

The Colorado Potato Breeding and Selection Program



A Photo Essay

“The mission of the Colorado Potato Breeding and Selection Program is to develop cultivars with characteristics that will help assure that the Colorado potato industry remains productive and competitive.”



Colorado State University's San Luis Valley Research Center is the headquarters for the Colorado Potato Breeding and Selection Program.



Potato flowers are complete since they contain both female and male parts.



Most new potato cultivars originate from the cross pollination of parents plants. This photo illustrates removal of the anthers (male part) in preparation for cross pollination.



Pollen is extracted from the anthers for cross pollination.



Pollen is transferred to the stigma (female part) of the selected female parent.



A small tomato-like berry or seed ball develops after pollination, if successful fertilization takes place.



Each seed ball may contain less than 100 seeds to a few hundred small seeds. Each seed is genetically different and represents a potential new potato cultivar.



The seeds are germinated in the greenhouse to produce seedling plants.



Several thousand seedlings are grown in the greenhouse each year. This increases the probability of finding improved cultivars since about 200,000 seedlings are grown for each cultivar named and released.



The seedling plants are grown to maturity to produce tubers in the greenhouse. Each tuber can differ in appearance, cooking qualities, and several other important characteristics. These tubers all came from one cross (same parents) displaying the great amount of genetic variation in potatoes.



Seedling tubers produced in the greenhouse are planted in the field the following year as single hills. The tubers are planted three-feet apart to allow for easy separation and identification at harvest.



When the single hills are harvested, selection is done to identify potential new cultivars. "Wild" types (like pictured above) are discarded because of long stolons and late maturity.



These tubers were also discarded because of a serious grade defect. Selection in the single hills is primarily based on tuber appearance.



The following year, selections from the single hills are increased for further evaluation. Each single hill is now called a clone and will carry a unique designation until discarded or named.



It takes 10-12 years of evaluation before naming a new cultivar. In the end, a new cultivar should be superior to existing cultivars in some way such as increased yield, resistance to pests and stresses, or a higher percentage of US No. 1 tubers.



The long-term process of developing a new potato cultivar fosters collaborations among growers, shippers, processors, researchers, and extension personnel.



Russet Nugget (TC582-1) resulted from a cross of Krantz and AND71609-1RU made in 1977. It was named in 1988 cooperatively by Colorado State University and Texas A&M University.



A field of Russet Nugget in the San Luis Valley. The name, Russet Nugget, was chosen to describe the tubers that have a high dry matter content and light golden flesh color.



Chipeta (AC80545-1), was named after the wife of the famous Ute Indian Chief Ouray. It is also a Ute Indian word meaning "white singing bird." Chipeta resulted from a cross of WNC612-13 x Wischip.



Chipeta is primarily used for the production of potato chips.



Two specialty cultivars were recently named. The first, Purple Majesty [CO94163-3P/P (ND2008-2 x All Blue)] resulted from a cross designed to enhance the chipping qualities of colored-fleshed potatoes.



Mountain Rose [CO94183-1R/R (All Red x ND2109-7)] also resulted from a cross designed to enhance the chipping qualities of colored-flesh potatoes. Potatoes with greater levels of anthocyanins (pigments) also have higher levels of antioxidants. Antioxidants may help prevent cancer and heart disease.



February is designated as "Potato Lover's Month."



Remember . . .

"Potatoes, like wives, should never be taken for granted." Peter Pirbright