

# Walnuts(*Julans regia*) with Vitazyme application



**Researchers:** Constanza Parra and Nicolas Miranda

**Research organization:** Syngenta Chile, and Plant Designs, Rochester, New York, respectively

**Location:** Naltagua, Central Chile **Variety:** Chandler **Soil type and analysis:** unknown

**Experimental design:** A walnut orchard was divided into a standard-treated area and a Vitazyme-treated area, to evaluate the effects of Vitazyme on Walnut quality as well as tree vigor. **Fertilization:** unknown

## ① Control ② Vitazyme

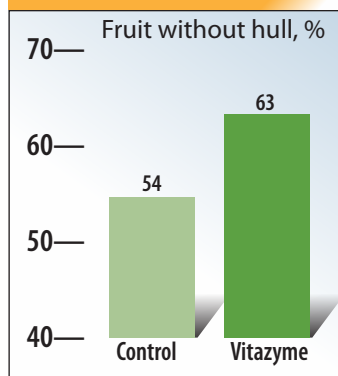
**Vitazyme applications:** Two applications were made with an orchard sprayer on the soil and leaves: (1) 3 liters/ha on December 2, 2024; (2) 1.5 liters/ha on January 6, 2025.

**Hull opening and maturity results:** At harvest, fruits on the ground were separated into two categories: those with the green husk attached and those with the hull detached, indicated greater physiological maturity. Then, two parameters were evaluated: (1) percent of fruit without a hull, and (2) kernel to hull ratio for fruit with the hull still attached.



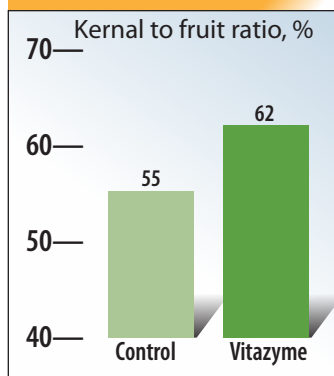
Treatment	Fruit without hull	Change	Kernel to hull ratio	Change
	%	%	%	%
1. Control	54	—	55	—
2. Vitazyme	63	9 (+17%)	62	7 (+13%)

### Fruit Without a Hull



*Increase in the fruit without a hull with Vitazyme: 9 percentage points*

### Kernel to Hull Ratio



*The Vitazyme treated walnuts were of superior size and matured earlier, while having better coloration which favored better processing performance.*

*Increase in the kernel to hull ratio with Vitazyme: 7 percentage points*

These data reveal an advanced maturity and kernel development at harvest with Vitazyme.

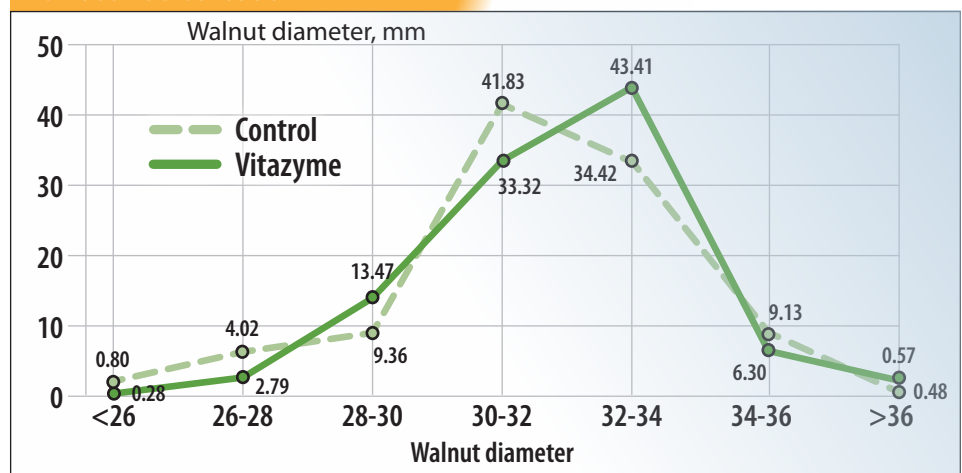
### Nut size distribution results:

These data show the average nut size distribution for three replicates for the two treatments.

**Control Nuts:** mostly in the 30-34 mm range

**Vitazyme nuts:** a shift towards larger diameter nuts in the 32-36 mm range

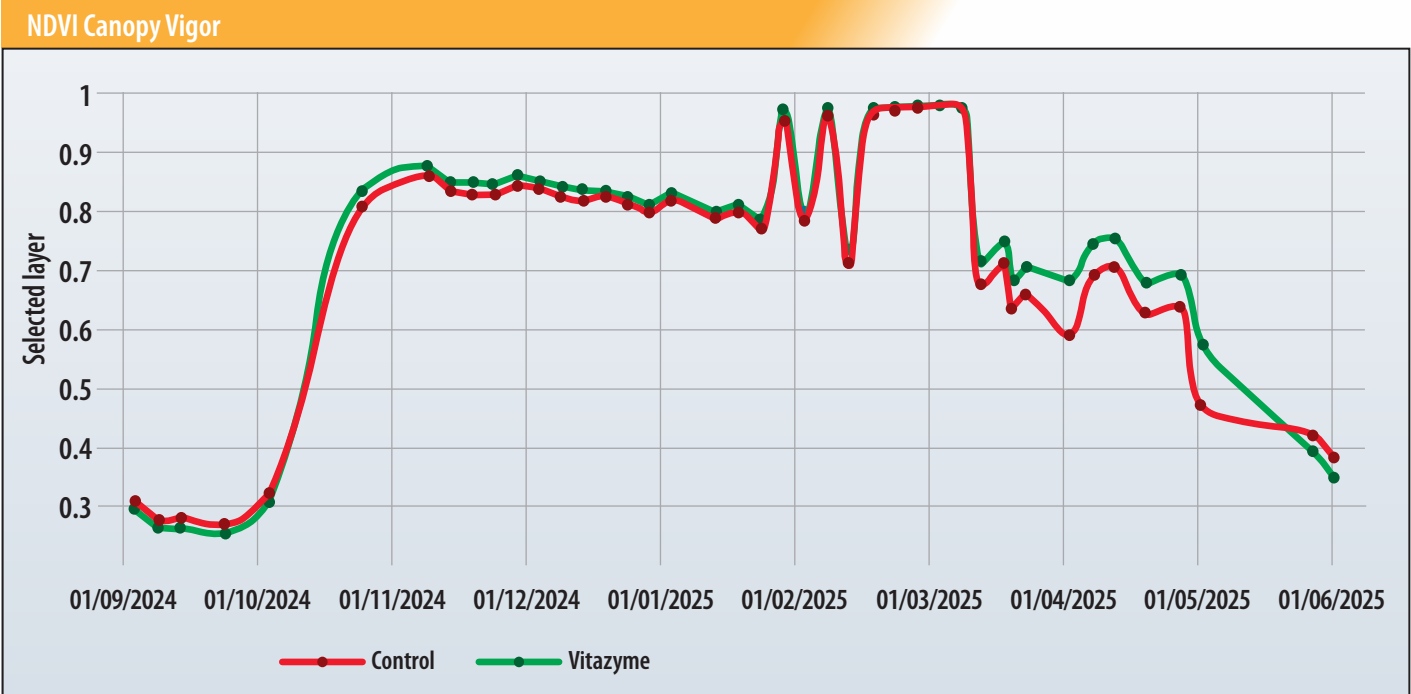
### Walnut Size Distribution



**Kernel color results:** Industry standard color evaluations were made for three replicates of both treatments: extra light, light, light amber, and amber.

Treatment	Color tendency	Interpretation
1. Control	Mixed light and light amber	Normal color distribution; some dark kernels
2.Vitazyme	Mostly light and extra light	Improved color uniformity and brightness

**NDVI canopy vigor results:** NDVI measurements were taken at several times during the growing season. These measurements are displayed in the accompanying graph. NDVI (Normalized Difference Vegetative Index) measures the difference between near-infrared and red light to quantify vegetative health, using satellite imagery. It ranges from -1 to 1, where higher values indicate denser and healthier vegetation.



Both treatments revealed good vegetative vigor in early December and January, and as the season progressed towards harvest in late April to early May the NDVI values declined, reflecting natural senescence. However Vitazyme values were greater near and after harvest.

**Conclusions:** This Chilean (Naltagua, Central Chile) walnut study, comparing two Vitazyme foliar and soil sprays with an untreated control portion of the orchard, demonstrated that Vitazyme enhanced fruit maturity and nut quality. The observed increase in hull detachment, higher kernel-to-hull ratio, larger nut size, and lighter kernel color collectively indicate accelerated and more uniform nut maturation under Vitazyme. This translates into easier harvesting and potentially better processing performance. The NDVI trend supports the hypothesis of improved physiological efficiency and post-harvest recovery under Vitazyme. Overall, these results confirm a consistent positive response of walnut trees to Vitazyme under Central Chilean conditions during the 2024-2025 season.



A walnut orchard in Central Chile was used to evaluate the effect of Vitazyme nut quality and size distribution.