

**POTATO** (*Solanum tuberosum*)  
**Early Blight;** *Alternaria solani*  
**Late Blight;** *Phytophthora infestans*  
**Black Scurf;** *Rhizoctonia solani*  
**Silver Scurf;** *Helminthosporium solani*  
**Leak;** *Pythium spp.*  
**Pink Rot;** *Phytophthora erythroseptica*

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**EVALUATION OF THE EFFECT OF FOLIAR FUNGICIDES ON POTATO STORAGE QUALITY, 1999:** A field trial was conducted at the Hancock Agricultural Research Station in central Wisconsin during the summer of 1999 to evaluate the efficacy of 63 foliar fungicide treatments to control early and late blight on Russet Burbank potatoes. Fungicide treatments were applied at weekly intervals from June 30 to August 25, according to treatment protocol, for a total of 9 weeks. Tubers were harvested and graded September 20-23, 1999 and, for selected treatments, a 30-40 pound sample was stored from each replicate plot. Any diseased tubers observed were discarded during the grading process and recorded as culls. Stored tubers included a mix of sizes from the four middle size grades, ranging from 4-16 oz. Tubers were placed in the potato storage area at the Hancock Agricultural Research Station, maintained at approximately 50° F and 90% RH until evaluation on February 25, 2000. All tubers were rated for presence or absence of symptoms of late blight, leak and soft rot, silver scurf, black scurf, pink rot and early blight. Samples of tubers with symptoms typical of silver scurf were brought back to the laboratory and incubated in a moist chamber to encourage sporulation in order to confirm the presence of *H. solani*.

Silver scurf and *Rhizoctonia* black scurf were the primary diseases affecting the tubers of Russet Burbank tubers in this trial after 5 months of storage. The incidence of both diseases was variable between treatments and while large numerical differences were apparent, the differences were not significant. Thus we were unable to make clear-cut distinctions between foliar applied treatments in their ability to control pathogens affecting the quality of stored tubers.

#### **Footnotes for Table 1**

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- 1 Application dates: 1=6/30, 2=7/7, 3=7/14, 4=7/21, 5=7/28, 6=8/4, 7=8/11, 8=8/18, 9=8/25
- 2 Relative area under the disease progress curve. Data for each observation date are plotted on a graph and the relative area under the line is calculated for each treatment providing a measure of the relative severity of disease throughout the season. A disease rating of 100% foliage infection for the entire season would produce a value of 1.0. All relative AUDPC values are expressed as the proportion of this value. Either decreased disease severity and/or later disease development will contribute to lower relative AUDPC. Early blight and late blight AUDPC values were calculated from Jun 25 through Sep7 (late blight values were 0 prior to Aug 23) AUDPC for total defoliation includes early blight ratings through Aug 16 and ratings for early blight and late blight combined for the rest of the season.
- 3 No tuber symptoms of late blight or pink rot were observed.
- 4 Silver scurf index: Tubers were spread out and the % of the top surface area with silver scurf symptoms was rated on a 5 point scale with 0 = none; 1 = 1-10% of the surface area of the tuber affected; 2 = 10-25% affected; 3 = 25-50% affected; 4 = 50-75% affected; 5 = > 75% affected. The lesion area index was calculated by summing the number in each class times the class number / 5 times the total number of tubers rated. The index represents a percentage of the worst possible case (if all tubers were rated 5, the index would = 100).
- 5 *Rhizoctonia* index: Tubers were spread out and the severity of *Rhizoctonia* symptoms on the top surface was rated on a 5 point scale with 0 = none; 1 = 1-5 sclerotia; 2 = 5-10 sclerotia; 3 = 10-20 sclerotia; 4 = > 20 sclerotia. The *Rhizoctonia* index was calculated by summing the number in each class times the class number / 4 times the total number of tubers rated. The index represents a percentage of the worst possible case (if all tubers were rated 4, the index would = 100).
- 6 Analysis of variance was performed on data, and Fisher's protected least significant difference (LSD) was calculated. NS = not significant at the P = 0.05 level.

**Table 1. Effect of treatment on tuber condition after storage.**

No.	Treatment	Rate/Acre		Schedule Summary <sup>1</sup>	Relative AUDPC <sup>2</sup>			Yield (cwt/A)		% of Tubers With: <sup>3</sup>					Silver Scurf Index <sup>4</sup>	Rhizoc-tonia Index <sup>5</sup>
		Formulated Product	Active Ingredient		Early Blight	Late Blight	Com-bined	Total	US#1	No Symp-toms	Leak / Soft Rot	Silver Scurf	Rhizoc-tonia	Early Blight		
1	Untreated Control				0.289	0.003	0.294	458.9	300.8	34.3	0.0	64.8	1.7	0.0	23.2	1.9
2	Folicur 3.6 F + Curzate 60 DF + Induce	0.25 pt 0.21 lb 0.06%	1.8 oz. 2.0 oz.	9 Appl (wks 1-9)	0.134	0.031	0.181	565.8	367.5	46.5	0.0	51.1	6.2	0.0	11.8	3.8
3	Folicur 3.6 F + Curzate 60 DF + Induce	0.31 pt 0.21 lb 0.06%	2.25 oz. 2.0 oz.	9 Appl (wks 1-9)	0.117	0.040	0.165	598.1	356.2	53.6	0.4	43.6	2.9	0.0	13.2	0.6
4	Folicur 3.6 F + Curzate 60 DF + Induce	0.38 pt 0.21 lb 0.06%	2.7 oz. 2.0 oz.	9 Appl (wks 1-9)	0.082	0.030	0.121	575.7	362.9	63.7	0.0	34.8	2.6	0.0	9.6	1.5
7	Bravo WS (6F) + Acrobat 50 WP Quadris 2.08 SC + Acrobat 50 WP Quadris 2.08 SC + Acrobat 50 WP	1.0 pt 0.4 lb 0.38 pt 0.4 lb 0.38 pt 0.4 lb	0.75 lb 0.2 lb 0.1 lb 0.2 lb 0.1 lb 0.2 lb	4 Appl (wks 2,4,6,8) 2 Appl (wks 6,8) 4 Appl (wks 1,3,5,7) 3 Appl (wks 1,5,7) 1 Appl (wk 9)	0.055	0.000	0.055	563.8	316.1	75.2	0.0	23.3	1.5	0.0	5.5	0.4
8	Bravo WS (6F) + Acrobat 50 WP Quadris 2.08 SC + Acrobat 50 WP Quadris 2.08 SC + Acrobat 50 WP	1.0 pt 0.3 lb 0.38 pt 0.3 lb 0.38 pt 0.3 lb	0.75 lb 0.15 lb 0.1 lb 0.15 lb 0.1 lb 0.15 lb	4 Appl (wks 2,4,6,8) 2 Appl (wks 6,8) 4 Appl (wks 1,3,5,7) 3 Appl (wks 1,5,7) 1 Appl (wk 9)	0.054	0.000	0.054	579.0	337.6	66.1	0.0	32.2	1.7	0.0	9.8	0.8
9	Bravo Zn 4.17 F	2.125 pt	1.11 lb	9 Appl (wks 1-9)	0.203	0.000	0.203	521.6	279.2	47.6	0.0	50.8	2.7	0.5	17.7	1.7
10	Bravo Zn 4.17 F Quadris 2.08 SC	2.125 pt 0.38 pt	1.11 lb lb	6 Appl (wks 2,4,6,7,8,9) 3 Appl (wks 1,3,5)	0.061	0.000	0.061	584.2	307.1	51.6	0.0	44.9	4.0	0.0	17.3	1.7
11	Bravo Zn 4.17 F Quadris 2.08 SC	2.125 pt 0.38 pt	1.11 lb lb	6 Appl (wks 1,3,5,7,8,9) 3 Appl (wks 2,4,6)	0.056	0.000	0.056	595.3	383.6	44.0	0.4	53.4	3.6	0.0	17.2	2.9
12	Bravo Ultrex Fluazinam 500 F Quadris 2.08 SC	1.4 lb 0.5 pt 0.38 pt	1.13 lb 0.26 lb 0.1 lb	5 Appl (wks 3,6,7,8,9) 2 Appl (wks 2,5) 2 Appl (wks 1,4)	0.055	0.000	0.055	579.6	292.4	48.4	0.0	47.1	6.1	0.0	10.8	2.1
13	Bravo WS (6F)	1.5 pt	1.125 lb	9 Appl (wks 1-9)	0.249	0.000	0.249	498.5	282.5	57.2	0.0	38.5	5.4	0.0	11.0	2.5
14	Bravo WS (6F) Quadris 2.08 SC Quadris 2.08 SC	1.0 pt 0.38 pt 0.76 pt	0.75 lb 0.1 lb 0.2 lb	5 Appl (wks 1,2,4,6,8) 3 Appl (wks 3,5,7) 1 Appl (wk 9)	0.073	0.000	0.073	561.6	328.2	51.2	0.0	45.9	3.3	0.0	14.0	0.8
15	Bravo WS (6F) Quadris 2.08 SC Quadris 2.08 SC	1.0 pt 0.38 pt 0.76 pt	0.75 lb 0.1 lb 0.2 lb	6 Appl (wks 1-4, 6,8) 2 Appl (wks 5,7) 1 Appl (wk 9)	0.082	0.000	0.083	549.9	334.0	55.3	0.0	38.8	6.7	0.0	13.2	3.3
16	Bravo WS (6F) Quadris 2.08 SC	1.0 pt 0.38 pt	0.75 lb 0.1 lb	7 Appl (wks 1-6, 8) 1 Appl (wk 7)	0.125	0.001	0.127	516.0	298.3	62.2	0.0	36.4	1.6	0.0	11.7	0.8

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		Formulated Product	Active Ingredient		Early Blight	Late Blight	Com-bined	Total	US#1	No Symp-toms	Leak / Soft Rot	Silver Scurf	Rhizoc-tonia	Early Blight		
	Quadris 2.08 SC	0.76 pt	0.2 lb	1 Appl (wk 9)												
17	Bravo WS (6F) Fluazinam 500 F	1.0 pt 0.5 pt	0.75 lb 0.26 lb	5 Appl (wks 1,2,4,6,8) 4 Appl (wks 3,5,7,9)	0.245	0.000	0.245	468.0	278.4	46.6	0.0	50.6	4.4	0.0	15.0	3.3
18	Bravo WS (6F) Fluazinam 500 F	1.0 pt 0.5 pt	0.75 lb 0.26 lb	6 Appl (wks 1-4, 6, 8) 3 Appl (wks 5,7,9)	0.223	0.000	0.223	502.5	264.7	42.5	0.4	54.6	3.2	0.0	21.2	1.0
19	Bravo WS (6F) Fluazinam 500 F	1.0 pt 0.5 pt	0.75 lb 0.26 lb	7 Appl (wks 1-6, 8) 2 Appl (wks 7,9)	0.241	0.000	0.241	472.1	280.2	65.2	0.0	29.3	12.1	0.3	7.5	6.9
21	Bravo Zn 4.17 F DPX-KP481 50 WG	2.125 pt 0.75 lb	1.11 lb 6 oz.	2 Appl (wks 1,2) 7 Appl (wks 3-9)	0.103	0.000	0.104	583.9	344.0	43.9	0.0	53.7	9.5	0.0	15.2	4.8
24	DPX-JE874 50 WG + Bravo Zn 4.17 F	0.375 lb 1.4 pt	0.187 lb 0.75 lb	9 Appl (wks 1-9)	0.111	0.000	0.111	564.6	312.2	59.5	0.0	33.8	8.8	0.0	9.2	4.0
26	Bravo Zn 4.17 F DPX-KP481 50 WG	2.125 pt 0.5 lb	1.11 lb 4 oz.	4 Appl (wks 1,3,5,7) 5 Appl (wks 2,4,6,8,9)	0.105	0.000	0.106	547.3	316.0	46.4	0.0	50.1	5.1	0.0	14.3	2.1
30	Dithane DF Rainshield NT RH-141457 75 DF	0.53 lb 1.0 lb 2.0 lb	0.4 lb 0.75 lb 1.5 lb	1 Appl (wk 1) 2 Appl (wks 2,3) 6 Appl (wks 4-9)	0.184	0.000	0.184	490.1	270.3	61.1	0.0	34.2	7.1	0.4	10.7	4.0
52	Bravo WS (6F) Tattoo-C Tattoo-C	1.5 pt 2.3 pt 1.3 pt	1.125 lb 1.8 lb 1.0 lb	1 Appl (wk 9) 1 Appl (wk 1) 7 Appl (wks 2-8)	0.214	0.000	0.214	503.7	286.3	51.2	0.0	45.1	4.4	0.0	16.3	4.4
53	Bravo WS (6F) Tattoo-C (14 day interval)	1.5 pt 2.3 pt	1.125 lb 1.8 lb	6 Appl (wks 2,4,6-9) 3 Appl (wks 1,3,5)	0.243	0.000	0.243	486.5	245.6	41.9	0.0	57.4	0.8	0.0	17.5	1.0
54	Bravo WS (6F) Tattoo-C	1.5 pt 1.3 pt	1.125 lb 1.0 lb	1 Appl (wk 9) 8 Appl (wks 1-8)	0.257	0.000	0.257	519.4	307.6	56.7	0.0	40.8	3.3	0.0	13.5	0.4
58	BAS 500 F 2.09 Bravo WS (6F)	0.38 pt 1.0 pt	0.1 lb 0.75 lb	5 Appl (wks 1,3,5,7,9) 4 Appl (wks 2,4,6,8)	0.100	0.000	0.100	540.4	325.1	41.4	0.0	55.0	11.8	0.0	21.2	6.5
	<b>Pr &gt; F <sup>6</sup></b>				<b>&lt; 0.01</b>	<b>&lt; 0.01</b>	<b>&lt; 0.01</b>	<b>&lt; 0.01</b>	<b>&lt; 0.01</b>	<b>0.71</b>	<b>0.61</b>	<b>0.66</b>	<b>0.40</b>	<b>0.57</b>	<b>0.81</b>	<b>0.79</b>
	<b>LSD <sup>6</sup></b>				<b>0.048</b>	<b>0.009</b>	<b>0.046</b>	<b>46.6</b>	<b>68.6</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

