

NET

Horticulture
Section
Vol. II, No. 11

November 1944
Colorado A. & M. College
Fort Collins, Colorado

Misc. Series Paper No. 250, Colorado Agricultural Experiment Station

✓ A LEAK DISEASE OF POTATO TUBERS IN COLORADO

W. A. Kreutzer and George H. Lane

For the past few years growers in certain Colorado potato areas have experienced difficulty with a tuber rot of potatoes which has been confused with late blight rot. This disease was first observed in the Gilcrest area in 1940, where it caused considerable damage. In 1942 a similar trouble occurred near Glenwood Springs. During the past season, the disease was observed in the northern Colorado late potato area.

Cause of the Disease

The tuber rot closely resembles a trouble known as "leak" which is caused by the mold Pythium. This disease has been found primarily in the eastern part of the United States, where it causes little or no damage. The leak disease observed in Colorado appears to be caused by a different mold called Phytophthora, which, although closely related to Pythium, is in general a far more dangerous parasite. The "leak" Phytophthora is quite different from the late-blight Phytophthora.

The leak disease was called to the attention of Experiment Station workers this year by reports from growers and others that late-blight infection was present in some fields in the late potato area and was causing noticeable tuber rot. Investigation of some of these fields, in company with E. W. Bodine, and John G. McLean, revealed that there was no late blight present, but that the tuber rot was of the leak type. In all cases where the trouble occurred in excessive amounts, the fields had been given heavy late irrigations or the ground was low or flat so that there was poor drainage after irrigation, allowing the water to stand in these places.

How to Distinguish Leak from Late Blight

The leak disease as we have observed it in Colorado may be distinguished from late-blight infection of the tubers in the following ways:

Leak.

Late Blight

External Tuber Symptoms

Tuber is somewhat pliable, and appears water-soaked, showing blackish water-soaked areas just under the skin. The tuber resembles a frozen potato.

Tuber in general is firm, showing brown-red discolorations just under the skin. The tuber is not water-soaked in appearance. Late blight is generally accompanied by a strong odor.

Internal Tuber Symptoms

When halved, infected tubers show blackened, mottled areas just under the skin. The interior of the tuber

When halved, infected tubers show a red-brown, firm rot just under the skin and sometimes extending through

is discolored resembling freezing injury. The flesh has lost the crispness and firmness characteristic of healthy potato tissue.

the interior of the tuber. The unaffected tissue is not discolored and is crisp and normal.

Vine Symptoms

No recognizable symptoms to date. Further information is necessary.

Definite vine symptoms. Vines show blighting of leaves and brown streak-like lesions on the stems.

Control of Leak

At present we do not know definitely whether or not the leak disease will spread from tuber to tuber in storage. It is felt that there is considerable danger that this may occur where the storage leaks or where moisture is allowed to accumulate. Careful sorting of potatoes is advisable where the leak disease is present.

To prevent leak from occurring again in serious proportions, growers must guard against over-irrigation and poor drainage. The evidence which we have at present indicates that the leak fungus is soil-borne. Consequently attacks by this mold are likely to occur whenever favorable conditions are present. Since the mold is an organism requiring free water to develop and spread, it is doubtful if the fungus would cause serious losses under conditions of normal precipitation, except in low and poorly drained spots and in over-irrigated fields.

✓ NET NECROSIS AND STEM-END DISCOLORATION IN COLORADO POTATOES

W. A. Kreutzer and John G. McLean

Stem-end discoloration and net necrosis in otherwise sound potato tubers have frequently lowered the quality of Colorado potatoes. This past season, net necrosis was found in exceptionally large amounts. The Plant Disease Emergency Survey estimates a loss of a trace to 2 percent caused by net necrosis in northern Colorado, with as high as 10 to 12 percent net necrosis in some fields.

Colorado potato growers are quite familiar with these two troubles. The two things growers would like to know, however, are: first, what causes net necrosis and stem-end browning in potato tubers, and second, how can these troubles be prevented or at least reduced in amount?

It is known that leafroll will cause net necrosis in the tubers. It is also known that excessive soil heating will cause the trouble. In addition, it is likely that undescribed virus diseases which may be present in our potatoes may be responsible for some net necrosis. This year a new trouble which was called "purple top," "purple stem," or "blue stem" appeared in our late potatoes. Tubers produced by plants showing this disease showed a high percentage of net necrosis. At present we do not know just what causes the "purple stem" disease or whether or not it will occur again.

Stem-end browning in Colorado is usually caused by Fusarium infection. Undoubtedly there are virus diseases not too well understood at present which may bring about stem-end browning in potatoes. It is believed that unfavorable growing conditions may also bring about stem-end browning.

To summarize, we are forced to state that too little is known concerning the true causes of net necrosis and stem-end browning.

The important consideration now is this--Just what is to be done at present to reduce these troubles?

The Colorado Agricultural Experiment Station, as well as other agencies, is studying these diseases. Undoubtedly it will be years before most of the causes of these troubles are known.

There is one sound bit of advice, however, based on past experiences with other potato troubles, particularly those caused by viruses. It is this: Where possible, do not plant tubers showing either stem-end browning or net necrosis. Discard seed stocks showing excessive amounts of these troubles.

Colorado A. & M. College
AGRICULTURAL EXPERIMENT STATION
Fort Collins, Colorado

Penalty for Private Use to Avoid
Payment of Postage \$300
(PMGC)

Homer J. Kenney Director
FREE BULLETINS
Permit No. 1010
Colo.-SN II-11/44/1,500

~~Mr. Karl G. Parker
County Extension Agent
Colorado Springs, Colorado~~

Canon City, Colorado
County Extension Agent
Charles W. Daniels

POSTMASTER: - If not at address, please
check and return. No postage required;
stamp name of your office plainly.

() Unclaimed () Address unknown

Correct address