

**EFFECT OF SEED TREATMENTS AND THEIR CORRESPONDING
IMPACT ON SEEDLING EMERGENCE AND SURVIVAL**

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Since 1980 our farmers have averaged less than 56 percent of the seeds planted producing beets at harvest. The survival rate ranges from 44.5 percent to 63.2 percent. A crust on the soil, wind, and other factors including seedling disease can affect stand. This test was conducted to find if any seed treatment would reduce seedling disease resulting in better stand establishment.

Presently we are using Thiram 50 W applied by a Vector hi-coater. Dayglo neon red is used for color and Dow Methocel is used as a sticker. No layer is applied first to separate the fungicide from the seed and only a total of about 3.2 percent is added by weight to the seed.

A total of twelve treatment materials were tested at least once over three years. All treatments were mixed with water and sprayed on bare seed. All tests were randomized in two row plots, 30 feet long with six replications. Stand counts were taken at the 4-8 leaf size to evaluate performance.

Products and Rates Used:

<u>Product</u>	<u>AMOUNT PER 100 POUNDS OF SEED</u>		
	<u>1990</u>	<u>1991</u>	<u>1992</u>
Captan 400 FL	8.0 Fl. Oz.	--	6.0 Fl. Oz.
Thiram 50 WP	8.0 Oz.	8.0 Oz.	8.0 Oz.
Apron FL	1.5 Fl. Oz.	2.0 Fl. Oz.	.75 Fl. Oz.
RTU-PCNB	3.0 Fl. Oz.	4.0 Fl. Oz.	--
Chloroneb 65 WP	2.0 Oz.	--	--
Tachigaren 70 WP	1.8 Lbs.	2.0 Lbs.	4.5 Lbs.
Terraclor Super X (dry)	4.0 Oz.	--	--
Apron 12.5% Dust (dry)	4.0 Oz.	--	--
Gus (NTN) 338 75%	--	5.3 Oz.	12.0 Lbs.
Baytan 30 FL	--	--	3.0 Fl. Oz.
Mon 25 WP	--	--	3.0 Oz.
PGR IV	--	--	4.0 Fl. Oz.

Tables 1-3 contain the results from each individual year. There is a significant difference between some treatments in 1990 and 1992, but no treatment in any year was significantly better (5% level) than the untreated check or thiram alone.

Table 1
1990
AVERAGE OF THREE LOCATIONS

<u>TREATMENT</u>	<u>FIELD % EMERG.</u>	<u>TREATMENT</u>	<u>FIELD % EMERG.</u>
Untreated	55.1	Tachigaren 70% WP	51.9
Captan 400	54.7	Tach. 70%, Thir. 50 WP	55.2
Thiram 50 WP	54.5	Tach. (slurry), Terraclor (dry)	47.3
Thiram, Apron FL	54.6	Tach. (slurry), Apron (dry)	51.3
Thir., Apron, RTU-PCNB	56.8	Thir. (slurry), Terraclor (dry)	52.1
Thir., Apron, Chloroneb	55.3	Thir. (slurry), Apron (dry)	55.0
LSD (5%)		5.9	

Table 2
1991
AVERAGE OF THREE LOCATIONS

<u>TREATMENT</u>	<u>FIELD % EMERG.</u>	<u>TREATMENT</u>	<u>FIELD % EMERG.</u>
Untreated	58.7	Thiram, GUS 338	64.1
Thiram 50 WP	57.6	Thiram, Apron, GUS 338	62.6
Thiram, Apron FL	56.2	Thiram, Apron, RTU-PCNB	60.1
Tachigaren 70% WP	55.9	Thiram, Apron, RTU-PCNB, GUS 338	61.3
Thiram, Tach. 70% WP	55.6	Thir., Tach., RTU-PCNB	62.5
LSD (5%)		NS	

Table 3
1992
AVERAGE OF THREE LOCATIONS

<u>TREATMENT</u>	<u>FIELD % EMERG.</u>	<u>TREATMENT</u>	<u>FIELD % EMERG.</u>
Untreated	59.8	Apron, Thir. & Baytan	44.2
Thiram 50 WP	57.8	Apron, Thir., Mon.	59.2
Captan 400	55.7	Thir., Tach., GUS 338	52.8
Thiram, Tach.	52.9	Thir., Tach, PGR IV	51.6
Apron, Thiram	59.3	Apron, Thir., PGR IV	56.6
Apron, Thir., Tach.	46.6	Apron, Thir., Tach, PGR IV	49.2
LSD (5%)		5.6	

There were only four treatments tested all three years. Table 4 shows the average of three years expressed as a percent of the mean.

Table 4
AVERAGE OF THREE YEARS

TREATMENT	FIELD EMERG. % OF MEAN
Untreated	104.2
Thiram 50 WP	102.0
Thiram 50 WP, Apron FL	102.2
Thiram 50 WP, Tach. 70 WP	98.2

All treatments were applied to bare seed and may be a factor if some of the treatments were toxic to the seed. The high rate of Tachigaren applied in 1992 did affect a lab germination done in November 1992 (Table 5).

Table 5
1992 TREATMENT
LABORATORY GERMINATION

TREATMENT	% GERM. -- 11/27/92
Untreated	98
Thiram	96
Tachigaren (average of 5)	28
Other Treatments	87.5
Mean of all 12	64

I did plant seed treated in 1990 and 1991 one year later to check for toxic effects. Table 6 was treated in 1990 and planted in 1991. Table 7 was treated in 1991 and planted in 1992. There does not seem to be a consistent, significant pattern to indicate a toxic effect but in three cases, there is a treatment that is significantly less than the untreated check; Table 6, Tachigaren slurry and Apron dry, Table 7, Tachigaren alone and with Thiram.

Table 6
1991
CARRY-OVER SEED TREATMENTS
AVERAGE OF TWO LOCATIONS

TREATMENT	FIELD % EMERG.	TREATMENT	FIELD % EMERG.
Untreated	61.9	Tachigaren 70% WP	59.9
Captan 400	62.4	Tachigaren, Thiram	68.4
Thiram 50 WP	61.9	Tach. (slurry), Terraclor (dry)	57.3
Thiram, Apron	57.5	Tach. (slurry), Apron (dry)	49.8
Thir., Apron, RTU-PCNB	58.3	Thir. (slurry), Terraclor (dry)	59.2
Thir., Apron, Chloroneb	63.2	Thiram (slurry), Apron (dry)	59.4
LSD (5%)	8.1		

Table 7

1992

CARRYOVER SEED TREATMENT
AVERAGE OF TWO LOCATIONS

TREATMENT	FIELD % EMERG.	TREATMENT	FIELD % EMERG.
Untreated	75.0	Thiram, GUS 338	76.3
Thiram 50 WP	77.2	Thir., Apron, GUS 338	73.6
Thiram, Apron	69.8	Thir., Apron, RTU-PCNB	71.7
Tachigaren 75% WP	66.0	Thir., Apron, RTU-PCNB, GUS 338	73.4
Thiram, Tachigaren	65.6	Thir., Tach, RTU-PCNB	76.6
LSD (5%)		8.8	

The six treatments that were in both carryover treatment tests are listed in Table 8. These are expressed as a percent of the mean.

Table 8

CARRYOVER SEED TREATMENT
AVERAGE OF 2 YEARS

TREATMENT	FIELD EMERGENCE % OF MEAN
Untreated	103.4
Thiram	104.9
Thiram, Apron	96.2
Thiram, Apron, RTU-PCNB	98.1
Tachigaren	95.5
Thiram, Tachigaren	102.3

CONCLUSION: Even with our poor survival rate these tests show no benefit to any of the treatment materials.