

National Dry Bean Nursery Trials in Bonita, 1995

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Abstract

Results of the 1995 National Cooperative Dry Bean Nursery Trials are reported in this paper. Thirty seven varieties of eight different classes of beans were included in this replicated, small plot trial. Bill-Z, the leading pinto bean variety in the area, was the highest yielding variety in the study with a yield just under 3000 pounds per acre. Fleetwood Navy variety and UI 59 Great Northern variety were the next leading varieties with yields about 50 pounds less than Bill-Z. Chase, a pinto variety recently developed with strong rust tolerance, yielded only 2300 pounds per acre in this study.. Yields, seed per pound, aerial biomass, harvest index and maturity class are also reported.

Introduction

Beans are a minor crop in Cochise County, but still bring around \$500,000 in income to the farmers growing them. They are also an excellent crop for rotation. In the early 1980's around 1800 acres of beans were grown in the county and the acreage grown each year varies with the price of beans and the rotation needs of the growers. This study is to help the bean growers in the high desert areas of the state and also to supply valuable information to the bean industry in the United States and Canada. These plots are grown in cooperation with the National Cooperative Dry Bean Nurseries which have test sites in 20 locations in the United States and 4 locations in Canada.

Materials and Methods

This trial was a replicated small plot study planted within a 125 acre pivot on the Haas Farm in the Coon Hollow area of northern Cochise county in southeastern Arizona. The plots were planted dry with a John Deere 71 flex-planter modified to accept cone-drop hoppers. After planting the plots were watered up using a center pivot irrigation system. The cultural practices for the plots were the same as the rest of the pivot and are highlighted below.

Crop History:

Soil type: Sonoita Sandy loam

Previous crop: Corn

Planting date: July 22, 1995 Rate: 75 lbs/acre

Herbicide: Treflan and Eptam preplant

Fertilizer: 190 lbs/ac 11-52-0 + 9 gal 10-34-0 + Zn at planting,
25 lbs/ac N applied via fertigation

Insecticide: None

Fungicide: None

Irrigation: Center pivot

Harvest date: November 9, 1995 (110 days, 2207 HU(86/55°F))

The bean plots were cut together with the rest of the bean field and then a subsample was taken from each plot where plants were counted, weighed, threshed with a Vogle-type small plot thresher and bean weights and aerial biomass determined.

Results and Discussions

Table 1 gives some agronomic and physiological parameters for bean varieties grown in the 1995 regional bean nursery. The yields and seeds per pound are self-explanatory, but some of the other term need explanations. **Aerial Biomass** is the weight of the entire plant above the roots, at physiological maturity, in pounds per acre. **Harvest Index** is the dry bean yield divided by the aerial biomass, and is a measure of the plants ability to partition it's energies to seed production. **Maturity** abbreviations are as follows: **ME** = medium early, **M** = medium, **ML** = medium late, **F** = full, **L** = late, **VL** = very late.

The yields in the 1995 trial are not as good as those seen in the 1994 trial (1) but mostly due to the later planting date. The number of days between planting and harvest and the number of heat units during the growing season were very comparable between 1994 and 1995, but the two week later planting date in 1995 dropped the average yield from 3364 lbs/ac to 1987 lbs/ac. The Great Northern and Pinto varieties suffered less from the late planting than all the rest of the classes of beans. The later the maturity class, the lower the yields were for the late planted trial.

In the pinto varieties, Bill-Z yielded the most and the yield of Chase dropped to below the average. This, again, might be due in part to the late planting and the fact that Chase is slightly longer in maturity than several of the pinto varieties. As has been noted in the past, the better Navy and Great Northern varieties have yielded very close to the best pinto variety. This would make it possible to change to other classes of beans being grown in the area if the market were to change.

References

1. Clark, L.J. and E.W. Carpenter. 1995. National Dry Bean Nursery Trials in Bonita, 1994. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-102, pp. 93-96.

Table 1. Results of the National Cooperative Dry Bean Nursery in Bonita, Arizona, 1995.

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Variety	Source	Yield (lbs/ac)	Seeds/lb	Aerial Biomass	Harvest Index	Maturity
Navy						
Fleetwood	Ag-Canada	2939.8	2840.6	7133.0	40.3	F
Cygnus	Univ. Guelph	2176.9	2557.1	4165.4	38.6	F
LB-4813-B	USDA-P	2109.7	3240.0	5989.5	36.4	F
ISB 1614	Idaho Sd Bean	1889.4	2751.6	4791.6	38.8	F
Average		1835.1	2880.1	5352.4	31.8	
IS-4924-B	USDA-P	1826.4	2835.0	5635.6	32.3	F
Vista	Gen-Tec Ltd	1722.0	3240.0	5336.1	26.8	L
Gryphon	Univ. Guelph	1553.3	3240.0	4247.1	30.1	L
IS-4905-B	USDA-P	1396.1	1086.6	5581.1	24.4	L
ISB 254-4	Idaho Sd Bean	1371.5	3302.3	5091.1	26.1	L
IS-4923-B	USDA-P	1366.1	3707.3	5553.9	24.4	F
Black						
UI 911	Univ. Idaho	1460.9	3489.2	4546.6	31.0	L
Midnight	SUNY	1294.0	3780.0	4546.6	27.1	L
Average		1183.5	3598.3	4301.6	25.2	
Raven	MSU	1081.6	3561.9	3947.6	24.6	L
LB-4815-B	USDA-P	897.3	3561.9	4165.4	18.2	VL
Red						
UI 239	Univ. Idaho	2226.8	1762.1	5091.1	43.2	M
NW 63	USDA-P	2186.5	1592.1	4709.9	45.4	ML
IS-4978-B	USDA-P	2119.9	2751.6	4927.7	41.1	M
LB-4803-B	USDA-P	2050.3	1269.0	4056.5	48.2	M
Average		1935.8	2070.3	4628.2	40.3	
IS-4931-B	USDA-P	1095.4	2976.8	4356.0	23.5	ML
Pinto						
Bill-Z	CSU	2985.4	1326.4	5856.4	50.1	M
ISB 2001	Idaho Sd Bean	2870.2	1345.3	6506.8	43.5	M
Othello	USDA-P	2727.3	1325.2	5417.8	50.3	M
Olathe	CSU	2715.9	1377.1	5118.3	48.1	ML
IS-4913-Bq	USDA-P	2699.7	1270.0	5308.9	50.0	M
88-048-03	NDSU	2568.9	1407.4	5717.3	44.5	ML
Average		2561.5	1351.0	5488.1	46.1	
Chase	Univ. Neb.	2305.4	1487.6	4955.0	45.7	ML
Hatton	NDSU	2244.8	1325.6	5503.4	44.7	ML
Aztec	MSU	1936.2	1294.8	5009.4	37.8	ML
Great Northern						
UI 59	Univ. Idaho	2928.4	1475.4	5798.9	49.2	ME
Average		2466.2	1553.3	5662.8	42.7	
Alpine	MSU	2245.3	1709.2	5717.3	38.6	F
IS-4914-B	USDA-P	2224.9	1475.4	5472.2	40.3	ML
Light Red Kidney						
CA Early	SVM	2080.3	885.3	5254.4	38.5	M
Average		1833.9	883.1	5036.6	35.6	
IS-4907-Ba	USDA-P	1587.5	880.9	4818.8	32.7	ME
Dark Red Kidney						
Isles	MSU	1702.8	876.9	5363.3	31.7	ML
Average		1665.6	1005.7	5036.6	31.9	
Montcalm	MSU	1628.3	1134.4	4709.9	32.0	M
Cranberry						
ISB 23	Idaho Sd Bean	1969.9	859.9	5553.9	34.8	F
Average		1651.8	859.9	4846.1	33.9	
Cardinal	MSU	1333.7	859.9	4138.2	33.0	L
Mean		1986.98	2050.31	5203.76	36.92	
LSD(05)		637.29	118.76	1527.23	7.94	
CV(%)		22.9	4.13	20.9	15.35	