

A21-021-890FE

Efficacy of ozone applied alone and in mix, against *Sclerotinia sp.* and *Erysiphe sp.* on cucurbits. Italy 2021

Trial ID: A21-021-890FE Location: Italy Trial Year: 2021
Protocol ID: 890A21FE3 Investigator (Creator): Michele Rugiano
Project ID: Study Director: Antonio Russo
Official Trial ID: A21-021-890FE Sponsor Contact: Giulio Senese - MET Srl
Trial Origin: C contracted trial

TREATMENT LIST

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Description	Other Rate	Other Rate Unit	Appl Code	Comment 1	Comment 2
1	CHK	Untreated Check									
2	FUNG	Ozone			SN			3ppm pr	ABCDEF	300-1500 L/ha	Spray application with water
3	FUNG	Zolfis 80 Sector	80%		WG			5kg/ha	ABCDEF	300-1500 L/ha	Spray application
4	FUNG	Ozone			SN			3ppm pr	ABCDEF	300-1500 L/ha	
	FUNG	Zolfis 80 Sector	80%		WG			5kg/ha	ABCDEF	300-1500 L/ha	Apply Zolfis 80 Sector after Ozone on dry leaves
5	FUNG	Ozone			SN			3ppm pr	ABCDEF	300-1500 L/ha	Ozone spray application in emulsified sunflower oil with water
	FUNG	Sunflower oil			EC	Rate 1-5 %V/V		1% v/v	ABCDEF	300-1500 L/ha	
6	FUNG	Sunflower oil			EC	Rate 1-5 %V/V		1% v/v	ABCDEF	300-1500 L/ha	Spray application

OBJECTIVES

Objectives:

- Does the Ozone used alone have efficacy if compared to the standard Zolfis 80 Sector?
- Does the addition of Ozone to the standard Zolfis 80 Sector increase the efficacy of Zolfis 80 Sector used alone?
- Does the addition of Ozone emulsified Sunflower/Soybean oil increase the efficacy of Ozone used alone?
- Are all treatments safe for the crop?

SITE DESCRIPTION

Trial Location			
City:	Eboli	Country:	ITA Italy
State/Prov.:	Salerno SA	Region:	Campania
Postal Code:	84025	Climate Zone:	EPOMED EPPO Mediterranean

Crop Description			
Crop 1:	C CUMME Cucumis melo	melon	BBCH Scale: BVVT
Entry Date:	Oct-13-2021	Stage Scale:	BBCH
Variety:	Proteo		
Planting Date:	Feb-20-2021	Planting Density:	12500 P/ha
		Planting Method:	TRAHAN transplanted - hand
Row Spacing:	80 cm		
Spacing within Row:	100 cm		

Pest Description			
Pest 1 Type:	D	Code: ERYSSP Erysiphe sp.	Entry Date: Oct-13-2021
Common Name:		Erysiphe sp.	Stage Scale: BBCH
		Artificial Population:	N no

Site and Design			
Treated Plot Width:	1,5 m	Total Plot Width:	1,5 m
Treated Plot Length:	5 m	Total Plot Length:	5 m
Treated Plot Area:	7,5 m ²	Treatments:	6
Replications:	4	Site Type:	GREENH greenhouse
% Slope:	0	Experimental Unit:	1 PLOT plot
Untreated Arrangement:	INCLUDED		single control randomized in each block
Block Arrangement:	BSSPUP		all blocks side by side, plots lying upon each other
		Tillage Type:	CONTIL conventional-till
		Study Design:	RACOBL Randomized Complete Block (RCB)

Soil Description			
% Sand:	39	% OM:	2,1
% Silt:	41	pH:	7,95
% Clay:	20	Texture:	L loam
Soil Drainage:	G good	Soil Name:	Loam
		Fert. Level:	G good

Application Description						
	A	B	C	D	E	F
Application Date	Mar-25-2021	Apr-1-2021	Apr-8-2021	Apr-15-2021	Apr-22-2021	Apr-29-2021
Appl. Start Time	10:00	12:00	17:00	14:00	10:00	16:00
Appl. Stop Time	11:00	13:00	18:00	15:00	11:00	17:00
Interval to Prev. Appl.		7 DAYS	7 DAYS	7 DAYS	7 DAYS	7 DAYS
Application Method	BROADC	BROADC	BROADC	BROADC	BROADC	BROADC
Application Timing	PREVEN	FIINSP	FIINSP	FIINSP	FIINSP	FIINSP
Application Placement	FOLIAR	FOLIAR	FOLIAR	FOLIAR	FOLIAR	FOLIAR
Applied By	M.Cagnano	M.Cagnano	M.Cagnano	M.Cagnano	M.Cagnano	M.Cagnano
Appl. Entry Date	Oct-13-2021	Oct-13-2021	Oct-13-2021	Oct-13-2021	Oct-13-2021	Oct-13-2021
Air Temperature Start, Stop	15; 16 C	18; 21 C	17; 17 C	20; 20 C	14; 15 C	25; 25 C
% Relative Humidity Start, Stop	51; 51	59; 59	61; 61	60; 60	57; 57	61; 61
Wind Velocity+Dir. Start	0 KPH; -	0 KPH; -	0 KPH; -	0 KPH; -	0 KPH; -	0 KPH; -
Wind Velocity+Dir. Stop	0 KPH; -	0 KPH; -	0 KPH; -	0 KPH; -	0 KPH; -	0 KPH; -
Wind Velocity+Dir. Max	0 KPH; -	0 KPH; -	0 KPH; -	0 KPH; -	0 KPH; -	0 KPH; -
Wet Leaves (Y/N)	N; no	N; no	N; no	N; no	N; no	N; no
Soil Temperature	15 C	16 C	15 C	15 C	16 C	16 C
Soil Moisture	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Soil Surface Condition	FINE	FINE	FINE	FINE	FINE	FINE
Weather Source	WSFIELD	WSFIELD	WSFIELD	WSFIELD	WSFIELD	WSFIELD

Comment:

n trt. 3, trt. 4, trt.5 and trt. 6 the standard product was applied by means of knapsack sprayer #273.

Operation pressure: 4 BAR

Nozzle Type: Flat Fan

Nozzle size: 02

Nozzle spacing: 50 cm

Nozzle/Row: 3

Nozzle calibration: 2500 mL/MIN

Time to treat 1 plot:

- Appl. A: 10.81 s
- Appl. B: 12.62 s
- Appl. C: 12.62 s
- Appl. D: 12.62 s
- Appl. E: 14.49 s
- Appl. F: 14.49 s

· **Protocol Application Directions:**

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· **Time and frequency of application**

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· Application A: pre-infection

· Spray interval 8-10 days.

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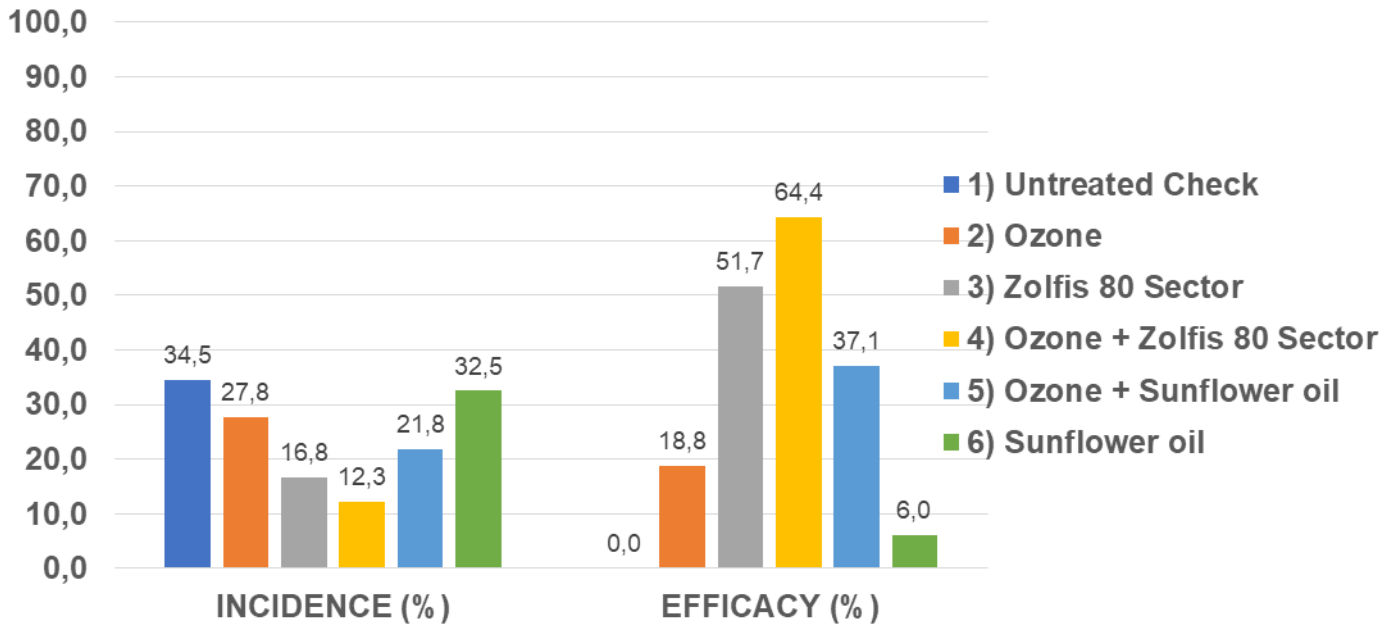
· **Doses and volumes**

· Use water volume variable following crop growth: 300-1500 L/ha

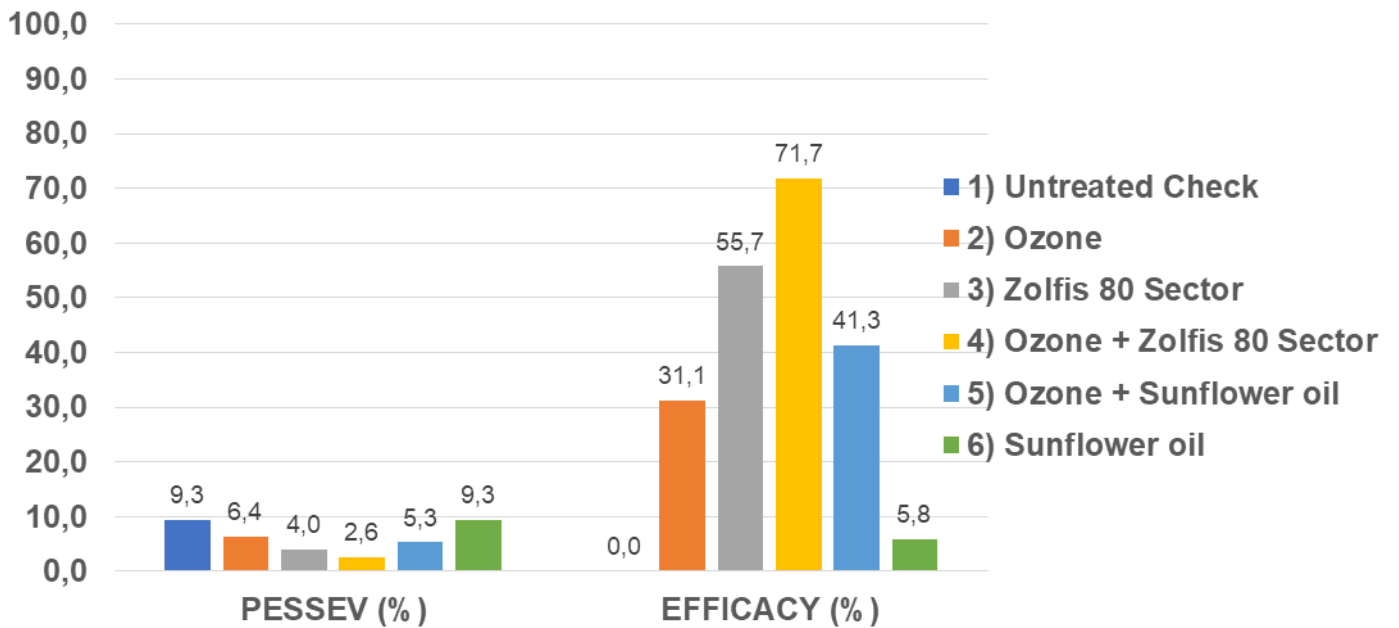
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RESULTS

Incidence on leaves – 11 days after last application



Severity on leaves – 11 days after last application



COMMENTS

English version: At the end of the experimental program for the control of *Erysiphe sp.* on melon, during which 6 applications were carried out based on susceptibility moments of the crop, the untreated check showed a pest incidence on leaf equal to 34.50% and a disease severity equal to 9.29%. Not all the products tested in field showed significant different results if compared to the untreated check regarding the pest severity and pest incidence. The best result on leaves was showed by the strategy of Ozone with the reference product Zolfis 80 Sector equal to 64.38% of control, different from all the others treatments. To follow, the standard Zolfis 80 Sector with 51.71%, the strategy Ozone+Sunflower oil emulsified with 37.14%, Ozone alone with 18.81% and at last Sunflower oil alone with 5.17% of pest incidence control. Regarding the disease severity on leaves, was observed almost the same behaviour: Ozone with the reference product Zolfis 80 Sector showed the best control with 71.73%, comparable to the standard alone with 55.73%. This last was also comparable with the strategy Ozone+Sunflower oil with 41.28%. Sunflower oil alone showed a result in control the disease severity worse than the untreated. The use of Ozone applied alone showed an efficacy different to the standard Zolfis 80 Sector. The addition of Ozone increase the efficacy of Zolfis 80 Sector applied alone in the pest incidence control, while towards severity they were comparable. The strategy of Ozone in emulsified Sunflower oil, statistically increase the efficacy of Ozone applied alone regarding the pest incidence, but was comparable regarding the pest severity.

Versione italiana: Al termine della strategia sperimentale per il controllo di *Erysiphe sp.* su melone, durante la quale sono state realizzate 6 applicazioni, basate sui momenti di suscettibilità della coltura, il testimone non trattato ha mostrato una incidenza della malattia su foglia pari al 34.50% e una severità pari al 9.29%. Non tutti i prodotti applicati in campo hanno fornito risultati significativi differenti rispetto al testimone per quanto riguarda la severità e l'incidenza della malattia. Il miglior risultato sulle foglie è stato fornito dalla strategia Ozono con il prodotto di riferimento Zolfis 80 Sector pari al 64.38% di controllo, differente da tutti gli altri trattamenti. A seguire, lo standard Zolfis 80 Sector con 51.71%, la strategia Ozono+Sunflower oil in emulsione con 37.14%, Ozono da solo con 18.81% e come ultimo Sunflower oil da solo con 5.17% di controllo dell'incidenza. Riguardo alla severità della malattia sulle foglie, è stato osservato quasi lo stesso comportamento: Ozono con il prodotto standard Zolfis 80 Sector ha mostrato il migliore controllo con 71.73%, comparabile allo standard da solo con 55.73%. Quest'ultimo era anche comparabile con la strategia di Ozono+Sunflower oil con 41.28%. Sunflower oil da solo ha mostrato un risultato peggiore di quello del non trattato nel controllo della severità. L'uso di Ozono applicato da solo ha mostrato una efficacia differente rispetto a quella dello standard Zolfis 80 Sector. L'aggiunta di Ozono aumenta l'efficacia di Zolfis 80 Sector applicato da solo nel controllo dell'incidenza della malattia, mentre nei confronti della severità erano paragonabili. La strategia di Ozono in emulsione con Sunflower oil, statisticamente aumenta l'efficacia di Ozono applicato da solo per quanto riguarda l'incidenza della malattia, ma era comparabile nei confronti della severità

CONCLUSION

Conclusions:

English version: Within the test aimed at controlling *Erysiphe sp.* on melon, with the use of organic products, Ozone alone showed efficacy in reducing the disease severity and incidence on leaves compared to the untreated check. Ozone in strategy with the standard Zolfis 80 Sector showed the best control in reducing the disease incidence, while was comparable to the standard applied alone regarding the pest severity. No symptoms of phytotoxicity were observed.

Versione italiana: All'interno della prova volta al controllo di *Erysiphe sp.* su melone con utilizzo di prodotti biologici, l'Ozono da solo ha mostrato efficacia nel ridurre la severità e l'incidenza della malattia sulle foglie rispetto al non trattato. Ozono in strategia con lo standard Zolfis 80 Sector ha mostrato il miglior controllo riducendo l'incidenza della malattia, mentre era comparabile allo standard applicato da solo riguardo alla severità della malattia. Non si sono osservati sintomi di fitotossicità.

CONTACTS

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