

Vital Earth Resources

706 East Broadway, Gladewater, Texas 75647

(903) 845-2163 FAX: (903) 845-2262

2006 Crop Results

Vitazyme on Onions

Researchers: Eng. Wilberto Gonzalez, and Eng. Jorge Gonzalez, Camilo Cienfuegos, Agricultural Enterprise

Location: Villena Farm of Camilo Cienfuegos Agricultural Enterprise, Havana Province, Cuba

Variety: unknown

Soil type: red ferralitic

Planting date: late 2005 to early 2006

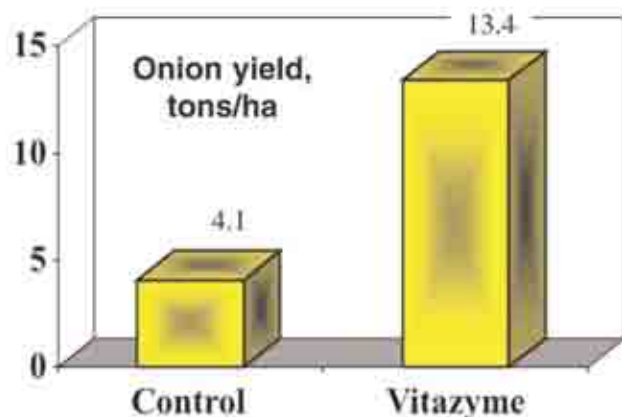
Experimental design: A commercial production trial involved a split field area of 0.013 ha treated and 1.0 ha untreated with Vitazyme at Villena Farm.

1. Control

2. Vitazyme

Fertilization: unknown

Vitazyme applications: 1.0 liter/ha on the leaves twice, separated by 30 days



Increase in onion yield: 227%

Conclusions: This commercial onion trial in Cuba revealed the remarkable ability of Vitazyme to increase onion production, with a 227% yield increase.

Vital Earth Resources

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

2004 Crop Results

Vitazyme on Onions

Researchers: Isel Creach Rodriguez, Ph.D.

Location: Santiago de Cuba Experiment Station, Dos Rios, Palma Soriana, Santiago de Cuba

Variety: red bulb multiplying onion

Soil type: Leptic haplustert

Transplanting Date: January 13, 2004

Experimental design: Two areas of onions were used in two studies, one area in each study treated with Vitazyme and the other area left untreated. All other treatments were identical for both areas.

1. Control

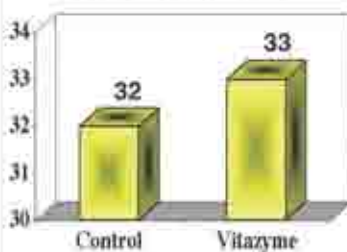
2. Vitazyme

Fertilization: unknown

Vitazyme application: 13 oz/acre on the leaves and soil on January 1, and again on February 17, 2004

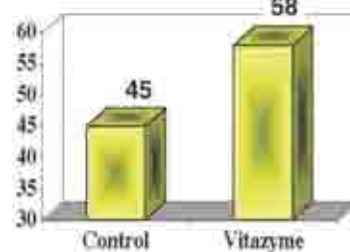
Trial 1

Height, cm



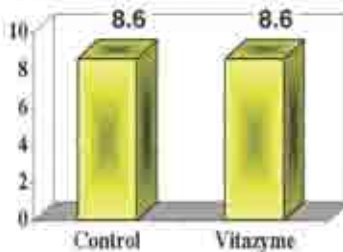
Height increase:
3%

Leaves Per Stool



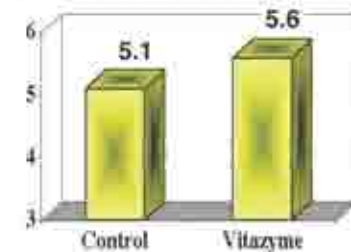
Leaves/stool
increase: 29%

Plants Per Stool



Plants/stool
increase: 0%

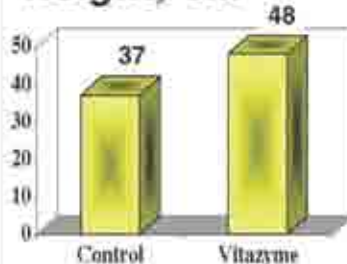
Leaves Per Plant



Leaves/plant
increase: 10%

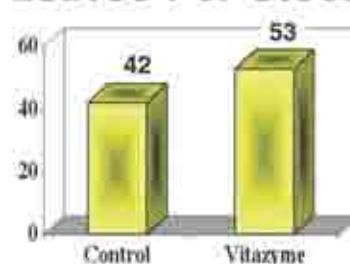
Trial 2

Height, cm



Height increase:
30%

Leaves Per Stool



Leaves/stool
increase: 26%

Plants Per Stool



Plants/stool
increase: 12%

Leaves Per Plant



Leaves/plant
increase: 12%

Conclusions: In this Cuban onion study, both trials showed a clear advantage for Vitazyme on growth and yield potential in terms of plant height, leaves per stool, and leaves per plant.

Vital Earth Resources

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

2004 Crop Results

Vitazyme on Onions

Researcher: unknown

Location: Granja MININT Jaguey Grande, Cuba

Variety: J-5

Soil type: Leptic haplustert

Planting date: unknown

Experimental design: An experimental area was divided into a Vitazyme treated and an untreated area to determine the product's effects on onion yield.

1. Control

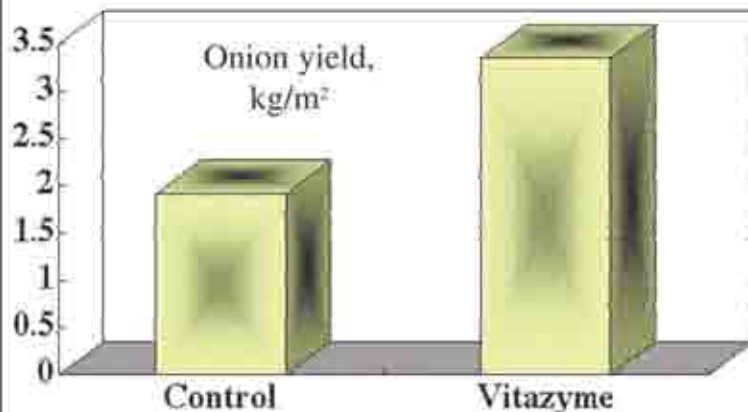
2. Vitazyme

Fertilization: unknown

Vitazyme application: 1 liter/ha on the seedlings at transplanting, and 1 liter/ha on the plants and soil at 35 and at 79 days after transplanting (total application = 2.4 liters/ha, or 0.0068 cc/plant)

Yield results:

Treatment	Onion yield kg/m ²	Change kg/m ²	Weight/plant g/plant	Change g/plant	Value of production pecos	Change pecos
Control	1.92	—	55.26	—	180.32	—
Vitazyme	3.35	1.43 (+74%)	94.70	39.44 (+71%)	315.56	+135.24



Increase in onion yield: +74%

**Increase in weight per onion:
+71%**

Conclusions: Onions in this Cuban study responded very well to Vitazyme by increasing yield 74%, and average onion weight by 71%. The increase in value of this production was 135.24 pecos; the field area for this increase was not defined in the study report.

Vital Earth Resources

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

2001 Crop Results

Vitazyme on Onions

Research coordinator: H.W. Chung

Researcher: unknown

Variety: Manina

Location: Kunwe-Kun, Kyungbuk, Korea

Soil type: clay loam

Transplanting date: unknown

Experimental design: A field area for the onions was selected in an established plot to evaluate growth parameters. The areas were divided into treatments using the following:

1. Control 2. Vitazyme 3. Product A 4. Product B 5. Product D

Vitazyme application: A 1:1,000 dilution (0.1%) solution was sprayed on the leaves and soil on April 19, April 26, and May 3, 2001.

Fertilization: unknown

Data collection: Results on growth and bulb weight were collected on May 30 and June 7, 2001.

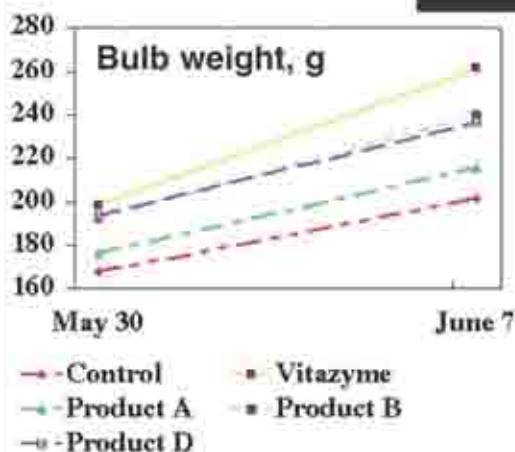
Total plant weight

Treatment	Fresh weight, May 30	Change	Fresh weight, June 7	Change
1. (Control)	236.0	—	276.7	—
2. (Vitazyme)	291.8	+55.8 (+24%)	383.3	+106 (+39%)
3. (Product A)	252.5	+16.5 (+7%)	301.6	+24.9 (+9%)
4. (Product B)	276.1	+40.1 (+17%)	338.0	+61.3 (+22%)
5. (Product D)	286.1	+50.1 (+21%)	320.7	+44.0 (+16%)



Increase in plant weight with Vitazyme:
First evaluation: 24% Second evaluation: 39%

Bulb weight



Treatment	Bulb weight, May 30	Change	Bulb weight, June 7	Change
1. (Control)	167.7	—	201.6	—
2. (Vitazyme)	198.6	+30.9 (+18%)	261.5	+59.9 (+30%)
3. (Product A)	176.1	+8.4 (+5%)	215.7	+14.1 (+7%)
4. (Product B)	192.3	+24.6 (+15%)	240.2	+38.6 (+19%)
5. (Product D)	193.9	+26.2 (+16%)	236.9	+35.3 (+18%)

Increase in bulb weight with Vitazyme:
First evaluation: 18% Second evaluation: 39%

Conclusions: Vitazyme gave excellent growth stimulation to these onions, increasing total plant weight by 24% on May 30, and by 39% on June 7. The increase in growth was accelerating above the control as time passed. The same was true with bulb weight, where an 18% yield increase on May 30 gave way to a 30% bulb increase on June 7. Vitazyme outperformed the other three products in all situations.

Vital Earth Resources

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

2001 Crop Results

Vitazyme on Onions

Farmer: Larry Karas, Wm. Karas and Sons

Location: Elba, New York

Variety: Benchmark

Soil type: muck (organic)

Planting date: April 30 and May 1, 2001

Watering: sprinkler irrigated

Experimental design: Six side-by-side fields of 3.33 acres each, with very uniform muck soils across all fields, were divided into two parts: three fields treated with Vitazyme and three fields left untreated.

1. Control

2. Vitazyme

Fertilization: the same for all six fields: 1,000 lb/acre 10-8-28 at planting, and 100 lb/acre of urea (46-0-0) midseason.

Vitazyme treatment: 13 oz/acre on the seeds at planting;

13 oz/acre on the leaves and soil at the 6 to 7 leaf stage.

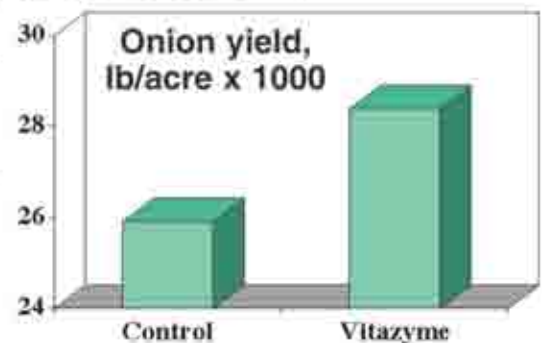
Growing season observations: On August 14, 2001, shortly before harvest, the Vitazyme treated onions were noticeably larger on average, and the leaves were much greener compared to the senescing control leaves. Thus, the treated plants were continuing to photosynthesize later and add more bulk to the bulbs.

Harvest date: late August, 2001

Yield results: All six fields were harvested at the same time, and the onions were placed in 1,000 lb boxes in the field. These boxes were counted for the different fields and totaled for each treatment.

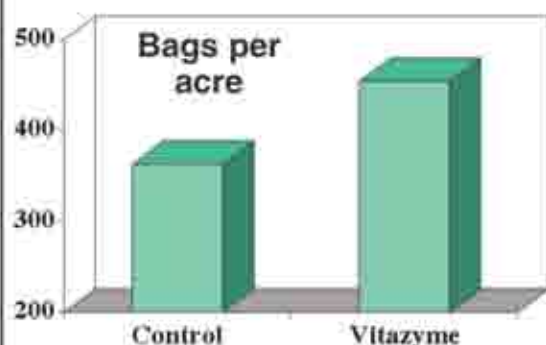


	Control	Vitazyme	Change
Onion yield	259	284	25 (+10%)
Total weight, lb	259,000	284,000	25,000 (+10%)
Per acre weight, lb/acre	25,900	28,400	2,500 (+10%)



Onion yield increase: 10%

Onion packout results: The onions were graded and packed into 50-lb bags. Only the bulbs that were 2 inches in diameter and larger were packed, and are included in these figures.



	Control	Vitazyme	Increase
----- onions >2" in diameter -----			
Bags per acre	362.6 bags/acre	454.4 bags/acre	91.8 (+25%)
Total weight	18,130 lb/acre	22,720 lb/acre	4,590 (+25%)

Marketable onion yield increase: 25%

Percent marketable yield of total harvest:

	Total yield	Marketable yield	Percent of total
	----- lb/acre -----		
Control	25,900	18,130	70%
Vitazyme	28,400	22,720	80%

Control % of marketable: 70%
Vitazyme % of marketable: 80%

Income results: Average market price of onions: \$0.10/lb.

	Control	Vitazyme	Change
	----- \$/acre -----		
Onion income	1,813	2,272	+459

Income increase: \$459/acre

Return per dollar invested with Vitazyme: \$51.00

Conclusions: Vitazyme substantially improved the yield and size of onions in this New York muck soil field trial. While Vitazyme improved the overall yield by 10%, it increased the packout (onions > 2" in diameter) by an additional amount over the control so that the overall marketable weight was 25% greater than for the control. This extra weight amounted to \$459/acre more income, as Vitazyme returned \$51 for every dollar invested in the product.

Vital Earth Resources

706 East Broadway, Gladewater, Texas 75647

(903) 845-2163 FAX: (903) 845-2262

2000 Crop Results

Vitazyme on Onions ***A testimonial***

Farmer: Troy Shuknecht, Lee Shuknecht and Sons

Location: Elba, New York

Fertility program: a balanced program with regular use of cover sprays and foliar sprays

Vitazyme application: (1) 13 oz/acre in the furrow at planting, with starter fertilizer and fungicide; (2) 13 oz/acre over the leaves and soil at the 3 to 4-leaf stage; (3) 13 oz/acre over the leaves and soil at bulb initiation.

Time of Vitazyme use: 5 years

Troy: "We're very satisfied with Vitazyme. We farm mostly mineral soils, and they are easier to work and have better drainage than when we first started the program. We have had good crops in two difficult years when others didn't. We grow mostly jumbo-sized onions and Vitazyme really helps them obtain that size. It's a big benefit."

Vital Earth Resources

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

2000 Crop Results

Vitazyme on Onions

Farmer: John Dunsmoor

Location: Fulton, New York

Variety: New York Early

Soil type: muck

In-row spacing: 9 plants/foot (seeded)

Planting date: May 5, 2000

Row spacing: 15.5 inches between double rows

Experimental design: Four small onion fields in muck were selected for this study. Three of the fields received Vitazyme and one (the control) was left untreated.

Field 1

1.06 acres

Vitazyme

Field 2

1.40 acres

Vitazyme

Field 3

1.15 acres

Vitazyme

Field 4

1.27 acres

Control

1. Control

2. Vitazyme

Fertility treatments: 100 lb/acre N, 80 lb/acre P₂O₅, 120 lb/acre K₂O, plus micronutrients pre-plant; 34 lb/acre N topdressed during growth

Vitazyme treatment: 13 oz/acre in the furrow at planting, along with a fungicide and insecticide

Harvest date: September 8, 2000

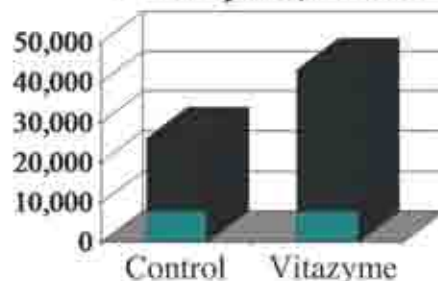
Yield results:

Treatment	Field 1	Field 2	Field 3	Average	Control
Yield, bags*/acre	905.70	714.29	973.91	864.63	519.67
Yield, lb/acre	45,285	35,715	48,696	43,232	25,984(+66%)

* One bag = 50 lb.

Onion yield increase: 66%

Onion yield, lb/acre



Income results: The onion value is about \$4.00/50lb bag, or \$0.08/lb.

	Control	Vitazyme	Change
		\$/acre	
Gross income	2,078.72	3,458.56	(+)1,379.84

Income increase: \$1,379.84/acre

Conclusions and observations: During the growing season in other fields it was noted that Vitazyme, when applied with other fertility products at planting in the seed row, improved emergence and the resulting plant population. These fields, however, averaged 746.56 cwt/acre, somewhat less than when Vitazyme was used alone.

Vitazyme in the onion test, used one time at planting on the seeds, produced an average yield increase that was 66% above the control fields. This increase translated into a very large income increase of nearly \$1,380/acre.

Vital Earth Resources

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

1999 Crop Results

Vitazyme on Onions

Farmer: Fred Strano

Location: Fulton, New York

Variety: Prince (yellow)

Seeding rate: 8 plants/foot (seed)

Planting date: May 5, 1999

Harvest date: October 15, 1999

Soil type: organic (muck)

Previous crop: onions

Row spacing: two rows 6 inches apart, spaced every 15 inches

Experimental design: An onion field was treated with Vitazyme on several rows the length of the field.

1. Control

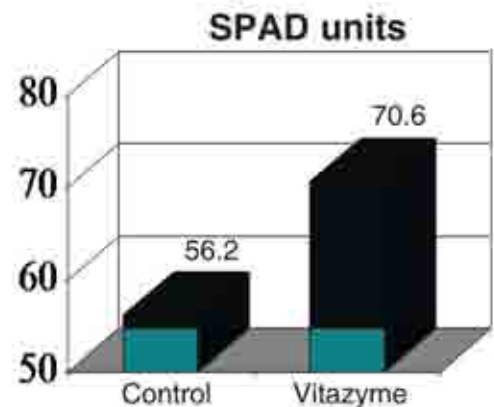
2. Vitazyme

Fertilizer treatments: Preplant: 100-60-250 lb/acre actual N-P-K, plus 75 lb/acre Ca-Mg-micronutrients
Sidedressed in July: 70 lb/acre 34-0-0 (NH₄NO₃)

Vitazyme applications: 13 oz/acre at planting on the seeds

Chlorophyll results: On August 16, 1999, evaluations were made with a Minolta SPAD meter of several Vitazyme treated and untreated onion leaves from adjoining rows at the treatment boundary.

	<u>Control</u>	<u>Vitazyme</u>	<u>Increase</u>
Chlorophyll, SPAD values	56.2	70.6	14.4 (+26%)



Chlorophyll increase: 26%

Yield results: Although evaluations of the field on August 16 revealed a decided advantage for the Vitazyme treatment (see the chlorophyll data above), the final harvest weights did not reveal a significant yield difference. There was a decided difference in onion quality, however, which is shown on the next page.

The yield was 72,500 lb/acre for this field. Samples of onions for the two treatments were sized, and the various sizes were multiplied by the price for those sizes to give a total value for the crop. As size increases, so does the price.

Control

Onion size	Onion value	Proportion of crop	Amount of crop	Onion value
inches	\$/lb	%	lb/acre	\$/acre
2.0	0.06	8.83	6,401.8	384.11
2.5	0.14	31.39	22,757.8	3,186.09
2.75	0.16	31.25	22,656.3	3,625.01
3.0	0.18	28.53	20,684.3	3,723.17
		100.00	72,500.0	10,918.38

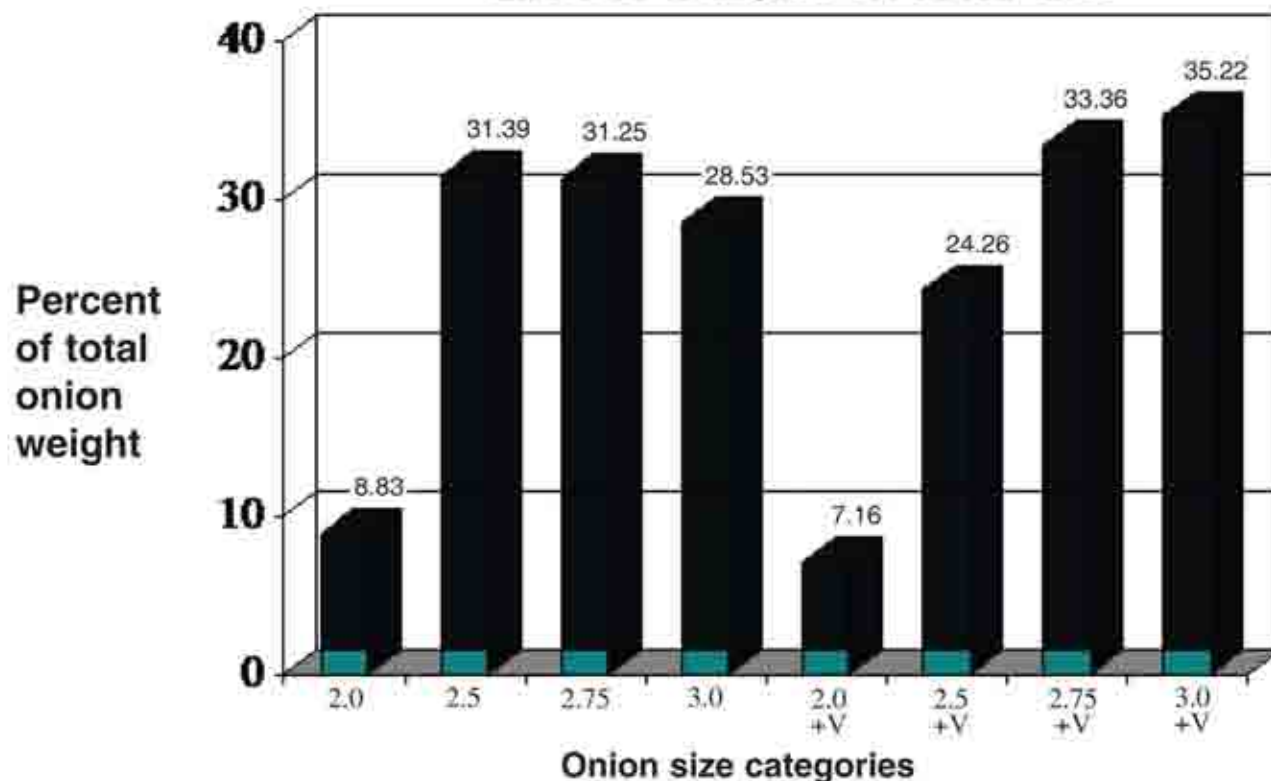
Vitazyme

Onion size	Onion value	Proportion of crop	Amount of crop	Onion value
inches	\$/lb	%	lb/acre	\$/acre
2.0	0.06	7.16	5,191.0	311.46
2.5	0.14	24.26	17,588.5	2,462.39
2.75	0.16	33.36	24,186.0	3,869.76
3.0	0.18	35.22	25,534.5	4,596.12
		100.00	72,500.0	11,239.73

	<u>Control</u>	<u>Vitazyme</u>	<u>Increase</u>
Onion value	\$ 10,918.38/acre	\$11,239.73	\$321.35/acre

**Income increase: \$321.35/acre
(from quality improvement only)**

Effect of Vitazyme on Onion Size



Vitazyme clearly increases onion size, resulting in greater income per acre.

Vital Earth Resources

706 East Broadway, Gladewater, Texas 75647

(903) 845-2163 FAX: (903) 845-2262

1997 Crop Results

Vitazyme on Onions

Researchers: Williams Farms (Douglas, Steve, and John Williams)

Location: Marion, New York

Variety: Hamlet (a white onion)

Planting arrangement: wide beds

Planting date: May 2, 1997

Soil type: muck

Experimental design: Two field areas of an onion field were selected that were similar in soils and past treatment. One area received Vitazyme, and the other area nothing besides normal fertilizer.

1. Control

2. Vitazyme

Fertility treatments: The control area received 1,300 lb/acre 10-10-15 dry fertilizer before planting. The Vitazyme area received 750 lb/acre 10-10-15 dry fertilizer before planting, plus 250 lb/acre high-calcium pelleted lime. One gallon/acre of liquid-Ca was applied with a herbicide near planting time, and then six foliar applications of liquid-Ca were applied with a fungicide spray. At planting, 5 gal/acre of 9-18-9 and Nutrapathic Soil Conditioner were applied.

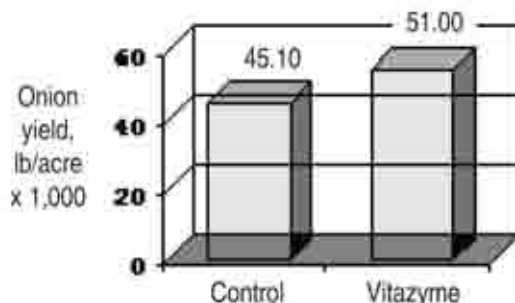
Vitazyme treatments: (1) 13 oz/acre with the starter fertilizer; (2) 13 oz/acre with the second fungicide spray (about the third leaf); (3) 13 oz/acre at bulb initiation.

Harvest date: early October

Yield results:

	Boxes/acre*	Weight (lb)/acre
Control	41	45,100
Vitazyme	50	55,000 (+22%)

*Each box weighed about 1,100 lb.



Yield increase: 22%

Income results: Onions are valued at about \$10.00/cut (100 lb)

	<u>Income</u>	<u>Increase</u>
Control	\$4,510/acre	—
Vitazyme	\$5,500/acre	\$990/acre

Income increase: \$990/acre

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

1997 Crop Results

Vitazyme on Onions

Researchers: Williams Farms (Douglas, Steve, and John Williams)

Location: Marion, New York

Variety: Hamlet (a white onion)

Planting arrangement: wide beds

Planting date: May 2, 1997

Soil type: muck

Experimental design: Two field areas of an onion field were selected that were similar in soils and past treatment. One area received Vitazyme, and the other area nothing besides normal fertilizer.

1. Control

2. Vitazyme

Fertility treatments: The control area received 1,300 lb/acre 10-10-15 dry fertilizer before planting. The Vitazyme area received 750 lb/acre 10-10-15 dry fertilizer before planting, plus 250 lb/acre high-calcium pelleted lime. One gallon/acre of liquid-Ca was applied with a herbicide near planting time, and then six foliar applications of liquid-Ca were applied with a fungicide spray. At planting, 5 gal/acre of 9-18-9 and Nutrapathic Soil Conditioner were applied.

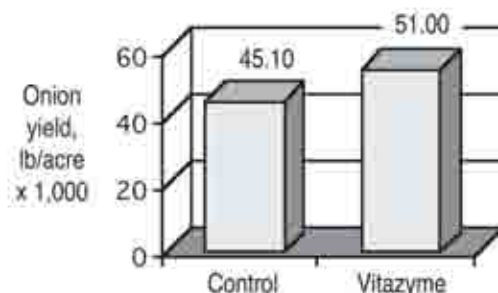
Vitazyme treatments: (1) 13 oz/acre with the starter fertilizer; (2) 13 oz/acre with the second fungicide spray (about the third leaf); (3) 13 oz/acre at bulb initiation.

Harvest date: early October

Yield results:

	Boxes/acre*	Weight (lb)/acre
Control	41	45,100
Vitazyme	50	55,000 (+22%)

*Each box weighed about 1,100 lb.



Yield increase: 22%

Income results: Onions are valued at about \$10.00/cut (100 lb)

	<u>Income</u>	<u>Increase</u>
Control	\$4,510/acre	—
Vitazyme	\$5,500/acre	\$990/acre

Income increase: \$990/acre