

SPUD NOTES

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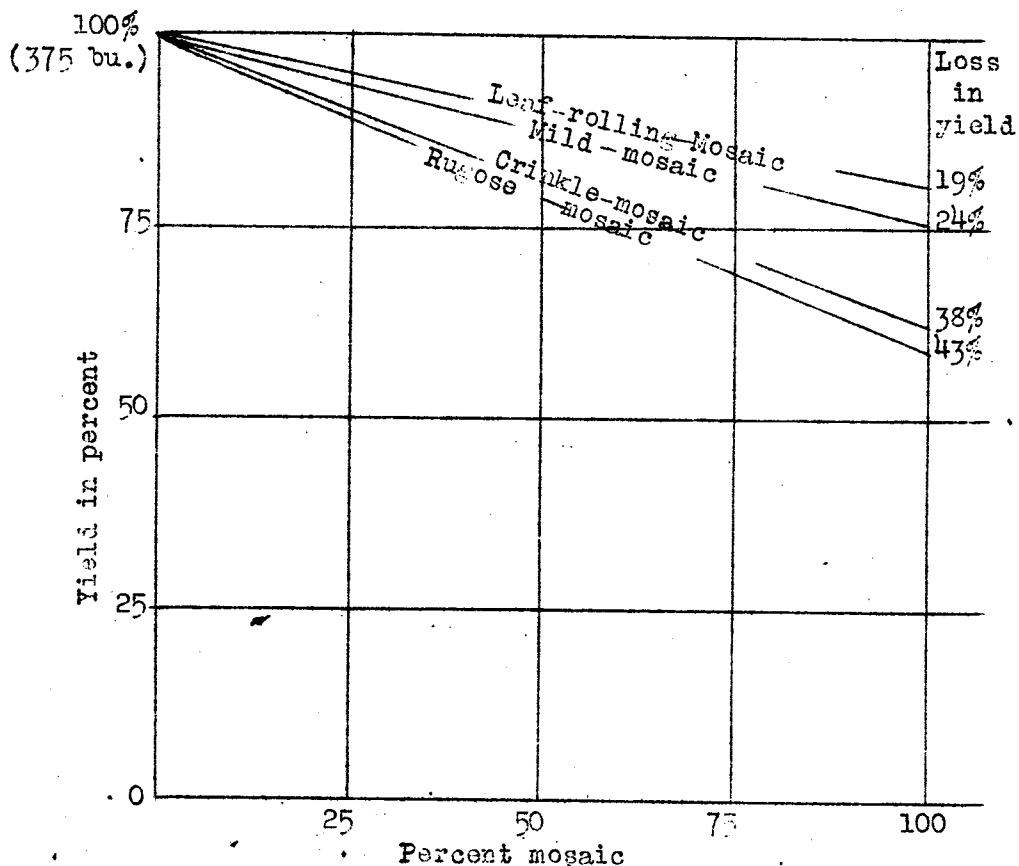
THE EFFECT OF VIRUS DISEASES ON THE YIELD OF POTATOES

John G. McLean

Work has recently been reported on the effect of some of the various virus diseases on the yield of marketable potatoes. The tests were conducted by the U. S. Department of Agriculture and cooperators within the states of Maine, New Jersey, New York, Florida, Alabama, Louisiana, and Virginia.

The following graphs represent a compilation of these results for several years in these various states. In each graph, 100 percent yield represents the yield of the healthy potatoes.

Figure 1.— The effect of mosaic diseases on yield.



This graph shows the effect of leaf-rolling, mild, crinkle, and rugose mosaics on yield (in Maine and New York). It can be seen that the yield is

reduced even though some of these diseases are not generally considered to be important to the commercial grower. For example, on a 375-bushel crop from healthy potatoes, 100 percent of mild mosaic would mean the loss of 90 bushels per acre, while crinkle or rugose mosaic would result in considerable loss even though the percentage of disease was less than 50 percent.

Figure 2 shows the effect of various percentages of spindle tuber on the yield of U. S. No. 1 potatoes. It can be seen that in general each percent of spindle tuber present reduces the yield by slightly less than one-half of one percent. Fifty percent spindle tuber would result in a loss of 20 percent or 54 bushels on a 270-bushel crop (the yield of the healthy plants.)

Figure 2.—The effect of spindle tuber on yield.

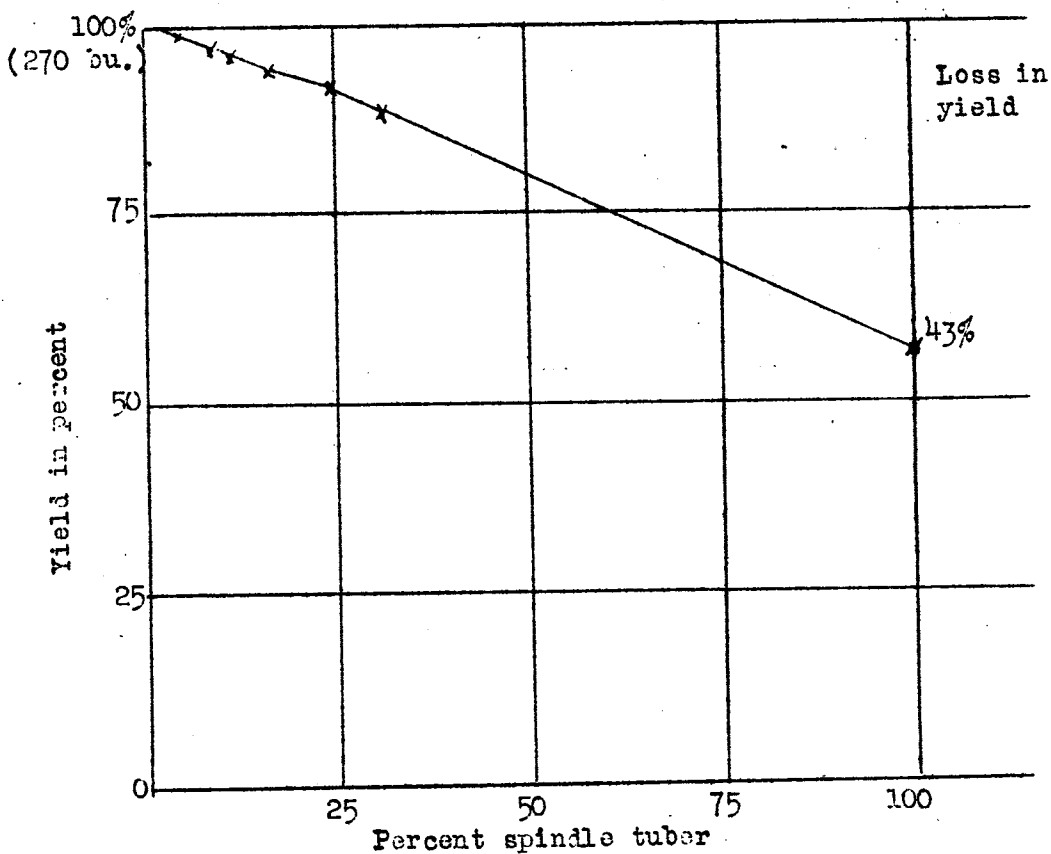
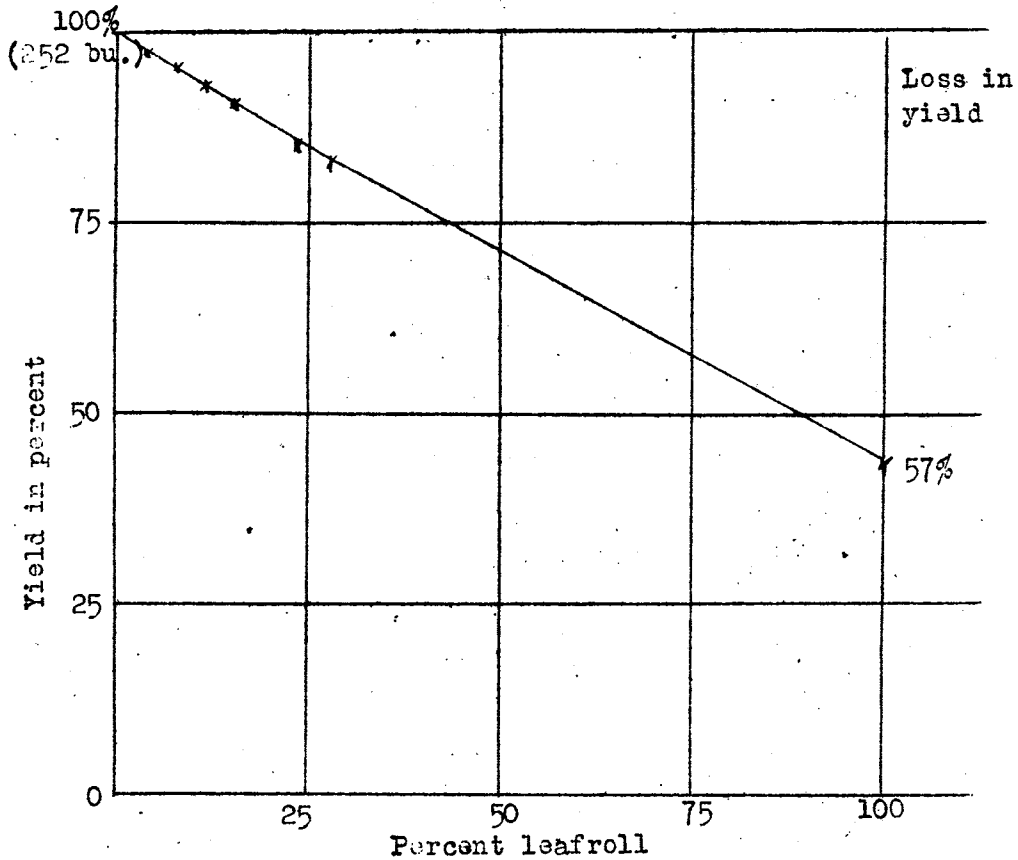


Figure 3 shows the effect of leafroll, which generally reduces yield slightly more than one-half of one percent for each percent of leafroll. In this case, 50 percent leafroll would reduce the yield of U. S. No. 1 potatoes about 75 bushels per acre below the 252-bushel yield of the healthy plants.

Further data is given in these papers which shows the variation in loss from virus diseases to be somewhat affected by the variety, the year, and the location. As an example, the loss from 100 percent spindle tuber varies from 20 percent on Katahdin in Florida to 67 percent of the yield lost on Cobblers in Virginia. The variation in leafroll losses was from 37 to 67 percent with different varieties

Figure 3.--The effect of leafroll on yield.



in different states.

While the preceding graphs do not represent a true picture for any particular section in Colorado, with its many varieties and types of growing seasons, they do provide the potato grower a means of estimating how many potatoes are not dug and sold when poor seed is used.

Here are a few figures which emphasize the spread of diseases in a single year and the importance of planting good seed every year.

	Disease in seed stock		Disease the following year	Increase in disease
Mild mosaic	8.7%	to	50%	41.3%
	20.0%	to	68%	48.0%
Spindle tuber	5.8%	to	11%	5.2%
	0.0%	to	10%	10.0%
Leafroll	0.0%	to	11%	11.0%

Sources of materials:

Bonde, R., Schultz, E.S., Raleigh, W. P., Maine Bulletin 421, 1944.
 LeClerc, E. L., et al. American Potato Journal, vol. 21; pages 60-71, 1944.

✓ EARLY ROGUING PAYS

J. L. Forsberg and A. O. Simonds

The earlier a diseased plant is removed from a field the better are the chances of surrounding plants remaining healthy and producing disease-free tubers. The longer a diseased plant is allowed to remain in the field the greater becomes the amount of disease which can be expected to show up in next year's crop.

The main purpose of roguing a field of potatoes being grown for seed is to eliminate the sources of disease infection. Virus diseases of the potato are carried in tubers which appear perfectly healthy. When such tubers are planted disease symptoms appear on the vines during the early growing season. These diseases are spread by insects to healthy plants. Symptoms of some virus diseases do not appear until the year following infection. Thus much of a current season's disease spread is not detected until the following year.

It is the practice of some growers to delay roguing until just before field inspections are made. This practice will probably be effective in removing enough of the diseased plants so the field will be passed by the inspector but it will not insure a disease-free seed lot for next year's planting. The grower should realize that when he is roguing he is attempting to improve his crop, and is not merely trying to eliminate enough of the evident disease to get by the tolerance allowed for certified seed.

Fields which have not been rogued prior to the first inspection must stand on their merits this year; any fields showing disease in amounts exceeding the allowed tolerance will be rejected for certification. The grower should not expect the inspector to return at a later date and make another inspection just because the field has not been rogued. If roguing has not been started by the time of the first inspection much early season spread of disease most likely has already occurred.

When all certified seed growers realize that the purpose of a thorough roguing program is to eliminate field spread of diseases, much will have been accomplished toward producing better potatoes in Colorado.

✓ CERTIFICATION NOTES

W. F. McGee

The field inspections for acreages of certified and war-approved seed potatoes will be started soon. Growers should rogue the fields early in order to remove all diseased and weak plants. Early roguing is necessary to prevent spread of diseases from non-healthy plants to healthy plants.

Seed lots, checked in the greenhouse during the winter, have shown that a great deal of current season spread of disease takes place during the growing season. Records also show that the longer diseased plants are left growing in the field, the greater the spread of virus diseases.

Inspection will be made approximately on the following dates:

<u>Place</u>	<u>1st Field Inspection</u>	<u>2nd Field Inspection</u>
San Luis Valley	July 17 to 29	August 15 to 26
San Juan Basin	July 24 to 29	August 28 to Sept. 2
Western Slope	July 24 to 29	August 28 to 31
Northwestern Colorado	August 3 to 9	August 24 to 31
Northern Colorado	August 1 to 18	September 1 to 15

Each grower of certified or war-approved seed potatoes should plan to be present when the inspector is in the field. By so doing, the inspector may assist the grower in identifying diseased plants, so that such plants may be removed immediately following inspection, providing the field is still within the tolerance of diseases permitted for war-approved or certified classification.

This, however, does not mean that growers should wait until inspection is made before they remove diseased plants.

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