



Borregaard



· PLANT NUTRITION



BorreGRO® HA-1

A New Soil Conditioner for Improved Potato Growth



The Natural Choice for Increasing Potato Growth and Yield

BorreGRO® HA-I is a modified potassium humate derived from the plant active portions of lignite ore. Made through a patented process, BorreGRO® HA-I has superior solubility over the entire useful pH range and can be formulated with both basic and acidic fertilizers. As a product from nature, BorreGRO® HA-I meets all the requirements of sustainable agriculture, and offers farmers a “natural” way to improve plant health and productivity.

BORREGRO® HA-I BENEFITS

When used as part of an overall fertility program, BorreGRO® HA-I can increase:

- Nutrient Uptake
- Tuber Size
- Yields
- Profits



GOOD FOR THE ENVIRONMENT.



· PLANT NUTRITION

Introducing a Better Way to Nourish Potato Crops...



BorreGRO® HA-1

A New Soil Conditioner for Improved Potato Growth

BorreGRO® HA-1 functions as a complexing agent for soil nutrients and maintains the soil nutrients in forms that are more readily available to the plant. BorreGRO® HA-1 is also believed to be a source of metabolizable energy for the soil microbes present in the root zone. In addition, BorreGRO® HA-1 will provide a source of added organic carbon, sulfur and potassium, which are necessary requirements for good potato growth.

BORREGRO® HA-1 IN THE ROOT ZONE

In the rhizosphere, or root zone of plants, complex interactions are constantly occurring between plant roots and soil microbes. Microbes live in the soil and gain needed energy sources from plants, while aiding in nutrient transfer back to the plants, thereby creating an environment more conducive to good root growth.

INCREASED PROFITS

The results summarized below show that the addition of BorreGRO® HA-1 to standard fertility programs can increase both the yield and value of marketable potatoes. Potatoes grown with this treatment returned additional gross profits of as much as \$973.34 per hectare to the grower.

Effect of **BorreGRO® HA-1** + Fertilizer on Total Yield and Gross Profit per Hectare

Financial Gain from Using BorreGRO® HA-1			
Test	Potato Variety	% Yield Increase	\$ Increase/Hectare
TX 002	Frito Lay Variety	3.0*	NA
TX 003	Frito Lay Variety	8.7	\$358.30
ID 003	Russet Burbank	25.6	\$973.34
ID 004A	Russet Burbank	3.7	\$487.73
ID 004B	Russet Burbank	11.6	\$143.86
ID 005	Russet Burbank	15.3	\$808.80

* Potatoes were harvested early. There were ~11.0% more tubers than the check.

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FOR
YOU.



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IMPROVED NUTRIENT UPTAKE

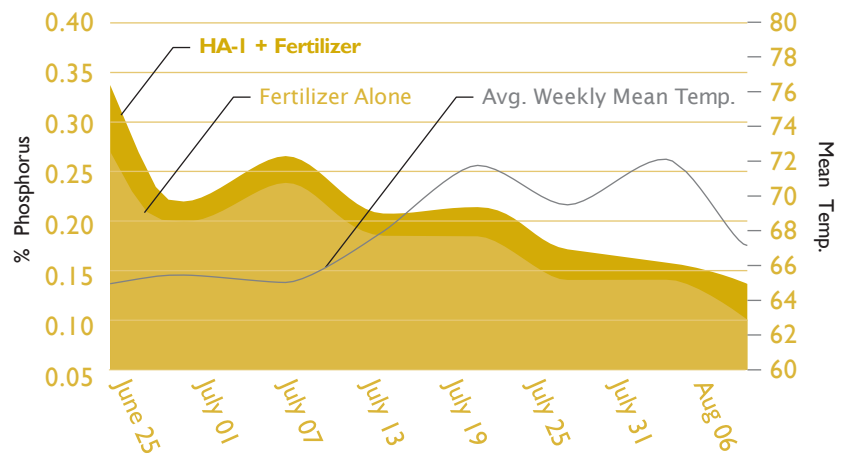
Good nutrient management, especially of phosphorus, has been shown to be an extremely important factor in potato production. Testing conducted in Idaho over a three year period has shown that BorreGRO® HA-I can complex nutrients, making them more available for uptake by the growing potato plant.

The results of trials in Idaho show that the levels of phosphorus and potassium in the petioles of potato plants treated with fertilizer and BorreGRO® HA-I were higher than in those of potato plants treated with fertilizer alone. Similar results were obtained with other plant nutrients.

Potato Petiole Analysis - Phosphorus

(Percent throughout the Growing Season)

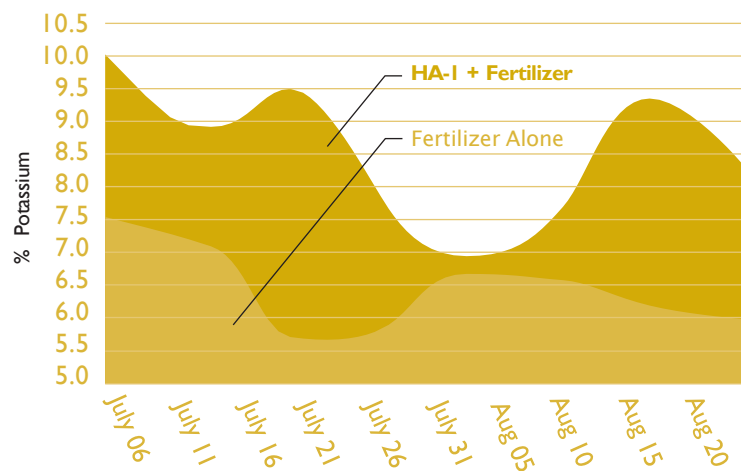
Magic Valley, Idaho – Russet Burbanks



Potato Petiole Analysis - Potassium

(Percent throughout the Growing Season)

Magic Valley, Idaho – Russet Burbanks



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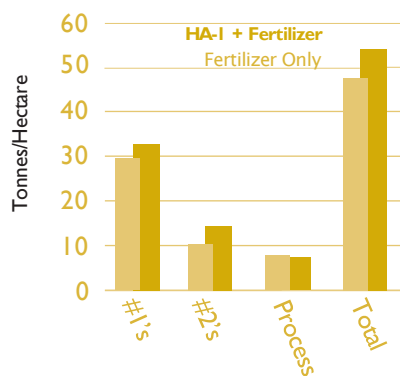
INCREASED TUBER SIZE

The Magic Valley, Idaho trials proved that the addition of BorreGRO® HA-I to standard fertility programs resulted in increases in both tuber size and count. From a grower's standpoint, this translates to higher market pricing, thereby providing increased profits.

Yield and Grade of Potatoes

Magic Valley, Idaho (ID-005)

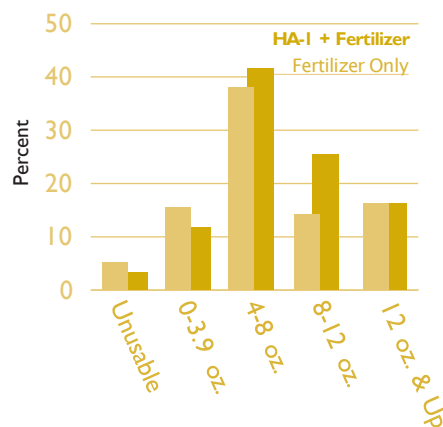
BorreGRO® HA-I + Fertilizer



Percent of Potato Yield by Size

Magic Valley, Idaho (ID-005)

BorreGRO® HA-I + Fertilizer



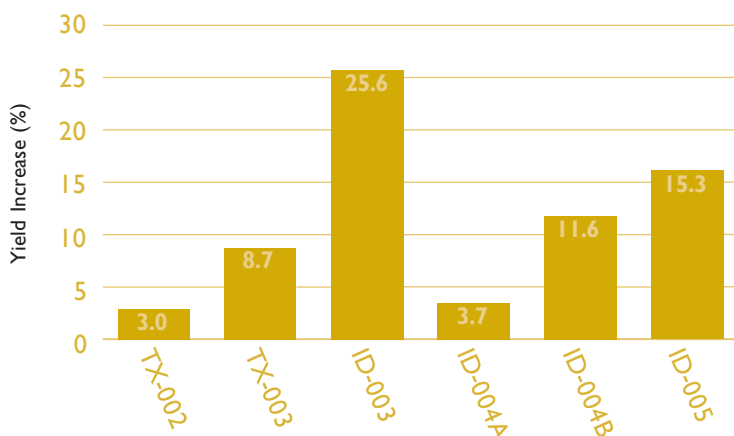
INCREASED YIELDS

In six field trials conducted over a four year period in Texas and Idaho, the addition of BorreGRO® HA-I to standard fertility programs resulted in an average increase in total potato yield of more than 10%. Consistent potato yield increases across several growing regions and growing seasons, confirm that the effect of BorreGRO® HA-I is not limited to a particular growing region, time period, or soil type.

Percent Increase in Potato Yields

Texas & Idaho

BorreGRO® HA-I + Fertilizer vs. Fertilizer Alone



BorreGRO® HA-1

Use Guidelines

BorreGRO® HA-I is a soil amendment, and not a fertilizer. As such, it should always be used as part of a standard fertility program. Application rates for BorreGRO® HA-I vary from 2 to 6 kg per hectare, with the best results being obtained when the product is applied directly to or beneath the surface of the seed furrow.

BorreGRO® HA-I can be mixed and applied with most types of fertilizers (including acidic fertilizers), pesticides, and micronutrients. A simple jar test prior to application is recommended to confirm compatibility. Always read and follow label instructions when using BorreGRO® HA-I.

The Basics

BorreGRO® HA-I is available as either a soluble powder or concentrated (20%) liquid.

Product labels are available upon request from your Borregaard sales representative.

BORREGAARD

Borregaard is the world's leading manufacturer and supplier of lignin-based products. Our products are environmentally friendly and utilize a natural and renewable source of raw material.

We offer a specialty line of products to the Plant Nutrition Market, including irrigation line additives, soil conditioners, micronutrients and chelating agents. Our extensive network of production plants and sales offices will ensure optimal service and product availability to our customers worldwide.

TO LEARN MORE:

For more information about BorreGRO® HA-I, please contact your local sales office at the numbers below or visit us on the web at www.borregaard.com.



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