

Guarantee®

Seaweed Extract

Increases Bunch Length, Fruit Set, Yield and Brix in *Pinot noir* Wine Grapes

Ocean Organics Guarantee® Seaweed Extract produced increases in Pinot noir:

- Bunch length (rachis stretch)
- Fruit set and sizing
- Final estimated harvest
- Brix

CROP

Vitis vinifera European grape
Variety: Pinot noir

STUDY OBJECTIVES

To evaluate the impact of Guarantee® Seaweed Extract on Pinot noir wine grapes in a field trial.

LOCATION/SCIENTISTS

Malibu, CA

Investigator: David Holden, Holden Research and Consulting

Study Director: Sarah Williams, Ph.D.

STUDY DESIGN

Four applications of Guarantee® seaweed extract were made (2 quarts/acre) via foliar applications at shoot extension, pre-bloom, post-bloom, and pre-Veraison. The applications were made on 4/9/15, 4/27/15, 5/28/15, and 6/18/15. The impact of Ocean Organics seaweed extract on the following variables was measured:

- Bunch set and sizing over time
- Brix over time after Veraison
- Final estimated harvest based on sampling
- General pH, titratable acids, and Brix of harvested juice.

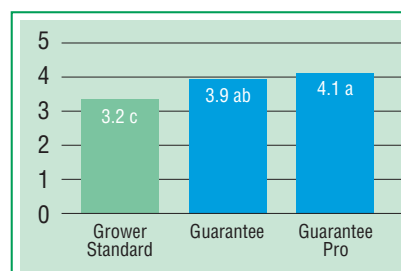


RESULTS

Bunch Cluster Length (Rachis)

Both Guarantee and Guarantee Pro showed the greatest rachis length. The rachis stretch, as seen by industry, allows the berries on the vine to grow larger and gives higher weights to the final produced bunches. Improved rachis stretch also may allow spacing between berries that helps prevent disease.

Rachis length in inches 6/17/15 Veraison



Ocean Organics seaweed treatments were compared to an untreated control (UTC). Guarantee® seaweed extract was also compared to Guarantee Pro, which is seaweed extract enhanced with Ocean Organics' proprietary Pro-Amino Technology. This trial was set up as a random complete block designed trial with completely randomized data collection of six replicates. It should be noted that the grower used limited inputs in the production of these grapes, with low rates of fertilizer being used this season. Most nutrients came from the background levels in the soil (grower used some sources of nitrogen in the past season).

Continued

Final Production Data

Guarantee and Guarantee Pro showed numerically better production per vine over the grower standard. Guarantee Pro showed the most significant increase in final bunch weight over all. There were no statistically significant differences in the average number of final bunches harvested per vine; however, both Ocean Organics treatments showed a numerical improvement over the grower standard. Final production extrapolated to yield in tons per acre is shown, based on average bunch weight and number of bunches per vine. Both Ocean Organics treatments showed a performance improvement over the grower standard.

8/12/15 Harvest	Avg Bunch Weight (grams)	Avg # Bunches/Vine	Extrapolated Harvest per Acre (tons)
Grower Standard	54.5 ab	17.6 a	1.18 a
Guarantee	50.4 bc	20.6 a	1.27 a
Guarantee Pro	61.8 a	19.4 a	1.44 a

Early Bunch and Berry Growth

Early bunch and berry growth data at veraison is shown in the below table. Both Guarantee and Guarantee Pro showed a trend for improved sizing, as well as a numerically higher berry set over the grower standard. These measurements are taken because the industry is concerned about the final set of berries and the loss of berries (shatter) in the season.

6/17/15 Veraison	Avg Bunch Weight (grams)	Number of Berries Set per Bunch
Grower Standard	45.94 a	109 a
Guarantee	62.3 a	126.1 a
Guarantee Pro	62.17 a	125.6 a

Brix

Early and late Brix readings seemed to indicate earlier Brix development for Guarantee and Guarantee Pro over the grower standard. These grapes are generally harvested when they reach a degree of Brix of 23-25. If they reach that degree of Brix earlier it may be advantageous to the wine maker under certain circumstances, such as poor weather at the anticipated harvest date. Berry sugar development reported as degrees of Brix over time is shown in the table below.

Brix	7/14/15 Post-Veraison	7/21/15 3 wks Pre-harvest	7/28/15 2 wks Pre-harvest	8/12/15 Harvest
Grower Standard	17.13 c	18.73 a	18.78 b	23.9
Guarantee	17.97 a	18.83 a	19.0 a	23.1
Guarantee Pro	17.57 b	18.82 a	18.95 ab	24.1

Final Harvest Juice

Final harvest juice was analyzed by Baker Wine and Grape Labs for the degree of Brix, Titratable Acids (TA), and juice pH. For Guarantee and Guarantee Pro, respectively: Brix was 23.1 and 24.1; TA was 0.57 and 0.55; and pH was 3.31 and 3.43. These would all appear to be within a normal range for each sample. These samples at harvest were not replicated so there is no indication if any is significantly different than the others. Past discussions with the lab and growers would indicate these are in a correct range for these grapes. Generally, wine makers do not want to see any large variations in these numbers for the crop.

At no time during the course of this trial were any adverse or phytotoxic effects observed to this crop. All data rated as significant was done so utilizing the Least Significant Difference analysis at a 90% confidence level.

Guarantee and Guarantee Pro showed:

Increased bunch length

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Numerically better production per vine

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A trend for improved sizing

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Numerically higher berry set

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Earlier Brix development

Ocean Organics is a manufacturer of high performance, scientifically proven seaplant-extract based biostimulants, plant growth materials and granular fertilizers. Our state-of-the-art products contain unique and proprietary constituents. Founded in 1977, we are the developers and manufacturers of the Emerald Isle foliar fertilizers and biostimulants, now owned and distributed to professional turf and ornamental markets by Lebanon Turf Products. Our materials have been tested in over 25 universities and independent laboratories.



Ocean Organics®

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