

## Zaccaria Agricultural Consulting, Inc.

### \*Out&About Research\*

Evaluate Gwn-10026 for brown rot on cherries

 Trial ID: Cherries Brown RotGwn2011  
 Location: Mettler, CA  
 Project ID:

 Protocol ID: Cherries Brown RotGwn2011  
 Study Director: Brian Deeter  
 Investigator: Jake J. Zaccaria  
 Sponsor Contact:

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Spray Volume	Volume Unit	Mix Size	Mix Unit
1	CHK	Untreated Check										
2	FUNG	ROVRAL	4	LB/GAL	L	16	FL OZ/A	AB	120	GAL/AC	2.0	Gallons
	FUNG	Quintec	250	G/L	SC	6	FL OZ/A	C	120	GAL/AC	2.0	Gallons
	ADJ	Dyne-Amic	99	%	EC	1	PT/100 GAL	ABC	120	GAL/AC	2.0	Gallons
3	FUNG	ROVRAL	4	LB/GAL	L	16	FL OZ/A	A	120	GAL/AC	2.0	Gallons
	FUNG	Pristine	38	%W/W	WG	14.5	OZ WT/A	BC	120	GAL/AC	2.0	Gallons
	ADJ	Dyne-Amic	99	%	EC	1	PT/100 GAL	ABC	120	GAL/AC	2.0	Gallons
4	FUNG	ROVRAL	4	LB/GAL	L	16	FL OZ/A	A	120	GAL/AC	2.0	Gallons
	FUNG	Rally	40	%W/W	WS	1	LB/A	B	120	GAL/AC	2.0	Gallons
	FUNG	Quintec	250	G/L	SC	6	FL OZ/A	C	120	GAL/AC	2.0	Gallons
	ADJ	Dyne-Amic	99	%	EC	1	PT/100 GAL	ABC	120	GAL/AC	2.0	Gallons
5	FUNG	GWN-10026	50	%W/W	WG	2	LB/A	ABC	120	GAL/AC	2.0	Gallons
	ADJ	Dyne-Amic	99	%	EC	1	PT/100 GAL	ABC	120	GAL/AC	2.0	Gallons
6	FUNG	GWN-10026	50	%W/W	WG	4	LB/A	ABC	120	GAL/AC	2.0	Gallons
	ADJ	Dyne-Amic	99	%	EC	1	PT/100 GAL	ABC	120	GAL/AC	2.0	Gallons

Replications: 4, Design: Randomized Complete Block (RCB), Treatment units: US standard, Treated 'Plot' size Width: 12 feet, Treated 'Plot' size Length: 16 feet, Application volume: 110 gal/ac, Mix size: 2 gallons, Format definitions: G-All7.def, G-All7.frm

Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
33.370	ml	ROVRAL	4	L	
6.257	ml	Quintec	250	SC	
141.938	ml	Dyne-Amic	99	EC	
14.495	g	Pristine	38	WG	
7.997	g	Rally	40	WS	Comm.
143.949	g	GWN-10026	50	WG	

\* 'Per area' calculations based on 4 replicates of 12 by 16 feet 'Plot' experimental units (area of one treatment).

\* 'Per area' calculations based on spray volume= 110,120 gal/ac, mix size= 2 gallons (mix size basis).

\* 'Per volume' calculations use spray volume= 110,120 gal/ac, mix size= 2 gallons.

\* Adjusted for multiple applications in treatment list.

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Trial ID: Cherries Brown RotGwn2011	Protocol ID: Cherries Brown RotGwn2011
Location: Mettler, CA	Study Director: Brian Deeter
Project ID:	Investigator: Jake J. Zaccaria
	Sponsor Contact:

#### General Trial Information

Study Director: Brian Deeter	Title: R&D Representative
Investigator: Jake J. Zaccaria	Title: Research Consultant
Discipline: F fungicide	Trial Reliability: High
Trial Status: F one-year/final	Planned Completion Date: 30Jun2011
Initiation Date: 07Mar2011	

#### Trial Location

City: Mettler  
State/Prov.: CA  
Country: USA

#### Objectives:

Evaluate Gwn-10026 for brown rot on cherries

#### Conclusions:

RESEARCH PROJECT:

#### INTRODUCTION

Blossom blight, *Monilinia laxa*, can cause severe damage to stonefruit trees. The disease can cause significant damage to the blossom and a dramatic reduction in yield when conducive environmental conditions exist and the disease is not controlled. A field trial was conducted to determine the disease control efficacy of Gowan product GW-10026 for the control of the disease compared to several standard material treatments. The treatment materials in the trial were as listed in the treatment list.

The trial was located in a commercial production cherry orchard in the Kern County fruit-growing region near Mettler, California. The weather and environmental conditions during the trial period were relatively conducive for the development of the disease. The disease developed on the blossom petals and continued to develop to a moderate to high level.

#### RESULTS

#### EVALUATION SUMMARY

The area of the trial used for evaluation purposes was the entire tree/plot area. The data from the evaluations made throughout the trial period show that *Monilinia* blossom blight developed to a moderate to high level within the trial area, a condition similar to the adjacent local area.

The data from the evaluations made throughout the trial period; for strikes/tree, disease severity, and number of fruit/tree show that moderate to heavy disease was evident within the trial area in the untreated control plots. The data show that the Gowan GWN-10026 treatments provided blossom blight control compared to the untreated control. A disease control rate reversal was noted from the GWN-10026 treatments; better disease control was noted from the GWN-10026 at the 2#/acre rate than from the 4#/acre rate treatment. The phytotoxicity evaluation data show that the GWN-10026 treatments, at the rates applied, did not cause any visual crop injury to the Sequoia/Glen Airey variety cherry trees.

Note: Glen Airey pollinizer trees - Plot 101, 201, 301, 305

Statistical separation between the GWN-10026 treatments and the standard treatments was noted if treatment 2 was not included in the analyses

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### Personnel

**Study Director:** Brian Deeter    **Title:** R&D Representative  
**Affiliation:** Gowan Company  
**Investigator:** Jake J. Zaccaria    **Title:** Research Consultant  
**Affiliation:** Zaccaria Ag Consulting, Inc.

### Crop Description

**Crop 1:**    PRNAV Prunus avium    Sweet cherry  
**Variety:** Sequoia/Glen Airey (Pollenizer)  
**BBCH Scale:** BSTO    **Planting Date:** 04Jan2008  
**Planting Method:** ESTABL established    **Rate, Unit:** 225 P/A  
**Row Spacing, Unit:** 16 FT    **Spacing Within Row, Unit:** 12 FT  
**Soil Moisture:** NORMAL normal

### Pest Description

**Pest 1 Type:** D    **Code:** MONILA Monilinia laxa  
**Common Name:** Blossom blight

### Site and Design

**Plot Width, Unit:** 12 FT    **Site Type:** ORCHAR orchard  
**Plot Length, Unit:** 16 FT    **Experimental Unit:** 1 PLOT plot  
**Plot Area, Unit:** 192 FT2    **Tillage Type:** MINTIL minimum-till  
**Replications:** 4    **Study Design:** RACOB� Randomized Complete Block (RCB)

### Application Description

	A	B	C
<b>Application Date:</b>	07Mar2011	12Mar2011	18Mar2011
<b>Time of Day:</b>	7-8am	7-8am	7-8am
<b>Application Method:</b>	SPRAY	SPRAY	SPRAY
<b>Application Timing:</b>	Popcorn	75%Blm	PetalFall
<b>Application Placement:</b>	FOLIAR	FOLIAR	FOLIAR
<b>Applied By:</b>	Zaccaria J.	Zaccaria J.	Zaccaria J.
<b>Air Temperature, Unit:</b>	56 F	61 F	59 F
<b>% Relative Humidity:</b>	39	38	39
<b>Wind Velocity, Unit:</b>	2 MPH	2 MPH	1 MPH
<b>Wind Direction:</b>	NW	NW	NW
<b>Dew Presence (Y/N):</b>	N no	N no	N no
<b>Soil Moisture:</b>	NORMAL	NORMAL	NORMAL
<b>% Cloud Cover:</b>	40	0	25

### Crop Stage At Each Application

	A	B	C
<b>Crop 1 Code, BBCH Scale:</b>	PRNAV BSTO	PRNAV BSTO	PRNAV BSTO
<b>Stage Scale Used:</b>	DESC	DESC	DESC
<b>Stage Majority, Percent:</b>	Popcorn	75%Blm	PetalFal

### Pest Stage At Each Application

	A	B	C
<b>Pest 1 Code, Type, Scale:</b>	MONILA D	MONILA D	MONILA D
<b>Stage Majority, Percent:</b>	PRINFC	PRINFC	PRINFC

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### Application Equipment

	A	B	C
<b>Appl. Equipment:</b>	Solo	Solo	Solo
<b>Equipment Type:</b>	MISBLO	MISBLO	MISBLO
<b>Nozzle Type:</b>	Orifice	Orifice	Orifice
<b>Nozzles/Row:</b>	1	1	1
<b>Carrier:</b>	WATER	WATER	WATER
<b>Spray Volume, Unit:</b>	120 gal/ac	120 gal/ac	120 gal/ac
<b>Mix Size, Unit:</b>	2 Gallons	2 Gallons	2 Gallons
<b>Propellant:</b>	Mist/air	Mist/air	Mist/air

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Trt	Treatment	Rate	1	2	3	4	5	6
1	Untreated Check		0.0a	0.0a	0.0a	0.8a	0.0a	13.8a
2	ROVRAL Quintec Dyne-Amic	16FL OZ/A 6FL OZ/A 1PT/100 GAL	0.0a	0.0a	0.0a	0.0a	0.0a	3.0b
3	ROVRAL Pristine Dyne-Amic	16FL OZ/A 14.5OZ WT/A 1PT/100 GAL	0.0a	0.0a	0.0a	0.0a	0.0a	2.8b
4	ROVRAL Rally Quintec Dyne-Amic	16FL OZ/A 1LB/A 6FL OZ/A 1PT/100 GAL	0.0a	0.0a	0.0a	0.0a	0.0a	3.0b
5	GWN-10026 Dyne-Amic	2LB/A 1PT/100 GAL	0.0a	0.0a	0.0a	0.0a	0.0a	4.8b
6	GWN-10026 Dyne-Amic	4LB/A 1PT/100 GAL	0.0a	0.0a	0.0a	0.3a	0.0a	3.0b
	LSD (P=.05)		0.00	0.00	0.00	0.62	0.00	3.71
	Standard Deviation		0.00	0.00	0.00	0.41	0.00	2.46
	CV		0.0	0.0	0.0	244.95	0.0	48.89
	Grand Mean		0.0	0.0	0.0	0.17	0.0	5.04
	Bartlett's X2		0.0	0.0	0.0	1.154	0.0	5.496
	P(Bartlett's X2)		.	.	.	0.283	.	0.24
	Friedman's X2		0.0	0.0	0.0	2.5	0.0	11.964
	P(Friedman's X2)		1.00	1.00	1.00	0.776	1.00	0.035
	Replicate F		0.000	0.000	0.000	2.000	0.000	0.391
	Replicate Prob(F)		1.0000	1.0000	1.0000	0.1573	1.0000	0.7613
	Treatment F		0.000	0.000	0.000	2.200	0.000	12.336
	Treatment Prob(F)		1.0000	1.0000	1.0000	0.1087	1.0000	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Column 4 Footnote: 1. Data are: The number of strikes/ infected terminals per tree
Column 6 Footnote: 1. Data are: The number of strikes/ infected terminals per tree
Column 7 Footnote: 2. Data are: The number of developing fruit per tree
Column 8 Footnote: 3. Data are: The visual percent disease severity per tree.

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Pest Type	D Disease	D Disease
Pest Code	MONILA	MONILA
Pest Scientific Name	Monilinia laxa	Monilinia laxa
Pest Name	Blossom blight	Blossom blight
Crop Code	PRNAV	PRNAV
BBCH Scale	BSTO	BSTO
Crop Scientific Name	Prunus avium	Prunus avium
Crop Name	Sweet cherry	Sweet cherry
Crop Variety	Sequoia/GlnAr	Sequoia/GlnAr
Part Rated	PLANT C	PLANT C
Rating Date	16Apr2011	16Apr2011
Rating Type	Fruit	PESSEV
Rating Unit	NUMBER	%Visual
Sample Size, Unit	1 Tree	1 Tree
Number of Subsamples	1	1
Crop Stage Majority	FruitDev	FruitDev
Crop Stage Scale	DESC	DESC
Pest Stage Majority	ACTIVE	ACTIVE
Footnote Number	2	3
Assessed By	Zaccaria J.	Zaccaria J.
Days After First/Last Applic.	40 29	40 29
Trt-Eval Interval	29 DA-C	29 DA-C
ARM Action Codes	D05	D05
Trt Treatment	Rate	
No. Name	Rate Unit	
	7	8
1 Untreated Check	42.8a	77.5a
2ROVRAL	16FL OZ/A	89.8a
Quintec	6FL OZ/A	
Dyne-Amic	1PT/100 GAL	
3ROVRAL	16FL OZ/A	86.0a
Pristine	14.5OZ WT/A	
Dyne-Amic	1PT/100 GAL	
4ROVRAL	16FL OZ/A	59.5a
Rally	1LB/A	
Quintec	6FL OZ/A	
Dyne-Amic	1PT/100 GAL	
5GWN-10026	2LB/A	148.8a
Dyne-Amic	1PT/100 GAL	
6GWN-10026	4LB/A	88.0a
Dyne-Amic	1PT/100 GAL	
LSD (P=.05)	65.69	27.43
Standard Deviation	43.59	18.21
CV	50.81	27.88
Grand Mean	85.79	65.29
Bartlett's X2	2.302	8.448
P(Bartlett's X2)	0.806	0.133
Friedman's X2	9.464	4.107
P(Friedman's X2)	0.092	0.534
Replicate F	8.242	4.026
Replicate Prob(F)	0.0018	0.0276
Treatment F	2.748	0.889
Treatment Prob(F)	0.0589	0.5128

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Pest Type	PRNAV		PRNAV		PRNAV		D Disease		D Disease	
Pest Code	BSTO		BSTO		BSTO		MONILA		MONILA	
Pest Scientific Name	Prunus avium		Prunus avium		Prunus avium		Monilinia laxa		Monilinia laxa	
Pest Name	Sweet cherry		Sweet cherry		Sweet cherry		Blossom blight		Blossom blight	
Crop Code	PRNAV		PRNAV		PRNAV		PRNAV		PRNAV	
BCH Scale	BSTO		BSTO		BSTO		BSTO		BSTO	
Crop Scientific Name	Prunus avium		Prunus avium		Prunus avium		Prunus avium		Prunus avium	
Crop Name	Sweet cherry		Sweet cherry		Sweet cherry		Sweet cherry		Sweet cherry	
Crop Variety	Sequoia/GlnAr		Sequoia/GlnAr		Sequoia/GlnAr		Sequoia/GlnAr		Sequoia/GlnAr	
Part Rated	PLANT C		PLANT C		PLANT C		PLANT C		PLANT C	
Rating Date	12Mar2011		18Mar2011		22Mar2011		22Mar2011		30Mar2011	
Rating Type	PHYGEN		PHYGEN		PHYGEN		PESINC		PHYGEN	
Rating Unit	%Visual		%Visual		%Visual		NUMBER		%Visual	
Sample Size, Unit	1 TREE		1 Tree		1 Tree		1 Tree		1 Tree	
Number of Subsamples	1		1		1		1		1	
Crop Stage Majority	75%Blm		PetalFal		FruitDev		FruitDev		FruitDev	
Crop Stage Scale	DESC		DESC		DESC		DESC		DESC	
Pest Stage Majority	ACTIVE		ACTIVE		ACTIVE		ACTIVE		ACTIVE	
Footnote Number	1		1		1		1		1	
Assessed By	Zaccaria J.		Zaccaria J.		Zaccaria J.		Zaccaria J.		Zaccaria J.	
Days After First/Last Applic.	5 5		11 6		15 4		15 4		23 12	
Trt-Eval Interval	5 DA-A		6 DA-B		4 DA-C		4 DA-C		12 DA-C	
ARM Action Codes	D05		D05		D05		D05		D05	
Trt Treatment	Rate	Plot	1	2	3	4	5	6		
No. Name	Rate Unit	Plot	1	2	3	4	5	6		
1 Untreated Check		101	0.0	0.0	0.0	2.0	0.0	11.0		
		202	0.0	0.0	0.0	1.0	0.0	9.0		
		304	0.0	0.0	0.0	0.0	0.0	18.0		
		405	0.0	0.0	0.0	0.0	0.0	17.0		
	Mean =		0.0	0.0	0.0	0.8	0.0	13.8		
2 ROVRAL	16 FL OZ/A	102	0.0	0.0	0.0	0.0	0.0	5.0		
Quintec	6 FL OZ/A	206	0.0	0.0	0.0	0.0	0.0	4.0		
Dyne-Amic	1 PT/100 GAL	303	0.0	0.0	0.0	0.0	0.0	2.0		
		404	0.0	0.0	0.0	0.0	0.0	1.0		
	Mean =		0.0	0.0	0.0	0.0	0.0	3.0		
3 ROVRAL	16 FL OZ/A	103	0.0	0.0	0.0	0.0	0.0	1.0		
Pristine	14.5 OZ WT/A	205	0.0	0.0	0.0	0.0	0.0	6.0		
Dyne-Amic	1 PT/100 GAL	306	0.0	0.0	0.0	0.0	0.0	3.0		
		401	0.0	0.0	0.0	0.0	0.0	1.0		
	Mean =		0.0	0.0	0.0	0.0	0.0	2.8		
4 ROVRAL	16 FL OZ/A	104	0.0	0.0	0.0	0.0	0.0	2.0		
Rally	1 LB/A	203	0.0	0.0	0.0	0.0	0.0	5.0		
Quintec	6 FL OZ/A	305	0.0	0.0	0.0	0.0	0.0	3.0		
Dyne-Amic	1 PT/100 GAL	406	0.0	0.0	0.0	0.0	0.0	2.0		
	Mean =		0.0	0.0	0.0	0.0	0.0	3.0		
5 GWN-10026	2 LB/A	105	0.0	0.0	0.0	0.0	0.0	3.0		
Dyne-Amic	1 PT/100 GAL	204	0.0	0.0	0.0	0.0	0.0	6.0		
		301	0.0	0.0	0.0	0.0	0.0	4.0		
		402	0.0	0.0	0.0	0.0	0.0	6.0		
	Mean =		0.0	0.0	0.0	0.0	0.0	4.8		
6 GWN-10026	4 LB/A	106	0.0	0.0	0.0	1.0	0.0	3.0		
Dyne-Amic	1 PT/100 GAL	201	0.0	0.0	0.0	0.0	0.0	3.0		
		302	0.0	0.0	0.0	0.0	0.0	3.0		
		403	0.0	0.0	0.0	0.0	0.0	3.0		
	Mean =		0.0	0.0	0.0	0.3	0.0	3.0		

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Pest Code	MONILA	MONILA
Pest Scientific Name	Monilinia laxa	Monilinia laxa
Pest Name	Blossom blight	Blossom blight
Crop Code	PRNAV	PRNAV
BBCH Scale	BSTO	BSTO
Crop Scientific Name	Prunus avium	Prunus avium
Crop Name	Sweet cherry	Sweet cherry
Crop Variety	Sequoia/GlnAr	Sequoia/GlnAr
Part Rated	PLANT C	PLANT C
Rating Date	16Apr2011	16Apr2011
Rating Type	Fruit	PESSEV
Rating Unit	NUMBER	%Visual
Sample Size, Unit	1 Tree	1 Tree
Number of Subsamples	1	1
Crop Stage Majority	FruitDev	FruitDev
Crop Stage Scale	DESC	DESC
Pest Stage Majority	ACTIVE	ACTIVE
Footnote Number	2	3
Assessed By	Zaccaria J.	Zaccaria J.
Days After First/Last Applic.	40 29	40 29
Trt-Eval Interval	29 DA-C	29 DA-C
ARM Action Codes	D05	D05
Trt Treatment	Rate	
No. Name	Rate Unit	Plot
		7
		8
1 Untreated Check		101 3.0
		202 26.0
		304 48.0
		405 94.0
	Mean =	42.8
2 ROVRAL	16 FL OZ/A	102 8.0
Quintec	6 FL OZ/A	206 52.0
Dyne-Amic	1 PT/100 GAL	303 190.0
		404 109.0
	Mean =	89.8
3 ROVRAL	16 FL OZ/A	103 15.0
Pristine	14.5 OZ WT/A	205 92.0
Dyne-Amic	1 PT/100 GAL	306 210.0
		401 27.0
	Mean =	86.0
4 ROVRAL	16 FL OZ/A	104 13.0
Rally	1 LB/A	203 88.0
Quintec	6 FL OZ/A	305 128.0
Dyne-Amic	1 PT/100 GAL	406 9.0
	Mean =	59.5
5 GWN-10026	2 LB/A	105 120.0
Dyne-Amic	1 PT/100 GAL	204 169.0
		301 212.0
		402 94.0
	Mean =	148.8
6 GWN-10026	4 LB/A	106 24.0
Dyne-Amic	1 PT/100 GAL	201 153.0
		302 117.0
		403 58.0
	Mean =	88.0