**2018 Nebraska Dry Bean Variety Trials**

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The PHREC Dry Bean Breeding program conducted replicated field trials in 2018 at two locations, the Scottsbluff Ag Lab and the Mitchell Ag lab, to evaluate which dry bean entries (varieties/experimental lines) are best suited for western Nebraska. These trials have been ongoing for 38 years as a service to the dry bean industry of Nebraska. Information about dry bean variety performance can be accessed on the web at <http://cropwatch.unl./varietytest-Drybeans/2017>

**Locations and Germplasm**

Three replicated trials [one great northern (26 entries), one pinto (36 entries), and one light/dark red kidney (LRK/DRK, 35 entries)] were planted at both the Mitchell and Scottsbluff Ag Labs on June 5 and 11, respectively. Two additional trials [one black (15 entries) and one miscellaneous (13 entries)] were planted at the Scottsbluff Ag Lab on June 11. The Cooperative Dry Bean Nursery (2018 CDBN), 21 entries) was planted at the Scottsbluff Ag Lab on June 13.

Soil at the Scottsbluff site (41◦53.6′ N, 103◦40.7′ W, 1200 m elevation) is a Tripp very fine sandy loam (coarse-silty, mixed, superactive, mesic Aridic Haplustolls). Soil at the Mitchell site (41◦56.6′ N, 103◦41.9′ W, 1240 m elevation) is a silt loam (Typic Ustorthents).

**Agronomic Management**

The field at the Scottsbluff Ag Lab was plowed and sprayed/roller harrowed with Eptam @ 2.5 pts/acre and Sonalan @ 2 pts/acre on May 25. The field at the Mitchell Ag Lab was plowed on May 31 and sprayed/roller harrowed with Eptam @ 2.5 pts/acre and Sonalan @ 2 pts/acre on June 2.

The field at the Scottsbluff Ag Lab had 39# residual N and 10# N manure credit. About 80# of 46-0-0/acre were applied. The field at the Mitchell Ag Lab had 69# residual N and 99# N manure credit.

Both experimental fields received hail and wind damage on May 22, May 23, and July 24 and were sprayed with Megafol @ 8 oz/acre and Badge @ 1.5 pts/acre on June 26. Both experimental fields were sprayed with Priaxor @ 4 oz/acre on July 19.

Sprinkler irrigation system was used at the Mitchell Ag Lab, while furrow irrigation was used at the Scottsbluff Ag Lab. The Mitchell Ag Lab was irrigated 14 times (9.4 inches) and the Scottsbluff Ag Lab was irrigated 8 times (16 inches).

The entries were assigned to experimental units using a randomized complete block design with four replications at each location. Each plot consisted of four 22-foot rows spaced 22 inches apart. The target plant population was 80,000 plants/acre for all market classes except the LRK/DRK which had a target population of 100,000 plants/acre. The trials were planted with a Hege cone planter. Only 20 feet of the middle two rows of each plot were harvested at the end of the growing season with a plot combine (Wintersteiger Classic). Variety/line trials at the Mitchell Ag lab were undercut and combined on September 18 and 19, respectively. Those at the Scottsbluff Ag lab were undercut and combined on September 20 and 21-22, respectively.

**Response Variables**

Data collected were: yield (lbs/acre adjusted to 14% Moisture), DTF (days to flowering, actual number of days from planting to when 50% of the plants had at least one flower opened), DTM (days to maturity, actual days from planting to when 80% of the plants were ready to be harvested), 100-seed counts (weight of 100 seeds in grams, adjusted to 14% Moisture), and Test Weight (lbs/bushel). Data are presented in Tables 1 to 10.

**Statistical Analysis**

Data were analyzed using PROC MIXED (SAS, 2004). Each location was analyzed separately. Homogeneity of variances was evaluated using Bartlett’s χ2 test (Steel and Torrie, 1980). When appropriate, the data were pooled across locations. Means were separated using a F-protected LSD. All tests were considered significant at *P* ≤ 0.05.

From the bottom of each table: GRAND MEAN is the mean of the experiment. The Coefficient of Variation expressed in percentage (CV %) is a measurement of how variable the experiment was. Large CVs mean that a large amount of variation cannot be attributed to differences among entries. The LSD is the Least Significance Difference. If the difference between two entries exceeds the LSD value for any particular response variable, it means that with 95 percent probability (0.05 level), the higher value cultivar had a significantly greater value. If the difference between two entries is less than the LSD value, then the entries are considered similar.

We were able to pool data from both locations for the great northern trial (Table 1) because there was no interaction between entries and location. For the pintos and light/dark red kidney varieties/lines, data is presented by location because there was a significant interaction between entries and locations.

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Table 10. 2018 Cooperative Dry Bean Nursery (CDBN) - Scottsbluff Ag Lab.

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