

Prevent Potato Beetle Damage

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Now when it is so necessary that every farmer produce more of every crop, the importance of the potato crop must not be overlooked. As a source of human food the world over, the Irish potato crop ranks among the top few. It is grown on nearly every Missouri farm and a few should be grown in every victory garden. For best results one should use disease-free seed, fertile soil, and give careful attention to the control of insect pests. The crop is attacked by many different insects, such as wireworms, grubworms, stalk borers, aphids, leafhoppers, flea beetles, blister beetles, and the Colorado potato beetle. Of these, the last species is most important, and if one is to expect a crop he must fight this pest every year.

Its Stages of Development.—Under Missouri conditions, the pest is most important soon after the crop comes up. It spends the winter in the ground in the hard, yellow and black striped beetle stage. Even before the first potato sprouts show above ground these beetles will be found flying into the potato patch. After feeding for a time they mate and begin to lay small patches of yellow or orange-colored eggs mostly on the lower side of the potato leaves. When the weather is warm these eggs hatch in a week or ten days and the small orange or pinkish grubs begin to feed on the leaves. They grow rapidly and as more hatch from day to day they may devour the foliage faster than new leaves develop. As they grow the grubs are always so stuffed that they appear ready to burst. With food abundant and temperature favorable, the grubs grow rapidly, and when full-fed they are nearly as large as the adult beetle, yellow to pinkish-orange in color, with rows of black spots. Then they leave the plants, burrow into the ground a few inches, and pass to the resting stage in small, round, earthen cells made by the grubs. After spending a week in the resting stage they transform to the adult, but frequently remain in the ground for a time before emerging. When they finally come out of the ground they fly about looking for food. If late potatoes are at hand they settle on them, though they may turn to the common bull nettles or tobacco or tomatoes for food. Here eggs for a second generation are laid and the grubs feed, mature, and enter the ground to change through the

resting stage to the adult again before cold weather sets in. As a rule, the adults of this second generation remain in the ground until the following spring. The beetles are strong fliers and it makes no difference where one plants his potatoes he will be sure to find beetles present waiting for the first green tips to show above ground.

How They Are Controlled.—Both the adult beetles and the grubs chew and swallow the foliage so they are readily killed with any of the poison sprays or dusts. Paris green, a strong arsenical, was first used on potatoes to control this pest. Later, lead arsenate, which is milder and less apt to burn the potato foliage, was used. More recently, improved calcium arsenate as used on cotton for leaf worm has been widely used. A number of fluorine compounds, such as cryolite, have also proven very effective. Also, the newer derris and pyrethrum insecticides are effective, but for the duration of the war they are not available for such use.

Most gardeners will have on hand a small quantity of lead arsenate and under prevailing conditions it is perhaps best to use. One part of lead arsenate mixed with 5 parts of lime or flour can be applied with a small dust gun or with an improvised pepper duster when the dew is on, where only a small planting is to be treated. For larger patches, a regular duster is needed. If the grower has a sprayer and not a duster, he can mix 2 or 3 tablespoonfuls of lead arsenate with a gallon of water and apply as a spray with good results. It is necessary to repeat such applications two or three times at weekly intervals so as to cover the new foliage and kill later hatching grubs. The first application should be made as soon as the plants are two inches high and beetles show up.

If the grower has paris green or calcium arsenate, but no lead arsenate, they may be used, but they contain about twice as much arsenic so use only about half as much as suggested above where lead arsenate is used. Also, include a small amount of lime where paris green or calcium arsenate is used as a spray on potatoes. If the grower has on hand cryolite it may be used as recommended on the package. The important thing to keep in mind is that these beetles may ruin a crop in a few days so the grower must spray or dust promptly and he should use whichever standard poison insecticide he has on hand rather than to delay a few days in getting a better one.

The above recommended applications of insecticides will protect the growing potato crop from the Colorado potato beetle, and they will also largely ward off early injury by the flea beetles. However, later, as the potato crop approaches maturity, blister beetles or old-fashioned potato beetles frequently appear and do much damage. Poison sprays have little effect on them as they resist poison. However, they can be driven out of the garden and forced to feed on weeds in waste areas. If they come back into the patch, drive them out again.