2004
RESEARCH REPORT

Extension Potato
Disease Control Project

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Colorado State University

SLV Research Center

CONTENTS

Early Blight Fungicide Trials

2004 POTATO - EARLY BLIGHT FUNGICIDE TRIALS

Researchers:	Richard T. Zink and Andrew Houser, Colorado State University, SLVRC
Location:	San Luis Valley Research Center, Center, CO
Cultivar:	Russet Norkotah Selection 8, cut seed, 2-4 oz.
Application:	All treatments applied using an R & D CO_2 charged tractor mounted plot sprayer with four XR 8002VS nozzles spaced seventeen inches apart at 60 psi pressure and applying 40 gallons/acre as a broadcast application.
Spray Dates:	July 6; July 12; July 19; July 26; August 3; August 12; August 16; August 23
Planted:	May 5, 2004
Plot Design:	Randomized complete block
Plot Size:	4 - 20 foot rows per treatment per replication, treatments applied to center two rows and data taken on center two rows.
Plant Spacing:	12 inches
Row Spacing:	34 inches
Replications:	Four
Irrigation:	Solid set sprinkler, rate based on ET
Fertilizer:	80N-60P-40K-25S-2.5Zn, preplant, 20N through sprinkler after tuber set
Herbicide:	Sencor, 0.66 lb./A + Dual Magnum, 1.5 pt./A + Spartan, 2.66 oz./A
Insecticide:	None
Vine Killer:	Mechanically removed on September 2, 2004
Harvested:	September 16 & 17, 2004

DATA:

Disease:	Early blight disease incidence based on percent leaves infected, readings taken weekly starting August 4, 2004.
Yield:	2-20 foot rows per treatment per replication, total yield expressed as cwt/A.
Grade:	By hand, percent tubers by weight in pounds < 4 oz., 4-10 oz., > 10 oz., US #2's, and culls.

Table 1. Fungicide programs evaluated for early blight control, San Luis Valley, Colorado 2004.

Program	Products	Rate	Application Schedule[a]
1	Untreated Control		
2	Dithane DF	2.0 lb./A	1,2,3,4,5,6,7,8
3	Cuprofix MZ Penncozeb 75DF Headline	4.0 lb./A 2.0 lb./A 6.1 fl.oz./A	1 3,7 5
4	Cuprofix MZ Penncozeb 75DF Headline	4.0 lb./A 3.0 pt./A 6.1 fl.oz./A	1 3,7 5
5	Cuprofix MZ Penncozeb 75DF	4.0 lb./A 2.0 lb./A	1,5 3,7
6	Cuprofix MZ Penncozeb 4F Bond	4.0 lb./A 3.0 pt./A 4.0 fl.oz./A	1,5 3,7 1,3,5,7
7	Headline Preference Dithane	6.0 fl.oz./A 0.25 %v/v 2.0 lb./A	1,5 1,5 3,7
8	Endura Rivet Headline Preference Dithane	2.5 oz./A 0.5 %v/v 6.0 fl.oz./A 0.25 %v/v 2.0 lb./A	1,7 1,7 3 3 5
9	Amistar Bravo WS	2.0 oz./A 1.25 pt./A	1,5 3,7
10	AGM 04004	32.0 fl.oz./A	5,7
11	AGM 04010	32.0 fl.oz./A	5,7
12	AGM 04009	32.0 fl.oz./A	5,7
13	AGM 040024 10-52-10 Class Act	0.6 fl.oz./A 5.0 lb./A 2.5 gal./100gal.	1,4,8 1,4,8 1,4,8
14	AGM 04024	0.6 fl.oz./A	1,4,8
15	AGM 04026	6.0 fl.oz./A	1,4,8
16	Quadris Bravo WS	6.2 fl.oz./A 1.25 pt./A	1,5 3,7
17	Amistar Bravo WS	2.0 oz./A 1.25 pt./A	1,5 3,7
18	Bravo WS Quadris Dithane SuperTin	1.25 pt./A 6.2 fl.oz./A 2.0 lb./A 2.5 oz./A	1 3 5 7
19	Dithane Quadris SuperTin	2.0 lb./A 6.2 fl.oz./A 2.5 oz./A	1 3 5
20	Bravo WS Quadris Bravo WS	1.25 pt./A 6.2 fl.oz./A 1.5 pt./A	2 3 5
21	Champ 2F Polyram DF Champ 2F	1.0 pt./A 2.0 lb./A 1.95 pt./A	2 3 5

[a] Schedule for applying treatments on a weekly basis, schedule started on July 6 (i.e. 1 = week 1, 2 = week 2).

Table 2. Effect of fungicide programs on the incidence of early blight in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004; No Late Blight occurred within the trial.

	Percent Leaves Infected					
Treatment	August 4	August 13	August 19	August 25	August 30	AUDPC[a]
1	9.4	30.8	36.0	96.3	100.0	954.0 a
2	2.3	5.3	14.7	58.3	85.8	582.4 fgh
3	3.2	4.8	13.3	46.7	77.8	509.8 hij
4	3.0	6.1	13.8	43.8	75.4	497.0 h-k
5	4.5	6.8	18.1	70.4	91.3	668.5 def
6	3.1	6.4	15.9	64.2	83.8	606.6 efg
7	2.3	5.9	13.5	45.0	79.2	510.4 hij
8	2.8	6.4	16.6	35.4	60.8	427.3 jkl
9	3.2	4.8	14.2	27.1	54.2	361.7 l
10	8.5	14.6	16.8	79.6	97.8	760.4 bc
11	8.4	15.0	24.5	77.5	97.3	779.6 bc
12	7.5	16.3	24.7	81.3	96.5	791.6 b
13	5.1	10.9	20.6	67.9	94.8	697.6 cde
14	7.2	17.0	24.5	80.8	99.6	801.8 b
15	8.3	16.5	25.4	80.0	96.9	794.8 b
16	2.3	6.7	13.7	35.4	60.0	413.3 kl
17	2.2	6.3	14.9	28.8	54.2	372.2 l
18	1.9	7.0	18.2	44.6	64.6	477.1 ijk
19	2.6	7.6	14.8	57.1	69.2	529.4 ghi
20	2.3	6.0	12.9	42.5	75.8	488.6 ijk
21	5.3	12.3	22.7	77.1	95.7	745.5 bcd
LSD(P=0.05)	1.88	4.42	7.96	17.67	9.91	91.78

[a]AUDPC is the Area Under the Disease Progress Curve.
Means followed by the same letters are not significantly different at P=0.05 for AUDPC.

Table 3. Effect of fungicide programs on tuber yield and quality in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

	Percent[a]					
Treatment	< 4 oz.	4-10 oz.	> 10 oz.	US #2s	Culls	Cwt/A[b]
1	4.8	33.7	42.1	1.0	1.2	309.9
2	4.3	28.6	43.6	0.2	1.0	294.1
3	5.7	32.6	48.2	0.5	2.1	332.6
4	4.4	28.6	41.8	0.5	1.4	287.8
5	4.0	27.9	48.4	0.6	1.6	308.9
6	3.4	29.2	51.6	0.4	1.2	324.1
7	4.3	34.6	46.8	1.5	1.6	329.6
8	4.5	29.1	54.4	1.0	2.1	338.4
9	2.9	28.9	48.2	0.3	1.5	307.7
10	4.1	31.1	35.8	2.1	2.1	272.9
11	5.1	31.1	42.0	0.4	0.2	300.7
12	4.5	31.1	41.6	1.1	0.5	296.7
13	4.9	27.4	42.9	1.4	0.6	289.3
14	4.5	30.1	37.7	0.4	0.6	278.1
15	4.7	30.0	46.8	0.8	0.8	313.3
16	4.3	27.2	49.0	0.9	1.3	309.8
17	3.8	32.0	48.6	1.1	0.7	324.6
18	3.8	29.0	48.4	1.3	1.1	312.2
19	3.8	29.4	45.0	0.4	1.1	300.7
20	4.4	30.3	57.2	0.6	1.0	353.6
21	4.2	28.4	53.4	1.8	0.8	330.9
LSD(P=0.05)	NS	NS	NS	NS	NS	NS

[a] Based on tuber weight in pounds, mean of four replications.
[b] Total yield expressed as hundred weight per acre, 2-20 foot rows per treatment per replication, mean of four replications.

Effects of plant growth regulators and calcium, applied in season, on specific gravity in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Treatment/Rate	Application Schedule[a]	Specific Gravity[b]
1. Untreated Control	-	1.07895 d
10. AGM 04004 @ 32.0 fl.oz./A	5,7	1.07845 e
11. AGM 04010 @ 32.0 fl.oz./A	5,7	1.08120 b
12. AGM 04009 @ 32.0 fl.oz./A	5,7	1.07795 f
13. AGM 040024 @ 0.6 fl.oz./A + 10-52-10 @ 5.0 lb./A + Class Act @ 2.5 gal./100 gal.	1,4,8	1.07845 e
14. AGM 04024 @ 0.6 fl.oz./A	1,4,8	1.08245 a
15. AGM 04026 @ 6.0 fl.oz./A	1,4,8	1.07920 c
LSD(P=0.05)		0.00148

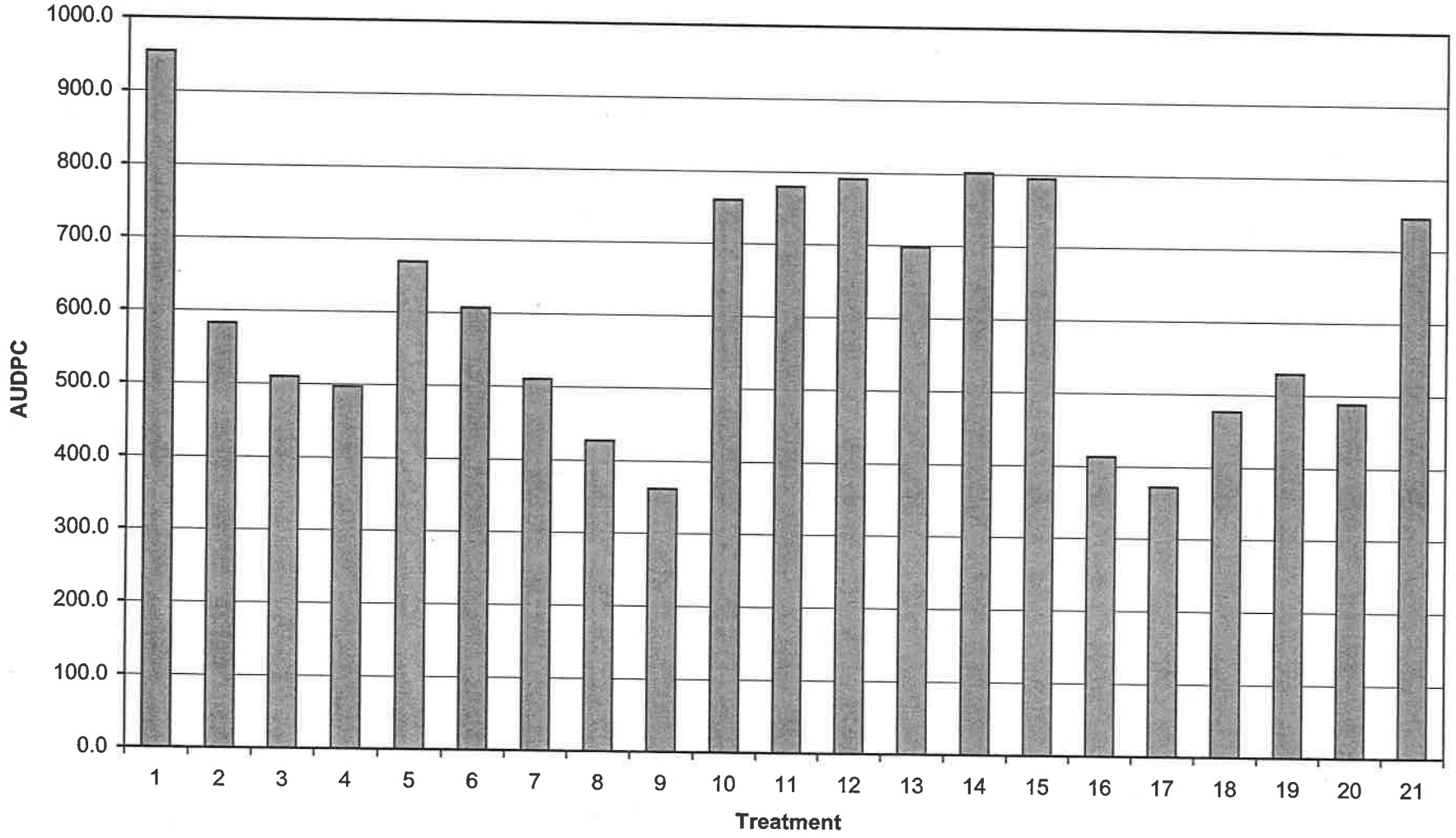
[a] Schedule for applying treatments on a weekly basis, schedule started on July 6 (i.e. 1 = week 1, 2 = week 2).
[b] Average specific gravity of tubers after harvest, eight pounds per treatment per replication(two replications).
Means followed by the same letters are not significantly different at P=0.05 for AUDPC.

Effects of plant growth regulators and calcium, applied in season, on petiole analysis in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Date Sampled	Treatment	P %	K %	Ca %	Mg %	S %	Na %	Zn ppm	Fe ppm	Mn ppm	Cu ppm	B ppm	NO3-N ppm	PO4-P %
July 9, 2004	1	0.29	8.97	3.19	0.57	0.23	0.05	80	208	302	7	23	31800	0.16
	13	0.29	8.75	3.19	0.53	0.22	0.06	81	200	268	2	22	30300	0.18
	14	0.27	9.21	3.52	0.57	0.23	0.05	98	195	316	9	27	30900	0.16
	15	0.31	9.27	2.81	0.54	0.22	0.04	81	149	291	7	29	28600	0.17
Aug. 1, 2004	1	0.15	6.52	3.23	0.61	0.25	0.12	65	62	530	2	33	23600	0.07
	13	0.14	6.20	3.21	0.64	0.22	0.11	68	85	350	6	33	23100	0.05
	14	0.12	5.62	3.11	0.65	0.22	0.11	48	74	373	3	32	20600	0.05
	15	0.14	5.75	2.61	0.53	0.19	0.09	49	47	351	1	29	21500	0.06
Aug. 6, 2004	1	0.12	5.53	3.25	0.74	0.20	0.14	42	60	421	2	29	23700	0.05
	10	0.11	5.23	3.40	0.82	0.19	0.12	44	75	434	2	30	23100	0.05
	11	0.11	5.78	3.36	0.76	0.22	0.14	69	107	343	4	29	21800	0.04
	12	0.11	5.72	2.99	0.75	0.21	0.13	50	81	465	4	30	21200	0.05
Aug. 20, 2004	1	0.09	4.25	3.79	1.17	0.19	0.20	31	85	537	2	31	17700	0.04
	10	0.09	3.84	4.12	1.19	0.18	0.21	32	47	497	1	30	22400	0.04
	11	0.09	4.89	3.79	1.00	0.17	0.19	40	47	416	3	28	21500	0.04
	12	0.09	4.40	3.49	1.05	0.18	0.19	20	51	431	3	29	16500	0.04
Aug. 27, 2004	1	0.11	4.45	4.08	1.21	0.22	0.22	27	69	571	3	31	21400	0.05
	13	0.10	3.98	4.20	1.31	0.17	0.28	24	80	375	4	29	15900	0.04
	14	0.11	4.07	4.45	1.38	0.19	0.22	25	91	520	2	31	19000	0.05
	15	0.11	4.00	3.86	1.38	0.21	0.20	31	63	422	2	29	16100	0.05

Air-dried petioles were analyzed by Servi-Tech Laboratories on November 2, 2004.

Area Under the Disease Progress Curve for Early Blight
2004 Fungicide Trial, Colorado State University
San Luis Valley Research Center, Center, CO



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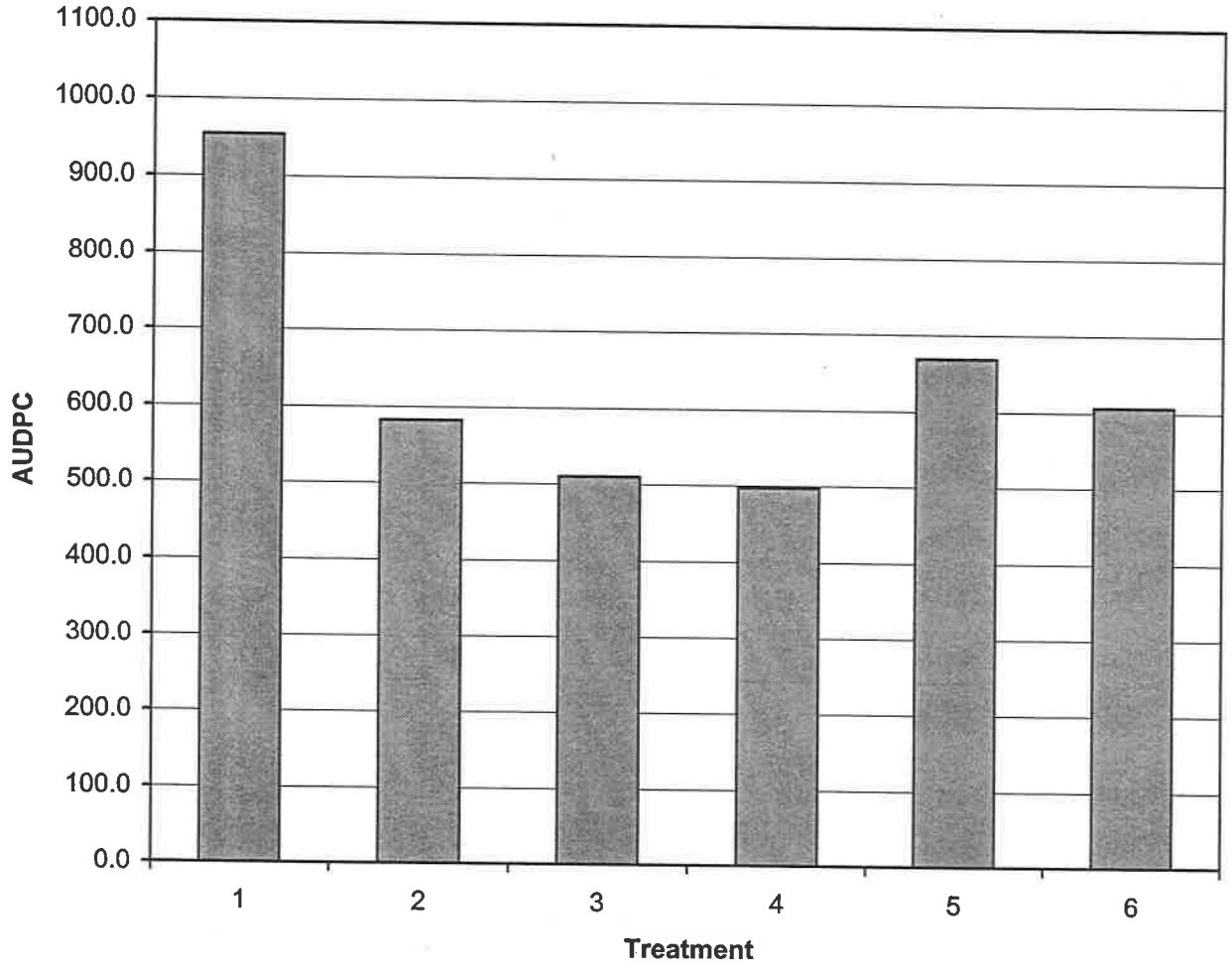

1. Control, no treatment

2. Dithane DF @ 2.0 lb./A (1-8)

3. Cuprofix MZ @ 4.0 lb./A (1) + Penncozeb 75DF @ 2.0 lb./A (3,7) + Headline @ 6.1 fl.oz./A (5)

4. Cuprofix MZ @ 4.0 lb./A (1) + Penncozeb 75DF @ 3.0 lb./A (3,7) + Headline @ 6.1 fl.oz./A (5)

5. Cuprofix MZ @ 4.0 lb./A (1,5) + Penncozeb 75DF @ 2.0 lb./A (3,7)

6. Cuprofix MZ @ 4.0 lb./A (1,5) + Penncozeb 75DF @ 3.0 lb./A (3,7) + Bond @ 4.0 fl.oz./A (1,3,5,7)

Area Under the Disease Progress Curve for Early Blight
2004 Fungicide Trial, Colorado State University
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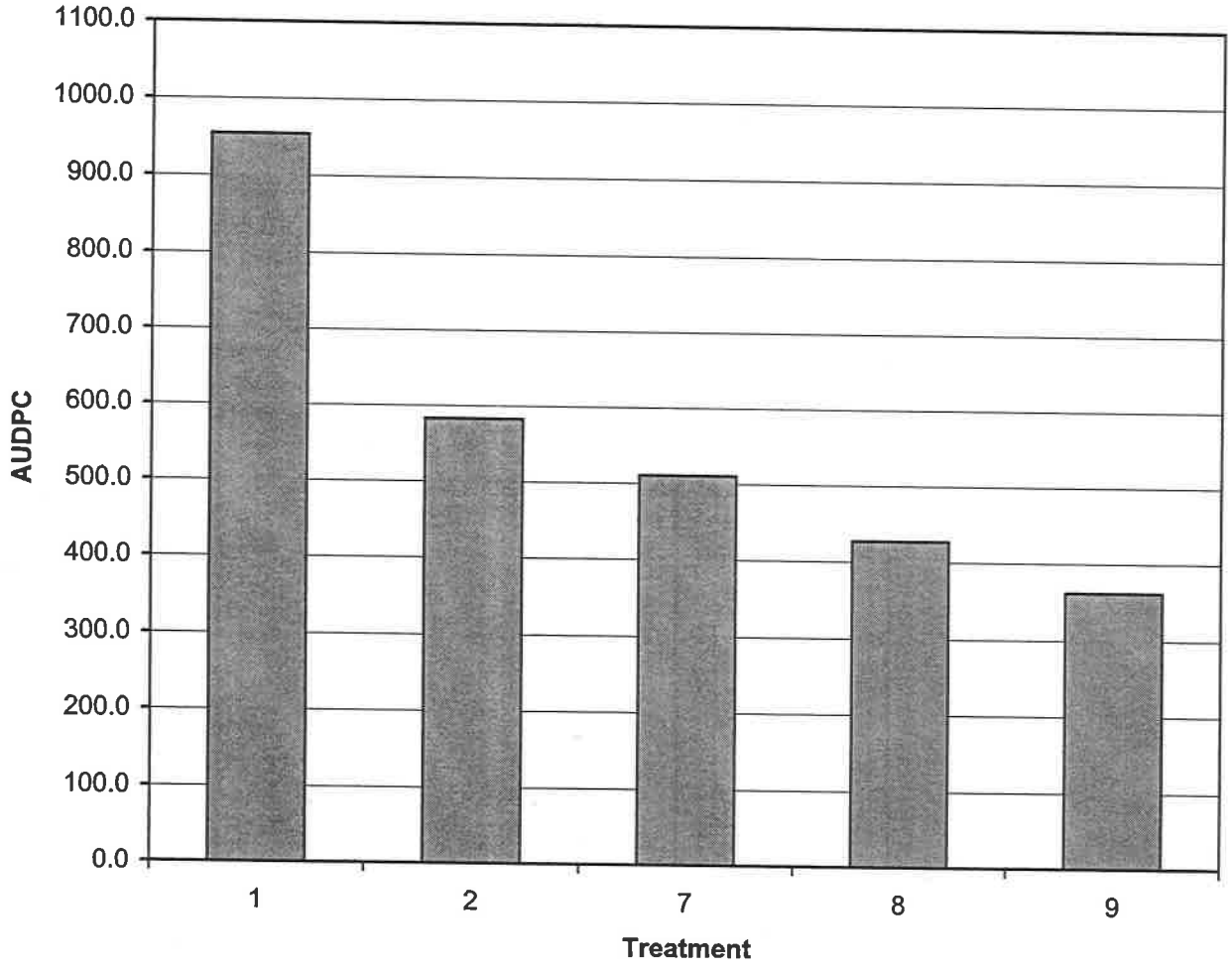

1. Control, no treatment

2. Dithane DF @ 2.0 lb./A (1-8)

7. Headline @ 6.0 fl.oz./A (1,5) + Preference @ 0.25 %v/v (1,5) + Dithane DF @ 2.0 lb./A (3,7)

8. Endura @ 2.5 oz./A (1,7) + Rivet @ 0.5 %v/v (1,7) + Headline @ 6.0 fl.oz./A (3) + Preference @ 0.25 %v/v (3) + Dithane DF @ 2.0 lb./A (5)

9. Amistar @ 2.0 fl.oz./A (1,5) + Bravo WS @ 1.25 pt./A (3,7)

Area Under the Disease Progress Curve for Early Blight
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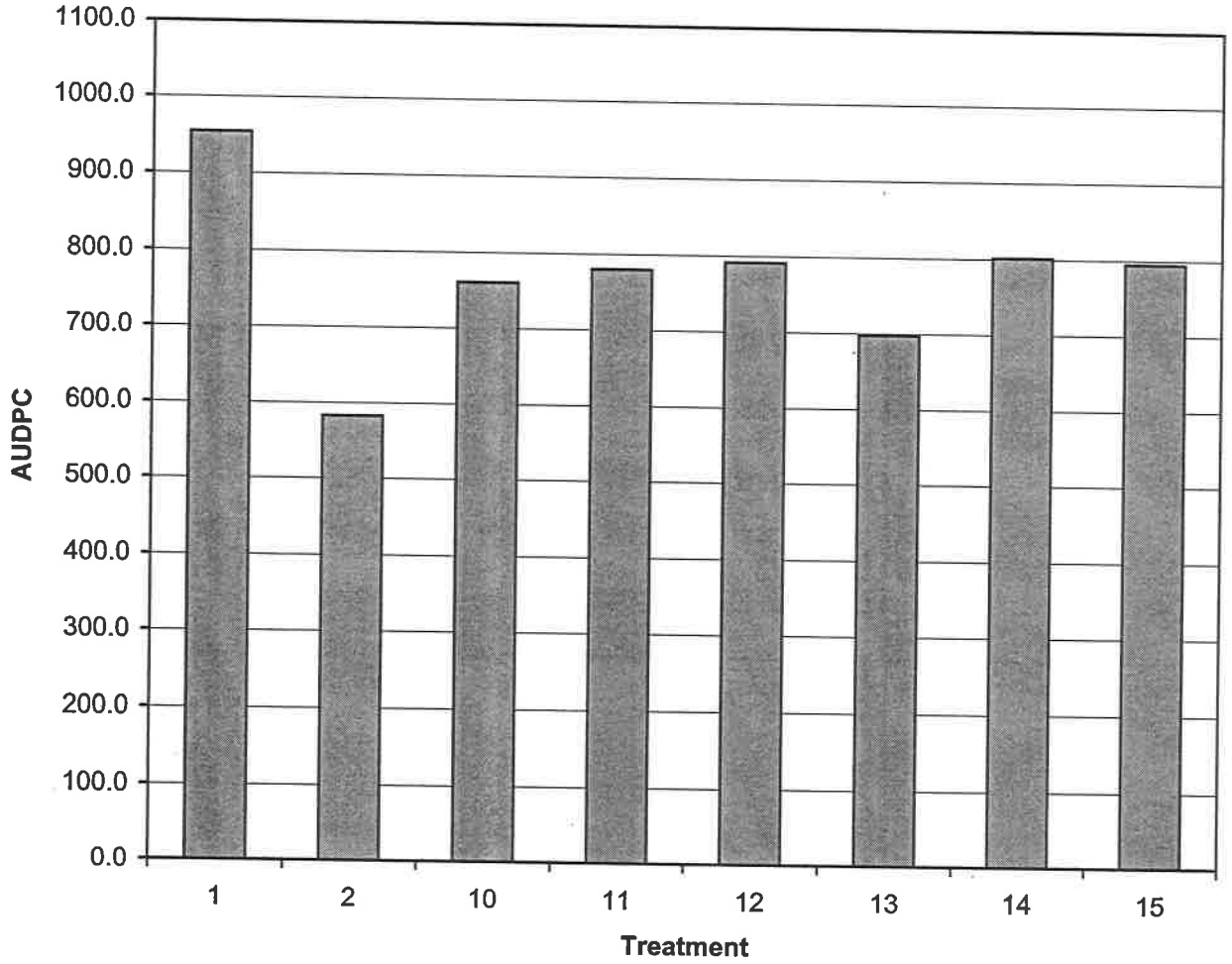
San Luis Valley Research Center, Center, CO



1. Control, no treatment

2. Dithane DF @ 2.0 lb./A (1-8)

10. AGM 04004 @ 32.0 fl.oz./A (5,7)

11. AGM 04010 @ 32 fl.oz./A (5,7)

12. AGM 04009 @ 32.0 fl.oz./A (5,7)

13. AGM 040024 @ 0.6 fl.oz./A + 10-52-10 @ 5.0 lb./A + Class Act @ 2.5 gal./100 gal. (1,4,8)

14. AGM 04024 @ 0.6 fl.oz./A (1,4,8)

15. AGM 04026 @ 6.0 fl.oz./A (1,4,8)

Area Under the Disease Progress Curve for Early Blight
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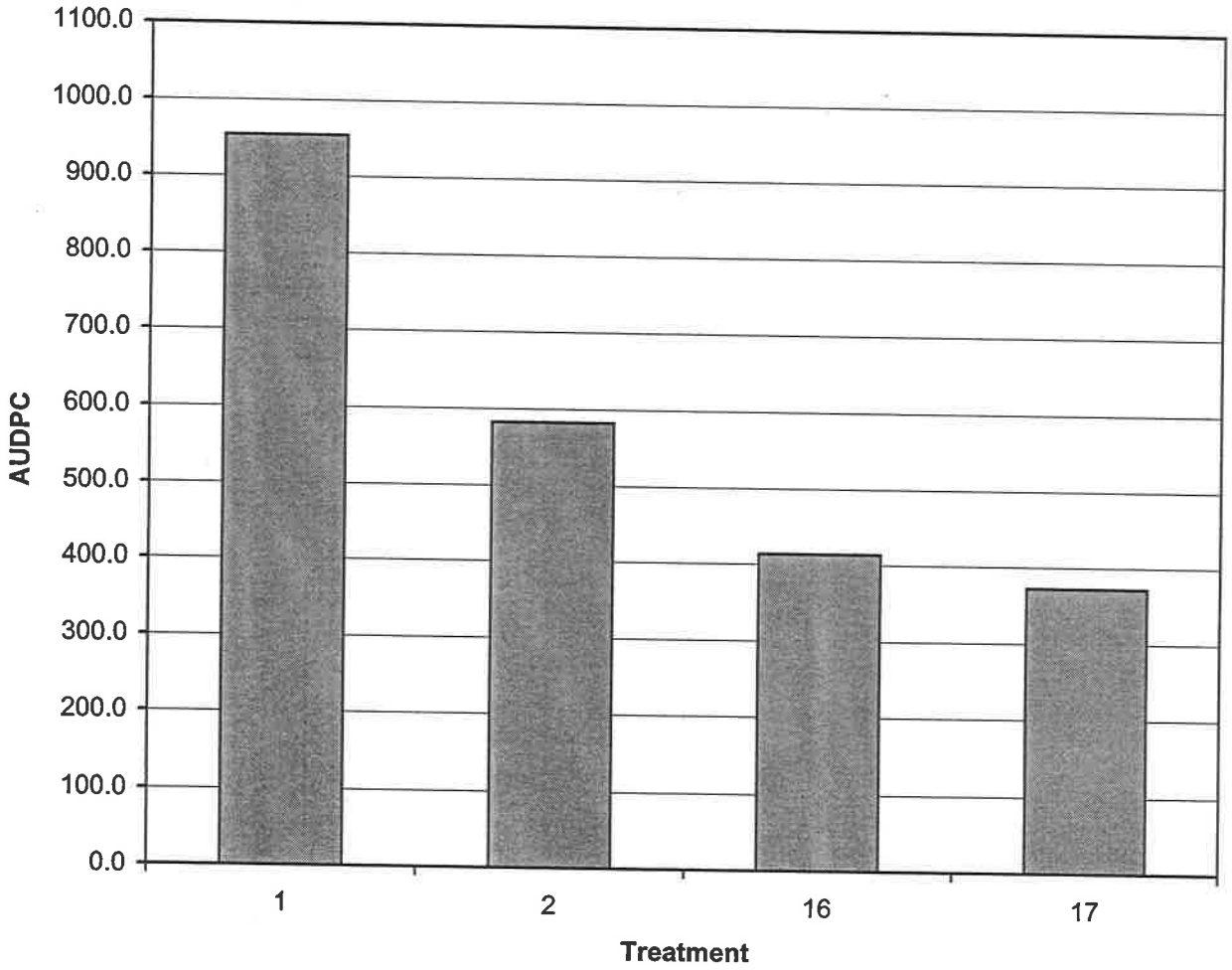


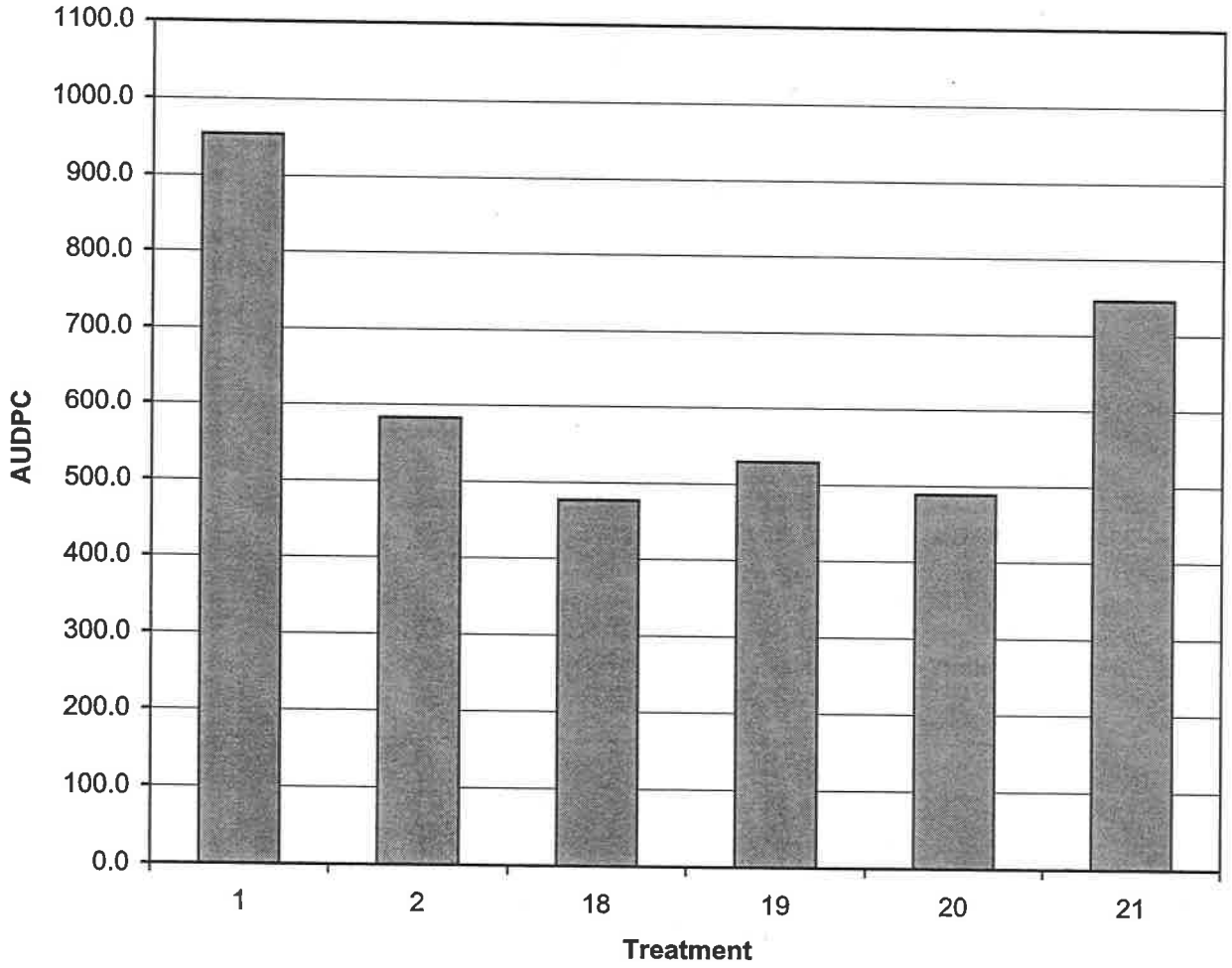
1. Control, no treatment

2. Dithane DF @ 2.0 lb./A (1-8)

16. Bravo WS @ 1.25 pt./A (1,5) + Quadris @ 6.2 fl.oz./A (3,7)

17. Bravo WS @ 1.25 pt./A (1,5) + Amistar @ 2.0 oz./A (3,7)

Area Under the Disease Progress Curve for Early Blight
2004 Fungicide Trial, Colorado State University
San Luis Valley Research Center, Center, CO



1. Control, no treatment

2. Dithane DF @ 2.0 lb./A (1-8)

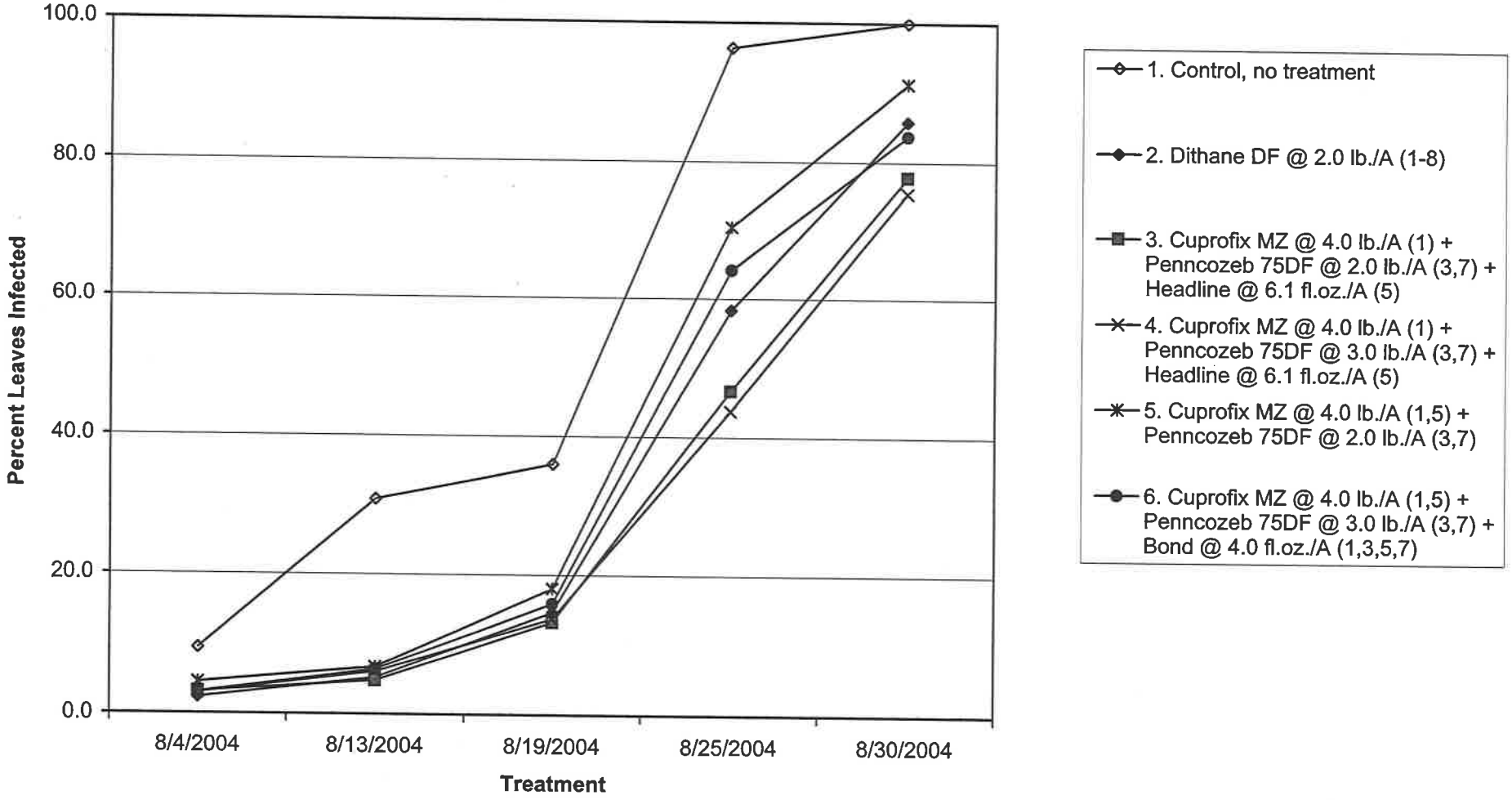
18. Bravo WS @ 1.25 pt./A (1) + Quadris @ 6.2 fl.oz./A (3) + Dithane DF @ 2.0 lb./A (5) + SuperTin @ 2.5 oz./A (7)

19. Dithane DF @ 2.0 lb./A (1) + Quadris @ 6.2 fl.oz./A (3) + SuperTin @ 2.5 oz./A (5)

20. Bravo WS @ 1.25 pt./A (2) + Quadris @ 6.2 fl.oz./A (3) + Bravo WS @ 1.5 pt./A (5)

21. Champ 2F @ 1.0 pt./A (2) + Polyram DF @ 2.0 lb./A (3) + Champ 2F @ 1.95 pt./A (5)

Disease Progress Curve for Early Blight
2004 Fungicide Trial, Colorado State University
San Luis Valley Research Center, Center, CO



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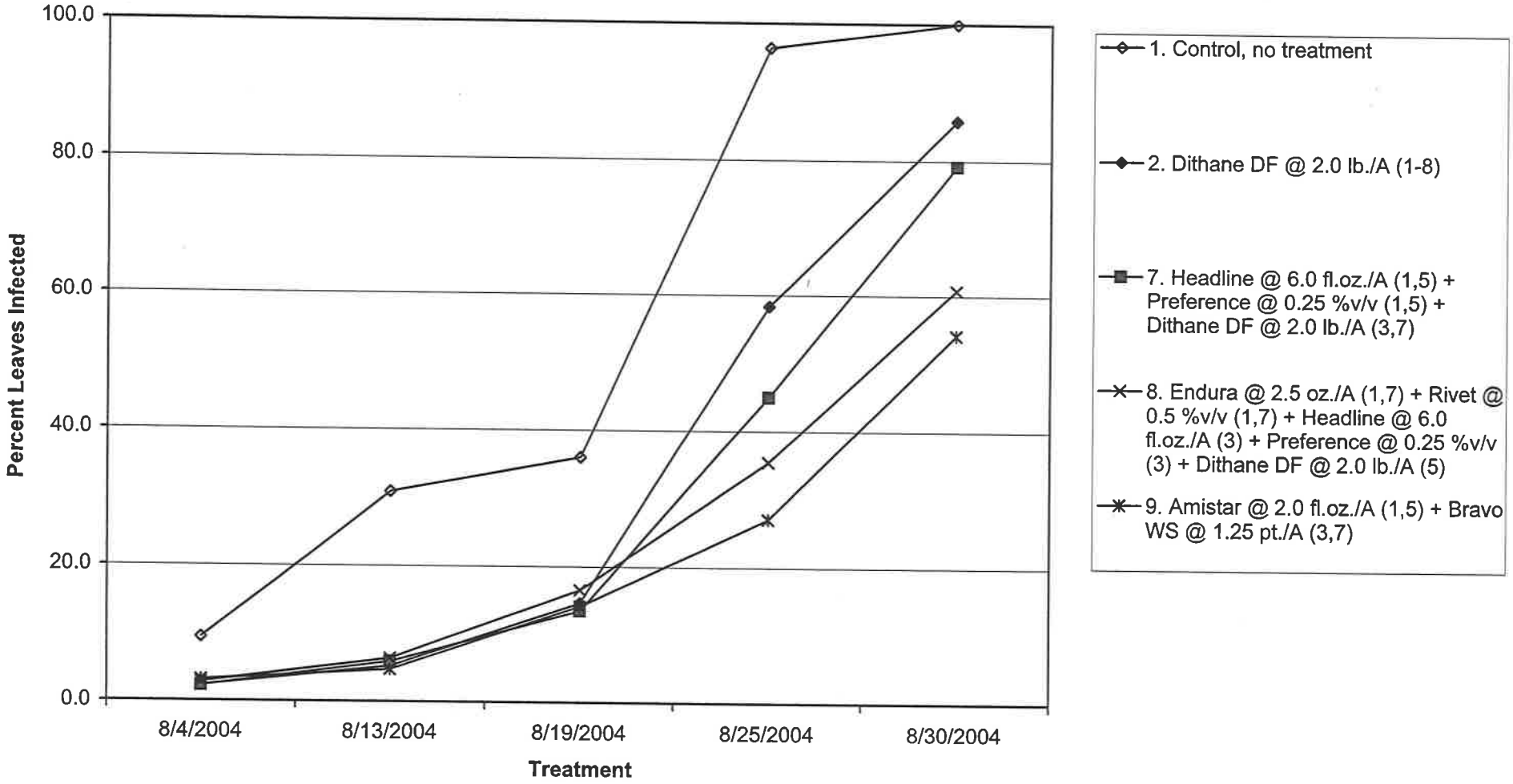

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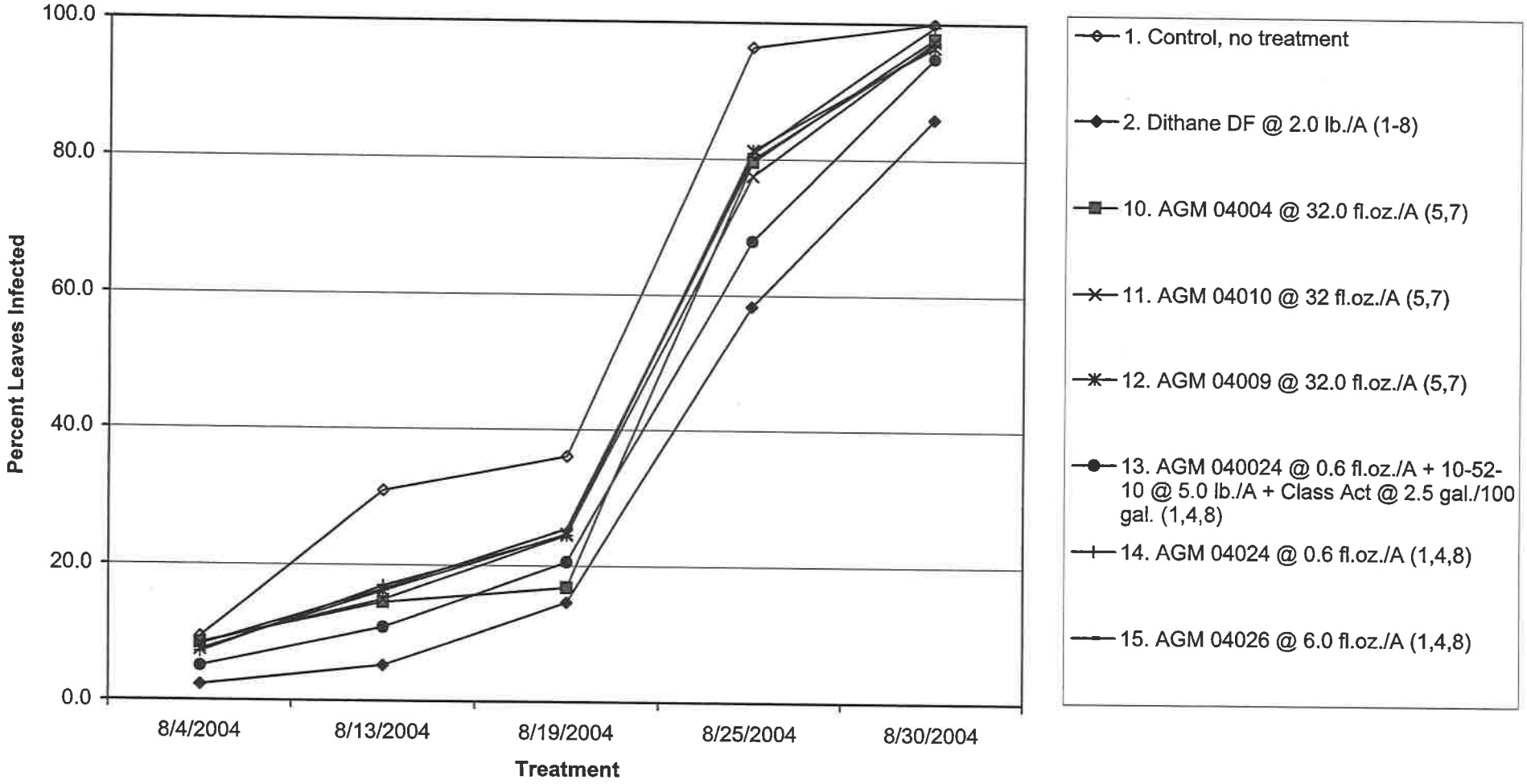

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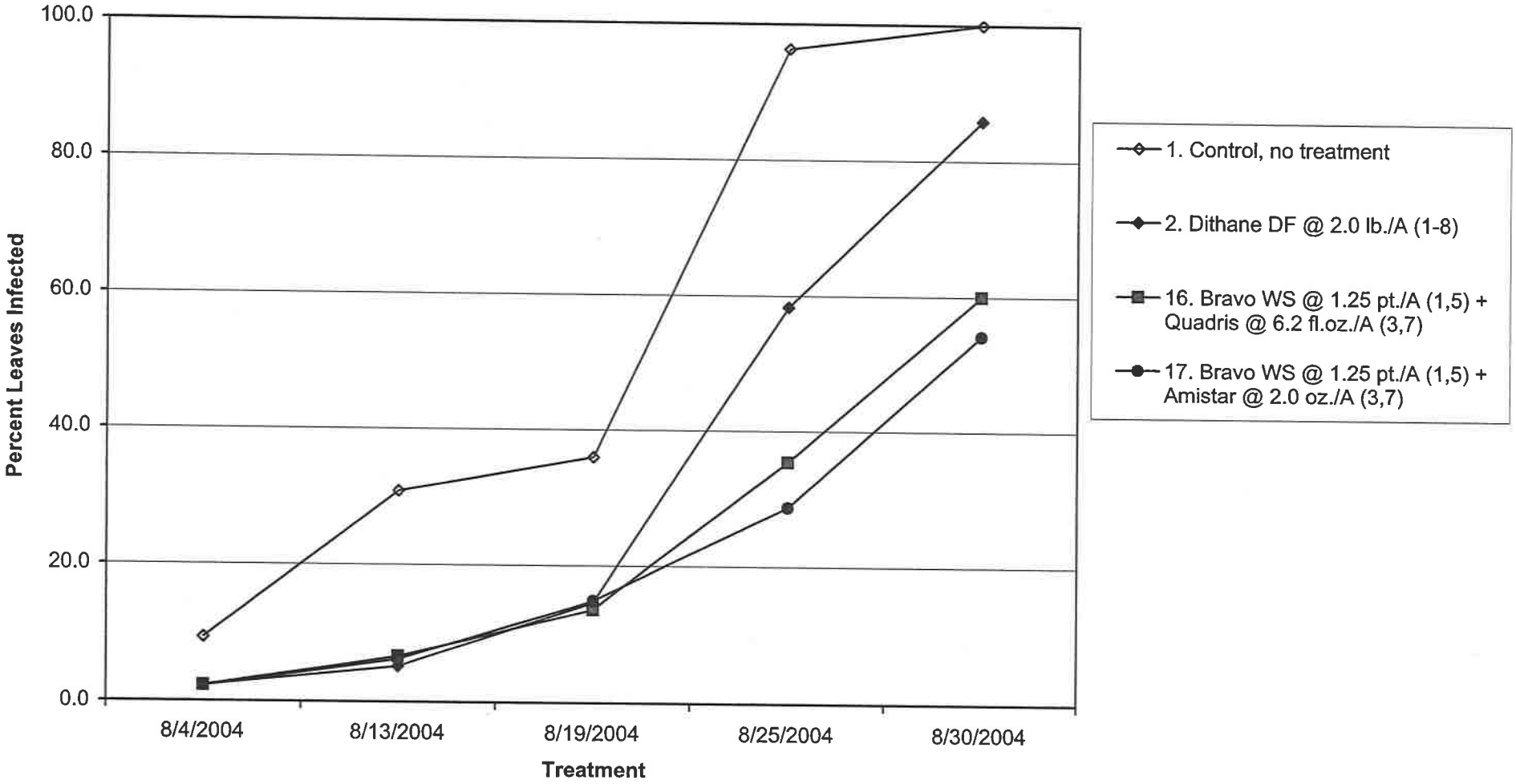

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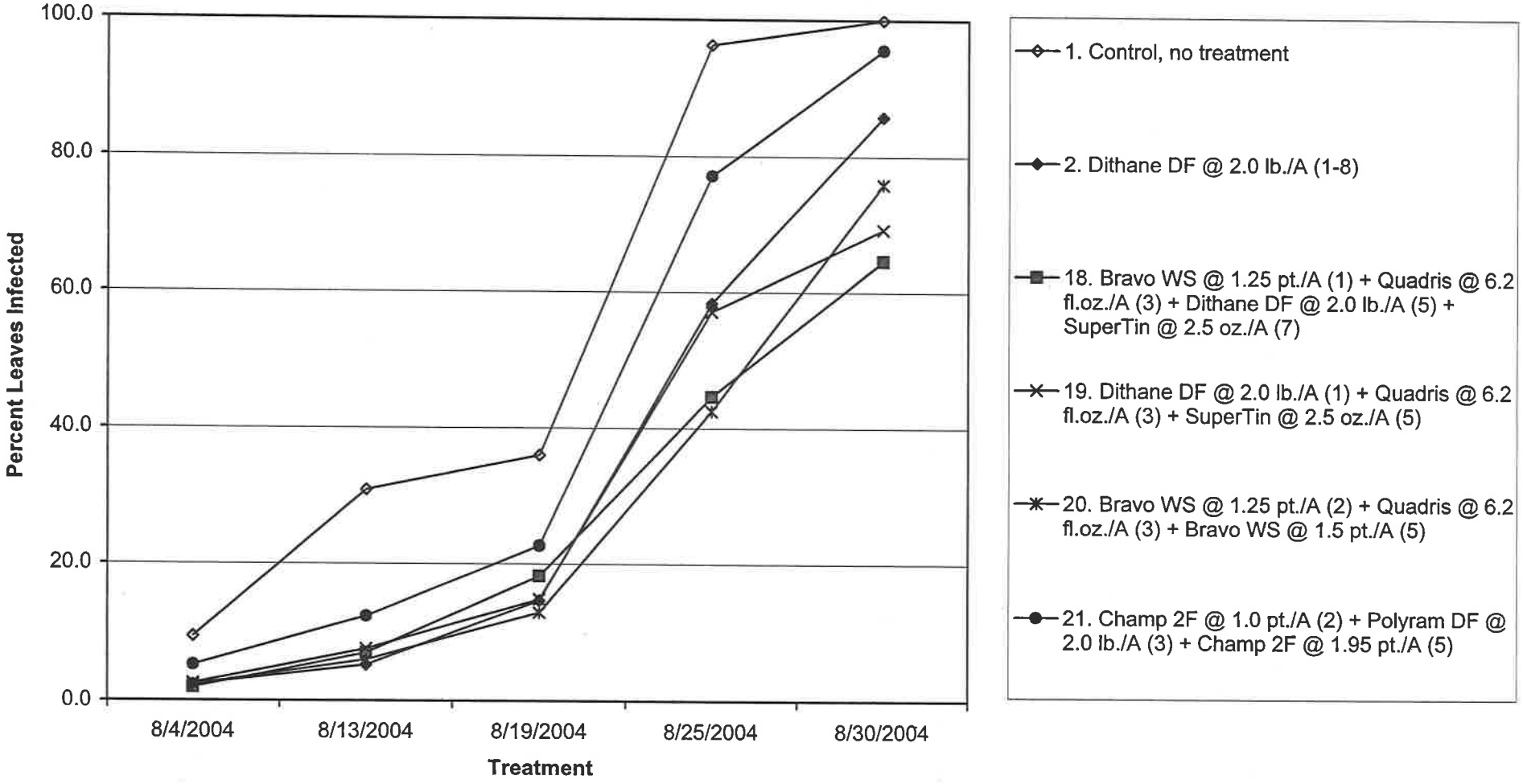
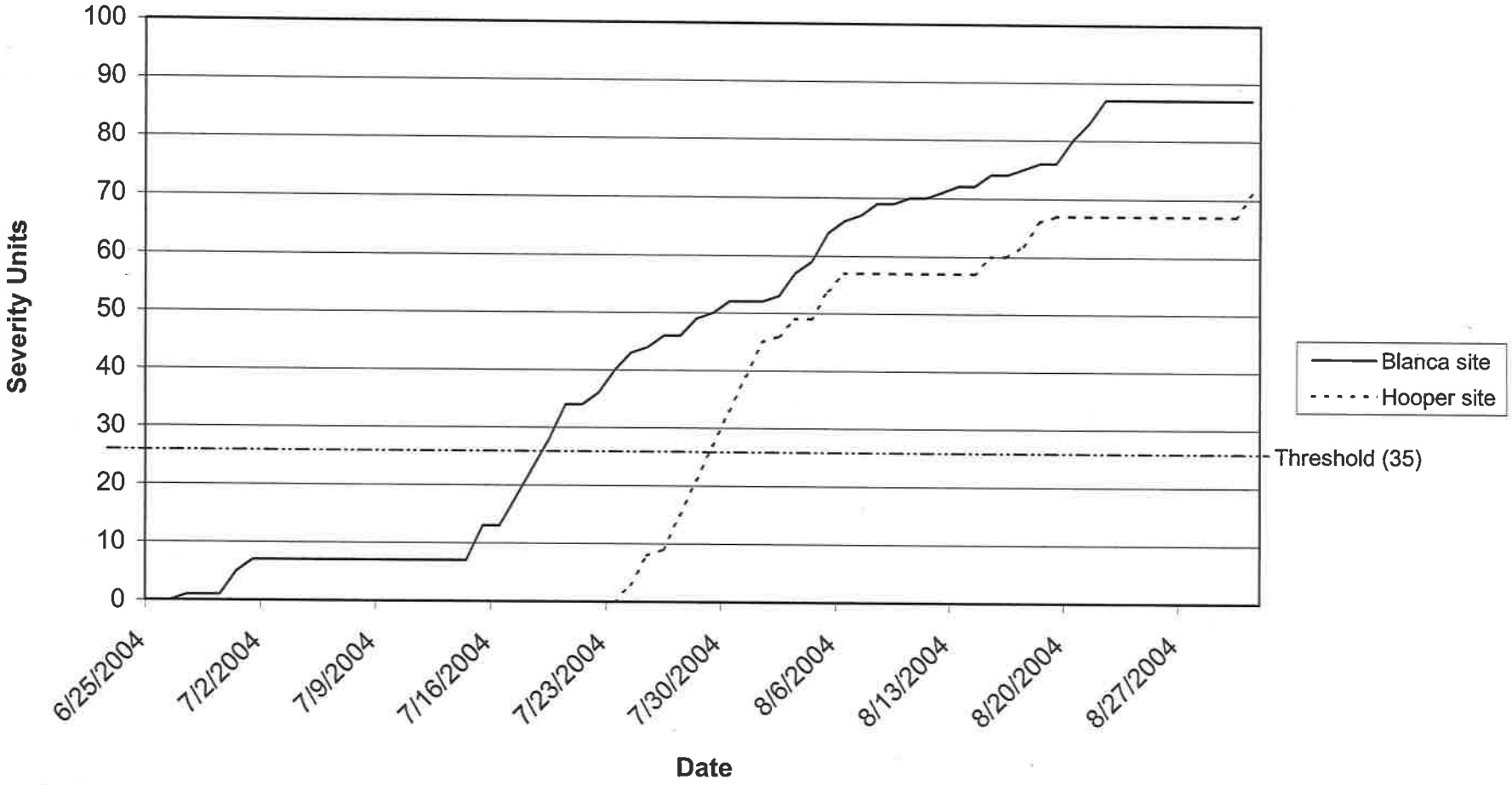


SLV Late Blight Forecasting Data

Potato Late Blight Fry Units, San Luis Valley, Colorado, 2004

Moderate Susceptible Varieties



Footnote:

- The Fry Late Blight model was used to calculate the severity units.
- The Hooper weather station was set up on June 14, 2004.
- The Blanca weather station was set up on June 25, 2004.

Seed Piece Treatment Trials for Control of Rhizoctonia

EVALUATION OF FUNGICIDES APPLIED AT PLANTING FOR CONTROL OF RHIZOCTONIA ON POTATO, 2004

Researchers: Richard T. Zink and Andrew Houser, Colorado State University, SLVRC

Location: San Luis Valley Research Center, Center, CO

Cultivar: Russet Norkotah selection 8, cut seed, 2-4 oz.

Objective: To evaluate the efficacy of various In-furrow and seed treatments in controlling disease.

Application: In-Furrow treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with one XR 8002VS nozzle, at 10 gallons/acre as a directed in-furrow application. On seed treatments were applied directly to fresh cut seed and planted within twenty-four hours.

Treatments:

1. Control, no treatment
2. Maxim 4FS @ 1.25 g.ai./100kg seed (On seed)
3. Maxim 4FS @ 1.25 g.ai./100kg seed (On seed)
   Amistar 80WG @ 1.0 g.ai./100 rowM (In-furrow)
4. Moncoat MZ 7.5DP @ 56.25 g.ai./100kg seed (On seed)
5. Maxim 4FS @ 1.25 g.ai./100kg seed (On seed)
   Quadris 2.08SC @ 1.0 g.ai./100 rowM (In-furrow)
6. Mancozeb 80WG @ 2800.0 g.ai./Ha (On seed)
   Amistar 80WG @ 1.0 g.ai./100 rowM (In-furrow)
7. Mancozeb 80WG @ 2800.0 g.ai./Ha (On-seed)
   Headline 2.09SC @ 1.0 g.ai./100 rowM (In-furrow)

Planted: May 7, 2004
Plot Design: Randomized complete block
Plot Size: 2 - 40 foot rows per treatment per replication
Plant Spacing: 12 inches
Row Spacing: 34 inches
Replications: Four
Irrigation: Solid set sprinkler, rate based on ET
Fertilizer: 80N-60P-40K-25S-2.5Zn, preplant, 20N through sprinkler after tuber set
Herbicide: Sencor, 0.66 lb./A + Dual Magnum, 1.5 pt./A + Spartan, 2.66 oz./A
Insecticide: None
Fungicide: None
Vine Killer: Mechanically removed on September 2, 2004
Harvested: September 9 & 10, 2004

DATA

Stand: 2-40 foot rows/treatment/replication, counts taken 48 days after planting.
Seed piece decay: Soft-rot and dry-rot combined rated 0-100, where 0 = no decay and 100 = complete decay; 10 seed pieces/treatment/replication.
Stem canker: Percent stems infected; 10 plants/treatment/replication.
Blackleg: Percent stems infected; 10 plants/treatment/replication.
Plant vigor: Rated 1-5, where 1 = poor and 5 = good; 10 plants/treatment/replication.
Stems: Average number of stems per plant; 10 plants/treatment/replication.
Tuber set: Average number of tubers per plant at full set; 10 plants/treatment/replication.
Yield: 2-35 foot rows per treatment per replication, total yield expressed in cwt/A.
Grade: By hand, percent tubers by weight in pounds and tuber no. < 4 oz., 4-6 oz., 6-10 oz., > 10 oz., US #2's, and culls.
Black scurf severity index: Mean percent of the affected tuber surface area, 10 8-10 oz. tubers per treatment per replication multiplied by the severity of the sclerotia, where 1= small sclerotia and 3 = large sclerotia.

Table 1. Effects of seed treatments on plant development and incidence of disease in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Treatment/Rate[a]	Stand[b]	Vigor[c]	Stems[d]	%Stems with Rhizoctonia[e]	Stolons[f]	%Stolons with Rhizoctonia[g]	Seed piece decay[h]	No. tubers per plant[i]	Black scurf severity index[j]
1. Control, no treatment	90.9 c	3.5 bc	4.0 b	21.2	22.3 c	5.4	61.9 ab	28.5	9.5
2. Maxim 4FS @ 1.25 g.ai./100kg seed (On seed)	88.1 c	3.1 c	3.8 b	11.6	21.6 c	1.8	62.9 a	28.9	6.4
3. Maxim 4FS @ 1.25 g.ai./100kg seed (On seed) Amistar 80WG @ 1.0 g.ai./100 rowM (IF)	93.8 bc	4.0 ab	4.5 ab	5.8	25.4 bc	1.3	40.6 abc	34.5	1.4
4. Moncoat MZ 7.5DP @ 56.25 g.ai./100kg seed (On seed)	99.1 ab	4.4 a	4.6 ab	17.6	30.0 ab	6.9	10.6 d	35.6	0.9
5. Maxim 4FS @ 1.25 g.ai./100kg seed (On seed) Quadris 2.08SC @ 1.0 g.ai./100 rowM (IF)	93.1 c	4.3 a	4.5 ab	18.5	28.0 ab	3.7	32.5 cd	32.0	2.0
6. Mancozeb 80WG @ 2800.0 g.ai./Ha (On seed) Amistar 80WG @ 1.0 g.ai./100 rowM (IF)	99.1 ab	4.4 a	5.3 a	9.3	30.8 a	2.5	34.5 bcd	33.8	3.3
7. Mancozeb 80WG @ 2800.0 g.ai./Ha (On-seed) Headline 2.09SC @ 1.0 g.ai./100 rowM (IF)	100.6 a	4.4 a	5.3 a	7.5	31.6 a	2.5	26.8 cd	36.3	7.5
LSD(P=0.05)	5.71	0.57	0.97	NS	5.41	NS	27.43	NS	NS

[a] All treatments were applied according to the manufacturer's recommendations.
[b] Percentage of plants emerged 48 days after planting; four replications.
[c] Mean percent vigor, where 1 = poor, 5 = good; 10 plants/treatment/replication.
[d] Mean number of stems per seed piece 62 days after planting; 10 plants/treatment/replication.
[e] Mean percent stems with Rhizoctonia canker 62 days after planting; 10 plants/treatment/replication.
[f] Mean number of stolons per seed piece 62 days after planting; 10 plants/treatment/replication.
[g] Mean percent stolons with Rhizoctonia canker 62 days after planting; 10 plants/treatment/replication.
[h] Mean percent incidence of disease combined soft-rot and dry-rot 62 days after planting; rated 0-100, where 0 = no decay, 100 = complete decay; 10 seed pieces/treatment/replication.
[i] Mean number of tubers per plant 62 days after planting; 10 plants/treatment/replication.
[j] Mean percent of the affected tuber surface area, 10 8-10 oz. tubers per treatment per replication multiplied by the severity of the sclerotia, where 1 = small sclerotia and 3 = large sclerotia.
Means followed by the same letters are not significantly different at P=0.05.

Table 2. Effects of seed treatments on tuber yield and quality in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

	Percent[a]												
Treatment/Rate	< 4 oz.	No.	4-6 oz.	No.	6-10 oz.	No.	>10 oz.	No.	US #2s	No.	Culls	No.	Cwt/A[b]
1. Control, no treatment	4.7	15.6	13.2 d	22.1 c	35.0	34.9	45.5 a	25.9 a	0.5	0.5	1.1	1.0	322.9 bc
2. Maxim 4FS @ 1.25 g.ai./100kg seed (On seed)	4.9	16.0	13.5 cd	22.1 c	36.9	36.1	40.6 ab	22.5 abc	1.9	1.0	2.2	2.3	307.4 c
3. Maxim 4FS @ 1.25 g.ai./100kg seed (On seed) + Amistar 80WG @ 1.0 g.ai./100 rowM (IF)	3.6	12.3	16.9 bc	26.8 b	36.3	35.3	40.3 ab	23.3 ab	1.7	1.4	1.2	0.8	393.3 a
4. Moncoat MZ 7.5DP @ 56.25 g.ai./100kg seed (On seed)	4.6	13.1	18.1 b	27.3 b	45.0	40.7	30.1 c	17.3 cd	0.7	0.4	1.5	1.1	382.9 ab
5. Maxim 4FS @ 1.25 g.ai./100kg seed (On seed) + Quadris 2.08SC @ 1.0 g.ai./100 rowM (IF)	4.2	14.6	16.4 bcd	26.0 bc	35.2	33.7	41.5 a	24.0 ab	0.9	0.6	1.6	1.1	393.9 a
6. Mancozeb 80WG @ 2800.0 g.ai./Ha (On seed) + Amistar 80WG @ 1.0 g.ai./100 rowM (IF)	4.6	12.8	19.3 b	28.8 ab	40.9	37.6	32.8 bc	18.8 bcd	0.9	0.7	1.5	1.3	421.1 a
7. Mancozeb 80WG @ 2800.0 g.ai./Ha (On-seed) + Headline 2.09SC @ 1.0 g.ai./100 rowM (IF)	4.8	13.6	23.0 a	32.3 a	41.2	36.6	27.9 c	15.4 d	1.2	0.8	1.9	1.3	412.9 a
LSD(P=0.05)	NS	NS	3.50	4.23	NS	NS	8.22	5.57	NS	NS	NS	NS	65.49

[a] Based on tuber weight in pounds and tuber number, mean of four replications.
[b] Total yield expressed as hundred weight per acre, 2-35 foot rows per treatment per replication, mean of four replications.
Means followed by the same letters are not significantly different at P=0.05.

EVALUATION OF FUNGICIDES APPLIED AT PLANTING FOR CONTROL OF RHIZOCTONIA ON POTATO, 2004

Researchers: Richard T. Zink and Andrew Houser, Colorado State University, SLVRC

Location: San Luis Valley Research Center, Center, CO

Cultivar: Russet Norkotah selection 8, cut seed, 2-4 oz.

Objective: To evaluate the efficacy of various In-furrow and seed treatments in controlling disease and seed piece decay.

Application: In-Furrow treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with one XR 8002VS nozzle, at 10 gallons/acre as a directed in-furrow application. On seed treatments were applied directly to fresh cut seed and planted within twenty-four hours.

Treatments:

1. Control, no treatment
2. Headline @ 6.0 fl.oz./A (In-furrow)
3. Endura @ 5.5 oz./A (In-furrow)
4. Headline @ 6.0 fl.oz./A (In-furrow)
   Endura @ 4.5 oz./A (In-furrow)
5. Moncut SC @ 16.0 fl.oz./A (In-furrow)
6. PCC-3 @ 0.5 lb./cwt (On-seed)
7. PCC-4A @ 0.22 lb./cwt (Applied as liquid prior to planting)
   PCC-4B @ 0.75 lb./cwt (On-Seed)

Planted: May 7, 2004
Plot Design: Randomized complete block
Plot Size: 1 - 40 foot row per treatment per replication
Plant Spacing: 12 inches
Row Spacing: 34 inches
Replications: Four
Irrigation: Solid set sprinkler, rate based on ET
Fertilizer: 80N-60P-40K-25S-2.5Zn, preplant, 20N through sprinkler after tuber set
Herbicide: Sencor, 0.66 lb./A + Dual Magnum, 1.5 pt./A + Spartan, 2.66 oz./A
Insecticide: None
Fungicide: None
Vine Killer: Mechanically removed on September 2, 2004
Harvested: September 10, 2004

DATA

Stand: 1-40 foot row/treatment/replication, counts taken 48 days after planting.
Seed piece decay: Soft-rot and dry-rot combined rated 0-100, where 0 = no decay and 100 = complete decay; 5 seed pieces/treatment/replication.
Stem canker: Percent stems infected; 5 plants/treatment/replication.
Blackleg: Percent stems infected; 5 plants/treatment/replication.
Plant vigor: Rated 1-5, where 1 = poor and 5 = good; 5 plants/treatment/replication.
Stems: Average number of stems per plant; 5 plants/treatment/replication.
Tuber set: Average number of tubers per plant at full set; 5 plants/treatment/replication.
Yield: 1-35 foot row per treatment per replication, total yield expressed in cwt/A.
Grade: By hand, percent tubers by weight in pounds and tuber no. < 4 oz., 4-6 oz., 6-10 oz., > 10 oz., US #2's, and culls.
Black scurf severity index: Mean percent of the affected tuber surface area, 10 8-10 oz. tubers per treatment per replication multiplied by the severity of the sclerotia, where 1= small sclerotia and 3 = large sclerotia.

Table 1. Effects of seed treatments on plant development and incidence of disease in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Treatment/Rate[a]	Stand[b]	Vigor[c]	Stems[d]	%Stems with Rhizoctonia[e]	Stolons[f]	%Stolons with Rhizoctonia[g]	Seed piece decay[h]	%Stems with Black Leg[i]	Black scurf severity index[j]
1. Control, no treatment	96.3 bc	3.9 ab	3.8	23.5	21.6	9.1	32.0 ab	0.00	11.5
2. Headline @ 6.0 fl.oz./A (IF)	98.8 ab	4.0 ab	4.8	8.7	26.0	0.2	17.5 b	0.00	10.0
3. Endura @ 5.5 oz./A (IF)	89.4 d	3.1 c	4.3	0.0	21.4	1.9	54.8 a	0.04	5.3
4. Headline @ 6.0 fl.oz./A (IF) Endura @ 4.5 oz./A (IF)	97.5 abc	4.3 a	4.6	26.5	24.0	7.1	14.0 b	0.00	8.7
5. Moncut SC @ 16.0 fl.oz./A (IF)	95.0 c	3.3 bc	3.7	4.7	19.4	1.3	50.8 a	0.00	8.4
6. PCC-3 @ 0.5 lb./cwt (On-seed)	99.4 ab	4.1 a	4.2	13.8	25.1	2.9	3.8 b	0.00	6.3
7. PCC-4A @ 0.22 lb./cwt (Applied as liquid prior to planting) PCC-4B @ 0.75 lb./cwt (On-Seed)	100.0 a	4.4 a	5.0	4.8	27.7	0.4	13.0 b	0.00	1.3
LSD(P=0.05)	3.13	0.72	NS	NS	NS	NS	29.08	NS	NS

[a] All treatments were applied according to the manufacturer's recommendations.
[b] Percentage of plants emerged 48 days after planting; four replications.
[c] Mean percent vigor, where 1 = poor, 5 = good; 5 plants/treatment/replication.
[d] Mean number of stems per seed piece 55 days after planting; 5 plants/treatment/replication.
[e] Mean percent stems with Rhizoctonia canker 55 days after planting; 5 plants/treatment/replication.
[f] Mean number of stolons per seed piece 55 days after planting; 5 plants/treatment/replication.
[g] Mean percent stolons with Rhizoctonia canker 55 days after planting; 5 plants/treatment/replication.
[h] Mean percent incidence of disease combined soft-rot and dry-rot 55 days after planting; rated 0-100, where 0 = no decay, 100 = complete decay; 5 seed pieces/treatment/replication.
[i] Mean percent stems with black leg 55 days after planting; 5 plants/treatment/replication.
[j] Mean percent of the affected tuber surface area, 10 8-10 oz. tubers per treatment per replication multiplied by the severity of the sclerotia, where 1 = small sclerotia and 3 = large sclerotia.
Means followed by the same letters are not significantly different at P=0.05.

Table 2. Effects of seed treatments on tuber yield and quality in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Treatment/Rate	Percent[a]												
	< 4 oz.	No.	4-6 oz.	No.	6-10 oz.	No.	>10 oz.	No.	US #2s	No.	Culls	No.	Cwt/A[b]
1. Control, no treatment	5.1	17.5	11.9	20.2	34.3	34.6	45.5	25.6	1.3	0.8	2.0	1.4	402.7 d
2. Headline @ 6.0 fl.oz./A (IF)	4.7	13.9	16.3	24.9	37.9	38.0	39.4	21.9	0.3	0.2	1.4	1.0	458.7 bc
3. Endura @ 5.5 oz./A (IF)	4.6	15.0	13.9	22.7	31.7	31.7	46.0	27.1	1.8	2.0	2.1	1.6	398.0 d
4. Headline @ 6.0 fl.oz./A (IF) Endura @ 4.5 oz./A (IF)	2.8	9.4	11.0	19.3	30.2	33.9	53.1	34.5	1.1	1.2	1.8	1.7	510.0 a
5. Moncut SC @ 16.0 fl.oz./A (IF)	3.8	13.6	12.0	21.4	34.8	35.6	47.6	27.9	0.6	0.8	1.3	0.8	440.8 cd
6. PCC-3 @ 0.5 lb./cwt (On-seed)	3.9	11.8	15.1	24.8	35.5	36.1	43.6	26.0	1.1	0.9	0.7	0.5	465.8 abc
7. PCC-4A @ 0.22 lb./cwt (Applied as liquid prior to planting) PCC-4B @ 0.75 lb./cwt (On-Seed)	3.8	11.5	14.5	23.5	37.4	38.0	42.1	25.4	0.8	0.5	1.4	1.1	500.7 ab
LSD(P=0.05)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	47.08

[a] Based on tuber weight in pounds and tuber number, mean of four replications.
[b] Total yield expressed as hundred weight per acre, 1-35 foot row per treatment per replication, mean of four replications.

Aphid Insecticide Trials

EVALUATION OF INSECTICIDES FOR CONTROL OF APHIDS ON POTATO, 2004

Researchers: Richard T. Zink and Andrew Houser, Colorado State University, SLVRC

Location: San Luis Valley Research Center, Center, CO

Cultivar: Russet Norkotah selection 8, cut seed, 2-4 oz.

Objective: To evaluate the efficacy of various insecticides in controlling aphids on potato.

Application: All treatments (including control) were treated with Maxim 4F @ 0.08 fl.oz./cwt as a liquid spray seed treatment prior to planting. In-Furrow and At-hilling treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with two XR 8002VS nozzles, at 10 gallons/acre as a directed in-furrow application.

Treatments:
1. Control, no treatment
2. Platinum @ 0.52 fl.oz./1000 row ft. (In-furrow)
3. Cruiser @ 0.13 fl.oz./cwt (In-furrow)
4. Platinum @ 0.52 fl.oz./1000 row ft. (At-hilling)

Planted: May 11, 2004
Plot Design: Randomized complete block
Plot Size: 4 - 20 foot rows per treatment per replication
Plant Spacing: 12 inches
Row Spacing: 34 inches
Replications: Four
Irrigation: Solid set sprinkler, rate based on ET
Fertilizer: 80N-60P-40K-25S-2.5Zn, preplant, 20N through sprinkler after tuber set
Herbicide: Sencor, 0.66 lb./A + Dual Magnum, 1.5 pt./A + Spartan, 2.66 oz./A
Fungicide: None
Vine Killer: Mechanically removed on September 2, 2004
Harvested: September 7, 2004

DATA

Disease: Aphid readings were taken from 10 randomly selected plants per treatment per replication. The total number of aphids was recorded from one compound leaf from each of the 10 plants. Aphid readings were taken on the following dates: July 29, August 5, & August 19.

Yield: 4-20 foot rows per treatment per replication, total yield expressed as cwt/A.

Grade: By hand, percent tubers by weight in pounds and tuber no. < 4oz., 4-10oz., >10oz., US #2's, and culls.

Table 1. Effects of products, applied at planting and in season, on the incidence of aphids in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

	Avg. # Aphids per Leaf[a]		
Treatment/Rate	**July 29**	**August 5**	**August 19**
1. Control, no treatment	0.58 a	4.20 a	12.78 a
2. Platinum @ 0.52 fl.oz./1000 row ft. (In-furrow)	0.03 b	0.05 b	0.43 b
3. Cruiser @ 0.13 fl.oz./cwt (In-furrow)	0.00 b	0.08 b	1.60 b
4. Platinum @ 0.52 fl.oz./1000 row ft. (At-hilling)	0.05 b	0.05 b	0.73 b
LSD(P=0.05)	0.43	1.85	3.26

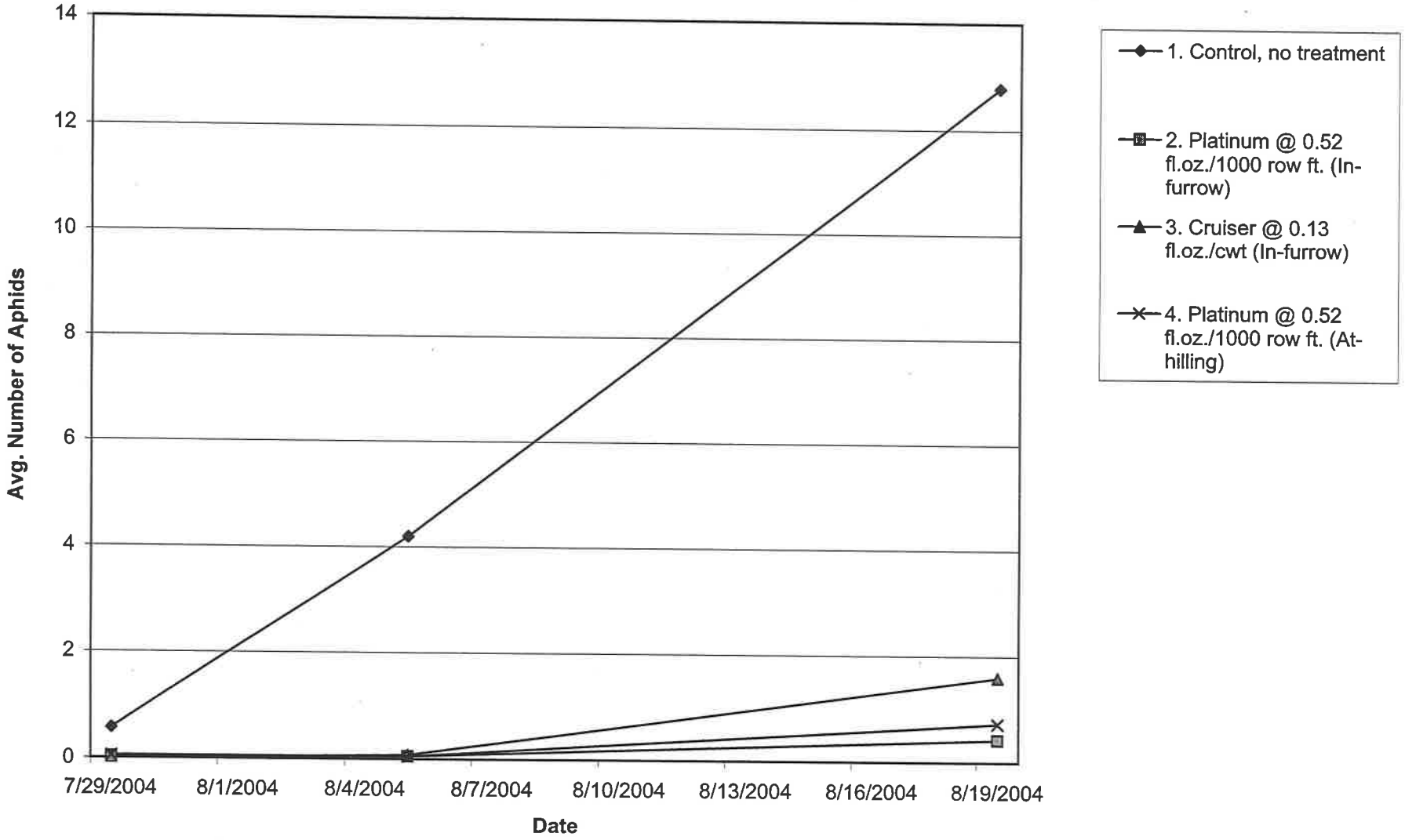
[a] Average number of aphids per compound leaf per potato plant, 10 plants/treatment/replication/reading. Means followed by the same letters are not significantly different at P=0.05 for AUDPC.

Table 2. Effects of products applied at planting and in season on the incidence of aphids in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Treatment/Rate	Percent[a]					Cwt/A[b]
	< 4 oz.	4-10 oz.	> 10 oz.	US #2s	Culls	
1. Control, no treatment	7.6	38.0	50.9	1.0	2.5	380.0
2. Platinum @ 0.52 fl.oz./1000 row ft. (In-furrow)	7.1	38.7	50.0	1.0	3.2	409.1
3. Cruiser @ 0.13 fl.oz./cwt (In-furrow)	8.4	35.4	52.1	1.3	2.8	374.6
4. Platinum @ 0.52 fl.oz./1000 row ft. (At-hilling)	6.4	39.7	51.7	0.7	1.4	418.3
LSD(P=0.05)	NS	NS	NS	NS	NS	NS

[a] Based on tuber weight in pounds, mean of four replications.
[b] Total yield expressed as hundred weight per acre, 4-20 foot rows per treatment per replication, mean of four replications.

Average number of Aphids per Compound Potato Leaf, San Luis Valley Research Center, 2004



Powdery Scab Trials

2004 EVALUATION OF FUNGICIDES APPLIED AT PLANTING FOR CONTROL OF POWDERY SCAB ON POTATO

Researchers: Richard Zink, Robert Davidson, and Andrew Houser, Colorado State University

Location: Off-station trial, San Luis Valley, CO

Cultivar: Cherry Red, cut seed, 2-4 oz.

Objective: To evaluate the efficacy of various fungicide treatments in controlling powdery scab on potato.

Application: In-furrow treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with one XR 8002VS nozzle, at 10 gallons/acre. On-seed treatments were applied directly to whole seed and planted within twenty-four hours.

Treatments:

1. Control, no treatment
2. Omega 1.5 pt./A, In-furrow
3. Omega 3.0 pt./A, In-furrow
4. Endura @ 20.5 oz./A, In-furrow
5. Ranman @ 3.0 fl.oz./A, In-furrow
   Silwett @ 2.0 fl.oz./A, In-furrow
6. Ranman @ 6.0 fl.oz./A, In-furrow
   Silwett @ 2.0 fl.oz./A, In-furrow
7. Ranman @ 12.0 fl.oz./A, In-furrow
   Silwett @ 2.0 fl.oz./A, In-furrow
8. Topsin @ 1.5 lb./A, In-furrow
   Topsin @ 1.5 lb./A, Foliar (July 28)
   Topsin @ 1.0 lb./A, Foliar (August 18)

Planted: May 12, 2004 (Treatment #4 was planted on May 21)
Plot Design: Randomized
Plot Size: 2 - 20 foot rows per treatment per replication
Plant Spacing: 12 inches
Row Spacing: 34 inches
Replications: Four
Irrigation: Center pivot sprinkler, rate based on ET
Fertilizer: 40N-160P-0K-33S-2Zn preplant, 84N-18S topdress
Herbicide: Prowl @ 1.8 pt./A + Sencor @ 1/3 lb./A
Insecticide: Permethrin @ 6.4 oz./A
Fungicide: Dithane DF @ 1.5 lb./A + Amistar @ 2.0 oz./A + Agri Tin @ 2.5 oz./A
Vine Killer: Reglone @ 2.0 pt./A on August 25, 2004
Harvested: September 8, 2004

DATA

Disease: Mean percent of the number of tubers showing >10 powdery scab lesions at harvest.

Yield: 2-20 foot rows per treatment per replication, total yield expressed as cwt/A.

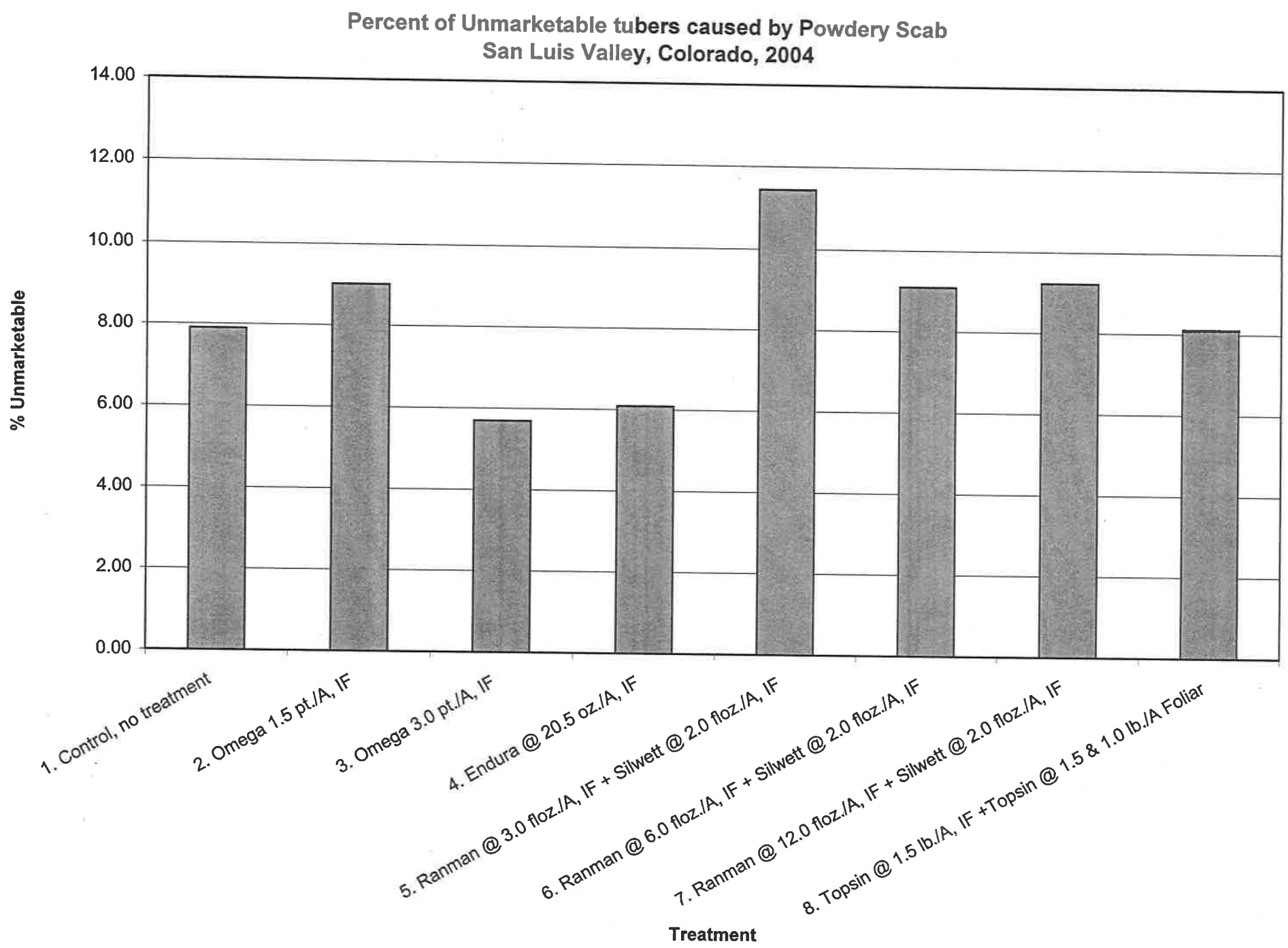
Grade: By hand, percent tubers by weight in pounds and tuber number unmarketable(< 4oz.) and marketable (>10oz.).

Table 1. Effect of fungicides, applied at planting and in season, on the incidence of powdery scab on tubers in the cultivar Cherry Red, San Luis Valley, Colorado, 2004.

	Percent Yield			
Cultivar	Unmarketable[a]	Marketable[b]	Cwt/A[c]	% Unmarketable[d]
1. Control, no treatment	21.1	78.9	475.2 bc	7.9
2. Omega 1.5 pt./A, In-furrow	22.7	77.3	552.2 a	9.0
3. Omega 3.0 pt./A, In-furrow	21.3	78.8	526.2 ab	5.7
4. Endura @ 20.5 oz./A, In-furrow	22.8	77.2	441.6 c	6.1
5. Ranman @ 3.0 fl.oz./A, In-furrow Silwett @ 2.0 fl.oz./A, In-furrow	23.0	77.0	480.0 bc	11.4
6. Ranman @ 6.0 fl.oz./A, In-furrow Silwett @ 2.0 fl.oz./A, In-furrow	21.9	78.1	489.7 bc	9.1
7. Ranman @ 12.0 fl.oz./A, In-furrow Silwett @ 2.0 fl.oz./A, In-furrow	22.0	78.0	474.3 bc	9.2
8. Topsin @ 1.5 lb./A, In-furrow Topsin @ 1.5 lb./A, Foliar (July 28) Topsin @ 1.0 lb./A, Foliar (August 18)	20.9	79.1	501.2 ab	8.1
LSD(P=0.05)	NS	NS	53.61	NS

[a] Percent of tubers sized under four ounces, 2-20 foot rows per treatment per replication, mean of four replications.
[b] Percent of tubers sized from four to 10 ounces, 2-20 foot rows per treatment per replication, mean of four replications.
[c] Total yield expressed as hundred weight per acre, 2-20 foot rows per treatment per replication, mean of four replications.
[d] Percent of unmarketable tubers due to the presence of Powdery Scab, tubers with 10 or more lesions were considered unmarketable, 2-20 foot rows per treatment per replication, mean of four replications.

Richard T. Zink, Associate Professor, Colorado State University


Percent of Unmarketable tubers caused by Powdery Scab
San Luis Valley, Colorado, 2004
% Unmarketable
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1. Control, no treatment
2. Omega 1.5 pt./A, IF
3. Omega 3.0 pt./A, IF
4. Endura @ 20.5 oz./A, IF
5. Ranman @ 3.0 floz./A, IF + Silwett @ 2.0 floz./A, IF
6. Ranman @ 6.0 floz./A, IF + Silwett @ 2.0 floz./A, IF
7. Ranman @ 12.0 floz./A, IF + Silwett @ 2.0 floz./A, IF
8. Topsin @ 1.5 lb./A, IF +Topsin @ 1.5 & 1.0 lb./A Foliar
Treatment

EVALUATION OF ADVANCED CLONES FOR SUSCEPTIBILITY TO POWDERY SCAB, 2004

Researchers: Richard Zink, Robert Davidson, and Andrew Houser, Colorado State University, SLVRC

Location: Off-station trial, San Luis Valley, CO

Objective: To evaluate the susceptibility of advanced potato clones to powdery scab.

Clones:

1. ATLANTIC
2. SUPERIOR
3. RANGER RUSSET
4. RUSSET BURBANK
5. ALTURAS
6. BANNOCK RUSSET
7. GEM RUSSET
8. HARLEY BLACKWELL
9. BO766-3
10. MN96013-1
11. MN96001-2
12. MN99380-1
13. MEGACHIP (W1201)
14. FREEDOM RUSSET (W1836-3rus)
15. VILLETTA ROSE (W2275-R)
16. CO94035-15ru
17. CO94165-3P/P
18. CO94183-1R/R
19. AF1753-16
20. AF1808-18
21. VC1002-3W/Y
22. VC0967-2R/Y
23. CHERRY RED (DT6063-1R)

Planted: May 12, 2004
Plot Design: Randomized
Plot Size: 1 - 10 foot row per treatment per replication
Plant Spacing: 12 inches
Row Spacing: 34 inches
Replications: Three
Irrigation: Center pivot sprinkler, rate based on ET
Fertilizer: 40N-160P-0K-33S-2Zn preplant, 84N-18S topdress
Herbicide: Prowl @ 1.8 pt./A + Sencor @ 1/3 lb./A
Insecticide: Permethrin @ 6.4 oz./A
Fungicide: Dithane DF @ 1.5 lb./A + Amistar @ 2.0 oz./A + Agri Tin @ 2.5 oz./A
Vine Killer: Reglone @ 2.0 pt./A on August 25, 2004
Harvested: September 8, 2004

DATA

Disease: Galls on roots rated 0 to 4, 0 = none, 4 = heavily infected, readings taken August 5.
Mean percent of the number of tubers showing one or more powdery scab lesions at harvest multiplied by the severity of the lesions, where 1 = very little or no disease and 5 = heavily infested.

Table 1. Evaluation of advanced clones for tuber susceptibility to powdery scab, San Luis Valley, Colorado, 2004.

Cultivar	Tuber symptoms			
	Percent Incidence	Percent Healthy	Severity Index[a]	Root Gall Rating[b]
1. ATLANTIC	2.0 e	98.0 a	2.0 d	3.0 abc
2. SUPERIOR	4.0 de	96.0 ab	6.0 cd	3.5 ab
3. RANGER RUSSET	0.0 e	100.0 a	0.0 d	2.5 a-d
4. RUSSET BURBANK	0.0 e	100.0 a	0.0 d	3.0 abc
5. ALTURAS	0.0 e	100.0 a	0.0 d	1.5 cde
6. BANNOCK RUSSET	0.0 e	100.0 a	0.0 d	1.5 cde
7. GEM RUSSET	0.0 e	100.0 a	0.0 d	2.5 a-d
8. HARLEY BLACKWELL	4.7 de	95.3 ab	6.7 bcd	2.0 b-e
9. BO766-3	9.3 cde	90.7 abc	16.0 bcd	2.5 a-d
10. MN96013-1	5.3 de	94.7 ab	6.7 bcd	1.0 de
11. MN96001-2	43.3 a	56.7 e	130.7 a	1.5 cde
12. MN99380-1	2.7 e	97.3 a	2.7 d	1.0 de
13. MEGACHIP (W1201)	26.0 b	74.0 d	50.7 bc	2.0 b-e
14. FREEDOM RUSSET (W1836-3rus)	0.7 e	99.3 a	0.7 d	0.5 e
15. VILLETTA ROSE (W2275-R)	2.0 e	98.0 a	2.0 d	1.0 de
16. CO94035-15ru	0.0 e	100.0 a	0.0 d	1.0 de
17. CO94165-3P/P	16.7 bcd	83.3 bcd	26.7 bcd	2.0 b-e
18. CO94183-1R/R	42.7 a	57.3 e	97.3 a	1.5 cde
19. AF1753-16	1.3 e	98.7 a	1.3 d	1.5 cde
20. AF1808-18	0.0 e	100.0 a	0.0 d	0.5 e
21. VC1002-3W/Y	10.0 cde	90.0 abc	16.7 bcd	4.0 a
22. VC0967-2R/Y	22.0 bc	78.0 cd	51.3 b	3.5 ab
23. CHERRY RED (DT6063-1R)	43.3 a	56.7 e	100.7 a	3.0 abc
LSD(P=0.05)	12.99	12.99	45.03	1.53

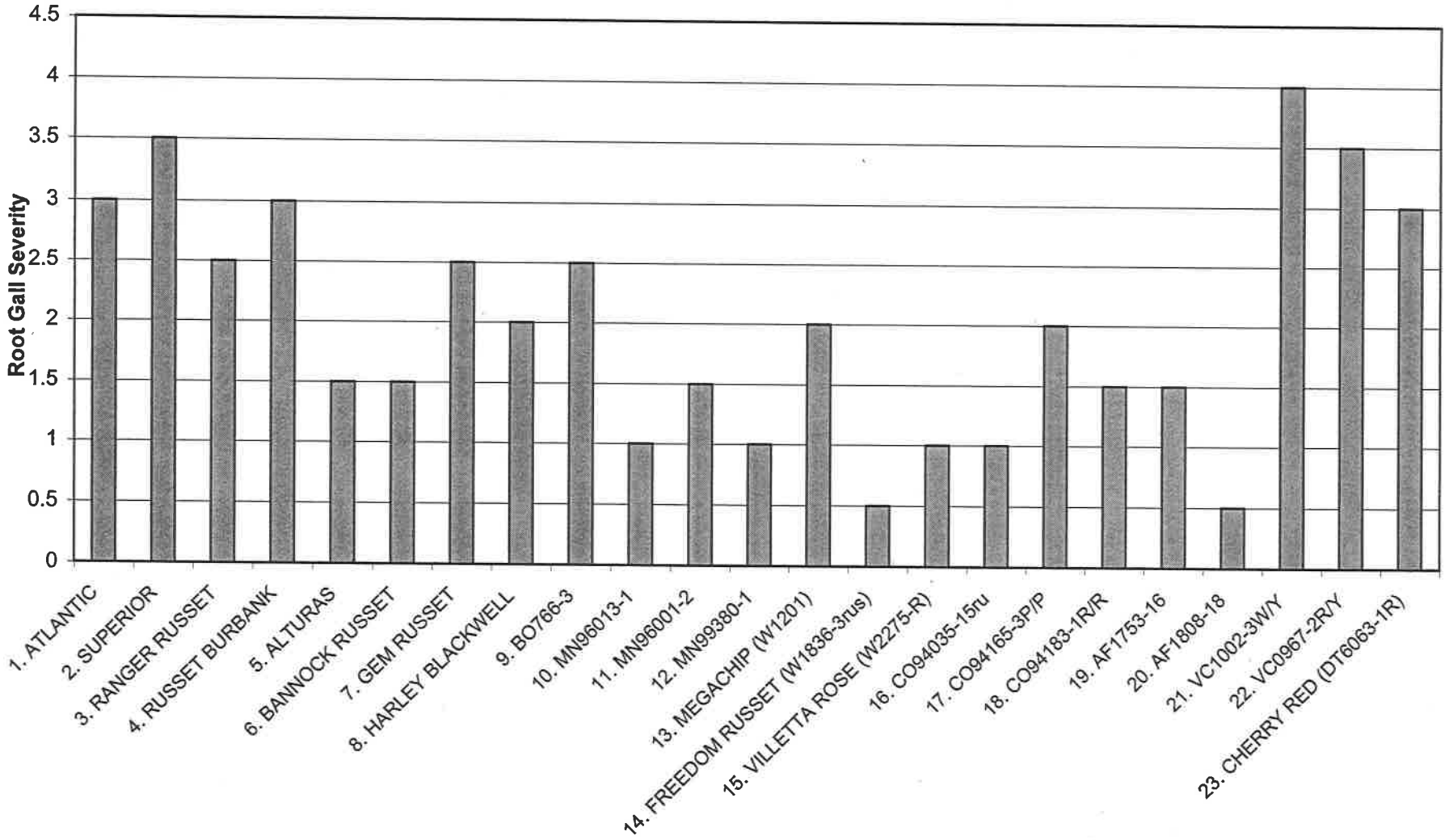
[a] Severity Index = mean percent of the number of affected tubers, 50 tubers/treatment/replication multiplied by the severity of the lesions, where 1 = very little or no disease and 5 = heavily infested.

[b] Root Gall Rating = mean percent of plants infected with powdery scab root galls, where 0 = no root galls and 4 = extensive root galls.

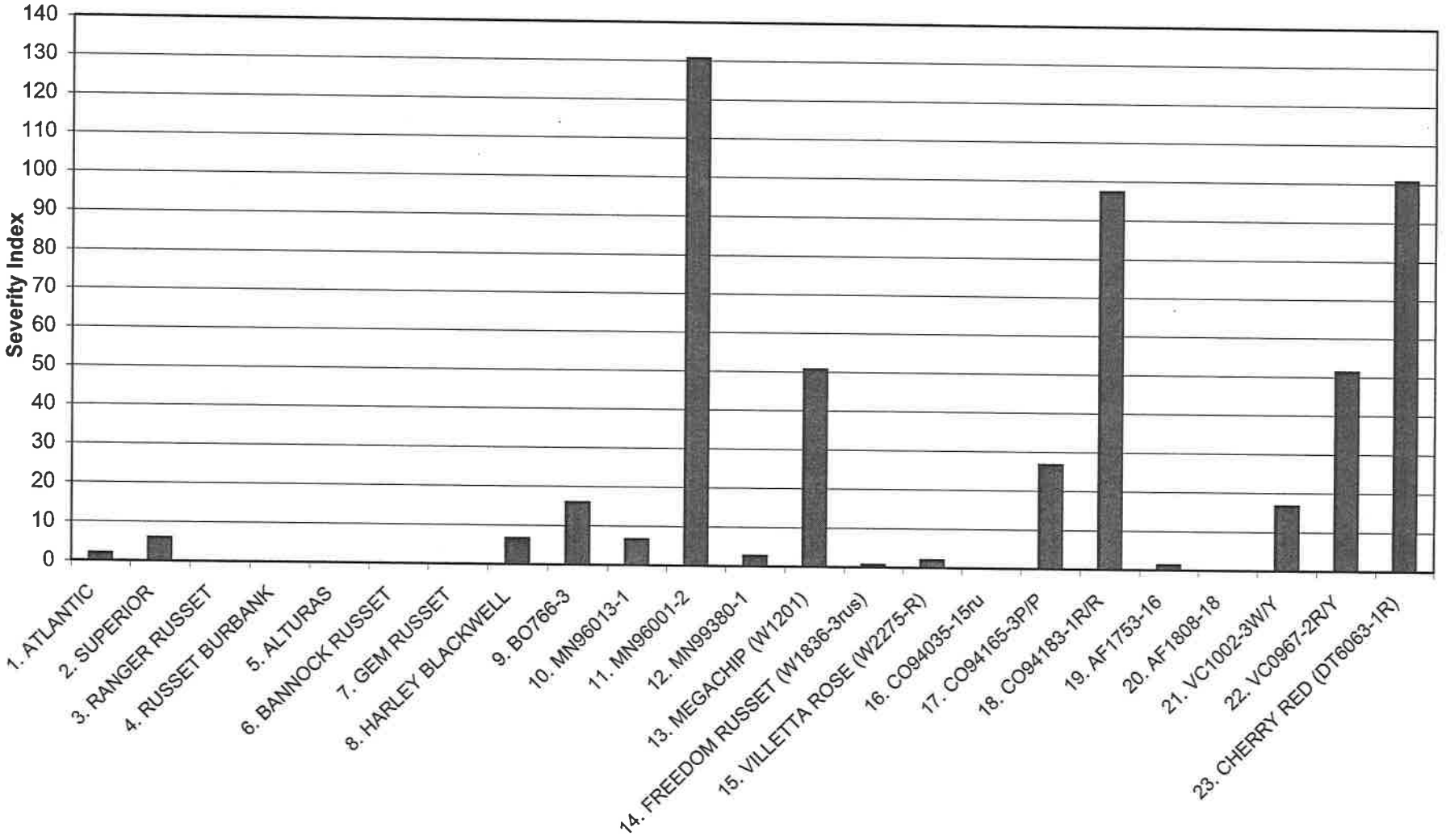
Means followed by the same letter are not significantly different at P=0.05.

Richard T. Zink, Associate Professor, Colorado State University

Evaluation of advanced clones for suseptibility to powdery scab root galls
San Luis Valley, Colorado, 2004



Evaluation of advanced clones for tuber susceptibility to powdery scab
San Luis Valley, Colorado, 2004



EVALUATION OF OMEGA APPLIED BY CHEMIGATION FOR CONTROL OF POWDERY SCAB ON POTATO, 2004

Researchers: Richard T. Zink and Andrew Houser, Colorado State University, SLVRC

Location: Off-station trial, San Luis Valley, CO

Cultivar: Chipeta, cut seed, 2-4 oz.

Objective: To evaluate the efficacy of applying Omega fungicide in controlling powdery scab on potato.

Application: Omega was applied through center pivot chemigation in two separate fields on a four-acre section per field.
For Omega Application: Chemical was mixed with 20 gal. of water and was irrigated on with 0.5 inches of water.

Treatments:
1. Control, no treatment A
2. Control, no treatment B
3. Omega @ 3.0 pt./A, applied on August 18, 2004

	Field # 1	**Field #2**
Planted:	May 21, 2004	May 17, 2004
Plot Design:	Randomized sampling within treatment blocks.	Same
Plot Size:	1- 4 acre plot of ground per treatment	Same
Plant Spacing:	12 inches	Same
Row Spacing:	34 inches	Same
Replications:	Four	Same
Irrigation:	Center pivot sprinkler, rate based on ET	Same
Fertilizer:	50N preplant, 48N topdress	50N preplant, 57.5N topdress
Herbicide:	Dual Magnum, 1.33 pt./A + Trifluralin, 0.67 pt./A + Sencor, 1.33 oz./A	Same
Insecticide:	Asana, 0.4 pt./A + Vydate, 1.0 qt./A + Leverage, 4.3 floz./A	Asana, 0.6 pt./A + Vydate, 2.0 qt./A + Leverage, 4.3 floz./A
Fungicide:	Bravo Ultrex, 0.9 lb./A + Amistar, 2.0 oz./A	Same
Vine Killer:	Sulfuric acid	Same
Harvested:	September 2 & 3, 2004	Same

DATA

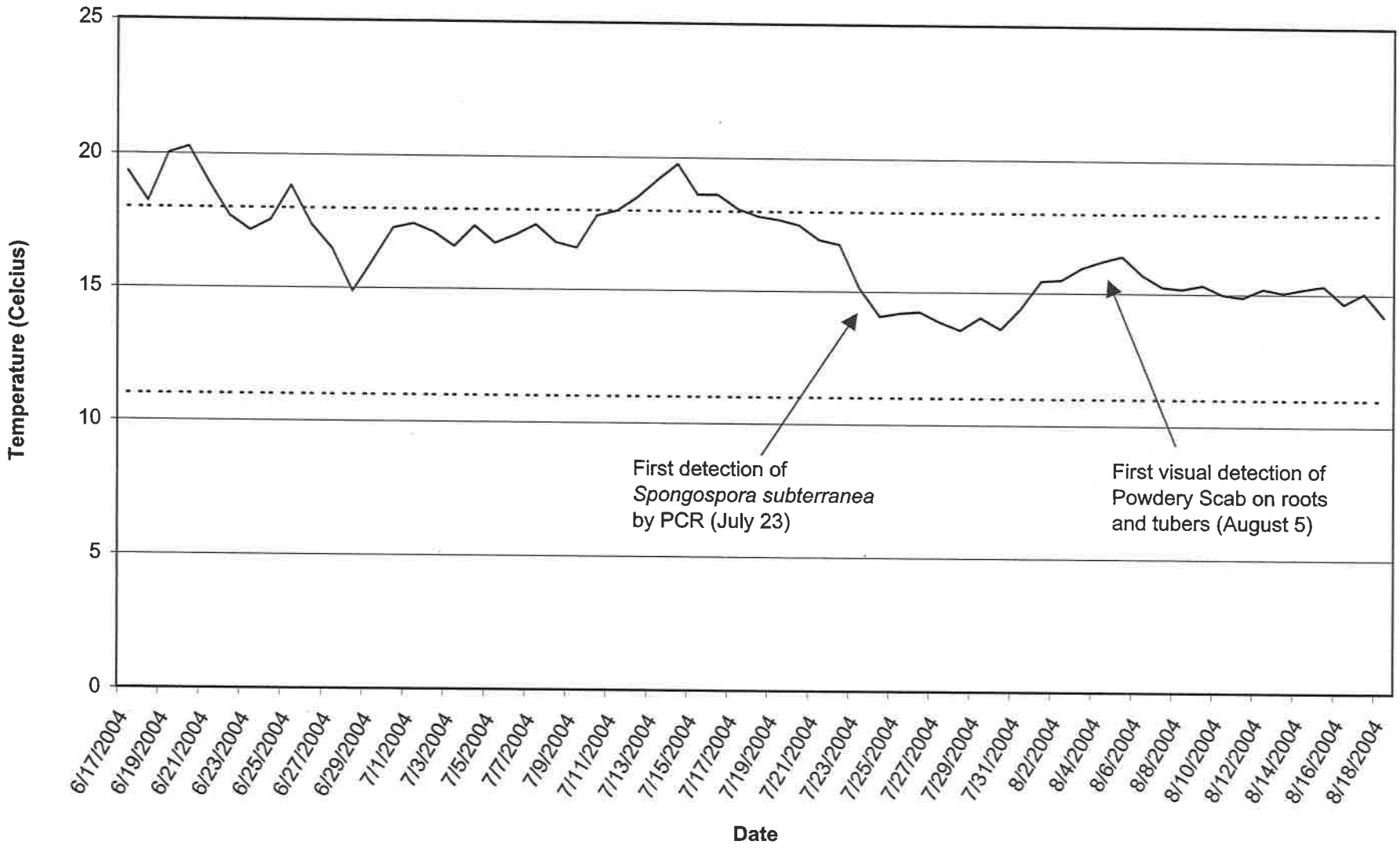
Disease: Mean percent of 100 tubers per replication, taken from four locations per replication per treated area, showing powdery scab lesions post harvest and the number of lesions found per tuber post harvest.

Table 1. Effect of Omega fungicide, applied by chemigation, on the incidence of powdery scab on tubers in the cultivar Chipeta, San Luis Valley, Colorado, 2004.

Cultivar	% infected[a]	% with 1-5 lesions[b]	% with 6-10 lesions[c]	% with 11-20 lesions[d]	% with 21-30 lesions[e]	% with >21 lesions[f]	% with >30 lesions[g]
1. Control, no treatment A	42.6 ab	50.0	14.3	12.4	9.0 a	23.4	14.4
2. Control, no treatment B	39.3 b	50.9	15.8	14.7	3.6 b	18.6	15.0
3. Omega @ 3.0 pt./A, applied on August 18, 2004	49.9 a	54.9	11.7	10.5	7.5 ab	22.9	15.4
LSD(P=0.05)	7.72	NS	NS	NS	4.28	NS	NS

[a] Percent tubers with powdery scab lesions, 100 8 to 10 oz. tubers/treatment/replication, mean of eight replications (four reps. per site).
[b] Percent tubers with 1-5 lesions/treatment/replication, mean of eight replications (four reps. per site).
[c] Percent tubers with 6-10 lesions/treatment/replication, mean of eight replications (four reps. per site).
[d] Percent tubers with 11-20 lesions/treatment/replication, mean of eight replications (four reps. per site).
[e] Percent tubers with 21-30 lesions/treatment/replication, mean of eight replications (four reps. per site).
[f] Percent tubers with >21 lesions/treatment/replication, mean of eight replications (four reps. per site).
[g] Percent tubers with >30 lesions/treatment/replication, mean of eight replications (four reps. per site).

Soil Temperatures, San Luis Valley, Coloardo, 2004



PCR Detection of *Spongospora subterranea* from Asymptomatic Tubers

Researchers: Richard Zink, Robert Davidson, and Andrew Houser, Colorado State University

Location: Off-station trial, San Luis Valley, CO

Cultivar: Cherry Red, cut seed, 2-4 oz.

Objective: To determine the timing of infection for powdery scab on potato.

Sampling Date	**Presence of *S. subterranea***
July 7, 2004	Negative
July 13, 2004	negative
July 23, 2004	positive
July 28, 2004	positive
August 5, 2004	positive
August 11, 2004	positive

PCR tests were conducted by Barbara J. Christ, Professor of Plant Pathology, Pennsylvania State University

Pink Rot Trials

EVALUATION OF FUNGICIDES FOR CONTROL OF PINK ROT ON POTATO, 2004

Researchers: Richard T. Zink and Andrew Houser, Colorado State University, SLVRC

Location: San Luis Valley Research Center, Center, CO

Cultivar: Russet Norkotah selection 8, cut seed, 2-4 oz.

Objective: To evaluate the efficacy of various fungicides in controlling pink rot in potato.

Application: In-Furrow treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with two XR 8002VS nozzle, at 10 gallons/acre as a directed in-furrow application. Foliar treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with two XR 8002VS nozzles, at 20 gallons/acre. Foliar applications were scheduled on a weekly basis (i.e. 1 = week 1, 2 = week 2).

Program	Infurrow		Foliar (Foliar applications began on July 9, 2004)		
	Products	Rate	Products	Rate	Application Schedule
1.	Control, no treatment	-	Control, no	-	-
2.	Reason	300 g.ai./HA	Reason	300 g.ai./HA	1,3
			Bond	0.1 %V/V	1
			Dithane 75DF	680 g.ai./A	2,5
3.	Ridomil Gold 4EC	0.21 oz./1000 row ft.	Ridomil Gold 4EC	3.23 fl.oz./A	1
			Dithane 75DF	680 g.ai./A	1,2,3,5
4.	Omega	16.0 fl.oz./A	No Treatment		
5.	Omega	32.0 fl.oz./A	No Treatment		
6.	Ridomil Gold 4EC	0.42 fl.oz./1000 row ft.	No Treatment		
7.	No Treatment		Ridomil Gold 4EC	0.42 fl.oz./1000 row ft.	(At emergence)
8.	No Treatment		Ridomil Gold 4EC	3.23 fl.oz./A	1,3

Planted: May 5, 2004

Plot Design: Randomized complete block

Plot Size: 2 - 20 foot rows per treatment per replication

Plant Spacing: 12 inches

Row Spacing: 34 inches

Replications: Four

Irrigation: Solid set sprinkler, rate based on ET

Fertilizer: 80N-60P-40K-25S-2.5Zn, preplant, 20N through sprinkler after tuber set

Herbicide: Sencor, 0.66 lb./A + Dual Magnum, 1.5 pt./A + Spartan, 2.66 oz./A

Insecticide: None

Vine Killer: Mechanically removed on September 2, 2004

Harvested: September 13 & 14, 2004

DATA

Disease: Percent tubers with pink rot at harvest and at grading and after harvest by challenge inoculation. The plot received an additional 7.0 inches of water over the course of a month (August 4th to September 9th) to induce pink rot.

Yield: 2-20 foot row per treatment per replication, total yield expressed as cwt/A.

Grade: By hand, percent tubers by weight in pounds < 4 oz., 4-10 oz., > 10 oz., US #2's, and culls.

Table 1. Effects of products, applied at planting and in season for control of pink rot, on tuber yield and quality in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Program	Infurrow	Foliar (Foliar applications began on July 9, 2004)		Percent[a]					
	Products/Rate	Products/Rate	Application Schedule[c]	< 4 oz.	4-10 oz.	> 10 oz.	US #2s	Culls	Cwt/A[b]
1.	Control, no treatment	Control, no treatment	-	8.6	41.1	48.7	0.0	1.6	354.3
2.	Reason @ 300 g.ai./HA	Reason @ 300 g.ai./HA	1,3	7.7	40.7	51.0	0.6	0.1	368.3
		Bond @ 0.1% V/V	1						
		Dithane 75DF @ 680 g.ai./A	2,5						
3.	Ridomil Gold 4EC @ 0.21 fl.oz./1000 rowft.	Ridomil Gold 4EC @ 3.23 fl.oz./A	1	8.8	42.7	47.2	0.7	0.8	319.2
		Dithane 75DF @ 680 g.ai./A	1,2,3,5						
4.	Omega @ 16.0 fl.oz./A	No Treatment		10.7	45.9	42.0	0.9	0.5	304.5
5.	Omega @ 32.0 fl.oz./A	No Treatment		9.3	46.6	43.6	0.1	0.5	316.2
6.	Ridomil Gold 4EC @ 0.42 fl.oz./1000 rowft.	No Treatment		10.7	44.1	43.4	0.3	1.6	366.1
7.	No Treatment	Ridomil Gold 4EC @ 0.42 fl.oz./1000 rowft.	(At emergence)	7.4	40.5	50.7	0.3	1.2	364.9
8.	No Treatment	Ridomil Gold 4EC @ 3.23 fl.oz./A	1,3	9.1	40.8	49.0	0.0	1.1	321.9
LSD(P=0.05)				NS	NS	NS	NS	NS	NS

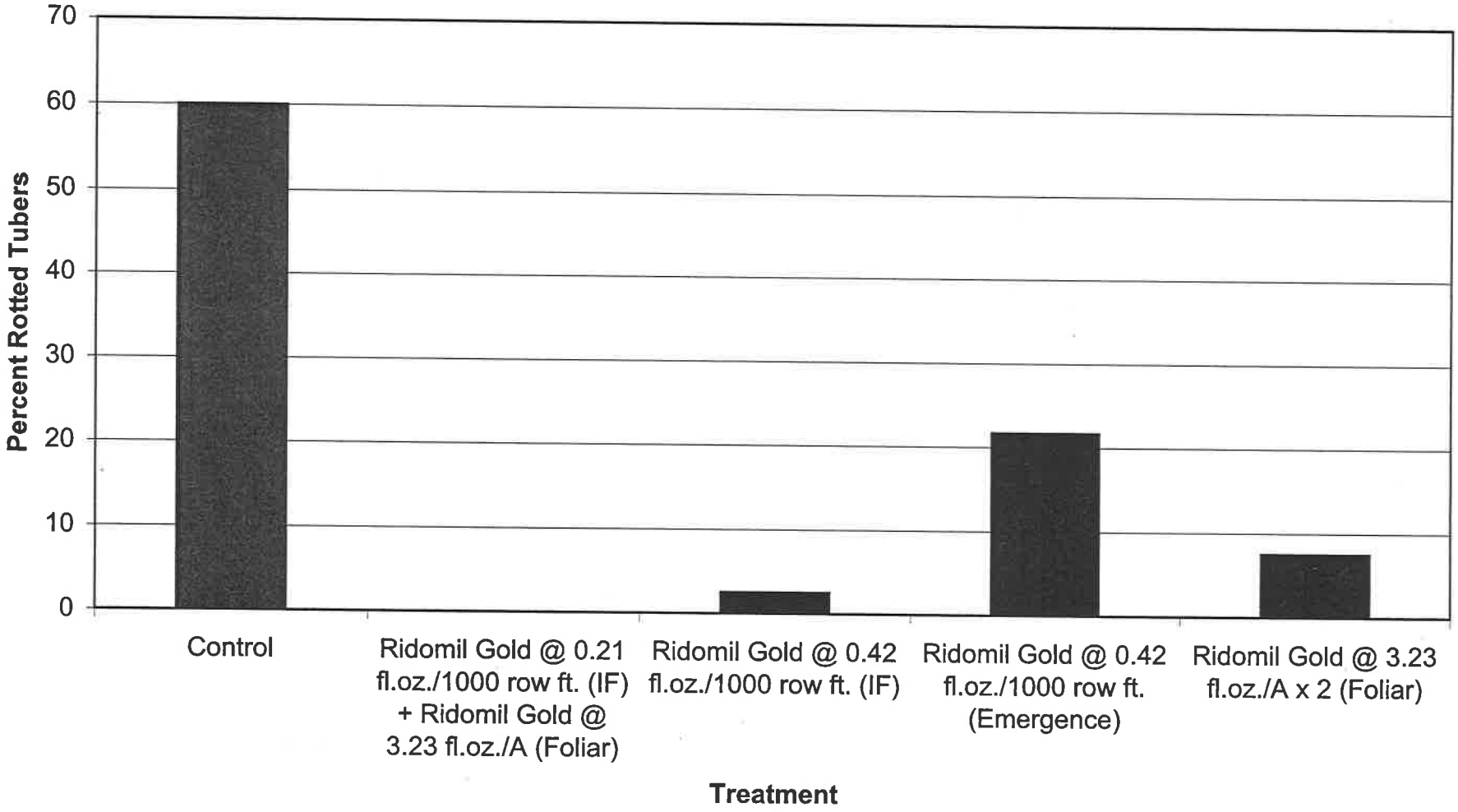
[a] Based on tuber weight in pounds, mean of four replications.
[b] Total yield expressed as hundred weight per acre, 2-20 foot rows per treatment per replication, mean of four replications.
[c] Foliar applications were scheduled on a weekly basis (i.e. 1 = week 1, 2 = week 2).

Table 2. Effects of products, applied at planting and in season, on pink rot in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Program	Infurrow	Foliar (Foliar applications began on July 9, 2004)		Incidence of tuber rot[a]	Pink Rot[b]
	Products/Rate	Products/Rate	Application Schedule[c]		
1.	Control, no treatment	Control, no treatment	-	1.55	60.0 a
2.	Reason @ 300 g.ai./HA	Reason @ 300 g.ai./HA	1,3	0.06	-
		Bond @ 0.1% V/V	1		
		Dithane 75DF @ 680 g.ai./A	2,5		
3.	Ridomil Gold 4EC @ 0.21 fl.oz./1000 rowft.	Ridomil Gold 4EC @ 3.23 fl.oz./A	1	0.41	0.0 b
		Dithane 75DF @ 680 g.ai./A	1,2,3,5		
4.	Omega @ 16.0 fl.oz./A	No Treatment		0.25	-
5.	Omega @ 32.0 fl.oz./A	No Treatment		1.36	-
6.	Ridomil Gold 4EC @ 0.42 fl.oz./1000 rowft.	No Treatment		1.22	2.5 b
7.	No Treatment	Ridomil Gold 4EC @ 0.42 fl.oz./ 1000 rowft.	(At emergence)	0.53	21.7 b
8.	No Treatment	Ridomil Gold 4EC @ 3.23 fl.oz./A	1,3	0.15	7.5 b
LSD(P=0.05)				NS	24.76

[a] Combined mean percent by weight of tubers showing water rot at harvest and at grading, four replications.
[b] Percent tubers showing pink rot by post harvest tuber challenge inoculation, assays conducted by Dr. Gary Secor at North Dakota State University- Fargo, average of five tubers/treatment/replication.
[c] Foliar applications were scheduled on a weekly basis (i.e. 1 = week 1, 2 = week 2).
Means followed by the same letters are not significantly different at P=0.05.

Effect of Ridomil Applications on Pink Rot in Tuber Challenge Inoculations in Russet Norkotah, Colorado, 2004



EVALUATION OF FUNGICIDES FOR CONTROL OF PINK ROT ON POTATO, 2004

Researchers: Richard T. Zink and Andrew Houser, Colorado State University, SLVRC

Location: San Luis Valley Research Center, Center, CO

Cultivar: Russet Norkotah selection 8, cut seed, 2-4 oz.

Objective: To evaluate the efficacy of various fungicides in controlling pink rot in potato.

Application: In-Furrow treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with two XR 8002VS nozzle, at 10 gallons/acre as a directed in-furrow application. Foliar treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with two XR 8002VS nozzles, at 20 gallons/acre. Foliar applications for treatments 2 through 5 started weekly on July 29. Foliar applications started on July 9th for treatment 7.

Treatments:

1. Control, no treatment
2. Proprietary
3. Proprietary
4. Proprietary
5. Proprietary
6. Omega @ 16.0 fl.oz./A(IF)
7. Ridomil Gold 4EC @ 0.21 fl.oz./1000 row ft.(IF) + Ridomil Gold 4EC @ 3.23 fl.oz./A (Foliar) + Dithane 75DF @ 680 g.ai./A (Foliar)

Planted: May 5, 2004

Plot Design: Randomized complete block

Plot Size: 2 - 20 foot rows per treatment per replication

Plant Spacing: 12 inches

Row Spacing: 34 inches

Replications: Four

Irrigation: Solid set sprinkler, rate based on ET

Fertilizer: 80N-60P-40K-25S-2.5Zn, preplant, 20N through sprinkler after tuber set

Herbicide: Sencor, 0.66 lb./A + Dual Magnum, 1.5 pt./A + Spartan, 2.66 oz./A

Insecticide: None

Vine Killer: Mechanically removed on September 2, 2004

Harvested: September 13 & 14, 2004

DATA

Disease: Percent tubers with pink rot at harvest and at grading and after harvest by challenge inoculation. The plot received an additional 7.0 inches of water over the course of a month (August 4th to September 9th) to induce pink rot.

Yield: 2-20 foot row per treatment per replication, total yield expressed as cwt/A.

Grade: By hand, percent tubers by weight in pounds < 4 oz., 4-10 oz., > 10 oz., US #2's, and culls.

Table 1. Effects of products, applied at planting and in season for control of pink rot, on tuber yield and quality in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Program	In-furrow Product/Rate	Foliar Product/Rate[a]	Percent[b]					Cwt/A[c]
			< 4 oz.	4-10 oz.	> 10 oz.	US #2s	Culls	
1.	Control, no treatment	-	8.6	41.1	48.7	0.0	1.6	354.3
2.	-	Proprietary	8.0	42.6	48.3	0.0	1.2	322.4
3.	-	Proprietary	9.3	38.2	50.6	0.0	2.0	336.2
4.	-	Proprietary	10.2	40.5	48.0	0.4	1.0	313.5
5.	-	Proprietary	9.4	36.8	52.3	0.3	1.2	327.4
6.	Omega @ 16.0 fl.oz./A	-	10.7	45.9	42.0	0.9	0.5	304.5
7.[d]	Ridomil Gold 4EC @ 0.21 fl.oz./1000 row ft.	Ridomil Gold 4EC @ 3.23 fl.oz./A Dithane 75DF @ 680 g.ai./A	8.8	42.7	47.2	0.7	0.8	319.2
LSD(P=0.05)			NS	NS	NS	NS	NS	NS

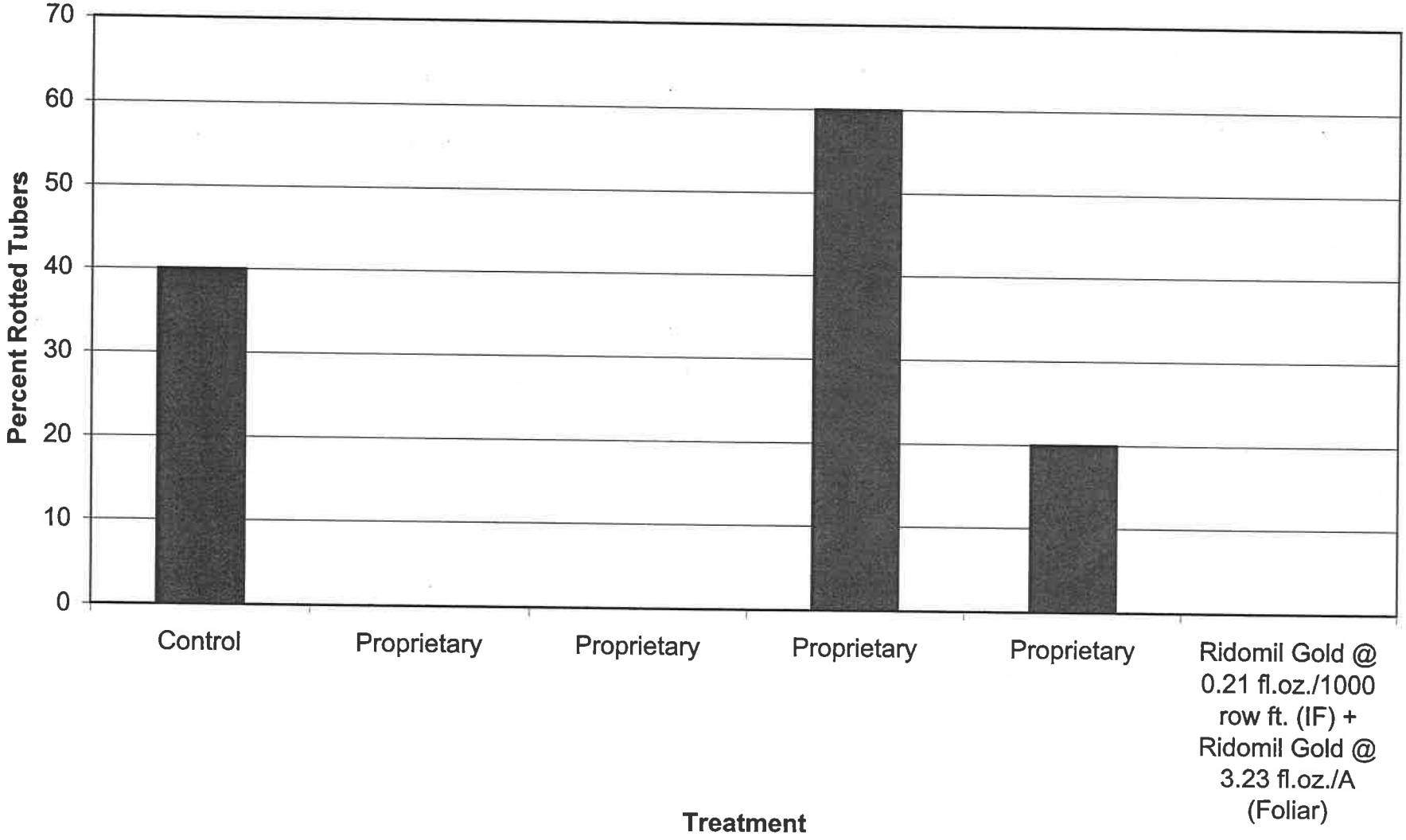
[a] All products for treatments 2 through 5 were applied weekly starting July 29 (five applications per treatment).
[b] Based on tuber weight in pounds, mean of four replications.
[c] Total yield expressed as hundred weight per acre, 2-20 foot rows per treatment per replication, mean of four replications.
[d] The foliar application of Ridomil Gold was applied on July 9th and the application of Dithane 75DF was applied on July 9th, July 16th, July 26th, and August 6th.

Table 2. Effects of products, applied at planting and in season, on pink rot in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Program	In-furrow Product/Rate	Foliar Product/Rate[a]	Incidence of tuber rot[b]	Pink Rot[c]
1.	Control, no treatment	-	1.55	40.0
2.	-	Proprietary	0.51	0.0
3.	-	Proprietary	1.04	0.0
4.	-	Proprietary	0.59	60.0
5.	-	Proprietary	1.43	20.0
6.	Omega @ 16.0 fl.oz./A	-	0.25	-
7.[d]	Ridomil Gold 4EC @ 0.21 fl.oz./1000 row ft.	Ridomil Gold 4EC @ 3.23 fl.oz./A Dithane 75DF @ 680 g.ai./A	0.41	0.0
LSD(P=0.05)			NS	-

[a] All products for treatments 2 through 5 were applied weekly starting July 29 (five applications per treatment).
[b] Combined mean percent by weight of tubers showing water rot at harvest and at grading, four replications.
[c] Percent tubers showing pink rot by post harvest tuber challenge inoculation, assays conducted by Dr. Gary Secor at North Dakota State University- Fargo, five tubers/treatment.
[d] The foliar application of Ridomil Gold was applied on July 9th and the application of Dithane 75DF was applied on July 9th, July 16th, July 26th, and August 6th.

Effect of an Experimental on Pink Rot in Tuber Challenge Inoculations in Russet Norkotah, Colorado, 2004



EVALUATION OF FUNGICIDES FOR CONTROL OF PINK ROT ON POTATO, 2004

Researchers: Richard T. Zink and Andrew Houser, Colorado State University, SLVRC

Location: San Luis Valley Research Center, Center, CO

Cultivar: Russet Norkotah selection 8, cut seed, 2-4 oz.

Objective: To evaluate the efficacy of various fungicides in controlling pink rot in potato.

Application: In-Furrow treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with two XR 8002VS nozzle, at 10 gallons/acre as a directed in-furrow application. Foliar treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with two XR 8002VS nozzles, at 20 gallons/acre. Foliar applications were scheduled on a weekly basis (i.e. 1 = week 1, 2 = week 2).

Program	Infurrow		Foliar (Foliar application occurred on July 9, 2004)		
	Products	Rate	Products	Rate	Application Schedule
1.	Control, no treatment		Control, no treatment	-	-
2.	Ranman Silwett	0.21 fl.oz./1000 row ft. 0.158 fl.oz./1000 row ft.	Ranman Silwett	2.75 fl.oz./A 2.0 fl.oz./A	1
3.	Ranman Silwett	0.42 fl.oz./1000 row ft. 0.315 fl.oz./1000 row ft.	Ranman Silwett	2.75 fl.oz./A 2.0 fl.oz./A	1
4.	Ranman Silwett	0.42 fl.oz./1000 row ft. 0.315 fl.oz./1000 row ft.	No Foliar Application	-	-

Planted: May 5, 2004
Plot Design: Randomized complete block
Plot Size: 4 - 20 foot rows per treatment per replication
Plant Spacing: 12 inches
Row Spacing: 34 inches
Replications: Four
Irrigation: Solid set sprinkler, rate based on ET
Fertilizer: 80N-60P-40K-25S-2.5Zn, preplant, 20N through sprinkler after tuber set
Herbicide: Sencor, 0.66 lb./A + Dual Magnum, 1.5 pt./A + Spartan, 2.66 oz./A
Insecticide: None
Vine Killer: Mechanically removed on September 2, 2004
Harvested: September 13, 2004

DATA

Disease: Percent tubers with pink rot at harvest and at grading. The plot received an additional 7.0 inches of water over the course of a month (August 4th to September 9th) to induce pink rot.
Yield: 4-20 foot rows per treatment per replication, total yield expressed as cwt/A.
Grade: By hand, percent tubers by weight in pounds < 4 oz., 4-10 oz., > 10 oz., US #2's, and culls.

Table 1. Effects of products, applied at planting and in season for control of pink rot, on tuber yield and quality in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Program	Infurrow	Foliar (Foliar application occurred on July 9, 2004)		Percent[a]					
	Products/Rate	Products/Rate	Application Schedule[c]	< 4 oz.	4-10 oz.	> 10 oz.	US #2s	Culls	Cwt/A[b]
1.	Control, no treatment	Control, no treatment	-	7.2	36.1	55.1	0.5	1.1	358.5
2.	Ranman @ 0.21 fl.oz./1000 row ft. Silwett @ 0.158 fl.oz./1000 row ft.	Ranman @ 2.75 fl.oz./A Silwett @ 2.0 fl.oz./A	1	9.4	39.5	48.5	0.6	2.0	325.0
3.	Ranman @ 0.42 fl.oz./1000 row ft. Silwett @ 0.315 fl.oz./1000 row ft.	Ranman @ 2.75 fl.oz./A Silwett @ 2.0 fl.oz./A	1	9.3	35.6	51.8	0.7	2.6	360.2
4.	Ranman @ 0.42 fl.oz./1000 row ft. Silwett @ 0.315 fl.oz./1000 row ft.	No Foliar Application	-	7.8	40.3	50.7	0.3	0.9	364.3
LSD(P=0.05)				NS	NS	NS	NS	NS	NS

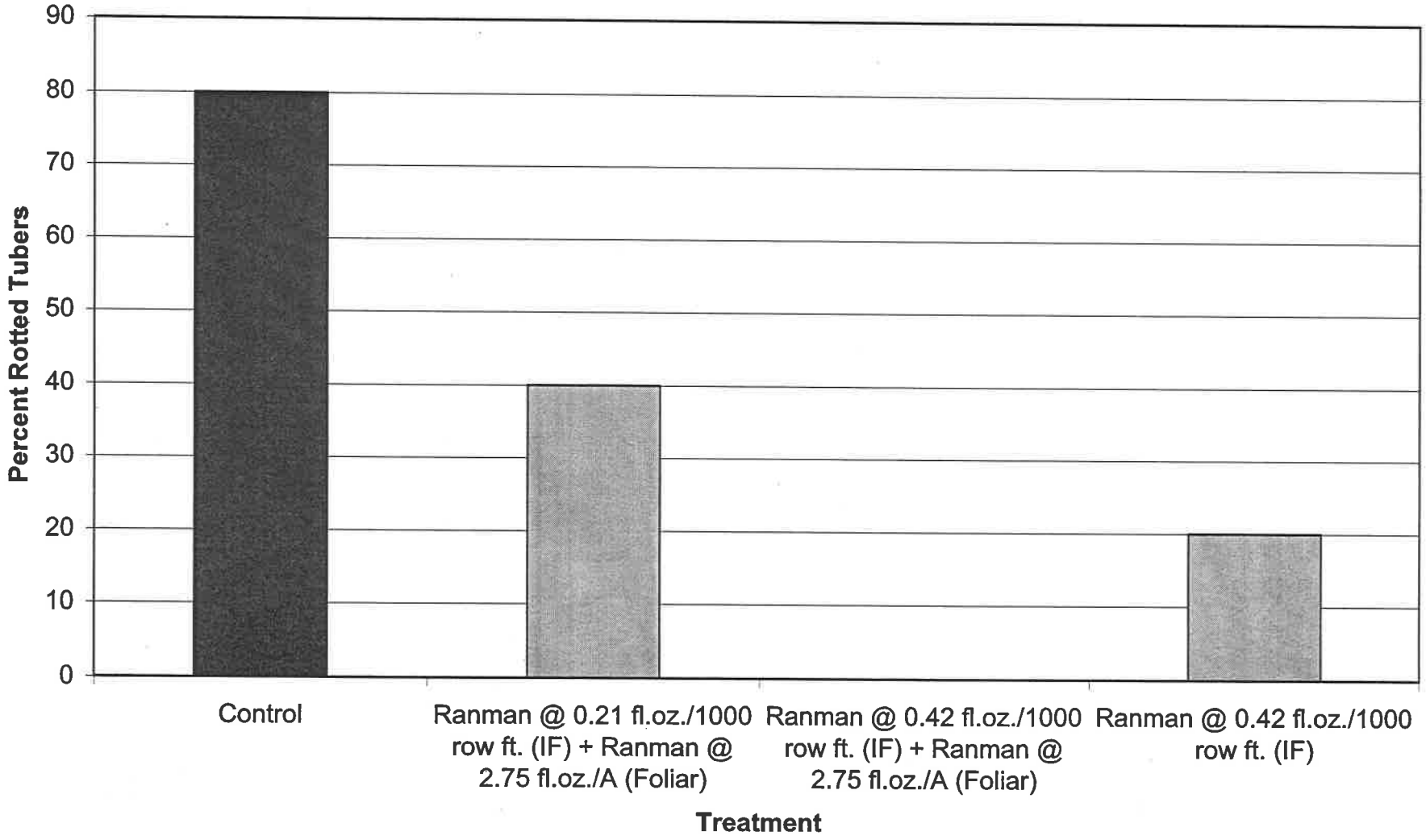
[a] Based on tuber weight in pounds, mean of four replications.
[b] Total yield expressed as hundred weight per acre, 4-20 foot rows per treatment per replication, mean of four replications.
[c] Foliar applications were scheduled on a weekly basis (i.e. 1 = week 1, 2 = week 2).

Table 2. Effects of products, applied at planting and in season, on pink rot in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2004.

Program	Infurrow	Foliar (Foliar application occurred on July 9, 2004)		Incidence of tuber rot[a]	Pink Rot[b]
	Products/Rate	Products/Rate	Application Schedule[c]		
1.	Control, no treatment	Control, no treatment	-	1.42	80.0
2.	Ranman @ 0.21fl.oz./1000 row ft. Silwett @ 0.158 fl.oz./1000 row ft.	Ranman @ 2.75 fl.oz./A Silwett @ 2.0 fl.oz./A	1	1.34	40.0
3.	Ranman @ 0.42 fl.oz./1000 row ft. Silwett @ 0.315 fl.oz./1000 row ft.	Ranman @ 2.75 fl.oz./A Silwett @ 2.0 fl.oz./A	1	0.58	0.0
4.	Ranman @ 0.42 fl.oz./1000 row ft. Silwett @ 0.315 fl.oz./1000 row ft.	No Foliar Application	-	0.19	20.0
LSD(P=0.05)				NS	-

[a] Combined mean percent by weight of tubers showing water rot at harvest and at grading, four replications.
[b] Percent tubers showing pink rot by post harvest tuber challenge inoculation, assays conducted by Dr. Gary Secor at North Dakota State University-Fargo, average of five tubers/treatment.
[c] Foliar applications were scheduled on a weekly basis (i.e. 1 = week 1, 2 = week 2).

Effect of Ranman on Pink Rot in Tuber Challenge Inoculations in Russet Norkotah, Colorado, 2004



Advanced Clone Disease Assessment Program

2004 Bacterial Ring Rot Evaluation

Location: NW Corner, Selter's Farm, 9 North, ½ East of SLVRC

Treatments: 50 clones/cultivars - Non-inoculated controls consisted of 21 seed pieces (fresh cut lengthwise with no dipping). Inoculated treatments were obtained by placing 21 seed pieces (fresh cut lengthwise) into 1½ liter of Ringer's solution (100 ml of 10x with 900 ml of cold water) for 5 minutes. Three Cms plates (Strain # CIC31) exhibiting good bacterial growth, with some agar, were scraped into the Ringer's. After four treatments were dipped, a fourth and fifth plate were added to the solution to finish out the last two treatments. Six clones were dipped per batch and the cold solution was not used for more than 45 minutes total time. Cms plates were 7-9 days old and inoculation took place on 5/5-6/04. Inoculated tubers were allowed to stay moist in paper sack overnight. After planting, tubers were immediately covered with soil.

Plot Design: Randomized complete block - 7 inoculated, 7 non-inoculated seed pieces/cultivar x 3 reps with non-inoculated controls planted north of inoculated treatments.

Plant Date: 5/4/04

Cultivars:

1. AC97068-2RU
2. AC97097-14W
3. AC97521-1R/Y
4. CO97043-14W
5. CO97065-7W
6. CO97078-5R
7. CO97087-2RU
8. CO97090-4RU
9. CO97137-1W
10. CO97138-3RU
11. CO97138-7RU
12. CO97226-2R/R
13. CO97232-1R/Y
14. CO97232-2R/Y
15. CO97233-3R/Y
16. AC96010-3RU
17. AC96052-1RU
18. CO96045-1RU
19. CO96047-7RU
20. CO96109-7RU
21. CO96141-4W
22. CO94157-2W/Y
23. VC1123-2W/Y
24. VC1009-1W/Y
25. A91814-5
26. A92030-5
27. A92294-6
28. A93157-6LS
29. A95074-6
30. A95109-1
31. AO93487-2R
32. AO96160-3
33. ATX91137-1RU
34. ATX92230-1RU
35. NDA5507-3YF
36. PA95A11-14
37. WNC230-14RU
38. Ute Russet
39. Centennial Russet
40. Russet Burbank
41. Sangre
42. Russet Norkotah
43. CO86030-1RU
44. CO86153-2RU
45. FL2006
46. FL2061
47. FL2072
48. FL2000
49. FL2053
50. Golden Sunburst

Irrigation: Solid set sprinkler: rate based on ET and ppt. Total water for season was 18".

Fertilizer: 80:60:40:25(S):2.5:(Zn) with 10 N from irrigation water.
Total for season: 90:60:40:25(S):2.5(Zn).

Herbicide: Ground rig application: 5/26/2004 Eptam (4.5pt/A) + Spartan* (2.5oz/A).

Fungicide/ Insecticide: Aerial applications: 7/10/04 Actara (1.5oz./A), Bravo (1pt/A)
7/24/04 Bravo (1pt./A)

Harvest: 5/14-15/04

*Severe damage due to Spartan.

Table 3. 2004 Clonal Evaluation for Bacterial Ring Rot Foliar Symptom Expression									
^	Clone	DAP to First Symptoms	# Reps Positive	# Plants Positive	% Plants Positive	DAP 50% or More +	Total # Reps Positive	% Plants + 108 DAP	Summary of Symptoms
1	AC97068-2RU	63	1	1	4.8	108	3	57.1	All
1	AC97097-14W	63	1	4	19.0	108	3	57.1	All
1	AC97521-1R/Y	63	3	6	30.0	108	3	50.0	ED,R,IVC,IVN,MN
1	CO97043-14W	63	2	6	28.6	108	3	66.7	All
1	CO97065-7W	63	2	4	19.0	108	3	85.7	All
1	CO97078-5R	63	2	3	14.3		3	33.3	All
1	CO97087-2RU	73	2	5	23.8	87	3	90.5	All
1	CO97090-4RU	63	1	2	9.5	87	3	76.2	All
1	CO97137-1W	63	3	5	23.8	80	3	90.5	All
1	CO97138-3RU	63	2	5	23.8	80	3	85.7	All
1	CO97138-7RU	63	2	6	28.6	73	3	85.7	All
1	CO97226-2R/R	87	3	6	30.0	108	3	50.0	IVC,IVN,MN,W
1	CO97232-1R/Y	63	2	3	15.0		2	25.0	All
1	CO97232-2R/Y	63	1	2	9.5	108	3	61.9	IVC,IVN,MN,W
1	CO97233-3RY	73	2	4	19.0		3	33.3	ED,R,IVC,IVN,MN
2	AC96010-3RU	63	1	2	9.5	108	3	57.1	All
2	AC96052-1RU	73	1	2	11.8		3	47.1	ED,R,IVC,IVN,MN
2	CO96045-1RU	63	1	2	9.5	108	3	61.9	All
2	CO96047-7RU	63	3	6	30.0		3	40.0	All
2	CO96109-7RU	63	1	2	9.5	93	3	85.7	All
2	CO96141-4W	63	1	1	5.0		3	40.0	All
2	CO94157-2W/Y	73	3	6	28.6	108	3	52.4	All
2	VC1123-2W/Y	108	1	1	4.8		1	4.8	IVC,IVN,MN,W
3	VC1009-1W/Y	73	1	1	4.8		2	33.3	ED,R,IVC,W
1	CO86030-1RU	63	1	1	4.8		2	9.5	All
1	CO86153-2RU	63	1	1	4.8		3	33.3	ED,R,IVC
1	Golden Sunburst	63	1	1	4.8		2	22.2	All
	WNC230-14RU	80	1	1	4.8		1	4.8	ED,R,IVC
	Ute Russet	63	2	5	25.0		3	45.0	ED,R,IVC,IVN,MN
	Centennial Russet	63	1	1	4.8		2	23.8	All
	Russet Burbank	63	3	7	35.0	73	3	80.0	All
	Sangre	63	2	3	14.3		2	47.6	All
	Russet Norkotah	63	3	12	57.1	63	3	81.0	All
	^ Number of years tested. Planting date- 5/4/04. Key to symptoms: ED-Early Dwarf, R-Rosette, IVC-Interveinal Chlorosis,								
	IVN-Interveinal Necrosis, MN-Marginal Necrosis, W-Wilt, All-all symptoms seen during season.								
	Date vs. DAP (Days after planting): 7/6=DAP 63, 7/16=DAP 73, 7/23=DAP 80, 7/30=DAP 87, 8/5=DAP 93, 8/20=DAP 108								

Table 4. 2004 Clonal Evaluation for Bacterial Ring Rot				
Tuber Symptom Expression				
Clone	# Reps +	# Tubers +	%Tubers +	PS Rating
AC97068-2RU	1	1	5	
AC97097-14W				
AC97521-1R/Y				1
C097043-14W	1	3	15	1
CO97065-7W	1	1	5	2
CO97078-5R	2	3	15	
CO97087-2RU	1	1	5	
CO97090-4RU				
CO97137-1W				
CO97138-3RU	1	1	5	
CO97138-7RU				
CO97226-2R/R				
CO97232-1R/Y				
CO97232-2R/Y	1	2	10	
CO97233-3R/Y				
AC96010-3RU				
AC96052-1RU				
CO96045-1RU				
CO96047-7RU				
CO96109-7RU	1	1	5	
CO96141-4W				
CO94157-2W/Y	1	1	5	
VC1123-2W/Y	1	2	10	
VC1009-1W/Y				1
CO86030-1RU				
CO86153-2RU				
Golden Sunburst	1	1	5	
WNC230-14RU	1	1	5	
Ute Russet				
Centennial Russet				
Russet Burbank	1	1	5	
Sangre				
Russet Norkotah	1	1	5	
2 of 3 reps screened with 10 tubers cut/treatment representing at least 5 plants.				
% tubers (+) is based upon #pos/#cut. Harvest = 9/15-16/04				
PS rating: 1- 1-3 lesions (not severe), 2- 3-10 lesions (not severe),				