

Vital Earth Resources

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

2014 Crop Results

Vitazyme on Pears (Organic)

Synergism with Stimplex Seaweed Extract

Researchers: Eloina Chavez, quality control leader, Stemilt Pear Receiving, and Jacob Hesseltine, Vital Grow Distribution LLC, Waterville, Washington

Farmer: Kyle Mathison Orchards

Location: Stemilt Hill, Wenatchee, Washington

Variety: D'Anjou

Tree age: 59 years

Rootstock: unknown

Tree density: 20 feet between rows, 10 feet in-row (0.0045913 acre/tree), or 218 trees/acre

Experimental design: A 4.0-acre block of pears was treated five times with Stimplex seaweed, and an adjoining 13-acre block was treated with Stimplex followed by Vitazyme. The objective of the study was to evaluate the effect of the products on pear quality and yield.

Treatment	Prebloom	20% bloom	80% bloom	Post-bloom 1*	Post-bloom 2*
Block 1: Stimplex	X	X	X	X	X
Block 2: Stimplex	X	X	X	O	O
Vitazyme	O	O	O	X	X

*Blight Ban and foliar nutrients added.

Fertilization: 7 tons/acre of compost

Vitazyme application: 16 oz/acre for both post-bloom applications. An air-blast sprayer delivered 200 gal/acre, driven 2 to 2.4 mph.

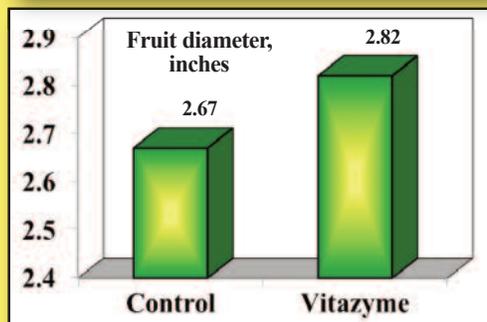
Stimplex application: 48 oz/acre for all applications

Blight Ban and foliar nutrients: These products were added with the Vitazyme or Stimplex.

Growing season weather: favorable

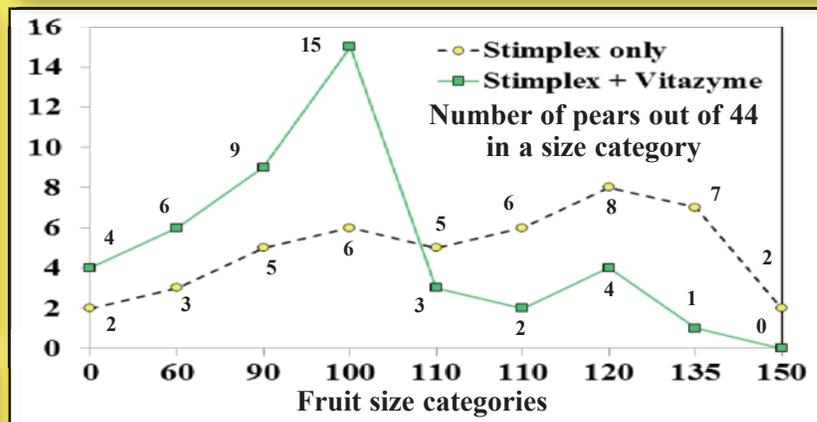
Fruit quality results: Forty-four pears of average size were picked from both treatments to evaluate fruit quality parameters. These analyses were performed at the Stemilt Quality Control facilities.

Fruit Size



Increase in fruit diameter with Vitazyme: 6%

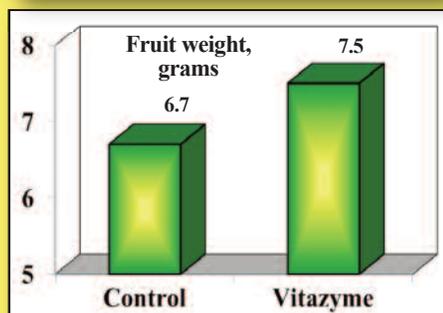
Pear Size Grade Review¹



¹Pears were sized by Eloina Chavez, quality control leader for Stemilt Pear Receiving. Size 60 is the largest, and size 150 is the smallest.

Notice the great improvement in pear size for the larger diameters. Size 90 and larger constitutes 77% of the total fruit for the Vitazyme treatment, while Stimplex only had 36% of the fruit in the same size categories.

Fruit Weight¹

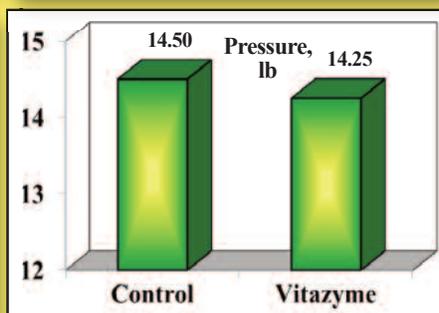


¹Determined using a Matrix-500 digital scale.

Increase in fruit weight with Vitazyme: 12%

A great increase in average fruit weight was noted.

Fruit Pressure¹

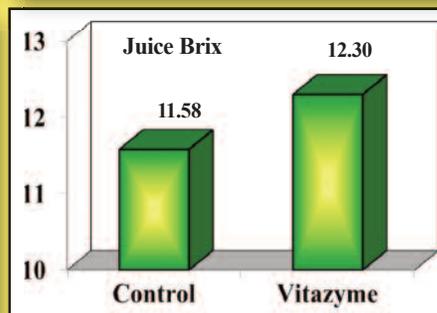


¹Determined by a FirmTech automated digital firmness tester.

Decrease in fruit pressure with Vitazyme: (-) 2%

This slight decrease in fruit firmness is of little consequence, since any value about 12 lb pressure is excellent for marketing.

Fruit Brix¹



¹Determined using an Atago PAL-1 refractometer.

Increase in fruit Brix with Vitazyme: 0.72 %-point

A sizable improvement in fruit sugars means better tasting, sweeter fruit.

Conclusions: This Washington pear study revealed that Vitazyme, applied twice after three Stimplex seaweed applications, greatly increased pear quality above the Stimplex only treatment. Fruit size was moved toward the larger categories; 77% of the Vitazyme treated pears were size 90 or larger compared to only 36% for the Stimplex only treated pears. Fruit weight increased by 12% and fruit Brix by 0.72 percentage point, showing that Vitazyme produced larger, sweeter pears. A slight drop in fruit pressure with the product was of no practical consequence since both treatments provided high pressure values. Pear yield, though not directly measured, likely increased by about 12%, similar to fruit weight increases, assuming the fruit set was similar for both treatments. This study shows that Vitazyme, applied after seaweed application, can greatly improve pear yields and quality versus seaweed alone. Had Vitazyme been used for all five applications, the differences in growth and quality values would likely have been greater. Also, the cost of per acre applications is much less with Vitazyme — \$37.50 versus \$93.75 — so the utility of this program for pear production in Washington can be readily seen.

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2007 Crop Results

Vitazyme on Pears

Researchers: Agr, Assistance

Variety: Bosc

Rootstock: unknown

Experimental design: A pear orchard was divided into Vitazyme treated and untreated portions, with the objective of determining whether or not this product could change fruit yield and quality.

Location: Wayne County, New York

Tree age: 15 years (full-bearing)

1. Control

2. Vitazyme

Fertilization: unknown

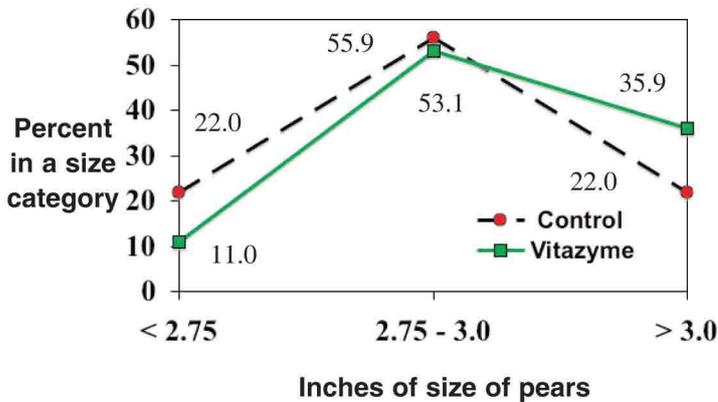
Vitazyme application: 16 oz/acre at pink, bloom, petal fall, and first cover using 100 gallons/acre at 3 mph

Weather for 2007: warm and near-record dry, with 8 to 10 inches of rainfall during the April to September growing season

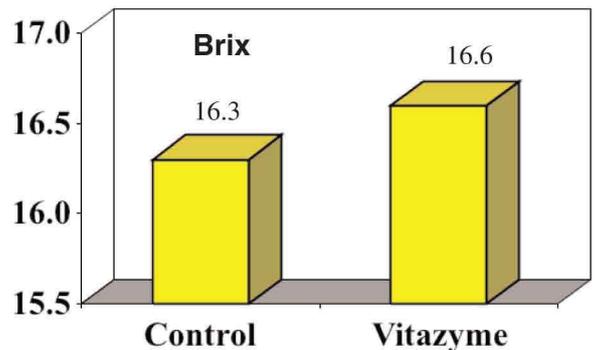
Collection of results: On September 27, seven typical limbs for each treatment were selected and evaluated.

Fruit quality: Brix and fruit pressure were measured for 10 pears per branch (rep Vitazyme produced fruit that was larger (35.9 vs. 22.0% fruit greater than 3.0 inches), and contained more sugars and slightly stronger fruit cells.

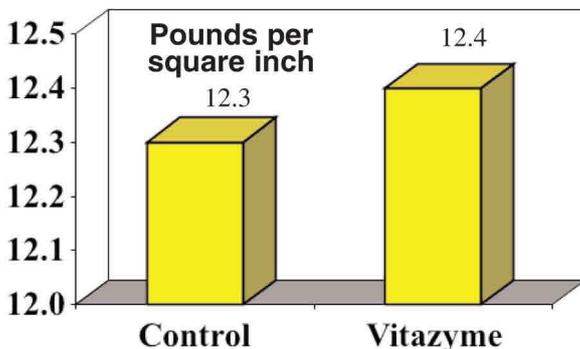
Fruit Grade



Fruit Brix

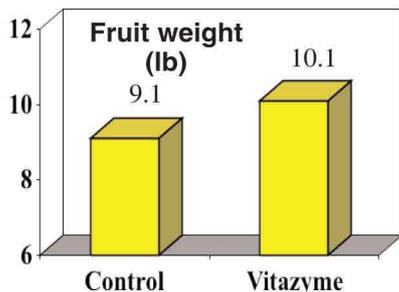


Fruit Pressure



Fruit yield:

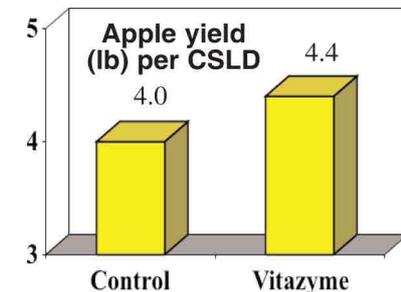
Weight Per Limb



Increase in fruit/limb

11%

Yield Per CSLD*

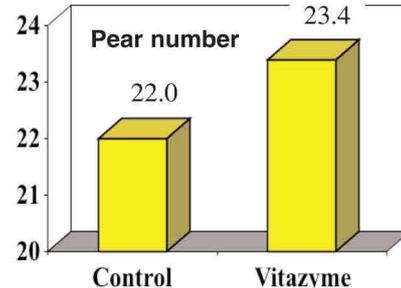


*Cross-sectional limb diameter

Increase in yield/CSLD

10%

Pears Per Branch



Increase in pears/branch

6%

Vitazyme improved all fruit yield parameters, including fruit weight per limb (+11%), yield per CSLD (+10%), and pear number per branch (+6%).

Conclusions: According to the researcher,

“There was a trend toward larger fruit size in the Vitazyme treatment (7.1 oz/fruit) compared to the untreated standard (6.6 oz/fruit) — and a corresponding increase in the percentage of harvested fruit over 3.0 diameter (35.9% vs. 22%). The Vitazyme program also increased soluble solid levels by 0.3 brix despite the high soluble solids levels which were produced this very sunny growing season.

One of the largest commercial challenges to growing Bosc pears is maintaining good return cropping levels, so a return bloom evaluation will be made at this trial site in the spring of 2008.”

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2007 Crop Results

Vitazyme on Pears

Researcher: Randy Paddock, Paddock Agricultural Services

Farm cooperators: Jim Bittner

Location: Appleton, New York (Singer Farms) **Variety:** Bartlett

Soil type: gravely loam

Orchard age: unknown

Experimental design: A pear orchard was divided into a Vitazyme treated portion and a normally treated portion (balance of the area). The entire field was similar in soil fertility. The purpose of the study was to determine the effect of Vitazyme on the yield and profitability of pears.

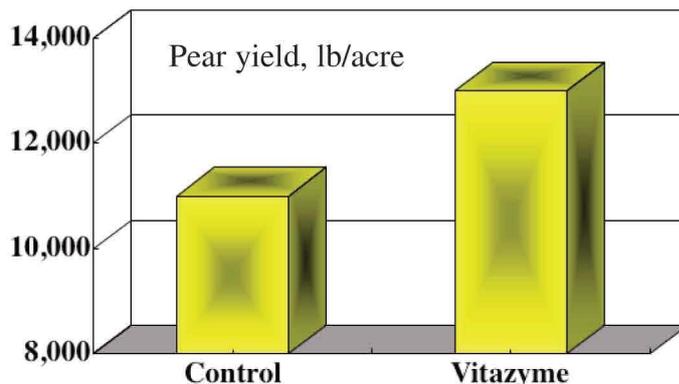
Fertilization: 100 lb/acre of muriate of potash (0-0-60% N-P₂O₅-K₂O) applied in early spring, plus a foliar spray of zinc and boron at bloom

Vitazyme application: 24 oz/acre sprayed on the leaves 7 days after petal fall, 17 days after petal fall, and 30 days after petal fall

Yield results: Harvest weights were made for each treatment and are given in the table below.

Treatment	Yield, lb/acre	Increase, lb/acre
Control	11,000	—
Vitazyme	13,000	2,000 (+18%)

**Increase in pear yield
with Vitazyme: 18%**



It is clear that Vitazyme produced a dramatic response in this pear study, increasing yield by 18% above the control.

Income results: The increased 2,000 lb/acre of pears, at \$0.22/lb., resulted in a greater return from Vitazyme of \$440.00/acre.

**Increase in pear income with Vitazyme:
\$440/acre**

Conclusions: This pear study with Vitazyme near Lake Ontario in New York shows the potential of the product to improve pear yield.

Presumably the increased photosynthesis and overall plant metabolism, stimulated by the product's active agents, especially in triggering rhizosphere activity, enabled a greater fixation of carbon and uptake of nutrients by the trees.

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2003 Crop Results

Vitazyme on Pears

Researcher: Jeff Alicandro, Agr. Assistance, North Rose, New York

Farmer: Jay DeBadts and Sons

Location: Sodus, New York

Crop load: full

Variety: Bartlett (for processing)

Soil type: unknown

Tree age: mature

Experimental design: A pear orchard was divided into two portions, one treated with Vitazyme and the other an untreated control. All other treatments were the same on both sides.

1. Control

2. Vitazyme

Fertilizer treatment: unknown

Vitazyme treatments: Three applications were made at 24 oz/acre on the leaves: (1) at "pink", (2), at petal fall, and (3) at first cover.

Harvest date: unknown

Weather: The weather was very cool and wet during much of the growing season.

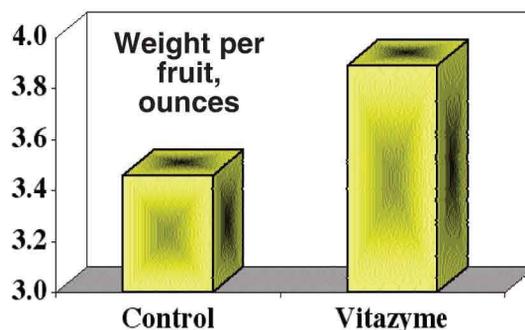
Quality results: This test was primarily to determine the effect of Vitazyme on various quality parameters of pears, including fruit size, fruit grade, fruit uniformity, fruit pressure, and fruit soluble solids.

Fruit Size

Eight bins of pears were compared from both treatments to determine the average weight of the pears. One hundred pears from each bin were weighed and averaged.

Treatment	Fresh weight*	Weight change
	oz/pear	oz/pear
Control	3.46	—
Vitazyme	3.89	0.43 (12%)

*100 fruit were sampled per bin, for 8 bins, or 800 fruit were averaged for each figure.

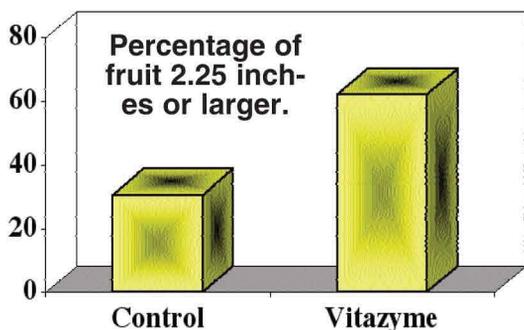


Vitazyme treated fruit were considerably larger, by 12%, than the untreated controls.

Increase in fruit weight with Vitazyme: +12%

Fruit Grade

The same pears that were weighed in the above determination were also graded. A measurement was made of fruit diameter, either less than or greater than 2.25 inches.



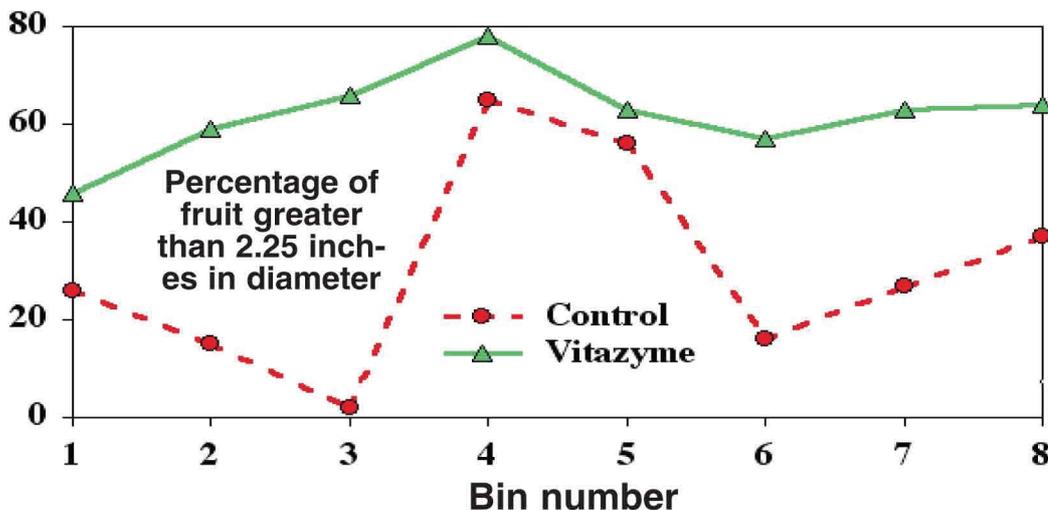
Treatment	Fruit grade*	Grade change
	----- % fruit 2.25 inches or more -----	
Control	30.5	—
Vitazyme	62.0	31.5 (+103%)

*100 fruit were sampled per bin, for 8 bins, or 800 fruit were averaged for each figure.

Increase in fruit grade: 103% more were \geq 2.25 inches

Fruit Uniformity

Using the same figures as for fruit grade, the following graph illustrates the degree of uniformity for the two treatments. The Vitazyme treated fruit had about twice the number of pears that were 2.25 inches or greater in diameter than did the untreated control.



The untreated control shows a great variability in pear size, whereas the Vitazyme treatment displays considerable uniformity in size: the pears vary only from 46 to 78% for fruit equal to or greater than 2.25 inches in diameter.

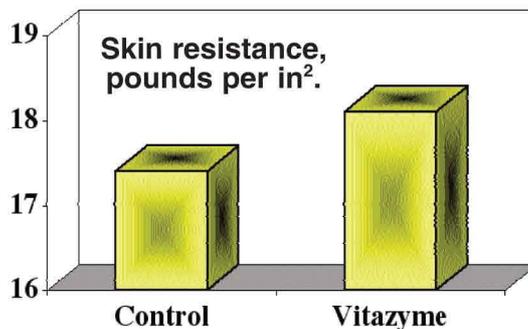
Fruit Pressure

An analysis was made of 25 pears from each treatment using a small device that measures the resistance of the flesh to pressure. These values were averaged for each treatment.

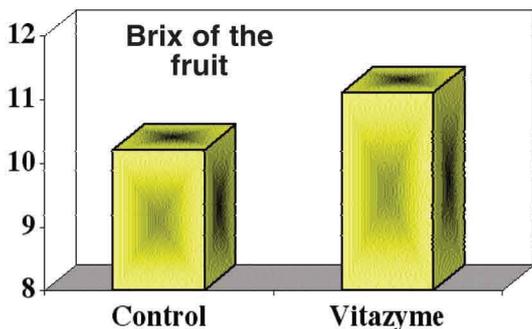
Treatment	Fruit pressure	Pressure change
	----- psi on the skin -----	
Control	17.4	—
Vitazyme	18.1	0.7 (+4%)

The Vitazyme caused the shine and flesh to be somewhat firmer to applied pressure of the test instrument.

Increase in fruit resistance to pressure with Vitazyme: +4%



Fruit Soluble Solids



Treatment	Fruit Brix	Brix change
Control	10.2	—
Vitazyme	11.1	0.9 (+9%)

For each treatment, 10 fruit were selected and analyzed with a refractometer, using the juice expressed from the fruit.

Since Brix approximates the sugar content of the juice, the Vitazyme treatment produced sweeter pears than the untreated control.

Conclusions: In this test in New York with Vitazyme on pears, the product caused a number of worthwhile, positive effects on the fruit:

- (1) An increase in fruit weight and size (+12%), meaning better prices for the fruit
- (2) A marked increase in fruit uniformity for larger fruit (≥ 2.25 in diameter)
- (3) An increase in flesh firmness and resistance to pressure (+4%), meaning less bruising potential and better shipping and storage qualities

(4) An improvement in soluble solids, or sugars and minerals (+9%), meaning sweeter and tastier fruit

The grower and the pickers all felt that the Vitazyme treated fruit was larger. This product can produce a number of benefits for pear growers that make it an obvious choice to use for better yields, quality and profits.