Collins Agricultural Consultants

Downey Mildew hop disease trial

Trial ID:hop various 2021 circadia only Location:CAC oregon city oregon Trial Year:2021
Protocol ID: Investigator (Creator):Craig Collins
Project ID: Study Director:
Sponsor Contact:

Reps: 4 Plots: 15 by 30 feet

Trt No.	Treatment Name	Form Type	Other Rate	Other Rate Unit	Appl Code	Amt Product to Measure	Rep 1	2	3	4
1	Untreated Check						101	211	306	410
2	Curzate 60 DF	WG	3.2	oz/a	AC	3.748 g/mx	102	203	304	401
	Ranman 400 SC	SC	2.75	fl oz/a	BDEF	3.36 mL/mx				
	PREFERENCE	EC	0.25	% v/v	ABCDEF	19.55 mL/mx				
3	All Phase	WG	0.5	oz/gal	ABCDEF	29.29 g/mx	112	202	310	411
	PREFERENCE	EC	0.25	% v/v	ABCDEF	19.55 mL/mx				

Sort Order: Treatment

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

Amount*	Unit	Treatment Name	Form Conc	Form Unit	Form Type	Lot Code
9.371	g	Curzate 60 DF			WG	
16.802	mL	Ranman 400 SC			SC	
293.243	mL	PREFERENCE			EC	
219.638	g	All Phase			WG	

* 'Per area' calculations based on application amount= 50 GAL/AC, mix size= 2.066 GAL (mix size basis).
* Product amount calculations increased 25 % for overage adjustment.
* 'Per volume' calculations use spray volume= 50 GAL/AC, mix size= 2.066 GAL.
* Adjusted for multiple applications in treatment list.

General Trial Information

Investigator: Craig Collins **Title:**Director of Research

Discipline:F fungicide
Trial Status:F one-year/final **Trial Reliability:**MARGINAL marginal quality
ARM Trial Created On: Aug-12-2021
Initiation Date: Apr-8-2021
Completion Date: Aug-12-2021

Trial Location
City: Oregon City **Country:**USA United States
State/Prov.: Oregon
Postal Code:97045 **Climate Zone:**USMAR US Maritime

Conducted Under GLP: No
Conducted Under GEP: No

Role:INVEST investigator
Investigator: Craig Collins **Title:**Director of Research
Organization: Collins Agricultural Consultants, Inc.
Address 1:22025 South Central Point Rd **Phone No.:**503-781-3374
Country:USA United States **E-mail:**collinsagr@msn.com
City:OREGON CITY, OREGON **Postal Code:**97045
Role:COOPER cooperator
Cooperator: Jeff Bizon
Organization: Stauffer Farms
Address 1:13851 Stauffer Rd, NE
Country:USA United States
City: Hubbard **State/Prov:**Oregon **Postal Code:**97032

Crop Description

Crop 1:C HUMLU Humulus lupulus Common hop **BBCH Scale:**BHOP
Entry Date: Apr-8-2021 **Stage Scale:**BBCH
Variety:nugget
Row Spacing:15 FT
Spacing within Row:7.5 FT

Pest Description

Pest 1 Type:D **Code:**PSPEHU Pseudoperonospora humuli **Entry Date:**Aug-12-2021
Common Name: Downy mildew of hop **Stage Scale:**BBCH
Artificial Population:N no

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Site and Design

Treated Plot Width:15 FT **Site Type:**HOPYAR hopyard
Treated Plot Length:30 FT
Treated Plot Area:450.0 FT2 **Treatments:**3 **Tillage Type:**NOTILL no-till
Replications:4 **Study Design:**RACOBL Randomized Complete Block (RCB)
% Slope:1

Comment: insect and weed free during trial peroid

Soil Description

Description Name:woodburn silt loam
% Sand:25 **% OM:**2.5 **Texture:**SIL silt loam
% Silt:48 **pH:**6.3 **Soil Name:**woodburn silt loam
% Clay:27 **CEC:**16 **Fert. Level:**E excellent
Soil Drainage:G good

Weather Conditions

Overall Moisture Conditions:SLIWET slightly wet
Closest Weather Station:CAC INC **Distance:**10 MI

No.	Date	Moisture Total	Unit
1.	Apr-13-2021	1	IN

Comment:

irrigated field 4/13/2021 and again 5/4/2021 with 1 inch of water
irrigated May 12 and 13 with 1 inch of water each day near evening.
irrigated May 19 and 20 with 1 inches of water each day

Application Description

	A	B	C	D	E	F
Application Date	Apr-8-2021	Apr-22-2021	May-6-2021	May-20-2021	Jun-3-2021	Jun-17-2021
Appl. Start Time	1:00 AM	11:00 AM	1:00 AM	9:45 AM	9:45 AM	9:45 AM
Appl. Stop Time	2:00 AM	11:45 AM	2:00 AM	10:45 AM	10:45 AM	10:45 AM
Application Method	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing	29	39	43	45	45	45
Application Placement	BRODIR	BRODIR	BRODIR	BRODIR	BRODIR	BRODIR
Applied By	CAC Inc	CAC Inc	CAC Inc	CAC Inc	CAC Inc	CAC Inc
Appl. Entry Date	Apr-8-2021	Apr-22-2021	May-10-2021	Jun-14-2021	Jun-14-2021	Aug-12-2021
Air Temperature Start, Stop	60	68	75	55	55	55
% Relative Humidity Start, Stop	60	70	68	70	70	70
Wind Velocity+Dir. Start	1 MPH	1 MPH	1 MPH	1 MPH	1 MPH	1 MPH
Wet Leaves (Y/N)	N no	N no	N no	N no	N no	N no
Soil Temperature	55 F	65 F	68 F	65 F	65 F	65 F
Soil Moisture	75FC	75FC	75FC	75FC	75FC	75FC
Soil Surface Condition	SMOOTH	SMOOTH	SMOOTH	SMOOTH	SMOOTH	SMOOTH
% Cloud Cover	25	100	100	100	100	0

Crop Stage At Each Application

	A	B	C	D	E	F
Crop 1 Code, BBCH Scale	HUMLU BHOP	HUMLU BHOP	HUMLU BHOP	HUMLU BHOP	HUMLU BHOP	HUMLU BHOP
Stage Scale Used	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH
Stage Majority, Percent	28	32	33	34	35	
Diameter Average	4 FT	5 FT	4 FT	4 FT	4 FT	
Height Average	24 IN	30 IN	36 IN	40 IN	44 IN	

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Pest Stage At Each Application

	A	B	C	D	E
Pest 1 Code, Type, Scale	PSPEHU D BBCH	PSPEHU D BBCH	PSPEHU D BBCH	PSPEHU D BBCH	PSPEHU D BBCH

	F
Pest 1 Code, Type, Scale	PSPEHU D BBCH

Application Equipment

	A	B	C	D	E	F
Appl. Equipment	Hop Spray	Hop Spray	Hop Spray	Hop Spray	Hop Spray	Hop Spray
Equipment Type	SPRBAC	SPRBAC	SPRBAC	SPRBAC	SPRBAC	SPRBAC
Operation Pressure	40 psi	40 psi	40 psi	40 psi	40 psi	40 psi
Nozzle Model	8004	8004	8004	8004	8004	8004
Nozzle Type	flat fan	flat fan	flat fan	flat fan	flat fan	flat fan
Nozzle Spacing	12 IN	12.0 IN	12.0 IN	12.0 IN	12.0 IN	12.0 IN
Nozzles/Row	4	4.0	4.0	4.0	4.0	4.0
Band Width	48 inch	48.0 inch	48.0 inch	48.0 inch	48.0 inch	48.0 inch
% Coverage	100	100	100	100	100	100
Row Sides Applied	2	2	2	2	2	2
Boom ID	Grape Multi	Grape Multi	Grape Multi	Grape Multi	Grape Multi	Grape Multi
Boom Length	4.0 FT	4.0 FT	4.0 FT	4.0 FT	4.0 FT	4.0 FT
Boom Height	4.0 FT	4.0 FT	4.0 FT	4.0 FT	4.0 FT	4.0 FT
Ground Speed	2 mph	2 mph	2 mph	2 mph	2 mph	2 mph
Incorporation Equip.	none	none	none	none	none	none
Hours to Incorp.	0	0.0	0.0	0.0	0.0	0.0
Incorp. Depth	0 in	0 in	0 in	0 in	0 in	0 in
Application Amount	50 GAL/AC	50 GAL/AC	50 GAL/AC	50 GAL/AC	50 GAL/AC	50 GAL/AC
Mix Overage	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Mix Size	2.066 GAL	2.066 GAL	2.066 GAL	2.066 GAL	2.066 GAL	2.066 GAL
Spray pH	6.5	6.5	6.5	6.5	6.5	6.5
Propellant	Co2	Co2	Co2	Co2	Co2	Co2
Tank Mix (Y/N)	Y yes	Y yes	Y yes	Y yes	Y yes	Y yes

Notes

Context	Date	By	Notes
STATUS	Mar-25-2021	Craig Collins	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Apr-8-2021	Craig Collins	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed	D Disease
Pest Code	CROP	CROP	CROP	CROP	CROP	PSPEHU
Pest Name	Phyto	Phyto	Phyto	Phyto	Phyto	Downy mildew of>
Crop Type, Code	C HUMLU	C HUMLU	C HUMLU	C HUMLU	C HUMLU	C HUMLU
Crop Name	Common hop	Common hop	Common hop	Common hop	Common hop	Common hop
Rating Date	Apr-29-2021	May-10-2021	May-21-2021	May-27-2021	Jun-11-2021	Apr-29-2021
Part Rated	PLALAR C	PLALAR C	PLALAR C	PLALAR C	PLALAR C	PLALAR P
Rating Type	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PESSEV
Rating Unit/Min/Max	0-100 0 100	0-100 0 100	0-100 0 100	0-100 0 100	0-100 0 100	0-100 0 100
Number of Subsamples	1	1	1	1	1	1
Assessed By	CAC	CAC	CAC	CAC	CAC	CAC
Data Entry Date	Apr-29-2021	Apr-29-2021	May-21-2021	May-29-2021	Jun-14-2021	Apr-29-2021
Days After First/Last Applic.	21 7	32 4	43 1	49 7	64 8	21 7
ARM Action Codes						
Trt No. Treatment Name / Appl Code	1*	2*	3*	4*	5*	6*
1Untreated Check	0.0-	0.0-	0.0-	0.0-	0.0-	0.250-

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Pest Type		W Weed	W Weed	W Weed	W Weed	W Weed	D Disease
Pest Code		CROP	CROP	CROP	CROP	CROP	PSPEHU
Pest Name		Phyto	Phyto	Phyto	Phyto	Phyto	Downy mildew of>
Crop Type, Code		C HUMLU	C HUMLU	C HUMLU	C HUMLU	C HUMLU	C HUMLU
Crop Name		Common hop	Common hop	Common hop	Common hop	Common hop	Common hop
Rating Date		Apr-29-2021	May-10-2021	May-21-2021	May-27-2021	Jun-11-2021	Apr-29-2021
Part Rated		PLALAR C	PLALAR C	PLALAR C	PLALAR C	PLALAR C	PLALAR P
Rating Type		PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PESSEV
Rating Unit/Min/Max		0-100 0 100	0-100 0 100	0-100 0 100	0-100 0 100	0-100 0 100	0-100 0 100
Number of Subsamples		1	1	1	1	1	1
Assessed By		CAC	CAC	CAC	CAC	CAC	CAC
Data Entry Date		Apr-29-2021	Apr-29-2021	May-21-2021	May-29-2021	Jun-14-2021	Apr-29-2021
Days After First/Last Applic.		21 7	32 4	43 1	49 7	64 8	21 7
ARM Action Codes							
Trt No.	Treatment Name	Appl Code	1*	2*	3*	4*	5*	6*
2	Curzate 60 DF	AC	0.0-	0.0-	0.0-	0.0-	0.0-	0.000-
	Ranman 400 SC	BDEF						
	PREFERENCE	ABCDEF						
3	All Phase	ABCDEF	0.0-	0.0-	0.0-	0.0-	0.0-	0.000-
	PREFERENCE	ABCDEF						
LSD P=.05			.	.	.	.	.	.
Standard Deviation			0.00	0.00	0.00	0.00	0.00	0.0000
CV			0.0	0.0	0.0	0.0	0.0	0.0
Grand Mean			0.00	0.00	0.00	0.00	0.00	0.0833
Levene's F^			.	.	.	.	.	.
Levene's Prob(F)			.	.	.	.	.	.
Rank X2			.	.	.	.	.	.
P(Rank X2)			.	.	.	.	.	.
Skewness^			.	.	.	.	.	.
Kurtosis^			.	.	.	.	.	.
Replicate F			0.000	0.000	0.000	0.000	0.000	0.000
Replicate Prob(F)			1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Treatment F			0.000	0.000	0.000	0.000	0.000	0.000
Treatment Prob(F)			1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

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Sponsor Contact:

Pest Type	D Disease	D Disease	D Disease
Pest Code	PSPEHU	PSPEHU	PSPEHU
Pest Name	Downy mildew of>	Downy mildew of>	Downy mildew of>
Crop Type, Code	C HUMLU	C HUMLU	C HUMLU
Crop Name	Common hop	Common hop	Common hop
Rating Date	May-10-2021	May-21-2021	May-27-2021
Part Rated	PLALAR P	PLALAR P	PLALAR P
Rating Type	PESSEV	PESSEV	PESSEV
Rating Unit/Min/Max	0-100 0 100	0-100 0 100	0-100 0 100
Number of Subsamples	1	1	1
Assessed By	CAC	CAC	CAC
Data Entry Date	May-10-2021	May-21-2021	May-29-2021
Days After First/Last Applic.	32 4	43 1	49 7
ARM Action Codes	AS	AS	AS
Trt Treatment Appl No. Name Code	7* dAS	8* dAS	9* dAS
1Untreated Check	1.0-	2.5a	6.0a

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Sponsor Contact:

Pest Type		D Disease	D Disease	D Disease
Pest Code		PSPEHU	PSPEHU	PSPEHU
Pest Name		Downy mildew of>	Downy mildew of>	Downy mildew of>
Crop Type, Code		C HUMLU	C HUMLU	C HUMLU
Crop Name		Common hop	Common hop	Common hop
Rating Date		May-10-2021	May-21-2021	May-27-2021
Part Rated		PLALAR P	PLALAR P	PLALAR P
Rating Type		PESSEV	PESSEV	PESSEV
Rating Unit/Min/Max		0-100 0 100	0-100 0 100	0-100 0 100
Number of Subsamples		1	1	1
Assessed By		CAC	CAC	CAC
Data Entry Date		May-10-2021	May-21-2021	May-29-2021
Days After First/Last Applic.		32 4	43 1	49 7
ARM Action Codes		AS	AS	AS
Trt No.	Treatment Name	Appl Code	7* dAS	8* dAS	9* dAS
2	Curzate 60 DF	AC	0.0-	0.0b	0.0b
	Ranman 400 SC	BDEF			
	PREFERENCE	ABCDEF			
3	All Phase	ABCDEF	0.0-	0.0b	0.0b
	PREFERENCE	ABCDEF			
LSD P=.05			.	0.55 - 0.60	1.10 - 1.20
Standard Deviation			0.00t	0.10t	0.13t
CV			0.0t	9.23t	9.94t
Grand Mean			0.88t	1.05t	1.32t
Levene's F^			.	631784632059363000000000000000.00	320807880427100000000000000000.00
Levene's Prob(F)			.	0.00*	0.00*
Rank X2			.	.	.
P(Rank X2)			.	.	.
Skewness^			.	0.0	0.0
Kurtosis^			.	-1.65	-1.65
Replicate F			0.000	1.000	1.000
Replicate Prob(F)			1.0000	0.4547	0.4547
Treatment F			0.000	148.442	261.024
Treatment Prob(F)			1.0000	0.0001	0.0001

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Sponsor Contact:

Pest Type		D Disease	D Disease
Pest Code		PSPEHU	PSPEHU
Pest Name		Downy mildew of>	Downy mildew of>
Crop Type, Code		C HUMLU	C HUMLU
Crop Name		Common hop	Common hop
Rating Date		Jun-11-2021	Jun-30-2021
Part Rated		PLALAR P	PLALAR P
Rating Type		PESSEV	PESSEV
Rating Unit/Min/Max		0-100 0 100	0-100 0 100
Number of Subsamples		1	1
Assessed By		CAC	CAC
Data Entry Date		Jun-14-2021	Aug-12-2021
Days After First/Last Applic.		64 8	83 13
ARM Action Codes		AS	AS
Trt No.	Treatment Name / Appl Code	10* dAS	11* dAS
1	Untreated Check	6.7a	6.7a

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Sponsor Contact:

Pest Type		D Disease	D Disease
Pest Code		PSPEHU	PSPEHU
Pest Name		Downy mildew of>	Downy mildew of>
Crop Type, Code		C HUMLU	C HUMLU
Crop Name		Common hop	Common hop
Rating Date		Jun-11-2021	Jun-30-2021
Part Rated		PLALAR P	PLALAR P
Rating Type		PESSEV	PESSEV
Rating Unit/Min/Max		0-100 0 100	0-100 0 100
Number of Subsamples		1	1
Assessed By		CAC	CAC
Data Entry Date		Jun-14-2021	Aug-12-2021
Days After First/Last Applic.		64 8	83 13
ARM Action Codes		AS	AS
Trt No.	Treatment Name / Appl Code	10* dAS	11* dAS
2	Curzate 60 DF / AC	0.2b	0.2b
	Ranman 400 SC / BDEF		
	PREFERENCE / ABCDEF		
3	All Phase / ABCDEF	0.0b	0.0b
	PREFERENCE / ABCDEF		
LSD P=.05		0.61 - 1.56	0.61 - 1.56
Standard Deviation		0.18t	0.18t
CV		12.68t	12.68t
Grand Mean		1.41t	1.41t
Levene's F^		0.279	0.279
Levene's Prob(F)		0.763	0.763
Rank X2		.	.
P(Rank X2)		.	.
Skewness^		-0.7598	-0.7598
Kurtosis^		-0.2163	-0.2163
Replicate F		3.186	3.186
Replicate Prob(F)		0.1056	0.1056
Treatment F		152.857	152.857
Treatment Prob(F)		0.0001	0.0001

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Pest Type
W, Weed = Weed or volunteer crop
D, Disease = Disease, such as a fungus, bacteria, or virus
Pest Code
PSPEHU, Pseudoperonospora humuli, Downy mildew of hop = US
Crop Type, Code
C = EPPO species (Bayer) codes
HUMLU, BHOP, Humulus lupulus, Common hop = US
Part Rated
PLALAR = plant - large
C = Crop is Part Rated
P = Pest is Part Rated
Rating Type
PHYGEN = phytotoxicity - general / injury
PESSEV = pest severity
Rating Unit/Min/Max
0-100, 0, 100 = 0-100 index/scale-percent
ARM Action Codes
AS = Automatic square root transformation of X+0.5

Pest Type			W Weed		W Weed		W Weed		W Weed		W Weed		D Disease
Pest Code			CROP		CROP		CROP		CROP		CROP		PSPEHU
Pest Name			Phyto		Phyto		Phyto		Phyto		Phyto		Downy mildew of>
Crop Type, Code			C HUMLU		C HUMLU		C HUMLU		C HUMLU		C HUMLU		C HUMLU
Crop Name			Common hop		Common hop		Common hop		Common hop		Common hop		Common hop
Rating Date			Apr-29-2021		May-10-2021		May-21-2021		May-27-2021		Jun-11-2021		Apr-29-2021
Part Rated			PLALAR C		PLALAR C		PLALAR C		PLALAR C		PLALAR C		PLALAR P
Rating Type			PHYGEN		PHYGEN		PHYGEN		PHYGEN		PHYGEN		PESSEV
Rating Unit/Min/Max			0-100 0 100		0-100 0 100		0-100 0 100		0-100 0 100		0-100 0 100		0-100 0 100
Number of Subsamples			1		1		1		1		1		1
Assessed By			CAC		CAC		CAC		CAC		CAC		CAC
Data Entry Date			Apr-29-2021		Apr-29-2021		May-21-2021		May-29-2021		Jun-14-2021		Apr-29-2021
Days After First/Last Applic.			21 7		32 4		43 1		49 7		64 8		21 7
ARM Action Codes													
Trt No.	Treatment Name	Appl Code	Plot	1		2		3		4		5		6
1	Untreated Check		101	0.0		0.0		0.0		0.0		0.0		0.250
			211	0.0		0.0		0.0		0.0		0.0		0.250
			306	0.0		0.0		0.0		0.0		0.0		0.250
			410	0.0		0.0		0.0		0.0		0.0		0.250
			Mean =	0.0		0.0		0.0		0.0		0.0		0.250
2	Curzate 60 DF	AC	102	0.0		0.0		0.0		0.0		0.0		0.000
	Ranman 400 SC	BDEF	203	0.0		0.0		0.0		0.0		0.0		0.000
	PREFERENCE	ABCDEF	304	0.0		0.0		0.0		0.0		0.0		0.000
			401	0.0		0.0		0.0		0.0		0.0		0.000
			Mean =	0.0		0.0		0.0		0.0		0.0		0.000
3	All Phase	ABCDEF	112	0.0		0.0		0.0		0.0		0.0		0.000
	PREFERENCE	ABCDEF	202	0.0		0.0		0.0		0.0		0.0		0.000
			310	0.0		0.0		0.0		0.0		0.0		0.000
			411	0.0		0.0		0.0		0.0		0.0		0.000
			Mean =	0.0		0.0		0.0		0.0		0.0		0.000

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Project ID: Study Director:
Sponsor Contact:

Pest Type			D Disease	D Disease	D Disease	D Disease	D Disease
Pest Code			PSPEHU	PSPEHU	PSPEHU	PSPEHU	PSPEHU
Pest Name			Downy mildew of>	Downy mildew of>	Downy mildew of>	Downy mildew of>	Downy mildew of>
Crop Type, Code			C HUMLU	C HUMLU	C HUMLU	C HUMLU	C HUMLU
Crop Name			Common hop	Common hop	Common hop	Common hop	Common hop
Rating Date			May-10-2021	May-21-2021	May-27-2021	Jun-11-2021	Jun-30-2021
Part Rated			PLALAR P	PLALAR P	PLALAR P	PLALAR P	PLALAR P
Rating Type			PESSEV	PESSEV	PESSEV	PESSEV	PESSEV
Rating Unit/Min/Max			0-100 0 100	0-100 0 100	0-100 0 100	0-100 0 100	0-100 0 100
Number of Subsamples			1	1	1	1	1
Assessed By			CAC	CAC	CAC	CAC	CAC
Data Entry Date			May-10-2021	May-21-2021	May-29-2021	Jun-14-2021	Aug-12-2021
Days After First/Last Applic.			32 4	43 1	49 7	64 8	83 13
ARM Action Codes			AS	AS	AS	AS	AS
Trt No.	Treatment Name	Appl Code	Plot	7	8	9	10	11
1	Untreated Check		101	1.0	3.0	7.0	7.0	7.0
			211	1.0	2.0	5.0	5.0	5.0
			306	1.0	2.0	5.0	6.0	6.0
			410	1.0	3.0	7.0	9.0	9.0
			Mean =	1.0d	2.5d	6.0d	6.7d	6.7d
2	Curzate 60 DF	AC	102	0.0	0.0	0.0	0.0	0.0
	Ranman 400 SC	BDEF	203	0.0	0.0	0.0	0.0	0.0
	PREFERENCE	ABCDEF	304	0.0	0.0	0.0	0.0	0.0
			401	0.0	0.0	0.0	1.0	1.0
			Mean =	0.0d	0.0d	0.0d	0.2d	0.2d
3	All Phase	ABCDEF	112	0.0	0.0	0.0	0.0	0.0
	PREFERENCE	ABCDEF	202	0.0	0.0	0.0	0.0	0.0
			310	0.0	0.0	0.0	0.0	0.0
			411	0.0	0.0	0.0	0.0	0.0
			Mean =	0.0d	0.0d	0.0d	0.0d	0.0d

Collins Agricultural Consultants

Downey Mildew hop disease trial

Trial ID:hop various 2021 circadia only Location:CAC oregon city oregon Trial Year:2021
Protocol ID: Investigator (Creator):Craig Collins
Project ID: Study Director:
Sponsor Contact:

Pest Type
W, Weed = Weed or volunteer crop
D, Disease = Disease, such as a fungus, bacteria, or virus
Pest Code
PSPEHU, Pseudoperonospora humuli, Downy mildew of hop = US
Crop Type, Code
C = EPPO species (Bayer) codes
HUMLU, BHOP, Humulus lupulus, Common hop = US
Part Rated
PLALAR = plant - large
C = Crop is Part Rated
P = Pest is Part Rated
Rating Type
PHYGEN = phytotoxicity - general / injury
PESSEV = pest severity
Rating Unit/Min/Max
0-100, 0, 100 = 0-100 index/scale-percent
ARM Action Codes
AS = Automatic square root transformation of X+0.5

Trial Comments

2021 FOLIAR DISEASES OF HOP; Downey Mildew (Uncinula necator)
Nugget Hops (Pseudoperonospora humuli)

By: Craig Collins, Collins Agricultural Consultants, Inc.
22025 South Central Point Rd, Oregon City, Oregon 97045

2021 EVALUATION OF FUNGICIDES FOR THE CONTROL OF FOLIAR HOP DISEASES:

The experiment was conducted near Hubbard, Oregon in a grower field. The plot area was planted in the fall of 1975 with Nugget variety hops on 15 ft wide rows. There were four rows of hops on a 7.5 ft in row spacing. Hops were fertilized by the grower throughout the trial according to his normal growing standards. Individual treatment plots measured 15 ft. wide by 30 ft long and consisted of four hop plants per plot. Treatments were assigned to plots in a randomized complete block design with four replications. The test area was weed and insect free throughout the test period. It was commercially maintained by the grower to control weeds and insects. The trial site was not inoculated but had naturally occurring infections of Downey mildew. The test site was drip irrigated by the grower in accordance to commercial standards. The first visible sign of Downey mildew disease in the checks occurred on April 29, 2021. Fungicide treatments were applied 6 times: April 8, April 22, May 6, May 20, June 3 and June 17, 2021. All applications were made using a Multi-boom 4 nozzle sprayer set at 40 psi and delivering 50 gal/A via 4 flat fan 8004 nozzles. All treatments were sprayed to drip. Visual determination of percent infected foliage in the center of each plot was taken on April 27, May 5, May 12, May 25, and June 8, 2021.

The test site was irrigated with 1 inch of overhead water on 6 dates to promote DM disease. Irrigation was applied on 4-13, 5-4,5-12, 5-13, 5-19, 5-20. No yields assessments were required for this trial. The highest max temperature from 1st application to last rating was 112.6 F and the lowest min temperature was 57.4 F. Total precipitation from first application to last rating was 2.12 inches. Disease pressure was very poor, because of lack of rainl. In general, the weather was warm and dry which did not favor the disease. Temperatures were warmer per day as compared to previous years. Average temperature were some 10 degrees warmer than previous years. For the period of March 1 to end of June there were about 8 less inches of rainfall. Compared to the untreated controls, foliar symptoms were controlled well by most treatments. There was no phytotoxicity with any fungicide treatment.