



# Potato Pathologist

Colorado State University Research  
Protects Colorado Seed Potatoes

In the 1840s, a tragic event in the history of agriculture changed a country forever. A fungus destroyed the Irish potato crop, the population's major food source, and precipitated the Irish Potato Famine. Rob Davidson, Colorado State University Cooperative Extension state seed potato specialist and the potato pathologist for the Colorado Potato Certification Service, is intent on not repeating history.

Although potatoes are not the primary food of the United States, Colorado potatoes are big business. Colorado routinely ranks among the top five or six states in acreage planted, and Colorado is the fourth largest producer of potato seed. Growers in the state produce in excess of 150 cultivars and sell 1.4 million hundredweight of seed throughout the United States and to several international markets. The majority of Colorado's seed potatoes are produced in the San Luis Valley.

Davidson and other researchers at the San Luis Valley Research Center's Colorado Potato Certification Service are involved in making sure that Colorado seed potatoes maintain their excellent reputation so that growers can continue to expand their markets and their profits. "Certification," Davidson explains, "is the official process of evaluating potatoes based upon a set of standards relating to seed history and acceptability for production. The certification process focuses on disease tolerances, specified growing and production regulations, pathogen/disease testing, grade inspections, and grower expectations, and ends with issuance of an official state tag indicating the status of the seed within the program. A seed lot is classified according to years of production, levels of disease, handling methods, and other

criteria. The seed lot may be classified as entered, downgraded in class, or rejected as seed. In a practical sense, this means that the seed has gone through a series of inspections and met certain conditions that give assurance to the buyer that the seed should produce a reasonable crop with a minimum of problems during the first season of growth."

In addition, Davidson and his co-workers have been responsible for helping to identify the various disease and pest threats to successful certified seed potato production in Colorado and other parts of the west and for developing management strategies to help growers limit or control pest and disease problems. Their work has been instrumental in reducing the impacts from diseases such as bacterial ring rot and blackleg/soft rot to negligible levels. When other seed regions have been struggling, Davidson's research, along with the research of his colleagues like Richard Zink, has helped Colorado growers continue to produce high-quality seed stocks for sale into the surrounding region. For example, Davidson has conducted research on a technique for killing potato vines at the end of the growing season. "Growers use a variety of techniques," he says, "to kill vines at the end of the season in order to prevent additional spread of virus diseases and provide for higher-quality potatoes with good skin set. Research, funded in part by the Agricultural Experiment Station, demonstrated that vines could be chopped and sulfuric acid (one type of vine desiccant) could be applied within 48 hours with no spread of bacterial or virus diseases. This is important because many of the cultivars being grown have very large vines that are difficult to kill with only one application of acid. This research allowed the growers to chop the vines mechanically

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(a practice that normally would spread many different types of viral or bacterial diseases) to reduce foliage, apply sulfuric acid once, and have an effective, safe, and economical vine kill.”

Another key focus of this research program over the past several years is the evaluation of advanced clones from the Colorado cultivar development program, headed by David Holm. Clones are screened for their reaction to several of the major disease threats found in Colorado including bacterial ring rot, potato virus Y, and potato leafroll virus. Through this screening, clones that have problems expressing disease symptoms are removed from the system. This has resulted in significant reductions of these particular diseases being found in the certified seed crop. Currently, Colorado producers raise

around 7,900 acres of Colorado-developed cultivars, representing more than 50 percent of the seed acreage entered into the program. “Since many of these clones are under Federal Plant Variety Protection, additional revenues to support research are generated for CSU through the collection of royalties. This results in a win-win situation for both the growers and the University,” Davidson says.

Davidson’s potato research seems never-ending. Presently, he is particularly concerned about two serious threats to Colorado seed potato production – importing serious diseases and pests from other regions and the practice of growers cultivating noncertified or common seed in the seed-producing region and perpetuating disease problems or reintroducing disease problems into otherwise clean, certified seed.



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## A Brief History of Potatoes in the San Luis Valley

The San Luis Valley produces 92 percent of Colorado’s potatoes. The valley’s warm, sunny, summer days and cool nights are perfect for growing potatoes, while the cold, dry winters help reduce pest and disease problems in the region.

The San Luis Valley is one of the oldest potato-growing areas in the country. Farmers began growing potatoes in the valley around 1875. Today, the two major types of potatoes grown in the San Luis Valley are the russets and the reds. The russet is a familiar oval-shaped, russet brown, smooth-textured potato. The most popular red potato in the region is a variety known as the Sangre, which was developed in the San Luis Valley as an all-around potato, suitable for a variety of uses. The valley also is known for its Yukon Gold potatoes, which have sweet yellow skin and buttery flavor; the Chipeta potato developed especially for potato chips; and blue potatoes.