CO-OPERATIVE SEED TREATMENT TRIALS - 1964[1]

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Twenty-six seed treatment materials were tested in 1964 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 T. foetida and T. caries.

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 Marine. About 50.0% of seeds cracked during threshing,

Fungicides

The 26 seed treatment materials received for testing and brief otatements concerning their nature and source are listed below,

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1/ Contribution No. 173 from the Canada Department of Agriculture Research Station, Winnipeg, Manitoba.

2/ Plant Pathologists,

Treatment No.	P.C.P. No.	Description of Products
1		Check -- Seed not treated.
2	2521	A powder containing 3.2% mercury as ethylmercuric p-toluene sulfonanilide. E.I. du Pont do Nemours, Wilmington, Delaware.
3		A powder containing hcxachlorobenzene and captan. Green Cross Products, Montreal, Quebec.
4		A powder containing 50.0% tetrachloro-nitroanisole obtained from Pittsburgh Plate Glass Company. Mooretown, New Jersey.
5		A powder containing 20.0% captan and 20% hexachlorobenzene. Ortho Agricultural Chemical (Canada) Limited, New Westminster, B. C.
6		A powder containing 35.0% p-dimethylamino-benzonediazo sodium sulfonate and 35.0% trichlorodinitrobenzene. Chemagro Corporation, Kansas City, Missouri.
7		A powder containing 70. 0% trichlorcdinitro-benzene. Chemagro Corporation, Kansas city, Missouri.
8, 9	6767	A powder containing 75.0% captan. Ortho Agricultural Chemical (Canada) Limited, New Westminster, B.C.
10	4677	A liquid containing 3.7 oz./Imp. gal. methylmercuric dicyandiamide (2.5 oa. mercury equivalent). Morton Chemical Company, Woodstock, Illinois.
31, 12	8566	A liquid containing 2.25% mercury as mixed methylmercuric - 2, 3, - dihydroxy-propyl mercaptide and methylmercuric acetate. E.I. du Pont de Nemours, Wilmington, Delaware.
13, 14	5725	A liquid containing 2.30% mercury as ethylmercuric-2, 3 - dihydroxypropyl mercaptide and ethylmercuric acetate. E.I. du Pont de Nemours, Wilmington, Delaware.

Treatment No.	P.C.P. No.	Description of Products
15, 16	8782	A liquid containing 1.53% mercury as methylmercuric-2, 3 - dihydroxypropyl mercaptide and methylmercuric acetate. Green Cross Products (Sherwin-Williams), Montreal, Quebec.
17		A liquid containing 2.36 oz./Imp. gal. mercury as methylmercuric dicyandiamide. Chipman Chemicals Ltd., Winnipeg, Manitoba.
18	6750	A liquid containing 2.36 oz./Imp. gal. mercury as methylmercuric dicyandiamide. Chipman Chemicals Ltd., Winnipeg, Manitoba.
19	7284	A liquid combination fungicide-insecticide containing 0.89 oz./Imp. gal. mercury as methylmercuric dicyandiamide and 25 lbs./Imp. gal. heptachlor, Chipman Chemicals Ltd., Winnipeg, Manitoba.
20	8239	A liquid containing 4.2% mercury as methylmercuric-oxime. Seventy Seven Oil Co. LM., Lethbridge, Alberta.
21	8542	A liquid containing 7.8 oz./gal. of mercury as methylmercuric dicyandiamide. Seventy Seven Oil Company, Ltd., Lethbridga, Alberta.
22	8246	A liquid containing methylmercuric benzoate 4.2 oz./Imp. gal. (Mercury equivalent 2.5 oz./Imp. gal.). Morton Chemical Company, Woodstock, Illinois.
23	8428	Liquid combination fungicide-insecticide containing methylmercuric dicyandiamide 0.77% (Mercury equivalent 0.5%), and 2 1/3 lbs. Aldrin per Imp. gal. Morton Chemical Company, Woodstock, Illinois.
24	8708	A liquid containing mercury of undisclosed composition. Morton Chemical Company, Woodstock, Illinois.
25		A liquid containing methylmercuric p-toluene sulfonate 2.89% (1.5% mercury]. Norton Chemical Company, Woodstock, Illinois.

Table 1. Co-operative Seed Treatment Trials - 1964 (Summary of Data from 4 Stations for Wheat, 7 Stations for Oats, 9 Stations for Barley, 9 Stations for Flax).

Treatment No.	Treatment	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	5.69	9.69	14.13	66.3
2	Ceresan M	0.50	0.50	0.50	1.50	0.00	0.00	0.13	64.1
3	Green Cross 3944 X	1.00	1.00	1.00	2.00	0.00	0.30	0.10	60.0
4	TCNA (50%)	0.50	0.50	0.50	1.50	0.03	7.63	14.04	53.0
5	Orthocide 20-20	2.00	2.00	2.00	4.00	0.00	3.32	1.85	66.6
6	Dexon-Chemagro	1.00	1.00	1.00	2.00	0.00	0.02	2.54	60.8
7	Chemagro 2635	0.50	0.50	0.50	1.50	1.31	0.68	2.75	50.2
8	Orthocide 75	0.50	0.50	0.50	1.50	0.38	4.87	1.96	67.1
9	Ortnocide 75	1.00	1.00	1.00	2.00	0.94	2.61	0.83	69.5
10	Panogen 15	0.75	0.75	0.75	1.50	0.00	0.00	0.28	71.2
11	Ceresan L	0.50	.50	0.50	1.00	0.08	0.00	0.31	72.8
12	Ceresan L	0.75	0.75	0.75	1.50	0.00	0.04	0.14	69.0
13	Ceressn 100	0.50	0.50	0.50	1.00	0.00	0.02	0.49	67.9
14	Ceresen 100	0.75	0.75	0.75	1.50	0.00	0.00	0.39	63.5
15	Liquisan 10 L	0.50	0.50	0.50	1.00	0.13	0.09	0.71	68.2
16	Liquisan 10 L	0.75	0.75	0.75	1.50	0.00	0.11	0.8	68.9
17	Agrosol	0.75	0.75	0.75	1.50	0.00	0.00	0.28	69.4
18	Agrosol (standard)	0.75	0.75	0.75	1.50	0.00	0.00	0.31	68.8
19	Mergamma Liquid	2.00	2.00	2.00	4.00	0.00	0.00	0.29	64.6
20	Seventy-seven* P.C.P. 8239	0.75	0.75	0.75	1.50	0.03	0.16	0.21	66.5
21	Seventy-seven* P.C.P. 8542	0.75	0.75	0.75	1.50	0.00	0.00	0.25	70.0
22	E.P. 209	0.75	0.75	0.75	1.50	0.28	0.00	0.11	70.6
23	E.P. 219	2.12	2.12	2.12	4.00	0.00	0.02	0.17	64.4
24	E.P. 228	0.75	0.75	0.75	1.50	0.13	0.00	0.13	68.7
25	E.P. 254	0.75	0.75	0.75	1.50	0.06	0.04	0.08	70.2
26	Drinox Y34	2.00	2.00	2.00	4.00	11.53	11.71	12.86	54.2
27	Drinox H34B	2.00	2.00	2.00	4.00	15.94	10.21	12.59	58.7
26 a	Pentadrin	2.00	--	--	--	0.03	--	--	--
28 b	Green Cross 3958	--	2.00	2.00	4.00	--	9.41	8.71	59.8
29	Pandrinox	2.00	2.00	2.00	4.00	0.25	0.04	0.13	67.2
39	Panogen CS*	0.75	0.75	.75	1.50	0.03	0.04	0.11	66.3
Least Sign. Difference						4.26	2.90	3.58	4.0

* Dilute with water (one part concentrate with 2 parts water).

Treatment No.	P.C.P. No.	Description of Products
26	8130	A liquid insecticide containing heptachlor 2.5 lb./Imp. gal, Morton Chemical Company, Woodstock, Illinois.
27	6521	A liquid insecticide containing heptachlor 2.5 lb./Imp. gal. Morton Chemical Company, Woodstock, Illinois.
28 (a)	8034	A liquid fungicide-insecticide containing 1.6 lb./Imp. gal. pentachloronitrobenzene and 2.6 lb./Imp. gal. heptachlor. Morton Chemical Company, Woodstock, Illinois.
28 (b)		A powder containing 15% RD 8684 (a non-mercurial fungicide). Green Cross Products (Sherwin-Williams), Montreal, Quebec.
29	7208	A liquid fungicide-insecticide containing methylmercuric dicyandiamide 1.33 oz./Imp. gal. (0.59 oz./gal. mercury equivalent), and 2.63 lb./ Imp. gal. heptachlor. Morton Chemical Company, Woodstock, Illinois.
30	4790	A liquid containing methylmercuric dicyandiamide 11.7 oz/Imp. gal. (7.8 oz./ Imp. gal. mercury equivalent). Morton Chemical Company, Woodstock, Illinois.

Experimental Results

The field data collected in 1964 are summarized in Table 1. The insecticides Drinox #34 and Drinox #34B significantly ~~increased~~ bunt of wheat, had no effect on barley and oat smuts, and significantly decreased germination of wheat and flax. Chemagro 2635 and Orthocide 75 gave moderate control of all smuts. Chemagro 2635 decreased germination of wheat and flax, but Orthocide 75 tended to increase germination. TCNA (50%) and Green Cross 3958 were unsatisfactory for oat and barley smut and were injurious to seed germination of wheat and flax. Green Cross 3944X gave excellent control of all smuts, and Orthocide 20 - 20 was very effective against bunt of wheat, and gave excellent germination of wheat and flax. These two non-mercurials indicate that the present use of hazardous mercurials could be replaced by safer to handle fungicides.

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