

# POTATO PROTECTION *for* COMMERCIAL ACREAGES



*Leafhoppers reduce potato yields. This photograph illustrates hopper-burn and two enlarged leafhoppers*

MICHIGAN STATE COLLEGE

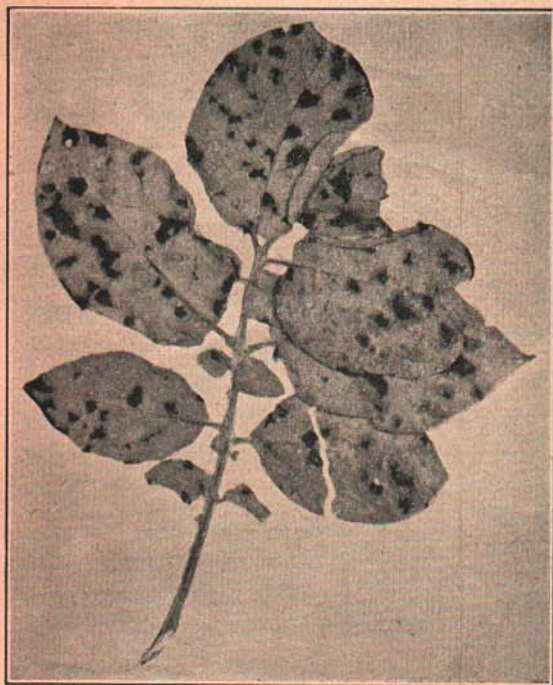
EXTENSION SERVICE

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# Potato Protection for Commercial Acreages

By W. F. MOROFSKY and J. H. MUNCIE

Protection of potato fields from insects and diseases is absolutely essential for the production of a high quality crop whether the crop is to be used as table stock or for seed. Insects not only destroy potato leaves but also carry diseases which result in the running out of the seed stock and the production of potatoes of low quality.



*Fig. 1. Early blight makes brown spots on potato leaves.*

The use of DDT combined with suitable copper materials as sprays in two-year plot trials has resulted in greatly increased yields and better insect control than standard bordeaux mixture alone. In similar experimental dusting plot trials using fixed copper materials combined with DDT, rotenone, pyrethrum, sabadilla, Z-39, rotenone thiocyanate, and certain other insecticides, the results so far as yields are concerned have been inconclusive. The field trials carried out by a few growers in 1945, however, showed that the fixed copper-DDT

dusts resulted in increased yields of potatoes over the monohydrate copper sulfate-lime 20-80 dust.

## SPRAYING

Spraying with bordeaux mixture 8-4-100 or with a suitable fixed copper spray containing an equivalent amount of metallic copper plus 3 pounds of 25-percent wettable DDT in 100 gallons of spray has given excellent control of potato leafhopper, potato flea beetle, Colorado potato beetle, and increased yields of potatoes. The number of times that DDT should be applied in the spray material will depend upon the extent of the insect infestation.

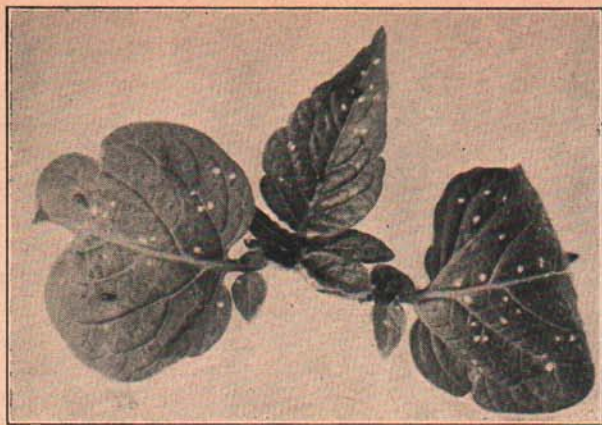


Fig. 2. Flea beetles eat small holes in leaves.

bordeaux mixture or fixed copper, must be applied at intervals of a week or 10 days throughout the season, regardless of the degree of insect infestation, in order to protect the crop from early and late blight. It is often necessary to spray more frequently to prevent infection under conditions favorable for late blight.

### DUSTING

Dusting of potatoes is often more advantageous than spraying on those farms where there is a shortage of water or when water must be hauled long distances to the potato field, or when excess weight of the spraying equipment, as on muck soils, is undesirable. Application of dust is more rapid than that of sprays, but the cost of materials is somewhat higher. However, the saving in labor and time in dusting may offset the difference in the cost of materials.

Dusts should be applied when the air is still to prevent the protective material from being blown away. A canvas curtain trailer behind the machine is very helpful in preventing the dust from blowing and results in a better coverage and deposit of protective materials. Potato dusts, in general, contain approximately the equivalent of 7-percent metallic copper. The insecticide, DDT, is added so that there is the equivalent of 3 pounds of pure DDT in 100 pounds of the mixed dust. This insecticide is generally supplied as 50-percent nonwetable DDT for dust mixing, and in this case 6 pounds of DDT powder are included in 100 pounds of the mixed dust,

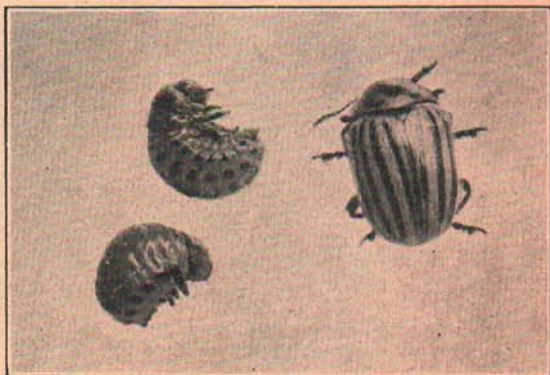


Fig. 3. Potato beetles must be controlled early.

In general, applications are necessary each week or 10 days, beginning when the plants are 4 inches high in order to keep new vine growth covered. Later in the season, when leafhoppers and flea beetles are no longer a problem, it is probable that DDT can be omitted in some applications.

The fungicide, either

which makes a 3-percent DDT mixture. There are now available several ready-mixed commercial potato dusts which contain the equivalent of 7-percent metallic copper and 3-percent DDT. In general, better results will be obtained with the use of ready-mixed dusts than with those mixed by the grower unless the dusting machine is equipped with an efficient power-driven mixer.

The first application of dust should be made when the plants are 4 inches high and the application repeated at intervals of a week or 10 days. DDT may be omitted from the late dust applications when leafhoppers, flea beetles, and Colorado potato beetles are no longer a problem. However, new vine growth must be kept covered with a copper-containing dust to prevent late blight and early blight infection.

### SPRAY FORMULAS

#### BORDEAUX MIXTURE

Copper sulfate (blue vitriol) .....	8 pounds
Hydrated lime .....	4 pounds
*DDT (25-percent wettable) .....	3 pounds
Water .....	100 gallons

#### FIXED COPPER

Fixed copper (50-percent metallic copper) .....	4 pounds
*DDT (25-percent wettable) .....	3 pounds
Water .....	100 gallons

\*DDT may be omitted from late sprays after leafhoppers, flea beetles, and Colorado potato beetles are no longer present.

### DUST FORMULAS

FIXED COPPER (50-percent metallic copper) .....	14 pounds
*DDT (50-percent powder) .....	6 pounds
Talc or Pyrophyllite .....	80 pounds

#### COPPER-LIME-DDT (READ CAUTION 1)

Monohydrated copper sulfate .....	20 pounds
Hydrated lime .....	74 pounds
*DDT (50-percent powder) .....	6 pounds

\*DDT may be omitted from late applications of potato dust after leafhoppers, flea beetles and Colorado potato beetles are no longer present.

### CAUTION

1. The copper-lime-DDT formula is included on basis of 1 year's trial because of the former wide popularity of monohydrated copper sulfate-lime-calcium arsenate, potato dust. Experience is confined to freshly mixed monohydrate copper sulfate, lime, DDT dusts.
2. Keep mixed dust and monohydrate copper sulfate in tight dry containers to prevent the absorption of moisture and resultant caking.
3. Do not get dust in wet or sweaty clothing next to the skin. Serious burns may result.
4. Handle DDT with the same precautions as you would in handling arsenicals.

*(Issued, July 1937; Second Printing, June 1939; First Revision, April 1943;  
Second Printing of First Revision, February 1945;  
Second Revision, April 1946)*