

Seed-Treatment Trial

2007

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UAP

Russet Burbank seed was purchased locally. Fifty pounds of the cut seed was accurately weighed and placed into a new plastic garbage bag. The corresponding amount of test material was weighed and placed into the garbage bag. The open end of the bag was secured and the bag shaken and rolled to insure coverage of the cut seed. The mixing process appeared to provide good coverage of the seed. Rubber examination gloves, changed with treatments, insured no cross contamination of materials or seed occurred. A treatment list appears in Table 1.

Plots were established near Van Buren, Maine. The seed pieces were planted at one-foot intervals. A tape measure was used for each plot to insure uniform seed placement. Rubber examination gloves, changed between each plot, were used to avoid cross contamination of the treatments. Seed pieces were planted two inches deep and immediately covered with four inches of soil. Plots consisted of single rows, 40 feet long. Plots were planted on 3 June. A plot plan appears in Figure 1.

The rows for planting were made with a commercial potato planter, providing rows for the hand planting and the proper fertilization scheme of 1050 pounds per acre of 14-14-14.

The plots, once planted, were covered with soil using a hoe. Each of the eight treatments were replicated four times, and arranged in a randomized complete block design. The plots were maintained by the grower as part of a regular field maintenance and appropriate weed, insect, and disease control materials were applied by the grower. The potatoes were top killed 18 September.

On 2 July, emergence and vigor ratings were taken. Data and analysis for the emergence rating appears in Table 2. Data and analysis for the vigor rating appears in Table 3. On 13 August, plant ratings for *Rhizoctonia* were performed. Ratings of *Rhizoctonia* infection on the stems were also performed at this time (Table 4). The rating system used was 0 -- no infection, 1 -- one lesion less than 2 mm, 2 -- larger lesion or more than one small lesion, 3 -- coalescing of lesions, but stem is not girdled, 4 -- stem girdled, 5 -- stem dead. At this time, the stems were counted (Table 5).

The center 20 feet of the plots was hand harvested on 5 October. The potatoes were sized and yields were recorded in pounds per plot (Tables 6 - 10). The potatoes were washed and the incidence (Table 11) and severity (Table 12) of *Rhizoctonia* was evaluated.

It is important to note that although an LSD test is used a mean separation technique; there can be some question to the validity of the application of a mean separation technique to treatments of levels of the same compound. This is to say that while 0.75 and 1.0 pounds of the same chemical are separate treatments, it would be more accurate to use regression analysis to determine the effectiveness of levels equivalent to 0 (check), 0.75, and 1.0 pounds of product. In all cases, the alpha level of 5% was used.

Single degree of freedom comparisons are not included with this report. The number of potential comparisons prohibited including all of them. As an example: Check vs. Tops MZ; Tops MZ vs. Maxim MZ, etc. If you desire any specific comparisons, please contact me and I will perform them by request.

Table 1. Treatments and rates for potato seed-treatment trials, 2007.

Treatment	Rate of material per 100 pounds of seed
Check	0.0 oz
LI 6188 + LI6227 + MZ 6%	0.3 oz + 0.6 oz + 0.5 lb
LI 6188 + LI6227 + MZ 6%	0.3 oz + 0.8 oz + 0.5 lb
LI 6188 + LI6227 + MZ 6%	0.4 oz + 0.6 oz + 0.5 lb
LI 6188 + LI6227 + MZ 6%	0.4 oz + 0.8 oz + 0.5 lb
LI 6188 + LI6227 + MZ 6%	0.5 oz + 0.6 oz + 0.5 lb
LI 6188 + LI6227 + MZ 6%	0.5 oz + 0.8 oz + 0.5 lb
Maxim FS	0.04 oz

Table 2. Data and analyses of 2 July emergence rating for potato seed-treatment trials, 2007

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	25.89	8.63	0.77	0.5262
Treatment	7	152.44	21.778	1.93	0.1150
Error	21	236.82	11.277		
Total	31	415.16			

Treatment	Emergence 2 July 2007 (percent)
LI 6188 .5 + LI6227 .6	99.72
Maxim 4FS	99.18
LI 6188 .4 + LI6227 .8	98.35
LI 6188 .4 + LI6227 .6	97.50
LI 6188 .3 + LI6227 .6	96.68
LI 6188 .3 + LI6227 .8	95.28
Check	93.58
LI 6188 .5 + LI6227 .8	93.43
LSD value at alpha = 0.05	4.94

Table 3. Data and analysis of 2 July plant vigor rating for potato seed-treatment trials, 2007.

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	233.59	77.865	3.99	0.0215
Treatment	7	380.47	54.353	2.78	0.0326
Error	21	410.16	19.531		
Total	31	1024.22			

Treatment	Vigor 2 July 2007 (percent)
Maxim 4FS	98.75
LI 6188 .4 + LI6227 .8	97.75
LI 6188 .4 + LI6227 .6	97.50
LI 6188 .5 + LI6227 .6	96.25
LI 6188 .3 + LI6227 .6	95.00
LI 6188 .5 + LI6227 .8	92.50
Check	91.25
LI 6188 .3 + LI6227 .8	88.75
LSD value at alpha = 0.05	6.50

Table 4. *Rhizoctonia* Stem Rating (Mean of Five Plants) 13 August 2007, (0 - 5 rating scale).

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	0.35	0.116	0.51	0.6821
Treatment	7	6.82	0.974	4.26	0.0045
Error	21	4.80	0.229		
Total	31	11.96			

Treatment	<i>Rhizoctonia</i> stem rating 13 August 2007 (0-5)
Check	1.80
LI 6188 .5 + LI6227 .6	0.58
LI 6188 .5 + LI6227 .8	0.58
LI 6188 .3 + LI6227 .8	0.50
Maxim 4FS	0.48
LI 6188 .4 + LI6227 .6	0.43
LI 6188 .4 + LI6227 .8	0.31
LI 6188 .3 + LI6227 .6	0.25
LSD value at alpha = 0.05	0.70

Table 5. Number of stems of five plants 13 August 2007.

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	67.34	22.448	2.39	0.0977
Treatment	7	122.72	17.531	1.86	0.1271
Error	51	798.67	15.660		
Total	31	387.47			

Treatment	Number of stems per five plants 13 August 2007
Maxim 4FS	21.00
LI 6188 .5 + LI6227 .8	20.75
Check	19.00
LI 6188 .5 + LI6227 .6	19.00
LI 6188 .4 + LI6227 .6	18.00
LI 6188 .4 + LI6227 .8	16.50
LI 6188 .3 + LI6227 .6	16.00
LI 6188 .3 + LI6227 .8	15.50
LSD value at alpha = 0.050	4.51

Table 6. Plot yield of tubers up to 1 7/8 inches in diameter (approximately less than four ounces).

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	30.92	10.307	0.83	0.4899
Treatment	7	86.56	12.366	1.00	0.4578
Error	21	259.36	12.351		
Total	31	376.84			

Treatment	Plot yield (pounds) up to 1 7/8 inch tubers
Maxim 4FS	19.43
LI 6188 .4 + LI6227 .8	17.93
LI 6188 .5 + LI6227 .8	17.03
Check	16.21
LI 6188 .4 + LI6227 .6	15.71
LI 6188 .5 + LI6227 .6	15.65
LI 6188 .3 + LI6227 .6	14.53
LI 6188 .3 + LI6227 .8	14.13
LSD value at alpha = 0.050	5.17

Table 7. Plot yield of tubers from 1 7/8 to 2 1/4 inches in diameter (approximately less than four ounces).

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	60.93	20.310	2.32	0.1048
Treatment	7	35.75	5.107	0.58	0.7620
Error	21	183.95	28.76		
Total	31	280.63			

Treatment	Plot yield (pounds) 2 1/4 to 2 1/2 inch tubers
Check	12.55
LI 6188 .5 + LI6227 .8	12.54
Maxim 4FS	12.48
LI 6188 .4 + LI6227 .6	11.62
LI 6188 .4 + LI6227 .8	11.29
LI 6188 .3 + LI6227 .8	10.84
LI 6188 .3 + LI6227 .6	10.65
LI 6188 .5 + LI6227 .6	9.35
LSD value at alpha = 0.050	4.35

Table 8. Plot yield of tubers 2 1/4 to 2 1/2 inches in diameter (approximately four to six ounces).

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	1.32	0.440	0.38	0.7696
Treatment	7	10.14	1.448	1.24	0.3235
Error	21	24.43	1.163		
Total	31	35.89			

Treatment	Plot yield (pounds) 2 1/4 to 2 1/2 inch tubers
LI 6188 .4 + LI6227 .8	2.06
LI 6188 .3 + LI6227 .6	2.02
Check	1.99
LI 6188 .5 + LI6227 .6	1.47
LI 6188 .4 + LI6227 .6	1.36
LI 6188 .3 + LI6227 .8	1.29
LI 6188 .5 + LI6227 .8	1.09
Maxim 4FS	0.51
LSD value at alpha = 0.050	1.59

Table 9. Plot yield of tubers 2 1/2 to 3 1/4 inches in diameter (approximately six to ten ounces).

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	23.48	7.826	1.08	0.3776
Treatment	7	122.67	17.524	2.43	0.0547
Error	21	151.66	7.222		
Total	31	297.81			

Treatment	Plot yield (pounds) 2 1/2 to 3 1/4 inch tubers
LI 6188 .3 + LI6227 .8	9.14
LI 6188 .3 + LI6227 .6	7.47
Check	5.48
LI 6188 .4 + LI6227 .6	5.39
LI 6188 .5 + LI6227 .8	4.63
LI 6188 .5 + LI6227 .6	4.44
LI 6188 .4 + LI6227 .8	3.72
Maxim 4FS	2.56
LSD value at alpha = 0.050	3.95

Table 10. Total plot yield of tubers.

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	166.63	55.541	1.14	0.3576
Treatment	7	80.41	11.487	0.23	0.9718
Error	21	1027.27	48.918		
Total	31	1274.30			

Treatment	Total Plot Yield pounds/20 feet of row
LI 6188 .3 + LI6227 .8	36.26
Check	36.22
LI 6188 .5 + LI6227 .8	35.28
LI 6188 .4 + LI6227 .8	34.99
Maxim 4FS	34.97
LI 6188 .3 + LI6227 .6	34.67
LI 6188 .4 + LI6227 .6	34.08
LI 6188 .5 + LI6227 .6	30.90
LSD value at alpha = 0.05	10.28

Table 11. *Rhizoctonia* incidence of harvested tubers.

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	2.59	0.865	0.51	0.6802
Treatment	7	8.97	1.281	0.75	0.6302
Error	21	36.55	1.698		
Total	31	47.22			

Treatment	<i>Rhizoctonia</i> Incidence on tubers (percent)
Check	1.25
LI 6188 .5 + LI6227 .8	1.25
Maxim 4FS	0.25
LI 6188 .3 + LI6227 .6	0.00
LI 6188 .4 + LI6227 .8	0.00
LI 6188 .5 + LI6227 .6	0.00
LI 6188 .3 + LI6227 .8	0.00
LI 6188 .4 + LI6227 .6	0.00
LSD value at alpha = 0.05	1.92

Table 12. *Rhizoctonia* severity of harvested tubers.

ANALYSIS OF VARIANCE TABLE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F-value	Prob
Rep	3	1.84	0.615	0.70	0.5619
Treatment	7	5.22	0.746	0.85	0.5594
Error	21	18.41	0.876		
Total	31	25.47			

Treatment	<i>Rhizoctonia</i> Severity on tubers (percent)
Check	1.25
LI 6188 .3 + LI6227 .6	1.25
LI 6188 .3 + LI6227 .8	1.25
LI 6188 .4 + LI6227 .6	1.25
LI 6188 .4 + LI6227 .8	1.25
LI 6188 .5 + LI6227 .6	1.25
LI 6188 .5 + LI6227 .8	0.25
Maxim 4FS	0.25
LSD value at alpha = 0.05	1.38

Figure 1. Plot layout for potato seed piece treatment trials, 2007

Rep 1	Rep 1	Rep 1	Rep 1	Rep 1	Rep 1	Rep 1	Rep 1
Plot 101	Plot 102	Plot 103	Plot 104	Plot 105	Plot 106	Plot 107	Plot 108
.3 + .6	chec k	.5 .6	.3 + .8	.5 + .8	.4 + .6	Std	.4 + .8
Rep 2	Rep 2	Rep 2	Rep 2	Rep 2	Rep 2	Rep 2	Rep 2
Plot 201	Plot 202	Plot 203	Plot 204	Plot 205	Plot 206	Plot 207	Plot 208
.3 + .8	.5 + .8	.3 + .6	.4 + .8	chec k	.5 .6	Std	.4 + .6
Rep 3	Rep 3	Rep 3	Rep 3	Rep 3	Rep 3	Rep 3	Rep 3
Plot 301	Plot 302	Plot 303	Plot 304	Plot 305	Plot 306	Plot 307	Plot 308
chec k	.3 + .6	.5 .6	.4 + .6	.5 + .8	.4 + .8	Std	.3 + .8
Rep 4	Rep 4	Rep 4	Rep 4	Rep 4	Rep 4	Rep 4	Rep 4
Plot 401	Plot 402	Plot 403	Plot 404	Plot 405	Plot 406	Plot 407	Plot 408
.3 + .8	chec k	Std	.4 + .6	.5 .6	.3 + .6	.4 + .8	.5 + .8