The Dry Bean Breeding Project (DBBP) is responsible for developing pinto bean (Phaseolus vulgaris L.) varieties for the Central High Plains and the San Juan Basin in Southwestern Colorado and New Mexico. Since 2000, the project has released four pinto bean cultivars with improved disease resistance, plant architecture, and seed quality. Each of these varieties incorporated genes that were identified by breeders and pathologists who searched for new sources of genetic diversity. Enhanced disease resistance genes include novel alleles for resistance to Bean common mosaic virus, Bean common necrotic virus, common bacterial blight, white mold, and root rot caused by soil borne fungi. Plant architecture was altered by introgressing genes that confer upright plant architecture obtained from common beans domesticated in the lowland tropical areas of Central America. Seed quality was enhanced using a novel gene from tropical bean germplasm that improved seed color. It is termed the “Slow Darkening” gene (sd allele) that was originally found in indigenous land races from Mexico and Central America. The sd allele delays the darkening of pinto beans in storage due to reduced oxidation of phenolic and flavonoid compounds found naturally in the pinto bean seed coat. This lengthens the storage time of beans and reduces losses due to seed discoloration. Since 2000, cultivars released by the DBBP occupy about 40% (20,000 acres) of commercial acreage in Colorado; 7 to 10% (16,000 to 23,000 acres) of bean production in the High Plains Region (CO, KS, NE, WY), and 100% (6,000 acres) of rainfed production in the San Juan Basin. One must be careful with these estimates, because no formal surveys are conducted to verify the exact quantity of production for any single cultivar.

**Indicate all funding sources**
- USDA - NIFA/AFRI
- Hatch Funds (These are also known as USDA formula funds. They are often used for salary support for agricultural faculty and technicians, and to fund experiment station operating costs)
- Commodity Groups
- State Funding
- SCRI (Specialty Crops Research Initiative)

**What problem was addressed by this success?**
- Disease or pest
- Yield
- Quality
- Other (please specify) More efficient harvesting due to upright plant architecture

**Please indicate all stake holders that benefited from this success story**
- Growers
- End-users
- Consumers
- Students
- Plant Breeders

**Indicate the number of each type of participant in this success story**
- Undergraduate = 5
- Graduate Student = 3
- Post Doc = 0
- Research Technician = 1
- Other = 0

**What are the outputs? Output = (product, goods and services resulting from success e.g. varieties or germplasm released, new genetic tools etc)**
Four common bean varieties

**What are the impacts? Impact = (long term, sustainable change due to success story e.g. change in disease, yield, quality including acreage planted)**
Improved disease resistance, plant architecture, and quality.

**Which category below best describes this success story?**
Varieties released