

## Avocados with Vitazyme application

**Researcher:** Steven David

**Research organization:** Sustainable Farming Solutions, Perth, Western Australia

**Location:** Western Australia

**Variety:** Unknown

**Experimental design:** Nursery avocado plants were treated with Vitazyme and compared with untreated controls to determine the effect of this product on root and top growth.

### ① Control ② Vitazyme

**Vitazyme application:** (1) Some plants were drenched at two times with a 1% Vitazyme solution; (2) other plants were drenched at two times with a 2% Vitazyme solution. Application timing is not known.

**Growth results:** Although no measurements were made, it was obvious by observation that both the 1% and 2% pot drenches improved root growth. This was especially true for the 2% drench, which displayed much greater root growth than the untreated control, and was substantially greater than the 1% drench. Note the accompanying photograph.



*The circled root ball has been treated twice with a 2% Vitazyme drench, and reveals an amazing improvement in rooting; the 1% drench in the center also shows excellent rooting, far better than the control on the left.*

**Conclusions:** This Western Australia Vitazyme trial revealed that either a 1% or 2% pot root drench, applied two times, greatly increased root growth and associated top growth and development. This product is thus shown to be an excellent adjunct to nursery applications of avocados to stimulate more rapid growth, and reduced time to reach transplanting size.

# Avocados with Vitazyme application

**Researcher:** Francisco E. González Valdés, M.S., Agronomy Engineer  
**Research Institution:** Belloto Consulting Ltd., Chile

## Experiment 1. Vitazyme used with avocado under unfavorable conditions (2016)

**Variety:** a Phytophthora-sensitive rootstock

**Soil type:** clayey

**Planting date:** 2013

**Experimental design:** Root-rot sensitive avocado trees were treated with three Vitazyme regimes to determine the products effectiveness to control the problem. Each plot had 10 trees, with 16 plots (four reps), or 160 total trees.

**Observations:** At six months after these applications, there was a noticeable increase in leaf area for the Vitazyme treatments, but final results were not yet available.



*Vitazyme applied to avocados in Chile has been proven to enhance tree growth and yields consistently, as can be seen in this photo showing vigorous new growth in a producing plantation.*

Treatment	Vitazyme in drip irrigation	Vitazyme foliar
1	0	0
2	1 liter/ha, four applications	0
3	0	0.2% four applications
4	1 liter/ha, four applications	0.2% four applications

**Increase in leaf area with drip irrigation: 48%**

**Increase in leaf area with foliar + drip irrigation: 80%**

**Conclusions:** In these Chilean avocado trials, Vitazyme increased leaf area of the trees substantially and significantly, using both a foliar spray and a drip irrigation application. In Experiment 2, leaf area was increased by 48% using four drip irrigation applications,

whereas by alternating foliar and drip irrigation applications the leaf area increased a remarkable 80%. This latter treatment is thus recommended for avocado growers to attain vigorous leaf canopies which should translate to greater fruit yields.

## Experiment 2. Vitazyme for avocado tree vigor (2013)

**Variety:** unknown

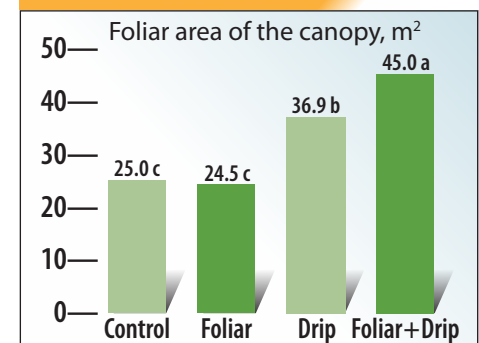
**Experimental design:** Four treatments were made in an avocado orchard, replicated four times, to determine the effectiveness of this product in accelerating the vigor of the trees.

Treatment	Vitazyme application sequence <sup>1</sup>			
	1	2	3	4
1	0	0	0	0
2	Foliar	Foliar	Foliar	Foliar
3	Drip	Drip	Drip	Drip
4	Foliar	Drip	Foliar	Drip

<sup>1</sup>Treatment levels are at 1 liter/ha; foliar applications used a 0.2% solution spray.

## Leaf area results:

### Leaf Area\*



\*Means followed by the same letter are not significantly different according to Duncan's Multiple Range Test P=0.05.

### ***Vital Earth Resources***

706 East Broadway, Gladewater, Texas 75647  
(903) 845-2163 FAX: (903) 845-2262

## **2014 Crop Results**

# **Vitazyme on Avocados**

Researcher: Hermilo Sanchez Sanchez, Ph.D.

University location: Academic Unit of Agro-Hydraulic Engineering, Autonomous University of Puebla, San Juan Acateno, Teziutlan, Puebla, Mexico

Location of study: commercial orchard at Tlalnepantla, Morelos, Mexico

Variety: Hass

Trial initiation: August 13, 2013

Soil type: clayey

Tree age: 8+ years

Tree spacing: 6m x 6m

Experimental design: An avocado orchard was selected to evaluate the effect of Vitazyme on the yield and quality of the fruit. The experiment was laid out in a Latin Square design with one tree per plot (36 m<sup>2</sup>), replicated four times.

Treatment	Days after harvest <sup>1</sup>				Total dosage
	60	120	180	240	
	----- ml/liter of spray -----				liters/ha
Control	0	0	0	0	0
Vitazyme 1	2.5	2.5	2.5	2.5	0.7
Vitazyme 2	5.0	5.0	5.0	5.0	1.4
Vitazyme 3	7.5	7.5	7.5	7.5	2.1

<sup>1</sup>All applications received the indicated dosage of Vitazyme in 5 liters per tree of water, applied to the leaves.

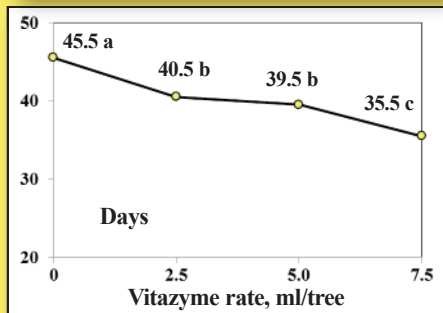
Fertilization: none

Vitazyme application: 2.5, 5.0, and 7.5 ml/tree applied by sprayer to the leaves of appropriate trees every 60 days, for four times, following harvest (see the table)

Statistical evaluation: The Statistical Analysis System (SAS) was used, employing Tukey's Test to evaluate differences among treatment means, at P = 0.05.

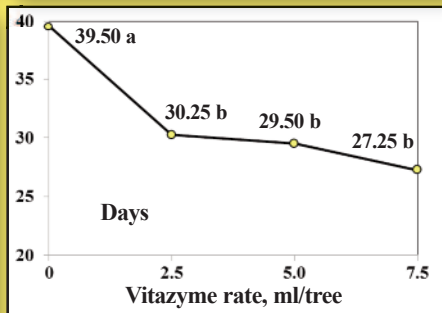
Growth and yield results: For all means, values followed by the same letter are not significantly different at P = 0.05 according to Tukey's Test.

### Days to Bud Break<sup>1</sup>



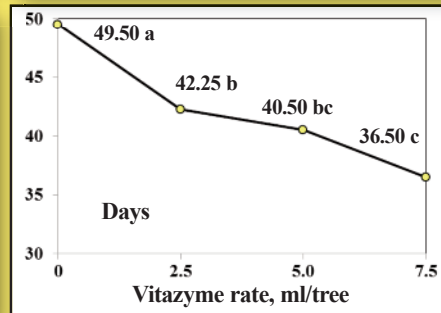
<sup>1</sup>Number of days to bud break after pruning.

### Days to Flowering<sup>1</sup>



<sup>1</sup>Number of days to 50% bud break.

### Days to Fruit Set<sup>1</sup>



<sup>1</sup>Number of days to 20% of the small fruit formed, starting from 50% bud break.

#### Reduction in Days to Bud Break

**Vitazyme 1 ..... 5 days**  
**Vitazyme 2 ..... 6 days**  
**Vitazyme 3 ..... 10 days**

As the Vitazyme rate increased, the time to bud break was reduced linearly by 5 to 10 days.

#### Reduction in Days to Flowering

**Vitazyme 1 ... 9.25 days**  
**Vitazyme 2 ... 10.00 days**  
**Vitazyme 3 ... 12.25 days**

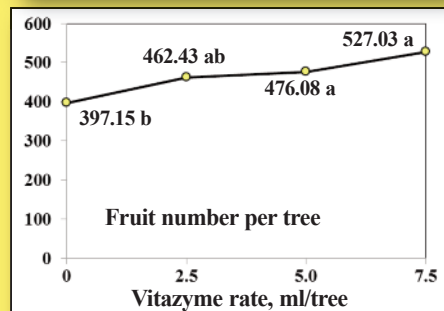
Days to flowering were reduced by a remarkable 9.25 to 12.25 days, consistent with brassinosteroid effects on fruit trees.

#### Reduction in Days to Fruit Set

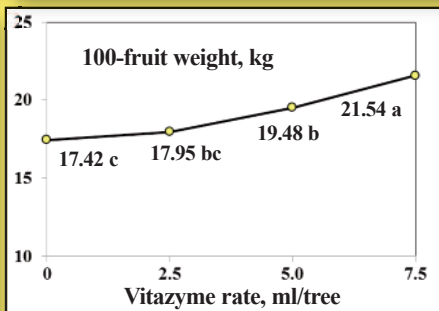
**Vitazyme 1 ... 7.25 days**  
**Vitazyme 2 ... 9.00 days**  
**Vitazyme 3 ... 13.00 days**

Days to fruit set were greatly reduced, by up to 13 days at the highest Vitazyme application.

### Fruits Per Tree

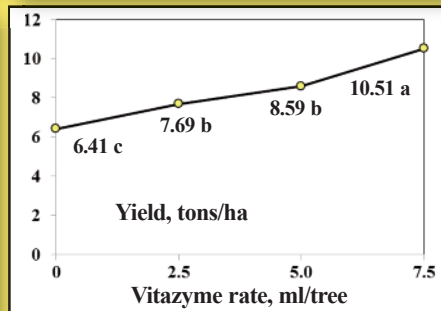


### Fruit Weight<sup>1</sup>



<sup>1</sup>100 fruit were weighed.

### Fruit Yield<sup>1</sup>



<sup>1</sup>Estimate based on fruit weight.

#### Increase in Fruits Per Tree

**Vitazyme 1 ..... 16%**  
**Vitazyme 2 ..... 20%**  
**Vitazyme 3 ..... 33%**

A linear increase in fruit number resulted, with higher rates of application, up to a 33% increase.

#### Increase in Fruit Weight

**Vitazyme 1 ..... 3%**  
**Vitazyme 2 ..... 12%**  
**Vitazyme 3 ..... 24%**

Significant fruit weight increases occurred at the 5.0 and 7.5 ml/tree rates, with up to 24% greater weight.

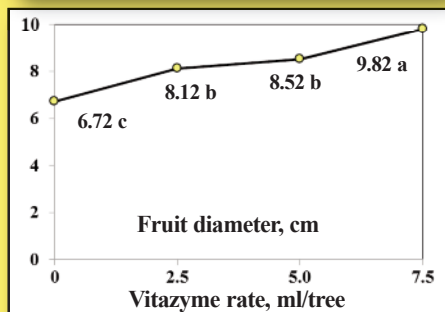
#### Increase in Fruit Yield

**Vitazyme 1 ..... 20%**  
**Vitazyme 2 ..... 34%**  
**Vitazyme 3 ..... 64%**

A nearly straight-line increase in yield resulted from added increments of Vitazyme.

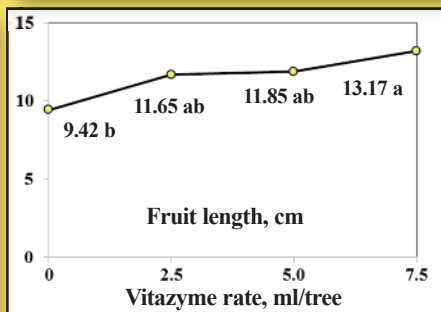


### Fruit Diameter<sup>1</sup>



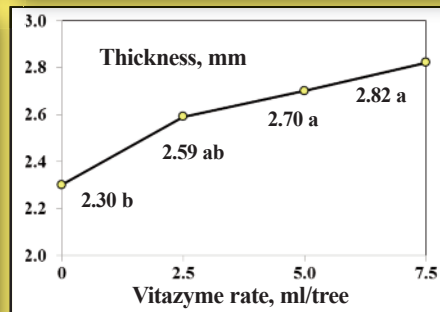
<sup>1</sup>10 fruits were measured with a vernier caliper, and averaged.

### Fruit Length<sup>1</sup>



<sup>1</sup>10 fruits were measured with a vernier caliper, and averaged.

### Skin Thickness<sup>1</sup>



<sup>1</sup>A cross section of skin from five fruit was measured by microscope, and averaged.

### Increase in Fruit Diameter

Vitazyme 1	21%
Vitazyme 2	27%
Vitazyme 3	46%

All rates of Vitazyme increased fruit diameter significantly, up to 46% at the highest rate.

### Increase in Fruit Length

Vitazyme 1	24%
Vitazyme 2	26%
Vitazyme 3	40%

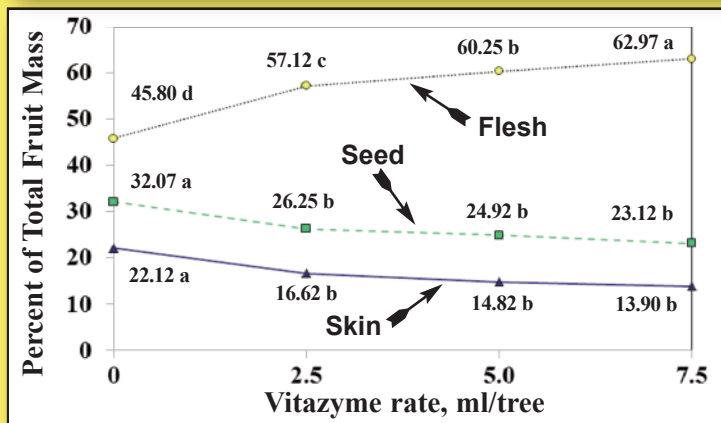
All three Vitazyme treatments were statistically the same, and the 7.5 ml/tree rate produced a 40% increase in fruit length.

### Increase in Skin Thickness

Vitazyme 1	13%
Vitazyme 2	17%
Vitazyme 3	23%

In all cases Vitazyme increased skin thickness, significantly at the 7.5 ml/tree level (23%).

### Percentage of Flesh, Skin, and Seed<sup>1</sup>



<sup>1</sup>Ten fruits for each plot were selected, and the flesh, skin, and seeds were separated, weighed, and averaged.

### Change with Vitazyme, percentage points

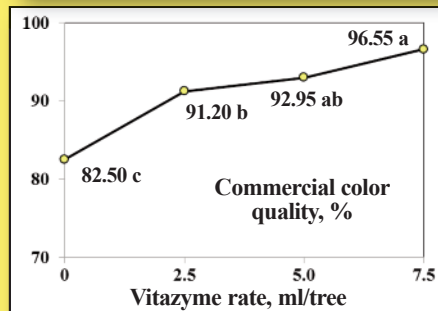
	<u>Flesh</u>	<u>Skin</u>	<u>Seed</u>
Vitazyme 1	+11.32	-5.50	-5.82
Vitazyme 2	+14.45	-7.30	-7.15
Vitazyme 3	+17.17	-8.22	-8.95

The percentage of flesh of the avocado fruit increased linearly and significantly with the rate of Vitazyme application, while the percentages of skin and seed conversely dropped with those same rates.

**Conclusions:** The conclusions of the Mexican authors are as follows.

1. Vitazyme, at dosages of 0.7, 1.4 and 2.1 liters per hectare of Vitazyme, equivalent to 100, 200 and 200 mL/200 L water in 1390 liters per hectare of solution, each in 4 foliar sprays at intervals of two months after the last harvest, in 8 years old avocado trees, recorded good effects on the evaluated parameters in the avocado crop, achieving significant improvements in days to bud break, to flowering and to fruit set, as well as in yield and quality of fruits, showing statistical differences with the untreated control throughout the development of the trial.
2. With four foliar applications of Vitazyme at dosages of 0.7, 1.4 and 2.1 liters per hectare of Vitazyme, equivalent to 100, 200, and 300 mL/200 L water in 1390 liters per hectare of solution, each in 4 foliar sprays at intervals of two months after the last harvest, in 8 years old avocado trees, significant yield increases compared with an untreated control of 1.18, 2.18, and 4.11 tons/hectare, or 20, 34, and 64%, respectively, are achieved. Likewise, marked improvements in the quality of the Vitazyme treated fruits are noticed.
3. The use of Vitazyme at dosages of 0.7, 1.4, and 2.1 liters per hectare of Vitazyme, each in 4 foliar sprays at intervals of the two months after the last harvest, is recommended in avocado trees, since it is demonstrated to be an alternative that favorably increased yields per hectare, as well as the quality of avocado fruits.
4. There were no toxic effects to the avocado crop, after applying dosages of 0.7, 1.4, and 2.1 liters per hectare of Vitazyme, equivalent to 100, 200, and 300 mL/200 L water in 1390 liters per hectare of solution.

### Uniformity of Color<sup>1</sup>



<sup>1</sup>100 fruit were evaluated for color qualifying for commercial for commercial sales.

### Increase in Uniformity (percentage points)

Vitazyme 1 .....	8.70
Vitazyme 2 .....	10.45
Vitazyme 3 .....	14.05

Significantly more fruit was of commercial color quality with all three Vitazyme treatments, especially the 7.5 ml/tree rate.

## Vital Earth Resources

706 East Broadway, Gladewater, Texas 75647  
(903) 845-2163 FAX: (903) 845-2262

# 2013 Crop Results

## Vitazyme on Avocados

Researcher: unknown      Farmer: Tran Minh Nhuong      Location: Ea Po, Dak Nong Province, Viet Nam  
Variety: unknown      Years in production: 5      Planting density: 550 plants/ha  
Experimental design: Six avocado trees for each treatment — one with Vitazyme and the other an untreated control — were selected near each other to evaluate the effects of Vitazyme on the yield of fruit.

### 1. Control

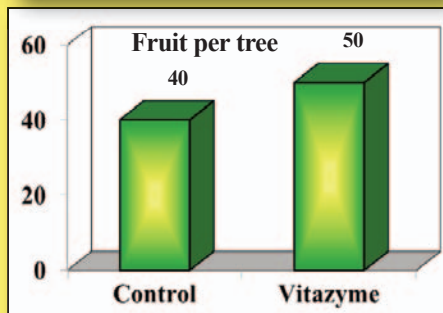
### 2. Vitazyme

Fertilization: unknown

Vitazyme application: 0.5 liter applied per tree to all six trees, five times during the year

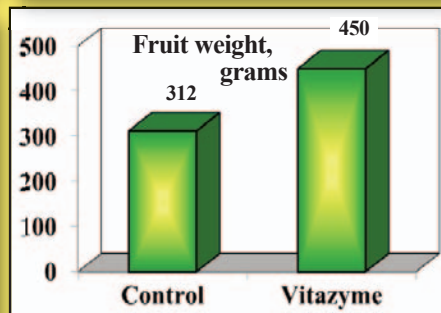
Yield results:

### Fruit Number<sup>1</sup>

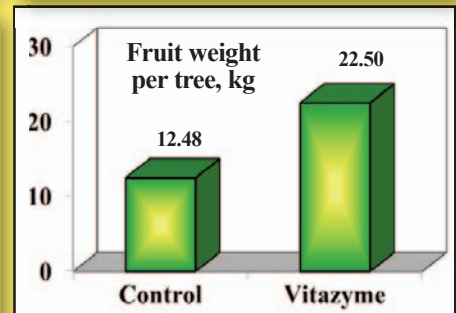


<sup>1</sup>Per avocado tree.

### Fruit Weight



### Fruit Yield<sup>1</sup>



<sup>1</sup>Per avocado tree per year.

**Increase in fruit  
number: 25%**

**Increase in fruit  
weight: 44%**

**Increase in fruit  
yield: 80%**

Fruit number, weight, and yield all increased dramatically with Vitazyme application.

Income results: Costs of Vitazyme: 24,000 VND/tree

**Increase in income with Vitazyme: 162,500 VND/tree**

Conclusions: An avocado study in Viet Nam, using six trees for each treatment, revealed that Vitazyme greatly improved the yield (+80%), number (+25%), and size (+44%) of fruit. Moreover, the income per tree was raised by 162,500 VND. It was observed during the trial that **many avocado fruit fell prematurely in the control treatment, but not in the Vitazyme treatment.** This program is shown to be a most excellent adjunct to avocado production in Viet Nam.