THE CONTROL OF POTATO BLIGHT

(W. A. Orton)

The blighting of potato foliage during July, August, and September in western Washington is usually due to the disease known as "late blight". This trouble, which is caused by the fungus known to botanists as Phytophthora infestans De Bary, prevails throughout the northern tier of states and especially in the great potato-growing sections of Michigan, New York, Vermont and Maine, where much experience with remedial measures has been gained, which will be directly applicable to Washington conditions.

The late blight fungus requires for its best development a moist or humid climate and a comparatively low temperature. It is for this reason that it is widely prevalent in the regions mentioned, while it does not occur to any great extent in southern districts. Losses due to blight are often not realized by farmers. These losses are of a two-fold nature. In the first place, the crop is reduced by the premature destruction of the vines, and in the second place there is frequently considerable decay during storage due to the same fungus which attacked the vines. It is estimated by reliable authorities that the average loss throughout the principal potato-growing sections of the country amounts to 60 bushels per acre in seasons when the blight is prevalent, making a total loss of many millions of dollars, nearly all of which could have been prevented.

Potato blight can be effectually prevented by spraying with Bordeaux mixture, and this treatment has become an established farm practice in many sections of the country. This should also be the case in western Washington, and a few careful trials will soon convince the most skeptical potato grower of the profits to be made in this manner.

It is advised that spraying be begun the latter part of June, as it is important to make the first application before the blight appears. Once the disease has gained headway in a field it is much more difficult to check it. Additional sprayings should be made at intervals of two weeks in dry weather or more frequently toward the end of the season, if the weather is rainy and the disease spreading rapidly in neighboring fields.

Bordeaux mixture for potatoes should contain 6 lbs. of bluestone and 4 lbs. of freshly slaked stone lime to 40 or 50 gallons of water. A farmer intending to spray his potatoes would do well to write to the U. S. Department of Agriculture at Washington for Farmers' Bulletins 91 and 243, which give detailed instructions for the preparation and application of the spray, which can not be fully described within the limits of a newspaper article. Briefly stated, it is recommended that whenever any considerable area of potatoes has to be sprayed preparations should be made for making the mixture quickly on a large scale through the employment of stock solutions and a mixing platform. The stock solution of bluestone is usually made by weighing out 2 lbs. to each gallon of water, and suspending the same in a loose sack near the top of the water. A few hours will suffice to dissolve the bluestone. The lime should be slaked with care, and sufficient water added to bring the paste to a concentration of 2 lbs. per gallon. To prepare a barrel of mixture 3 gallons of the stock bluestone solution are taken and diluted in a separate barrel to make 20 gallons. Two gallons of the lime milk well stirred are diluted in another barrel to make 20 gallons and both poured together into the spray tank, or allowed to empty into it from an elevated platform. The mixture should be made fresh before using.

The application should be as thorough as possible. Some form of spray pump is essential, and as a matter of economy in fields of several acres a geared or power sprayer is best, provided the machine possesses sufficient capacity to thoroughly cover the potato foliage. Many sprayers now on the market are deficient in this respect and require to be run twice or three times over the field to thoroughly cover the foliage. For well-grown potato vines 150 to 200 gallons per acre will be needed, although great gains in yield are often reported from the use of much smaller quantities. The effect of Bordeaux mixture on potatoes is very marked, even in seasons when the blight is not espcially prevalent, and it has been shown beyond question by many years of experience that it is profitable to spray every year. Experiments made at the Puyallup station by David A. Brodie showed an average increase in a yield of marketable potatoes in the sprayed rows over that of the unsprayed rows of nearly 37 per cent. Results still more striking have been reported from trials in Vermont and New York. In the latter state five sprayings at the experiment station at Geneva increased the yield 233 bushels per acre and three sprayings increased it 191 bushels per acre.

"In fourteen farmers' business experiments, including 180 acres, the average gain due to spraying was 62¼ bu. per acre; the average total cost of spraying, $4.98 per acre; the average cost for each spraying, 93 cents per acre; and the average net profit, based on the market price of potatoes at digging time, $24.86 per acre.

"In 41 farmers' volunteer experiments, including 363¾ acres, the average gain due to spraying was 58½ bu. per acre. In 23 of these experiments the average total cost of spraying was $3.91 per acre; the average cost for each spraying, 90 2-3 cents; and the average net profit, based on the market price of potatoes at digging time, $22.01 per acre." As reported in Bulletin No. 264 of the New York State Experiment Station.

Cabbage Pests and Peony Growing.

(C. E. Wightman, Skagit Co.)

As I have experimented considerable with cabbage pests I should like to give my experience as to results for the benefit of those who try to raise cabbage. The green grub or worm produced by the white butterfly, after a good deal of experimenting I can combat for a positive certainty with the trouble of spraying about every 10 days, with two grains of white arsenic to one gallon of water. There is not the slightest danger of poisoning from spraying with this solution, for one quart of said solution cannot be put on a cabbage head in a season's spraying, and one quart would contain but one-half grain of arsenic, which would hurt no one. White arsenic is made soluble in water by putting one part arsenic and four parts salsoda in enough water to dissolve the soda by four or five volumes. Boil for one-half hour and by measuring water and weighing the arsenic it is easy to know how many grains of arsenic each ounce contains. Commence spraying when plants are small and continue till advanced in heading at least every 10 days and you will never be bothered with green grubs. For club root and a preventative for keeping wire worms and cut worms at a distance, use a Master's plant setter for setting plants and put in one ounce liquid ammonia to each gallon of water.

Lice have been for me the most difficult to control. They multiply so fast and spread so quickly. I have tried almost every kind of spray and have written to and talked with anyone I was likely to get any information from, but as yet they perplex me. Pure coal oil will kill at once every one it touches, but it will also kill the plants. Still, if sprayed on carefully just after on the plants there is not much danger of injury to the plant. Dry dust or ashes will also kill them if sprinkled on when the plants are wet, but as it is very hard to reach all it is a poor remedy. I have had fair success with whale oil and coal oil emulsion with the two grains of arsenic solution added. But by all odds the best remedy I have as yet found is a spray made of one pound of pearline, four pounds naptha soap, 80 grains arsenic and 40 gallons water. This will positively kill more effectually than coal oil, every one it touches. But to kill it must be put on the pests direct and spraying has to be done often and well whenever they appear. I always add the arsenic solution because it will kill all biting pests, but has no effect on the sucking lot. For rose-bushes or more tender plants affected with green aphis or other lice use the above solution a little weaker so as not to burn the foliage and spray oftener.

We have great success with peonies and cultivate thus: Set roots in October or November, about four feet apart in good soil, well worked up and pulverized. Barnyard manure is best. Cultivate shallow and often as soon as ground is fit in spring, until the buds show well. Plants over 12 inches in diameter should have a support in the form of a hoop 10 or 12 inches above ground. After blooming continue to cultivate till fall. Here they need no winter protection. When plants get to be three feet in diameter they should be separated and reset. Ours usually grow about 20 inches high. After once set in good rich soil they need little care, except plants of shallow cultivation.

PLANET, JR., HORSE HOE IN THE FIELD.

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