

## BILLET PLANTING RESEARCH

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Research continued to develop methods to maximize the chances of success with billet planting. During 2008, results were obtained from three field experiments conducted at the Sugar Research Station at St. Gabriel comparing yields obtained from billet and whole stalk planting of recently released and experimental varieties. Differences were detected among varieties in tolerance to billet planting.

Multiple yield components were compared for billet and whole stalk plantings of eight varieties in plantcane (Table 1). Millable stalk population, sugar per ton, cane tonnage and total sugar per acre were yield components for which differences were detected between billet and whole stalk plantings for some varieties. HoCP 00-950 and the two experimental (unreleased) varieties, L 01-283 and L 01-299, were the only ones with equivalent yields for billet and whole stalk plantings for all yield components.

Table 1. Comparison of yield components for billet and whole stalk plantings of eight varieties in plantcane during 2008.

Variety	Treatment	Stalks/acre (x1000) <sup>1</sup>	Stalk wt. (lbs.)	Sugar/ton (lbs.) <sup>y</sup>	Tons cane per acre <sup>y</sup>	Sugar/acre (lbs.) <sup>y</sup>
Ho 95-988	Billet	32.5	2.03	226	24.8 b	5624 b
	Whole	36.8	2.12	223	33.5 a	7465 a
HoCP 96-540	Billet	31.6 b	2.30	228	28.4	6460
	Whole	39.1 a	2.32	212	38.3	8047
L 97-128	Billet	28.4 b	1.99	208 b	25.2 b	5271 b
	Whole	34.1 a	2.28	221 a	33.9 a	7482 a
L 99-226	Billet	25.9 b	2.22	207	25.9 b	5376 b
	Whole	34.5 a	2.83	216	41.0 a	8817 a
L 99-233	Billet	40.6	1.65	220	24.3 b	5333 b
	Whole	47.6	1.62	223	32.2 a	7192 a
HoCP 00-950	Billet	35.6	1.74	227	27.6	6221
	Whole	38.9	1.82	230	33.8	7719
L 01-283	Billet	40.4	2.00	216	36.2	7816
	Whole	40.4	1.98	214	36.2	7689
L 01-299	Billet	38.4	1.94	205	36.7	7509
	Whole	42.2	1.98	202	38.2	7706

<sup>y</sup>Values of different yield components for billet and whole stalk comparisons within a variety followed by different letters were significantly different (P=0.05).

First ratoon yield results were obtained from another experiment for eight varieties. Six varieties had lower yields in billet plantings in plantcane; however, only L 99-226 still had significantly lower tonnage in billet plantings in first ratoon (Table 2).

Table 2. Comparison of yield components for billet and whole stalk plantings for eight varieties in 2007 plantcane and 2008 first ratoon.

Variety	Treatment	Plantcane		First ratoon	
		Tons cane per acre <sup>y</sup>	Sugar/acre (lbs.) <sup>y</sup>	Tons cane per acre <sup>y</sup>	Sugar/acre (lbs.) <sup>y</sup>
LCP 85-384	Billet	29.0 b	5227	28.4	6030
	Whole	37.5 a	6231	28.7	6025
Ho 95-988	Billet	32.7 b	6094 b	31.0	6584
	Whole	46.7 a	8429 a	33.1	7274
HoCP 96-540	Billet	38.8 b	9259	38.1	8040
	Whole	53.8 a	9880	43.4	9093
L 97-128	Billet	33.6 b	5941 b	29.8	6040
	Whole	48.9 a	8573 a	34.6	7153
L 99-226	Billet	41.0 b	7918 b	33.1 b	7323
	Whole	50.6 a	9650 a	36.6 a	7838
L 99-233	Billet	42.7	7657 b	27.6	5937
	Whole	46.7	8729 a	29.1	6042
L 01-283	Billet	48.7	9241	35.1	7484
	Whole	49.5	9608	36.2	7681
L 01-299	Billet	46.9	8576	41.2	8327
	Whole	45.4	8599	42.1	8730

<sup>y</sup>Values of different yield components for billet and whole stalk comparisons within a variety followed by different letters were significantly different (P=0.05).

Second ratoon yields were obtained for an experiment with eight varieties. A lack of environmental stress after planting resulted in equivalent yields in billet and whole stalk plantings for six of eight varieties in plantcane. If differences do not occur in plantcane, ratoon crop yields would usually be expected to be similar. The ratoon crop yields obtained from all varieties were not significantly lower in billet plantings including the two varieties (Ho 95-988 and L 97-128) with lower yields in plantcane (Table 3).

The field experiments comparing billet and whole stalk planting yields demonstrate that varieties vary in the tolerance of billet planting and that environmental stress affects the amount of yield reduction compared to whole stalk planting. Ho 95-988 appears to be intolerant to billet planting. A group of varieties, LCP 85-384, HoCP 96-540, L 97-128, and L 99-226, experience yield reductions in billet plantings when stressful environmental conditions occur. The newer varieties, L 01-283 and L 01-299, have thus far exhibited tolerance to billet planting. L 99-233

exhibited tolerance to billet planting in early experiments, but significant yield reductions in billet plantings have now been detected in two experiments.

Table 3. Comparison of plantcane yield components for billet and whole stalk plantings of four varieties in 2006 plantcane, 2007 first ratoon, and 2008 second ratoon.

Variety	Billet vs. whole	Plantcane		First ratoon		Second ratoon	
		Tons per acre <sup>y</sup>	Sucrose (lbs/acre) <sup>y</sup>	Tons per acre <sup>y</sup>	Sucrose (lbs/acre)	Tons per acre	Sucrose (lbs/acre)
LCP85-384	Billet	31.4	6740	31.1	5535	24.0	5083
	Whole	32.7	7105	34.1	6450	27.0	5783
Ho95-988	Billet	35.1 b	7560 b	41.6	8677	25.9	5676
	Whole	45.2 a	10509 a	40.6	8650	26.8	5988
HoCP96-540	Billet	41.4	9259	34.4	6635	34.8	7358
	Whole	45.1	9880	39.3	7730	30.6	6624
L97-128	Billet	37.3 b	7872 b	32.6	6656	23.7	4986
	Whole	46.2 a	10146 a	37.1	7786	32.1	6816
L99-226	Billet	41.7	9719	38.5	7878	30.7	6852
	Whole	43.1	10539	39.0	8301	32.0	7278
L99-233	Billet	38.6	8094	39.3 a	7557	27.4	5734
	Whole	39.0	8368	34.0 b	6845	29.9	6223
L01-283	Billet	50.9	11473	44.5	8933	33.1	7142
	Whole	51.5	11553	44.7	9268	30.9	6792
L01-299	Billet	50.0	11139	46.6	9276	37.4	7935
	Whole	52.6	11368	51.3	10118	38.2	7994

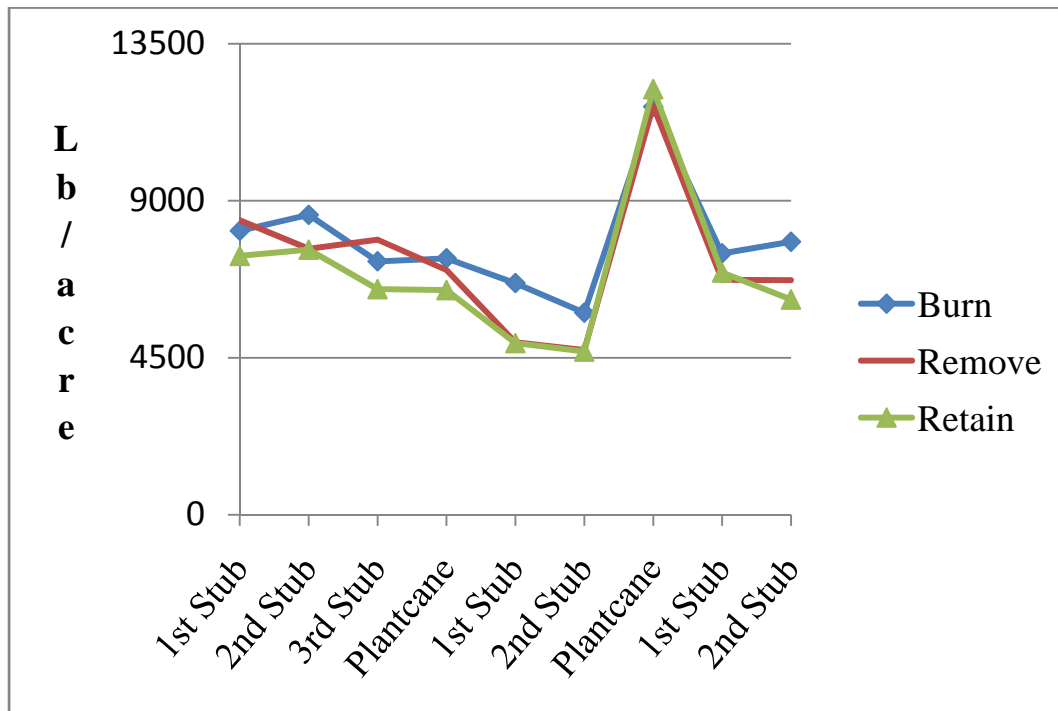
<sup>y</sup>Values of different yield components for billet and whole stalk comparisons within a variety followed by different letters were significantly different (P=0.05).

## LONG-TERM COMBINE-HARVEST RESIDUE STUDY

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### Summary:

Second stubble of the third cane production cycle of a long-term study of the effects of combine-trash management was harvested in 2008. Of particular interest are the changes in soil fertility over time and the effects of residue management on successive crop cycles (plantcane through final stubble). Cycle no. three second stubble yields were 7,825, 6,725 and 6,272 pounds of sugar/acre for the standing burn, physical trash removal from row tops and full-trash retention treatments, respectively. The variety HoCP 96-540 is known to be somewhat intolerant of residue and the separation of the lines in the chart below graphically depicts the effect of residue retention.



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