

AGRI 2000

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

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|--------------------|---------------|-------------------------|----------------------------------|-------------|------|
| Trial ID: | A20-300-890FE | 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: | A20-300-890FE | 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 | 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

City: Castenaso **Country:** ITA Italy
State/Prov.: Bologna BO **Region:** Emilia R.
Postal Code: 40055 **Climate Zone:** EPOMED EPPO Mediterranean

Crop Description

Crop 1: Vitis vinifera (European grape)
Variety: Chardonnay
Perennial Age: 30 YR
Planting Density: 1904 P/ha
Row Spacing: 3,5 m
Spacing within Row: 1,5 m

Pest Description

Pest 1 Type: Plasmopara viticola
Common Name: Downy mildew of grapevine

Site and Design

Treated Plot Width: 3,5 m
Treated Plot Length: 7,5 m
Treated Plot Area: 26,25 m²
Replications: 4
Study Design: Randomized Complete Block (RCB)
Untreated Arrangement: Single control randomized in each block

Soil Description

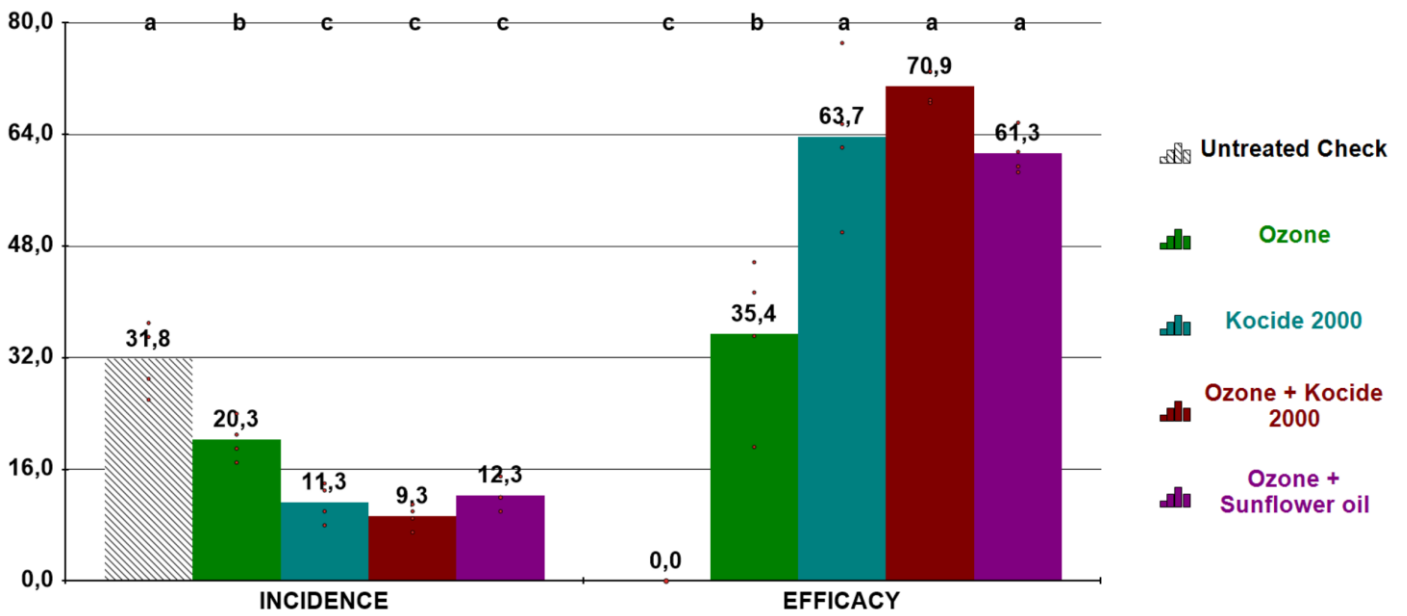
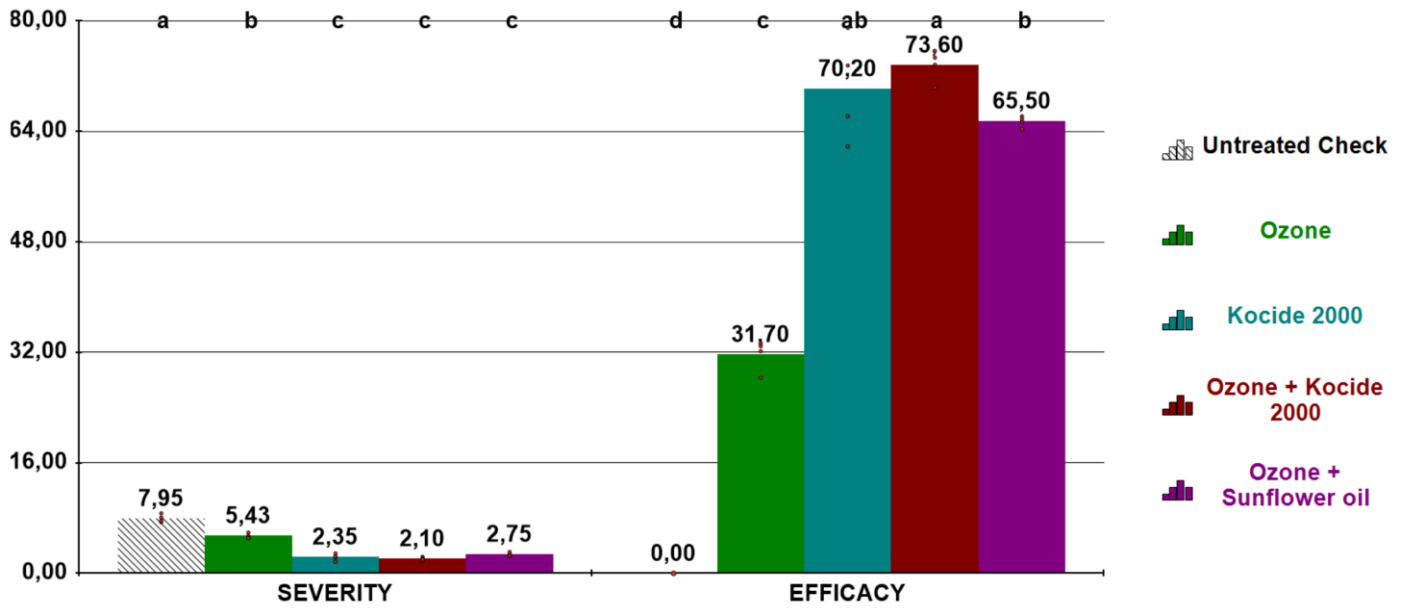
Texture: SICL silty clay loam

Application Description

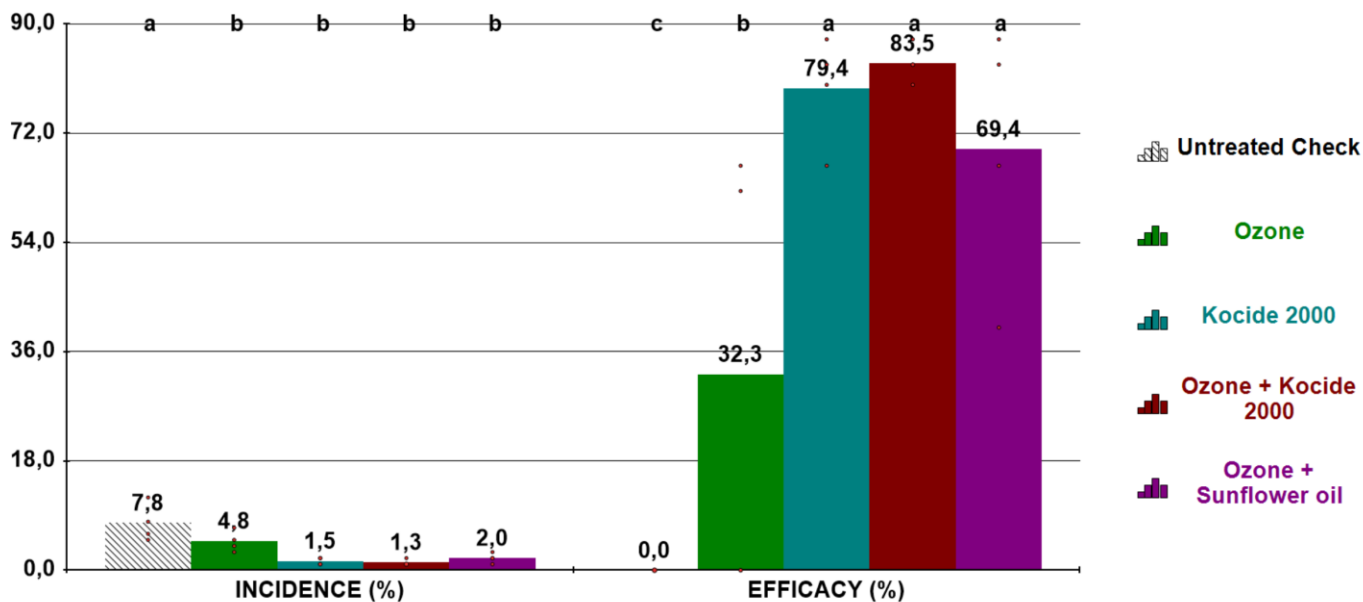
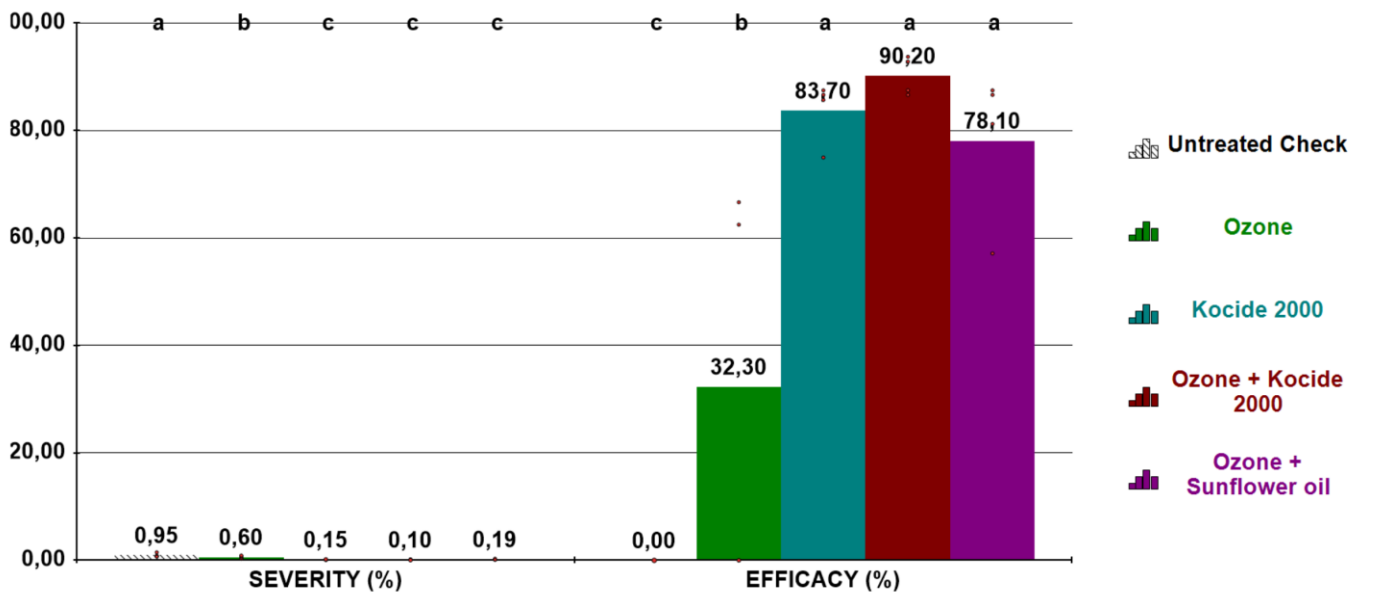
| | A | B | C | D | E | F | G | H |
|-------------------------|-------------|-------------|-------------|------------|------------|-------------|-------------|-------------|
| Application Date | May-15-2020 | May-21-2020 | May-26-2020 | Jun-1-2020 | Jun-8-2020 | Jun-15-2020 | Jun-22-2020 | Jun-29-2020 |

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 5-7 days spray interval were carried out, the untreated check showed an incidence on leaves equal to 31,8% (31,8 attacked leaves on 100 leaves), with a disease severity of 7,95% (the 7,95% 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 9,3% of leaves, with a disease severity limited to 2,10%, 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 20,3% and 12,3% respectively and a severity of 5,43% and 2,75%.

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 5-7 giorni, il testimone non trattato ha mostrato un'incidenza su foglia pari a 31,8% (31,8 foglie colpite su 100 foglie), con una severità del 7,95% (il 7,95% 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 9,3% delle foglie con una severità del danno limitata al 2,10%, 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 20,3% e 12,3% e una severità del 5,43% e 2,75%.

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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