

Title Comparative field test between two sugar cane (*Saccharum* spp.) harvesters under two different operational conditions in Brazil

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Abstract

The sugar cane crop is one of the main products in Brazil and according to several authors can generate, besides the industrialized stalks, an amount of crop residues from the order of 15 to 30 % in weight of the aerial part of the plants, depending on the field conditions. The sugar cane area in Brazil is around 5.5×10^6 hectares, with an amount of 400×10^6 tons of stalks, with stalks yield of 72 tons.ha^{-1} . This study took place in a sugar cane plot (Latitude $22^{\circ}46' \text{ S}$, Longitude $47^{\circ}23' \text{ W}$ and 600m of altitude) with 3% of slope, located in São Paulo State. The sugar cane variety was SP 80-1816, in its fourth cut, 11 months old and with a planted row spacing of 1.40 m. By other side, several sugar mills are bringing the crop residue to their patio to produce energy with the bagasse. One choice is to bring the crop residue at the same moment with the stalks, avoiding the next operation of baling it. The objective of this study was to analyze some operational parameters of two different sugar cane harvesters under the same field conditions, which was divided in four treatments: T1 = CAMECO CHT2500B operating normally; T2 = CAMECO CHT2500B operating without the cleaning system; T3 = CASE 7700 operating normally; T4 = CASE 7700 operating without the cleaning system. The results obtained were:

CEB raw material (tons.h⁻¹) * 59.2 b 44.3 c 69.0 ab 79.9 a

CEB stalks (tons.h⁻¹) * 57.6 a 37.7 b 67.0 a 69.7 a

CEL raw material (tons.h⁻¹) * 56.1 c 43.9 c 67.8 ab 77.4 a

CEL stalks (tons.h⁻¹) * 52.5 a 36.3 b 62.1 a 63.7 a

Manipulation efficacy (%) * 94.7 b 98.9 a 98.3 a 99.3 a

Vegetal trash (%) ** 6.3 b 17,6 a 8.44 ab 18,49 a

Mineral trash (%) * 0.8 b 2.5 a 0.6 b 1.5 ab

The conclusion is that under normal operation the CASE harvester worked better than CAMECO in the parameters CEL stalks and Manipulation efficiency. And without the cleaning system operating CASE also worked better in the parameters of CEB raw material, CEB stalks, CEL raw material and CEL stalks.