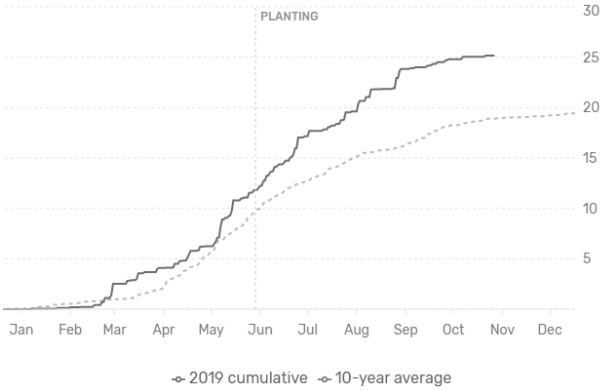
Pinto Bean Planting Population for Direct Harvested Dry Beans

Study ID: 0807031201901
County: Cherry
Soil Type: Valentine loamy fine sand 3-9% slopes
Planting Date: 6/10/19
Harvest Date: 9/17/19
Row Spacing (in): 20
Variety: La Paz pinto beans
Reps: 4
Previous Crop: Corn
Tillage: Disk chopping vertical till twice and then rolled before planting
Herbicides: ***Pre:*** 1.3 pts/ac Medal® II ***Post:*** 21 oz/ac Varisto® and 7 oz/ac Targa® with 1 pt/ac crop oil
Desiccant: 2 oz/ac Sharpen®, 32 oz/ac Durango®, and 5 oz/ac Flame® with 3 oz/ac Downdraft® and 1 pt/ac MSO on 9/10/19
Seed Treatment: Maxim®, Apron®, Rancona®, and Vibrance®
Foliar Insecticides: 5 oz/ac L-C Insecticide™ pivot-applied
Foliar Fungicides: SaniDate® 12.0 pivot-applied with 2 applications in July and August
Fertilizer: 12 lb N/ac, 45 lb P/ac, 90 lb K/ac, 5 lb S/ac, 1 lb Zn/ac, and 1 lb B/ac dry broadcast; 20 lb N/ac, 40 lb P/ac, 15 lb S/ac, and 1 lb Zn/ac as starter; 70 lb N/ac and 10 lb S/ac through pivot in July; 2.83 lb/ac 32% UAN with post herbicide
Irrigation: Pivot, Total: 7”
Rainfall (in):



Introduction: The purpose of this study was to compare several planting rates of dry edible beans (La Paz pinto variety) planted in 20" row spacing. Target populations were 100,000 and 130,000 plants/ac; however, the planting equipment used resulted in seeding rates that differed from the intended rate. Actual populations were determined by early season stand counts and were 96,703 and 125,344 plants/ac, respectively. To estimate the treatment seeding rate and subsequent seed costs, 10% was added to the stand count values; this resulted in treatment seeding rates of approximately 106,370 and 137,830 seeds/ac, and assumes all treatments had similar emergence and germination. The plots were direct harvested on September 17 with a John Deere® S780 combine and John Deere® 635F flex draper header and Crary® Wind System. Temperature at harvest was 77°F at 54% relative humidity

Samples from each plot were analyzed for bean quality parameters. Pod height measurements were taken to determine the percent of pods 2" or greater above the soil surface. Harvest loss estimates were determined by taking counts in one-square-foot frames randomly chosen in the harvested area, but equally representing the left side of header, center of header, and right side of header area behind the combine.

Results:

Treatment (seeds/ac)	Stand Count (plants/ac)	Pods > 2" above-ground (%)	Harvest Loss (bu/ac)	Small (%)	Split (%)	Foreign Material (%)	Damaged (%)	Moisture (%)	Density (lb/bu)	Seeds per lb	Yield (bu/ac)†	Marginal Net Return‡ ($/ac)
100,000	96,703 B*	87 B	1.5 A	3 A	1 A	0 A	5.9 A	15.3 A	60.6 A	1,408 A	33 A	364.27 A
130,000	125,344 A	94 A	1.5 A	4 A	0 A	0 A	8.0 A	15.5 A	60.0 B	1,378 A	34 A	311.43 B
P-Value	0.0001	0.003	0.878	0.387	0.154	0.462	0.130	0.566	0.068	0.409	0.677	0.094

*Values with the same letter are not significantly different at a 90% confidence level.

†Bushels per acre adjusted to 14% moisture and adjusted for clean yield (%splits, %small, and % foreign material removed).

‡Marginal net return based on $25/cwt ($15/bu at 60lb/bu). Seed cost for the bean seed was $69.50/100,000 seeds. Seed costs for each treatment were adjusted to represent the estimated actual seeding rate: $73.93/ac for 100,000 seeds/ac, and $95.79/ac for 130,000 seeds/ac treatment.

Sponsored by: **In Partnership with:**

University of Nebraska Lincoln · Nebraska Corn Board · Nebraska Soybean Checkoff · Nebraska Corn Growers Association · Nebraska Dry Bean Commission

Summary:

- The percent of pods greater than 2" above the soil was greater for the 130,000 seeds/ac treatment than the 100,000 seeds/ac treatment. Pod heights were fairly good for these treatments with the 130,000 population holding pods significantly higher than the 100,000 population.
- Harvest loss was not different between the two populations tested.
- There were no differences in percent small, percent split, percent foreign material, percent damage, moisture, and seeds per lb.
- There was no yield difference among the two populations tested.
- The surrounding field was planted to La Paz variety pinto beans and the overall average yield for the surrounding field was 33.4 bu/ac.
- Market value for net return was adjusted for beans having more than 3% damage in pinto beans.
- Increasing the seeding rate from 100,000 seeds/ac to 130,000 seeds/ac resulted in lower net returns due to increased seed cost and no yield advantage.

Sponsored by: **In Partnership with:**