CO-OPERATIVE SEED TREATMENT TRIALS -- 1963 [1]

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Twenty-nine seed treatment materials were tested in 1963 against common bunt of wheat (mixed Tilletia foetida (Wallr,) Liro and T. caries (DC.) Tul,), oat smut (mixed Ustilago avenae (Pers.) Rostr. and U. kolleri Wille), covered smut of barley (U. hordei (Pers,) Lagerh.), and against seed rot of flax caused by a complex of soil-borne and seed-borne micro-organisms.

Materials and Methods

Kinds of seed used in trials

Wheat bunt trials - Variety Red Bobs, Seed artificially contaminated (1:200, by weight) with mixed spores of Tilletia tritici and T. foetida.

Oat smut trials - Variety Vanguard, Seed naturally contaminated by loose and covered smut.

Barley smut trials - Variety Plush. Seed naturally contaminated by covered smut.

Flax seed-rot trials - Variety Redwood. About 50% of seeds cracked during threshing.

Fungicides

The 29 seed-treatment materials received for testing and brief statements on their nature and source are listed below with designating numbers 2 to 30 inclusive. Those numbers 2 to 12 are dusts, and the remainder are liquids. The majority of the materials contain organic mercury compounds.

1/ Contribution No. 150 from the Canada Department of Agriculture Research Station, Winnipeg, Manitoba.

2/ Principal Plant Pathologist and Associate Plant Pathologist, respectively, Plant Pathology Laboratory.

Treatment No.	Description of Products
1	Check - Seed not treated.
2	A. powder containing 3.2% mercury as ethylmercuric p-toluene sulfonanilide. Obtained from E. 4 du Pont de Nemours, Wilmington, Delaware.
3	A powder containing 0.8% mercury as ethylmercuric p-toluene sulfonanilide. Obtained from E .I. du Pont de Nemours, Wilmington, Delaware.
4	A mercurial powder of undisclosed composition. Obtained from E.I. du Pont de Nemours, Wilmington, Delaware.
5	A powder containing 12.5% "Diazinon" and 37.5% captan. Obtained from Chipman Chemicals, Winnipeg, Manitoba.
6	A powder containing 50.0% tetrachloronitroanisole. Obtained from Pittsburgh Plate Glass Company, Mooretown, New Jersey.
7	A powder containing 5.0% mercury as mixed phenyl-mercuric acetate and ethylmercuric chloride, Obtained from Allied Chemical Services, Calgary, Alberta.
8	A powder containing 60.0% captan and 15.0% dieldrin. Obtained from Stauffer Chemical of Canada, Vancouver, B. C.
9	A powder containing 40.0% dieldrin and 2.0% mercury as mixed phenylmercuric acetate and ethylmercuric chloride. Obtained from Allied Chemical Services, Calgary, Alberta.
10	A powder containing 70.0% p-dimethylaminobenzene-diazo sodium sulfonate. Obtained from Chemagro Corporation, Kansas City, Missouri.
11	A powder containing 35.0% p-dimethylaminobenzene-diazo sodium sulfonate and 35.0% trichlorodinitro-benzene. Obtained from Chemagro Corporation, Kansas City, Missouri.
12	A powder containing 70.0% trIchlorodinitrobenzene. Obtained from Chemagro Corporation, Kansas City, Missouri.

Treatment No.	Description of Products
13	A liquid containing 25% heptachlor and 0.37% mercury as methylmercuricdicyandiamide. Obtained from Morton Chemical Corporation Co., Woodstock, Illinois.
14	A. liquid containing 5.0% mercury as ethylmercuric hydroxide. Obtained from Green Cross Products, Winnipeg, Manitoba.
15	A liquid containing 4.2% mercury as methylmercuric 8-hydroxyquinolinate. Obtained from Seventy Seven Oil Company, Lethbridge, Alberta.
16	A liquid containing 1.5% mercury as methylmercuric nitrile. Obtained from Morton Chemical Company, Woodstock, Illinois.
17	A liquid containing 40.0% aldrin and 0.44% mercury as methylmercuric 8-hydroxyquinolinate. Obtained from Shell Oil Company, Toronto, Ontario.
18	A liquid containing 30.0% aldrin. Obtained from Morton Chemical Company, Woodstock, Illinois.
19	A liquid containing 7.8 oz./gal. of mercury as methylmercuric dicyandiamide. Obtained from Seventy Seven Oil Company, Lethbridge, Alberta.
20	A liquid containing 1.5% mercury as methylmercuric benzoate. Obtained from Morton Chemical Company, Woodstock, Illinois.
21	A liquid containing 1.25% mercury as methylmercuric 8-hydroxyquinolinate. Obtained from Morton Chemical Company, Woodstock, Illinois.
22	A liquid containing 1.5% mercury as methylmercuric nitrile. Obtained from Chipman Chemical Company, Winnipeg, Manitoba.
23	A liquid containing 1.5% mercury as methylmercuric dicyandiamide. Obtained from Chipman Chemical Company, Winnipeg, Manitoba.
24	A liquid Containing 2.5 oz./gal. of mercury as methylercuric dicyandiamide. Obtained from Morton Chemical Company, Woodstock, Illinois.

Treatment No.	Descriptions of Products
25	A liquid containing a mixture of heptachlor and pentachloronitrobenaene. Obtained from Morton Chemical Company, Woodstock, Illinois.
26	A liquid containing 1.5% mercury as methylmercuric benzoate. Obtained from N.V. Aagrunol Chemical Works, Holland.
27	A liquid containing 1.75% mercury as methylmercuric benzoate. Obtained from N. V. Aagrunol Chemical Works, Holland.
28	A liquid containing 2.1% mercury as mixed ethylmercuric 2,3-dihydroxypropyl mercaptide and ethylmercuric acetate. Obtained from E.I. du Pont de Nemours, Wilmington, Delaware.
29	A liquid containing 30.870 technical aldrin and 8.43% mercury as phenylmercuric acetate. Obtained from Gallowhur Chemicals Canada Ltd., Montreal, Quebec.
30	A liquid containing 2.25% mercury as mixed methylmercuric 2, 3-dihydroxypropyl mercaptide and methylmercuric acetate. Obtained from E.I. du Pont de Nemours, Wilmington, Delaware.

Experimental Results

The field data collected in 1963 are summarized in Table 1. One product, Drinox, was unsatisfactory for the control of all smut diseases tested, and two products, Diazinon-Captan Dual Purpose Seed Dressing and Pentadrin, gave only moderate control. In general, TCNA (50% powder), Captan-Dieldrin 60-15 and Gallodual were not quite as effective as some of the other seed dressings for controlling smut diseases. Although Chemagro 2635 70% gave inadequate control of bunt and depressed flax germination, and Dexon 70% W P inadequate control of oat and barley smuts, the combined product Dexon 35% + Chemagro 2635 35% gave satisfactory results for all crops. Flax germination was considered satisfactory when it exceeded 70% and moderately satisfactory within the range 65 to 70%. Four products, TCNA, Chemagro 2635 70%, Drinox and Pentadrin decreased the germination.

Table 1. Co-operative Seed Treatment Trials - 1963 (Summary of Data from 6 Stations for Wheat, 11 Stations for Oats, 13 Stations for Barley. 9 Stations for Flax).

Treatment No.	Abbreviated Name	Dose (oz./bu.)				Smut (%)			Germination %
		Wheat	Oats	Barley	Flax	Wheat	Oats	Barley	Flax
1	Check (dry, untreated seed)	0.00	0.00	0.00	0.00	18.7	8.0	23.4	60.3
2	Ceresan M	0.50	0.50	0.50	1.50	0.0	0.0	0.5	69.3
3	Ceresan M-DB	2.00	2.00	2.00	4.00	0.0	00	0.6	65.7
4	DuPont 1966	0.50	0.50	0.50	1.50	00	0.0	0.2	72.2
5	Diazinon-Captan	(4 oz./100 lb. seed)				3.6	2.0	2.9	68.4
6	TCNA (50% powder)	1.50	1.50	1.50	1.50	02	1.9	3.7	55.2
7	ACS Mercury ST.	0.50	0.50	0.50	1.50	0.0	0.0	0.1	66.9
8	Captan-Dieldrin 60-15	1.00	1.00	1.00	1.00	1.1	1.2	0.8	68.9
9	ACS AM Dual Purpose**	2.00	1.40	1.40	5.00	0.2	0.1	0.4	64.0
10	Dexon 70% WP	1.00	1.00	1.00	1.00	0.0	23	15.7	73.4
11	Dexon 35% + Chemagro 2635 35%	1.00	1.00	1.00	1.00	0.0	0.0	0.3	72.1
12	Chemagro 2635 70%	1.00	1.00	1.00	1.00	4.1	0.0	0.2	55.3
13	Pandrinox	2.12	2.12	2.12	4.00	0.0	0.0	0.1	67.0
14	Sandoz Tillex	0.75	0.75	0.75	1.50	00	00	0.1	64.9
15	Seventy Seven (P.C.P. 8239)*	0.75	0.75	0.75	1.50	00	00	0.0	75.0
	EP-208 Liquid	0.75	0.75	0.75	1.50	00	00	0.2	73.7
17	Shell AM Dual Purpose**	2.00	1.40	1.40	5.00	00	01	7.4	64.1
18	Drinox	4.00	4.00	4.00	4.00	22.7	7.7	24.0	56.4
19	Seventy Seven (P.C.P. 8542)*	0.75	0.75	0.75	1-50	0.0	0.0	0.3	72.8
20	EP-209 Liquid	0.75	0.75	0.75	1.50	0.2	0.0	-0.0	69.8
21	EP-202 Liquid	0.75	0.75	0.75	1.50	0.0	0.0	0.6	70.7
22	Agrosol (1962)	0.75	0.75	0.75	1.50	00	0.0	0.2	70.0
23	Agrosol (SB)	0.75	0.75	0.75	1.50	00	0.0	0.3	73.8
24	Panogen 15B	0.75	0.75	0.75	1.50	0.0	0.0	0.2	70.5
25	Pentadrin	3.00	3.00	3.00	7.50	1.7	1.6	13.9	56.1
26	Aabiton LSV-150	0.75	0.75	0.75	1.50	0.0	00	2.3	69.5
27	Aabiton LS-175	0.75	0.75	0.75	1.00	0.0	0.0	0.1	72.5
28	Ceresan 75	0.75	0.75	0.75	1.50	0.0	0.0	0.4	69.7
29	Gallodual	2.44	1.90	1.90	6.66	0.1	1.7	0.9	65.2
30	Ceresan L	0.75	0.75	0.75	1.50	0.0	0.0	0.1	74.2
						6.3	1.0	3.3	5.4

* Dilute according to Manufacturer's directions before use.
** Dosage is based on seeding rate.

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3	Ceresan M-DB	2.00	2.00	2.00	4.00	0.0	00	0.6	65.7
4	DuPont 1966	0.50	0.50	0.50	1.50	00	0.0	0.2	72.2
5	Diazinon-Captan	(4 oz./100 lb. seed)				3.6	2.0	2.9	68.4
6	TCNA (50% powder)	1.50	1.50	1.50	1.50	02	1.9	3.7	55.2
7	ACS Mercury ST.	0.50	0.50	0.50	1.50	0.0	0.0	0.1	66.9
8	Captan-Dieldrin 60-15	1.00	1.00	1.00	1.00	1.1	1.2	0.8	68.9
9	ACS AM Dual Purpose**	2.00	1.40	1.40	5.00	0.2	0.1	0.4	64.0
10	Dexon 70% WP	1.00	1.00	1.00	1.00	0.0	23	15.7	73.4
11	Dexon 35% + Chemagro 2635 35%	1.00	1.00	1.00	1.00	0.0	0.0	0.3	72.1
12	Chemagro 2635 70%	1.00	1.00	1.00	1.00	4.1	0.0	0.2	55.3
13	Pandrinox	2.12	2.12	2.12	4.00	0.0	0.0	0.1	67.0
14	Sandoz Tillex	0.75	0.75	0.75	1.50	00	00	0.1	64.9
15	Seventy Seven (P.C.P. 8239)*	0.75	0.75	0.75	1.50	00	00	0.0	75.0
	EP-208 Liquid	0.75	0.75	0.75	1.50	00	00	0.2	73.7
17	Shell AM Dual Purpose**	2.00	1.40	1.40	5.00	00	01	7.4	64.1
18	Drinox	4.00	4.00	4.00	4.00	22.7	7.7	24.0	56.4
19	Seventy Seven (P.C.P. 8542)*	0.75	0.75	0.75	1-50	0.0	0.0	0.3	72.8
20	EP-209 Liquid	0.75	0.75	0.75	1.50	0.2	0.0	-0.0	69.8
21	EP-202 Liquid	0.75	0.75	0.75	1.50	0.0	0.0	0.6	70.7
22	Agrosol (1962)	0.75	0.75	0.75	1.50	00	0.0	0.2	70.0
23	Agrosol (SB)	0.75	0.75	0.75	1.50	00	0.0	0.3	73.8
24	Panogen 15B	0.75	0.75	0.75	1.50	0.0	0.0	0.2	70.5
25	Pentadrin	3.00	3.00	3.00	7.50	1.7	1.6	13.9	56.1
26	Aabiton LSV-150	0.75	0.75	0.75	1.50	0.0	00	2.3	69.5
27	Aabiton LS-175	0.75	0.75	0.75	1.00	0.0	0.0	0.1	72.5
28	Ceresan 75	0.75	0.75	0.75	1.50	0.0	0.0	0.4	69.7
29	Gallodual	2.44	1.90	1.90	6.66	0.1	1.7	0.9	65.2
30	Ceresan L	0.75	0.75	0.75	1.50	0.0	0.0	0.1	74.2
						6.3	1.0	3.3	5.4

* Dilute according to Manufacturer's directions before use.
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