Innovation in harvesting fronts being put to the test

A significant new innovation in cane harvesting is a relatively rare occurrence, but a new design of harvester fronts is being put to the test at SRA.

BY BRAD PFEFFER

Steve Lawn and the team at EHS manufacturing knew there had to be a better way.

Through years of experience and after trawling through a back catalogue of industry research, they understood that pick-up losses from mechanical harvesting could be anywhere from 1 percent to 10 percent. They also knew that the first moment the harvester touches the cane has a cascade affect for the rest of the harvesting process, and for future ratoons.

They had seen previous innovations in front-end components such as old-design BSES fronts.

But, in consultation with SRA, they wanted to take this further.

This led to the development of their innovation called the CaneStalker, a new design with three crop lifters on each side of the cane row and with the aim of improving cane feeding through the machine.

After extensive development and testing by EHS, independent of SRA, the fronts have recently been fitted to three SRA Case IH harvesters in 2018, located at Mackay, Burdekin, and Gordonvale.

SRA Adoption Officer for harvesting, Phil Patane, said that the machines were currently being used to harvest SRA trials and had a received a thumbs-up from the crew on the ground for their feeding performance.

"Feeding-wise they are performing well, but we don't yet know how much of a reduced percentage of loss is occurring," Phil said. "The next step will be to investigate this and, after that, potentially link with existing research into the front-end components of the harvester."

A current research project is underway led by Norris ECT through the Rural R&D for Profit program looking to match front-end harvester components to groundspeed.

The team at EHS have consulted with Norris ECT on their work on the CaneStalker, and indicated that matching forward speed and spiral speed was critical.

"The front end of the harvester hasn't changed much over the years, and it is also quite poorly matched to groundspeed a lot of the time," Steve Lawn said.

"On most machines, the spiral performance is limited to 4km/hour groundspeed in really lodged crops.

"Anything faster than that and damage is occurring, so based on existing crop dividers the only way to cut really lodged cane is to slow right down.

"With our design, we wanted to be able to keep the groundspeed to at least 6km/hour for the economics of harvesting, without seeing the damage that could be occurring with existing crop dividers. We also want to be able to eliminate the use of side trim knives as these also cause some losses."

He said that when they initially began looking to reduce losses at the front-end of the harvester, he had thought an answer would come with the basecutters.

"But a lot of our simulation work showed that the problem was the crop dividers, not the basecutters, including split billets and damage to the stool.

"We haven't done any official testing, but the visuals look promising. In green cane crops in the Burdekin, where you would normally cut at say 4-5km/hour, they have been able to push faster and the CaneStalker is sorting the crop out without the need for side trim knives.

"We are hoping the feed is more uniform, which should stop glut feeding and improve cleaning. There is evidence of this already with very uniform chopper pressure. This should also assist in reducing losses at the choppers and extractor."

He said the small middle auger travelled at ground speed and its purpose was to lift the crop up, and not move it in either direction. Before the cane leaves the top of the middle pickup auger a 1 metre diameter three-point arc is created over the three augers to begin the separation. The other two augers can then lift the cane up and present it correctly for the base cutters and then feeding.

Phil Patane said it was exciting to see innovation on sugarcane harvesters.

"For any new innovation, it is critically important that SRA investigate this and assess what the gains may be. Perhaps in coming years they may become common on harvesters, but the first step is that we have to investigate." ■

Contact Adoption Officer, Phil Patane on
E ppatane@sugarresearch.com.au
T 07 4776 8202

To see a video of the CaneStalker visit www.sugarresearch.com.au/sra-information/media/

(Over page) Steve Lawn from EHS Manufacturing checking out one of the CaneStalkers that have been fitted to three SRA harvesters. (Right) The fronts fitted to the SRA Mackay harvester and at work harvesting an introgression trial.