

CONTENTS

- Early Blight Fungicide Trials.....2
 - Early blight degree days - 2011.....3
 - Early blight fungicide trial 1 (Site #1 & #2).....4
 - Early blight fungicide trial 2.....10
 - Early blight fungicide trial 3.....14

- Root Knot Nematode Degree Days.....18

- SLV Late Blight Forecasting Data - 2011.....20
 - Late blight severity units – Wallin model (Hooper & Sargent).....21
 - Late blight Fry severity units – Blanca & Hooper sites.....22
 - Late blight Negative Prognosis Units – Blanca & Hooper sites.....23

- Pink Rot Trial.....24
 - Pink rot fungicide evaluation trial25

- Powdery Scab Trials.....28
 - Powdery scab clonal evaluation trial (on-station greenhouse, SLV, CO).....29
 - Powdery scab soil temperature and soil moisture readings at 6, 8, & 10 inch depths.....31

- **Zeba Soil Amendment Trial**.....33

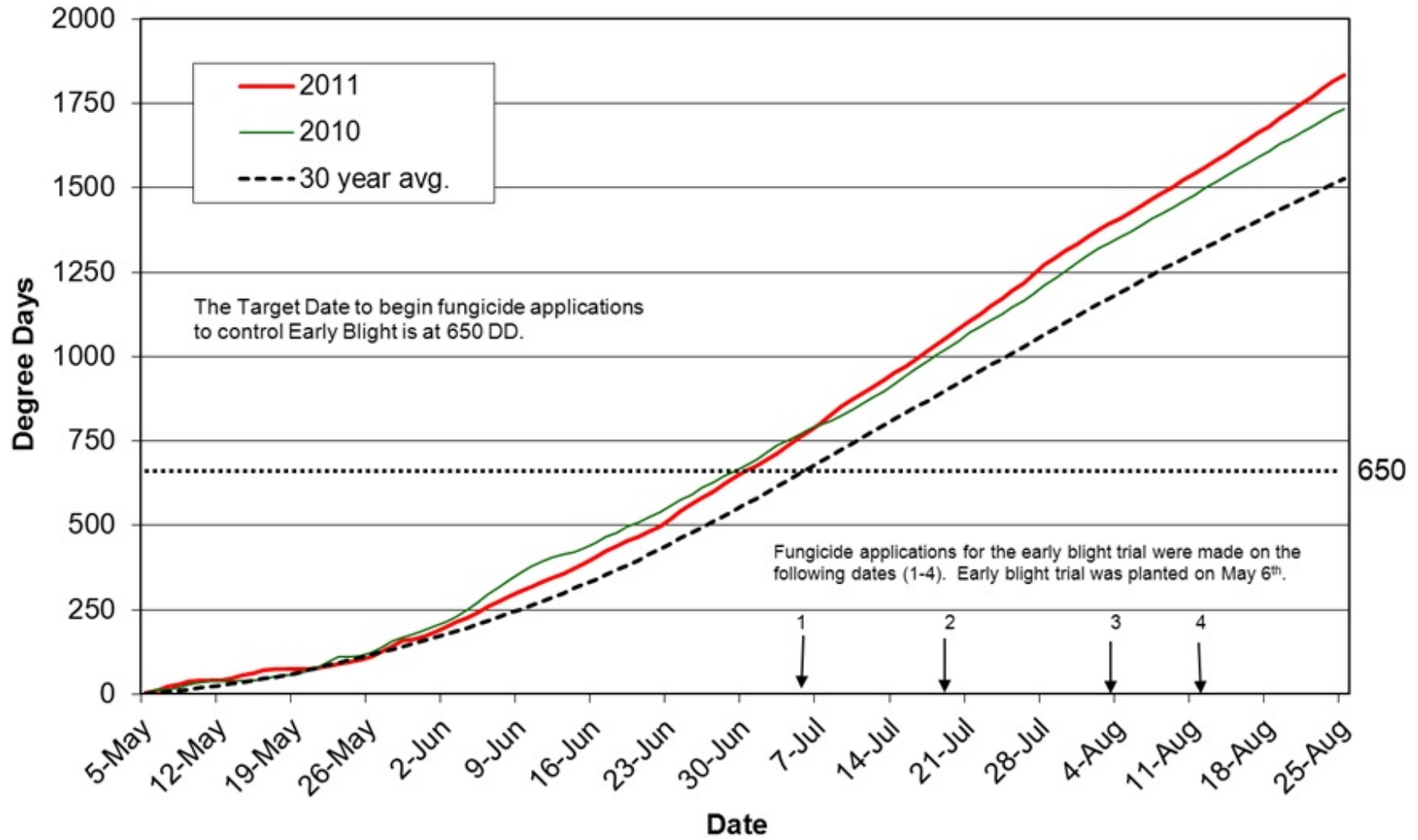
- Advanced Clone Disease Assessment Project.....38
 - Bacterial ring rot evaluation
 - Storage rots (*Fusarium* and *Erwinia*) evaluation – note: no results due to failure of inoculum for *Erwinia* evaluation
 - Potato leafroll evaluation – note: no results due to frost in Yuma, AZ
 - PVY evaluation – note: no results due to frost in Yuma, AZ

Early Blight Fungicide Trials

Spraying schedules that include two or three fungicide applications during the season (with at least one of the fungicides being a strobilurin), starting once degree days for early blight have been reached and continuing fungicide applications every 14 to 21 days, have worked well in the San Luis Valley. Other products such as Endura, Bravo, Dithane, Polyram, Super Tin, and various numbered compounds have also had success in controlling early blight, depending on application timing and which of the additional fungicides were used.

When yields (cwt/A) are analyzed for the early blight trial, a significant difference is typically not observed between the untreated control and the different treatments within a given year, even when disease levels are significantly lower in the treatments than in the control. However, when three or more years of early blight trial data are analyzed, the yields from the untreated controls are significantly less than several of the fungicide combination treatments. This indicates that when an effective fungicide program is used to control foliar early blight, yields are improved.

Early Blight Degree Days for the San Luis Valley



2011 POTATO – EARLY BLIGHT FUNGICIDE TRIAL #1

Researchers: Rob Davidson and Andrew Houser, Colorado State University, SLVRC

Location: Two locations: one under solid set irrigation system (site #1) and one under center pivot irrigation system (site #2), 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 CO₂ 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 5; July 18; August 1; August 12

Planted: May 6, 2011

Plot Design: Randomized complete block

Plot Size: Two - 15 foot rows per treatment per replication.

Plant Spacing: 12 inches

Row Spacing: 34 inches

Replications: Four

Irrigation: Solid set sprinkler (site #1); Center pivot (site #2) - rate based on ET for both.

Fertilizer: 80N-60P-40K-25S-2.5Z, preplant (both sites), 70N (site #1) & 40N (site #2) through sprinkler after tuber set.

Herbicide: Dual Magnum @ 1.6 pt./A

Insecticide: None (site #1); Fulfill @ 2.75oz./A & Endigo @ 4oz./A (site #2)

Vine Killer: Rotobeat vines on September 8, 2011 (both sites)

Harvested: September 27, 2011 (both sites)

DATA:

Disease: Early blight disease incidence based on percent leaves infected, readings taken weekly starting August 4, 2011 (site #1), August 8, 2011 (site #2).

AUDPC: **Area Under the Disease Progress Curve (AUDPC) is a measure of the progression of Early Blight, starting on August 4th and ending with the last reading on September 7th. AUDPC gives a better idea of the total amount of Early Blight in a plot during this time period, rather than just looking at the weekly percent incidence. The total AUDPC for the control plot (1) indicates the total amount of Early Blight that was present if no fungicides were used to suppress disease. The other treatments should be compared with the control to determine the effectiveness at reducing the disease. AUDPC is based on total percent leaflets infected with Early Blight, with readings taken on a weekly basis.**

Yield: 2-15 foot rows per treatment per replication, total yield expressed as cwt/A.

Grade: By hand, percent tubers by weight in kilograms < 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 2011.

<u>Program</u>	<u>Products</u>	<u>Rate</u>	<u>Application Schedule^a</u>
1	Untreated Control	-	-
2	Endura	3.5 oz./A	1,5
	Headline	6.0 oz./A	3
	Dithane F-45	1.2 qt./A	7
3	Endura	3.5 oz./A	1,5
	Cabrio Plus	2.0 lb./A	3
	Dithane F-45	1.2 qt./A	7
4	Priaxor	4.0 oz./A	1
	Cabrio Plus	2.0 lb./A	3
	Endura	3.5 oz./A	5
	Dithane F-45	1.2 qt./A	7
5	Pristine	7.0 oz./A	1
	Cabrio Plus	2.0 lb./A	3
	Endura	3.5 oz./A	5
	Dithane F-45	1.2 qt./A	7
6	Priaxor	4.0 oz./A	1
	Endura	3.5 oz./A	3
	Cabrio Plus	2.0 lb./A	5
	Dithane F-45	1.2 qt./A	7
7	Endura	3.5 oz./A	1
	Priaxor	4.0 oz./A	3
	Cabrio Plus	2.0 lb./A	5
	Dithane F-45	1.2 qt./A	7
8	Quadris Top	8.0 oz./A	1
	Quadris Opti	1.6 pt./A	3
	Revus Top	5.5 oz./A	5
	Dithane F-45	1.2 qt./A	7

^a Schedule for applying treatments on a weekly basis, schedule started on July 5 (i.e. 1 = week 1, 2 = week 2).

Table 2. Early Blight Trial #1 (site #1) - Effect of fungicide programs on the incidence of early blight in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2011; No Late Blight occurred within the trial.

Treatment	Percent Leaves Infected ^a (with one or more lesion)					AUDPC ^c
	August 4 ^b	August 11	August 22	August 29	September 6	
1	2.3	12.3 a	48.8 a	89.8 a	95.4 a	1011.2 a
2	0.8	3.3 b	11.2 bc	45.0 b	77.5 b	542.5 c
3	0.7	4.0 b	11.3 bc	45.0 b	84.2 ab	571.2 c
4	0.7	4.0 b	8.8 c	41.7 b	75.8 b	512.5 c
5	1.0	3.3 b	10.4 bc	40.8 b	80.0 b	533.6 c
6	1.0	4.2 b	10.0 bc	51.3 b	80.8 b	574.0 c
7	0.7	3.2 b	10.3 bc	51.7 b	80.8 b	572.8 c
8	0.8	5.4 b	19.2 b	76.7 a	93.2 a	767.2 b
LSD(P=0.05)	NS	2.5	9.4	15.5	11.4	123.1

^a Percent of leaflets with Early Blight lesions per plant (3 plants evaluated per treatment/rep, mean of four replications).

^b Readings were taken from only two replications due to the low levels of Early Blight present.

^c AUDPC is the Area Under the Disease Progress Curve, accumulated weekly from August 4 through September 6.

Means followed by the same letters are not significantly different at P=0.05 for AUDPC.

Table 3. Early Blight Trial #1 (site #2) - Effect of fungicide programs on the incidence of early blight in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2011; No Late Blight occurred within the trial.

Treatment	Percent Leaves Infected ^a (with one or more lesion)					AUDPC ^c
	August 8 ^b	August 12	August 23	August 30	September 7	
1	10.7	27.2 a	54.4 a	92.1 a	97.5 a	1084.6 a
2	4.0	4.3 b	10.3 b	50.0 bcd	79.1 bc	563.7 bc
3	2.2	3.2 b	10.2 b	37.9 cde	80.4 bc	520.4 c
4	1.2	2.7 b	6.3 b	26.7 e	67.9 c	406.8 c
5	1.3	3.3 b	8.8 b	35.0 de	77.0 bc	487.4 c
6	1.2	3.0 b	6.8 b	34.6 de	77.4 bc	476.3 c
7	1.2	2.5 b	11.7 b	53.7 bc	75.3 bc	560.4 bc
8	3.8	9.7 b	19.1 b	63.8 b	86.5 ab	700.2 b
LSD(P=0.05)	NS	14.0	21.4	17.6	12.7	176.3

^a Percent of leaflets with Early Blight lesions per plant (3 plants evaluated per treatment/rep, mean of four replications).

^b Readings were taken from only two replications due to the low levels of Early Blight present.

^c AUDPC is the Area Under the Disease Progress Curve, accumulated weekly from August 8 through September 7.

Means followed by the same letters are not significantly different at P=0.05 for AUDPC.

Table 4. Early Blight Trial #1 (site #1) - Effect of fungicide programs on tuber yield and quality in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2011.

Treatment	Percent ^a			US No 2's	Culls	Cwt/A ^b	Cwt/A w/o culls ^c
	< 4 oz.	4-10 oz.	> 10 oz.				
1	15.3	51.9	28.8	2.0	2.0 ab	503.0	483.2
2	14.5	49.0	33.7	2.8	0.0 c	480.7	466.8
3	15.6	51.5	29.6	0.0	3.3 a	512.0	495.1
4	14.2	49.7	33.1	2.2	0.9 bc	484.6	469.4
5	15.8	47.5	34.0	1.0	1.7 ab	426.2	414.6
6	13.8	49.8	33.3	1.3	1.8 ab	490.3	474.5
7	13.7	52.1	30.6	2.4	1.3 bc	501.8	483.8
8	15.8	49.5	32.6	1.1	1.1 bc	505.8	494.5
LSD(P=0.05)	NS	NS	NS	NS	1.7	NS	NS

^a Based on tuber weight in kilograms, mean of four replications.

^b Total yield expressed as hundred weight per acre, 2-15 foot rows per treatment per replication, mean of four replications.

^c Total yield expressed as hundred weight per acre (culls are removed from the cwt/A), 2-15 foot rows per treatment per replication, mean of four replications.

Table 5. Early Blight Trial #1 (site #2) - Effect of fungicide programs on tuber yield and quality in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2011.

Treatment	Percent ^a			US No 2's	Culls	Cwt/A ^b	Cwt/A w/o culls ^c
	< 4 oz.	4-10 oz.	> 10 oz.				
1	22.6	49.9	25.8	0.4	1.3	405.3	398.0
2	18.1	52.1	28.8	0.0	1.0	449.9	445.7
3	24.0	47.8	27.6	0.0	0.7	438.3	435.5
4	15.1	48.0	33.9	1.0	2.0	449.3	435.2
5	19.8	46.0	32.8	0.0	1.5	463.5	457.5
6	21.8	48.9	28.1	0.0	1.1	412.9	408.7
7	23.3	46.0	30.1	0.3	0.4	439.7	436.6
8	20.4	46.4	31.1	0.0	2.2	434.4	424.8
LSD(P=0.05)	NS	NS	NS	NS	NS	NS	NS

^a Based on tuber weight in kilograms, mean of four replications.

^b Total yield expressed as hundred weight per acre, 2-15 foot rows per treatment per replication, mean of four replications.

^c Total yield expressed as hundred weight per acre (culls are removed from the cwt/A), 2-15 foot rows per treatment per replication, mean of four replications.

2011 POTATO – EARLY BLIGHT FUNGICIDE TRIAL #2

Researchers: Rob Davidson 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 CO₂ 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 5; July 18; August 1; August 12

Planted: May 5 & 6, 2011

Plot Design: Randomized complete block

Plot Size: Two - 15 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-2.5Z, preplant, 70N through sprinkler after tuber set.

Herbicide: Dual Magnum @ 1.6 pt./A

Insecticide: None

Vine Killer: Rotobeat vines on September 8, 2011

Harvested: September 28, 2011

DATA:

Disease: Early blight disease incidence based on percent leaves infected, readings taken weekly starting August 5, 2011.

AUDPC: **Area Under the Disease Progress Curve (AUDPC) is a measure of the progression of Early Blight, starting on August 5th and ending with the last reading on September 7th. AUDPC gives a better idea of the total amount of Early Blight in a plot during this time period, rather than just looking at the weekly percent incidence. The total AUDPC for the control plot (1) indicates the total amount of Early Blight that was present if no fungicides were used to suppress disease. The other treatments should be compared with the control to determine the effectiveness at reducing the disease. AUDPC is based on total percent leaflets infected with Early Blight, with readings taken on a weekly basis.**

Yield: 2-15 foot rows per treatment per replication, total yield expressed as cwt/A.

Grade: By hand, percent tubers by weight in kilograms < 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 2011.

<u>Program</u>	<u>Products</u>	<u>Rate</u>	<u>Application Schedule^a</u>
1	Untreated Control	-	-
2	Echo ZN Luna Tranquility Reason	2.0 pt./A 8.0 oz./A 5.5 oz./A	1 3,7 5
3	Echo ZN Luna Tranquility Scala 60SC	2.0 pt./A 8.0 oz./A 7.0 oz./A	1 3,7 5
4	Echo ZN Endura Headline	2.0 pt./A 2.5 oz./A 9.0 oz./A	1 3,7 5
5	Echo ZN Dithane Rainshield	2.0 pt./A 2.0 lbs./A	1,5 3,7

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

Table 2. Early Blight Trial #2 - Effect of fungicide programs on the incidence of early blight in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2011; No Late Blight occurred within the trial.

Treatment	Percent Leaves Infected ^a (with one or more lesion)					AUDPC ^c
	August 5 ^b	August 11	August 22	August 29	September 7	
1	0.7	6.7 a	30.8 a	77.0 a	97.9 a	901.5 a
2	0.3	2.5 b	6.9 b	15.7 c	57.9 c	363.1 c
3	0.3	1.8 b	6.7 b	14.8 c	47.1 c	307.7 c
4	0.5	1.8 b	5.4 b	16.9 c	56.7 c	350.7 c
5	1.0	2.2 b	7.2 b	35.0 b	72.1 b	496.0 b
LSD(P=0.05)	NS	1.2	5.3	14.7	12.2	67.1

^a Percent of leaflets with Early Blight lesions per plant (3 plants evaluated per treatment/rep, mean of four replications).

^b Readings were taken from only two replications due to the low levels of Early Blight present.

^c AUDPC is the Area Under the Disease Progress Curve, accumulated weekly from August 5 through September 7.

Means followed by the same letters are not significantly different at P=0.05 for AUDPC.

Table 3. Early Blight Trial #2 - Effect of fungicide programs on tuber yield and quality in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2011.

Treatment	Percent ^a			US # 2s	Culls	Cwt/A ^b	Cwt/A w/o culls ^c
	< 4 oz.	4-10 oz.	> 10 oz.				
1	30.3	56.1	10.9	2.5	0.3	254.0	247.0
2	24.7	61.7	11.9	1.0	0.8	259.1	254.3
3	28.2	59.0	11.1	1.3	0.5	253.5	248.9
4	24.4	54.6	19.4	0.6	1.1	273.8	269.6
5	20.5	59.1	19.2	0.7	0.6	280.3	276.9
LSD(P=0.05)	NS	NS	NS	NS	NS	NS	NS

^a Based on tuber weight in kilograms, mean of four replications.

^b Total yield expressed as hundred weight per acre, 2-15 foot rows per treatment per replication, mean of four replications.

^c Total yield expressed as hundred weight per acre (culls are removed from the cwt/A), 2-15 foot rows per treatment per replication, mean of four replications.

2011 POTATO – EARLY BLIGHT FUNGICIDE TRIAL #3

Researchers: Rob Davidson 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 CO₂ 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 5; July 11; July 18; July 25; August 1; August 8; August 12

Planted: May 5 & 6, 2011

Plot Design: Randomized complete block

Plot Size: Two - 15 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-2.5Z, preplant, 70N through sprinkler after tuber set.

Herbicide: Dual Magnum @ 1.6 pt./A

Insecticide: None

Vine Killer: Rotobeat vines on September 8, 2011

Harvested: September 28, 2011

DATA:

Disease: Early blight disease incidence based on percent leaves infected, readings taken weekly starting August 4, 2011.

AUDPC: **Area Under the Disease Progress Curve (AUDPC) is a measure of the progression of Early Blight, starting on August 4th and ending with the last reading on September 7th. AUDPC gives a better idea of the total amount of Early Blight in a plot during this time period, rather than just looking at the weekly percent incidence. The total AUDPC for the control plot (1) indicates the total amount of Early Blight that was present if no fungicides were used to suppress disease. The other treatments should be compared with the control to determine the effectiveness at reducing the disease. AUDPC is based on total percent leaflets infected with Early Blight, with readings taken on a weekly basis.**

Yield: 2-15 foot rows per treatment per replication, total yield expressed as cwt/A.

Grade: By hand, percent tubers by weight in kilograms < 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 2011.

<u>Program</u>	<u>Products</u>	<u>Rate</u>	<u>Application Schedule^a</u>
1	Untreated Control	-	-
2	Quadris	6.2 floz/A	2
	Bravo WS	1.5 pt/A	4
	Endura	2.5 oz./A	6
3	Dithane Rainshield	2.0 lb./A	4,6
	Bravo WS	1.5 pt/A	5
4	Dithane Rainshield	2.0 lb./A	4,6
	Quadris	6.2 floz/A	5
5	Quadris	6.2 floz/A	4
	Bravo WS	1.5 pt/A	5
	Endura	2.5 oz./A	6
6	Dithane Rainshield	2.0 lb./A	1,5
	Quadris	6.2 floz/A	3
7	Quadris	6.2 floz/A	1
	Bravo WS	1.5 pt/A	3
	Endura	2.5 oz./A	5
8	Quadris Opti	1.6 pt/A	1
	Revus/Top	7.0 floz/A	3
	Bravo WS	1.5 pt./A	5
	Endura	2.5 oz/A	7
9	Quadris Top	8.0 floz/A	1
	Bravo WS	1.5 pt./A	3
	Quadris Opti	1.5 pt./A	5
	Revus/Top	7.0 floz/A	7

^a Schedule for applying treatments on a weekly basis, schedule started on July 5 (i.e. 1 = week 1, 2 = week 2).

Table 2. Early Blight Trial #3 - Effect of fungicide programs on the incidence of early blight in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2011; No Late Blight occurred within the trial.

Treatment	Percent Leaves Infected ^a (with one or more lesion)					AUDPC ^c
	August 4 ^b	August 11	August 20	August 29	September 7	
1	1.7	9.3 a	27.1 a	90.0 a	97.9 a	915.7 a
2	1.0	3.8 bc	11.3 c	57.1 bc	86.7 bc	657.3 bc
3	0.7	3.5 bc	9.3 cd	57.9 bc	86.6 bc	648.6 bc
4	1.0	4.3 b	16.8 b	65.4 b	84.9 bc	705.2 b
5	1.2	3.2 bc	7.0 d	39.2 de	80.4 c	545.9 d
6	1.0	3.5 bc	11.2 c	64.2 b	91.5 ab	702.4 b
7	0.7	3.0 bc	6.9 d	44.6 cd	86.6 bc	589.6 cd
8	0.5	2.2 c	6.6 d	27.1 e	70.4 d	450.6 e
9	0.8	2.5 c	7.5 cd	46.7 cd	86.7 bc	598.8 cd
LSD(P=0.05)	NS	1.7	4.0	13.8	9.0	73.0

^a Percent of leaflets with Early Blight lesions per plant (3 plants evaluated per treatment/rep, mean of four replications).

^b Readings were taken from only two replications due to the low levels of Early Blight present.

^c AUDPC is the Area Under the Disease Progress Curve, accumulated weekly from August 4 through September 7.

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

Table 3. Early Blight Trial #3 - Effect of fungicide programs on tuber yield and quality in the cultivar Russet Norkotah Selection 8, San Luis Valley, Colorado, 2011.

Treatment	Percent ^a					Cwt/A ^b	Cwt/A ^c (US # 1's)
	< 4 oz.	4-10 oz.	> 10 oz.	US # 2's	Culls		
1	22.9	59.4	15.4	1.1	1.3	280.8 cd	274.3 cd
2	17.7	56.3	23.3	1.4	1.4	359.3 ab	349.1 ab
3	17.1	53.7	28.2	0.0	1.0	351.7 ab	348.3 ab
4	18.9	54.5	25.7	0.2	0.7	366.9 a	363.5 a
5	20.6	56.1	21.8	0.2	1.3	324.6 abc	319.8 abc
6	20.8	53.1	24.7	0.0	1.5	346.0 ab	341.2 ab
7	23.9	60.6	13.7	1.0	0.9	273.8 d	268.7 d
8	24.6	58.5	14.8	0.7	1.5	313.6 bcd	307.1 dcb
9	18.6	53.8	24.3	0.2	3.2	338.7 ab	327.7 ab
LSD(P=0.05)	NS	NS	NS	NS	NS	49.7	50.6

^a Based on tuber weight in kilograms, mean of four replications.

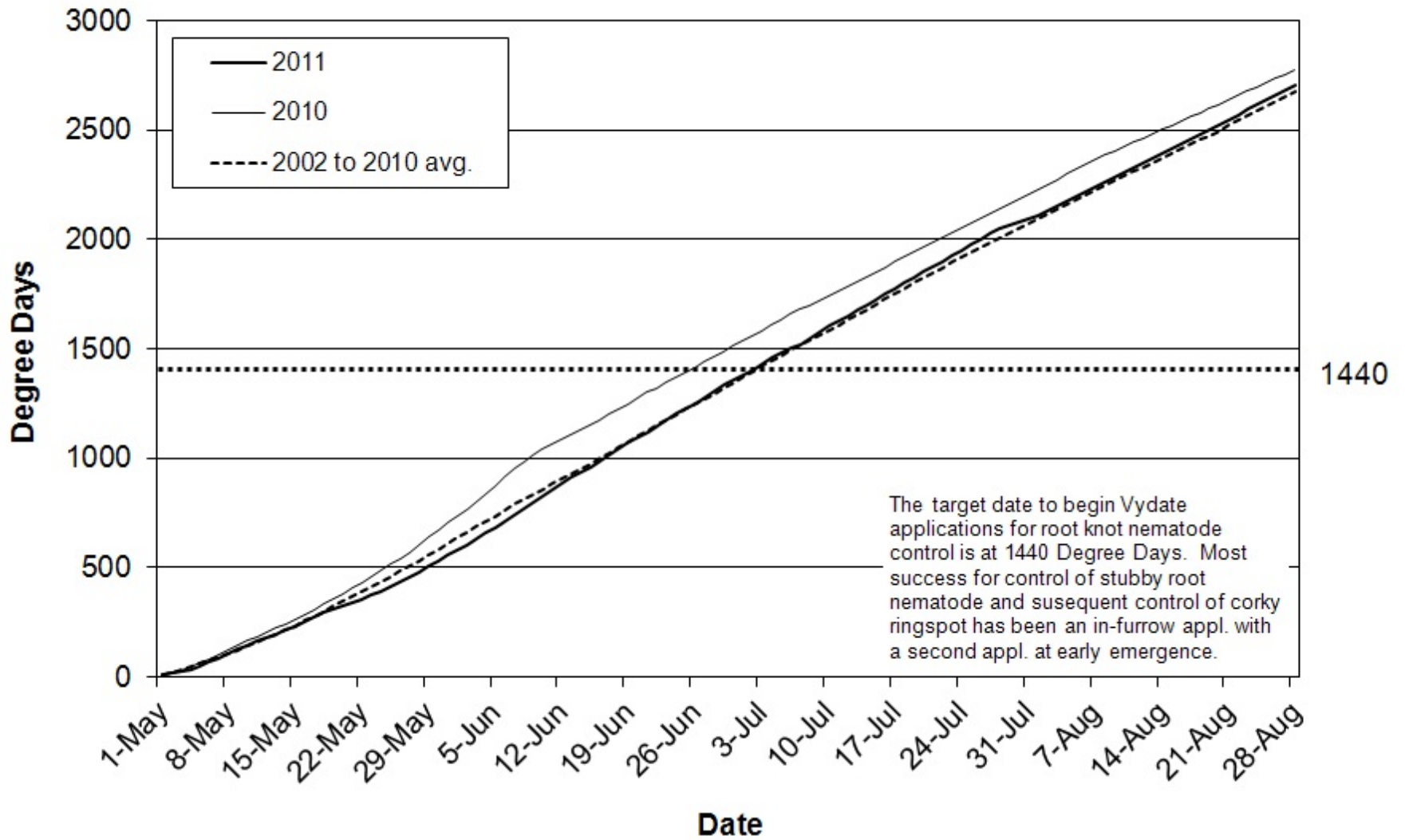
^b Total yield of US #1 tubers expressed as hundred weight per acre, 2-15 foot rows per treatment per replication, mean of four replications.

^c Yield of US #1 tubers expressed as hundred weight per acre, 2-15 foot rows per treatment per replication, mean of four replications.

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

Root Knot Nematode Degree Days

Root Knot Nematode Degree Days for the San Luis Valley



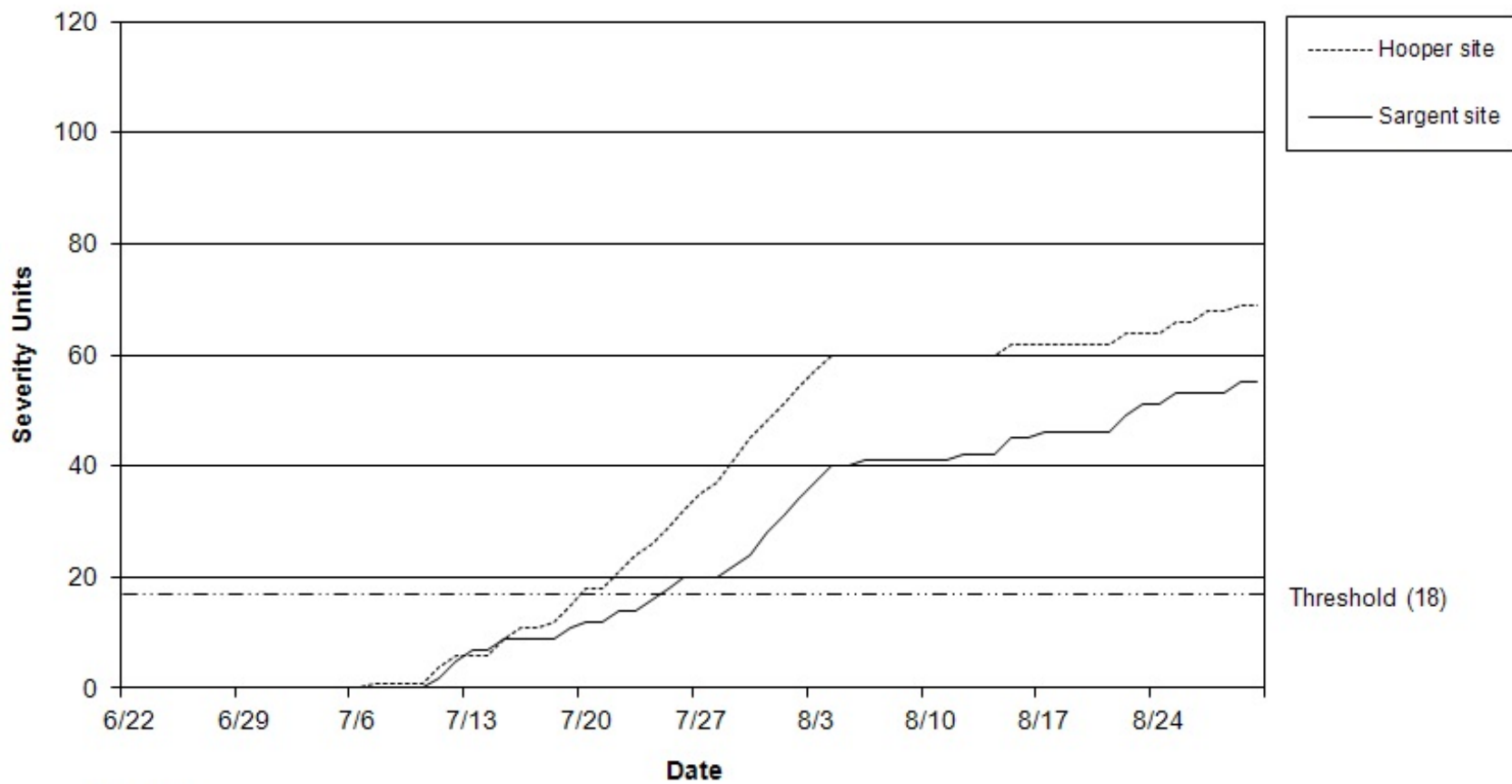
SLV Late Blight Forecasting

Over the last several years weather stations have been positioned at three locations around the San Luis Valley (Blanca, Hooper, & Sargent) in order to determine late blight severity units. This was continued in 2011 in order to determine the potential risk we have for late blight here in the valley.

A uMetos weather station was used at the Blanca and Hooper sites to determine late blight severity. This unit uses the Fry model and Negative Prognosis to calculate severity units (fry units). Humidity, air temperature, and leaf wetness are used to calculate severity units. Fry units accumulate differently depending of the level of susceptibility of a particular cultivar. Due to these differences, the severity units for a moderately susceptible cultivar has been recorded and graphed. Once the total number of fry units reaches 35 for a moderately susceptible cultivar, late blight can occur.

At the Sargent and Hooper site, a Watch Dog weather station was used to determine late blight severity. This unit uses the Wallin model for calculating late blight severity units. Humidity, air temperature, and rainfall are used to calculate severity units. Once the total number of severity units reaches 18, late blight can occur. This information may become critical in the future if late blight ever becomes established in the San Luis Valley.

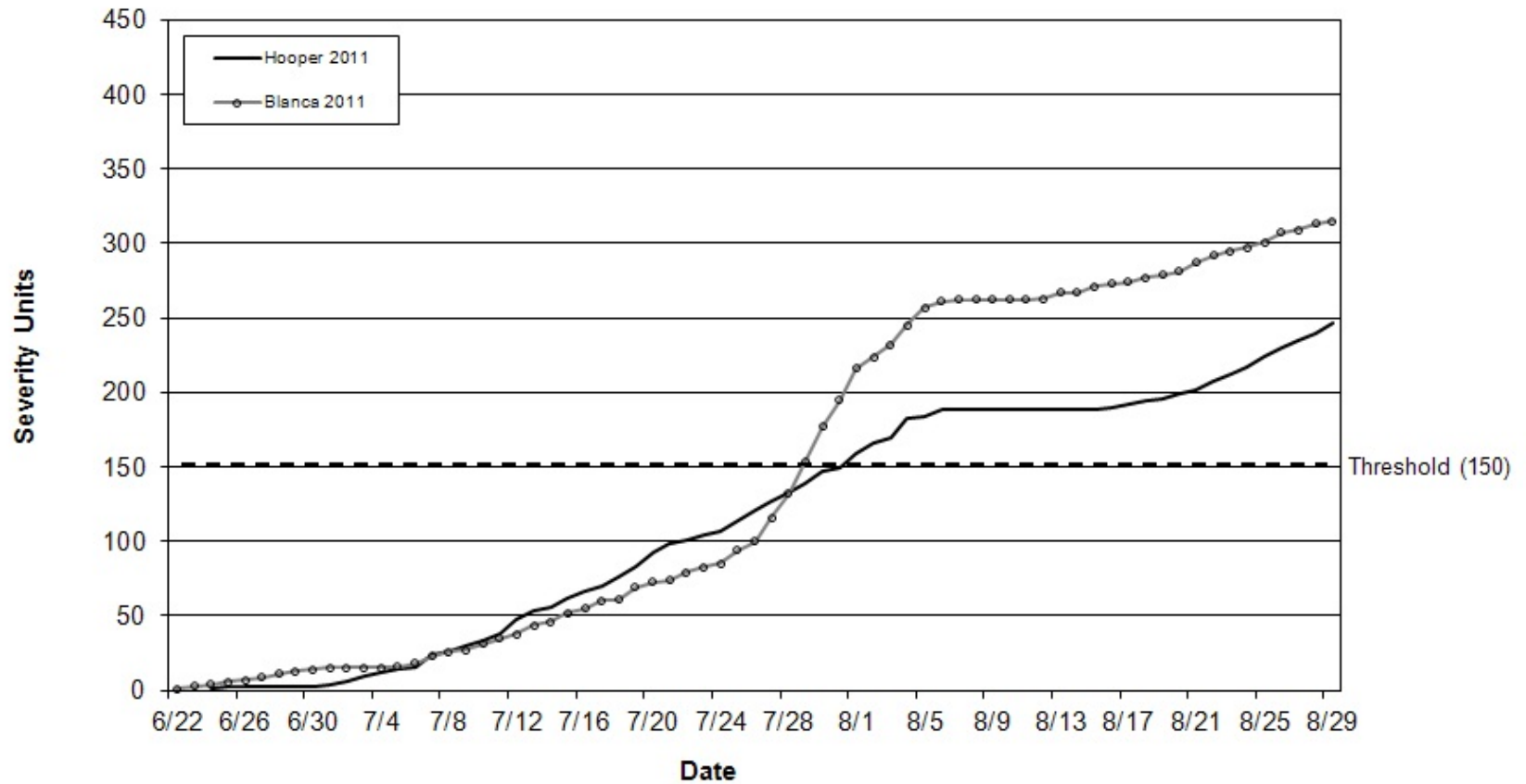
**Potato Late Blight Severity Values - Wallin Model,
San Luis Valley, Colorado, 2011**



Footnote:

- The Sargent weather station began collecting data on June 27, 2011.
- The Hooper weather station began collecting data on June 24, 2011.
- The Blanca weather station began collecting data on June 22, 2011.

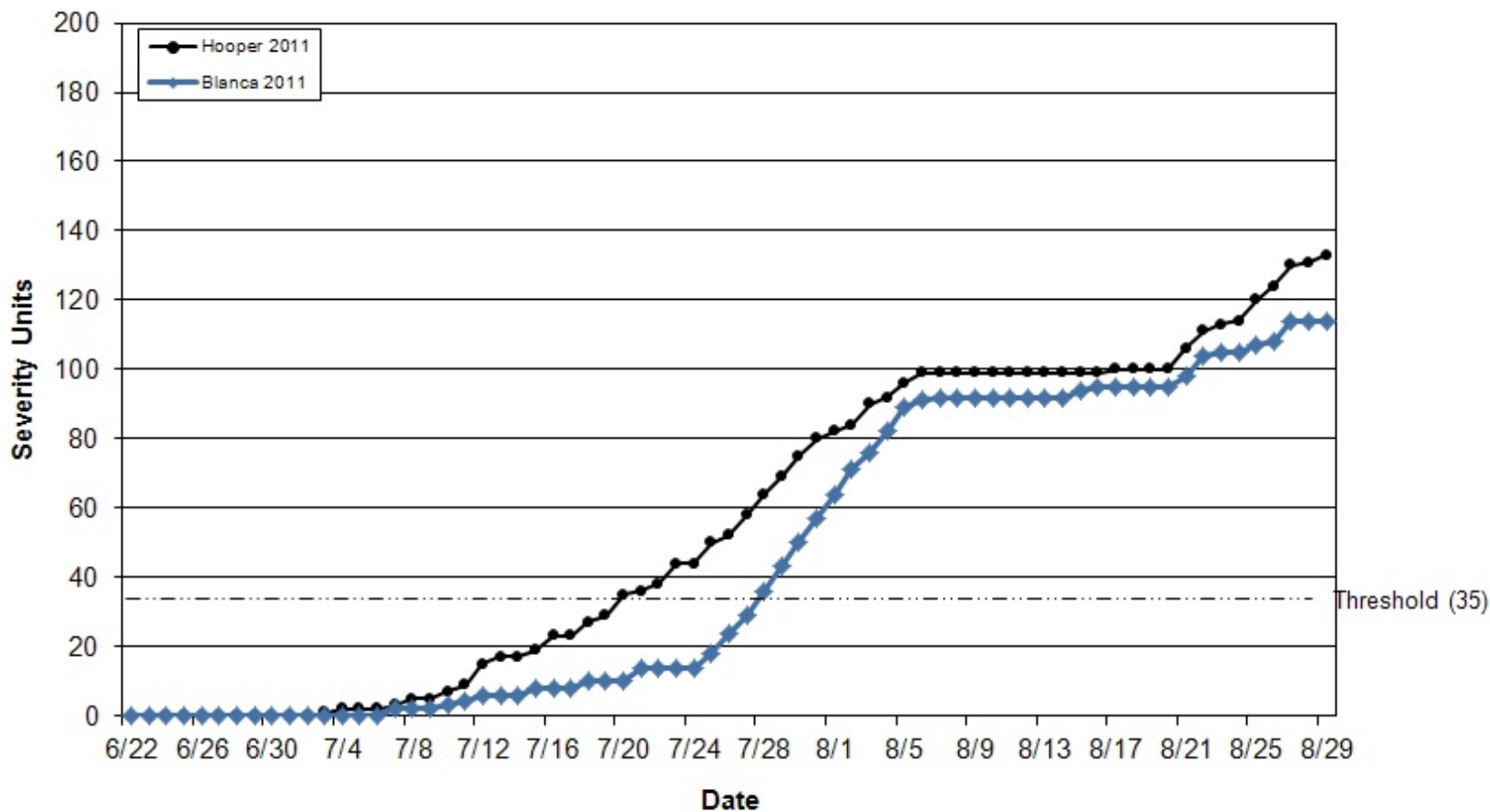
Potato Late Blight Negative Prognosis, San Luis Valley (Hooper & Blanca site), Colorado, 2011
 Moderate Susceptible Varieties



Footnote:

- The Fry Late Blight model was used to calculate severity units.
- The Hooper weather station was set up on June 24.
- The Blanca weather station was set up on June 22.

Potato Late Blight Fry Units, San Luis Valley (Hooper & Blanca site), Colorado, 2011
 Moderate Susceptible Varieties



Footnote:
 - The Fry Late Blight model was used to calculate severity units.
 - The Hooper weather station was set up on June 24.
 - The Blanca weather station was set up on June 22.

Pink Rot Trials

The fungicide Ridomil Gold has worked well at controlling pink rot in the San Luis Valley. However, in recent years the pink rot pathogen has become resistant in many potato growing regions across the United States. Due to the low level of disease pressure here at the station, resistance to Ridomil Gold has not yet been discovered. We have evaluated various fungicide treatments during the last several years and have found a few to be somewhat effective at controlling pink rot, but Ridomil Gold has had the most success. Even though we have had success with this product, the jury is still out on whether or not this product should be used in the San Luis Valley. Concern has focused on how quickly the pathogen obtains resistance and on the fact that resistant strains are more aggressive. Reducing any excess irrigation water in the latter part of the growing season can decrease the amount of disease in the potato field.

In 2011, several chemistries showed good to excellent results. Also, the biological agent Serenade was include in the trial with mixed results.

EVALUATION OF FUNGICIDES FOR CONTROL OF PINK ROT ON POTATO, 2011

Researchers: Rob Davidson and Andrew Houser, Colorado State University, SLVRC

Location: Off-station, San Luis Valley, CO

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

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

Application: In-furrow (IF), after hilling (AH) and tuber initiation (TI) treatments were applied using an R & D CO₂ charged backpack sprayer at 35 PSI, with one XR 8002VS nozzle, using 10 gallons of water/acre as a directed application. In-furrow treatments with two nozzles were applied using an R & D CO₂ charged backpack sprayer mounted to a potato planter at 35 PSI, with one XR 8002VS nozzle directed to spray the soil as it covered the seed piece (50% mix) and one XR 8002VS nozzle directed over seed piece (50% mix), using 10 gallons of water per acre. Applications were made on June 15 for AH treatments & July 8 for TI treatments.

Planted: May 3, 2011

Plot Design: Randomized complete block

Plot Size: 2 - 15 foot rows per treatment per replication

Plant Spacing: 12 inches

Row Spacing: 34 inches

Replications: four

Irrigation: Center Pivot Irrigation

Fertilizer: 220N, ½ applied preplant and ½ through sprinkler in season

Herbicide: Matrix

Fungicide: Headline, Phostrol, Endura, Revis Top, Supertin, and Bravo

Insecticide: Perm-Up

Vine Killer: Reglone was applied on September 11, 2011; Vines were chopped on September 16, 2011

Harvested: September 20 and 21, 2011

DATA

Disease: Mean percent of tubers with pink rot at harvest multiplied by disease severity rating of 1-5 (1 = less than 5% rotten, 5 = 100% rotten) per treatment per replication.

Yield: 2-15 foot row per treatment per replication, total yield expressed as cwt/A.

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

Table 1. Fungicide programs evaluated for Pink Rot control, San Luis Valley, Colorado 2011.

<u>Program</u>	<u>Products & Rate</u>	<u>Application Schedule^a</u>
1	Untreated Control	-
2.	Serenade Soil @ 2qt./A	In-furrow ^a
3.	Serenade Soil @ 4qt./A	In-furrow ^a
4.	Serenade Soil @ 2qt./A Serenade Soil @ 2qt./A	In-furrow ^a At-hilling ^b
5.	Serenade Soil @ 4qt./A Phostrol @ 8.0 pt./A	In-furrow ^a Tuber initiation ^c
6.	Ridomil Gold @ 0.42 floz./1000 row ft Phostrol @ 8.0 pt./A	In-furrow ^a In-furrow ^a
7.	Phostrol @ 8.0 pt./A	Tuber initiation ^c
8.	Ranman @ 0.42 floz./1000 row ft Silwet @ 0.32 floz./1000 row ft	In-furrow – 2 nozzle ^a In-furrow – 2 nozzle ^a
^d 9.	Proprietary	-
^d 10.	Proprietary	-
^d 11.	Presidio @ 0.125 lbai/A Presidio @ 0.125 lbai/A	In-furrow ^a At-hilling ^b
^d 12.	Proprietary	-
^d 13.	Proprietary	-
^d 14.	Ranman @ 0.42 floz/1000 row ft Silwet @ 0.32 floz./1000 row ft Ranman @ 2.75 floz/A	In-furrow – 2 nozzle ^a In-furrow – 2 nozzle ^a At-hilling ^b
^d 15.	Ridomil Gold @ 0.42 floz/1000 row ft	In-furrow ^a
16.	Presidio @ 0.125 lbai/A Ridomil Gold @ 0.42 floz/1000 row ft	In-furrow ^a In-furrow ^a
17.	Proprietary	-

^a In-furrow treatments were applied on May 3, 2011.

^b After-hilling treatments were applied June 15, 2011.

^c Tuber initiation treatments were applied on July 8, 2011.

^d Belay insecticide was applied in-furrow to treatments 9-15.

Table 2. Effect of applied products, for control of pink rot, on tuber yield and quality in the cultivar Russet Norkotah sel. 3. San Luis Valley, Colorado, 2011.

Treatment #	% Stand ^b	Percent ^a			US #2's	culls	cwt/A ^c	cwt/A ^d	No. rot	% rot ^e	% rot x
		< 4 oz.	4-10 oz.	> 10 oz.							
1.	93	11.2	41.1	44.2	1.2	2.4	442.3	424.5	3.0 ab	1.0 ab	5.2 a
2.	93	11.3	38.3	45.7	1.2	3.6	499.9	477.0	0.8 cd	0.3 cd	1.4 cde
3.	96	12.0	39.2	44.6	1.4	2.8	479.6	459.2	3.0 ab	0.8 abc	3.9 a-d
4.	92	12.4	40.7	43.7	0.8	2.5	459.8	444.6	4.3 a	0.8 abc	4.2 abc
5.	93	10.8	40.1	47.6	0.1	1.4	502.1	494.8	2.3 a-d	0.2 cd	1.1 de
6.	96	11.5	37.6	47.5	1.1	2.3	495.9	479.8	1.8 bcd	0.4 bcd	2.0 cde
7.	82	13.9	40.3	44.4	0.3	1.1	447.7	440.9	1.0 bcd	0.1 d	0.6 e
8.	73	14.0	40.8	42.2	0.3	2.6	449.1	435.5	2.0 bcd	0.3 cd	1.3 de
9.	83	10.9	40.7	45.9	0.0	2.6	482.4	470.2	2.3 a-d	0.4 bcd	2.2 b-e
10.	83	11.6	37.8	47.7	0.5	2.4	437.2	423.7	1.3 bcd	0.2 cd	1.0 e
11.	97	13.2	36.3	47.8	0.2	2.6	455.9	444.3	2.8 abc	1.2 a	4.8 ab
12.	84	11.0	35.4	49.2	0.8	3.6	522.2	497.1	2.0 bcd	0.6 a-d	2.5 a-e
13.	93	9.8	40.0	48.0	0.4	1.9	507.5	495.9	0.5 d	0.1 d	0.5 e
14.	78	13.4	39.7	42.9	1.2	2.9	467.1	448.8	0.5 d	0.1 d	0.3 e
15.	81	10.5	38.6	43.8	0.7	6.4	432.2	401.7	1.0 cd	0.2 cd	1.2 de
16.	87	11.0	39.9	46.4	0.0	2.8	491.7	477.8	2.0 bcd	0.2 cd	1.2 de
17.	93	12.9	40.4	42.5	1.5	2.8	489.1	468.6	2.3 a-d	0.3 cd	1.6 cde
LSD(P=0.05)	NS	NS	NS	NS	NS	NS	NS	NS	2.0	0.7	2.8

^a Based on tuber weight in kilograms, mean of four replications.

^b Plant stand counts were taken on June 15, 2011, 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 Hundred weight per acre – US #2s and culls, 2-20 foot rows per treatment per replication, mean of four replications.

^e Mean percent of tubers with pink rot at harvest per treatment per replication (i.e. 0.86 = 0.86%).

^f Mean percent of tubers with pink rot at harvest multiplied by disease severity from 1 to 5 (1 = less than 5% rotten, 5 = 100 % rotten).

Means followed by the same letters are not significantly different at P=0.05 for AUDPC.

Powdery Scab Trials

This research effort is directed at gaining a better understanding of the factors that lead to root galling and powdery scab symptom development on tubers. These factors include (under SLV conditions): understanding the role of irrigation, timing of water application, role of soil temperature, conditions within the potato hill which foster infection and symptom development, current inoculum level and how the inoculum moves in the Valley (both soil and seed borne), screening various chemistries that might impact infection and symptom development, and the cultivar by rotation situation leading to increased disease levels.

Results from this project indicate that as the environment in many other potato regions is moving away from critical soil temperatures for powdery scab infection and symptom development, the soil temperatures in the SLV are becoming more conducive for infection. Rotating susceptible cultivars with cultivars less susceptible, especially where root galling is concerned, can help alleviate the disease pressure and help growers harvest a cleaner crop, regardless of cultivar susceptibility.

Soil temperature and soil moisture readings taken at two or three soil depths (6, 8, & 10 in.), give a better understanding of field soil dynamics and help to determine how powdery scab development in the SLV is affected by these two soil parameters. Early season excess moisture can increase powdery scab infection and development. Also, when dissecting individual hills at harvest, tubers which sit in the region of the hill with the highest soil moisture during the season have the highest numbers and severity of powdery scab lesions. Finally, work with Omega (Fluazinam) is finished. A 24LSC label was obtained in 2007 for commercial use of the product on potatoes to control powdery scab. Studies on the in-furrow placement of the chemical in the hill (over the seed piece and into the covering soil as a split application) have been successful. Ultimately, a successful management program will incorporate several factors including: soil surveys to predict spore loads (standard practice for the last three years at the SLVRC), cultivar selection, water management at the appropriate times during the season, and use of Omega when warranted.

EVALUATION OF ADVANCED CLONES FOR SUSCEPTIBILITY TO POWDERY SCAB, 2011

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

Location: Greenhouse trial, San Luis Valley, CO

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

Clones:

- | | |
|-----------------------|-----------------------|
| 1. Centennial L-1 | 13. TC02072-3P/P |
| 2. Centennial L-1M | 14. CO01399-10P/Y |
| 3. Centennial L-2 | 15. CO00405-1RF |
| 4. Centennial L-2M | 16. CO99053-3RU |
| 5. Centennial L-3M | 17. CO99053-4RU |
| 6. Russet Nugget L-1M | 18. CO99100-1RU |
| 7. Russet Nugget L-2 | 19. Centennial Russet |
| 8. Russet Nugget L-2M | 20. Colorado Rose |
| 9. AC00395-2RU | 21. DT6063-1R |
| 10. AC01151-5W | 22. Russet Nugget |
| 11. CO02033-1W | 23. Mesa Russet |
| 12. CO02321-4W | |

Planted: June 24, 2011

Plot Design: Randomized Complete Block Design

Plot Size: Two 6" pots per treatment per replication

Seed: Potato eyes were removed from seed tubers using a melon scoop and allowed to suberize for several days. One eyeball was planted per pot, two inches deep in the soil.

Replications: Five

Irrigation: Overhead irrigation, rate predetermined based on the optimal irrigation regime for powdery scab symptom development.

Fertilizer: 20N-20P-20K

Insecticide: Not Available

Harvested: August 18 & September 16

DATA

Disease: Galls on roots rated 0 to 4, 0 = none, 4 = heavily infected, readings taken on November 17, 18 & December 2, 2011.

Mean percent of per pot 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.

Percent number of tubers per pot which are unmarketable due to powdery scab severity. Tuber readings were taken on November 17, 18 & December 2, 2011.

Table 1. Evaluation of advanced clones for tuber susceptibility to powdery scab in a greenhouse environment, San Luis Valley, Colorado, 2011.

Cultivar	% Stand ^a	Tuber symptoms					
		Percent Incidence	Percent Healthy	Severity Index ^b	% Unmarketable	Root Gall	Fresh Root
1. Centennial L-1	50 c	0.0 d	100.0 a	0.0 f	0.0 c	0.3 ef	0.7 e
2. Centennial L-1M	88 ab	83.1 ab	16.9 cd	119.8 d	0.0 c	0.0 f	1.2 e
3. Centennial L-2	88 ab	0.0 d	100.0 a	0.0 f	0.0 c	1.0 c-f	0.9 e
4. Centennial L-2M	75 abc	52.5 c	47.5 b	92.5 de	18.3 c	0.3 ef	0.4 e
5. Centennial L-3M	50 c	0.0 d	100.0 a	0.0 f	0.0 c	0.0 f	0.8 e
6. Russet Nugget L-1M	63 bc	0.0 d	100.0 a	0.0 f	0.0 c	1.8 bcd	4.8 cd
7. Russet Nugget L-2	88 ab	16.7 d	83.3 a	16.7 ef	0.0 c	1.8 bcd	8.1 ab
8. Russet Nugget L-2M	100 a	53.9 bc	46.1 bc	137.9 cd	20.0 c	1.3 c-f	9.9 a
9. AC00395-2RU	100 a	8.3 d	91.7 a	8.3 ef	0.0 c	0.8 def	9.7 a
10. AC01151-5W	63 bc	100.0 a	0.0 d	487.5 a	100.0 a	3.5 a	2.1 de
11. CO02033-1W	75 abc	93.3 a	6.7 d	373.3 b	55.0 b	2.7 ab	6.4 bc
12. CO02321-4W	63 bc	70.8 abc	29.2 bcd	212.5 c	62.5 b	1.3 c-f	1.3 e
13. TC02072-3P/P	100 a	100.0 a	0.0 d	375.0 b	95.0 a	1.0 c-f	2.1 de
14. CO01399-10P/Y	100 a	93.8 a	6.3 d	212.5 c	22.5 c	1.5 b-e	1.8 de
15. CO00405-1RF	75 abc	73.9 abc	26.2 bcd	126.2 cd	13.3 c	1.3 c-f	1.3 e
16. CO99053-3RU	100 a	0.0 d	100.0 a	0.0 f	0.0 c	1.0 c-f	2.2 de
17. CO99053-4RU	63 bc	12.5 d	87.5 a	12.5 ef	0.0 c	2.3 abc	0.9 e
18. CO99100-1RU	100 a	12.5 d	87.5 a	12.5 ef	0.0 c	2.0 bcd	1.9 de
19. Centennial Russet	100 a	10.4 d	89.6 a	10.4 ef	0.0 c	0.3 ef	0.7 e
20. Colorado Rose	88 ab	100.0 a	0.0 d	450.0 ab	100.0 a	1.3 c-f	1.3 e
21. DT6063-1R	88 ab	91.7 a	8.3 d	375.0 b	58.3 b	1.3 c-f	3.2 cde
22. Russet Nugget	75 abc	0.0 d	100.0 a	0.0 f	0.0 c	1.3 c-f	4.9 bcd
23. Mesa Russet	88 ab	0.0 d	100.0 a	0.0 f	0.0 c	0.0 f	1.1 e
LSD(P=0.05)	36.3	29.5	29.5	86.4	28.0	1.4	3.2

^a Percent Stand is based on the number of pots (five reps with two pots per rep) with growing plants that produced one or more tubers and/or a measurable amount of root mass for disease evaluation – if stand is less than 50%, the results are considered questionable.

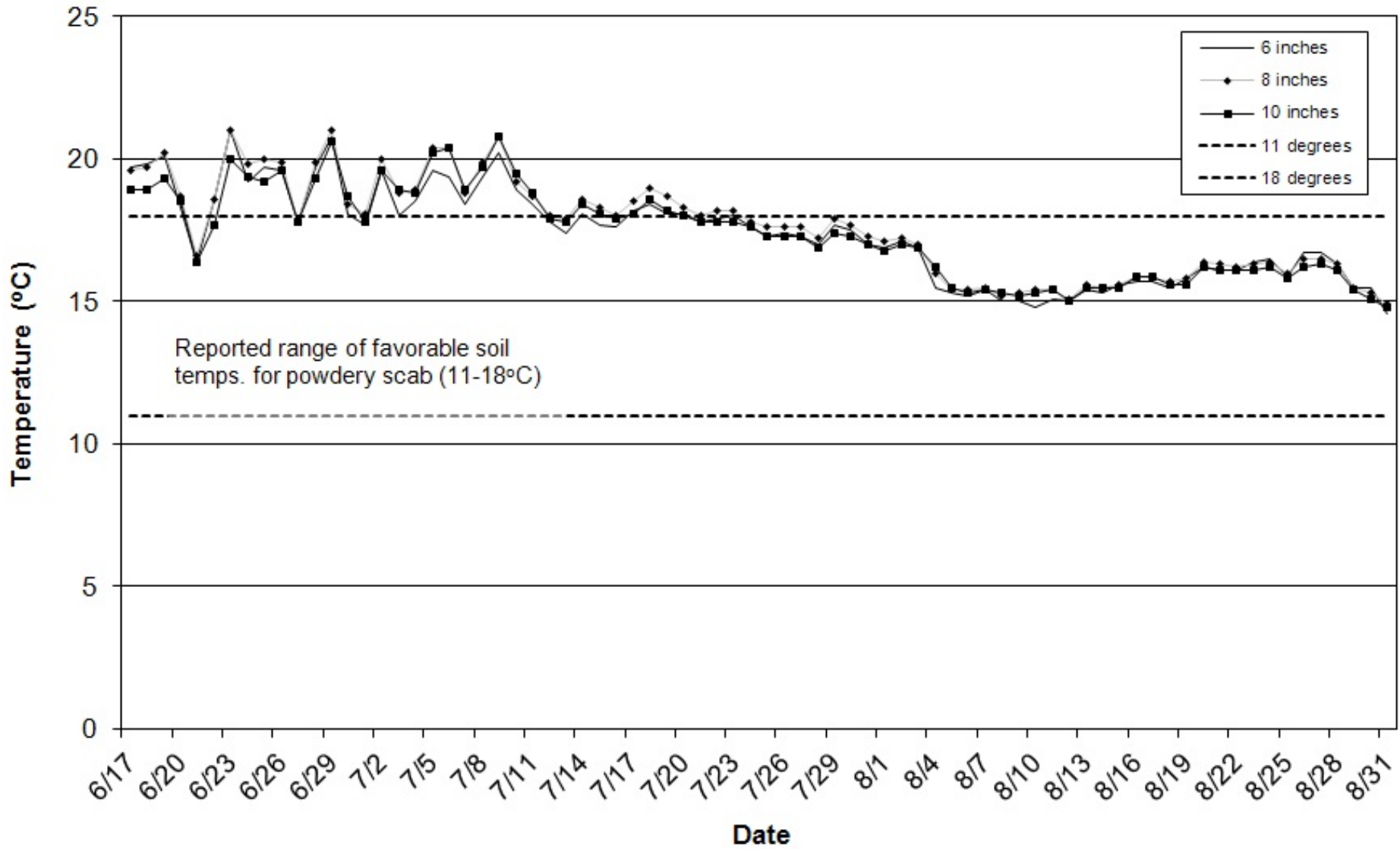
^b Severity Index = mean percent of the number of affected tubers multiplied by the severity of the lesions, where 1 = very little or no disease and 5 = heavily infested.

^c Root Gall Rating = visual analysis of roots for the presence of powdery scab root galls, where 0 = no root galls and 4 = extensive root galls. All plants were rated.

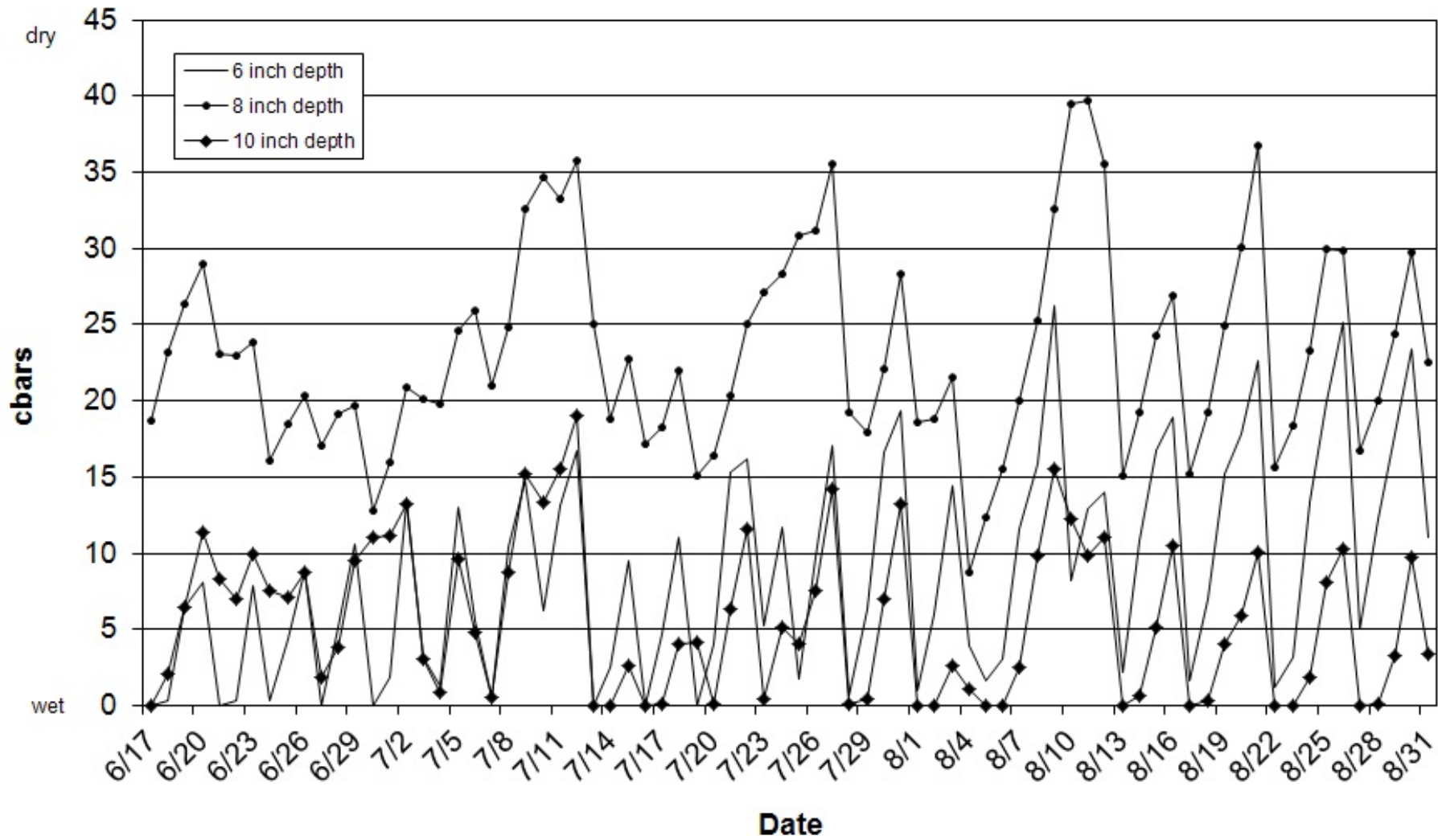
^d Mean fresh root weight data was collected when disease readings were taken. Root weight varied in some cases due to disease severity, which had an impact on the root gall reading. Where root weights are low, root gall readings are questionable.

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

**Average Soil Temperature Readings at 6, 8 & 10" Under Potato Plant Canopy,
San Luis Valley, Sargent location, Colorado, 2011**



**Soil Moisture Readings (Daily Average) 6, 8 & 10 Inches Below Soil Surface,
San Luis Valley, Sargent location, Colorado, 2011**



ZEBA Soil Amendment Trial

Zeba is a soil amendment that allows for better water retention in the soil. We are continuing evaluations on this product, looking at three potato cultivars (Rio Grande Russet, AC99375-1RU, & Russet Burbank) with different water requirements. Three irrigation regimes have been utilized (one irrigation regime was based on ET recommendations, one was based on soil moisture readings taken from soil that was treated with Zeba, and the third was based on a 25% reduction of the Zeba irrigation regime).

Based on irrigation scheduling recommendations from all three regimes, irrigation levels were approximately three inches less over the course of the growing season in the Zeba plots (eliminating approximately one irrigation event every two weeks). Soil moisture was recorded and different recommendations were made starting mid-July, to correspond with tuber set.

Preliminary results indicate that the addition of Zeba increased the water retention of the soil, however major differences in yield were not observed in all potato cultivars. Cultivars that are less efficient at scavenging water from the soil may benefit from the application of Zeba. Additional evaluations need to be conducted on the effectiveness of ZEBA before recommendations can be made to the industry.

EVALUATION OF ZEBBA PLANT AMENDMENT FOR INCREASED POTATO HEALTH AND YIELD ON THE CULTIVARS RUSSET BURBANK, AC99375-1RU, AND RIO GRANDE RUSSET, 2011

Researchers: Rob Davidson and Andrew Houser, Colorado State University, SLVRC
Location: San Luis Valley Research Center, Center, CO
Cultivars: Russet Burbank, AC99375-1RU and Rio Grande Russet, cut seed, 2-4 oz.
Objective: To evaluate the efficacy of using Zeba as a plant amendment for increasing the retention of soil moisture, plant health and yield in potato.
Application: All Zeba treatments were applied by hand over the seed piece in-furrow.
Irrigation: Solid set sprinkler for entire trial. All treatments were irrigated based on ET until July 5, at which time plots were irrigated using three different irrigation regimes: ET Irrigation - Irrigation based on SLV ET Report, Zeba Irrigation - Irrigation based on SM readings from Zeba Plots, & Deficit Irrigation - 75% of the Zeba Irrigation.

Treatments:

	Deficit Irrigation	Zeba Irrigation	ET Irrigation
Untreated Control	1. Russet Burbank	3. Russet Burbank	5. Russet Burbank
	7. AC99375-1RU	9. AC99375-1RU	11. AC99375-1RU
	13. Rio Grande Russet	15. Rio Grande Russet	17. Rio Grande Russet
Zeba (10 lb./A)	2. Russet Burbank	4. Russet Burbank	6. Russet Burbank
	8. AC99375-1RU	10. AC99375-1RU	12. AC99375-1RU
	14. Rio Grande Russet	16. Rio Grande Russet	18. Rio Grande Russet

Planted: May 5, 2011
Plot Design: Randomized complete block
Plot Size: 2 - 10 foot rows per treatment per replication
Plant Spacing: 12 inches
Row Spacing: 34 inches
Replications: four
Fertilizer: 80N-60P-40K-25S-2.5Z, preplant, 70N through sprinkler after tuber set.
Herbicide: Dual Magnum @ 1.6 pt./A
Fungicide: Quadris @ 12.4 floz./A
Vine Killer: Rotobeat vines on September 8, 2011
Harvested: September 22, 2011

DATA

Yield: 2-10 foot row per treatment per replication, total yield expressed as cwt/A.
Grade: By hand, percent tubers by weight in kilograms < 4 oz., 4-10 oz., > 10 oz., US #2's and culls.

Table 1. Effects of Zeba soil amendment, applied in-furrow for increasing tuber yield and quality in the potato cultivar Russet Burbank, San Luis Valley, Colorado, 2011.

Program	Treatment	Irrigation Regime ^d	Percent ^a			US #2	Culls	Cwt/A ^b	Cwt/A ^c (w/o culls)
			< 4 oz.	4-10 oz.	> 10 oz.				
1.	Untreated Control	DI	26.6	46.2	19.9	3.1	4.3	376.7 d	350.0 d
2.	Zeba (10 lbs/A)	DI	27.9	44.8	21.5	0.6	5.3	401.7 cd	378.4 cd
3.	Zeba (10 lbs/A)	ZI	27.5	36.0	31.6	0.6	4.4	458.8 bc	438.9 bc
4.	Zeba (10 lbs/A)	ZI	33.9	38.3	24.6	0.0	3.2	456.7 bc	440.6 bc
5.	Zeba (10 lbs/A)	ETI	27.0	42.8	25.7	0.5	4.0	546.0 a	519.8 a
6.	Zeba (10 lbs/A)	ETI	29.8	44.6	21.2	1.4	3.1	514.7 ab	491.8 ab
LSD(P=0.05)			NS	NS	NS	NS	NS	16.0	13.2

^a Based on tuber weight in kilograms, mean of four replications.

^b Total yield expressed as hundred weight per acre, 2-10 foot rows per treatment per replication, mean of four replications.

^c Total yield – culls, expressed as hundred weight per acre, 2-10 foot rows per treatment per replication, mean of four replications.

^d DI = 75% of the Zeba Irrigation, ZI = Irrigation based on SM readings from Zeba Plots, ETI = Irrigation based on SLV ET Report.

Table 2. Effects of Zeba soil amendment, applied in-furrow for increasing tuber yield and quality in the potato cultivar AC99375-1R, San Luis Valley, Colorado, 2011.

Program	Treatment	Irrigation Regime ^d	Percent ^a			US #2	Culls	Cwt/A ^b	Cwt/A ^c (w/o culls)
			< 4 oz.	4-10 oz.	> 10 oz.				
7.	Untreated Control	DI	27.4	51.7	20.9	0.0	0.0	499.4	499.4
8.	Zeba (10 lbs/A)	DI	32.8	50.9	16.3	0.0	0.1	495.6	495.2
9.	Zeba (10 lbs/A)	ZI	30.9	55.3	13.8	0.0	0.0	519.3	519.3
10.	Zeba (10 lbs/A)	ZI	32.2	51.9	15.6	0.2	0.1	554.5	552.8
11.	Zeba (10 lbs/A)	ETI	33.2	49.4	15.4	1.4	0.5	545.1	534.6
12.	Zeba (10 lbs/A)	ETI	34.3	53.3	11.1	1.3	0.0	493.1	487.2
LSD(P=0.05)			NS	NS	NS	NS	NS	NS	NS

^a Based on tuber weight in kilograms, mean of four replications.

^b Total yield expressed as hundred weight per acre, 2-10 foot rows per treatment per replication, mean of four replications.

^c Total yield – culls, expressed as hundred weight per acre, 2-10 foot rows per treatment per replication, mean of four replications.

^d DI = 75% of the Zeba Irrigation, ZI = Irrigation based on SM readings from Zeba Plots, ETI = Irrigation based on SLV ET Report.

Table 3. Effects of Zeba soil amendment, applied in-furrow for increasing tuber yield and quality in the potato cultivar Rio Grande Russet, San Luis Valley, Colorado, 2011.

Program	Treatment	Irrigation Regime ^d	Percent ^a					Cwt/A ^b	Cwt/A ^c (w/o culls)
			< 4 oz.	4-10 oz.	> 10 oz.	US #2's	Culls		
13.	Untreated Control	DI	20.7	53.0	25.4	0.8	0.0	416.9	413.4
14.	Zeba (10 lbs/A)	DI	23.2	49.0	25.2	2.4	0.3	391.0	380.6
15.	Zeba (10 lbs/A)	ZI	24.6	49.8	24.5	0.4	0.8	458.4	453.7
16.	Zeba (10 lbs/A)	ZI	20.3	57.4	21.1	0.4	0.8	466.8	461.3
17.	Zeba (10 lbs/A)	ETI	26.8	49.3	23.1	0.0	0.8	483.8	479.5
18.	Zeba (10 lbs/A)	ETI	28.4	44.1	26.7	0.4	0.5	447.8	444.0
LSD(P=0.05)			NS	NS	NS	NS	NS	NS	NS

^a Based on tuber weight in kilograms, mean of four replications.

^b Total yield expressed as hundred weight per acre, 2-10 foot rows per treatment per replication, mean of four replications.

^c Total yield – culls, expressed as hundred weight per acre, 2-10 foot rows per treatment per replication, mean of four replications.

^d DI = 75% of the Zeba Irrigation, ZI = Irrigation based on SM readings from Zeba Plots, ETI = Irrigation based on SLV ET Report.