the seed cleaning machine were from discarded or obsolete equipment. The cost of new parts and welding the paddles to the axle was \$4.00. We needed 16 hours to build the machine, but if a second machine were constructed the time would be greatly reduced.

The rough burrs on the inside of the can tended to wear smooth after processing many batches of fruit. As a result, it took longer to effectively remove the pulp. We suggest that anyone making a copy of this device for cleaning cherry seeds or similar uses, obtain a container having a coarse abrasive lining more resistant to wear than ordinary untempered steel.

Certain precautions should be taken by anyone building a copy of this apparatus. The motor should be of the weatherproof type, with a weatherproof switch. Wiring should be hard service flexible cord with a grounding conductor, to ground the motor. These precautions are essential for safe operation as considerable quantities of water are used for flushing the drum.