

Canola (Winter) with Vitazyme Bio on Winter Canola



Researchers: Vadim V. Plotnikov

Research organization:

Agro Expert International,
Kaharlyk, Ukraine, and Plant
Designs International, Rochester,
New York

Location: Salag Agro LLC, Bolgrad
District, Odessa Region, Vesely Kut
Village, Ukraine; southern Ukraine
(270-350 mm of precipitation
per year)

Variety: Hybrivok

Planting date: August 15, 2022

Planting rate: 400,000 seeds/ha

Previous crop: winter wheat

Tillage: disking to 10-12 cm

Planting depth: 2 cm with a
Pottinger planter

Soil type: Mollisol (2.5% organic
matter)

Experimental design:

A field-scale winter canola
trial in southern Ukraine was
designed to compare the effect
of Vitazyme Bio on canola seed
yield. A portion of the field was
left untreated while the rest of
the field received a biostimulant
application.

① Control ② Vitazyme Bio

Fertilization: An in-furrow
application of 6 kg/ha of N and
11 kg/ha of P₂O₅ was made at fall
planting. Then 40 kg/ha of N was
top-dressed in the spring.

Vitazyme Bio application: 0.5
liter/ha sprayed on the leaves and
soil at BBCH 59 (bud stage), on
April 26, 2023



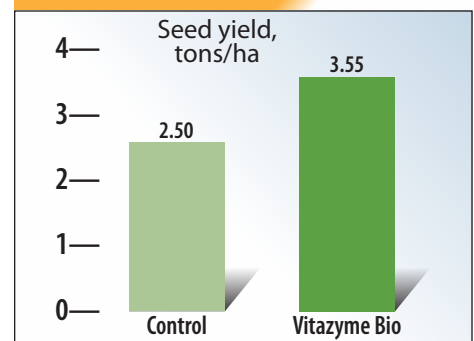
This beautiful field of canola was treated with Vitazyme Bio at the bud stage, and produced a major yield increase of 42% above the untreated control.

Yield results:

Treatment	Yield	Yield change
	tons/ha	tons/ha
1. Control	2.50	—
2. Vitazyme Bio	3.55	1.05 (+42%)

*Yield increase with
Vitazyme Bio: 42%*

Canola Seed Yield



Income results: : With a 1.05 ton/ha (42%) yield increase with Vitazyme Bio, the farmer netted \$388/ha more income.

Conclusions: This winter canola trial, which utilized only 0.5 liter/ha of Vitazyme Bio in part of the field at the bud stage, revealed that the seed yield was improved by a remarkable 42% with this biostimulant. Income was also increased, by \$388/ha. These results prove how profitable Vitazyme Bio use can be for canola farmers in southern Ukraine.



Canola with Vitazyme Cold Start application

Researchers: Vadim V. Plotnikov

Research organization:

Agro Expert International, Kaharlyk, Ukraine, and Plant Designs International, Rochester, New York

Location: PAE "Oleksandrivka,"

Uman District, Cherkasy Region, Oleksandrivka Village, Ukraine

Variety: Temptation

Planting date: August 27, 2021

Planting rate: 4 million seeds/ha

Previous crop: winter wheat

Tillage: disking to 6-8 cm, plowing to 28-30 cm, cultivation to 2-3 cm

Soil type: typical chernozem (4.2% organic matter)

Experimental design: A canola field was divided into a Vitazyme Cold Start treated portion, while the remainder of the field was left untreated. The purpose of the trial was to evaluate the effect of Vitazyme Cold Start on canola yield.

1 Control 2 Vitazyme twice

Fertilization: 8-24-24 kg/ha of N-P₂O₅-K₂O in-furrow at planting; 108 kg/ha of N and 34 kg/ha of S broadcast in the spring

Vitazyme Cold Start application:

0.5 liter/ha sprayed foliar in the fall (October 12, 2021) at the BBCH 23 stage (6 leaves); 1.0 liter/ha sprayed foliar in the spring (April 30, 2022) at the BBCH 55 stage (budding). Vitazyme Cold Start is a cold and wet weather variation of regular Vitazyme.

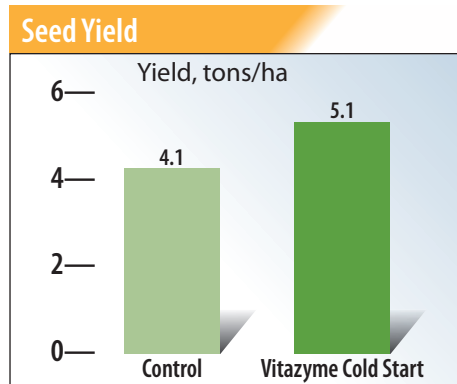


This Vitazyme Cold Start treated canola in the Cherkasy Region yielded 24% more seed than the untreated control.

Yield results:

Treatment	Yield tons/ha	Yield change tons/ha
1. Control	4.1	—
2. Vitazyme Cold Start	5.1	1.0 (+24%)

Yield increase with Vitazyme Cold Start: 24%



Conclusions: This winter canola field scale trial with Vitazyme Cold Start in Ukraine, using a fall foliar application of 0.5 liter/ha at the 6-leaf stage, and a spring foliar application of 1.0 liter/ha at the budding stage, provided an excellent 1.0 ton/ha yield increase (+24%). Such an increase provided the farmer an income increase of \$383/ha, showing the great utility of this program for canola growers in Ukraine.

Income results: The effect of a 1.0 ton/ha yield increase was to increase the income to the farmer by \$383/ha.

Researchers: Vadim V. Plotnikov

Research organization: Agro Expert International, Kaharlyk, Ukraine, and Plant Designs International, Rochester, New York

Location: PFC "Kolos," Bilhorod-Dnistrovsky District, Odessa Region, Marazliivka Village, Ukraine; southern Ukraine (270-350 mm of rain per year)

Variety: DK Impression KL

Planting date: August 8, 2021

Planting rate: 400,000 seeds/ha

Previous crop: winter wheat

Tillage: disking to 6-8 cm, direct seeding to 2 cm with a Mzuri planter

Soil type: typical Chernozem (4.0% organic matter)

Experimental design: A canola field was divided into a Vitazyme Bio treated portion, while the remainder of the field was left untreated. The purpose of the trial was to evaluate the effect of Vitazyme Bio on canola yield.

① Control ② Vitazyme Bio

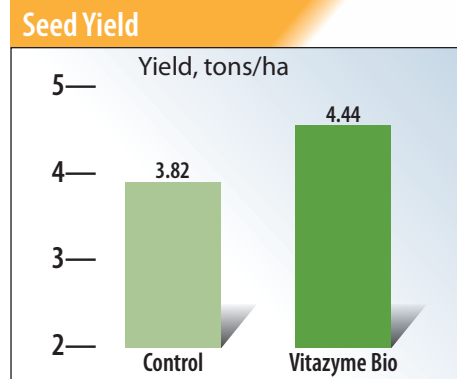
Fertilization: 9-45-25 kg/ha of N-P₂O₅-K₂O in-furrow at planting; 180 kg/ha of N and 42 kg/ha of S broadcast in the spring

Vitazyme Bio application: 0.8 liter/ha sprayed on the leaves at BBCH 59 (bud stage), on April 29, 2022.

Yield results:

Treatment	Yield tons/ha	Yield change tons/ha
1. Control	3.82	—
2. Vitazyme Bio	4.44	0.62 (+16%)

*Yield increase with
Vitazyme Bio: 16%*



Conclusions: A field-scale canola trial conducted in southern Ukraine in 2022 revealed that a Vitazyme Bio application of 0.8 liter/ha, sprayed on the plants at the bud stage, produced an excellent yield increase of 0.62 ton/ha (+16%). This yield increase boosted net income to the farmer by \$242/ha, showing the great value of the Vitazyme Bio program for Ukrainian farmers.

Income results: The additional 0.62 ton/ha yield with Vitazyme Bio produced an added \$242/ha of income.

Canola (Winter) with Vitazyme Bio application

Researcher: V.V. Plotnikov

Research organization: Agro Expert International, Kaharlyk, Ukraine, and Plant Designs International, Rochester, New York

Location: "Alfa" Farm, Berezivka District, Odessa Region, Rvasnopol Village, Ukraine; southern Ukraine (270-3350 mm of rain per year)

Variety: Klavir KL **Planting date:** August 29, 2020 **Planting rate:** 0.35 million seeds/ha **Previous crop:** winter wheat

Tillage: disking to 5-6 cm, deep disking to 18-20 cm, cultivation to 3-4 cm **Soil type:** Chernozem (4.3% organic matter)

Experimental design: A canola field was divided into a Vitazyme Bio treated portion, with an untreated portion left as a control, to evaluate the effect of this product as a foliar spray on seed yield.

① Control ② Vitazyme Bio

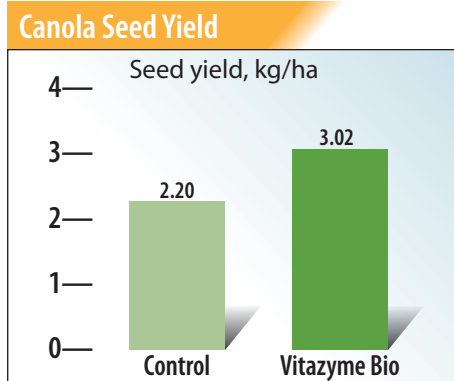
Fertilization: 16-16-16% N-P₂O₅-K₂O with the seeds at planting; 81 kg/ha N in the spring

Vitazyme Bio application: 0.5 liter/ha, sprayed on the leaves and soil on April 26, 2021, at early bloom (BBCH 59). Vitazyme Bio is the same as Organic Vitazyme, which is marked under that name in different parts of the world.

Yield results:

Treatment	Yield tons/ha	Yield change tons/ha
1. Control	2.20	—
2. Vitazyme Bio	3.02	0.82 (+37%)

*Increase in seed yield
with Vitazyme Bio: 37%*



The application of only 0.5 liter/ha of Vitazyme Bio at early bloom caused a great increase in seed yield: 0.82 ton/ha (37%).

Income results: The 0.82 ton/ha yield increase resulted in a net income increase of \$611/ha.

Conclusions: A winter canola split-field trial in southern Ukraine, using 0.5 liter/ha of Vitazyme Bio sprayed on the leaves at early bloom, resulted in a 0.82 ton/acre (37%) yield increase. This increase provided an additional \$611/ha income, showing the considerable utility of this program for winter canola production.



Canola (Winter) with Vitazyme application

Researcher: Darrel Carlisle **Research organization:** Carlisle Liquid Starters, Carroll, Manitoba, Canada

Location: Carrol, Manitoba, Canada **Variety:** unknown **Planting date:** unknown

Experimental design: A A field of canola was treated in part with Vitazyme, to compare with another biostimulant ("45") applied alongside, to determine the effect of this product on the yield of canola seed.

① "45" ② Vitazyme

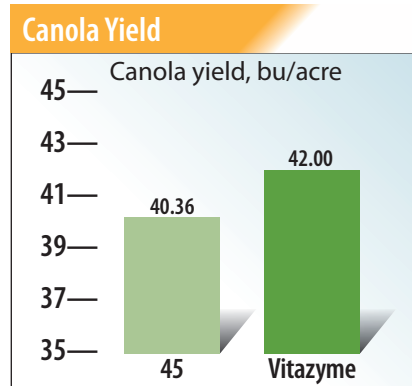
Fertilization: unknown **Vitazyme application:** 1.0 liter/ha along with the herbicide

45 application: This product is also called Lignijoule in Western Canada, and is a by-product of the pulp and paper industry.

Yield results: At harvest, two combined samples of canola were collected and weighed for both products.

Treatment	Seed yield bu/acre	Average yield bu/acre	Yield change bu/acre
45	37.40	—	—
45	43.32	40.36	—
Vitazyme	39.16	—	—
Vitazyme	44.84	42.00	1.64 (+4%)

Increase in seed yield with Vitazyme: 4 %



Conclusions:

A canola trial in Manitoba, comparing a product called "45" with Vitazyme, showed a 4% better yield with Vitazyme. This increase was 1.64 bu/acre.



Canola (Spring) with Vitazyme application

Researcher: William Hamman, Ph.D., and Donald Scott Walker

Researcher organization: Hamman AG Research, Inc., Lethbridge, Alberta, Canada **Location:** Coalhurst, Alberta, Canada

Variety: RRL1 **Planting date:** May 29, 2020 **Planting rate:** 6 kg/ha **Planting depth:** 2 cm **Row spacing:** 25 cm

Planting method: plot drill **Soil conditions at planting:** moist **Plot size:** 4 m x 8 m **Tillage method:** reduced till

Soil type: dark brown Chernozem; sandy clay loam; organic matter= 1.8%, pH= 8.35, cation exchange capacity = 27.4 meq/100g; fertility level = good, drainage = good

Experimental design: A small-plot replicated canola trial, using four replications arranged in a replicated complete block design, was established using varying application times and methods of Vitazyme, to determine the effect of this biostimulant on the yield of spring canola.

- 1 Control
- 2 Vitazyme

Treatment	Vitazyme applicaton ¹				
	Seeds	In-furrow	Pre-plant	Foliar/Soil	Early flower
1. Control	0	0	0	0	0
2. Vitazyme on seeds	1 liter/ton ^a	0	0	0	0
3. Vitazyme in-furrow	0	1 liter/ton ^b	0	0	0
4. Vitazyme on soil pre-plant	0	0	1 liter/ton ^c	0	0
5. Vitazyme foliar/soil early	0	0	0	1 liter/ton ^d	0
6. Vitazyme in-furrow + early flower	1 liter/ton	0	0		1 liter/ton ^e

^aApplied with a seed treater on May 29.
^bApplied May 29.
^cApplied May 29 just before planting.
^dApplied at early heading on June 19, along with Liberty herbicide.
^eApplied at early flowering on July 15.

Growing season weather: July, August, and September were especially dry.

Fertilization: unknown

Vitazyme application: All rates were 1 liter/ha at the times shown on the table.

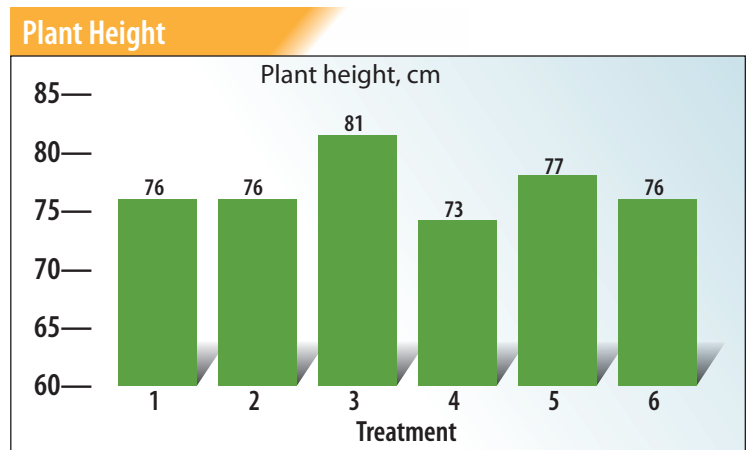
Liberty herbicide: Liberty is a BASF nonselective herbicide that controls a broad spectrum of broadleaf and grassy weeds.

It is used to control weeds for LibertyLink canola and other LibertyLink crops. The active ingredient is glufosinate ammonium.

Harvest date: September 11, 2020, using a Zurn 150 plot combine, harvesting an area of 1.5 x 8.0 meters for each plot (12.0m²).

Plant height results: Data was collected August 18.

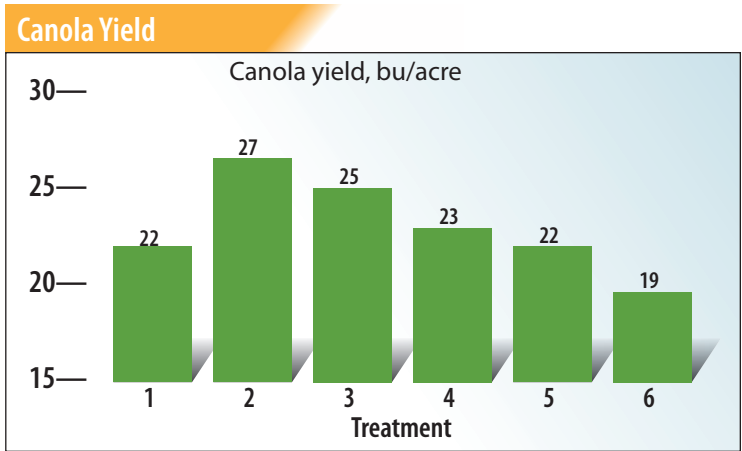
Treatment	Plant height
	cm
1. Control	76
2. Vitazyme on seeds	76
3. Vitazyme in-furrow	81
4. Vitazyme on soil pre-plant	73
5. Vitazyme foliar/soil early	77
6. Vitazyme in-furrow + early flower	76
CV	6.67
Replicate F	0.21
Treatment F	1.01
Treatment probability (P=0.05)	0.447
LSD (P=0.05)	7.7



Increase in plant height with Vitazyme applied in-furrow: 5 cm (+7%)

Yield results:

Treatment	Yield bu/acre	Yield change bu/acre
1. Control	22	—
2. Vitazyme on seeds	27	5 (+23%)
3. Vitazyme in-furrow	25	3 (+14%)
4. Vitazyme on soil pre-plant	23	1 (+5%)
5. Vitazyme foliar/soil early	22	0 —
6. Vitazyme in-furrow + early flower	19	(-) 3 (-14%)
CV	18.8	
Replicate F	0.69	
Treatment F	1.43	
Treatment probability (P=0.05)	0.27	
LSD (P=0.05)	6.4	



Increase in canola yield with Vitazyme

Seeds +23%
 In-furrow +14%
 Pre-plant..... +5%

Conclusions: This small-plot canola trial in Alberta, Canada, revealed that Vitazyme improved plant height by 7% during an early August evaluation. Yield effects were excellent with the seed treatment, giving a 23% yield increase, although due to plot variability the increase was not significant a P=0.05. The in-furrow and pre-plant soil treatment gave small yield increases, of 14% and 5%, respectively, while the application with Liberty herbicides brought no yield effect. The in-furrow plus early flower applications reduced yield for unknown reasons, possibly due to one unusually low-yielding plot. The Vitazyme seed and in-furrow treatments are shown to be good yield stimulators of canola under Alberta conditions despite a very dry summer.



Canola (Winter) with Vitazyme application

Researcher: V. V. Plotnikov

Research organization: Plant Designs International, Rochester, New York, and Agro Expert International, Kaharlyk, Ukraine

Location: PE AF "Dzvony", Peremyshl District, Lviv Region, Bolotnya Village, Ukraine: western Ukraine (550-750 mm of rain per year)

Variety: Seifer **Planting date:** August 20, 2018 **Planting rate:** 0.5 million seeds/ha **Previous crop:** winter wheat

Tillage: disking to 5-6 cm, plowing to 26-28 cm, cultivation to 2-3 cm **Soil type:** dark-gray podzolic (2.2% organic matter)

Experimental design: A winter canola field was divided into an untreated control area and a Vitazyme treated area—one application at budding—to evaluate the effect of this biostimulant on canola seed yield.

① Control ② Vitazyme

Fertilization: 30-60-90 kg/ha of N-P₂O₅-K₂O during fall plowing; 170-10-13 kg/ha of N-Mg-S in the spring

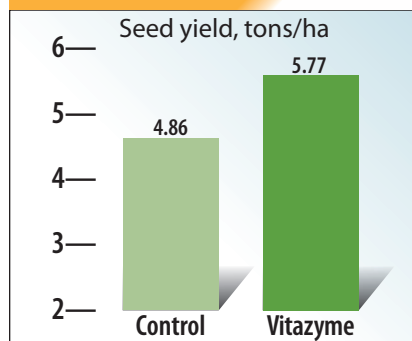
Vitazyme application: 1.0 liter/ha sprayed on the leaves at budding on May 1, 2019

Yield results:

Treatment	Yield tons/ha	Yield change tons/ha
1. Control	4.86	—
2. Vitazyme	5.77	0.91 (+19%)

*Increase in seed yield
with Vitazyme: 19%*

Seed Yield



Conclusions: A winter canola trial in western Ukraine in 2018-19, which compared an untreated control portion of a field with a portion sprayed with 0.7 liter/ha of Vitazyme in the spring, resulted in a great 19% yield increase, and a \$439/ha net income increase. These results prove the excellent efficacy of Vitazyme for improving the productivity and profits of canola growers in Ukraine.

Income results: As a result of the yield increase of 19%, the net income for this trial was increased by \$439/ha



Canola (Winter) with Vitazyme application

Researcher: V.V. Plotnikov

Research organizations: Plant Designs International, Rochester, New York, and Agro Expert International, Kaharlyk, Ukraine

Location: LLC "Spelta", Bilgorod-Dnistrovsk District, Odesa Region, Petrivka Village, Ukraine; Southern Ukraine (270-350 mm of precipitation per year)

Variety: Sherpa,

Planting date: August 30, 2018

Planting rate: 0.5 million seeds/ha

Previous crop: winter wheat

Soil type: Typical chernozem (humus=4.1%)

Field preparation: disking to 10-12 cm plowing to 20-22 cm, cultivation to 3-4 cm

Experimental design: A winter canola field was divided into conventionally treated and Vitazyme treated portions to evaluate the effects of Vitazyme on the yield of the seeds.

① Control ② Vitazyme

Fertilization: 32-52-24 kg/ha of N-P₂O₅-K₂O applied during fall plowing; 20 kg/ha of N applied at planting; 170 kg/ha of N and 36 kg/ha of S applied in the spring

Vitazyme application: 1.0 liter/ha sprayed on the leaves and soil at early flowering on April 28, 2019



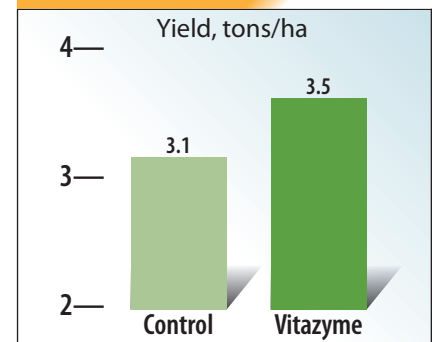
Tall, well-branched plants having well-filled seeds is the result of the Vitazyme program for this canola field, which yielded 13% more than the untreated control.

Yield results:

Treatment	Yield tons/ha	Yield change tons/ha
1. Control	3.1	—
2. Vitazyme + Cold Start	3.5	0.4 (+13%)

Increase in yield with Vitazyme: 13 %

Seed Yield



Income results: An extra 0.4 ton/ha of canola seeds produced added income of \$140/ha.

Conclusions: A winter canola trial conducted in Ukraine in 2018-2019, using a single Vitazyme foliar/soil spray at early flowering of 1.0 liter/ha, produced an excellent 13% yield increase, grossing \$140/ha more income for the farmer. This result points to the excellent responses farmers can expect with canola in Ukraine using the Vitazyme program.



Winter Canola with Vitazyme application

Researcher: V. V. Plotnikov

Research organization: Plant Designs, Inc., Rochester, New York, and Agro Expert International, Kaharlyk, Ukraine

Location: Bilgorod-Dnistrovskii District, Odessa Region, Petrivka Village, LTD Spelta, Ukraine

Variety: Mercedes **Planting date:** August 20, 2017

Previous crop: winter wheat

Soil type: typical chernozem (humus = 4.1%)

Planting rate: 400,000 seeds/ha

Field preparation: disking to 10-12 cm, plowing to 20-22 cm, cultivation to 3-4 cm

Experimental design: A winter canola field in southern Ukraine, planted in the late summer of 2017, was treated in part with Vitazyme the spring of 2018, and compared with untreated portions of the field to determine the product's effect on seed yield and profitability.

1 Control 2 Vitazyme

Fertilization: 32-52-24 kg/ha N-P₂O₅-S at plowing; 20 kg/ha P₂O₅ at planting; 170-36 kg/ha N-S in the spring

Vitazyme application: 1 liter/ha sprayed on the leaves and soil at early flowering on May 2

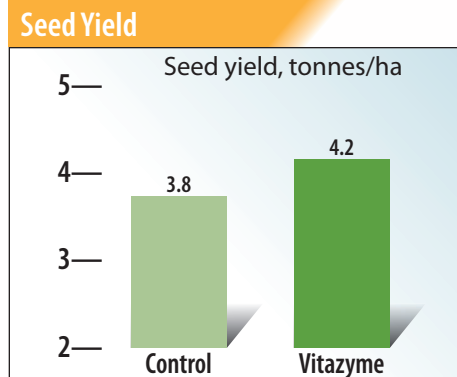


Notice the larger and deeper-penetrating root system of the Vitazyme treated winter canola. Better roots mean greater uptake of nutrients for higher yields.

Yield results:

Treatment	Seed yield tonnes/ha	Yield change tonnes/ha
1. Control	3.8	—
2. Vitazyme	4.2	0.4 (+10%)

Increase in seed yield with Vitazyme : 10%



Income results: A 0.4 tonne/ha yield increase gave \$178/ha greater income.

Conclusions: A western Ukraine winter canola study, using Vitazyme at 1 liter/ha in the spring at early flowering, resulted in a yield increase of 10%, while boosting income by \$178/ha. These results reveal the good efficacy of the program for canola growers in Ukraine.



Winter Canola with Vitazyme application

Researcher: V. V. Plotnikov

Research organization: Plant Designs, Inc., Rochester, New York, and Agro Expert International, Kaharlyk, Ukraine

Location: Ivanove District, Odessa Region, Rosiiska Slobidka Village, Agricultural Farm Zolota Osin, Ukraine

Variety: Gybrirok **Planting date:** August 20, 2017 **Previous crop:** winter wheat

Soil type: typical chernozem (humus = 4.1%) **Planting rate:** 500,000 seeds/ha

Field preparation: disking to 14-16 cm, cultivation to 3-4 cm

Experimental design: A field trial in southern Ukraine with winter canola was prepared in 2017, with one portion of the field treated with Vitazyme the spring of 2018 to evaluate the effect of this product on canola yield and profitability.

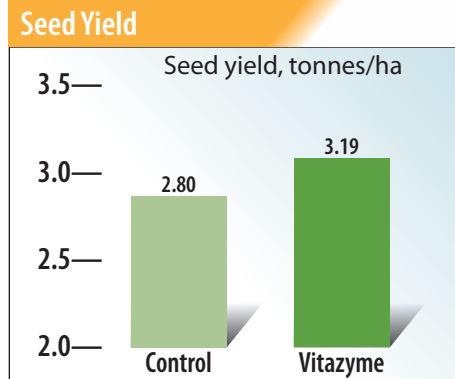
① Control ② Vitazyme

Fertilization: unknown

Vitazyme application: 0.5 liter/ha during bud formation on April 26

Yield results:

Treatment	Seed yield tonnes/ha	Yield change tonnes/ha
1. Control	2.80	—
2. Vitazyme	3.19	0.39 (+14%)



Income results: A seed increase of 0.39 tonne/ha produced \$184/ha additional income.

Conclusions: Vitazyme at bud formation in this southern Ukrainian canola trial produced a yield increase of 14%, using only 0.5 liter/ha of the product. This led to an income increase of \$184/ha, showing the great utility of the program for canola growers in Ukraine.

Increase in seed yield with Vitazyme : 14%



Winter Canola with Vitazyme application

Researcher: Vadim Plotnikov
Research organization: "Zolota osin" Farm, Ukraine, Plant Designs, New York, USA, and Agro Expert International, Ukraine
Location: Ivanivka District, Odessa Region, Rosiiska Slobidka Village, Ukraine
Variety: ES Artist
Seeding rate: 0.4 million seeds/ha
Planting date: August 15, 2016
Previous crop: wheat
Soil type: typical Chernozem; humus=4.1%
Soil preparation: disking to 10-12 cm, plowing to 20-22 cm, harrowing to 3-4 cm
Experimental design: A winter canola field was divided into Vitazyme treated and untreated control areas to determine the efficacy of this product in promoting yield increases.



Vitazyme treatments on canola in Ukraine resulted in excellent growth enhancement for both samples shown on the right side of this photo.

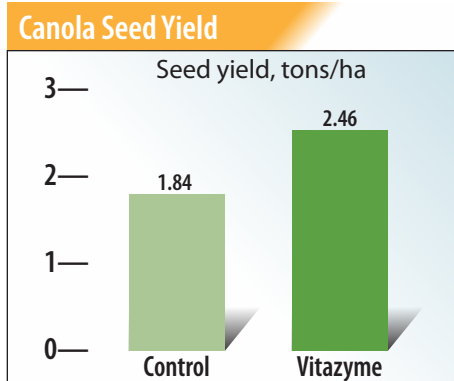
1 Control 2 Vitazyme

Fertilization: 12-12-12 kg/ha of N-P₂O₅-K₂O as starter at planting, and 52 kg/ha of N broadcast in the spring
Vitazyme application: 0.5 liter/ha sprayed on the leaves and soil at flower bud formation (April 30, 2017)
Growing season weather: dry
Yield results:

Treatment	Seed yield tons/ha	Yield change ton/ha
1. Control	1.84	—
2. Vitazyme	2.46	0.62 (+34%)

Increase in seed yield with Vitazyme: 34%

Income results: At a price of \$475.81/ton of canola seed, the added 0.62 ton/ha gave an additional \$295/ha income.



Conclusions: This winter canola southern Ukraine farm field Vitazyme trial, using one 0.5 liter/ha spray in the spring, proved that this program increased yield by 0.62 ton/ha (34%). This increase provided another \$295/ha income, showing that Vitazyme is a highly viable adjunct to farming programs for canola growers in Ukraine.

Canola *A study conducted in 2013*

Research organization:

SF- Soepenbergs s.r.o., Trnava, Slovakia,

Farmer cooperation: Jatov Trnovec, Vahom, Slovakia

Variety: unknown

Experimental design: A canola field was divided into Vitazyme treated and untreated areas to evaluate the effect of this product on the yield of seeds.

1 Control 2 Vitazyme

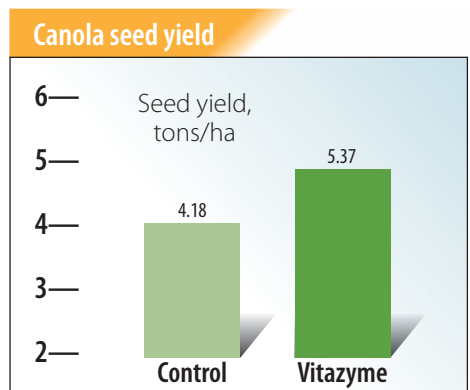
Fertilization: unknown

Vitazyme application: 1 liter/ha on the leaves and soil 50 days after planting, at flower formation along with fungicide and insecticide

Yield results:

Treatment	Yield tons/ha	Yield change tons/ha
Control	4.18	—
Vitazyme	5.37	1.19 (+28%)

Increase in canola seed yield with Vitazyme: 28%



Conclusion: An excellent 28% yield increase resulted from a single 1 liter/ha Vitazyme application, applied 50 days after planting. Such results illustrate the great value of this product for canola growers in Slovakia.

Canola with Vitazyme application

Researchers: Jacob Hesseltine and Heba Khalid

Research organization: Vital Grow Distribution LLC, Waterville, Washington

Farmer: Jorgenson Brothers

Location: Coulee City, Washington

Variety: High Class 115 spring canola, Roudup Ready

Planting date: last week of April

Seeding rate: 3.5 lb/acre

Seedbed preparation: plowing, rod weeding

Previous crop: fallow in 2014, with fall canola, which froze out

Soil type: sandy loam

Experimental design: A 240-acre spring canola field was divided by a dirt road, which served as a separation for a 70-acre area treated with Vitazyme. The purpose of the study was to evaluate the effect of this product on plant characteristics.

1 Control 2 Vitazyme

Fertilization: 50 lb/acre of nitrogen in the fall of 2014

Vitazyme application: 13 oz/acre sprayed on the plants and soil in the spring, along with Roundup (glyphosate), using a 90-foot sprayer

Growing season weather: a very dry and hot summer

Harvest date: last part of August, 2015

Plant parameter results: On July 14, 10 typical plants were dug from both of the two treated areas, near to each other to minimize soil differences, to evaluate several plant parameters.

Conclusion: This split field spring canola trial in Washington, using just one Vitazyme

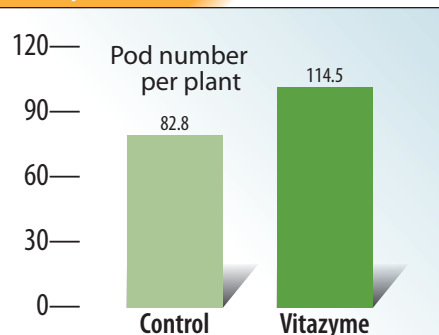


Note the marked increase in pod number per plant and pod size with Vitazyme..

application of 13 oz/acre, produced excellent plant responses when evaluated during the mid-growth period. Plant height was increased by 8%, pods per plant by 38%, stalk diameter by 27%, pod weight per plant by 47%, and average pod weight by 6%. These improvements set the stage for great yield increases, especially the greater pod number and weight per

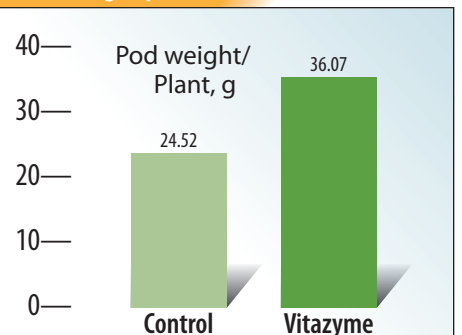
plant. It was not possible to separate the field areas for a yield evaluation, but it is presumed that a considerably greater yield was achieved on the Vitazyme treated area of the field. These results agree with responses of canola to Vitazyme noted in many other places across North America and the world, showing the great efficacy of this program for canola growers.

Pods per Plant



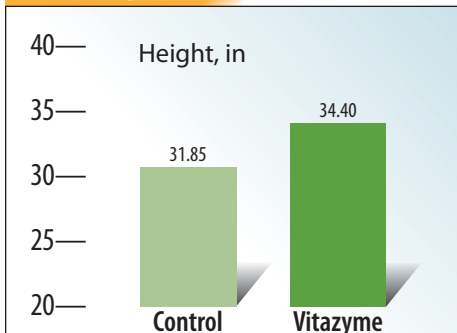
Increase with Vitazyme: 38%

Pod Weight per Plant



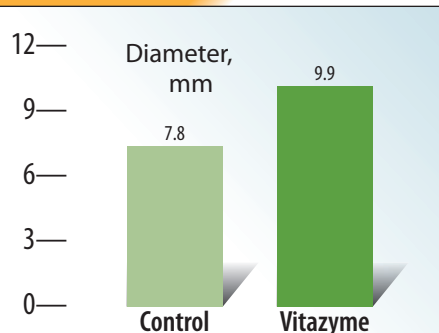
Increase with Vitazyme: 47%

Plant Height



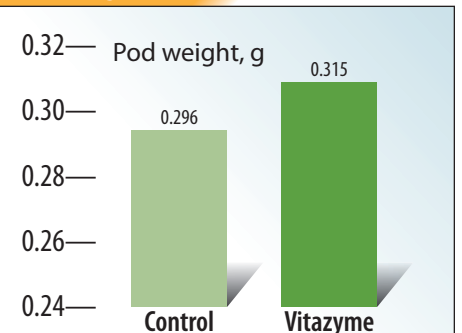
Increase with Vitazyme: 8%

Stalk Diameter



Increase with Vitazyme: 27%

Pod Weight



Increase with Vitazyme: 6%

Vital Earth Resources

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2009 Crop Results

Vitazyme on Canola

Researcher: O.V. Kornijchuk, V.V. Plotnikov, and agronomic scientists

Organization: Vinnytsia State Agricultural Experiment Station, Ukraine Academy of Agrarian Sciences, Vinnytsia, Ukraine

Seeding rate: 7 kg/ha

Seeding date: August 30, 2008

Location: Ukraine central forest-steppe area near Vinnytsia

Previous crop: spring barley

Variety: Black Giant, super elite

Tillage: plowing, cultivation, and harrowing

Soil type: gray forest steppe soil; in the 0-30 cm layer, 2.2% organic matter, 8.4 mg/100 g of soil “hydrolyzed nitrogen”, 15.8 mg/100g of soil phosphorus, 12.4 mg/100 g of soil exchangeable potassium, and pH=5.5.

Experimental design: A uniform field was divided into Vitazyme treated and untreated plots of 1.0 ha, replicated four times, to discover the effect of the product on the canola yield.

1. Control

2. Vitazyme once

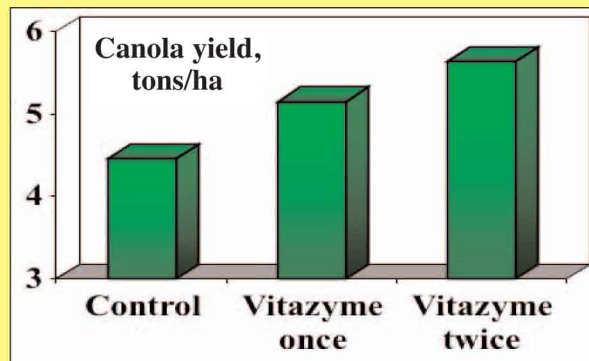
3. Vitazyme twice

Fertilization: in the fall of 2008, 30 kg/ha N, 60 kg/ha P₂O₅, and 90 kg/ha K₂O; in the spring of 2009, 90 kg/ha of N.

Vitazyme application: Treatment 1 received a fall application at 1.0 liter/ha on October 22, 2008, and Treatment 2 received this treatment plus another in the spring on April 30, 2009, at 1.0 liter/ha.

Yield results:

Treatment	Canola yield tons/ha	Yield change tons/ha
1. Control	4.46	—
2. Vitazyme	5.15	0.69 (+15%)
3. Vitazyme, fall + spring application	5.64	1.18 (+26%)



Increase in canola yield with Vitazyme

Fall application	15%
Fall + Spring application	26%

Income results:

- Income increase with fall Vitazyme: 1,663 hrn/ha
- Income increase with fall + spring Vitazyme: 2,786 hrn/ha

Conclusions: This winter canola trial at Vinnytsia, Ukraine, revealed that a single Vitazyme application in the fall, at 1 liter/ha, gave a large yield increase of 15%. An additional spring application at 1 liter/ha provided nearly double the fall-only application: 26%. Both treatments resulted in substantial increases in income, of 1,663 and 2,786 hrn/ha. These results prove the great utility of this product to improve winter canola yields under Ukrainian soil and climatic conditions.

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2008 Crop Results

Vitazyme on Winter Canola

Researchers: O.V. Kornijchuk, V. V. Plotnikov, and agronomic scientists

Organization: Vinnytsia State Agricultural Experiment Station of Forage Institute, Ukraine Academy of Agrarian Sciences, Vinnytsia, Ukraine

Location: Ukraine central forest – steppe area of Ukraine near Vinnytsia

Variety: Black Giant Super – Elite

Seeding rate: 6 kg/ha

Soil Type: gray forest steppe soil; in the 0-30 cm layer, 2.2% organic matter, 8.4 mg/100 g of soil “hydrolyzed nitrogen”, 15.8 mg/100 g of soil phosphorus, 12.4 mg/100 g of soil exchangeable potassium, and pH = 5.5.

Planting date: August 18, 2007

Previous crop: winter wheat

Tillage: plowing to 22 cm, and cultivation to 3-4 cm

Experimental design: A uniform field area was selected to place 1.0 ha plots, replicated four times, over the test area. The objective was to determine if Vitazyme could favorably influence crop yields for this gray forest soil area of Ukraine.

1. Control

2. Vitazyme applied in the fall

3. Vitazyme applied both fall and spring

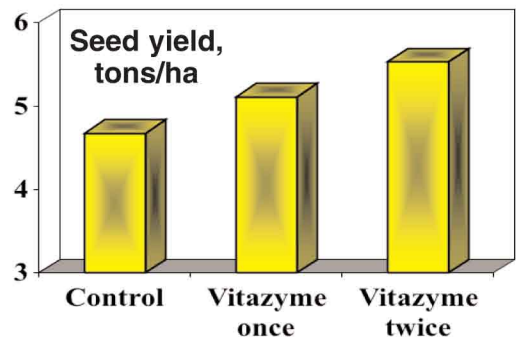
Fertilization: In the fall of 2007 a broadcast application of 30-60-90 kg/ha N-P₂O₅-K₂O was made. In the spring, 90 kg/ha of nitrogen was applied.

Vitazyme application: for Treatment 2, 1 liter/ha over the leaves and soil on October 5, 2007 (8 to 10 leaves), and for Treatment 3, 1 liter/ha on October 5, 2007, and also 1 liter/ha on May 15, 2008 (bloom).

Harvest date: unknown

Yield results:

Treatment	Seed yield tons/ha	Change tons/ha
Control	4.67	—
Vitazyme 1x	5.11	0.44 (+9%)
Vitazyme 2x	5.53	0.86 (+18%)



Increase in yield with fall application: 9%
Increase in yield with fall and spring applications: 18%

Income results: Based on current canola prices, the increase in income from Vitazyme for the two treatments is as follows:

Fall application 952 hrn/ha

Fall and spring application 1,855 hrn/ha

Conclusions: A fall application of Vitazyme (1 liter/ha) after planting resulted in a sizeable 9% increase in canola yield in Ukraine. Applying a second 1 liter/ha application in the spring doubled this yield increase to 18%, showing how effective this fertility supplement is to improve yields and profits on canola in Eastern Europe. Income increases were substantial for the two treatments: 952 and 1,855 hrn/ha, respectively.

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1999 Crop Results

Vitazyme on Canola

Farmer: James Harrison

Variety: Martina (a high uric acid industrial oil variety)

Harvest date: unknown

Experimental design: A canola field was divided into two parts, one treated with Vitazyme and the "Eco-Ag" System and the other left untreated.

Location: North Yorkshire, England

Planting date: unknown

Soil type: sandy clay loam

1. Control

2. Vitazyme + Eco-Ag products

Fertility treatments: no P_2O_5 or K_2O and reduced nitrogen fertilizer

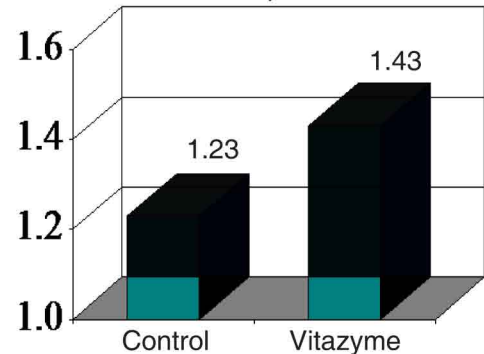
Vitazyme applications: Vitazyme was applied at recommended rates with other Eco-Ag products.

Yield results:

	<u>Control</u>	<u>Vitazyme</u>	<u>Increase</u>
Yield, tonnes/acre	1.23	1.43	0.20 (+16%)

Yield increase: 16%

Canola Yield, tonnes/acre



Income results: Canola price = \$254.40/tonne.

	<u>Control</u>	<u>Vitazyme</u>
Income	\$312.91/acre	\$363.79/acre

Income increase: \$50.88/acre

Comments: Using Vitazyme within the Eco-Ag program meant the crop required less fertilizer, especially nitrogen, than the conventional program. Even so, the Eco-Ag program still produced the highest yield and a sizeable income increase.