

## Vital Earth Resources

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# 2013 Crop Results

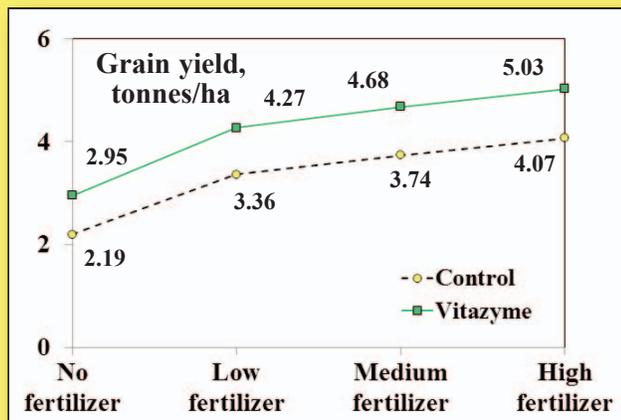
## Vitazyme on Spring Barley

**Researcher:** V.V. Plotnikov      **Research organization:** Scientific, Innovation, and Technology Center of the Institute of Forages and Agriculture of Podillya NAAS      **Location:** National Academy of Agricultural Sciences, Ukraine  
**Variety:** Nabat      **Soil type:** ash gray soil (humus = 2.2%, hydrolyzed-N = 8.4 mg/100 g of soil, P = 15.8 mg/100 kg of soil, exchangeable K = 12.4 mg/100 g of soil, pH = 5.5)  
**Previous crop:** buckwheat      **Planting date:** April 19, 2013  
**Soil preparation:** disking, plowing, harrowing      **Planting rate:** 4 million seeds/ha  
**Experimental design:** A small plot spring barley experiment was set up with four replications, to show the effectiveness of Vitazyme as a modifier of yield, protein, and disease incidence. Four levels of fertility were employed.

Treatment	Nitrogen kg/ha	Phosphorus kg/ha	Potassium kg/ha
1. Control	0	0	0
2. Control + Vita	0	0	0
3. Low fertility	30	20	30
4. Low fert + Vita	30	20	30
5. Medium fertility	45	30	45
6. Medium fert + Vita	45	30	45
7. High fertility	60	40	60
8. High fert + Vita	60	40	60

**Fertilization:** See the treatment table above. Phosphorus and potassium amendments were applied in the fall, and nitrogen was applied in the spring.

**Vitazyme application:** (1) a seed treatment of 1 liter/tonne of seed; (2) a foliar spray at tillering of 1 liter/ha  
**Yield results:**



### Yield increase with Vitazyme

**No fertilizer ..... 35%**  
**Low fertilizer ..... 27%**  
**Medium fertilizer ..... 25%**  
**High fertilizer ..... 24%**

Fertilizer levels improved barley grain yield, and Vitazyme at each level further increased the yield, by 24 to 35%.

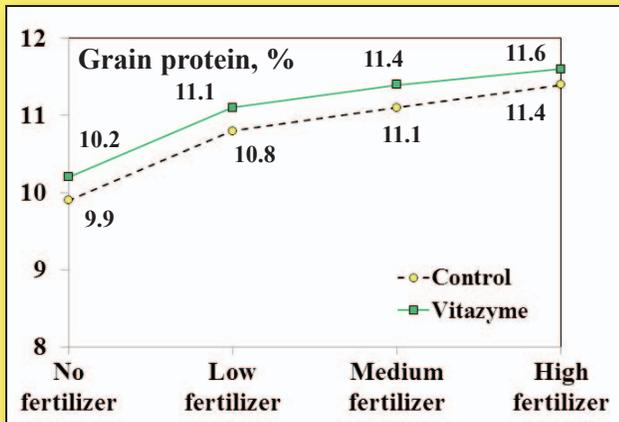
Income results:

**Vitazyme net income increase**

<b>No fertilizer</b> .....	<b>1,052 UAH/ha</b>
<b>Low fertilizer</b> .....	<b>1,307 UAH/ha</b>
<b>Medium fertilizer</b> .....	<b>1,358 UAH/ha</b>
<b>High fertilizer</b> .....	<b>1,392 UAH/ha</b>

Net income increased at each fertility level, with Vitazyme improving income the most at the high fertilizer rate.

Grain crude protein results:

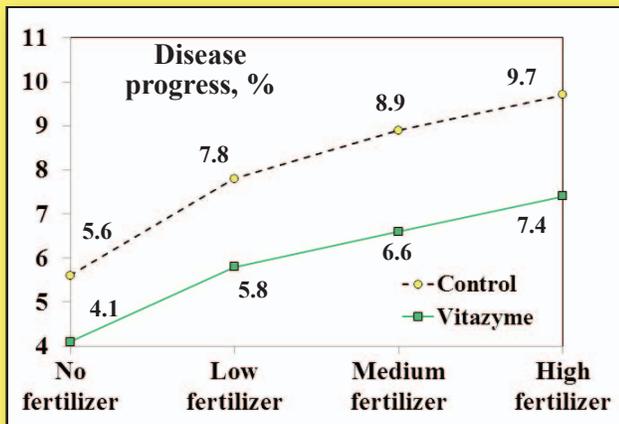


**Crude protein increase with Vitazyme**

<b>No fertilizer</b> .....	<b>0.3%-point</b>
<b>Low fertilizer</b> .....	<b>0.3%-point</b>
<b>Medium fertilizer</b> .....	<b>0.3%-point</b>
<b>High fertilizer</b> .....	<b>0.2%-point</b>

The increase in grain crude protein followed fertility levels, and Vitazyme nominally increased protein at each level.

Dark brown patch results: There was a 100% incidence of brown patch fungus for all treatments.



All plants were infected with this fungal disease, but the disease progress was greatest with higher fertilizer levels; Vitazyme slowed the progress by 1.5 to 2.3%-points.

Conclusions: In the words of the researchers,

1. In the case of no fertilizers, application of Vitazyme for spring barley of the Nabat variety, at a rate of 1 L/tonne of seed and 1 L/ha at the tillering stage, provided a grain yield increase of 0.76 tonne/ha, or 35%.
2. At middle and high nutrition backgrounds of spring barley plants ( $N_{30-60}P_{20-40}K_{30-60}$ ) and Vitazyme application, the grain yield increase was 0.91-0.96 tonne/ha, or 24-27%.
3. Vitazyme use when growing spring barley on the plot without fertilizers provided a profit of 1052 UAH/ha; with ( $N_{30-60}P_{20-40}K_{30-60}$ ) the profit was 1307-1392 UAH/ha, respectively.
4. Vitazyme use at respective development stages provided a slight increase in raw protein content in spring barley grain, by 0.2-0.3%.
5. Vitazyme application on spring barley plantings decreased the dark brown patch affect on leaves by 24-27%.