

The Colorado Potato Breeding and Selection Program



A Photo Essay

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Mission Statement

“The mission of the Colorado Potato Breeding and Selection Program is to develop cultivars that will help assure that the Colorado potato industry remains productive, competitive, and sustainable and that provide the consumer with improved nutrition and quality.”



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.



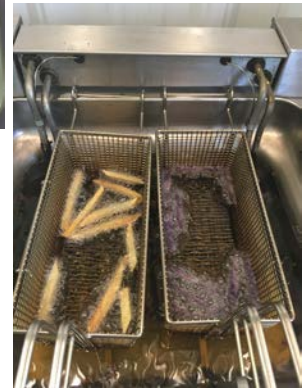
The following year, selections from the single hills are increased for further evaluation. Each single hill is now called a clone and will carry a unique designation until discarded or named.



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.



We screen clones for postharvest traits such as blackspot bruise and enzymatic browning susceptibility.

We also test for processing qualities such as solids, potato chip and french fry color.



Fortress Russet is a high yielding dual purpose russet with multiple disease resistance and low acrylamide content.



This is a field of Fortress Russet. The name, Fortress Russet, was chosen to emphasize the multiple disease resistance of the clone.



Masquerade is a fresh market specialty with bicolor purple and white skin and yellow flesh. It has a high yield potential and good flavor attributes.



Masquerade has large, attractive vines with deep purple flowers.



We have developed very unique specialties, like TC05276-P/PW, a purple fingerling with purple and white flesh.



We are also trying to develop darker yellow fleshed clones that contain higher levels of carotenoids, and improved health benefits.