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BLIGHT AND ROT OF POTATOES

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Are you a Connecticut potato grower? Then consider this brief bulletin as a personal letter to you, no matter whether you grow half an acre or forty acres of potatoes. Four years ago, soon after the writer began his work at the Connecticut Agricultural Experiment Station, the potato blight was so serious (many of the potato crops being killed by the end of July) that experiments were undertaken to determine the most practical spraying operations for controlling it. Each year since, our experiments and studies have increased in scope. At present we are trying a variety of methods for lessening its ravages and at the same time are at work on the life history of the blight fungus with the hope that when this is definitely and completely known it will aid in determining the best preventive treatment. Each of these four years the blight has caused serious injury either by premature blighting of the vines or rotting of the tubers or by both combined. Each year the interest of the growers in preventing this trouble has increased, if we can accurately judge from the numerous letters and talks we have had with farmers from all over the state. In 1902 one could scarcely find a person who made a practice of spraying

his potatoes to prevent the blight. To-day there is very evident and general interest in this matter. A considerable number of power spraying machines are now being used in this state, and already quite a few growers have informed the writer that they intended to spray this year. Some have been spraying for two or more years. Certain of the horse-power sprayers now in use seem to be fairly well adapted for the work, and when a perfectly satisfactory machine is put on the market, or when it is known which of the machines now offered for sale are most satisfactory, there is no doubt that the practice of spraying for blight will become more general. Our experiments and those of other stations, especially of Vermont and New York, show that if the spraying is done thoroughly and at the proper time the increased yield almost always considerably more than pays for the extra expense and trouble.

SPRAYING FOR THE BLIGHT.

Are you going to spray your late potatoes for the blight this year? If so, why not do it properly? Let us give you the benefit of our experience, as we find that many growers are not spraying their potatoes at the proper time or thoroughly.

Apparatus. Where a person is only growing a few potatoes in the garden, less than quarter of an acre, the ordinary knapsack sprayers or the small compressed air sprayers are useful. We know of persons who have even put on the mixture with a whisk broom, but we can hardly recommend this method. When one to ten acres are sprayed the ordinary barrel-pump sprayer carried in a light one-horse cart or wagon can be used to advantage. The pump can be connected at the end of the cart with a set of stationary nozzles which will spray four rows as one man pumps and a boy slowly drives through the field. Much more satisfactory work can be done, however, where, instead of the stationary apparatus, one or two lines of hose are used by men on foot. In this case one man pumps and drives and one or two men, each with a twenty-five foot hose with one or two nozzles, spray two or three rows each as they slowly walk up to the cart, when the driver then drives on again the length of the hose. This is the most thorough way of spraying. It is necessary to have a wagon whose wheels pass between each second row while the horse travels down between these rows. When a grower wishes to spray over eight acres of potatoes the horse-power sprayers are most convenient for use, but many of these, as yet, do not spray the vines very

thoroughly. It is usually necessary with these machines to go over the field at least twice for each spraying, the second time driving from the opposite direction. If the vines are not well covered then go over them a third time.

Time for spraying. From our observations the blight fungus ordinarily begins to appear in the fields from the middle of July to the middle of August according to the weather. *The first spraying should be made from the 5th to the 15th of July*, depending on the weather at this time—very wet, muggy weather requiring the earlier treatment. The last spraying should be made the last week in August or the first week in September. The number of sprayings will depend on their thoroughness and the weather. With the barrel-pump hand method four *thorough* sprayings ought to give good results, or even three in a dry season. With the horse-power sprayers it will require five to eight treatments. Do the work as thoroughly as you can; which means that you *aim to cover all of the foliage of all of the plants, using at least two barrels of the mixture per acre at each treatment.* Be especially careful to have the vines thoroughly coated when the wet, muggy blight weather comes on during July or August. If the rains wash off this coating replace it as soon as possible.

Preparation of Bordeaux mixture. We have found the following a very convenient way of making the Bordeaux mixture: *4 lbs. Copper Sulphate, 4 lbs. Fresh Lime, 40 to 50 gals. Water.* Dissolve the copper sulphate in hot or cold water, suspending in a coarse bag. Slake the lime in a small amount of water and then strain into the spray barrel, which is half filled with water. Dilute the copper sulphate to about half a barrel and then pour into the spray barrel, stirring the mixture. If necessary, add a little water to fill the barrel. Where large quantities are used, it is advisable to make stock solutions of the lime and the copper sulphate, each containing 1 lb. to 1 gal. of water. The proper proportions of each (4 gallons each per barrel) can then be used, as in the preceding account, when needed. As there is often trouble with the nozzles clogging, it is best to strain everything as it goes into the spray barrel. On this account, too, it is desirable to use finishing lime, though a little more expensive. If during the first sprayings the potato bugs are injurious, Paris green, at the rate of a pound to a barrel, can be added to the Bordeaux mixture. Mix the Paris green with a little water and then stir thoroughly through the Bordeaux.

A SUGGESTION CONCERNING ROT OF POTATOES.

Cause. Often, though not always, the rotting of the tubers is due, directly or indirectly, to the blight fungus. With early potatoes the rot of the tubers is far more serious than the blighting of the vines, as the latter are matured and often partially dead before the blight appears. For this reason it is questionable whether it generally pays to spray early potatoes. The rot of the tubers always follows rather than precedes the blighting of the vines. This is because the spores or germs of the blight fungus fall from the leaves onto the ground and are washed down to the tubers by the rains. Years ago it was shown in Europe that when the tubers were buried deeply in the ground the potatoes suffered less from rot, as it was then more difficult for the blight spores to be carried down to them. Our own observations also go to show that potatoes close to the surface of the ground suffer more from rot than those buried deeply in the soil, even when the vines blight the same. Judging from the statements of growers, the rotting of potatoes in this state is more serious and frequent now than in former years. We think this is partly explained by the fact that flat cultivation is now more generally practiced than formerly. From our own observations and from talks with growers we are led to believe that those who thoroughly ridge up their potatoes suffer less from rot than those who do not. This year we are beginning an experiment to get definite data on this point.

A coöperative experiment. We wish this test also to be made this year by various growers all over the state, in order to get results under varying conditions. Will you not help in this coöperative experiment? It simply means that between the 5th and the 15th of July you will ridge up thoroughly by hoe or the wings of your cultivator four or more rows of your potatoes. Bury the tubers at least 8 inches in the soil. Then when you dig your potatoes measure off fifty feet in two typical places in these ridged rows and count the total number of marketable tubers and also the number of rotten ones. In the same manner determine the number of marketable and of rotten tubers in one hundred feet of the ordinary cultivated part of your field near these ridged rows.

Fill out the data on the enclosed sheet and mail to the Botanist, Connecticut Agricultural Experiment Station, New Haven, Conn. Let us have a generous response to this request, as it is to your advantage!

FILL OUT THIS SHEET AS FULLY AS POSSIBLE
AND RETURN TO THE EXPERIMENT STATION.

1. *Your name:*
2. *Address:*
3. *Variety of potato:*
4. *Character of soil:*
5. *Drainage of land:*
6. *Did you use stable manure?*
7. *Effect of ridging on rot:*
 - Number of marketable tubers in 100 feet ridged rows:*
 - Number of rotten tubers in 100 feet ridged rows:*
 - Number of marketable tubers in 100 feet unridged rows:*
 - Number of rotten tubers in 100 feet unridged rows:*
8. *How deeply did you cover the ridged and the unridged potatoes?*
9. *Did the ridging in any way lessen the yield?*
10. *Were you seriously troubled with blight or rot this year?*
11. *Did you spray with Bordeaux mixture? How often and when?*
12. *Give briefly your experience (favorable or unfavorable features) with Bordeaux mixture for potato blight:*