Space Technology for Crop Drying

A new system for drying farm produce, derived from the space simulator, leads a sampling of food and agriculture spinoffs.
MIVAC, its developers say, offers bonus value in that it does a better job of drying more easily damaged crops—rice, for instance. The hot-air-blowing process often hardens the outer surface of the seed, making it difficult for internal moisture to escape; this may cause cracked grains of reduced quality. Microwaves heat rice—and other products—evenly from the inside out without hardening the outer coating, thereby obviating possible damage to kernels or grains.

At the Tifton pilot plant, MIVAC is being used to dry a number of agricultural products, such as rice, wheat, peanuts, soybeans, corn and pecans. Change of product entails no change of equipment. A small scale experimental facility, the MIVAC unit at Tifton has limited capacity. Corn, for example, is dried at the rate of seven bushels per hour. But it is possible, within existing technology, to scale up the system for a capacity of 1,000 bushels hourly. With anticipated development of advanced technology, capacity could be increased substantially further.

MIVAC is undergoing a two-way evaluation. The Department of Agriculture is examining results from the standpoint of product quality and processing cost. The Department of Energy is determining what energy savings MIVAC affords in comparison with existing systems.

Successful initial crop drying experiments led to development of the Microwave Vacuum Drying System (MIVAC). At left is an interior view. The long cylinder is the vacuum chamber; wet crops enter through the top funnel and emerge dried through the exit hatch near bottom. At surface level is the microwave generating equipment.