

## EFFECT OF INSECTICIDES ON TUBER YIELD AND CONTROL RECOMMENDATIONS FOR 1947

By

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Experiments with some of the newer insecticides were conducted by the North Dakota Agricultural Experiment Station and the State Seed Department at Grafton, North Dakota, during 1946. Each of 16 treatments shown in table 1 was replicated 6 times and a triple lattice design was used for arrangement of the plots. Each plot consisted of 2 parallel rows 80 feet long and separated from adjoining plots by 2 buffer rows on each side.

Particular emphasis was given to testing the effects of various insecticidal dusts and sprays on insect control and tuber yields. The treatments applied and resulting yields on the per acre basis are tabulated as follows:

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**Table 1. Insecticidal Treatments and Tuber Yields**

Plot	Treatment	Rates of Application	Dates Applied	Total Yields (Bus. per acre)
	<b>Sprays applied at 125 gal. per acre</b>	<b>Amount of Insecticide per 100 gal. water</b>		
1S	Syndeet 25% DDT emulsion	¼ lb. DDT	July 14, 27, & Aug. 10, 24	131
2S	DDD 25% emulsion	¼ lb. DDD	" "	152*
3S	Hexachlorocyclohexane (666) 50% powder	½ lb. 666	" "	148
4S	DDT 50% powder	¼ lb. DDT	" "	146
5S	DDT 50% powder	½ lb. DDT	" "	170**
6S	DDT 25% emulsion	¼ lb. DDT	" "	155*
	<b>Dusts</b>	<b>Pounds per acre</b>		
7D	DDT 5%	35 lbs.	July 13, 27, & Aug. 9, 23	145
8D	DDT 3%	35 lbs.	" "	173**
9D	DDT 5%	35 lbs.	July 13, 27, & Aug. 9	157*
0D	DDT 5%	35 lbs.	July 13, 27	144
1D	DDT 5%	35 lbs.	July 13	132
2D	DDT 5%	35 lbs.	July 27 & Aug. 9, 23	153*
3D	DDT 5%	35 lbs.	July 13, 18, 27 & Aug. 3, 9, 16, 23, 30	153*
4D	DDT 5%	35 lbs.	July 13; Aug. 9	151*
5D	Velsicol 1068 5%	35 lbs.	July 13, 27 & Aug. 9, 23	144
6	Check—no sprays or dusts applied.			126

\*Indicates significant difference at 5% level as compared with Check Plot No. 16.

\*\*Indicates highly significant difference at 1% level as compared with Check Plot No. 16.

On the basis of past experience the following control program is recommended:

### A Spraying or Dusting Schedule for Insect Control

Number of Applications	Time of Application	Material		Insects Controlled
		SPRAY	DUST	
1	When insect injury begins in late June or early July.	DDT	3 to 5% DDT	Colorado Potato Beetle Potato Flea Beetles
2	Ten to 14 days after the first application.	DDT	3 to 5% DDT	Potato Flea Beetles Leafhoppers
3	Ten to 14 days after the second application.	DDT	3 to 5% DDT	Leafhoppers Potato Flea Beetles Colorado Potato Beetle
4 <sup>a</sup>	Ten to 14 days after the third application.	DDT	3 to 5% DDT	Leafhoppers Potato Flea Beetles

<sup>a</sup>In years when insects are of slight importance possibly two or three well timed applications will be sufficient. Aphids are seldom abundant enough to require control.

First application of dust should be at the rate of 20 to 25 pounds per acre, but should be increased to 30 to 35 pounds for later applications. If spraying is used, the first application should be at 100 gallons per acre increasing to 125 gallons for further applications.

The sprays may be made from DDT wettable powders or from DDT emulsions, using from  $\frac{1}{2}$  to 1 pound of actual DDT per 100 gallons of water. Fungicides may be added to the insecticidal dusts and sprays when necessary.

Since early and late blight are not present during the forepart of the growing season, it is questionable whether a fungicide should be added to the insecticide until later in the season. As soon as early blight makes its appearance, applications of Zerlate dust or Dithane D-14 spray at 10- to 14-day intervals have been effective in preventing this disease in North Dakota.

Although late blight is not a serious disease in the State and only occurs occasionally, a grower should have a fungicide on hand and ready to apply as soon as this disease is reported in the vicinity. Late blight has not been present on the North Dakota Agricultural Experiment Station and the State Seed Department plots during 1945 and 1946 when several fungicides were tested. Experience of other states has shown that Dithane D-14 and Bordeaux mixture applied as sprays have been as effective against this disease as any materials tested the past few years. Zerlate dust has not been effective in controlling late blight, and it is questionable if there is any dust that will give as satisfactory control as Dithane D-14 or Bordeaux mixture sprays.