Will mechanization soon bring relief to burley producers?

Burley harvesters enter the market to help offset labor shortages
By George Duncan and Larry Wells

Burley tobacco producers were plagued this past season with abundances and shortages — abundances of rain at the wrong time, and shortages of labor for harvesting and stripping. However, there was some resurgence of hope for labor relief with the demonstration of three commercial burley harvesters and a new experimental model at a field day sponsored by Philip Morris USA at Mark and Dale Roberts' farm near Pleasureville, Ky. Innovative stripping aids are also emerging.

AUTOMATED HARVESTER

The former "Big Red" self-propelled automated harvester, developed during the past decade by University of Kentucky agricultural engineers, is now being commercially manufactured as the GCH Gold Standard by GCH International of Louisville, Ky.

The machine is capable of harvesting up to 5 acres per "normal" day but could continue harvesting at night for additional production. Sturdy 8-by-14-foot metal frames receive and support approximately 448 plants in the eight slotted rails of each frame. Approximately 15 or 16 frames are required per acre.

Five empty frames are loaded onto the harvester at a time using an extended-reach, all-terrain forklift. A filled frame is set off the harvester on self-contained support legs. Later, the forklift moves the filled frames to a sod area where they are covered with special poly tarps for curing. Two workers are required for the harvest.

The price for the machine is quoted at around $379,000 and frames at about $10,500 to $13,000 per acre. Thus, a system for large, annual-harvest acreage will be a major investment and likely will involve options for corporate financial support, leasing and/or custom harvest.

MARCO HARVESTER

A plant-notching harvester is being built by MarCo Manufacturing Co. LLC of Bennettsville, S.C. It is a tractor-mounted, three-point-hitch machine powered by a PTO-driven hydraulic system that cuts, notches and conveys the plants onto a wagon pulled alongside. Transport and hanging details are described in following paragraphs. The current model 6026 machine is quoted at $27,500 free on board from factory.

KIRPY HARVESTER

A French manufacturer has developed a special tractor-mounted and hydraulically powered machine that was imported this past season. The Kirpy harvester uses a small log-chain-type conveyor with small spike-laden, metal plates that convey plants from a standing position to deposit them horizontally onto a flatbed wagon pulled alongside the harvester.

A special requirement experienced by the trial users in the United States is that the tractor must have a very slow "creeper" ground drive (0.6 to 1 mph) while running the PTO at near 540 rpm for proper hydraulic flow and pressure.

The Kirpy machine is being marketed by a U.S. distributor, PT Equipment of Pilot Mountain, N.C. It is quoted at around $23,000 fob distributor with future prices likely affected by money exchange rates and shipping costs.

Both the MarCo and Kirpy harvesters can fill a farm wagon rather quickly with the loosely stacked plants, usually from 400 to 500 feet of row length. Multiple tractor and wagon units — probably three or more — are needed to shuttle wagons from the harvester to the wire-type field-curing framework to get maximum productivity of the harvester of about 2 to 2.5 acres per normal day.

FIELD-CURING STRUCTURE

The MarCo and Kirpy machines require a high-tensile wire field structure for hanging the notched plants for curing. Strong construction is essential as several hurriedly built frameworks partially failed this past year after loading.

Eight to 10 workers are needed at the high-tensile wire framework to unload the wagons to maintain continuous harvester operation. Thus, the systems need a total crew of 11 to 13 workers to harvest 2 acres or more per day.

An advantage of this method is the workers are handling only one plant at a time rather than a heavy stick of plants. All structures should have some form of plastic cover to protect the tobacco from rain and wind during the cure.

The leaf breakage from piling the plants onto the wagon and removing them appears to be somewhat greater than with normal manual harvest, depending on the condition of the tobacco at harvest and worker care in removing tangled plants from the wagon.

PROTOTYPE RAIL HARVESTER

A new machine for harvesting burley is under development by the UK Department of Biosystems and Agricultural Engineering. The experimental system is similar to the automated harvester's functions but involves a tractor-drawn harvester that cuts, conveys, inverts and notches whole burley plants. Notched plants are inserted into slotted 10-foot-long steel rails holding 40 plants each. Ten filled rails are unloaded on the go by the harvester onto the ground.

A tractor-drawn retriever/transporter picks up the 10-rail loads and transports them to field-curing structures. The rails are unloaded upon and supported by such structures, and covered later for rain and wind protection. Preliminary estimates indicate a harvesting capacity of 0.3 acres per hour for two workers. Potential machine cost is unknown.

STRIPPING AIDS

Two mechanical stripping machines are known to be under development, but they had not been publicly demonstrated by late 2006. Several innovative mechanical stripping aids are emerging from producers. Stalk choppers and conveyors for removing stalks from the stripping area are also under development.

More details on the equipment described and manufacturer's contact information can be obtained from these Web sites:

- *www.bae.uky.edu/ext/tobacco*
- *www.gchinternational.com*
- *www.kirpy.com/en/cadre_EN.html*
- *www.marcomfgllc.us*