

National Dry Bean Nursery Trials in Bonita, 1997

L.J. Clark and E.W. Carpenter

Abstract

Results of the 1997 National Cooperative Dry Bean Nursery Trials are reported in this paper. Thirty five varieties of seven different classes of beans were included in this replicated, small plot trial. Ole, a variety from Ag Canada was the highest yielding variety in the study with a yield over 4800 pounds per acre. Both Ole and ISB 2001 had yields higher than Bill Z, the highest yielding pinto bean in the area. Four varieties had yields over the 4000 pound per acre level. Yields, seed per pound, aerial biomass, harvest index, plant population and percent splits are also reported.

Introduction

Beans are a good rotation crop in Cochise County, and bring around \$500,000 in income to the farmers growing them. 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 Bonita area of southern part of Graham 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: Tubac-Sonoita Sandy loam

Previous crop: Corn

Planting date: June 27, 1997 Rate: 70 lbs/acre

Herbicide: Treflan chemigated at watering up

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

Irrigation: Center pivot

Harvest date: October 3rd (99 days, 1985 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 1997 regional bean nursery. The yields are in pounds per acre 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. Plants per acre and percent splits are also self explanatory.

The yields in the 1997 trial were excellent and comparable to the 1994 trial and much better than those reported in 1992, 1993 and 1995 (1). The high yields in 1994 and 1997 are tied to their earlier planting date. The number of heat units during the growing season were very comparable between 1994 and 1997, but the ten days earlier planting date in 1997 hastened the harvest date by seventeen days. Varieties of Navy and Small Red yielded over 4000 pounds per acre as well as the two varieties of Pintos. This indicates that if markets were developed, Navies and Small Reds could successfully be grown in the area.

The most exciting result from this study was the two new pinto varieties that yielded so well. These varieties will be tested again in the small replicated trial format as well as in large strip plots to see if they could be major varieties for the area.

References

1. Clark, L.J. and E.W. Carpenter. 1997. National Dry Bean Nursery Summary, 1992-1995. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-110, pp. 159-161.

Table 1. Results of the National Cooperative Dry Bean Nursery in Bonita, Arizona, 1997.

Variety #	Source	Yield	Seeds/lb	Aerial	Harv Ind	Pl/Ac	% Spl
Navy and Small White							
88:409	U. Idaho	4226.6	2110.9 a	8657.6 abc	49.3	89843	10
ISB 1814	ID Sd	3728.5	2160 a	8058.6 a-e	46.1	154638	20.5
ISB 1618	ID Sd	3667.2	2017 a	8113.1 a-e	45.4	163350	13.3
OAC Thunder	U. Guelph	3308.3	1890 ab	7731.9 a-f	42.8	49005	11.9
	Average	3102.3	2024.4	7187.4	43.3	87869	17.7
Huron	MSU	2630.1	1680 bc	5717.3 d-j	46.1	72963	18.7
Vista	check	2564.1	2061.8 a	7568.6 a-g	34.3	54995	25.4
ISB 254-4	ID Sd	2352.8	2110.9 a	6588.5 b-j	35.9	71330	32
Newport	MSU	2340.8	2164.9 a	5063.9 f-j	46.3	46827	9.4
Small Red							
W 63	check	4278.2	1226.9	8058.6	53.2	30492	13.9
88:539	U. Idaho	4080.2	1209.8	8330.9	49	52272	16.4
	Average	3626.0	1181.0	6933.3	53.1	47190.0	13.6
USWA-11	USDA-P	2519.6	1106.3	4410.5	57.2	58806	10.5
Pinto							
Ole	AgCanada	4840	1067.5	9202.1	52.6	47371.5	8.5
ISB 2001	ID Sd	4494.3	1019.5	9202.1	49.1	84942	8.8
Bill Z	check	3962.6	1134	7024.1	56.4	65340	12.8
Maverick	NDSU	3842.5	1570.9	9583.2	42.7	100188	21.4
93:220	U. Idaho	3666	975.6	4846.1	87.9	46827	14.7
	Average	3599.5	1339.0	6877.1	56.7	58533.8	12.4
Olathe	Field Var.	3391.1	1080.6	6479.6	52.3	38115	10.8
Frontier	NDSU	3347.9	1093.2	7677.5	43.6	50638.5	11.7
USWA-19	USDA-P	3136.7	3136.7	5880.6	53.3	40293	12
Chase	check	3061.1	1163.1	4247.1	79.7	34848	11.2
WSB 101	Wag SdCo	2253.2	1148.6	4628.3	48.9	76774.5	12.1
Great Northern							
90:465	U. Idaho	3728.5	1067.5	6479.6	57.4	47371.5	11.3
	Average	3459.2	1095.1	6534.0	53.3	41745.0	11.2
USWA-12	USDA-P	3416.4	1008	7350.8	46.2	39204	11.1
US 1140	check	3232.7	1209.8	5771.7	56.4	38659.5	11.2
Light Red				Kidney			
USWA-39	USDA-P	2931.4	693.6	7133	41.1	50638.5	24.5
AC ELK	AgCanada	2891.8	692.6	6806.3	42.7	52272	22.6
NY 10195	Cornell	2817.3	864.7	6261.8	45	38115	22.3
	Average	2804.6	723.1	6425.1	44.0	41817.6	23.0
HR 49	AgCanada	2734.6	686.8	6588.5	41.6	33214.5	23.4
Cal Early	check	2648.1	677.6	5336.1	49.6	34848	22.4
Dark Red Kidney							
2242	Sacr V	3430.8	804.4	8222	41.8	34848	16.8
USWA-39	USDA-P	2857	737.6	6207.3	46.1	32670	21.7
	Average	2788.3	752.9	7037.7	39.7	33214.5	21.6
Isles	MSU	2568.9	725.8	7078.5	36.5	33759	20.7
Montcalm	check	2296.4	743.8	6642.9	34.4	31581	27
White Kidney							
USWA-75	USDA-P	3675.6	667.2	7840.8	46.6	37026	26.4
	Average	3004.6	721.4	6506.8	45.9	36481.5	22.8
Lassen	check	2333.6	775.5	5172.8	45.2	35937	19.2
	Mean	3235.8	1213.3	6856	48.6	56285.7	16.7
	LSD (05)	932.7	247.3	2328	21.8	23174	8.5
	CV (%)	14.2	10	16.7	22	20.3	25