

# A20-298-890FE

## Efficacy of ozone applied alone and in mix, against *Plasmopara viticola* on grape, Italy 2020-2021

Trial ID: A20-298-890FE Location: Italy Trial Year: 2020  
Protocol ID: 890A20FE1 Investigator (Creator): Antonio Russo  
Project ID: Study Director: Renzo Bucchi - Agri 2000 Net Srl  
Official Trial ID: A20-298-890FE Sponsor Contact: Giulio Senese - MET Srl  
Trial Origin: C contracted trial

## TREATMEN LIST

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Description	Rate Rate	Rate Unit	Appl Code	Comment 1	Comment 2
1	CHK	Untreated Check									
2	FUNGO	Ozone			SN		5	PPM PR	ABCDEF GH	500-1200 L/ha	Spray application with water
3	FUNGO	Kocide 2000	35%		WG		200	g/100 L	ABCDEF GH	500-1200 L/ha	Spray application
4	FUNGO	Ozone			SN		5	PPM PR	ABCDEF GH	500-1200 L/ha	Spray application with water
	FUNGO	Kocide 2000	35%		WG		200	g/100 L	ABCDEF GH	500-1200 L/ha	Kocide 2000 spray application after Ozone on dry leaves
5	FUNGO	Ozone			SN		5	PPM PR	ABCDEF GH	500-1200 L/ha	Ozone spray application in emulsified sunflower oil with water
	FUNGO	Soybean oil			EC	Rate 1-5 %V/V	1%	V/V	ABCDEF GH	500-1200 L/ha	

## OBJECTIVES

- Do the Ozone used alone have efficacy comparable to the standard Kocide 2000?
- Does the addition of Ozone to the standard Kocide 2000 increase the efficacy of Kocide 2000 used alone?
- Does the addition of Ozone emulsified Sunflower oil increase the efficacy of Ozone used alone?
- Are all treatments safe for the crop?

# SITE DESCRIPTION

		Trial Location	
<b>City:</b>	Fusignano	<b>Country:</b>	ITA Italy
<b>State/Prov.:</b>	Ravenna RA	<b>Region:</b>	Emilia R.
<b>Postal Code:</b>	48034	<b>Climate Zone:</b>	EPOMED EPPO Mediterranean

		Crop Description
<b>Crop 1:</b>	Vitis vinifera (European grape)	
<b>Variety:</b>	Trebbiano Romagnolo	
<b>Perennial Age:</b>	16 YR	
<b>Planting Density:</b>	2222 P/ha	
<b>Rows per Plot:</b>	1	
<b>Row Spacing:</b>	3 m	
<b>Spacing within Row:</b>	1,5 m	

		Pest Description
<b>Pest 1 Type:</b>	Plasmopara viticola	
<b>Common Name:</b>	Downy mildew of grapevine	

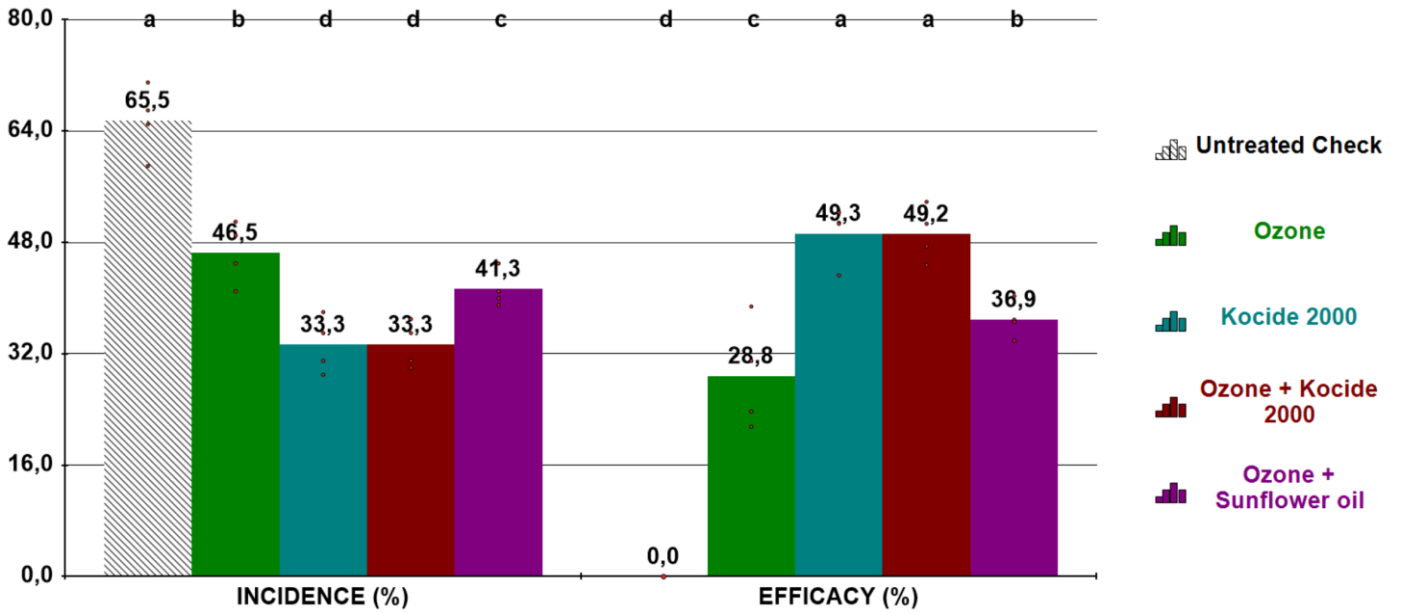
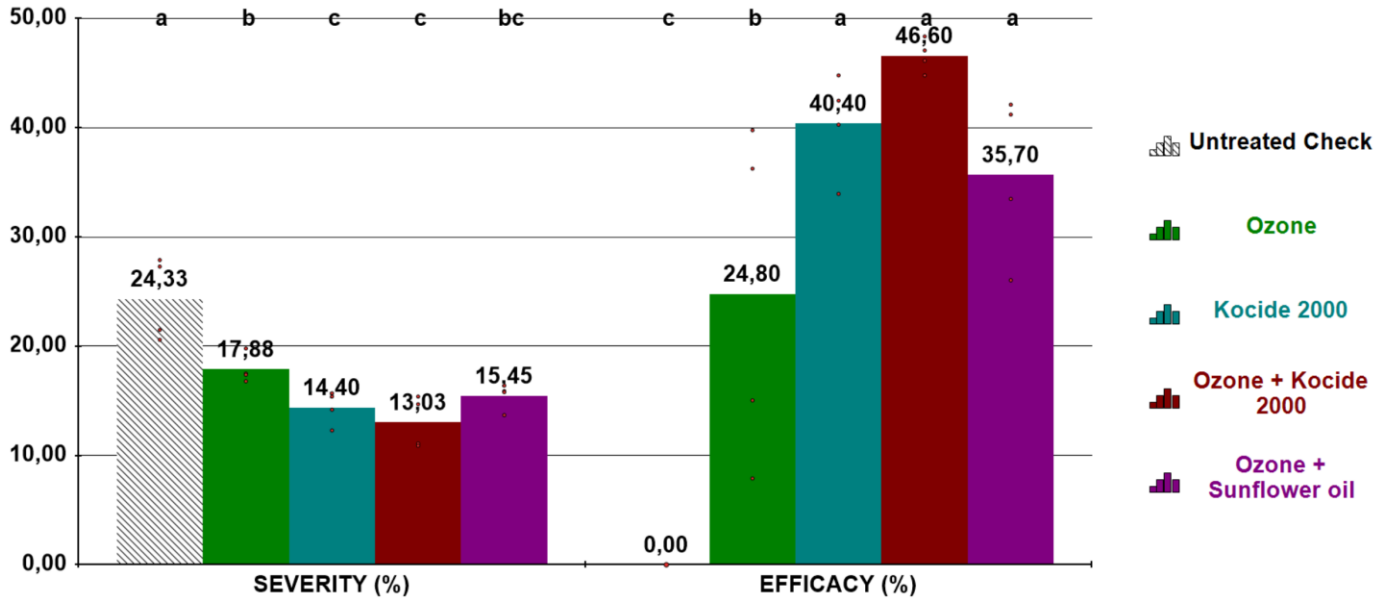
		Site and Design	
<b>Treated Plot Width:</b>	3 m	<b>Site Type:</b>	FIELD field
<b>Treated Plot Length:</b>	6 m		
<b>Treated Plot Area:</b>	18 m <sup>2</sup>		
<b>Replications:</b>	4		
<b>Study Design:</b>	Randomized Complete Block (RCB)		
<b>Untreated Arrangement:</b>	Single control randomized in each block		

		Soil Description
<b>Texture:</b>	SIL silt loam	

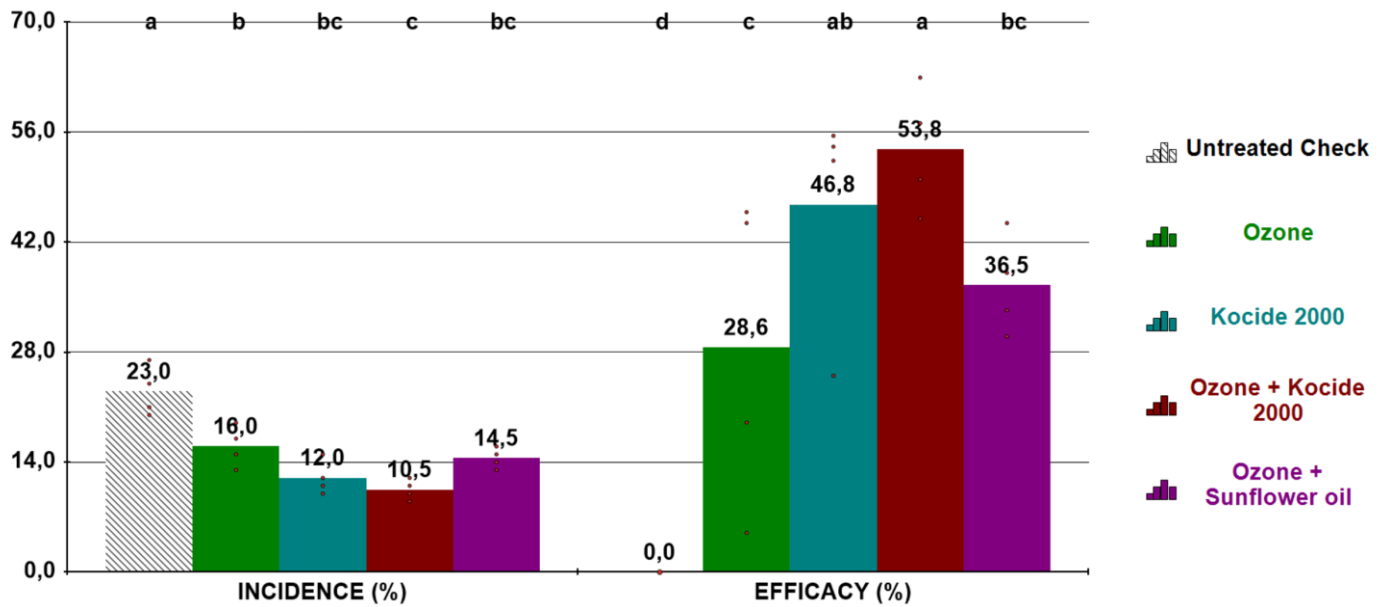
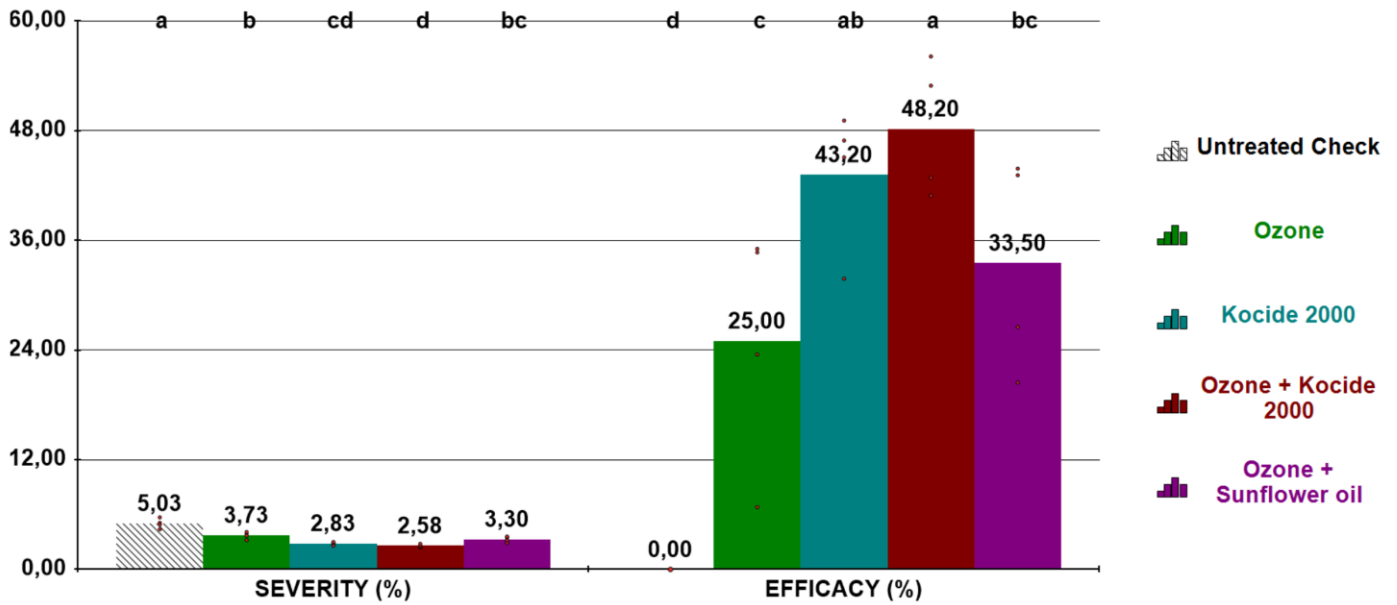
Application Description								
	A	B	C	D	E	F	G	H
<b>Application Date</b>	May-11-2020	May-18-2020	May-25-2020	Jun-1-2020	Jun-8-2020	Jun-13-2020	Jun-19-2020	Jun-25-2020

# RESULTS

## On LEAVES - 7 Days after last application



**On BUNCHES - 7 Days after last application**



## COMMENTS

**English version:** At the end of the experimental program for the control of downy mildew of grapevine, during which 8 application with a 7 days spray interval were carried out, the untreated check showed an incidence on leaves equal to 65,5% (65,5 attacked leaves on 100 leaves), with a disease severity of 24,33% (the 24,33% of the totality of the leaf surface), with a consequent serious damage to the yield. All the products tested in field showed significant results if compared to the untreated check. The best result is showed by the Ozone applied in strategy with the standard Kocide 2000, which reduced the downy mildew damage to 33,3% of leaves, with a disease severity limited to 13,03%, ensuring a more qualitative production to the crop. Also the Ozone applied alone and the ozonated sunflower oil allowed a control of the disease, albeit lower, showing an incidence of 46,5% and 41,3% respectively and a severity of 17,88% and 15,45%.

**Versione italiana:** Al termine della strategia sperimentale per il controllo della peronospora della vite, durante la quale sono state realizzate 8 applicazioni con intervallo di 7 giorni, il testimone non trattato ha mostrato un'incidenza su foglia pari a 65,5% (65,5 foglie colpite su 100 foglie), con una severità del 24,33% (il 24,33% della totalità della superficie fogliare), con conseguente grave danno alla produzione. Tutti i prodotti applicati in campo hanno fornito risultati significativi rispetto al testimone. Il miglior risultato è stato fornito dall'Ozono applicato in strategia con lo standard Kocide 2000 che ha ridotto l'attacco della peronospora al 33,3% delle foglie con una severità del danno limitata al 13,03%, garantendo una produzione più qualitativa alla coltura. Anche l'ozono applicato da solo e l'olio di girasole ozonato hanno permesso un controllo della malattia, seppur inferiore, mostrando un'incidenza rispettivamente del 46,5% e 41,3% e una severità del 17,88% e 15,45%.

## CONCLUSION

**English version:** Within the test aimed at controlling downy mildew on grapevine with the use of organic products, Ozone alone showed efficacy both on leaves and on bunches. Ozone in strategy with copper contributes to an improvement of the efficacy of the latter and the use of ozonated sunflower oil showed a higher disease control than ozonated water.

**Versione italiana:** All'interno della prova volta al controllo della peronospora della vite con utilizzo di prodotti biologici, l'Ozono da solo ha mostrato efficacia sia su foglia che su grappolo. L'ozono in strategia con il rame contribuisce ad un miglioramento dell'efficacia di quest'ultimo e l'utilizzo di olio di girasole ozonato ha un maggior controllo della malattia rispetto all'acqua ozonata.

## CONTACTS

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Scientific Responsible

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