Controlled Traffic Systems

OPPOSITE PAGE: SASRI staff on a field visit during the Controlled Traffic Project
LEFT: A typical field layout used in a controlled traffic sugarcane production system
RIGHT: The harvesting operation in a controlled traffic scenario

SASRI has recently completed a project that looked at ways of eliminating sugarcane stool damage caused by infield traffic. One such system is a controlled traffic system which aims to keep the wheels of infield vehicles and equipment away from the sugarcane stools, and restricts them to the traffic lanes where compaction is less harmful to the ratooning crop.

For a very long time, yield losses from stool damage were attributed to soil compaction. To fully appreciate the benefits of a controlled traffic system, stool damage and soil compaction have to be considered separately as causes of yield loss. While it is true that soil compaction will cause some reduction in yield, stool damage by infield vehicles is by far the bigger culprit. In fact, under certain circumstances, soil compaction can be seen as beneficial, for example it provides a firm surface for improved traction to infield vehicles. Stool damage, however, will never be regarded as beneficial under any circumstances, and is responsible for severe reductions in yield.

During the course of the SASRI project, a group of scientists and extension specialists visited sugarcane farmers in rainfed and irrigated areas who have successfully implemented controlled traffic systems, and who were able to share valuable lessons from their experiences. This information, together with findings from local field trials, international literature and from tacit knowledge of SASRI researchers and extension specialists was collated into the final project report. SASRI is busy repackaging the information into a set of user-friendly guidelines for sugarcane farmers wishing to implement controlled traffic systems.

So where does one start with implementing a controlled traffic system? The answer to that question will depend on what the farmers' current practices are, and on how much they are prepared to change.

Some situations may simply require an adjustment of the wheel spacing of infield vehicles and equipment to match the traffic lane spacing. Other cases may require a change in farm and field layout so that cane interrow spacing match equipment wheel spacing. Yet other scenarios may call for a combination of adjustments, i.e to both field layout and vehicle wheel spacing.

When making such a major change to the sugarcane production system, the farmer has to consider the implications of the change on various farm operations such as method of seedbed preparation, amount of seedcane per hectare, placement of fertilisers, where to sample for soil analyses, how to combat weeds, position of dripper tapes. The timing of the replant may also have to be revised as the reduced stool damage will yield more economical ratoons per crop cycle.

One of the fundamental issues that needs to be dealt with when choosing to implement a Controlled Traffic system is the farm and field layout. In planning the layout, the sugarcane farmer must consider all aspects of the farming operation. These include the daily rateable delivery, fertiliser and herbicide application methods, harvesting and loading operations and irrigation system configurations.

Based on our knowledge regarding the costs of the various activities that make up a controlled traffic system, we are confident that farmers will benefit economically from a controlled traffic system because of reduced stool damage, reduced weed control costs, increased number of ratoons and increased yields. International literature suggests that increase in yields alone could be up to 25%.

Sugarcane farmers considering the implementation of a controlled traffic system should, in the first instance, contact their extension specialists for advice and guidance.

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