

# Breeding Common Bean

W-2150 (2010-2015)

Beans have been cultivated in the U.S. for millennia and are a popular, nutritious food choice; however, the average national bean yield is low compared to other crops. Drought, diseases, poor soil quality, and short growing seasons reduce bean productivity in many growing environments. Yield losses can range from 10% to 90%. Using fungicides to fight diseases can increase production costs and result in environmental and human health hazards if improperly used. To address these challenges, a multistate research group, W-2150, is helping breed better bean varieties. Multistate collaboration makes it easier to share the data, tools, laboratories, greenhouses, and genetic materials needed for bean research and breeding.

The group's research has developed more effective methods for detecting and treating bean diseases and developed new bean varieties. New bean varieties help reduce production costs, increase the yield and competitiveness of U.S. bean growers, and sustain production for domestic consumption and export.

## New Bean Varieties & Benefits

### GROWING IN TOUGH CLIMATES



Photo by Scott Bauer, USDA-ARS.

**Drought tolerant breeding lines** will improve the **productivity** and **profitability** of beans for producers in areas often affected by drought.

**Heat tolerant bean varieties** improve yields under high temperatures, benefitting US growers and **expanding bean growing regions** in other countries.

### SHARING KNOWLEDGE

The Legume ipmPIPE (a website with centralized, useful tools and information about pest management for legume growers) has had a

**~5% return**

by reducing losses from diseases and pests.

### INCREASING YIELDS & PROFITS



Photo by Stephen Ausmus, USDA-ARS.

New varieties are **easier to harvest** and have **higher, more consistent yields**. These varieties **reduce production costs, provide greater, steadier grower income**.

If the area planted with new bean varieties increases by just 10%, the **value of yield increases could exceed \$250 million each year**

Coyne great northern bean variety is **highly resistant to common bacterial blight and bean rust**. Farmers growing these beans will have **direct cost savings of**

**\$450,000 per year**

because of reduced use of chemicals.

New upright black bean varieties allow growers in Michigan to direct harvest the crop and **reduce production costs**.

Using a double-row arrangement, pinto bean growers should be able to **increase yield** and maintain **desirable seed size**.

### IMPROVING NUTRITION

Beans with **modified sugar content** are more suitable for people with **certain dietary needs and restrictions**.

Beans with **increased zinc concentration** provide an **essential mineral for human health**

Black bean varieties with **superior canning quality** offer a **stronger revenue stream** to bean processors and producers.

### INCREASING CONSUMPTION

New **bean-based snacks and convenience foods** could **increase bean consumption** and **competitiveness** with other foods.

### IMPROVING ENVIRONMENTAL HEALTH

Adoption of new varieties nationwide may **reduce fungicide** use by

**25% or more**

resulting in a **cleaner environment** and **savings for producers**.

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For more information on the Multistate Research Program or the Impact Writing Initiative, visit <http://www.multistateresearchimpacts.org/>.

#### Participating Institutions:

University of Alaska, Fairbanks  
University of California, Davis  
University of California, Riverside  
Colorado State University  
Cornell University  
University of Georgia  
University of Idaho  
Iowa State University  
Michigan State University

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