

New Row Crop Head

(Continued from cover page)

cutterbar. Some 600 units were sold. In the late 1970's, Massey Ferguson licensed the row crop head design from Pavel and introduced their version of the head at the 1977 Farm Progress Show (see FARM SHOW's Vol. 1, No. 6, issue). The company later decided to shelve the unit. MF's Jack Winslow worked with Pavel and his row crop head at the time.

"There are still people in the company who think we should have gone ahead with it but we had other priorities at the time. Like any new product it had bugs to work out. For example, there was a counterbalancing problem that caused the snouts to bulldoze, forcing the bristle belt to buckle over and stop gathering. We felt the problem could easily have been solved but the company decided to commit their resources to other areas," says Winslow, who says he's monitoring progress of the new head. "I hope it works out because it's a good idea and Deere could use some competition in that market."

Pavel says the problems Massey experienced with the head were production problems not due to the design. "They gave me the machines they'd built. I fixed the problems and then sold them. I know of several that are still in use," he says, adding that his production units are now lighter than Massey's and designed with pressure-regulated skid

shoes that eliminate any problem with bulldozing.

Each row unit on Pavel's header is fitted with an upper and lower set of gathering brushes mounted on V-belts. As the bristles come together on the row, they interlock to form a flat surface that holds the stalk upright and catches shattered seeds that fall. "You can pour a gallon of loose beans directly onto the brushes when they're running and not a one will get through to the ground. The bristles carry them on up to the auger," says Pavel. "Most crop loss in a dry crop is caused by the reel slapping against the crop and from the impact of the sickle on the stalk, especially if sections aren't sharp or if the sickle is running unevenly. That won't happen with my cutting system, which is reelless and the only one of its kind. It's unbelievably efficient."

The cutting system for each row consists of two self-sharpening notched discs that overlap each other by several inches. The key to their quick-cutting ability is that one of the discs spins twice as fast as the other, according to Pavel. "The notched, beveled cutting edge actually draws in the crop unlike a conventional sickle which can bounce stalks away. The discs cut so quick and forcibly, they'll slice right through a wooden broom handle," Pavel points out.

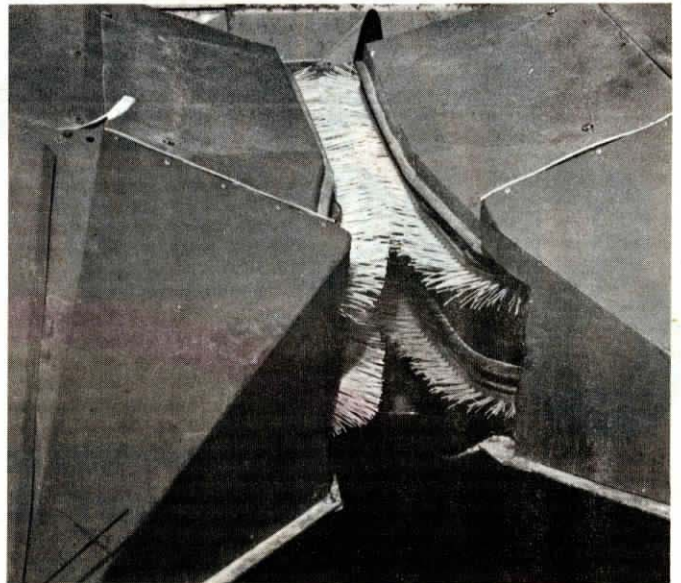
Row units mount on a "dummy" grain platform head that has been stripped of sickle, wobble box, and reel. Each unit is hinged at the edge of the platform and floats independently on a skid shoe that follows the ground contour. Height of cutting discs can be varied from 1 in. below ground to 4 in. above ground. To cut sunflowers, corn, or any other crop that needs a higher cut, the head is locked into a raised position.

Because the cutting discs are positioned below the lip of the platform, dirt and rocks don't get into the header, according to Pavel. Also, the bristles compress weeds together so tightly he says they feed through better with no tangling. Bristles grab the crop about 8 in. ahead of the cutting discs which helps feed crop into the machine at a high rate.

"One of the crops it works beautifully in is edible beans. We run the cutting discs 1/2 to 1 in. below ground and it does a fantastic job cutting and harvesting at one time, eliminating a second pass through the field. The discs are made from a hard steel that's not bothered by stones. We've put 400 acres on one set of discs and they still look like new," says Pavel.

A drive shaft off the reel-drive runs the row units. Each row unit couples individually to the drive shaft so that, if needed, any unit can be uncoupled and removed from the header for service. Pavel notes that all parts except for the V-belt brush and cutting discs are standard over-the-counter items, including bearings, gears, pulleys, etc.

"Two men can put together a 4-row unit in half a day. It'll fit any grain platform except for flex heads, which aren't strong enough to support the added weight," notes Pavel. A minimum of 30-in. row spacing is needed but wider 36, 38 or 40-in. spacing can also be accommodated. A 6-row narrow set-up - with 30-in. rows - requires a 15-ft. grain



Unlike conventional gathering chains and belts, interlocking nylon bristles carry shattered grain into head.

platform. A 8-row wide with 36-in. spacing requires a 24-ft. platform.

Pavel tested the header extensively on his 1986 crop, cutting soybeans and sunflowers at speeds of 6 to 8 mph. "If your machine can handle the flow of material, the head can easily handle the high speeds. It helps eliminate shatter loss because the discs cut so quick and because there's no reel. Seeds that do fall are carried into the machine by the brushes," Pavel explains. "In soybeans, it saves virtually every pod - including the low-growing ones since the cutting discs can be set to run underground." The machine has also been tested successfully in grain sorghum, safflower and other crops. Pavel says it's particularly effective in down crops because of the way the brushes grab onto the crop, and the low level at which the cutting discs are able to operate. "In down corn it'll gather in ears that no cornhead could ever pick up, including ears lying on the ground. However, it's not designed to do the job of a cornhead in high-yielding standing corn since you have to run the stalk and leaves through the combine together with the ears. We have used it, though, to

harvest lower yielding corn at 50 to 60 bu. per acre. In fact, one day we harvested soybeans, corn, milo and sunflowers without ever changing the head. You can also convert it back to its original configuration to harvest wheat and other small grains."

Pavel says the new head doesn't require additional power. "A 4-row unit needs only about 7 hp. to operate," he says. It sells for about \$1,800 per row, or about \$7,200 for a 4-row unit. An 8-row unit costs more because of extra bracing required.

Another company, Hiniker Mfg., Mankato, Minn., is currently experimenting with a prototype forage harvester that makes use of Pavel's brush gathering system. Replacing chain gatherers with bristles eliminates damage to cutterheads that can occur when metal parts break and get into the machine. Hiniker's forage harvester is also expected to go into production this summer.

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Notched cutting discs below head cut crop quicker and cleaner than conventional sickles, according to Pavel. Key to success of cutting system is that one disc spins twice as fast as the other.

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