



**BRANDT®**

# Get More From Your Fertilizer Investment

BRANDT® EnzUp®  
Patent Pending  
Enzyme Technology





## BRANDT EnzUp

BRANDT EnzUp is a groundbreaking new enzyme technology that enhances water and nutrient availability, uptake and use by the roots and increases microbial activity. The result is improved soil and plant health, increased root mass and improved drought and stress tolerance.



# Revolutionary Enzyme Protection Process Keeps Enzymes Active in Soil Longer and Improves Efficacy

BRANDT ENZUP enzymes undergo a patent pending process that prevents the enzymes from degrading in the soil too quickly after application. This allows them to remain active longer and substantially increases enzyme efficacy. This is an entirely new technology and scientific breakthrough for agriculture.

## The Importance Of Enzymes and How They Function In Crops

- Enzymes are non-living proteins made by plants, microbes or other organisms in the soil proteins.
- Enzyme activity is an indicator of healthy soils.
- Enzymes act as catalysts that perform very specific functions and create chemical reactions in the soil. Typically, enzymes either cleave something apart or pull something together. Enzymes impact:
  - Organic matter breakdown
  - Nitrogen fixation and conversion
  - Nutrient availability and uptake
  - Pesticide degradation

## The Difference Between Enzyme and Microbial Products

Microbial products contain live microbes. To survive in the soil, microbes require nutrients, optimal pH, salt and organic matter - which causes them to have a high death rate, especially during harvest and tilling. It takes months to build up microbe levels in the soil.

In contrast, enzymes are non-living organisms, which makes them more stable in the soil. When they are applied to the soil, they are immediately active and perform consistently across all soil types.

### Key Benefits of BRANDT EnzUp



Improved plant health,  
improved nutrient and  
water uptake



Improved stress  
tolerance



Improved quality  
and yield



Enhanced plant  
response to applied  
fertilizers - increased  
bushels

UP TO **15%** YIELD INCREASE<sup>1</sup>

<sup>1</sup>Source: BRANDT Field Trials 2016-2018

Stable  
chemistry



Immediately  
active in the  
soil



100-1200X  
more enzymes



Consistent  
performance  
across all soil  
types



**BRANDT EnzUp Enzymes**

Microbes



Live organism



Takes time to  
build up  
microbe numbers  
in the soil



Have a  
high death rate



Require optimal  
pH and soil  
conditions to  
survive



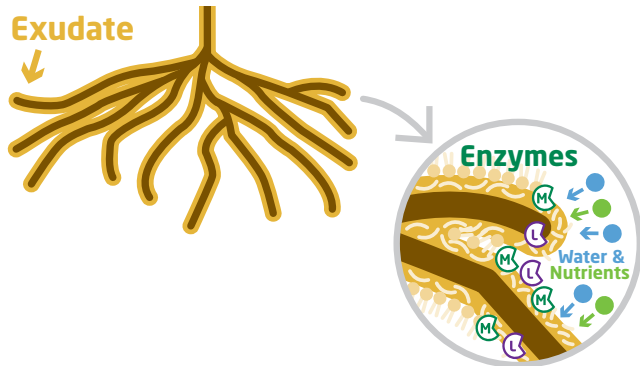
**BRANDT EnzUp Zn**

# Concentrated Liquid Enzyme Solution

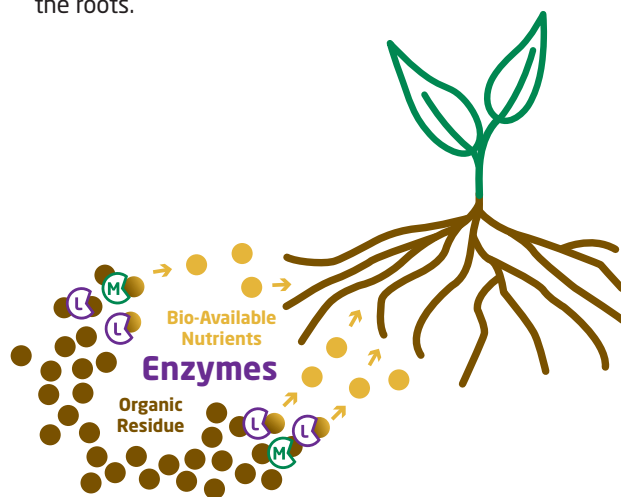
**Contains a High Concentration of Mannanase and Lipase Enzymes That Boost Nutrient Availability and Uptake**



**Mannanase enzyme** - its primary function is to break down starches in the exudate that surrounds the outermost layer of the root tips. This chemical reaction creates a draw of water and nutrients to the root zone and releases sugars to the plant. This in turn boosts root growth and increases microbial activity.



**Lipase enzyme** - its primary function is to break down lipids in root exudates and organic residue in the soil allowing for better water flow and nutrient uptake by the roots.



## Key Benefits

- More water and nutrient uptake
- Increased plant response to fertilizer applications
- Gets plants off to a strong start
- Increased microbial activity
- Larger, healthier root systems
- Improved stress and drought tolerance
- Increased yield

## Zinc and Enzyme Interaction

**Zn**

All enzymes need a co-factor for activation. For Lipase and Mannanase enzymes, zinc is that co-factor. The zinc ignites enzyme activity, which allows the enzymes to perform their chemical reactions faster and more effectively. The boost in enzyme activity increases total water and nutrient uptake.



### Field Trials

<b>Corn</b>			
NC, 2017 (bu/ac)		<b>10.1</b>	Advantage
		(633.9 kg/ha)	
10-34-0 + BRANDT ENZUP ZN		219.9	(13,802.6 kg/ha)
10-34-0		209.8	(13168.64 kg/ha)
IA, 2018 (bu/ac)		<b>12.0</b>	Advantage
		(753.2 kg/ha)	
10-34-0 + BRANDT ENZUP ZN		146	(9164.1 kg/ha)
10-34-0		134	(8410.9 kg/ha)
IL, 2018 (bu/ac)		<b>9.0</b>	Advantage
		(564.9 kg/ha)	
5-12-0 4S + BRANDT ENZUP ZN		293	(18390.9 kg/ha)
Control		284	(17826.0 kg/ha)
NE, 2018 (bu/ac)		<b>18.2</b>	Advantage
		(1142.0 kg/ha)	
9-24-3 + BRANDT ENZUP ZN		271.5	(17041.4 kg/ha)
9-24-3		253.3	(15899.0 kg/ha)
<b>Cotton</b>			
VA, 2018 (lb/ac) 2x2 application		<b>173.4</b>	Advantage
		(194.4 kg/ha)	
11-37-0 + BRANDT ENZUP ZN		1493.7	(1674.2 kg/ha)
11-37-0		1320.3	(1479.9 kg/ha)
<b>Lettuce</b>			
CA, 2019 (lb) mean carton weight		<b>5.8</b>	Advantage
		(2.6 kg)	
GS + BRANDT ENZUP ZN		26.5	(12.0 kg)
Grower Standard		20.7	(9.4 kg)
<b>Potatoes</b>			
ID, 2018 (cwt/ac)		<b>48</b>	Advantage
		(5380.1 kg/ha)	
10-34-0 + BRANDT ENZUP ZN		432	(48420.8 kg/ha)
10-34-0 + 9% ZN EDTA		384	(43040.7 kg/ha)
ID, 2018 (cwt/ac)		<b>39</b>	Advantage
		(4371.3 kg/ha)	
10-34-0 + BRANDT ENZUP ZN		444	(49765.8 kg/ha)
10-34-0 + 9% ZN EDTA		405	(45394.5 kg/ha)

### Application Rates and Timing

**Soil Application**

*Field and Row Crops:* 1 quart per acre in furrow or banded either as a stand alone or in combination with liquid NPK starter fertilizers at planting or 1 quart per acre banded in the strip till not more than 2 weeks before planting.

*Vegetable Crops (brassicas, cucurbits, fruiting and leafy):* 3 quarts per acre at planting or in transplant solution applied in the root zone through fertigation.

*Potato, Sweet Potato:* 2-3 quarts per acre in furrow or banded either as a stand alone or in combination with liquid NPK starter fertilizers.

*Fruits, Trees and Vines:* 3 quarts per acre delivered in the root zone at the time of planting or during growth stages through fertigation. For individual trees or plants, the product may be diluted as above or sprinkled directly on the soil uniformly under the plant's drip line, then watered in.

*Optimum rate of application will vary depending on treatment interval, soil properties (such as pH, organic matter content, texture), weather conditions, time of year, plant species and its nutrient requirements. For best results, follow soil/tissue test recommendation.*

### Guaranteed Analysis

Zinc (Zn).....	4.0%
4.0% Chelated zinc	

Derived from zinc EDTA.

**ALSO CONTAINS NON-PLANT FOOD INGREDIENTS:**

Lipase.....	2,000	µUnits/ml
Mannanase .....	1,000	mUnits/ml





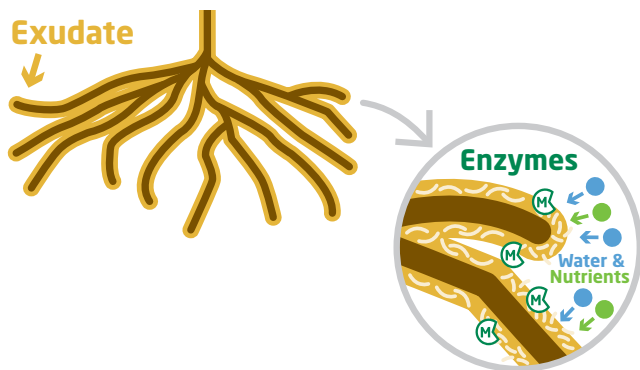
BRANDT EnzUp P DS

# Dry Soluble Enzyme and Phosphate Package

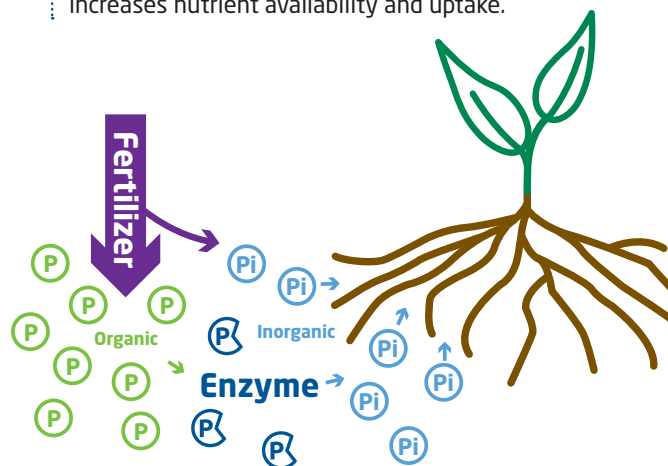
Contains a High Concentration of Phosphatase and Mannanase Enzymes Which Converts Organic Phosphorus to Available Phosphate and Releases Nutrients from Organic Residue



**Mannanase enzyme** - its primary function is to break down starches in the exudate that surrounds the outermost layer of the root tips. This chemical reaction creates a draw of water and nutrients to the root zone and releases sugars to the plant. This in turn boosts root growth and increases microbial activity.



**Phosphatase enzyme** - its primary function is to convert tied up organic phosphate into soluble, bio-available phosphate that is immediately available for plant use. This reaction significantly increases nutrient availability and uptake.



## Key Benefits

- Enhances and speeds up the plant's phosphate uptake and use
- Enhanced plant response to fertilizer applications
- Gets plants off to a strong start
- Increased microbial activity
- Larger, healthier root systems
- Improved stress and drought tolerance
- Increased yield

## Unleash the Organic Phosphate in Your Soil

$P_2O_5$

% Organic Matter	Soil Organic Matter (lbs/acre/ft) approx	$P_2O_5$ tied up as Organic P (lbs/acre/ft of soil) approx
0.5	17,150	230
1.0	34,290	460
1.5	51,440	690
2.0	68,590	910
2.5	85,740	1,140
3.0	102,890	1,370

(Doran 2012)



### Field Trials

<b>Cantaloupe</b>			
NC, 2017 (lbs/ac)		<b>927.1</b>	Advantage
		(1039.1 kg/ha)	
BRANDT ENZUP P DS		(29489.5 kg/ha)	26309.9
Check		(28450.3 kg/ha)	25382.8
AZ, 2019 (# boxes per acre)		<b>108.6</b>	Advantage
BRANDT ENZUP P DS + 9% Zn			475.3
Grower Standard + 9% Zn			366.7
<b>Cucumber</b>			
GA, 2017 (lbs/ac)		<b>4648.8</b>	Advantage
		(5210.6 kg/ha)	
BRANDT ENZUP P DS		(64825.3 kg/ha)	57835.8
Check		(59614.7 kg/ha)	53187.0
<b>Pepper</b>			
NC, 2017 (lbs/ac)		<b>5775.5</b>	Advantage
		(6473.5 kg/ha)	
BRANDT ENZUP P DS		(50745.1 kg/ha)	45273.7
Check		(44272.2 kg/ha)	39498.2
<b>Tomato</b>			
NC, 2017 (lbs/ac)		<b>2534.5</b>	Advantage
		(2840.8 kg/ha)	
BRANDT ENZUP P DS		(65776.7 kg/ha)	58684.6
Check		(62935.9 kg/ha)	56150.1
FL, 2017 (lbs/ac)		<b>3637.4</b>	Advantage
		(4077.0 kg/ha)	
BRANDT ENZUP P DS		(37912.7 kg/ha)	33824.9
Check		(33835.7 kg/ha)	30187.5
<b>Almonds</b>			
CA, 2018, Nut Meat Yield (lbs/ac)		<b>220.0</b>	Advantage
		(246.6 kg/ha)	
BRANDT ENZUP P DS		(3104.8 kg/ha)	2770
Control		(2858.2 kg/ha)	2550
<b>Wine Grapes</b>			
CA, 2018, Mean Bunch Weight (lbs)		<b>0.04</b>	Advantage
		(0.02 kg)	
BRANDT ENZUP P DS		(0.27 kg)	0.59
MAP		(0.25 kg)	0.55

### Application Rates and Timing

Dissolve 5-30 pounds in sufficient water to treat one acre.  
 DO NOT exceed 1 lb BRANDT ENZUP P DS per gallon of water.  
 Repeat as needed.

### Guaranteed Analysis

Total Nitrogen (N).....	12.0%
12.0% Ammoniacal Nitrogen	
Available Phosphate (P <sub>2</sub> O <sub>5</sub> ).....	58.0%

Derived from monoammonium phosphate.

**ALSO CONTAINS NON-PLANT FOOD INGREDIENTS:**

Phosphatase.....	.50 x 10 <sup>2</sup> µUnits/g
Mannanase .....	.22 x 10 <sup>6</sup> µUnits/g

These products may only be sold in states where registered or where registration is not required. For further information, please contact your BRANDT representative.

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**Brandt Consolidated, Inc.**

2935 South Koke Mill Road  
Springfield, Illinois 62711 USA  
800 300 6559  
217 547 5840

3654 South Willow Avenue  
Fresno, California 93725 USA  
559 499 2100

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