NAME OF TEST: Blue Panic improvement

OBJECTIVES: (1) Develop lines of Blue Panic improved for leafiness and total yield; (2) develop procedures for evaluating leafiness.

EXPERIMENTAL PROCEDURE:

Location: Brazos River Valley Laboratory near College Station, Texas

Soil type: Miller clay and Norwood fine sandy loam

Field procedures:

1. Polycross progeny test of fine-stemmed selections - Fourteen clones were selected in 1959 with relatively fine stems, leafiness and apparent vigor and persistence. The 14 clones were isolated in a crossing block in 1960. Seed from this crossing block was used to establish a spaced-plant nursery in the spring of 1961. Each plot consisted of a vegetative clone and 9 polycross progeny in a 10-plant row, 40-inch rows, plants 40 inches apart in the row, replicated 4 times. Preliminary evaluations were made in 1961 and the plants again rated in 1962.
2. Open-pollinated progeny test of leafy selections - From more than 100 plants evaluated for yield, vigor and leafiness, 47 were selected for progeny testing along with common. Open-pollinated seed were collected in the fall of 1960 and a space-planted nursery was established in the spring of 1961. Each entry was represented by 2 vegetative clones and 5 o.p. seedling progeny per plot, replicated 4 times. Plants were 40 inches apart in the row, 40-inch rows.
3. Bulk spaced-plant polycross progeny population - Approximately 600 plants were established on 40-inch centers from a bulk made up of equal parts of seed from each of 8 clones in a crossing block. The clones were selected for crossing on the basis of progeny performance from two earlier polycross blocks. These plants were selected for leafiness and vigor without regard to stem size.
4. Forage yield and leafiness in solid-row planting - Polycross seed from 23 clones from 3 different crossing blocks were used to establish a solid row planting. Seedlings were started in the greenhouse and transplanted to the field May 31, 1962. Plots consisted of single 40-inch rows, 12 feet long, plants 1 foot apart in the row, entries replicated 5 times. The plots were harvested July 19, August 29 and October 23, 1962. Oven dry yields were determined and a sample of forage separated into leaf and stem components from which leaf percent and leaf yield were calculated. Observations were made on apparent leafiness and vigor.
5. Plant introductions - Thirty to fifty seedlings from each of 10 plant introductions and 4 nursery collections were established in the field in June. These were observed for desirable characteristics.

RESULTS:

Test 1: Polycross progeny from a 14 clone polycross of clones selected for fine stems and leafiness were established in early summer, 1961, and evaluated in the fall for stem size and leafiness. The plant population (Table 6) showed a definite shift toward finer stems and leafiness. The seedling distribution pattern within each clone indicated that some clones were more homozygous for fine stems and leafiness than others. The population was evaluated again in 1962 (Table 7) for leafiness and stem size. The ratings were not as closely related to the seedling-year ratings as in previous tests. Also the parent-progeny relationship was very poor. Some of the clones and their progenies were fairly satisfactory in both years.

These will be used to reconstitute a new polycross in early 1963.

Test 2: Leafiness ratings in 1961 and 1962 and stem size ratings are shown for the 49 entry test in Table 1. There was a considerable spread in ratings in both years and for both characteristics studied. The relationships between the parent clone and the seedling progeny were not close but were significant in most cases. Correlation coefficients for some of the comparisons are as follows:

1962 Vegetative versus O.P. Progeny leafiness ratings	0.363**
1962 Vegetative versus O.P. Progeny stem size ratings	0.333*
1961 Vegetative versus O.P. Progeny leafiness ratings	0.058
1961 versus 1962 Vegetative leafiness ratings	0.496**
1961 versus 1962 O.P. Progeny leafiness ratings	0.563**

The vegetative clones were slow in becoming established which may account for the poor parent-progeny relationship in 1961 and for the slightly poorer relationship for leafiness ratings for 1961 versus 1962 for vegetative clones than for seedling progeny. There were a few plants with satisfactory ratings in both years and for both characteristics.

These same 47 lines and 2 common checks were established in solid rows for a yield test in 1960. The test consisted of paired single-row plots of vegetative material and seedlings. The vegetative material was established on one foot centers in 40-inch rows and the seedling were established by seed directly in the field. Stands were established in late summer 1960 and harvested for yield three times in 1961. The clones had been evaluated previously by observation and by leaf-stem separation for leafiness.

The 1961 evaluations showed significant differences among clones for forage yield (Table 2), leaf yield (Table 3) and leaf percentage (Table 4) on each harvest date and for the season totals. Yield from vegetative material in general was higher than from seed.

There was very little relationship between parent clone and seedling progeny behavior for forage yield or leaf yield. Parent clones and seedling progeny were significantly related for leaf percentage at the third harvest date and average leaf percentage for the three dates.

Forage yield of the vegetative clones in solid row plantings was not significantly related to single plant yields in 1961. Neither was leaf yield of the same plant materials significantly related. Number of stems per plant in 1960 was closely related to plant yield (vigor) and leaf yield (leafiness) in 1960. Stem numbers from the 1960 clones were not related to performance in solid rows in 1961. Similarly, leafiness ratings which were closely related to forage yield and leaf yield of spaced plants, showed no relationship to performance in solid rows.

These results suggest serious problems in developing vigorous leafy blue panic strains where most of the evaluations must be conducted with spaced plants. It should be pointed out, however, that the material used in 1961 had been rather highly selected and did not represent the range available within the species. It did not represent the range used in the 1960 spaced plant studies. Thus, it is possible that if widely varying materials had been used, the relationships would have been significant. An extreme amount of variation was encountered due in part to border effects and uneven stands. However, this would not seem to account for the almost total absence of relationship between

results in 1960 and 1961.

These results indicate a further need for studying methods of evaluation including solid row plantings of breeding material, and methods of improving statistical and field control of variation.

Even though there was a general absence of agreement in performance between spaced plant and solid row stands, some clones were rated high in a number of different tests and evaluations. One clone was rated high in all the 1960 and 1961 evaluations. About 8 clones which have been fairly consistently high were included in a polycross in the spring of 1962.

Test 3: Plants were not evaluated individually in this test. There was considerable variation for stem size, vigor and apparent leafiness. However, the population appeared much above average for these characteristics when compared to an adjacent unselected plant introduction population. A random sample of plants was harvested from each population for yield determinations, leaf percentage and leaf yield. The leaf-stem separations have not been completed.

Test 4: Harvests were made on July 19, August 29 and October 23. Total forage yields, leaf yields, leaf percentages, vigor ratings and leafiness ratings are presented in Table 8. Total yields ranged from 4000 pounds to over 9000 and leaf yields from 1400 to more than 3000 pounds per acre. There was much less range in the other evaluations, however significant differences were obtained. in all evaluations.

The yield and yield components were not closely related to visual ratings. Neither were the evaluations in this test significantly related to similar ratings of the parent clones or spaced plants in tests in earlier years. This indicates further the problem of using individual plants for selection but evaluating the material in solid rows. Again the fact that unselected or common checks were not maintained throughout for comparison purposes is suggested as contributing to the poor relationships. Variation in the selected material may not be adequate to show significant relationships.

Six of the parent clones of the plant population discussed in Test 3 were included in this test. All except one (11-19S-27) were in the top group in each category.

Test 5: There were no uniformly desirable lines among 10 new plant introductions and 4 nursery collections from San Benito. There were about 30 individual plants in the nursery with sufficient promise to warrant further observations and testing.

Table 1. Blue Panic vegetative-open pollinated progeny spaced-plant leafiness and stem size evaluations, BRVL, 1961-62.

Code No.	Parent Identification	Leafiness rating[1/] Vegetative 1961	Vegetative 1962	O.P. progeny 1961	O.P. progeny 1962	Stem size rating Vegetative	Stem size rating O.P. progeny
1	Common	5.6	5.2	5.8	6.2	6.8	5.5
2	11-19-72P-14	6.0	4.5	5.0	4.2	4.2	5.0
3	11-19-72P-27	5.0	3.7	5.2	4.9	4.2	4.8
4	11-19-72P-29	5.0	3.8	5.4	4.7	3.8	5.6
5	11-19S-27P-1	6.6	6.3	6.2	5.3	5.5	5.8
6	11-19S-27P-12	5.0	4.5	3.4	4.0	5.5	5.1
7	11-19S-27P-29	4.6	3.3	3.4	3.9	3.8	4.7
8	12-10-72P-6	6.4	3.3	4.4	5.1	5.3	6.6
9	12-10-720P-8	3.4	1.7	4.8	3.8	2.0	3.9
10	12-10-720P-16	5.6	3.2	5.2	4.3	3.3	5.1
11	12-10-72S-6	6.0	3.2	5.6	5.2	6.0	5.9
12	12-10-72S-8	5.6	4.0	4.6	4.8	4.0	5.4
13	12-10S-100P-15	7.6	3.3	5.4	4.0	6.0	5.2
14	12-10S-100P-30	6.0	5.0	5.2	4.9	4.7	5.3
15	12-19-41P-7	3.4	2.5	4.6	3.5	3.5	4.0
16	12-19S-11P-14	5.0	3.0	4.2	5.1	4.3	5.9
17	12-19S-11P-27	4.6	4.5	5.0	5.1	3.2	6.5
18	12-19S-11S-26	5.0	3.5	6.2	5.5	1.8	5.5
19	12-19S-11S-28	6.6	4.5	4.2	4.3	5.3	5.9
20	12-19S-11S-29	7.4	5.5	5.8	6.5	7.3	7.6
21	12-25-11P-9	6.4	4.2	4.8	4.8	3.8	5.5
22	12-25-11P-17	5.6	4.8	4.4	4.3	5.5	4.8
23	12-25S-7P-25	5.4	2.8	4.2	5.2	4.5	5.9
24	12-25S-7P-28	7.0	3.3	4.6	4.0	3.5	4.8
25	12-25S-7P-29	5.6	3.2	3.8	3.5	4.3	4.5
26	14-14-13P-29	6.0	6.3	6.6	5.0	3.5	5.2
27	14-14S-12P-25	4.4	3.0	4.0	3.8	4.5	5.4
28	19-15-43P-21	6.0	4.5	4.6	4.8	5.7	4.4
29	19-15S-11P-1	5.6	5.0	---	5.4	2.7	---
30	19-15S-11P-7	4.0	2.8	5.6	5.2	3.8	6.6
31	19-15S-11P-30	5.6	3.7	4.6	4.3	4.3	5.2
32	20-16S-13P-8	7.4	6.8	3.8	4.8	8.3	5.3
33	23-20S-50P-2	5.0	2.7	5.0	4.7	2.3	5.4
34	23-20S-50P-20	6.4	3.3	5.4	4.8	6.0	6.0
35	24-22-64P-6	6.6	3.3	4.8	4.0	2.5	4.0
36	24-22S-69-15	5.0	3.3	4.8	5.4	3.5	6.4
37	24-22S-69-24	6.6	3.8	3.0	4.4	5.3	3.3
38	9-2P-21	4.6	2.0	6.2	4.9	6.0	6.9
39	9-2P-24	5.6	5.0	5.0	4.3	4.3	5.2
40	9-2S-24	6.4	4.2	3.8	3.7	6.2	4.4
41	12-24P-18	8.0	5.7	5.8	5.0	7.0	5.9
42	12-250P-5	6.0	2.8	4.8	4.8	3.8	6.1
43	12-250P-15	7.0	4.5	3.4	4.1	---	4.5
44	14-14P-1	6.4	3.5	6.4	5.3	4.0	5.3
45	14-14P-5	4.6	2.8	5.0	5.0	1.3	6.3
46	14-14P-6	5.0	4.0	5.4	4.7	1.3	5.3
47	14-140P-6	4.4	2.5	3.4	4.1	2.0	3.9
48	14-140P-7	5.0	3.7	5.0	4.9	3.8	6.1
49	Common	5.0	7.0	4.4	5.5	7.3	6.5

1/ Visual ratings of 1 to 10 with 1 = best.

Table 2. Forage yield of selected blue panic clones and their O. P. seedling progeny in solid-row stands, BRVL, 1961.

Code No.	Clone	Pounds of dry forage per acre: Vegetative clones 6/10	7/27	10/11	Total	Seedling progeny 6/10	7/27	10/11	Total
1	Common	----	----	----	----	----	----	----	----
2	11-19-72P-14	1220	2920	2140	6280	1540	2810	2380	6730
3	11-19-72P-27	1160	2480	1570	5210	1130	3220	2140	6490
4	11-19-72P-29	1870	3600	2280	9620	1190	2560	1800	5550
5	11-19S-27P-1	2910	5920	4260	13090	1660	3660	2900	8220
6	11-19S-27P-12	2680	6350	3260	12290	1760	3210	2500	8470
7	11-19S-27P-29	1360	3120	2990	7470	1310	3300	2540	7150
8	12-10-72P-6	680	4300	1700	6680	1200	2850	2580	6630
9	12-10-720P-8	1940	3500	2420	7860	1650	2520	2240	6410
10	12-10-720P-16	1850	2240	2500	6590	1760	2720	2570	7050
11	12-10-72S-6	1710	3320	1760	6790	1470	3920	2870	8260
12	12-10-72S-8	1660	3130	2390	7180	1280	2670	2190	6140
13	12-10S-100P-15	2140	4530	3360	10030	1290	2950	2140	6380
14	12-10S-100P-30	1710	4150	2980	8840	1170	3010	2300	6480
15	12-19-41P-7	1340	4870	2210	8384	1430	2680	2370	6480
16	12-19S-11P-14	2510	4090	3680	10280	1590	3200	2900	7690
17	12-19S-11P-27	2630	4250	2570	9250	1350	2780	2410	6540
18	12-19S-11S-26	2120	3970	2420	8510	1480	3280	2290	7050
19	12-19S-11S-28	1550	2490	1820	5860	1450	3070	2700	7220
20	12-19S-11S-29	1960	3820	3620	9400	1400	4060	2570	8030
21	12-25-11P-9	1190	2720	1660	5570	1810	3440	2080	7330
22	12-25-11P-17	980	3080	1950	6010	1100	2340	1530	4970
23	12-25S-7P-25	3280	4690	3780	11750	1650	2840	2410	6900
24	12-25S-7P-28	2350	4980	3430	10760	1990	3650	2940	8580
25	12-25S-7P-29	1330	2880	2900	7110	1580	3380	2980	7940
26	14-14-13P-29	780	2170	1140	4090	2280	4060	3240	9580
27	14-14S-12P-25	1600	3390	2930	7920	1240	3000	2490	6730
28	19-15-43P-21	1290	4370	1730	7390	1150	2350	2390	5890
29	19-15S-11P-1	2750	3950	3260	9960	2300	3060	3180	8540
30	19-15S-11P-7	3490	5430	3920	12840	1490	3430	3020	7940
31	19-15S-11P-30	2130	3160	2990	8280	1580	2870	2400	6850
32	20-16S-13P-8	2450	4260	3120	9830	1290	2290	2140	5720
33	23-20S-50P-2	1700	2930	1780	6410	1080	2320	2200	5600
34	23-20S-50P-20	2140	3450	2120	7710	2120	2280	1820	6220
35	24-22-64P-6	1760	4000	3000	8760	1840	3130	2190	7160
36	24-22S-69-15	1190	2830	1800	5820	1650	4180	2270	8100
37	24-22S-69-24	2810	4690	2860	10360	1530	2790	2510	6830
38	9-2P-21	2360	5250	2800	10460	1720	3130	2400	7250
39	9-2P-24	1970	4480	3470	9920	1590	2470	2400	6460
40	9-2S-24	1330	3090	1940	6360	1780	2620	3110	7510
41	12-24P-18	1710	4380	3200	9290	890	2650	2080	5620
42	12-250P-5	1210	3390	2090	6690	1080	2410	1870	5360
43	12-250P-15	2720	4720	3140	10580	1970	3830	2900	7700
44	14-14P-1	1650	3010	2310	6970	1480	4850	3040	9370
45	14-14P-5	1550	2730	2140	6420	2130	4000	3500	9630
46	14-14P-6	960	1310	930	3200	1610	4740	2090	8440
47	14-140P-6	1930	4050	2950	8930	1350	3120	2280	6750
48	14-140P-7	1740	3180	2010	6930	1300	3080	2080	6460
49	Common	2860	2790	2280	7930	900	3550	2070	6520

Table 3. Leaf yield of selected blue panic clones and their O.P. seedling progeny in solid rows, BRVL, 1961.

Code No.	Clone	Pounds per acre of leaves as dry forage: Vegetative clones 6/10	7/27	10/11	Total	Seedling progeny 6/10	7/27	10/11	Total
1	Common	----	----	----	----	----	----	----	----
2	11-19-72P-14	470	1190	880	2540	640	1090	910	2640
3	11-19-72P-27	380	880	680	1940	470	1120	700	2290
4	11-19-72P-29	590	1340	1000	2930	460	1060	700	2220
5	11-19S-27P-1	940	1860	1260	4060	580	1290	1020	2890
6	11-19S-27P-12	840	2040	1080	3960	830	1180	1220	3230
7	11-19S-27P-29	480	1030	800	2310	430	1010	700	2140
8	12-10-72P-6	230	1400	580	2210	500	970	980	2450
9	12-10-72OP-8	700	1360	980	3040	620	1420	880	2920
10	12-10-72OP-16	630	750	890	2270	640	1070	850	2560
11	12-10-72S-6	580	1240	610	2430	540	1570	1030	3140
12	12-10-72S-8	580	1130	1000	2710	520	960	850	2330
13	12-10S-100P-15	750	1620	1000	3370	640	1200	780	2620
14	12-10S-100P-30	530	1330	860	2720	470	960	660	2090
15	12-19-41P-7	450	1810	880	3140	530	1120	910	2560
16	12-19S-11P-14	830	1460	1240	3530	610	1160	870	2640
17	12-19S-11P-27	820	1340	790	2950	520	1110	790	2420
18	12-19S-11S-26	790	1940	840	3570	650	1050	810	2510
19	12-19S-11S-28	550	950	770	2270	600	1150	1190	2940
20	12-19S-11S-29	590	1110	1140	2840	510	1710	1020	3240
21	12-25-11P-9	410	900	650	1960	740	1210	660	2610
22	12-25-11P-17	380	880	580	1840	400	890	650	1940
23	12-25S-7P-25	1070	1580	1150	3800	560	970	920	2450
24	12-25S-7P-28	720	1560	780	3060	680	1220	1030	2930
25	12-25S-7P-29	430	1000	910	2340	630	1160	950	2740
26	14-14-13P-29	300	820	400	1520	850	1480	1160	3490
27	14-14S-12P-25	530	1290	930	2750	480	1280	790	2550
28	19-15-43P-21	430	1390	610	2430	440	760	1220	2420
29	19-15S-11P-1	1220	1400	1000	3620	720	1280	990	2990
30	19-15S-11P-7	1020	1800	1090	3910	470	1320	1020	2810
31	19-15S-11P-30	760	1370	990	3120	570	1000	810	2380
32	20-16S-13P-8	880	1270	980	3130	560	880	820	2660
33	23-20S-50P-2	680	1300	590	2570	390	1090	770	2250
34	23-20S-50P-20	890	1160	670	2720	810	820	630	2260
35	24-22-64P-6	640	1320	970	2930	740	1110	720	2570
36	24-22S-69-15	540	930	610	2080	730	1490	670	2890
37	24-22S-69-24	960	1580	970	3510	630	1000	1290	2920
38	9-2P-21	660	1500	680	2840	640	1130	810	2580
39	9-2P-24	710	1440	1390	3540	590	870	840	2300
40	9-2S-24	510	1540	650	2700	630	870	840	2340
41	12-24P-18	660	1410	1070	3140	370	1030	660	2060
42	12-250P-5	450	1170	820	2440	420	910	670	2000
43	12-250P-15	860	1410	920	3190	600	1810	1070	3480
44	14-14P-1	490	800	640	1930	540	1650	1060	3250
45	14-14P-5	500	880	720	2100	730	2340	1170	4240
46	14-14P-6	370	460	470	1300	560	2360	690	3610
47	14-140P-6	670	1370	1040	3080	500	1140	780	2420
48	14-140P-7	710	1120	650	2480	520	1160	640	2320
49	Common	750	1220	1010	2988	340	1210	640	2190

Table 4. Leaf percentage of selected blue panic clones and their O. P. seedling progeny in solid row stands, BRVL, 1961.

Code No.	Clone	Vegetative clones 6/10	7/27	10/11	Average	Seedling progeny 6/10	7/27	10/11	Average	Clone Average
1	Common									
2	11-19-72P-14	39.2	40.7	41.1	40.3	41.0	38.8	38.1	39.3	39.8
3	11-19-72P-27	34.0	35.2	43.1	37.4	44.2	34.8	33.0	37.3	37.4
4	11-19-72P-29	31.7	37.2	43.3	37.4	40.2	41.2	39.0	40.1	38.9
5	11-19S-27P-1	32.6	31.5	29.5	31.2	38.6	35.2	35.2	36.3	33.8
6	11-19S-27P-12	32.0	32.0	30.0	31.3	41.6	36.6	34.7	37.6	34.5
7	11-19S-27P-29	30.6	33.0	26.9	30.2	37.6	30.6	27.7	32.0	31.1
8	12-10-72P-6	31.6	32.5	34.1	32.7	41.2	33.8	38.0	37.7	35.2
9	12-10-720P-8	36.6	38.9	40.8	38.8	38.1	43.2	39.2	40.2	39.5
10	12-10-720P-16	34.4	33.6	35.6	34.5	38.2	39.2	33.3	36.9	35.7
11	12-10-72S-6	34.3	37.3	34.6	35.4	37.8	40.1	35.9	37.9	36.7
12	12-10-72S-8	36.5	36.0	41.7	38.1	40.6	35.8	38.8	38.4	38.3
13	12-10S-100P-15	35.0	35.8	29.9	33.6	47.0	40.9	36.4	41.4	37.5
14	12-10S-100P-30	31.8	32.1	29.0	31.0	40.2	32.0	28.8	33.7	32.4
15	12-19-41P-7	35.8	37.2	39.7	37.6	37.2	41.9	38.4	39.2	38.4
16	12-19S-11P-14	33.8	35.7	33.7	34.4	39.8	36.2	29.9	35.3	34.9
17	12-19S-11P-27	30.0	31.6	30.9	30.8	35.6	39.8	32.7	36.0	33.4
18	12-19S-11S-26	38.0	48.8	34.5	40.4	39.5	32.0	35.5	35.7	38.1
19	12-19S-11S-28	36.8	38.1	42.2	39.0	41.8	37.4	38.1	39.1	39.1
20	12-19S-11S-29	31.0	29.0	31.5	30.5	38.2	42.0	37.2	39.1	34.8
21	12-25-11P-9	35.4	33.2	39.0	35.9	37.3	35.2	31.6	34.7	35.3
22	12-25-11P-17	34.2	28.5	29.5	30.7	35.2	37.8	42.2	38.4	34.6
23	12-25S-7P-25	32.4	33.6	30.4	32.1	33.1	34.0	38.3	35.1	33.6
24	12-25S-7P-28	29.8	31.2	22.8	27.9	34.2	33.5	35.0	34.2	31.1
25	12-25S-7P-29	34.5	34.6	31.5	33.5	37.1	34.2	31.9	34.4	34.0
26	14-14-13P-29	41.8	37.8	35.1	38.2	38.2	36.4	35.9	36.8	37.5
27	14-14S-12P-25	33.6	38.1	31.6	34.4	39.8	42.8	31.6	38.1	36.3
28	19-15-43P-21	33.9	31.8	35.1	33.6	42.2	32.4	27.7	34.1	33.9
29	19-15S-11P-1	42.7	35.6	30.7	36.3	30.6	37.8	31.1	33.2	34.8
30	19-15S-11P-7	29.8	33.1	27.9	30.3	32.1	38.4	33.8	34.8	32.6
31	19-15S-11P-30	36.0	43.3	33.0	37.4	37.3	34.8	33.8	35.3	36.4
32	20-16S-13P-8	33.4	29.8	31.2	31.5	42.2	38.3	38.2	40.0	35.8
33	23-20S-50P-2	37.6	44.0	33.2	38.3	45.6	47.1	34.9	42.5	40.4
34	23-20S-50P-20	42.5	33.5	31.5	35.8	37.2	35.7	34.8	35.9	42.6
35	24-22-64P-6	36.9	33.1	32.3	34.1	35.1	35.3	33.0	34.5	34.3
36	24-22S-69-15	34.4	33.0	33.7	33.7	39.9	35.7	29.4	35.0	34.4
37	24-22S-69-24	33.4	33.8	33.7	33.6	39.8	35.8	51.5	42.4	38.0
38	9-2P-21	28.6	28.6	24.2	27.1	37.6	36.0	33.6	35.7	31.4
39	9-2P-24	38.4	32.4	40.1	37.0	40.7	35.2	35.1	37.0	37.0
40	9-2S-24	39.2	33.6	33.5	35.4	34.3	33.1	27.0	31.5	33.5
41	12-24P-18	40.4	32.0	33.6	35.3	40.1	39.0	31.9	37.0	36.2
42	12-250P-5	36.6	34.5	39.2	36.8	38.6	37.9	35.9	37.5	37.2
43	12-250P-15	31.6	29.9	33.1	31.5	30.6	47.3	36.9	35.4	33.5
44	14-14P-1	31.1	26.5	27.6	28.4	34.7	34.1	34.9	34.6	31.5
45	14-14P-5	33.6	32.0	33.6	33.1	34.5	58.4	33.4	42.1	37.6
46	14-14P-6	37.4	34.6	50.6	40.9	34.8	49.8	33.1	39.2	40.1
47	14-140P-6	37.4	33.8	35.1	35.4	34.8	36.6	34.3	35.2	35.3
48	14-140P-7	38.4	35.2	32.7	35.4	38.7	37.6	31.0	35.8	35.6
49	Common	33.1	33.0	29.1	28.7	33.2	34.1	30.7	32.7	30.7

Table 5. Correlation coefficients for various characteristics in yield test and spaced-plant nursery.

	Forage yield - veg.	Forage yield - O.P.	Veg. leaf yield - 1960	Veg. leaf % - Date 3	Veg. leaf % - Season	Veg. forage yield Date 1	Date 2	Date 3
Leaf yield - vegetative	.914**		.070					
Leaf yield - O.P.		.830**						
Forage yield - O.P.	.050							
Leafiness rating - 1960	.098							
Leaf % O.P. - Date 3	.160			.288**				
Leaf % O.P. - Season					.334**			
Spaced seedling {Leafiness 1961					.110			
O.P. forage yield								
Date 1						.174		
Date 2							-.221	
Date 3								.217

Note: Relationships are based on 1961 yield test unless otherwise noted.

Table 6. Leafiness and stem size ratings of blue panic polycross progeny of clones selected for leafiness and fine stems, College Station, Texas, 1961.

Parent Identification	Number of plants in each class: Leafiness class[1] 1	2	3	4	5	Average rating	Stem size class[2] 1	2	3	4	5	Average rating
BP 34	2	9	10	8	1	2.9		7	18	5	1	3.0
17-17	5	13	10	1		2.2	6	14	11	2		2.3
24-23	9	15	11	4	1	2.3	8	11	14	3	.	2.3
11-15-12	8	6	20	2		2.4	7	15	12	1	1	2.3
11-29-72	6	6	20	3	1	2.6	3	10	18	5		2.7
12-19S-11	10	6	14	5		2.4	3	5	21	6		2.9
12-9S-12	4	4	16	7		2.8	8	10	10	1		2.1
12-25-35	3	13	17	4		2.6	3	17	16			2.4
19-15-40	7	6	14	8	1	2.7	2	9	18	6		2.8
23-14S-28	6	10	14	4	1	2.5		6	20	7		3.0
23-14S-72	1	11	19	2		2.7	3	8	19	3		2.7
24-22-45	3	2	12	7	2	3.1		6	19	1		2.8
24-22-64	6	15	12	3		2.3	4	11	20		.	2.5
24-32-35	4	12	11	6		2.6	5	8	16	3		2.5
Total	74	128	200	64	7		52	137	232	43	2	

[1] 1 = most leafy

[2] 1 = fine stems, 5 = very coarse

Table 7. Leafiness and stem size ratings of blue panic clones and their polycross progenies, BRVL, 1962.

Parent clone	Leafiness rating[1/]		Stem size rating[2/]	
	Clone 1962	Polycross progeny 1962	Clone 1962	Polycross progeny 1962
BP 34	2.7	3.5	2.0	4.8
17-17	1.8	2.5	3.4	3.3
24-23	4.0	2.8	2.0	4.5
11-15-12	5.5	2.8	4.0	4.0
11-29-72	5.0	3.5	6.0	4.5
12-19S-11	2.0	3.8	4.8	6.3
12-9S-12	5.5	3.0	4.0	5.0
12-25-35	5.0	3.8	5.4	4.0
19-15-40	3.0	4.3	5.7	5.0
23-14S-28	4.0	3.3	4.0	6.0
23-14S-72	3.0	3.0	3.5	3.8
24-22-45	4.0	3.1	7.3	5.3
24-22-64	5.5	2.8	7.0	4.5
24-32-35	3.5	3.0	3.0	4.3

1/ 1 = leafy to 9 = stemmy

2/ 1 = fine to 9 = coarse

Table 8. Yield, yield components and plant ratings in solid-row planting in 1962.

Accession	Total yield	Leaf yield	Leaf %	Vigor rating[1/]	Leafiness rating[1/]
19-13	9190 a	2870 ab	32.0 abc	2.0 abc	2.6 abcd
12-25S-7*	8900 ab	3040 a	35.1 a	2.0 abc	2.6 abcd
20-16-70	8880 abc	2670 abc	30.5 abc	1.8 ab	2.6 abcd
9-2	8620 abc	2560 abcd	31.4 abc	2.4 abcd	3.0 bcd
12-25-11*	8610 abc	2739 abc	31.7 abc	3.0 abcde	2.8 abcd
12-19-41	8400 abcd	2400 bcdef	28.8 c	2.4 abcd	2.2 abcd
12-19S-11*	8390 abcd	2640 abcd	32.6 abc	2.6 abcd	2.4 abcd
24-22	8330 abcd	2450 abcde	30.8 abc	2.0 abc	2.6 abcd
19-15S-17	8140 abcd	2350 bcdef	32.6 abc	1.6 a	1.4 a
11-19-72*	7890 abcd	2380 bcdef	31.7 abc	3.2 abcde	2.4 abcd
20-10	7780 abcd	2470 abcde	32.3 abc	2.4 abcd	2.0 abc
12-25	7760 abcd	2530 abcdef	34.1 ab	3.4 bcde	2.8 abcd
19-13-44	7670 abcd	2163 bcdef	28.7 c	2.4 abcd	2.4 abcd
23-20-59	7530 abcd	2220 bcdef	31.3 abc	2.6 abcd	2.4 abcd
19-15-43	7400 abcdef	2410 bcdef	31.3 abc	2.8 abcde	2.6 abcd
19-16	7350 abcdef	2130 cdefg	29.6 c	2.4 abcd	2.8 abcd
23-20S-59*	7260 abcdefg	2250 bcdef	31.0 abc	3.0 abcde	2.8 abcd
20-16S-13	7190 abcdefgh	2190 bcdef	30.8 abc	2.2 abc	2.6 abcd
24-25-69	6990 abcdefgh	2300 bcdef	32.8 abc	2.4 abcd	2.4 abcd
19-13S-20	6720 bcdefgh	2090 cdefg	31.3 abc	2.4 abcd	3.0 bcd
14-14S-12	6670 bcdefgh	2090 cdefg	31.9 abc	2.2 abc	2.4 abcd
11-19S-27*	6420 cdefghi	2110 cdefg	33.6 ab	2.2 abc	2.6 abcd
12-10	6400 cdefghi	1960 defgh	31.3 abc	3.0 abcde	1.6 ab
12-10-72	6210 defghi	1810 efgh	30.8 abc	3.6 cde	2.0 abc
Common	5250 ghij	1720 fgh	33.2 abc	2.6 cde	2.8 abcd
Common	5130 hij	1720 fgh	34.3 a	4.4 e	3.2 cd
Common	4580 j	1460 h	32.6 abc	3.4 bcde	3.0 bcd
Common	4030 j	1410 h	35.1 a	4.0 de	3.6 d

[1/] Visual ratings with 1 = best.

* Indicates parent clones of population in Test 3.

Table 9. General observations of Blue Panic introductions and new accessions, BRVL, 1962.

Accession	Observations
R 430	Generally fair to stemmy, few good plants as follows: 1-4 Good leafiness and vigor 1-12 Good leafiness and vigor, intermediate stem size 1-13 Good leafiness and vigor, intermediate stem size 1-40 Good vigor, fair leafiness, coarse 1-45 Good vigor, fair leafiness, coarse 1-46 Good vigor, fair leafiness, intermediate stem size
R 930	Very poor
R 574	Generally quite stemmy
R 964	Generally fair to stemmy, plants 3-38 to 3-51 are fine with fair leafiness and vigor
PMT 546	Very fine but poor
PMT 550	Generally fair to stemmy
PMT 549	Fair to stemmy
PMT 548	Fair to stemmy, few good plants 5-49 Good leafiness, good vigor, intermediate stem size 5-50 " " " " " " " 5-52 Fair " " " " " " 5-53 " " " " " "
PMT 544	Several fair to good plants 6-1, 6-2, 6-3, 6-10, 6-12, 6-13
PMT 547	Several fair to good plants 6-31, 6-32, 6-35, 6-38, 6-40, 6-41, 6-42
PMT 545	Mostly stemmy undesirable plants
PMT 515	Guinea grass
R 430	Mostly stemmy undesirable plants
R 554	Mostly stemmy undesirable plants, 8-33 good leafiness and vigor
PMT 517	A few acceptable plants plants 9-1, 9-15, 9-24, and 9-28
PMT 516	Mostly stemmy undesirable plants except: 9-50 and 9-54

Note: R = Row number from San Benito Nursery. PMT = SCS plant materials accession number.

Table 10. Yield and leaf percentage of a random sample of plants from two spaced-plant blue panicgrass populations, 1962.

Synthetic				Common			
Plant	Leaf percent	Leaf yield[1/]	Plant yield[1/]	Plant	Leaf percent	Leaf yield[1/]	Plant yield[1/]
9-18	26.2	144	549	5-3	18.9	115	607
8-29	25.6	92	361	6-7	22.3	39	175
12-6	24.0	122	509	3-29	24.5	84	455
5-19	19.5	84	430	2-15	32.6	29	89
11-40	31.2	200	641	6-10	20.9	41	196
16-32	31.1	182	585	8-11	19.1	49	257
4-47	25.5	151	593	2-17	15.1	43	284
10-44	28.0	86	307	4-8	23.4	63	269
6-6	22.4	93	415	4-34	15.1	38	252
15-51	26.0	89	342	5-45	16.2	53	328
15-21	24.1	93	386	2-7	15.5	74	478
16-16	24.7	135	547	3-48	16.5	90	546
13-39	26.0	184	707	7-13	20.6	52	252
15-34	28.0	116	415	3-4	23.3	134	574
8-37	21.4	113	528	2-10	18.1	53	293
7-13	25.7	55	214	6-47	13.4	25	187
5-17	28.4	123	433	3-12	22.5	45	200
11-31	28.2	185	655	8-5	18.5	58	313
10-50	31.4	75	239	5-31	17.2	54	314
4-17	23.5	95	405	7-7	24.0	100	417
3-35	22.6	98	434	7-17	20.6	56	272
2-24	25.9	181	699	6-33	43.2	79	183
13-11	30.8	134	435	4-43	19.5	103	527
2-10	21.5	110	511	4-9	18.5	61	329
7-49	19.9	161	808				
5-33	27.3	169	620				
Average	25.6	126	491		20.8	64	324

[1/] Grams per plant.

Synthetic population shows:
- 23% increase in leaf percentage
- 98% increase in leaf yield
- 51% increase in total yield