THE ROLE OF RESISTANCE IN DISEASE CONTROL

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The most practical method for combatting certain plant diseases is to breed varieties resistant to the pathogens (bacteria, fungi and viruses) causing the diseases. One of the classical examples of this the breeding of sugar beets resistant to the virus causing curly top.

Much research has been done with potatoes to breed resistant varieties and considerable progress has been made with three diseases - late blight, common scab and latent mosaic (virus X). Resistant varieties are available and are being grown throughout the world.

In the Pacific Northwest, leafroll and Verticillium wilt are two common diseases and progress has been made breeding for resistance. Many thousands of potato seedlings are grown at the Irrigation Experiment Station each year where they are exposed to the pathogens causing common scab, Verticillium wilt, Rhizoctonia, blackleg, powdery mildew, seed piece decay, leafroll, curly top and aster yellows. Late blight and virus X tests are conducted in the greenhouse. New potato selections have been developed from this breeding program that carry a sufficient amount of resistance. Some of these selections have other desirable characteristics such as russet skin and the ability to make satisfactory potato chips directly from cold storage.

A new potato selection should be tested about five years before sufficient information has been obtained to evaluate it as a possible new variety.