

Microprocessor Improves Roller Ginning Efficiency

Although Eli Whitney is credited with inventing the saw-type gin stand in 1794, roller-type gins were used centuries earlier in India and are still used to separate delicate, extra-long-staple cotton fibers from seed. But today's roller cotton gins are much larger and more efficient, and they continue to evolve.

The latest improvement comes out of the Agricultural Research Service's Southwestern Cotton Ginning Research Laboratory in Mesilla Park, New Mexico. Engineers there used a microprocessor to automatically control the rate at which cotton is ginned.

If fed too fast, a roller gin stand will clog, possibly causing up to \$1,200 in equipment damage and requiring several hours to repair and readjust. If fed too slowly, the gin is inefficient and costs are greater.

"Basically the controller senses how much electrical power the gin's rotary knife is using. If there is a heavy draw, it means the machine is working harder and may plug. The microprocessor then slows the feeder," says Marvis N. Gillum, ARS agricultural engineer at the lab.

Gillum sought readily available electronic components to keep assembly costs low and reliability high. He was assisted by Carlos B. Armijo of the Agricultural Experiment Station at New Mexico State University in Las Cruces, New Mexico.

Glenbar Gin in Pima, Arizona, helped test the new controller application on one of their 12 gin stands during the 1993-94 season. It was so successful that they are now using controllers on all of their stands. They estimate the controllers raise their processing rate by 10 percent or more. That translates into additional savings of \$50 to \$75 per hour for the plant.

The electronic controller will help growers of extra-long-staple domestic Pima cotton compete better with foreign producers.

"These specialty cottons have become more popular in recent years but take up to five times longer to roller-gin compared to shorter fiber upland varieties that are saw-ginned," says Sidney E. Hughs, ARS agricultural engineer and research leader at the lab.

The engineers say other roller ginning plants have expressed interest in the device.—By **Dennis Senft**, ARS.

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