Last season's experience with the dust method of control has demonstrated its value in combating potato flea beetles. Three insecticides are suggested for the control of these insects.

Materials Used

Rotenone-Diatomaceous Earth Dust - A dust containing .5 of 1% rotenone in diatomaceous earth is suggested for control of potato flea beetles. This material may be purchased through dealers in insecticides. Rotenone kills the adult flea-beetles more quickly than any other insecticide tested. However, it has the disadvantage of deteriorating rapidly when exposed to light and air. (Caution - store rotenone-bearing material in a dark place and in relatively air-tight containers. Be sure you are purchasing fresh stock.)

Cryolite-Diatomaceous Earth Dust or Calcium arsenate diatomaceous earth dust - Either of these dusts may be purchased or homemade. The commercial dusts are supplied as a 20-80 mixture, i.e., 20 pounds of the insecticide and 80 pounds of diatomaceous earth. In mixing the insecticide with the diatomaceous earth, 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.

Neither of these two materials, which are poisonous to man and animals, kills flea beetles as rapidly as does the rotenone-bearing material, but they both have the advantage of being less expensive and do not deteriorate rapidly, which quality gives them greater lasting property when applied to the plants. (Caution - do not mix any of the three above insecticides with hydrated lime for potato flea beetle control.)
Dusting Machines

There are several types of hand dusting machines on the market. The rotary fan type is a satisfactory machine for applying the dust. Some growers, however, may prefer one of the various bellows type of dusters. Recent developments of power dusters make it advisable for growers of larger acreages to investigate these.

Number of Applications

The first application should be made almost as soon as the plants come up. The number of applications will depend upon the length of time beetles are present, and length of growing season.

The applications should be repeated at about ten-day intervals until the flea beetles have been reduced and until no additional foliage injury becomes evident.

Amount of Dust per Acre

It is estimated that from fifteen to twenty 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, dusting the potato foliage in that vicinity should be started. Repeated applications may check the migration without the necessity of dusting the entire field. This applies to fields of ten acres or more in extent which have not been planted to potatoes for several years.

Eastern Potato Flea Beetle Most Injurious

Two species of potato flea beetles now occur in Oregon. One, the western potato flea beetle, *Epitrix subsorizita*, 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 ocuumerus*, of the eastern states.

Flea Beetles Overwinter as Adult Beetles in Trash About Fields

Most of the beetles pass the winter in the adult stage in the soil of last season's potato planting, or along the edge of the field. The overwintering adults emerge from their winter quarters in April, 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.

Late Potatoes Planted Close to Early Patch may be More Severely Injured

Early potatoes attract the first beetle in the spring. If control practices are not followed in these early plantings as is often the case in many home gardens, they serve as an ideal place for flea beetles to multiply. When the late potatoes come up, the first brood of beetles move from the early potatoes into the late plantings. For this reason, it is suggested that late potatoes be planted as far from the home garden or early potatoes as practicable. In this connection, volunteer potatoes act in the same way as early plantings.
Potato Flea Beetles Feed on More than Fifty Plants

Potato flea beetles feed on the foliage of many plants, the greatest damage they do, however, is to the tubers of the potato. In Oregon, so far as known, the potato plant is the only one of which the beetles seriously injure the underground parts. Severe foliage injury to cultivated crops has been reported or observed on potatoes, tomatoes and beans. Many wild plants are seriously injured, especially in early spring and late fall when the normal host plants are not present. Severe injury has been observed on burdock, beggarticks, Canada thistle, bull thistle, wild mint, small bittersweet, and nettle. They have also been observed feeding less injuriously on pigweed, aster, creek dogwood, fireweed, hawthorne, prickly lettuce, wild celery, wild buckwheat, smart-weed, poplar rose, wild blackberry, dock, willow, black nightshade, sow-thistle, dandelion and cultivated turnip. Many other host plants have been reported from various parts of the country.

Potato Flea Beetle Attack Reduces Yield and Grade

The feeding of the larvae on the tubers greatly reduces the grade of the potatoes and the feeding of the adults on the foliage may result in reduced yield.

The foliage injury consists of numerous small, round, or irregular holes eaten in 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.