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## POTATO FLEA BEETLE CONTROL

by

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Last season's experience with the dust method of control has demonstrated its value in combating potato flea beetles.

### Materials Used

Calcium arsenate dust - This dust may be purchased or homemade. The commercial dust is supplied as a 20-80 mixture, i.e., 20 pounds of calcium arsenate and 80 pounds of hydrated lime. In quantities of 100 pounds, this dust is quoted at  $5\frac{1}{2}$  to 6 cents per pound. The homemade mixture may be made in the same proportions, i.e., one part calcium arsenate by weight to four parts by weight of hydrated lime.

In mixing the calcium arsenate with the hydrated lime, an O.A.C. diagonal axle dust mixing machine may be used. Complete directions for making this mixing machine are given in Oregon Agricultural Extension Bulletin 381. The calcium arsenate will cost 10 to  $10\frac{1}{2}$  cents per pound; the hydrated lime,  $1\frac{1}{2}$  cents per pound.

### Dusting Machines

There are several types of dusting machines on the market. The rotary fan type is a satisfactory machine for applying the dust and has been quoted at \$9.90 and \$13.90. Some growers, however, may prefer one of the various bellows type of duster.

### Number of Applications

The first application is made as soon as the flea beetles are observed on the potato foliage. The number of applications will depend upon the time the beetles first appear on foliage, length of time beetles are present, and length of growing season.

The applications are repeated at ten day intervals until the flea beetles have been eradicated and the foliage injury checked.

### Amount of Dust per Acre

It is estimated that from ten to fifteen pounds of the dust will cover one acre of potatoes. Occasionally a saving may be made on the quantity of dust used by close observation of the outside rows of the potato field. As soon as the potato flea beetles are observed migrating into the field from roadside weeds or plants in fields adjacent, dusting the potato foliage in that vicinity should be started. Repeated applications may check the migration without the necessity of dusting the entire field.

### Tuber Injury Controlled by Time of Planting

The severity of flea beetle injury to the tubers bears a direct relation, apparently, to the time of planting potatoes. Early potatoes planted for maturity in early July will often escape severe tuber injury. Late potatoes planted from June 15 to July 15 will develop tubers relatively free from flea beetle injury.

### Eastern Potato Flea Beetle Most Injurious

Two species of potato flea beetles now occur in Oregon. One, the western potato flea beetle, Epitrix subscrinata, has been reported causing injury mostly to the foliage in Oregon and Washington periodically since 1913. Serious tuber injury on potatoes started apparently with the introduction of the common potato flea beetle, Epitrix cucumerus, of the eastern states.

Together they constitute a serious menace to potato production in Oregon. Last year reports of serious tuber injury were received, especially from Columbia, Multnomah, Clackamas, and Washington and other counties in the Willamette Valley.

### Flea Beetles Overwinter as Adult Beetles in Trash About Fields

The beetles pass the winter in the adult stage, either in the soil of last season's potato planting or in debris about the field. The overwintering adults emerge from their winter quarters in May and June. They lay their eggs about the host plant, usually potatoes. The eggs hatch into small larvae which work into the soil and feed upon roots and developing tubers.

### Potato Flea Beetles Feed on More Than Fifty Plants

These insects have been reported feeding on a variety of plants including potato, nightshade, horse nettle, eggplant, tomato, ground cherry, petunia, tobacco, Jimson weed, wonderberry, chinese lantern. They have been reported also on apple, arbutus, ash, bean, beet, cabbage, carrot, celery, wild bird cherry, clover, corn, cucumber, dogbane, elder, holly, honeysuckle, hop, horse-chestnut, lettuce, maple, muskmelon, phlox, plantain, sweet potato, evening primrose, pumpkin, radish, raspberry, rhubarb, St. John's wort, sarsaparilla, sorrel, spinach, sumach, sunflower, turnip, viburnum, violet, and watermelon.

The most serious damage apparently is confined to the potato, tomato, pepper, and eggplant.

Potato Flea Beetle Attack Reduces Yield and Grade

Reduction in the yield and the grade of potatoes follows the feeding of the adult beetles upon the foliage and the larvae upon the root system and tubers. The foliage injury consists of numerous small, round, or irregular holes eaten through or into the leaves. The tuber injury is characterized by irregular corky tunnels and pitting just under the peel. Unless complicated by scab or rhizoctonia, the tuber injury may not be noticed by the grower in sorting his potatoes. As a result his potatoes often are placed in a lower grade than the grower anticipated, and his losses thereby increased. Tubers slightly injured are thrown out of the No. 1 grade and tubers severely injured are culled.

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