

Flushing carrots and fluming them from truck removes 90% of field soil

Low-cost, total recycling of wash water

Centrifugal separator removes 98% of soil at energy cost of 8 psi pressure during pumping

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New Solutions to Plant Problems

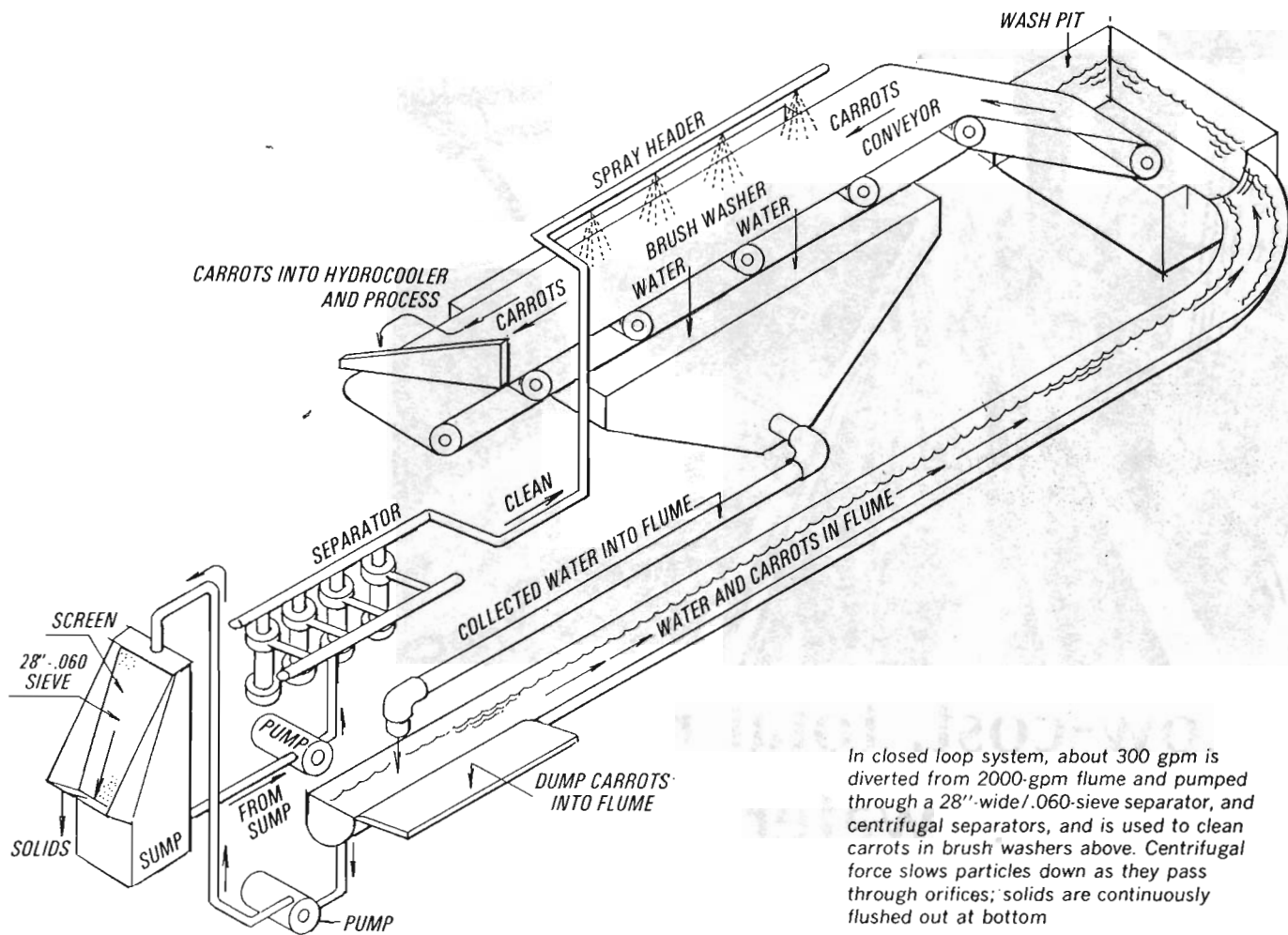
PROBLEM: Washing soil from root vegetables takes a lot of water. The Mike Yurosek & Son company is one of the largest suppliers of fresh carrots in the U.S., with their own Bunny-Luv brand, and as a private label supplier. The Lamont, California, plant uses approximately 4000 gpm of wash water in processing around 500 T/day of carrots, the year round. About 65-70% are shipped in 48-lb master bags for retail use. With water in short supply and waste disposal expensive, wash-water recycling became attractive.

SOLUTION: Wash water is recycled continuously. Two settling ponds, each 60' by 150', serve as surge reservoirs. From here, water is pumped for use in fluming the carrots. The flume water is used for flushing the carrots from the trucks (see photo). This flushing removes 90% of the field soil. Carrots go through a brush washer (see diagram), and then through sorting stations, where small sizes and misshapen carrots are removed as culls. The desired sizes are hydrocooled, then go through a second brush washer. Potable water sprays over the carrots in the final section.

A portion of the flume water is pumped through a patented, cylindrical, solids-liquid separator. Here, water enters an annular space at top; flow velocities decrease as solids are spun inward through orifices toward the center, rather than outward as in conventional cone-shaped cyclone separators. The cleaned water exits at the top; solids settle to the bottom, where they are continuously flushed out and returned to the settling pond. Trash is screened out through a stationary, curved screen separator before entering the four centrifugal separators. Flow through the four separators is 200-300 gpm total. A similar system is in operation at the Yurosek plant at El Centro, California.

Water in the hydrocoolers and in the final sprays is chlorinated at 100 ppm. Chlorination of these flows, which cycle through the ponds, is enough to keep the reservoirs, flumes, and equipment free of bacterial, fungal, or algal growth.

RESULTS: The low-cost, self-installed recycling system effectively recycles all wash and flume water, with exception of a

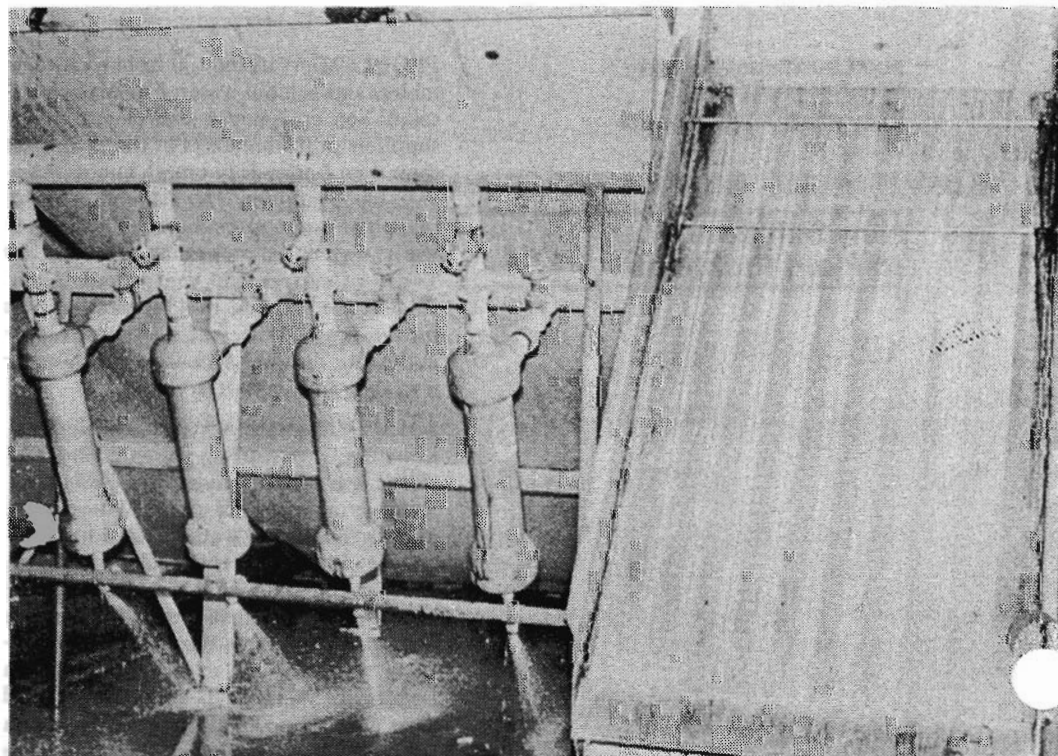


In closed loop system, about 300 gpm is diverted from 2000-gpm flume and pumped through a 28"-wide/.060-sieve separator, and centrifugal separators, and is used to clean carrots in brush washers above. Centrifugal force slows particles down as they pass through orifices; solids are continuously flushed out at bottom

small amount sprayed during final rinse, and water carried out with product. Re-cycle system requires no extra energy except to handle a pressure drop of about 8 psi to pump the water through the centrifugal separators. Separators remove 98% of soil particles 44 microns (325 screen size) or larger. Best of all, there is no waste water to treat. END

Laval separators are described in Bulletin 220, "Equipment and Applications," available from Laval Separator Corp., P.O. Box 6119, Fresno, CA 93703.

Hydrosieve® screen and technical assistance were provided by C-E Bauer, a division of the Process Equipment Group of Combustion Engineering, Inc., P.O. Box 968, Springfield, OH 45501.



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