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2014 Crop Results

Vitazyme on Avocados

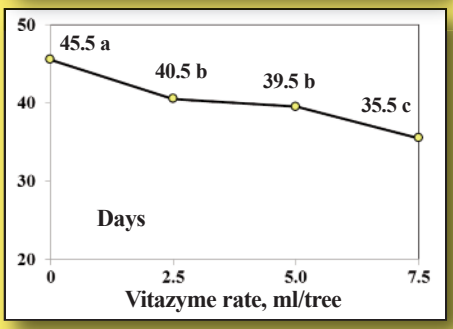
Researcher: Hermilo Sanchez Sanchez, Ph.D. *University location*: Academic Unit of Agro-Hydraulic Engineering, Autonomous University of Puebla, San Juan Acateno, Teziutlan, Puebla, Mexico
Location of study: commercial orchard at Tlalnepantla, Morelos, Mexico *Variety*: Hass
Trial initiation: August 13, 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^2), replicated four times.

Treatment	Days after harvest[1]				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

[1]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[1]



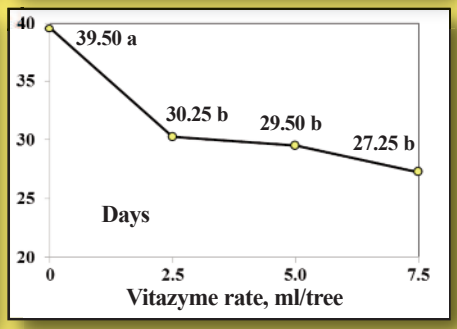
[1]Number of days to bud break after pruning.

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.

Days to Flowering[1]



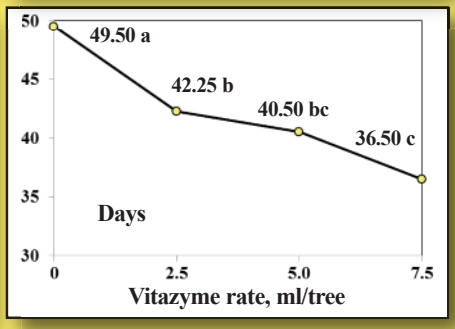
[1]Number of days to 50% bud break.

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.

Days to Fruit Set[1]



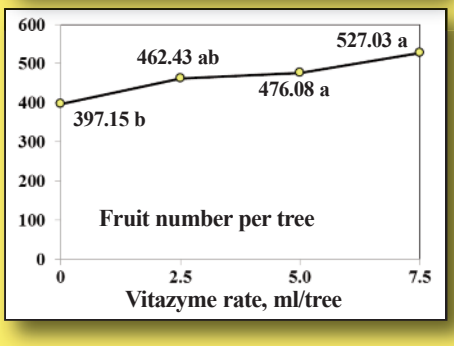
[1]Number of days to 20% of the small fruit formed, starting from 50% bud break.

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

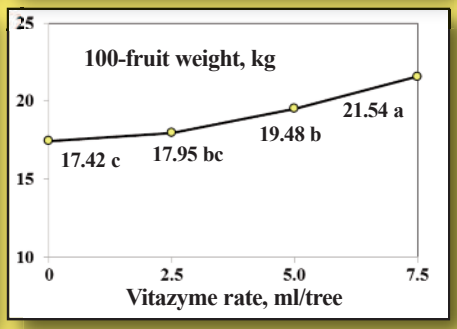


Increase in Fruits Per Tree

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.

Fruit Weight[1]



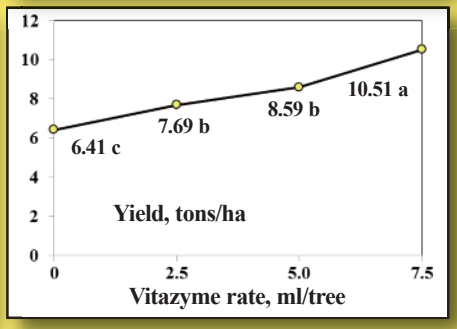
[1]100 fruit were weighed.

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.

Fruit Yield[1]



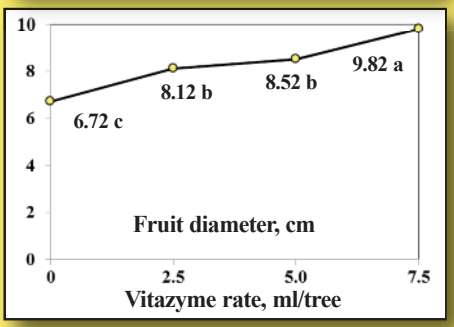
[1]Estimate based on fruit weight.

Increase in Fruit Yield

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

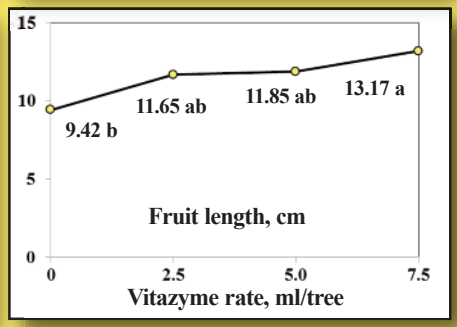
A nearly straight-line increase in yield resulted from added increments of Vitazyme.

Fruit Diameter[1]



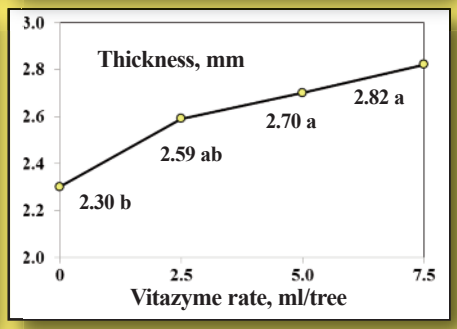
[1]10 fruits were measured with a vernier caliper, and averaged.

Fruit Length[1]



[1]10 fruits were measured with a vernier caliper, and averaged.

Skin Thickness[1]



[1]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.

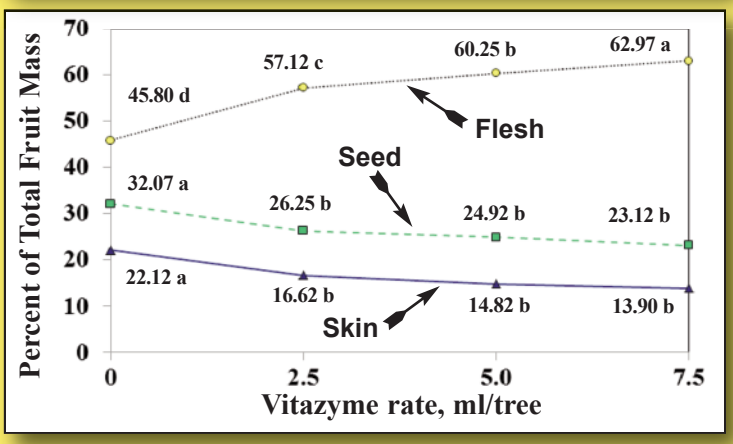
Increase in Fruit Length	
Vitazyme 1	24%
Vitazyme 2	26%
Vitazyme 3	40%

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[1]



[1]Ten fruits for each plot were selected, and the flesh, skin, and seeds were separated, weighed, and averaged.

Change with Vitazyme, percentage points	Flesh	Skin	Seed
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.

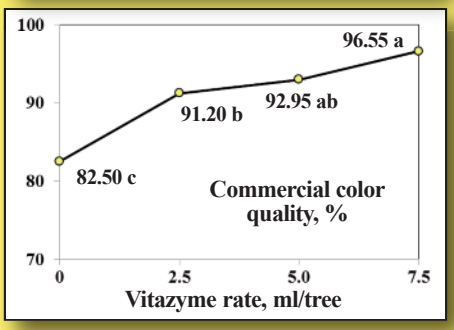
1. Vitazyme, at dosages of 0.7, 1.4 and 2.1 liters per hectare of Vitazyme, equivalent to 100, 200 and 200 mL/200 L water in 1390 liters per hectare of solution, each in 4 foliar sprays at intervals of two months after the last harvest, in 8 years old avocado trees, recorded good effects on the evaluated 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[1]



[1]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.

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2013 Crop Results

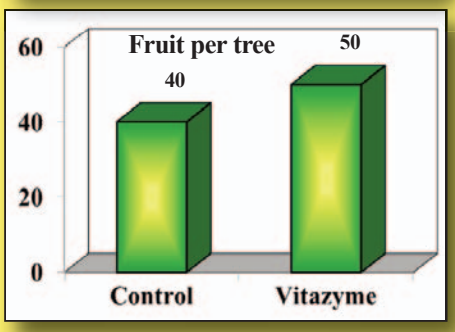
Vitazyme on Avocados

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:

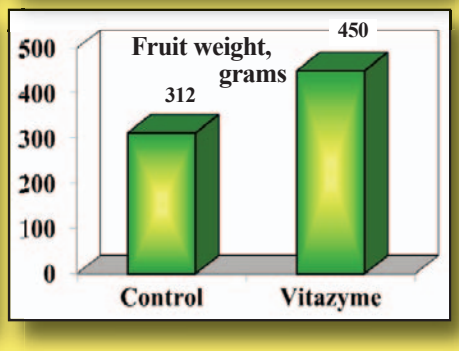
Fruit Number[1]



[1]Per avocado tree.

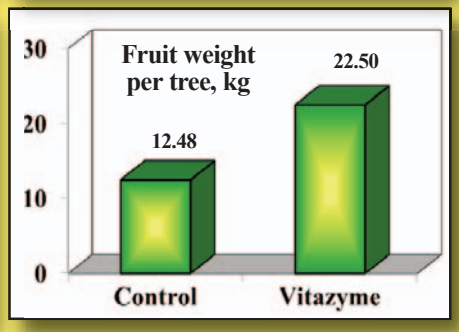
Increase in fruit number: 25%

Fruit Weight



Increase in fruit weight: 44%

Fruit Yield[1]



[1]Per avocado tree per year.

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.