



Biological Seed Treatment

Soil and Plant Enhancer (SPE-120) with active ingredient *Beauveria bassiana*, is a natural, **symbiotic fungus** that lives in the **soil, roots, stems, and leaves**. SPE-120 grows with the plant!

Conventional seed treatments using neonicotinoids or other synthetic chemicals have a finite amount that can fit on the seed. They become less effective as the plant grows and are not compatible with nature.

SPE-120 blends food grade and certified organic products with *Beauveria bassiana*. Many certifiers have determined compliance with organic standards. Contact your certifier to add SPE-120 to your plan.

Observed Results

- Potatoes- Reports have shown over 20 bags/acre yield increase. With reducing rhizoctonia, the pickouts were reduced from 23% to 2%. Minimal damage from Colorado Potato Beetle vs. neighbor.
- Soybeans and corn- Increased resilience to flooding and drought
- Tomatoes sold into restaurants were noticeably more flavorful. Brix score measured 5 points higher than from non-treated plants. Outdoor plants had almost no insect damage.
- Trial in soybeans treated with SPE-120 in Pewamo soils yielded 9.6 bushels more than untreated beans. Soybean aphids and stink bugs were found on non-treated plots only.
- Leaf chlorophyll measured 4.2 points higher for treated plants. Plants were visibly taller and healthier.
- Another soybean trial, 20 miles separate, found numerous alternative pollinators in the field treated with SPE-120. This was not the case in untreated fields.
- Reports from High Plains growers: increased quality; increased yields relating to limited potato psyllid pressure.
- Organic corn trials- Increase of up to 20 bu/ac in Ohio and northeast Iowa

Customer Comments

- "Organic Sweet corn harvested in August had no ear worm " – South Dakota grower
- "No loopers in our cabbage" – South Dakota vegetable grower

Application Rates

For best results, apply as seed treatment or in the seed trench.

Beauveria bassiana is relatively light sensitive

Seed trench: Add from .75 to 1.25 oz/acre based on the row width and the size of seed pieces

Foliar feed:

Ground application – 0.5-2.0 oz/ acre for plant health

Aerial application – 0.25 oz-1.5 oz/ acre for plant health

Corn and sorghum

Cotton

Legumes: beans, alfalfa and peanuts

Potatoes

Soybeans

Tomatoes

Vegetables and Fruit

Wheat and small grains

SPE-120 with *Beauveria bassiana* is a **plant symbiont** that provides the plant with:

- Stimulation of immune system
- Physical blockage of pathogenic diseases
- Beneficial Plant biochemical interactions
- Uses pest insects as a dispersal mechanism
- Naturally occurs in soil but has been killed off by fungicides and tillage

Reports, trials and research indicate seeds treated with Soil Plant Enhancer (SPE-120) with *Beauveria bassiana* have shown improved performance against:

Potato psyllids
 Leaf hoppers
 Pea aphids
 Green peach aphids
 Leaf miner, Mites, white flies
 Wheat midge
 Spotted wing drosophila in raspberries
 Grape colaspis
 Wheat stem sawfly
 Apple maggot
 Onion maggot
 Onion thrips
 Plum curculio
 Pecan weevil
 Alfalfa weevil
 Clover leaf weevil
 Squash borer
 Cabbage looper
 Armyworm
 Corn Ear worm
 Pink boll worm
 Variegated cutworm
 Black cutworm
 Webworm
 European corn borer
 Northern corn root worm beetle
 Western corn root worm beetle
 Japanese beetle
 Colorado potato beetle
 Wireworms
Corn: Fusarium, Goss's wilt, Anthracnose
Wheat: Common rust, Fusarium, DON
Potatoes: Rhizoctonia, Anthracnose, Early blight
Rye: Ergot

Soybeans: Stem Canker, Stem Borer, Fusarium root rot, Common rust, Anthracnose



E. Grand Forks, MN. Corn with SPE-120 seed treatment 7/10/2017



Central Ohio Corn: SPE-120 treated (top) vs. untreated showed better root and stalk development



Northern MN Dry beans – left SPE-120 treated, right chemical treated, picture taken July 8, 2016



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Potato and Vegetable Biological Seed Treatment

Soil and Plant Enhancer (SPE-120) with active ingredient *Beauveria bassiana*, is a natural, **sympiotic fungus** that lives in the **soil, roots, stems, and leaves**. SPE-120 grows with the plant!

Conventional seed treatments using neonicotinoids or other synthetic chemicals have a finite amount that can fit on the seed. They become less effective as the plant grows and are not compatible with nature.

SPE-120 blends food grade and certified organic products with *Beauveria bassiana*. Many certifiers have determined compliance with organic standards. Contact your certifier to add SPE-120 to your plan.

Observed Results

Potatoes

- Reports in Colorado and Ohio had over 20 bags/acre yield increase.
- In Colorado, with reducing rhizoctonia, the pickouts were reduced from 23% to 2%.
- Minimal damage from Colorado Potato Beetle (CPB) in Ohio.
- Reports from High Plains growers: increased quality; increased yields relating to limited potato psyllid pressure.

Tomatoes

- Tomatoes treated with SPE-120 and sold into restaurants were noticeably more flavorful.
- Brix score measured 5 points higher than control tomatoes.
- Outdoor plants had limited insect damage.

Customer Comments

- "Organic Sweet corn harvested in August had no earworms" – South Dakota grower
- "No loopers in our cabbage" – South Dakota vegetable grower
- "Cole crops had less cabbage loopers" – Colorado vegetable grower
- "Colorado Potato Beetle (CPB) damage was insignificant after using SPE-120 and this was in a field where we had potatoes for 4 years" – Ohio vegetable grower

Application Rates

For best results, apply as seed treatment or in the seed trench.

Potatoes:

Add .75 - 1.25 oz/ac of SPE-120 as a liquid pop-up or a seed treatment

Vegetable:

Apply 1.00-1.25 oz/ac to all seeds prior to planting in green house or outdoors

Transplants - apply 1 oz/ac to transplant water with optional compatible nutrients

Fruit Trees:

Apply direct to the ground as a spray or drip irrigation from 1.5-2 oz/acre

After first year, reduce by 50%

When seeds were not SPE-120 treated:

Ground, aerial or overhead irrigation application

Drip irrigation - this is the best option since the ingredient, *beauveria bassiana* is relatively light sensitive

Potatoes, tomatoes, onions, cole crops, dry beans, brassicas, strawberries, brambles, fruit trees, vineyards and more

SPE-120 with *Beauveria bassiana* is a **plant symbiont**.

Activity includes:

- Stimulation of immune system
- Restricts plant pathogens from entering the plant.
- Interacts with plant to produce additive biochemicals
- Combines plant resistance to insect feeders for reducing population threat
- Naturally occurs in soil but has been killed off by fungicides and tillage

Reports, trials and research indicate seeds treated with Soil Plant Enhancer (SPE-120) with *Beauveria bassiana* have shown improved performance against:

Potato psyllids
Leaf hoppers
Pea aphids
Green peach aphids
Leaf miner, Mites, white flies
Wheat midge
Spotted wing drosophila in raspberries
Grape colaspis
Wheat stem sawfly
Apple maggot
Onion maggot
Onion thrips
Plum curculio
Pecan weevil
Alfalfa weevil
Clover leaf weevil
Squash borer
Cabbage looper
Armyworm
Corn Ear worm
Pink boll worm
Variegated cutworm
Black cutworm
Webworm
European corn borer
Northern corn root worm beetle
Western corn root worm beetle
Japanese beetle
Colorado potato beetle
Wireworms

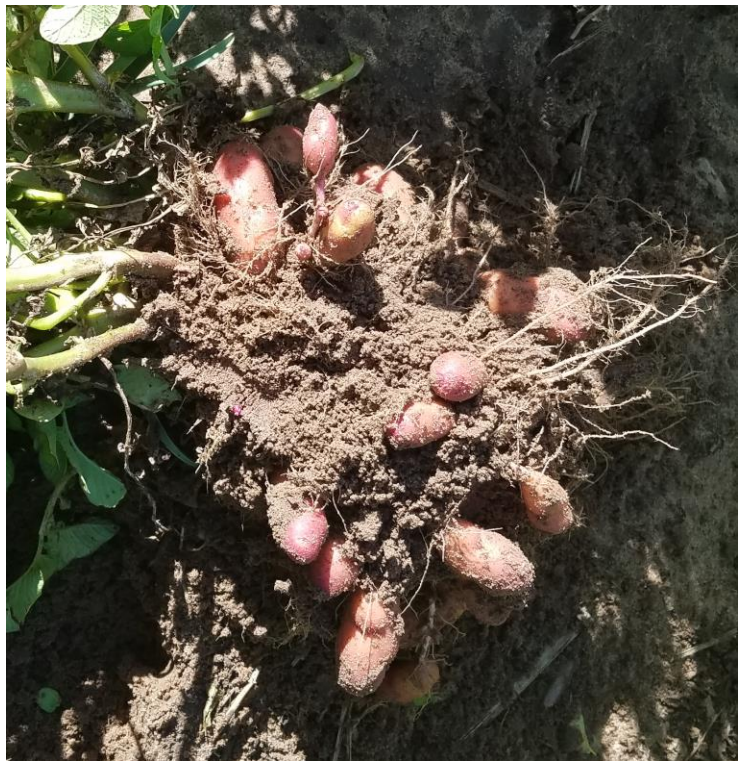
Wheat: Common rust, Fusarium, DON

Rye: Ergot

Potatoes: Rhizoctonia, Anthracnose, Early blight

Soybeans: Stem Canker, Stem Borer, Fusarium root rot, Common rust, Anthracnose

Corn: Fusarium, Goss's wilt, Anthracnose



Organic Fingerling Red, SPE-120 seed treatment at planting.
Taken about 8 weeks before harvest, Dalhart, TX July 2017



Greens and Cole crops SPE-120 treated, picture taken July 2017