



# SLINGSHOT



A PharmGrade Product



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# WHAT IS SLINGSHOT?

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Slingshot is a state-of-the-art dry biological inoculum to reach those acres where a liquid product isn't feasible. Slingshot follows the principles that have made our liquid products the industry gold standard: delivering broad-spectrum biodiversity in the highest concentrations.



Slingshot has shown great results in dry land grain operations where growers must watch every penny. In our recent field trials in dry land barley, our zones where 3 oz of Slingshot per acre was blended with the dry fertilizer had 27% better yields than the dry fertilizer alone.

Studies show that proper biological diversity in soils leads to better yield and quality outcomes through the following 4 Mechanisms:

- Improvement of nutrient availability
- Introduction of organisms acting as biocontrol agents
- Production of growth stimulating metabolites
- Reduction of plant stress



# PRODUCT INFORMATION



**Slingshot** is a concentrated biological inoculum formulated with broad spectrum, beneficial bacillus, Paecilomyces, and Trichoderma fungi species. **Slingshot** is a Plant Growth Promoting Rhizobacteria (PGPR). This inoculum provides more than traditional plant nutrient uptake by promoting healthy soil biofilm on strategic root and plant surfaces. These AGBIOFILM® layers become strategic exchanges for nutrient flow and relief of crop stress. Carbon flows efficiently back and forth through these layers carrying nutrient to the plant and sugars back to the microbes. This exchange is the key for effective yield increase. **Slingshot** is a dry inoculum in spore form to be used in conjunction with dry fertilizer applications with the goal of establishing AGBIOFILM® ecosystems in the soil, on the leaf surface and the root rhizosphere. **Slingshot** may stimulate root development, increase plant vigor, yield and quality of produce.

## CONTAINS NON-PLANT FOOD INGREDIENTS

Bacillus amyloiquefaciens .....	1.00x10 <sup>11</sup> cfu/g
Bacillus licheniformis .....	1.00x10 <sup>11</sup> cfu/g
Bacillus megaterium .....	2.00x10 <sup>10</sup> cfu/g
Bacillus pumilus .....	2.00x10 <sup>10</sup> cfu/g
Bacillus subtilis .....	1.00x10 <sup>11</sup> cfu/g
Bacillus firmus .....	1.00x10 <sup>10</sup> cfu/g
Bacillus methylotrophicus .....	3.00x10 <sup>10</sup> cfu/g
Bacillus mucilaginosus .....	1.00x10 <sup>10</sup> cfu/g
Bacillus polymyxa .....	5.00x10 <sup>9</sup> cfu/g
Azotobacter chroococcum .....	1.00x10 <sup>10</sup> cfu/g
Paecilomyces lilacinus .....	2.00x10 <sup>9</sup> cfu/g
Penicillium bilaiae .....	1.00x10 <sup>9</sup> cfu/g
Trichoderma harizanum .....	2.00x10 <sup>9</sup> cfu/g
Trichoderma viride .....	2.00x10 <sup>9</sup> cfu/g
<b>Total Biological Consortium .....</b>	<b>2.58x10<sup>10</sup> cfu/g</b>

## RECOMMENDED APPLICATION

For use on all agricultural crops and applications.  
Application and Rates: Apply 100-800 grams per acre per year on all field crops. For more specific application rates contact a local PHARMGRADE representative for more specific rates and instructions. This product may be mixed with a variety of fertilizers and pesticides. Please call for further directions. Always perform a jar test to ensure compatability.

## HANDLING AND STORAGE

Follow appropriate safety procedures. Skin contact may cause temporary staining. In case of accidental exposure, flush with plenty of water. Product is non-hazardous. Storage in a cool, dry place out of direct sunlight.  
**Caution keep out of reach of children. Contact poison control if ingested.**



# WHY SLINGSHOT?

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Slingshot is the culmination of 20 years of nutrient acquisition research. It is an assembly of the most active species of bacteria and fungi critical for acquiring and solubilizing plant nutrients in the soil. SLINGSHOT is a critical tool to get the most out of your dry fertilizer applications. It supercharges the efficiency of your fertilizer in the following ways:



- 1. Protect:** Most fertilizer additives use different chemistry to “protect” the nutrient by blocking tie-up with other elements in the soil. Slingshot does this on multiple fronts: It is fortified with nutrient-complexing organic acids that protect fertilizer from tying up in the soil.
- 2. Activate:** Microbes are the most dynamic players in nutrient acquisition. They have co-evolved with plants to provide nutrient transformations necessary for plant availability in exchange for carbon from root exudates. Slingshot inoculates the fertilizer prill with exactly the right bacteria and fungi that secrete nutrient solubilizing enzymes and other compounds to ensure they are in a plant-available form.
- 3. Utilize:** Slingshot offers the ability not only to maximize your investment in the fertilizer application it is added to, but will populate the soil and begin to mine fertilizer that has already tied up in the soil in years past. Specific selection criteria were applied in assembling the roster for slingshot. *Bacillus Megaterium* is a known phosphate solubilizer, while *Bacillus Licheniformis* is known for its interactions with potash. *Trichoderma* is critical to mineralizing organic matter in the soil into plant available forms.



# HOW TO USE SLINGSHOT?

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Slingshot was formulated to be blended in dry fertilizer applications. The species in Slingshot were chosen for their ability to solubilize nutrients, both from the fertilizer and from the nutrient already tied up in your soils.

Adding Slingshot technology to your fertilizer blends ensures the nutrients make it to the plant as well as all the other soil building benefits of a well-rounded Biological.



**Recommended Rate of 15 oz per ton of dry fertilizer.  
(\$105 per ton vs \$115 per ton with Avail)**

- Slingshot is a unique use case in the Pharmgrade suite of products as it is a fertilizer efficiency play in place of plants or soil. Pharmgrade liquid products are a much better medium for affecting plants and soil.
- Apply treated fertilizer as you would, Slingshot should improve fertilizer availability and efficiency by 15-20%.
- The microbial species in Slingshot will not only work on the fertilizer it is coating, but it will also go to work mining the nutrients banked in your soil. Recoup your investment in unprotected fertilizer over the years by introducing Slingshot technology into your soil.
- “Protected” high efficiency fertilizers are not new. Slingshot offers many of the same protection mechanisms as they do, with the addition of nutrient-mining microbes to ensure you get what you paid for in this year’s fert, and some that’s been locked away too.



# AWARDS & RECOGNITION



Tyler Tuttle  
Chief Commercial Officer

Kelly Tuttle  
CEO



Richard Tuttle  
CEO



# COVER STORIES

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