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Variety
Guide

New Storage Method Locks in Freshness

West Texas Mystery Disease Identified
A New Look in Storage

Domes provide the first new innovation in storage since the 1960s.

by Jina Martin

Something different could soon be popping up along the peanut-industry landscape.

Research is currently underway at the U.S. Department of Agriculture-Agricultural Research Service National Peanut Research Laboratory (NPRL) in Dawson, Ga., as well as at Doster Warehouse in Rochelle, Ga., to determine if dome-storage is a feasible option for peanuts.

Two 122-foot diameter domes were constructed at Doster Warehouse and each was filled with approximately 5,500 tons of farmers’ stock peanuts. Both domes have been outfitted with instruments that will measure temperatures during the storage period.

“We will measure the change in peanut quality,” says Chris Butts, agricultural engineer at the NPRL. “The goal is to store peanuts through the summer with less deterioration due to storage conditions.”

Four 12-foot diameter domes were built at the NPRL at the same time the 122-foot domes were built at Rochelle through a cooperative agreement with Doster Warehouse. The smaller domes hold about five tons of farmers stock peanuts.

“Two of the domes are being aerated by pulling outside air down through the peanuts and then exhausting the air,” Butts says. “In the other two of the domes, air from inside the dome is cooled and dehumidified using air conditioners then recirculated back through the peanuts. No outside air is introduced into these domes.”

Then, sometime in February, the air in two of the domes, one chilled and one ambient, will be flushed with nitrogen and a low-oxygen atmosphere maintained.

“This should stop any flavor deterioration, insect activity and mold growth,” Butts says.

Peanuts will be stored until August, and flavor, oil stability and seed germination will be measured.

What Makes a Good Dome?

Butts says that many of the same design parameters that are used in conventional storage carry over to dome storage.
"The loading system should distribute peanuts including foreign material uniformly during loading and avoid the concentration of dirt and LSKs, if possible."

Currently, Butts says aeration systems should be installed that pull air down through the peanuts at a rate that exchanges the volume of air at least once every 15 minutes. The duct system should distribute air uniformly through the peanut mass.

The structure is much simpler to construct compared to conventional farmers' stock warehouses, Butts says.

"A four to five person crew built the 122-foot domes in Rochelle in less than 45 days," he says.

Benefits to Dome Storage

Besides being easier to build, domes have a variety of benefits.

"The expected benefits include more stable temperature environment with minimal condensation provided that the aeration systems are operated appropriately," he says.

If peanuts need to be fumigated, a dome should be easier to seal and properly fumigate.

"It may also be feasible to use low-oxygen storage similar to techniques used in storing Vidalia onions to preserve the quality for longer periods of time," Butts says. Depending on the cost, domes may be a viable option for on-farm storage.

"It could reduce the cost of storage because of reduced losses due to aflatoxin and insect damage in storage," Butts says. PG

Tifton Quality Peanuts

Tifton Quality Peanuts LLC will have three domes standing on their property ready for storage by June of this year.

"They have created a lot of interest as most people have never seen anything like this," says Larry Lemley, CEO and president of Tifton Quality Peanuts. "The dome is 85-feet high and 170-feet in diameter."

Tifton Quality Peanuts was formed after research indicated that there were benefits to growers owning their own shelling facilities and becoming more integrated within the supply chain to manufacturers, says Alan Collins, who is in charge of sales, marketing and logistics for the company.

Each dome at Tifton Quality Peanuts will store 11,000 tons of peanuts, for a total on-site storage capacity of 33,000 tons.

"The most important feature of these unique buildings are that we can control temperatures, we can eliminate humidity and condensation and that we can control infestation," Collins says.

This differs from traditional farmers’ stock warehouses where temperatures can fluctuate dramatically and cause humidity and condensation problems.

"As each dome warehouse is almost airtight, we can fumigate once and then control the interior by nitrogen flushing creating an environment hostile to bugs, rodents and general infestation," Collins says. "The quality benefits will be enormous and instantly recognizable." PG

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