2016 Dry Bean Seeding Rate Trial

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Dry beans (Phaseolus vulgaris), a high-protein pulse crop, have been grown in the Northeast since the 1800's. As the local food movement expands, consumers have requested stores stock more and more locally produced foods, and heirloom dry beans are no exception. Currently, the demand for heirloom dry beans has exceeded the supply. Little agronomic information exists for production of dry beans in New England. In an effort to support and expend the local bean market throughout the northeast, the University of Vermont Extension Northwest Crops and Soils Program, as part of a USDA NE-SARE Partnership Grant (PG16-049), in 2016 established a second year of a dry bean seeding rate trial to determine the optimal seeding rates for three types of dry beans.

MATERIALS AND METHODS

The trial was conducted in 2016 at Borderview Research Farm in Alburgh, VT. The experimental design was a randomized complete block split design with four replications. Main plots were seeding rate and

with a Monosem 2-row planter. Seeding rates were determined by calculating the desired target seeding rate and adjusting for percent germination. Prior to planting, bean seed was treated with dry bean inoculant (*Rhizobium leguminosarum biovar phaseoli*). Additionally, a starter fertilizer was applied at 150 lbs ac^{-1} to the acre of 10-20-20 at the time of planting. The plots were 5'x 20', with 30-inch row spacing. Plant populations were taken on 23-Jun by counting the number of plants in 17.5 feet of both rows of each plot. Plots were mechanical cultivated with a four-row Brillion cultivator on 6-Jul and 11-Jul. At the time of harvest, plant populations were counted in one square meter per plot, plant height, and 10 pods from each plot were examined for the presence of disease. Plots were hand harvested in Alburgh on 26-Sep and were then threshed with a portable thresher with a rasp bar rotor. Beans were then weighed to calculate yields and a DICKEY-John MINI GAC Plus meter was used to determine bean moisture content and test weight.

Table 2

King of the Early	58,000 (low)	32,359	55.8

Trial Mean		33.9	41.7	2100	20.7	56.3
Yellow Eye	57,000 (low)	35.8	17.5	1776	**21.1**	**58.9**
Yellow Eye	77,000 (medium)	**37.6**	20.0	**1896**	22.0	58.3
Yellow Eye	97,000 (high)	37.1	**2.50***	1887	23.0	58.3
LSD (0.10)		NS	1.41	NS	NS	NS
Trial Mean		36.8	13.3	1853	22.0	58.5

*Treatments that did not perform significantly different than the top-performing treatment (in bold) in a particular column by dry bean type are indicated with an asterisk.
NS-Treatments were not significantly different from one another.

The actual plant populations were much lower than the target seeding rates for Yellow Eye, King of the Early, and Black Turtle Beans. Factors that may have limited germination rates include low soil moisture at the time of planting, possible planter error, and little rainfall after planting. Overall, yields for all bean types and seeding rates were higher in 2016 than in 2015. The medium seeding rate for all bean types yielded the highest. The drought like conditions did help to reduce weed pressure and plant disease. More research needs to be conducted in order to determine the ideal seeding rates for dry beans in our ever-changing climate.

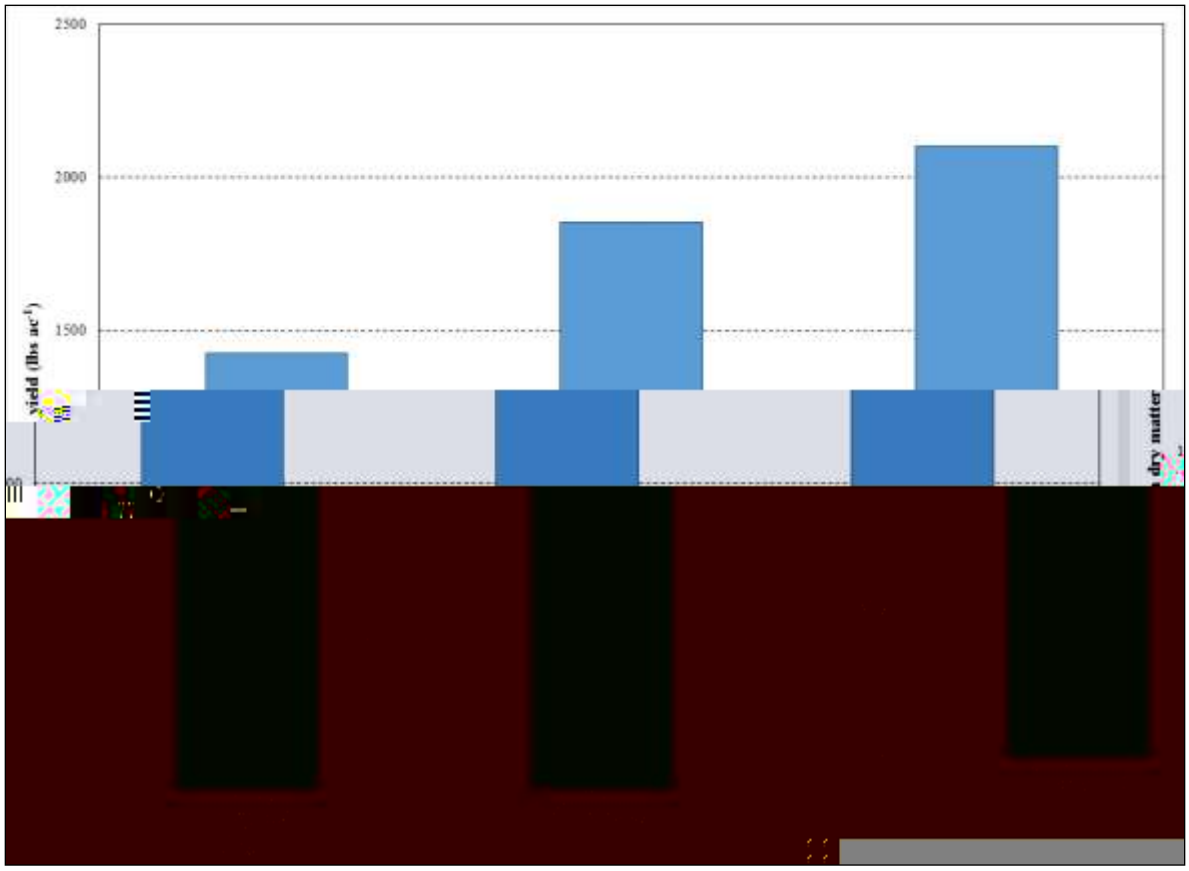

Figure 1. 2016 mean yields, of Black Turtle, King of the Early, and Yellow Eye dry beans, Alburgh, VT.

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