Vital Earth Resources
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2014 Crop Results

Vitazyme on Peppers (Chili)

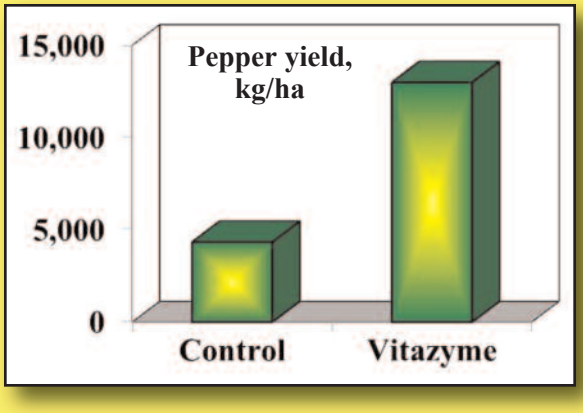
Researcher: Thiery Pelette *Research organization*: Acra Industries, Haiti
Location: Belladere, Haiti *Variety*: West Indies *Planting date*: unknown
Experimental design: This experiment was part of a multi-crop testing program that was established in December of 2011, to evaluate the efficacy of Vitazyme for increasing crop yields in Haiti. The test area was 1 hectare (10,000 m^2) for the treated and control plots.

1. Control **2. Vitazyme**

Fertilization: unknown
Vitazyme application: 1 liter/ha (13 oz/acre)
Harvest date: unknown
Yield results:

Treatment	Yield	Yield change
	kg/ha	kg/ha
Control	4,329	—
Vitazyme	17,316	12,987 (+300%)

Increase in chili pepper yield with Vitazyme: 300%



Conclusions: A chili pepper study in Haiti revealed a great increase in yield with Vitazyme application, fully 300% greater than the control. It is not known why the control treatment yielded so poorly, possibly due to plant disease which Vitazyme suppresses. This program is shown to hold great promise in helping to alleviate food production problems in this developing country.

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2013 Crop Results

Vitazyme on Pepper (Black)

Four Farm Trials — Cu Jut District

Trial 1

Researcher: unknown *Farmer*: Dam Van Huan *Location*: Dak Rong Hamlet, Cu Jut District, Viet Nam *Variety*: *Piper nigrum* *Plant population*: 1,600 pillars/ha

Experimental design: Pepper plants were treated with Vitazyme multiple times to evaluate its effect on pepper production, as compared to an untreated control.

1. Control **2. Vitazyme**

Fertilization: unknown

Vitazyme application: 500 ml of Vitazyme in 200 liters of water (0.25%) applied to 150 pepper pillars four times per year

Treatment	Ear length	Flowering	Fruits/Ear	Ear falling	Yield/Pillar	Total yield
	cm		number		kg	kg/ha
Control	10	Long periods	22.5	Much	4.1	6,560
Vitazyme	11	Same time	27.0	None	5.8	9,200

Trial 2

Researcher: unknown *Farmer*: Lang Van Chanh *Location*: Bon U2-Dak Rong Hamlet, Cu Jut District, Viet Nam *Variety*: unknown *Plant population*: 1,700 pillars/ha

Experimental design: Pepper plants were treated with Vitazyme multiple times to evaluate its effect on pepper production, as compared to an untreated control.

1. Control **2. Vitazyme**

Fertilization: unknown

Vitazyme application: 500 ml of Vitazyme in 200 liters of water (0.25%) applied to 250 pepper pillars five times per year

Treatment	Ear length	Flowering	Ear falling	Yield/Pillar	Total yield
	cm			kg	kg/ha
Control	10.5	Long periods	Much	4.1	7,480
Vitazyme	11.0	Same time	None	6.0	10,200

Trial 3

Researcher: unknown *Farmer*: Trien Van Muu *Location*: Cu Knia Hamlet, Cu Jut District, Viet Nam *Variety*: unknown *Plant population*: 1,300 pillars/ha

Experimental design: Pepper plants were treated with Vitazyme multiple times to evaluate its effect on pepper production, as compared to an untreated control.

1. Control **2. Vitazyme**

Fertilization: unknown

Vitazyme application: 500 ml of Vitazyme in 200 liters of water (0.25%) applied to 200 pepper pillars three times a year

Treatment	Ear falling	Yield/Pillar	Total yield
		kg	kg/ha
Control	Falling 30-60 days before harvest	5.0	6,500
Vitazyme	None	5.3	6,890

Trial 4

Researcher: unknown *Farmer*: Nguyen Van Yan *Location*: Cu Knia Hamlet, Cu Jut District, Viet Nam *Variety*: unknown *Plant population*: 1,800 pillars/ha

Experimental design: Pepper plants were treated with Vitazyme multiple times to evaluate its effect on pepper production, as compared to an untreated control.

1. Control **2. Vitazyme**

Fertilization: unknown

Vitazyme application: 500 ml of Vitazyme in 200 liters of water (0.25%) applied to 100 pepper pillars five times a year

Treatment	Ear length	Flowering	Fruits/Ear	Ear falling	Yield/Pillar	Total yield
	cm		number		kg	kg/ha
Control	11.0	Long periods	26.5	A few	6.3	11,340
Vitazyme	10.5	Same time	29.0	None	6.8	12,240

Trial Summary

Increases in Parameter Values With Vitazyme

Trial	Ear length	Flowering[1]	Fruits/Ear	Ear falling[2]	Yield
Trial 1	+20%	Improved	+20%	Improved	+41%
Trial 2	+5%	Improved	—	Improved	+36%
Trial 3	—	—	—	Improved	+6%
Trial 4	-5%	Improved	+9%	Improved	+8%

[1]In all cases Vitazyme caused uniform flowering at the same time, while the control displayed flowering a number of times over a long period.
[2]Immature pepper ears fell 1 to 2 months before harvest to a lesser or greater degree for all trials, but few fell with Vitazyme.

Income results:

Trial	Applications	Estimated added income with Vitazyme	Vitazyme cost[1]	Return On Investment
		Vnd/ha	Vnd/ha	VND spent : VND returned
Trial 1	4	136,000,000	8,000,000	17 : 1
Trial 2	5	127,500,000	6,375,000	20 : 1
Trial 3	3	71,500,000	3,900,000	18.3 : 1
Trial 4	5	162,000,000	8,100,000	20 : 1

[1]Includes product plus labor to apply.

Conclusions: This Viet Nam pepper trial at four locations revealed that Vitazyme, applied as a 0.25% solution three to five times per year, improved ear length (except in one case) and fruits per ear, and greatly reduced premature ear dropping while causing flowering to occur at one time instead of over a one to two month period. Yield increased by 6 to 41%, and income by up to 162,000,000 VND/ha. **Return On Investment was boosted from 17 : 1 to 20 : 1, a very consistent response.** Based on these results, Vitazyme is highly recommended for pepper culture in Viet Nam.

Other observations: **Vitazyme treated plants had darker green leaves and more buds by only 5 to 7 days after spraying.**

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2012 Crop Results

Vitazyme on Peppers

Researchers: Nelson Najarro and Cristhian Mazariegos, Foragro Development, Guatemala City, Guatemala.
Location: Jutiapa, Guatemala *Variety*: Natali (sweet pepper) *Transplanting date*: July 25, 2011
Planting rate: row spacing = 1.25 m; in-row spacing = 2.5 cm *Growth environment*: plastic tunnels
Experimental design: A pepper field was selected to evaluate the ability of Vitazyme to increase crop population. Two 120-meter rows containing 800 seedlings in a 300 m^2 area were treated with a single Vitazyme drench.

1. Control **2. Vitazyme**

Fertilization: unknown
Vitazyme application: Three days after transplanting, on July 28, 2011, a 1% Vitazyme solution was sprayed as a drench at the base of the transplants in the treated area. A total of 24 liters of solution was applied to the 800 seedlings, giving 30 ml/plant.
Growth results: At seven days after planting, the following results were noted with Vitazyme treatment as compared to the untreated control:

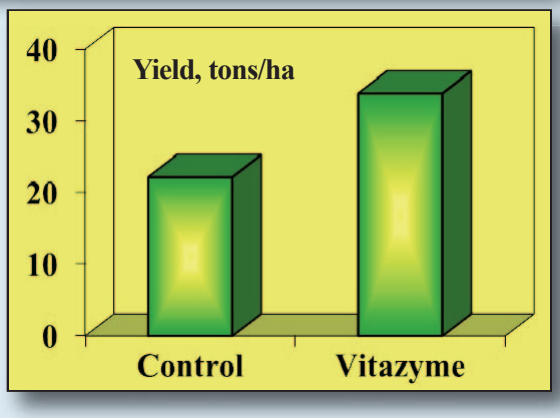
- ***More intense green color***
- ***Higher seedling survival rate***

Yield results:

Treatment	Diameter	Length	Weight	Fruits/ha	Yield
	cm	cm	grams		tons/ha
Control	15.00	13.20	56.0	395,833	22.16
Vitazyme	23.34 (+56%)	21.32 (+62%)	65.0 (+16%)	520,833 (+32%)	33.85 (+53%)

Increase with Vitazyme

Fruit diameter	56%
Fruit length	62%
Fruit weight	16%
Fruit/ha	32%



Note that all parameters of growth, especially yield, were dramatically increased with Vitazyme application.
Conclusions: In this Guatemala pepper trial, where only a single application to the root zone was made, the fruit size was dramatically increased (56% wider and 62% longer), as were the number per hectare (32%). Weight was boosted by 16% on average. These results were gained due to greater chlorophyll development and subsequent growth, and increased transplant survival. Also, contributing to a greater final yield was a ***greatly reduced infection from a viral disease*** that severely infected the control area after a storm, early in the trial, tore off the plastic covers of the growth tunnels.

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2007 Crop Results

Vitazyme on Peppers

A Testimonial

Farmer: Michael Prochko
Location: Jefferson, Ohio
Varieties: sweet, hot, and other varieties
Soil type: silt loam, poorly drained, tiled at 20-foot centers
Spacing: double rows spaced 5 feet
In-row spacing: 15 inches
Mulching: plastic mulch over rows
Fertility level: good

Experimental design: The farmer applied a special fertility program plus Vitazyme over the entire 4.0-acre pepper area. He compared this program to previous years' results with the same cropping system.

Fertilization: added sulfur, high-calcium lime, boron, zinc, manganese, and copper

Vitazyme application: 13 oz/acre to the leaves and foliage at intervals

Weather: erratic, with a drought until late July, and then good moisture

Yield and quality results: All varieties yielded excellently, the Excursion variety producing many peppers of 1.25 lb! The hot and pablano peppers were exceptionally large and prolific, with a rapid turnover of the new fruit after picking. there were more peppers produced than he could market this year with the Vitazyme program.

Conclusions: Vitazyme in this pepper production system in Ohio produced large numbers of very sizable and tasty fruit. The product enabled the plants to make optimum use of the native and applied plant nutrients.

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2006 Crop Results

Vitazyme on Peppers

A Testimonial

Researcher: Ing. Agapo Castro *Location*: La Beatriz, Atuntaqui, Ecuador

Experimental design: No replicates were used in this study. The researcher observed the state of the crops as compared to untreated areas.

Comments by the researcher: "The plants reached a higher developmental stage and their strength was excellent, with an intense green color. We harvested bigger fruits and had a better yield. The entire crop had better sanitary [disease resistance] conditions and better drought resistance."

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2004 Crop Results

Vitazyme on Peppers

Researchers: Isel Creach Rodriguez, Ph.D.
Location: Santiago de Cuba Experiment Station, Dos Rios, Palma Soriana, Santiago de Cuba
Variety: Chay *Row spacing*: 1 meter *Soil type*: Leptic haplustert
Transplanting Date: December 5, 2003
Experimental design: An area of 73m^2 was used for each of the two treatments to determine the effects of the products on the growth and yield potential of the peppers. Each plot had an equal number of plants.

1. Control **2. Vitazyme**

Fertilization: unknown
Vitazyme application: 1 liter/ha on January 20, 2004, and 1 liter/ha on February 11, 2004
Growth results: Plants were evaluated on January 21 and February 2, 2004, for height and leaf number using random sampling of plants and leaves. The experimental design of this study was not conducive to a detailed statistical analysis, so only basic statistics were calculated.

Plant Height

January 21, 2004

Sample	Control	Vitazyme
	cm	cm
1	23	24
2	24	23
3	24	22
4	22	25
5	23	24
6	24	23
7	25	23
8	22	24
9	23	25
10	24	22
Mean	23.4	23.5

Increase in plant height: none

February 9, 2004

Sample	Control	Vitazyme
	cm	cm
1	30	32
2	31	32
3	21	33
4	28	31
5	27	33
6	22	30
7	26	33
8	24	32
9	22	31
10	23	33
Mean	25.4	32.0 (+26%)

Increase in plant height: 26%

Leaves Per Plant (February 6)

Sample	Control	Vitazyme
	----- number of leaves-----	
1	86	112
2	87	103
3	98	100
4	95	98
5	93	102
6	82	86
7	84	108
8	95	101
9	92	106
10	99	102
Mean	91.1	101.8 (+12%)

Increase in leaves per plant: 12%

Yield results (estimated): A formula was used to calculate estimated fruit weight and final yield of the pepper crop (after two pickings), based upon previous field studies.

Parameter	Control	Vitazyme
Fruit weight	16 g	24 g
Fruit yield/plot	4.8 kg	7.2 kg

Conclusions: This study in Santiago de Cuba showed that two applications of Vitazyme substantially increased plant height by 59 days after transplanting (+26%), while leaves per plant increased by 12% with Vitazyme by 63 days after transplanting. Estimated pepper yield with Vitazyme increased by 50% over the control.

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2000 Crop Results

Vitazyme on Peppers

Caribbean Chemical International

Agronomist: Fayaz Shah
Location: Aranguez, Trinidad, West Indies
Variety: King Henry Sweet Pepper
Transplanting date: August 12, 1999
Harvest date: January 25, February 7, 12, 16, and 24, and March 8 and 20, 2000
Experimental design: A plot of a pepper field was treated with Vitazyme, and an adjoining portion of the field served as a control. The treated plot had 245 pepper plants in an area 10x70 feet.

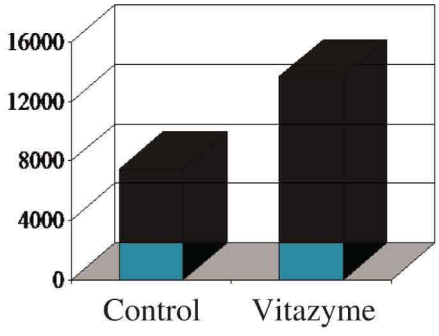
1. Control **2. Vitazyme**

Fertility treatments: unknown

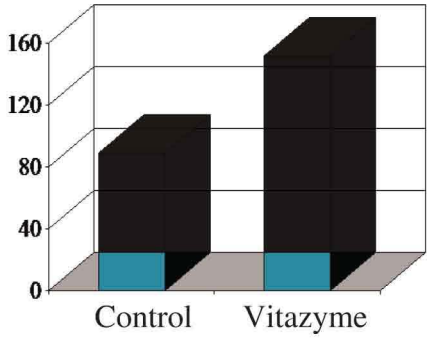
Vitazyme treatments: Vitazyme was applied three times at 30 ml/gallon (about 1%, or 3.29 liters/ha) each time on December 16 and December 29, 2000, and January 16, 2000.

Yield results: Both pepper number and total weight were tabulated over the harvest period for 10 randomly selected plants for the treated and untreated plots.

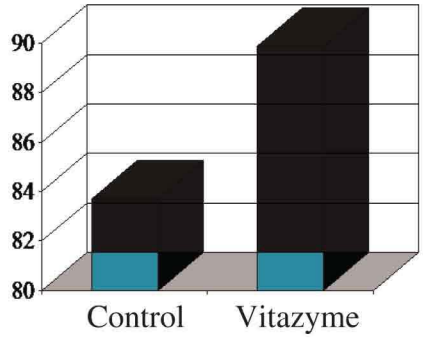
Treatment	Yield	Increase	Fruit number	Increase	Weight per fruit	Increase
	---------g----------				----------g/fruit----------	
Control	7,449	--	89	--	83.7	--
Vitazyme	13,668	6,219 (+83%)	152	63 (+71%)	89.9	6.2 (+7%)



Total yield, grams



Fruit number



Weight per fruit, grams

Conclusion: Vitazyme proved to be a great stimulator of pepper yield in this study, increasing total production by 83% above the control and increasing pepper size by 7%.

Yield increase: 83%

Fruit number increase: 83%

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1999 Crop Results

Vitazyme on Peppers

Caribbean Chemical International

Researcher: Chris Teixeira, agronomist *Location*: Trinidad, West Indies
Variety: King Henry *Transplanting date*: September 19, 1999 *Harvest date*: unknown
Experimental design: An area of a pepper field was treated with Vitazyme, while an adjacent area was left untreated. The determinations below are the analysis of five replications:

1. Control (no Vitazyme) 2. Vitazyme

Fertility treatments: 1 oz/plant of 12-24-12% N-P_2O_5-K_2O at planting; 1oz/plant of 12-12-17-2(Mg) 2 weeks after planting, and every 3 weeks thereafter

Vitazyme treatment: a 1% solution sprayed on the leaves and foliage on September 19, October 5, and October 24, 1999

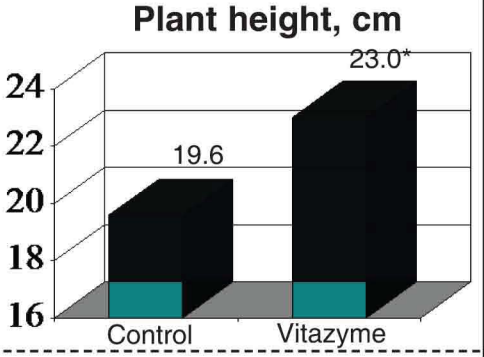
Yield and growth results: All values are from five replicates, collected on **November 10, 1999**.

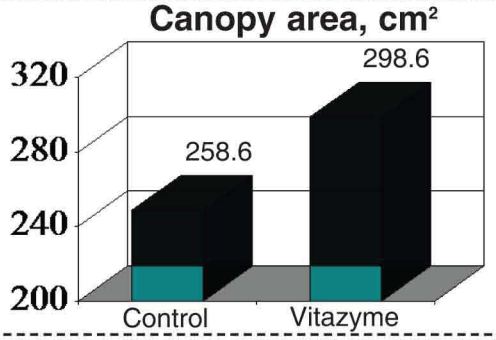
Plant Height

	Height, cm	Change, cm
Control	19.6	---
Vitazyme	23.0*	3.4 (+17%)

*Significantly greater than the control at P=0.12 (Duncan's Test)

Height increase: 17%





Leaf Canopy Area

	Canopy area, cm²	Change, cm
Control	248.6	---
Vitazyme	298.6	50.0 (+20%)

***Significantly greater than the control at P=0.001 (Duncan's test)

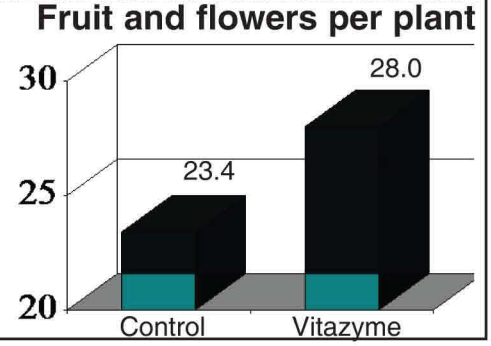
Canopy increase: 20%

Fruit and Flower Number

	Fruit and flower number	Increase
Control	23.4	---
Vitazyme	28.0*	4.6 (+20%)

*Significantly greater than the control at P=0.21 (Duncan's Test)

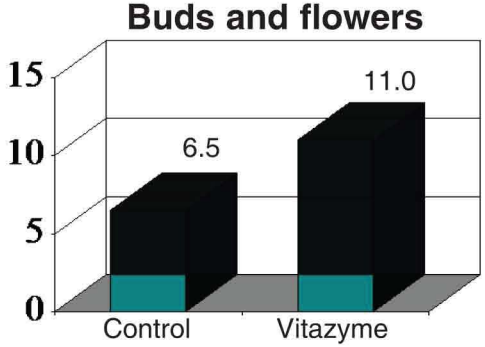
Fruit and flower increase: 20%



At this date the Vitazyme treatment was visibly superior to the control in the following respects:

- **A thicker, lusher leaf canopy**
- **Bigger and better developed roots**
- **A noticably better fruit set, and larger and more numerous pepper fruit**

Yield and growth results: Observations were made on **December 1, 1999**, using 10 plants per treatment.



Buds and Flowers

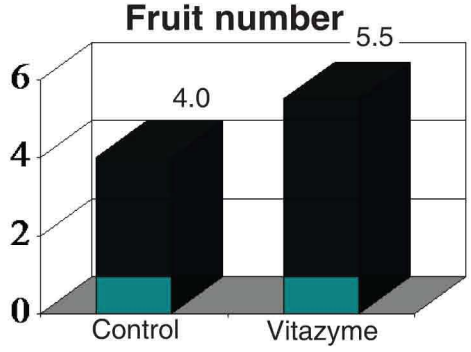
	Buds and flowers	Increase
Control	6.5	---
Vitazyme	11.0	4.5 (+69%)

Bud and flower increase: 69%

Pepper Fruit

	Fruit number	Increase
Control	4.0	---
Vitazyme	5.5	1.5 (+38%)

Pepper fruit increase: 38%



The Vitazyme treated plants also had **thicker stems**, were **darker green** in color throughout, and were **larger** in size than the control plants.