

Dry Beans as a Local Food Crop in West Virginia

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Introduction:

Dry, edible beans (*Phaseolus vulgaris*) are a staple crop in many cultures. In Central Appalachia, beans are an important dietary source of protein and fiber. Dry beans can have a vining or bush growth habit. When planted as a pole bean, the vines must be trellised. Bush beans, however, can be planted without trellising. Dry beans have a diversity of seed colors including white, brown, black and mottled colors such as the cranberry or Italian ‘Stregonata’ heirloom beans. Many dry bean varieties are heirloom varieties in which the seed can be saved and used for succeeding years. Relative to many other types of vegetables, dry beans are low input crops, requiring less fertilizer and labor. The beans are either machine or hand-harvested and shelled. Once shelled, the beans are stored in a cool, dry environment and can be sold during the off-season months such as winter.

Materials and Methods:

Nine dry bean varieties were evaluated at the WVU Organic Horticulture Farm in Morgantown, WV in 2020 and 2021 (Table 1). The varieties were hand-seeded into beds covered with white, plastic mulch with drip irrigation in early July (July 5-8) of each year. The seeds were sown as a 2-row bed with each plant spaced 6 inches apart. Individual plots were 4 feet in length and replicated three times in a randomized, complete block experimental design.



Figure 1. Beans were hand-harvested and shelled after drying.

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In mid-October, the beans were hand-harvested by stripping the pods from each plant (Figure 1). The dry pods were transferred to a high tunnel for further drying an additional 3 weeks. Pods from each replication were subsequently shelled using a mechanical sheller. The shelled beans from each variety were then weighed and evaluated for quality.

Results and Discussion:

Table 1. Dry bean varieties examined in 2020-21

Variety/Seed Co.	Description
Bird Egg bean (Seed saver)	West Virginia heirloom bean used as fresh-shelled or dried bean.
Black Turtle (Vermont Bean Seed Co.)	Very flavorful, small, black bean with high protein and fiber. Excellent for many recipes.
Borlotto- <i>Lingua Di Fuoco</i> (Seeds from Italy)	Italian heirloom horticultural bean called “Tongue of Fire” used either as a fresh, shell or dried bean.
Bush Fall bean (Sustainable Mountain Agric. Center)	Heirloom from Eastern Kentucky used as either a shell or dried bean.
Cannellini (Seeds from Italy)	Small, white, Italian heirloom bean with excellent flavor. Can be a substitute for Kidney or Great Northern dry beans.
Cranberry bean (Vermont Bean Seed Co.)	Heirloom bean from New England used as fresh shelled or dried bean.
French Horticultural bean (Vermont Bean Seed Co.)	Used as a fresh-shelled or dried bean. Excellent for canning and freezing.
Lina Cisco Bird Egg bean	Heirloom dry bean from Missouri with maroon color.
October bean (Seed saver)	Heirloom dry bean from West Virginia with excellent flavor.
Stregonta (<i>Fagiolo nanta</i>) (Seeds from Italy)	Italian heirloom bean used as a fresh shelled or dried bean.

Table 2. Marketable yield of dry beans.

Variety	Mkt. yield (lbs./1000 ft ²) ^z	
	2020	2021
Black Turtle Bean	134.4	131.3
Bush Fall Bean	81.7	70.0
Cannellini Bean	138.9	53.5
French Horticulture Bean	121.4	102.9
L.C. Birdegg Bean	115.8	65.2
October Pole Bean	194.7	-
Stregonta Bean	118.7	125.8
Vermont Cranberry Bean	148.5	149.3
<i>Average yield</i>	<i>131</i>	<i>98</i>
Significance		

^zMarketable yield is calculated based on bed area containing approximately 16 plants, not total land area.

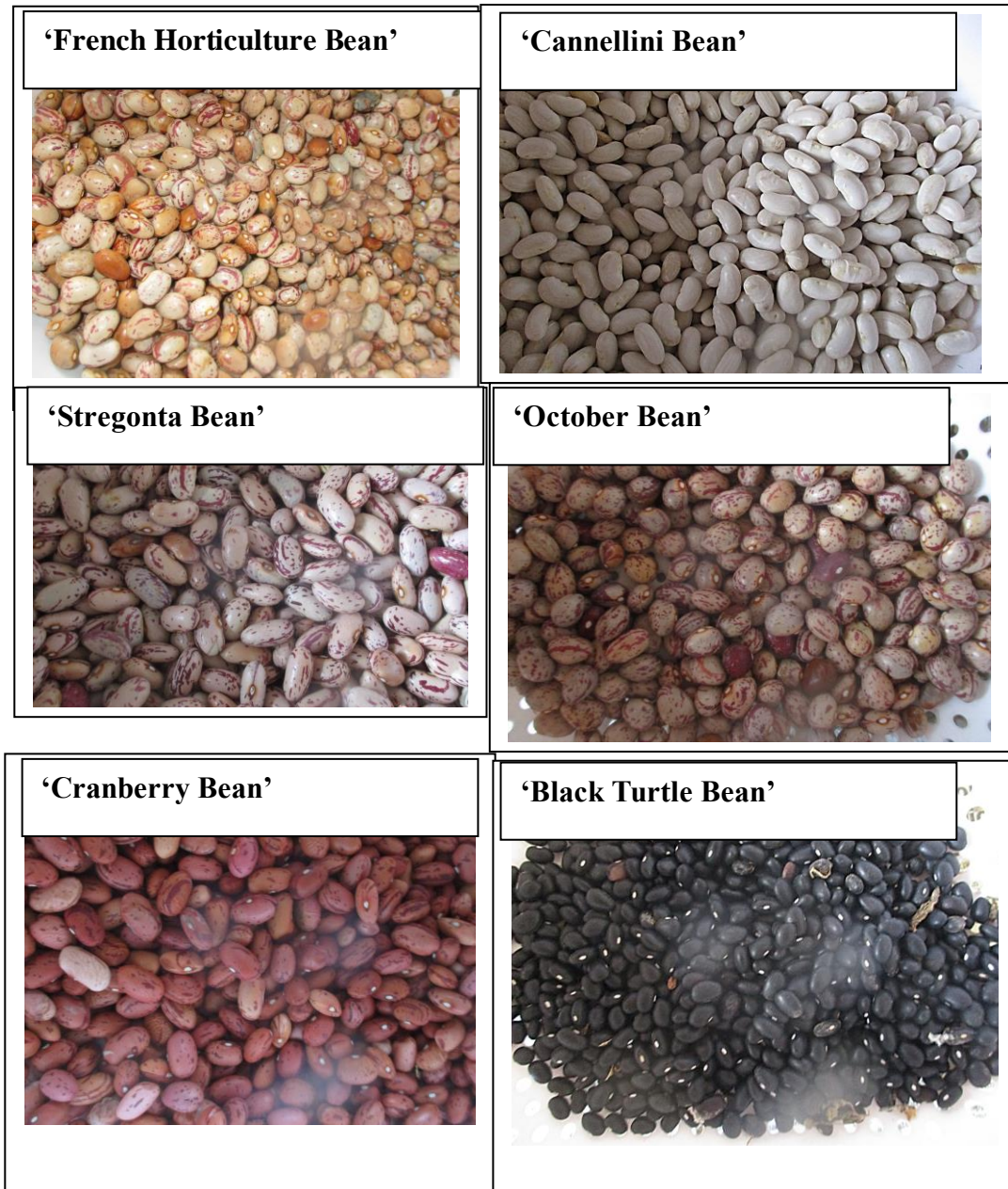


Figure 3. Phenotypic traits of dry beans evaluated.

Bush dry beans can be seeded in larger acreages and machine-harvested. The 'October bean' is a pole bean with high yields which must be hand-harvested. In our evaluation, each dry bean plant yielded 1-2 ounces of marketable beans per plant. Assuming plant populations of 30,000-40,000 plants per acre, this would produce a marketable yield of approximately 3200 lbs./acre. The 'Black Turtle Bean' was a consistently high-yielding dry bean cultivar. The pods stayed intact even as the plant dried in the field. The 'Cannellini' bean yielded well in 2020 but did not

have high yields in 2021 due to problems with stand establishment. ‘Cranberry’ beans are an excellent dry bean and produced the highest yields of all the dry bush beans evaluated. ‘October Pole Beans’ are high yielding with excellent quality but would have to be hand-harvested even in larger plantings.

Dry beans were packaged and test marketed in 2021 (Figure 4). Demand was very good with beans sold at an average price of \$3.00/lb. Growers should consider adding dry beans to their farm as a local food crop which can be sold in the off-season.



Figure 4. Dry beans can be packaged and sold at local markets throughout the year.

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