THE EFFECT OF MINIMUM TILLAGE ON A SILT LOAM SOIL AND ZERO TILLAGE ON A CLAY LOAM SOIL IN THE HERBERT RIVER DISTRICT

By

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RESULTS ARE PRESENTED from two second crop cycle farming system experiments which were planted in 2013 comparing the effect of conventional tillage practices verse permanent beds.

Experiment 1

Silt loam soil. Sugarcane was planted into permanent 1.85 m beds and conventionally prepared 1.55 m rows after a soybean rotation crop. The 1.85 m permanent beds were zonal tilled with a single pass of a small set of wavy discs. The conventional rows were tilled with four passes of a bed renovator.

The bed renovator was set up with a combination of three ripper legs and six offset discs. No tillage was performed after the soybean crop or prior to cane planting. Whole-stalk double-disc-opener cane planters were used to plant into the standing crop of soybeans which had been sprayed out earlier with glyphosate.

Experiment 2

Clay loam soil. Sugarcane was planted into permanent 1.85 m beds and conventionally prepared 1.5 m rows after a soybean rotation crop. The 1.85 m permanent beds were zero tilled. Tillage of the conventional rows and all other practices were as described above for experiment one.

Results

In both experiments conventional tillage produced larger soybean crops, which supplied higher levels of nitrogen to the subsequent plant cane crop. The extra available nitrogen in the conventional tilled treatments failed to improve cane yields. Higher cane yields and gross margins were recorded for the permanent beds. Soil compaction measurements which were collected eleven months after the cane was planted and prior to harvest showed that the permanent beds had more un-compacted soil, especially in the row area.

Discussion

Soil compaction can occur very quickly after tillage and in the trial was the most likely cause for statistically significant cane yield losses in the silt loam soil.

Conclusions

A farming system using permanent beds can be more profitable and environmentally friendly.