Vital Earth Resources
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2014 Crop Results

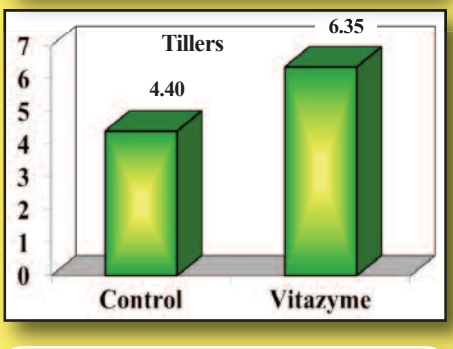
Vitazyme on Spring Barley

Researcher: Jacob Hesseltine, Vital Grow Distribution LLC, Waterville, Washington
Farmer: Tom Stahl *Location*: Waterville, Washington *Variety*: Gallatin (2-row)
Planting rate: 54 lb/acre *Soil type*: clay with volcanic ash
Seedbed preparation: undercutter to loosen soil; anhydrous applicator at 12-inch spacings (4-inches deep)
Previous crop: winter peas (died back from frost)
Planting date: April 30 to May 1, 2014, with an HZ Deep Furrow Drill, rows spaced 16 inches
Experimental design: Two 80-acre fields, separated by a dirt road, were selected for a spring barley study. The east field was treated once with Vitazyme, and the west field served as the untreated control. The objective was to evaluate the effect of this product on barley yield.

1. Control **2. Vitazyme**

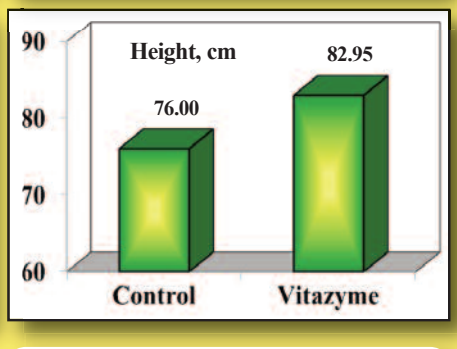
Fertilization: On April 29, 10 lb/acre of sulfur and 30 lb/acre of anhydrous ammonia were applied.
Vitazyme application: 13 oz/acre on June 24, along with Barrage (2, 4-D) at 16 oz/acre and Brox-m (bromoxomil) at 8 oz/acre; a Summers tow behind a spray rig
Crop season weather: mixed for spring grains; good July rains but moisture aided dwarf bunt development, and August 12, 13, and 15 had heavy rains
Growth results: Twenty plants were dug from each treatment on August 12, and evaluated for five parameters.

Tillers Per Plant



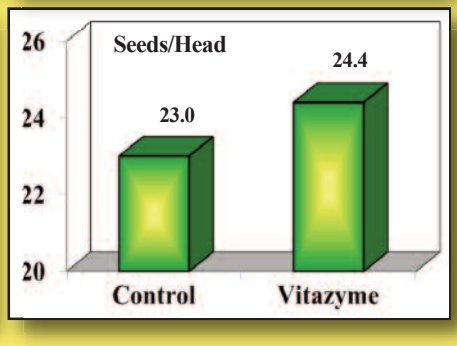
Increase in tillers per plant with Vitazyme: 44%

Plant Height



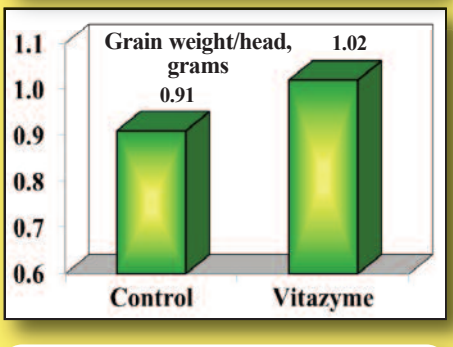
Increase in plant height with Vitazyme: 9%

Seeds Per Head



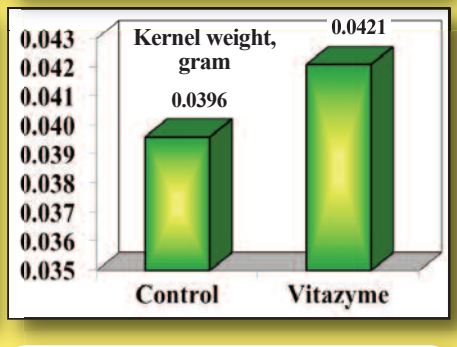
Increase in seeds per head with Vitazyme: 6%

Grain Weight Per Head



Increase in grain weight per head with Vitazyme: 12%

Kernel Weight



Increase in kernel weight with Vitazyme: 6%

Conclusions: A spring two-row barley trial in central Washington produced excellent improvements in yield traits attributable to Vitazyme. Increases were noted in tillers per plant (44%), plant height (9%), seeds per head (6%), grain weight per head (12%), and kernel weight (6%). All of these increases indicated a substantial improvement in yield, that was unfortunately not able to be quantified through direct measurement, These results display the great utility of using Vitazyme for spring barley production in Washington.

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2013 Crop Results

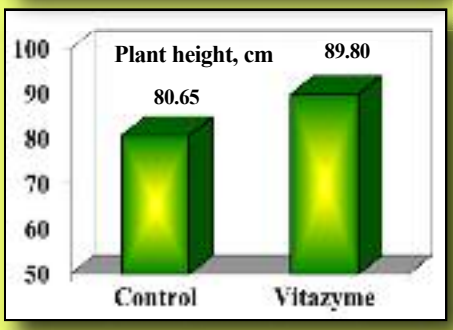
Vitazyme on Spring Barley

Researcher: Jacob Hesseltine *Farmer*: Tom Stahl *Location*: Waterville, Washington
Variety: Gallatin spring wheat *Previous crop*: summer fallow *Soil type*: volcanic ash
Planting date: May 7 to 10, 2013 *Planting rate*: 54 lb/acre *Tillage*: minimum
Experimental design: A 229-acre field of spring barley was selected for this trial, the outer perimeter treated with Vitazyme to evaluate the effect of this production plant characteristics.

1. Control **2. Vitazyme**

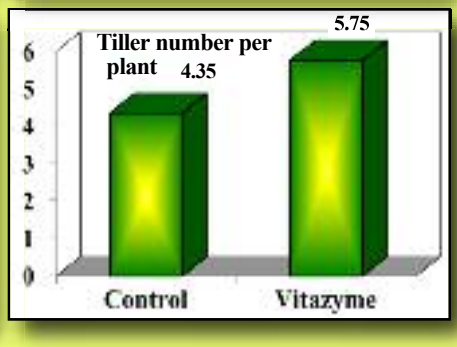
Fertilization: 40 lb/acre of N applied as anhydrous ammonia; 5 lb/acre of S
Vitazyme application: 13 oz/acre (1 liter/ha) sprayed on the leaves and soil on June 10 along with 16 oz/acre of Bromoxynil and 8 oz/acre of Barrage. A 90-foot sprayer made two passes around the field, leaving the center portion untreated with Vitazyme.
Weather for 2013: Excessive late season rain, unfavorable for crop production
Pre-harvest evaluation: On August 9, 20 typical plants from each treatment were dug to evaluate several parameters. Values for the 20 plants were averaged.
Pre-harvest evaluation: Before harvest, 20 typical plants from each treatment were dug and evaluated for five parameters. Values for the 20 plants were averaged.

Plant Height*

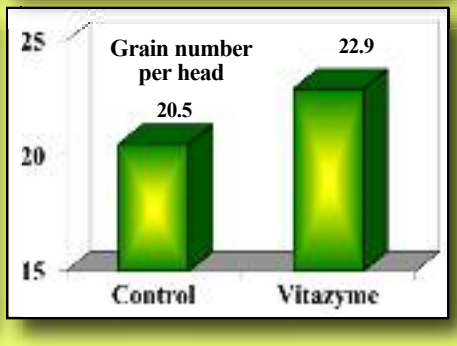


*Measured from soil level to tip of tallest tiller.

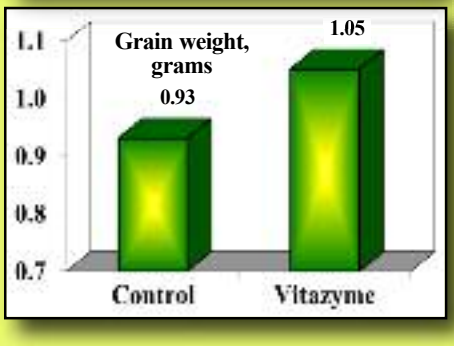
Productive Tillers/Plant



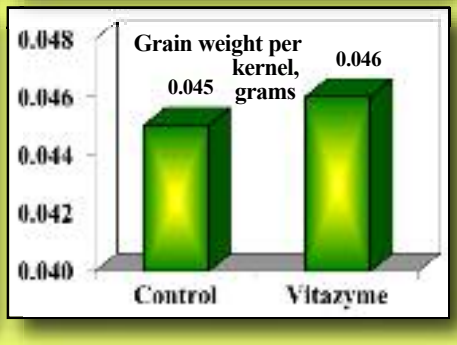
Grains Per Head



Grain Weight Per Head



Grain Weight Per Kernel



Yield results: none

Conclusions: This central Washington spring barley trial revealed that Vitazyme improved all plant and grain parameters, especially productive tillers per head (+32%), but grains per head (+12%) and grain weight per head as well (+13%); kernel weight was slightly increased. These data show that the yield was certainly enhanced with Vitazyme even though yield values were not obtained.

Increases with Vitazyme:

Plant height	11%
Productive tillers/plant	32%
Grains per head	12%
Grain weight/head	13%
Grain weight/kernel	2%