# Spring Barley *with Vitazyme application*

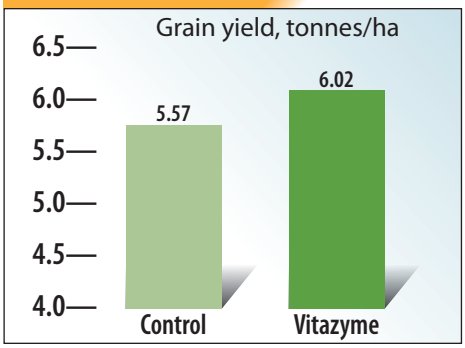
***Researcher:*** V.V. Plotnikov
***Research organization:*** Plant Designs, Inc., Rochester, New York, and Agro Expert International, Kaharlyk, Ukraine
***Location:*** Kolyvailo Farm, Vinnytsia District, Vinnytsia Region, Miziakivski Village, Ukraine
***Variety:*** Nezabudka, third generation
***Planting date:*** April 12, 2018
***Previous crop:*** corn
***Soil type:*** dark-brown podzolic (humus=2.0%)
***Planting rate:*** 4 million seeds/ha
***Field preparation:*** disking to 6-8 cm, plowing to 20-22 cm, cultivation to 4-5 cm
***Experimental design:*** A barley field was treated in part with Vitazyme, to compare with the untreated portion of the field and evaluate the effect on yield and profitability.

**1** ***Control*** **2** ***Vitazyme***

***Fertilization:*** 77-23-4 kg/ha N-Ca-Mg before planting; 10-26-26 N-$P_2O_5$-$K_2O$ at planting
***Vitazyme application:*** 1 liter/ha sprayed on April 10.
***Yield results:*** (See bar graph to the right)
***Income results:*** The extra 0.45 tonnes/ha produced $114/ha more income.
***Conclusions:*** This Ukraine spring barley trial, using one 1 liter/ha Vitazyme application, revealed that the yield increased by 8% (0.45 tonnes/ha), a substantial improvement that produced $114/ha more income. This program is proven to be an excellent practice for barley production in Ukraine.

| Treatment | Yield | Yield change |
|---|---|---|
| | tonnes/ha | tonnes/ha |
| 1. Control | 5.57 | — |
| 2. Vitazyme | 6.02 | 0.45 (+8%) |

## Grain Yield




***Increase in grain yield with Vitazyme: 8%***

# Barley *with Vitazyme application*

***Researchers:*** Martin Baltazar and Lucero Fernandez
***Farm:*** Novasem
***Research organization:*** Quimica Lucava
***Location:*** Sayula, Jalisco, Mexico
***Variety:*** Emerald
***Planting date:*** January 14, 2015
***Experimental design:*** A barley field was divided into a 1.5/ hectare Vitazyme treated area, and the remainder of the field served as a control. The purpose of the trial was to discover the effect of Vitazyme on barley yield and profitability.

*Barley is being given the second Vitazyme application in a Mexican trial in Jalisco. A pronounced 24% yield response resulted.*

**1** ***Control*** **2** ***Vitazyme***

***Fertilization:*** Unknown
***Vitazyme application:*** (1) 0.25 liter/ha on the seeds at planting (January 14, 2015) ; (2) 1 liter/ha sprayed on the leaves and soil 37 days after planting (February 20, 2015).
***Harvest date:*** April 29, 2015
***Yield results:***

| Treatment | Sample yield | Yield | Yield change |
|---|---|---|---|
| | kg/0.175 ha | kg/ha | kg/ha |
| Control | 510 | 2,914 | — |
| Vitazyme | 630 | 3,600 | 686(+24%) |

***Increase in barley yield with Vitazyme: 24%***

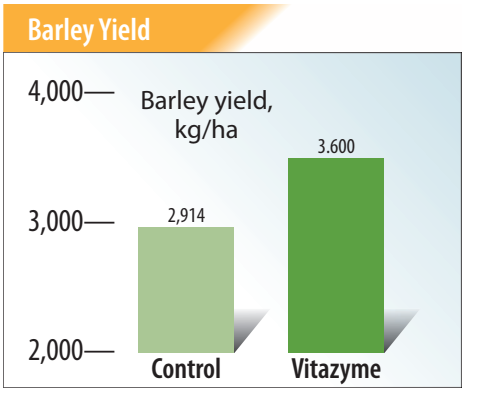
***Income results:***

| Treatment | Yield | Yield change | Gross income[1] | Income change | Vitazyme cost[2] | Profit | Cost : Benefit |
|---|---|---|---|---|---|---|---|
| | kg/ha | kg/ha | USD/ha | USD/ha | USD/ha | USD/ha | |
| Control | 2,914 | — | 874.2 | — | — | — | — |
| Vitazyme | 3,600 | 686 | 1,080.0 | 205.8 | 48.28 | 157.52 | 3.26 |

[1]Barley price = 0.30 USD/kg ; [2]Vitazyme cost (for 1.25 liters/ha) + relevant labor for 1 ha.

***Increased profit with Vitazyme: 157.52 USD/ha***
***Cost : Benefit with Vitazyme: 3.26***

***Conclusion:*** A barley trial in Mexico, with Vitazyme applied to the seeds at planting and to the leaves and soil 37 days later, resulted in an excellent 24% grain yield increase. This increase gave 157.52 USD/ha more income, and a cost : benefit of 3.26, showing the excellent utility of the program for barley growers in Mexico.



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# 2014 Crop Results

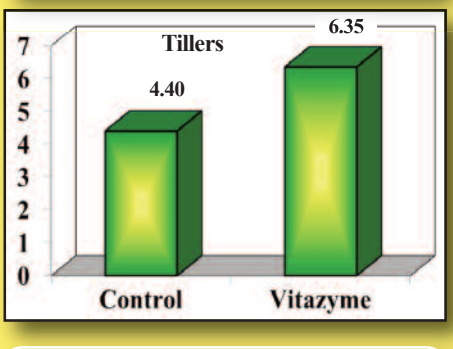
# Vitazyme on Spring Barley

*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**

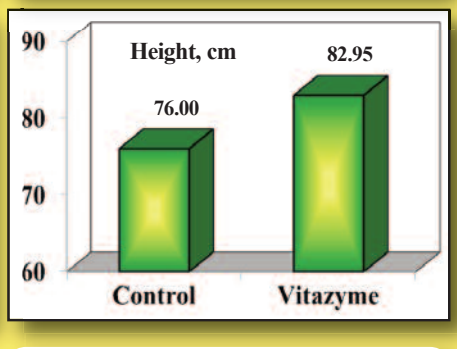
*Fertilization*: On April 29, 10 lb/acre of sulfur and 30 lb/acre of anhydrous ammonia were applied.
*Vitazyme application*: 13 oz/acre on June 24, along with Barrage (2, 4-D) at 16 oz/acre and Brox-m (bromoxomil) at 8 oz/acre; a Summers tow behind a spray rig
*Crop season weather*: mixed for spring 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***



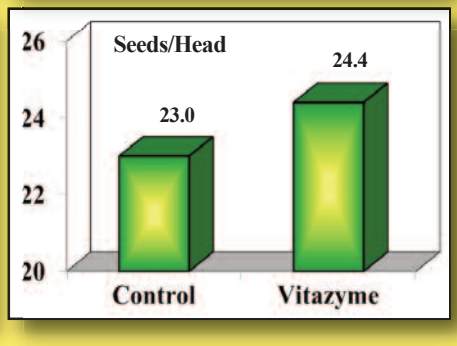

**Increase in tillers per plant with Vitazyme: 44%**

***Plant Height***



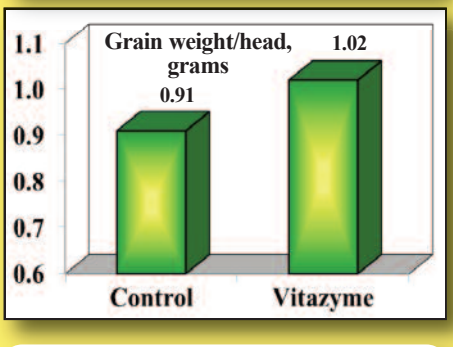

**Increase in plant height with Vitazyme: 9%**

***Seeds Per Head***



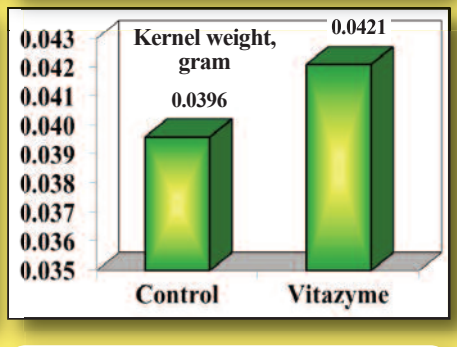

**Increase in seeds per head with Vitazyme: 6%**

## 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

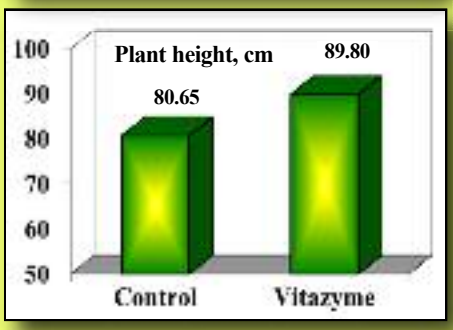
# Vitazyme on Spring Barley

*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**

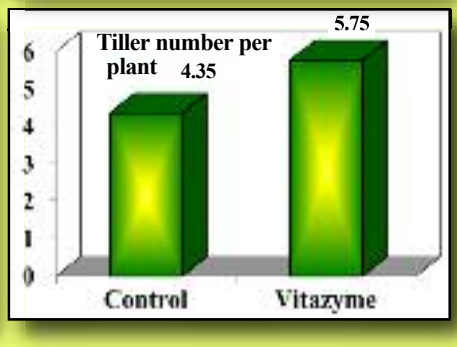
*Fertilization*: 40 lb/acre of N applied as anhydrous ammonia; 5 lb/acre of S
*Vitazyme application*: 13 oz/acre (1 liter/ha) sprayed on the leaves and soil on June 10 along with 16 oz/acre of Bromoxynil and 8 oz/acre of Barrage. A 90-foot sprayer made two passes around the field, leaving the center 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*

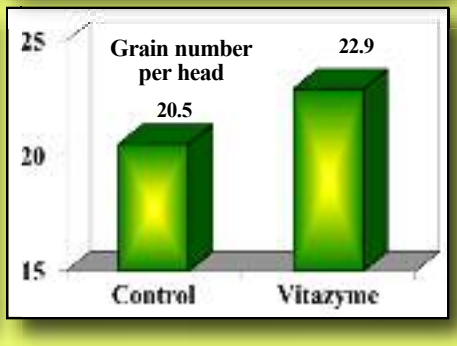



*Measured from soil level to tip of tallest tiller.

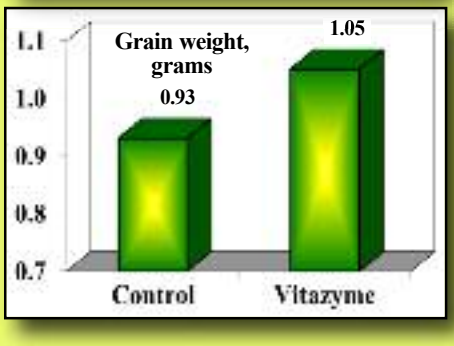
## Productive Tillers/Plant



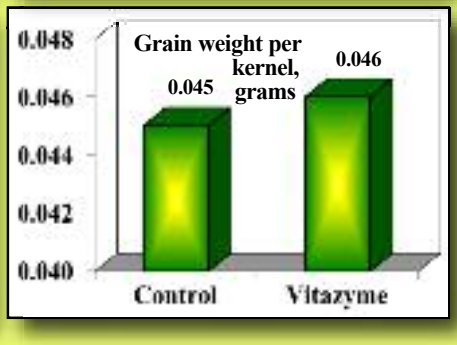

## Grains Per Head




## 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% |