

Performance of New Sugarcane Varieties in the Southern Irrigated Coastal Plains of Puerto Rico¹

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ABSTRACT

Sixty sugarcane varieties, sorted in five experiments, were grown in the South Coastal plains for performance evaluation. Experiments were located at Guayanilla farm, at Unión and Cintrona farms in Ponce, and at Florida and Centro farms in the Salinas-Santa Isabel area.

Experiments were planted and cultivated following the standard practice of the sugarcane industry.

Data on rendiments and tons of cane and of sugar per acre were recorded for the plant cane and two ratoon crops of each experiment. Other agronomic characteristics such as growth habits, stooling and ratooning ability, and fiber content were also recorded. Data of the three crops were statistically analyzed for rendiments, TCA and TSA.

PR 63-488, CP 52-43 and PR 63-525 were the most promising varieties in the Guayanilla area. Although they did not produce significantly more sugar than the checks, they are better suited to mechanized harvesting. PR 61-632, PR 63-525 and PR 64-1791 were the most promising in the Ponce area (Centro and Cintrona farms) because of their higher sugar yields and their harvestability characteristics. PR 61-632, PR 1152, PR 63-525, PR 64-1791 and PR 1124 were promising in the Salinas-Santa Isabel area. With these new varieties, cost of sugar production is lower than with the old commercial varieties, which are unsuited to mechanized harvesting and have poor juice quality.

INTRODUCTION

Cane sugar production in Puerto Rico has sharply declined during the past 20 years from a record of 1,359,841 tons in 1952 to 287,269 tons in 1974. Sugarcane is still, however an important factor in the economy of the Island. In 1974 it contributed some \$70,946.000 million to our gross income.

Several factors have contributed to the sharp decline of our sugar industry. High production costs brought about by continually increasing costs of materials, equipment, and labor, followed by declining yields of our cane, have reduced the profit margin to growers. Approximately 252,561 acres of sugarcane lands were abandoned between 1952 and 1973.

The industry must reduce its operating costs and increase sugar yields to insure a reasonable profit margin attractive to the sugarcane producer.

It seems that mechanization of the industry accompanied by the development of high sucrose and erect sugarcane varieties may be helpful. Harvesting costs constitute a very important item in sugarcane produc-

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tion. Several harvesting machines have been successfully tested in the island; however, they require certain conditions to operate efficiently.

The southern sugarcane area is still an important sector of the industry. A total of 49,448 acres were cultivated for the 1974 crop. The fertile flat soils favor the establishment of a modern wholly mechanized industry. The present commercial varieties do not fulfill the requirements of this type of industry.

In order to produce varieties adapted to this type of industry, the Agricultural Experiment Station established during the fall of 1970 and the spring of 1971 a new sugarcane variety crash program to provide the growers with vigorous, erect, high sucrose varieties, resistant to diseases and capable of withstanding the rigors of mechanization.

This paper reports on the performance of some new sugarcane varieties in the dry, irrigated southern coastal plains of Puerto Rico.

MATERIALS AND METHODS

Five sugarcane variety experiments were established during the fall of 1970 as "grancultura" plantings at the following sites: Colonia Rufina, Guayanilla; Colonias Unión and Cintrona Segunda, at Ponce; and Colonias Centro and Florida at Santa Isabel.

RUFINA FARM, GUAYANILLA

The experiment at Colonia Rufina was planted October 1970 on a San Antón soil classified as Cumulic, Haplustolls, fine-loamy, mixed, isohyperthermic. The experiment included 25 varieties in a 5×5 balanced lattice design replicated six times with five treatments per block. This experiment was harvested March 1972 as a plant cane; the first and second ratoons were harvested April 1973, and April 1974, respectively.

UNION FARM, PONCE

The second experiment was planted at Colonia Unión, Ponce, in October 1970; it included 25 varieties. The same soil type, San Antón, was used. A 5×5 balanced lattice design, with six replications and five treatments per block, was used. The experiment was harvested as plant cane May 1972; its first ratoon crop, May 1973; and its second ratoon crop, April 1974.

CINTRONA FARM, PONCE

This experiment, at Colonia Cintrona Segunda, Ponce, was planted November 1970 on a soil classified as Cintrona, a Typic, Calcicquolls, fine, mixed, isohyperthermic. It included 25 varieties. A balanced lattice design, was used, with six replications and five treatments per block. The plant cane was harvested May 1972; the first ratoon, May 1973; and the second ratoon, April 1974.

FLORIDA FARM, SANTA ISABEL

At Colonia Florida, Santa Isabel, a 25-variety experiment was planted October 1970 in a San Antón soil, a Cumullic Haplustolls, fine, mixed, isohyperthermic. The design used was a 5×5 balanced lattice design with six replications and five treatments per block.

CENTRO FARM, SANTA ISABEL

The experiment located at Colonia Centro, Santa Isabel, was established December, 1970, and included 30 varieites. The soil used was Santa Isabel, an Udic Pellusterts, fine, montmorillonitic, isohyperthermic. The design was a 5×6 rectangular lattice, with 6 replications and five treatments per block. The plant cane was harvested February 1972; the first ratoon, February 1973, and the second ratoon, March 1974.

At all sites, experiments were planted in 20 ft \times 20 ft blocks, and 5 ft between furrows. Seed was obtained from nurseries previously established at the Isabela, Lajas, Gurabo and Fortuna Substations. The seed, properly identified, was planted so that each plot received the same number of seed pieces. Land cultivation, cultivation practices and irrigation, fertilization, weeding, control of insects and diseases, followed the standard practices of commercial plantings on each particular farm.

Agronomic observations were conducted during the experiments, both as plant cane and ratoon cane. Data were recorded on germination, stooling, growth and vigor (both early and late stages), stalk size and quality, erectness, tasseling, ripening and ratooning characteristics.

The cane in all the experiments was burned before harvesting and harvested manually. Samples composed of 10 canes taken at random from each individual plot were weighed and chopped at the Fortuna Substation. Five hundred-gram samples of the chopped material were taken from every plot, frozen and analyzed by Pol-Ratio. Data on individual plot weights were recorded with a scale adapted to a Ford 4000 tractor.

Data on cane tonnage, sugar content, and sugar yields per acre of each experiment were statistically analyzed. Combined analysis of the plant and ratoon crops were also conducted.

RESULTS AND DISCUSSION

GUAYANILLA FARM

Table 1 indicates that some varieties that perform well in the plant crop decreased sugar production in the ratoons. PR 1141 was significantly higher in tons of sugar per acre (6.52 tons), during the plant crop, but ranked fourteenth and twentieth in the first and second ratoon crops, respectively. CP 52-43 ranked eighth as sugar producer in plant cane, but improved its performance in first ratoon, moving to a first place, ranking

TABLE 1.—Mean yields of the 10 best performing varieties at Guayanilla farm

Rank	Variety	Sucrose content	Cane per acre	Sugar per acre	Fiber content
		%	tons	tons	%
<i>Plant cane crop, 1972</i>					
1	PR 1141	11.98	54.8	6.52 a ¹	14.68
2	PR 61-902	10.19	52.8	5.40 b	15.46
3	PR 1028 (ck)	10.46	48.7	5.12 b	15.99
4	PR 63-488	9.57	53.8	5.09 b	14.71
5	PR 64-548	9.82	51.9	5.06 b	17.13
6	PR 62-258	8.95	55.0	4.94 b	16.60
7	PR 1059 (ck)	11.32	43.5	4.91 b	15.64
8	CP 52-43	8.99	53.5	4.81 b	15.74
9	UCW 53-69	9.26	52.6	4.78 b	17.90
10	PR 1140	11.15	43.6	4.78 b	17.04
<i>First ratoon crop, 1973</i>					
1	CP 52-43	10.78	33.96	3.73 a	16.33
2	Q 68	12.64	25.79	3.30 ac	16.31
3	PR 1028 (ck)	11.41	27.57	3.18 ac	17.91
4	PR 61-902	11.39	26.78	3.05 acd	16.20
5	PR 62-258	11.76	25.61	3.01 acd	18.17
6	PR 63-488	11.13	25.88	2.94 acd	16.16
7	PR 64-493	11.40	24.44	2.81 bcd	15.39
8	PR 64-915	10.84	25.55	2.78 bcd	17.39
9	PR 62-174	12.19	22.54	2.76 bcd	18.00
10	UCW 53-69	10.31	25.98	2.72 bcd	19.61
19	PR 1059 (ck)	11.24	19.58	2.23 d	15.47
<i>Second ratoon crop, 1974</i>					
1	PR 62-285	10.21	32.19	3.31 a	17.91
2	PR 63-488	9.71	30.21	3.01 a	16.53
3	PR 63-525	10.17	27.97	2.97 ac	15.62
4	CP 52-43	9.93	29.52	2.89 ac	17.55
5	PR 63-489	9.73	28.66	2.74 ac	16.51
6	UCW 53-69	10.51	23.92	2.44 ac	19.59
7	PR 64-1791	8.21	29.00	2.42 bc	18.96
8	Q 68	10.87	20.75	2.26 bcd	18.20
9	PR 62-258	9.66	22.74	2.22 bcd	21.15
10	PR 65-868	9.99	22.18	2.17 cd	15.84
16	PR 1028	8.90	17.85	1.60 d	17.99
23	PR 1059	9.20	11.94	1.06 d	17.63
<i>Combined/analysis</i>					
1	CP 52-43	9.94	39.00	3.82 a	16.53
2	PR 63-488	10.13	39.65	3.68 a	15.95
3	PR 61-902	10.50	33.29	3.49 a	16.25

¹ Values followed by one or more letters in common do not differ significantly at the 5% probability level.

TABLE 1.—*Continued*

Rank	Variety	Sucrose content	Cane per acre	Sugar per acre	Fiber content
		%	tons	tons	%
4	PR 1141	10.48	30.50	3.43 a	15.26
5	PR 62-285	10.17	33.93	3.40 a	17.73
6	PR 62-258	10.12	34.46	3.38 a	18.63
7	PR 63-489	9.89	35.01	3.38 a	16.39
8	PR 63-525	9.76	34.60	3.38 ab	15.20
9	UCW 53-69	10.07	34.16	3.33 ab	19.02
10	PR 1028	10.25	31.38	3.30 ab	17.28
19	PR 1059	10.58	25.02	2.73 b	16.24

fourth in the combined analysis. PR 63-488 performed well during the three-crop cycle, ranking fourth, sixth and second, respectively. PR 64-548 was among the first five varieties in plant cane but performed poorly during the successive crops. PR 62-258, and UCW 53-69 ranked among the leading varieties in the three crops. Other varieties were not uniform in their performance patterns.

Variety CP 52-43 is a fairly sweet cane with good stooling and ratooning characteristics. It is suited to machine harvesting and is an early maturing variety. Variety PR 63-488 is a sweet, semi-erect variety, good stooler and ratooner, also suited to mechanized harvesting. PR 1141 is a sweet cane which performed well in plant cane, but its sugar producing capacity drops with successive crops. PR 61-902, PR 62-258 and PR 63-489 are sweet, vigorous canes, but their inclined growth hinders mechanized harvesting. PR 63-525 is a vigorous, sweet cane exhibiting desirable stooling and ratooning characteristics. However, its semi-inclined habit of growth, especially when planted as a "grancultura" requires a cut-and-load harvester that harvests unburned cane.

No significant difference was observed among the leading 10 varieties when the pooled data of the three crops were statistically analyzed.

UNION FARM

Table 2 indicates that only one variety, PR 61-53, outyielded check variety PR 980 significantly, in the combined analysis. PR 61-53 produces high tonnage, but its juice is of poor quality. It is unsuited to mechanized harvesting because of its undesirable growth habits. PR 65-1042, PR 63-523, PR 63-457, PR 62-315 and Q 68 ranked second to sixth in order of merit, respectively, but there was no significant difference among them. PR 61-632 was the only erect, sweet variety that figured among the best sugar producers. Although it produced slightly less sugar than the above

TABLE 2.—Mean yields of the 10 best performing varieties at Unión Farm Ponce

Rank	Variety	Sucrose content	Cane per acre	Sugar per acre	Fiber content
		%	Tons	Tons	%
<i>Plant cane crop, 1972</i>					
1	PR 61-53	12.08	97.3	11.74	13.96
2	PR 62-315	12.38	92.1	11.51	11.68
3	PR 62-258	13.62	83.7	11.47	13.08
4	PR 63-473	12.74	84.1	10.73	11.56
5	Q 68	13.70	76.7	10.55	12.96
6	PR 64-1791	12.26	85.1	10.45	15.89
7	PR 63-523	12.60	82.4	10.40	11.97
8	PR 65-625	12.37	82.8	10.23	12.94
9	PR 980 (ck)	13.54	74.8	10.21	11.71
10	PR 65-1042	12.75	79.6	10.19	11.25
<i>First ratoon crop, 1973</i>					
1	PR 61-53	12.43	56.58	7.28	17.15
2	PR 63-523	13.45	52.69	6.99	15.51
3	PR 63-457	12.55	51.79	6.45	15.93
4	PR 65-1042	13.33	47.80	6.37	15.58
5	PR 61-632	12.78	50.61	6.36	16.05
6	PR 64-1628	12.58	48.88	6.15	15.30
7	PR 980 (ck)	12.02	50.60	6.00	16.94
8	Q 68	13.79	43.17	5.93	16.38
9	PR 62-315	11.89	48.22	5.69	16.31
10	NCO 310	12.18	45.69	5.62	17.79
<i>Second ratoon crop, 1974</i>					
1	PR 65-1042	11.34	44.88	5.08 a ¹	16.25
2	PR 63-457	10.79	46.00	4.89 ac	16.83
3	PR 61-53	9.08	49.05	4.48 ac	19.53
4	PR 63-523	10.44	41.59	4.32 ac	16.12
5	PR 63-473	10.72	40.24	4.27 ac	15.36
6	PR 980 (ck)	9.11	47.10	4.22 ac	18.47
7	PR 62-315	9.96	41.47	4.15 bc	16.23
8	PR 61-902	11.12	37.29	4.12 bc	18.56
9	PR 61-632	10.84	38.23	4.10 bc	16.66
10	PR 64-1791	8.71	46.61	4.09 bc	20.18
<i>Combined analysis</i>					
1	PR 61-53	11.20	67.65	7.84 a	16.87
2	PR 65-1042	12.49	57.44	7.24 ac	14.36
3	PR 63-523	12.17	58.90	7.24 ac	14.53
4	PR 63-457	12.02	58.97	7.14 ac	14.89
5	PR 62-315	11.41	60.59	7.12 ac	14.73
6	Q 68	12.63	52.58	6.82 bc	15.93
7	PR 980 (ck)	11.56	57.50	6.81 bc	15.70
8	PR 63-473	11.48	57.43	6.79 bc	14.08
9	PR 64-1628	12.09	53.68	6.67 bc	14.67
10	PR 61-632	11.98	54.96	6.64 bc	15.04

¹ See table 1.

mentioned varieties, it is suitable to mechanized harvesting, is a vigorous cane and possesses good stooling ability.

CINTRONA SEGUNDA FARM

Table 3 presents data on a plant cane and two ratoon crops. In the plant cane, PR 62-66, PR 63-1192, PR 61-902, and PR 61-632 produced significantly more sugar (3.68, 2.16, 2.04 and 1.95 tons more, respectively) than check variety PR 980. The first ratoon crop did not reveal significant differences among the best 10 performing varieties, although PR 980 occupied the last place. PR 63-525 was first in the first ratoon crop while PR 64-1791, PR 1117, PR 63-192, PR 61-902 and 64-1628 maintained a similar sugar production pattern in both crops. PR 63-525 was the leading variety in the second ratoon crop followed by NCO 310, PR 980, PR 64-1791 and PR 61-902, but there were not significant differences among them. Five varieties, PR 64-1628, UCW 53-69, PR 1117, PR 63-192 and PR 62-66, reduced their sugar production during the second ratoon.

Some varieties have a poor ratooning ability, this being a handicap that may disqualify them as commercial varieties, since cane fields are cultivated at least during a plant cane and two or three ratoon crops. PR 64-1791, the leading variety in the combined analysis, is a high-tonnage erect variety suited to mechanized harvesting; it tolerates water stress, but its juice is of poor quality. PR 63-525 is a promising variety for this area. It is a high-tonnage sweet cane; although it lodges badly when burned before harvesting. This can be overcome if new cut-and-load harvesters are utilized.

SALINAS—SANTA ISABEL AREA

Florida farm

Table 4 presents data on a plant cane and a first ratoon crop. In the plant cane crop, PR 980 was the leading variety, producing 64.4 tons of cane, the highest tonnage of cane per acre, but its source content was rather low, 12.9%. Sucrose content of the other eight most promising varieties fluctuated from 13.25 to 14.92%, except PR 63-473, that was 12.97%. No significant difference was observed in tons of sugar per acre among the check and other top varieties.

In the first ratoon crop, cane tonnage of all the varieties was adversely affected, probably due to water stress. PR 64-1791, a drought tolerant variety, ranked first, while PR 980 ranked tenth. PR 64-1628, NCo 310, and PR 61-902 improved their performance in the first ratoon and ranked as second, fifth and sixth, respectively. No statistical difference was reported between check and the promising new varieties. The combined analysis of the plant cane and the first ratoon placed PR 61-632, PR 980, PR 64-1791, PR 1152 and PR 63-525 in first to fifth place, respectively.

TABLE 3.—Mean yield of the best 10 performing varieties at Cintrona Farm, Ponce

Rank	Variety	Sucrose content	Cane per acre	Sugar per acre	Fiber content
		%	Tons	Tons	%
<i>Plant cane crop, 1972</i>					
1	PR 62-66	13.77	62.3	8.52 a ¹	13.61
2	PR 64-1791	11.92	60.2	7.15 ac	15.40
3	PR 63-192	13.87	51.0	7.00 ac	14.56
4	PR 61-902	12.44	55.4	6.88 ac	13.58
5	PR 61-632	11.13	55.1	6.79 acd	11.84
6	PR 64-1628	12.88	52.0	6.59 bcd	12.61
7	PR 1117	12.41	53.4	6.53 bcd	14.41
8	PR 64-610	12.95	48.8	6.33 bcd	11.32
9	UCW 53-69	11.61	53.2	6.09 bcd	15.86
10	Q 68	12.42	49.4	6.08 bcd	13.59
22	PR 980 (ck)	11.36	42.8	4.84 d	18.25
<i>First ratoon crop, 1973</i>					
1	PR 63-525	11.46	44.62	5.16	14.74
2	PR 1117	11.72	40.58	4.73	17.29
3	PR 63-457	11.30	39.80	4.58	15.07
4	CP 52-43	10.09	42.71	4.40	17.38
5	PR 64-1628	11.41	38.68	4.39	15.11
6	UCW 53-69	11.46	37.97	4.21	18.51
7	NCO 310	10.39	39.90	4.16	16.62
8	PR 63-192	11.73	33.93	4.09	17.63
9	PR 61-902	10.74	38.11	4.04	16.64
10	PR 980 (ck)	10.03	38.81	3.98	16.80
<i>Second ratoon crop, 1974</i>					
1	PR 63-525	11.00	32.92	3.63	15.59
2	NCO 310	10.45	35.11	3.62	15.42
3	PR 980 (ck)	10.41	35.01	3.61	17.28
4	PR 64-1791	8.52	41.35	3.57	20.01
5	PR 61-902	10.72	31.51	3.37	17.43
6	PR 1140	11.05	28.02	3.15	16.32
7	CP 52-43	9.12	34.18	3.15	18.69
8	PR 63-457	9.55	32.22	3.15	15.81
9	PR 61-632	9.45	32.05	3.00	16.49
10	Q 68	10.85	26.48	2.87	16.13
<i>Combined analysis</i>					
1	PR 64-1791	9.98	47.89	4.89	17.91
2	PR 63-525	11.21	42.23	4.77	14.03
3	PR 61-902	11.30	41.58	4.76	15.88
4	PR 62-66	11.37	37.46	4.68	15.69
5	PR 64-1618	11.48	39.48	4.60	15.18
6	PR 1117	11.19	40.42	4.59	16.93
7	NCO 310	11.04	41.34	4.59	15.04
8	PR 63-192	11.96	36.42	4.51	16.84
9	CP 52-43	10.26	42.49	4.46	16.44
10	PR 63-457	10.85	39.86	4.44	14.15
14	PR 980 (ck)	10.60	38.88	4.14	15.77

¹ See table 1.

PR 1152 and PR 61-632 are classified as erect, sweet canes, suited to mechanization and very promising as commercial varieties for this area.

Centro Farm

Table 5 presents data of the plant cane crop and two ratoons. Check varieties, PR 980 and H 32-8560, were sixth and eleventh, respectively, in order of merit in the plant cane. PR 1249, PR 1124, CP 52-43, NCo 310 and PR 63-192 produced higher sugar tonnage per acre than PR 980 and H 32-8560, although the difference was not significant.

TABLE 4.—*Mean yield of the best 10 performing at Florida farm, Santa Isabel*

Rank	Variety	Sucrose content	Cane per acre	Sugar per acre	Fiber content
		%	Tons	Tons	%
<i>Plant cane crop, 1972</i>					
1	PR 980 (ck)	12.90	69.4	8.96	11.50
2	PR 61-632	13.73	62.6	8.68	11.28
3	PR 63-525	13.35	62.1	8.20	10.63
4	PR 1152	13.92	58.7	8.20	11.21
5	PR 64-1791	12.05	68.7	8.19	13.43
6	PR 63-192	13.70	59.3	8.18	11.64
7	PR 63-473	12.97	63.9	8.17	10.95
8	CP 52-43	13.72	59.1	8.09	13.41
9	Q 68	13.39	60.5	8.07	11.47
10	PR 1141	14.92	52.5	7.85	10.98
<i>First ratoon crop, 1973</i>					
1	PR 64-1791	11.55	27.38	3.33	23.54
2	PR 64-1628	13.39	23.53	3.22	19.44
3	PR 61-632	13.00	22.64	3.03	20.02
4	PR 1152	15.42	18.06	2.93	20.18
5	NCo 310	11.46	23.34	2.91	20.02
6	PR 61-902	12.18	22.68	2.72	19.67
7	Q 68	12.30	20.83	2.71	20.06
8	PR 63-525	12.69	20.75	2.70	17.65
9	PR 63-473	11.61	21.19	2.66	22.11
10	PR 980 (ck)	12.44	20.19	2.65	20.51
<i>Combined analysis</i>					
1	PR 61-632	13.38	42.66	5.86	15.65
2	PR 980 (ck)	12.66	44.81	5.80	16.01
3	PR 64-1791	11.81	48.09	5.77	18.48
4	PR 1152	14.68	38.38	5.57	15.70
5	PR 63-525	13.13	41.29	5.49	14.14
6	PR 63-473	12.28	42.54	5.41	16.53
7	Q 68	12.84	40.65	5.39	15.77
8	PR 64-1628	13.56	39.38	5.34	15.32
9	PR 1141	14.89	35.31	5.24	16.14
10	CP 52-43	13.06	38.33	5.18	16.86

TABLE 5.—Mean yields of the 10 best performing varieties at Colonia Centro, Salinas

Rank	Variety	Sucrose content	Cane per acre	Sugar per acre	Fiber content
		%	Tons	Tons	%
<i>Plant cane crop, 1972</i>					
1	PR 1249	13.66	47.5	6.43	9.61
2	PR 1124	12.91	50.0	6.35	12.42
3	CP 52-43	13.72	46.2	6.34	12.02
4	NCo 310	13.37	46.4	6.18	11.95
5	PR 63-192	13.04	47.1	6.13	11.16
6	PR 980 (ck)	13.30	46.0	6.12	11.13
7	PR 63-525	13.07	45.6	5.90	10.55
8	PR 63-457	13.02	45.0	5.88	10.49
9	PR 62-66	13.22	44.5	5.83	11.12
10	PR 64-1628	12.96	44.3	5.74	10.72
<i>First ratoon crop, 1973</i>					
1	NCo 310	13.48	35.27	4.55	14.01
2	PR 1249	12.33	33.61	4.34	11.84
3	PR 63-525	13.66	31.48	4.31	12.61
4	H 32-8560	11.20	37.30	4.13	13.45
5	PR 63-457	12.51	32.56	4.12	11.13
6	PR 64-1791	11.16	34.43	3.88	15.04
7	PR 1013	12.57	29.59	3.82	12.40
8	PR 61-632	11.71	30.78	3.69	13.33
9	PR 61-902	12.99	29.88	3.69	14.06
10	PR 1124	12.51	28.67	3.67	12.95
<i>Second ratoon crop, 1974</i>					
1	H 32-8560	11.89	35.71	4.35	15.93
2	PR 980 (ck)	11.78	35.02	4.14	15.35
3	PR 62-739	10.85	33.72	3.69	15.54
4	NCo 310	12.50	29.18	3.64	16.61
5	PR 1124	12.70	26.65	3.30	15.29
6	PR 61-632	12.13	26.54	3.23	14.54
7	PR 61-902	11.85	25.64	3.10	16.19
8	PR 64-1791	10.53	28.29	3.05	17.56
9	CP 52-43	12.30	23.05	2.86	15.60
10	PR 1239	10.52	25.17	2.83	15.68
<i>Combined analysis</i>					
1	NCo 310	13.11	36.94	4.80	14.19
2	H 32-8560	11.35	39.00	4.74	13.73
3	PR 980 (ck)	12.22	37.02	4.59	13.63
4	PR 1124	12.72	35.12	4.44	13.55
5	PR 1249	12.58	34.24	4.40	11.86
6	CP 52-43	12.82	32.52	4.24	14.14
7	PR 61-632	12.20	33.93	4.19	12.91
8	PR 63-525	13.28	31.58	4.19	12.36
9	PR 64-1791	11.30	35.89	4.12	15.15
10	PR 61-902	12.79	32.02	4.10	14.41

In the first ratoon, PR 64-1791, PR 1013, PR 61-632 and PR 61-902 improved their performance when compared to the plant crop, being among the best 10 performing varieties. PR 63-525 and PR 63-457 remained within the top ten varieties.

In the second ratoon, variety performance was rather inconsistent. H 32-8560 produced significantly more sugar than PR 1124, PR 61-632, PR 61-902, PR 64-1791, CP 52-43 and PR 1239. PR 980 also produced more sugar than the same varieties, except PR 1124. The analysis of the pooled data of the three crops indicates no significant difference between outstanding new varieties and the check varieties.

RESUMEN

Durante los años de 1970 al 1974 se realizaron cinco pruebas regionales con nuevas variedades de caña de azúcar para determinar su aptitud en diferentes zonas ecológicas en la región sur de Puerto Rico. Un total de 60 variedades, entre las cuales se incluyeron siete que eran las variedades comerciales que se sembraban en la zona, se evaluaron en los distintos sitios: Finca Rufina en Guayanilla, Fincas Unión y Cintrona Segunda en Ponce, y Fincas Centro y Florida en la zona Santa Isabel-Salinas. El experimento en la Finca Rufina se sembró en un suelo de la serie San Antón, usándose un diseño reticulado compensado, e incluyendo 25 variedades; los experimentos en las Fincas Unión y Cintrona Segunda, en suelos de la serie San Antón, respectivamente. En ambos experimentos se incluyeron 25 variedades. En ambos se usaron los diseños reticulados compensados, con seis repeticiones y cinco tratamientos por bloque. El experimento de la Colonia Centro se sembró en un suelo de la serie Santa Isabel, usándose un diseño reticulado rectangular, con seis repeticiones y cinco tratamientos por bloque. En este experimento se incluyeron 30 variedades. En la Colonia Florida, en un suelo de la serie San Antón, se sembró otro experimento incluyendo 25 variedades, usándose un diseño reticulado compensado, con seis repeticiones y cinco tratamientos por bloque. Se recopilaron datos experimentales sobre el rendimiento, tonelajes de caña y de azúcar por acre en una cosecha de "grancultura" y en dos retoños. También se observaron otras características agronómicas, tales como macollamiento, retoñamiento, hábito de crecimiento y contenido de fibra.

En la zona de Guayanilla, las variedades PR 63-488, CP 52-43, PR 63-525, aunque no sobrepasaron significativamente la producción de las variedades comerciales, poseen ciertas características agronómicas que facilitan el corte mecanizado reduciendo así los costos de producción.

En la zona de Ponce las variedades superiores fueron PR 61-632, PR 63-525 y PR 64-1791. Esta última, aunque de calidad de jugos inferior

a la de las variedades testigo, produce buen tonelaje de caña, es deporte erguido y tolera condiciones de sequía.

En la zona de Santa Isabel a Salinas sobresalieron las variedades PR 61-632, PR 1152, PR 63-525, PR 64-1791 y PR 1124. Aunque algunas otras variedades son tan buenas productoras de azúcar por acre como las variedades mencionadas, éstas se adaptan más a las demandas de una industria totalmente mecanizada.