

# 1950 POTATO Fungicide Experiments<sup>1</sup>

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The 1950 potato fungicide experiment was conducted at Northwood, N. D., on land donated by Mr. Arthur Nelson. The fungicides shown in Table 1 were selected because they had appeared to be the most promising of several that had been tested during previous years.<sup>3</sup> The sticker CP-5<sup>4</sup> was included in certain dusts to determine its effect, and the plants in Plot 2D were sprayed with water just previous to application of the dust.

Because of bad spring floods in the Red River Valley, planting was delayed approximately one month. The growing season was favorable for potatoes and the highest yields since the fungicide experiments were started in 1945 were obtained. Early blight did not appear until the first week of September and never became prevalent enough to permit the evaluation of the fungicides. It was also not possible to determine the effect of the sticker used on certain plots. Satisfactory insect control was obtained from four applications of DDT.

## EXPERIMENTAL PROCEDURE

Seed: Certified B size Triumph.

Soil: Bearden silt loam.

Planting date: June 10.

Fertilizer: 8-8-8 applied in bands with fertilizer attachment at the rate of 490 pounds per acre.

Plot design: Triple lattice.

Replications: Each treatment six times.

Plot size: Two rows wide and 60 feet long with two untreated rows on each side.

Row width: 38 inches.

Insecticide: DDT included with the fungicides.

Sprayer: Two-row, tractor-drawn Bean sprayer, with 350 pounds pressure.

Rate of spray application: 100 gallons per acre, three nozzles per row for the first application and five nozzles for the remaining three applications.

<sup>1</sup>The cooperation of the Agseco Chemicals, Incorporated, Grand Forks, N. Dak.; the Tennessee Corporation, College Park, Ga.; the Rohm & Haas Company, Philadelphia, Pa.; and the Union Carbide and Carbon Corporation, New York, N. Y. in supporting this work is acknowledged.

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<sup>3</sup>For reports for years 1945 to 1949 see list of Bimonthly articles on Potato Insecticides and Fungicides on Page 156. (Ed.)

<sup>4</sup>Furnished by the Colloidal Products Corporation, San Francisco, Calif.

Duster: Two-row, tractor-drawn Niagara duster with three nozzles per row.  
 Rate of dust application: 25 pounds per acre.  
 Dates of spray and dust applications: July 14, July 25, August 7 and August 22.  
 Date of first killing frost: October 2.  
 Date of harvest: October 7.

## EXPERIMENTAL RESULTS

Potato fungicide experiments have been conducted annually in the Red River Valley since 1945 and a significant amount of early blight has been present three years and a trace of late blight one year. During such years as 1950, when only a slight amount of early blight was present, it was possible to determine the influence of the sprays and dusts on yield. From the adjusted mean yields in Table I it is evident that there was not much difference in the yields of the majority of the plots.

**Table 1. AVERAGE YIELDS COMPUTED AS BUSHELS PER ACRE.**

Plot	Material	Yield
<b>CHECK</b>		
1D	DDT 5%	434
<b>DUST TREATMENTS</b>		
2D	Dithane Z-78 6% and DDT 5% applied on wet foliage.	431
3D	Dithane Z-78 6%, DDT 5% and CP-5 5%.	452
4D	Dithane Z-78 8%, DDT 5% and CP-5 5%.	438
5D	Parzate 8% and DDT 5%.	438
6D	Parzate 8%, DDT 5% and CP-5 5%.	438
7D	Zinc Sulfate 8%, DDT 5% and CP-5 5%.	421
8D	Cop-O-Zink, Copper 6%, Zinc 1.6%, DDT 5% and CP-5 5%.	428
9D	Cop-O-Zink, Copper 6.6%, Zinc 1.7%, DDT 5% and CP-5 5%.	448
10D	Cop-O-Zink, Copper 7.5%, Zinc 1.9%, DDT 5% and CP-5 5%.	431
11D	Copper Zinc Chromate 6% and DDT 5%.	431
12D	Copper Zinc Chromate 6%, DDT 5% and CP-5 5%.	419
<b>SPRAY TREATMENTS<sup>1</sup></b>		
13S	Dithane D-14, Zinc Sulfate and DDT. 2 qts., 1-1-100.	442
14S	Dithane D-14, Zinc Sulfate and DDT. 2 qts., 2-1-100.	464
15S	Dithane D-14, Zinc Sulfate and DDT. 2 qts., 4-1-100.	444
16S	Dithane D-14, Zinc Sulfate and DDT. 2 qts., 6-1-100.	435

<sup>1</sup>All spray materials are expressed in standard units of weight or liquid measure sufficient to make 100 gallons of spray mixture. For example, Dithane D-14, Zinc Sulfate and DDT 2 qts., 1-1-100 means 2 quarts of Dithane D-14, 1 pound of Zinc Sulfate and 1 pound of actual DDT with sufficient water to make 100 gallons of spray mixture.

During the previous five seasons the zinc-containing dusts and sprays produced the highest yields regardless of whether early blight was present or absent. It is possible the heavy application of 8-8-8 fertilizer minimized the effect of the zinc-containing materials. The vines on Plots 13S, 14S, 15S and 16S remained green the longest and Plot 14S yielded 30 bushels more than the check (1D). This difference was not statistically significant.

### SUMMARY

1. The 1950 potato fungicide experiment was conducted at Northwood, N. D., on land donated by Mr. Arthur Nelson.
2. The fungicidal dusts included Dithane Z-78, Parzate, Cop-O-Zink and Copper Zinc Chromate. Various amounts of zinc sulfate were included in the Dithane D-14 spray.
3. A sufficient amount of early blight was not present for satisfactory evaluation of the fungicides or the CP-5 sticker.
4. The yields obtained from the majority of the plots were approximately the same and the difference between the highest yielding plot and the check was not statistically significant.
5. Plots sprayed with Dithane D-14 and various amounts of zinc sulfate remained green the longest. One of these plots (14S) had the highest yield.

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### BIMONTHLY BULLETIN ARTICLES ON POTATO INSECTICIDES AND FUNGICIDES, 1945-1950

#### INSECTICIDES: (Contribution No. 3 also covers fungicides.)

1. Munro, J. A. and Redman, K.—Effectiveness of DDT Against Potato Insects. Vol. VII, No. 4, p. 11, Mar.-April, 1945.
2. Munro, J. A., Butcher, F. G., and Redman, K.—Insects Affecting Potatoes. Vol. VII, No. 5, p. 25, May-June, 1945.
3. Munro, J. A. and Hoyman, W. G.—Evaluation of Various Spray and Dust Materials in the Control of Insects and of the Fungus Causing Early Blight of Potatoes. Vol. VIII, No. 3, pp. 23-30, Jan.-Feb., 1946.
4. Brandes, G. A. and Swisher, E. M.—Spray and Dust Treatments of Potato Demonstration Plots, 1945. Vol. VIII, No. 3, pp. 32-39, Jan.-Feb., 1946.
5. Munro, J. A., Post, R. L., and Hoyman, W. G.—Effect of Insecticides on Tuber Yield and Control Recommendations for 1947. Vol. IX, No. 4, pp. 109-110, Mar.-Apr., 1947.
6. Post, R. L., Colberg, W. J. and Munro, J. A.—Effect of Insecticides on Tuber Yield. Vol. X, No. 3, pp. 98-104, Jan.-Feb., 1948.
7. Post, R. L., Colberg, W. J. and Munro, J. A.—Effect of Insecticides on Tuber Yields. Vol. XI, No. 3, pp. 92-95, Jan.-Feb., 1949.
8. Post, R. L., McCalley, R. W. and Munro, J. A.—Insecticidal Applications and Potato Yields in North Dakota for 1949. Vol. XII, No. 2, pp. 42-46, Nov.-Dec., 1949.
9. Munro, J. A.—The New Era in Insect Control. Vol. XII, No. 5, pp. 172-176, May-June, 1950.

#### FUNGICIDES:

10. Hoyman, W. G., Munro, J. A. and Post, R. L.—Potato Fungicide Experiments in 1946. Vol. IX, No. 3, pp. 85-87, Jan.-Feb., 1947.
11. Hoyman, W. G.—Potato Fungicide Experiments in 1948. Vol. XI, No. 2, pp. 32-35, Nov.-Dec., 1948.
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