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# BioniQ<sup>®</sup>

## User Guide

BARLEY | CANOLA | OATS | RYE | WHEAT

NexusBioAg



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# Product Features

BioniQ is the inoculant for every cereal and canola grower that helps improve nutrient and moisture uptake, phosphate availability, and ultimately helps to increase yield potential. The *Penicillium bilaiae* fungus helps release bound mineral forms of soil and fertilizer phosphate, making it more readily available for the plant to use. The biologicals *Bacillus amyloliquefaciens* and *Trichoderma virens* help increase availability and uptake of nitrogen, phosphate, and potassium, which supports root and shoot growth in cereal and canola crops.

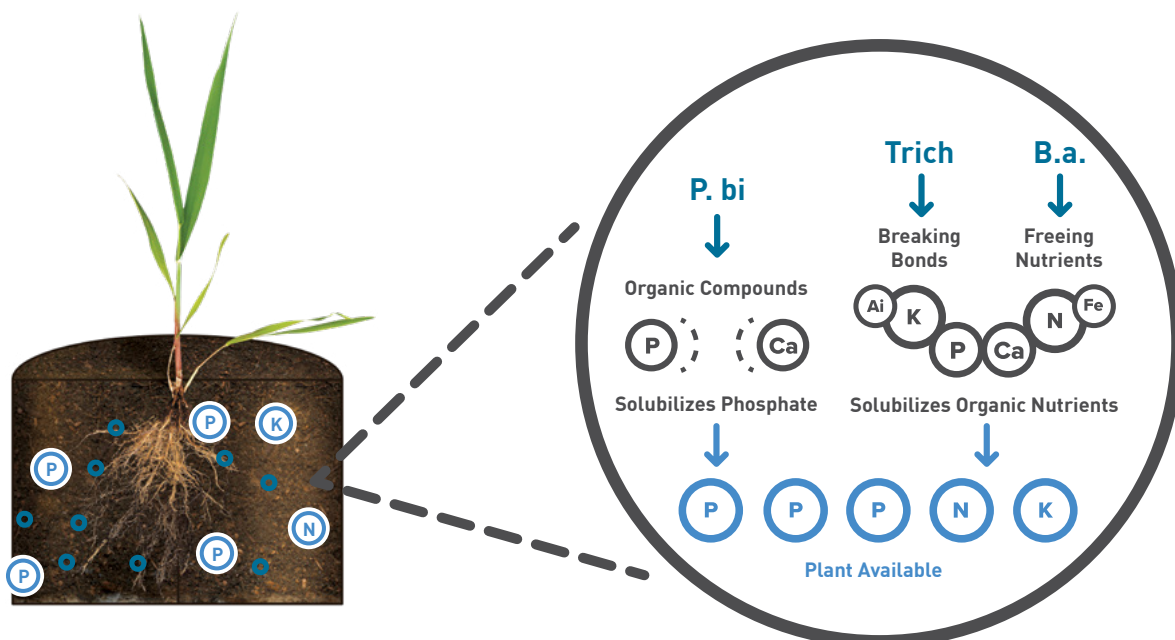
BioniQ increases yield and performance over a wide range of geographic locations and field conditions.

## BioniQ's 3 Biological Actives:

- ✓ *Penicillium bilaiae*
- ✓ *Bacillus amyloliquefaciens*
- ✓ *Trichoderma virens*

## How It Works

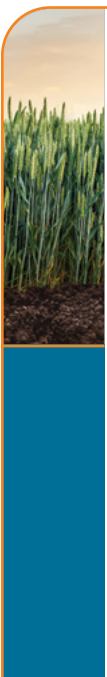
Three biological actives for improved availability and uptake of nutrients in a variety of soil conditions.



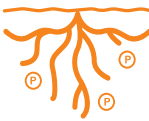





Trich = *Trichoderma virens*   P. bi = *Penicillium bilaiae*   B. a. = *Bacillus amyloliquefaciens*



# Product Benefits



		
Increased yield and return on investment - see more at <a href="https://BATResults.ca">BATResults.ca</a>	Performance in a variety of soil conditions and types; active in cool soils for enhanced early-season vigour	Improved availability of phosphate for enhanced root growth
		
Earlier, more uniform maturity	Enhanced nutrient availability, which supports root and shoot growth	Apply up to 60 days prior to seeding

## Better Phosphate Uptake With BioniQ

**Tested for Performance** - Over 250 strains of fungus and bacteria were tested to find the best combination of strains for BioniQ.

**Early vigour** - Early spring conditions, including cool soils, are difficult on plants and can limit early-season phosphate availability. This can lead to reduced plant growth and, ultimately, crop yield. With two strains of *Penicillium bilaiae* fungi, the biological is active in both warm and cool soil conditions allowing for the promotion of phosphate availability all season long.

**Greater stress tolerance** - Plants with larger healthy root systems have the ability to better withstand a variety of stresses, such as drought and weed pressure. Healthy root systems help cereal and canola plants access moisture and nutrients more efficiently. BioniQ increases phosphate availability in all areas of the soil that the root explores, not just around the fertilizer band, which helps promote more root growth.



# Benefits of BioniQ on Wheat

## Enhanced N, P, K Availability

The three specially selected biological actives increase the availability and uptake of nutrients, increasing early season vigour, increased root growth and crop uniformity. The organic compounds produced by the biologicals free bound nutrients in the soil and fertilizer making them available for the crop.



## Increased Phosphate Efficiency

Wheat treated with BioniQ enables germinating plants to utilize applied and soil phosphate. This early season phosphate availability results in a more uniform crop, increased early season vigour and more even maturity. The specially selected biologicals increase phosphate availability in cool and warm soils, enabling the release of bound phosphate all season long.



June 30, 2022  
Wheat - Mundare, AB

NexusBioAg



## Development of Root and Shoot Growth

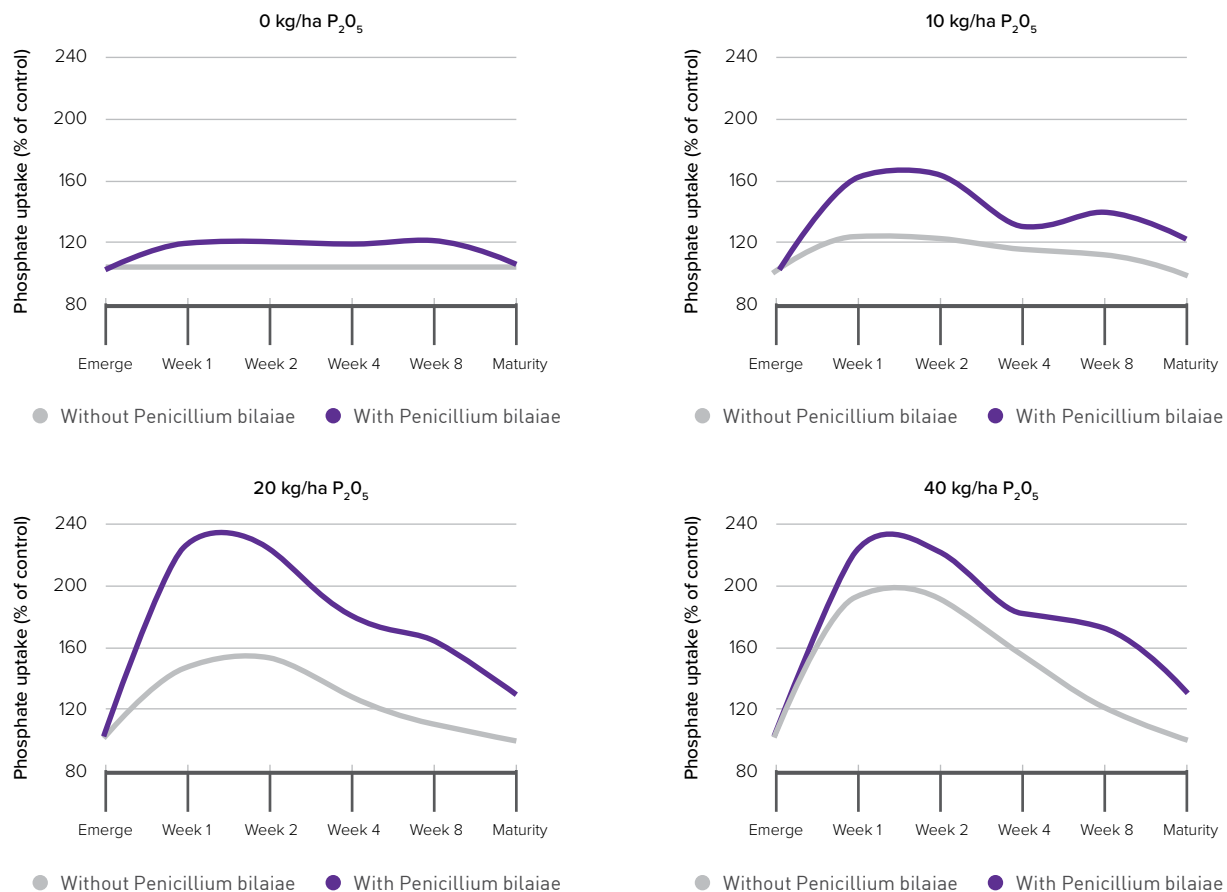
Proper phosphate fertility helps cereals establish quickly and uniformly. Phosphate, which is an essential component of the energy-building process, enhances early plant development and vigorous root and shoot growth.

## Improved Stress Tolerance

Early season vigour and stand uniformity contribute to a crop withstanding adverse environmental conditions as well as impeding weed growth. Adequate phosphate nutrition promotes rapid emergence and establishment. A healthy, well-established crop is better able to protect and develop potential yield.

## *Penicillium bilaiae* increases the availability of phosphate, resulting in increased uptake by the plant

Research data from the University of Manitoba, show the increase in uptake of phosphate throughout the growing season when using *Penicillium bilaiae* on wheat.

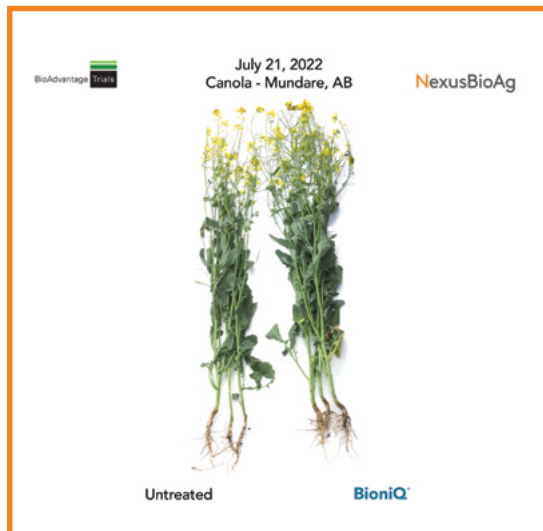


Source: J. Chambers and J. Yeoman, MB Soc. of Soil Sci. mfg on what. Six field trails on wheat, 1989-1990, University of Manitoba.

# Benefits of BioniQ on Canola

## Increased Availability of Soil and Fertilizer Phosphate

Enhanced phosphate availability results in increased root growth and increased leaf surface area. As a result, canola inoculated with BioniQ may flower earlier, have an increased number of pods and pod-bearing branches, and have earlier, more uniform maturity. Ultimately, you can help your canola crop reach its full potential.



## A More Even Supply of Phosphate to Improve Crop Uniformity

A healthy uniform canola crop has more potential to withstand weed, insect and disease pressures. Timing of pesticide applications, swathing and crop dry-down are easier to assess with a uniformly developed canola crop.

## Earlier Access to More Phosphate with Sensitive Seed

Top-yielding canola varieties require significant amounts of nitrogen and phosphate fertilizer to achieve their yield potential. Inoculating canola with BioniQ will help address phosphate needs with sensitive seed.







### Phosphate Fertility in Canola

Ensuring phosphate is available to the plant throughout the growing season is important for high-yielding canola crops. Canola seedlings require phosphate to advance from germination through to the three and four leaf stage, as a consequence of their small seed size phosphate content in the seed can only support seedling growth for approximately one week.

### Factors Limiting Phosphate Availability in Canola

- Phosphate is relatively immobile in the soil. This means phosphate must be placed within or near the seed row to be available for emerging seedlings.
- Canola is sensitive to seed-placed fertilizer. With good to excellent soil moisture, no more than 20 to 25 pound of P2 O5 per acre should be seed-placed<sup>1</sup>

<sup>1</sup> Source: Guidelines for Safe Rates of Fertilizer Placed with Seed, Saskatchewan Ministry of Agriculture.



# Proof, Not Promises.

BioAdvantage Trials

**PROOF, NOT PROMISES.**



In every program, there will be wins, losses, and ties. With our BioAdvantage Trials program we are transparent with our data and show every trial result, as we want to show the proof behind our products and not just promise that they will work.

## Barley

Untreated **77.0** (bu/ac)

BioniQ® **81.0** (bu/ac)



Win Rate



Yield Advantage

Source: Results were collected from 19 farmer-conducted, large-scale, side-by-side BioAdvantage Trials conducted in Western Canada from 2017-2023.

## Wheat

Untreated **63.5** (bu/ac)

BioniQ® **66.6** (bu/ac)



Win Rate



Yield Advantage

Source: Results were collected from 46 farmer-conducted, large-scale, side-by-side BioAdvantage Trials conducted in Western Canada from 2017-2023.

## Canola

Untreated **44.9** (bu/ac)

BioniQ® **46.9** (bu/ac)

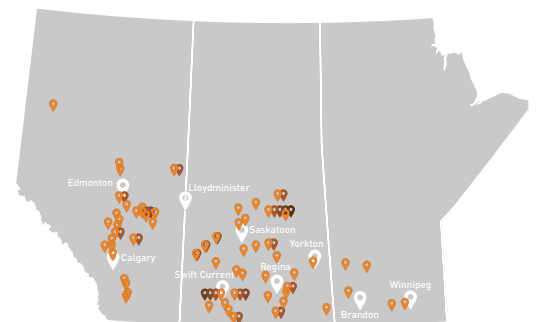
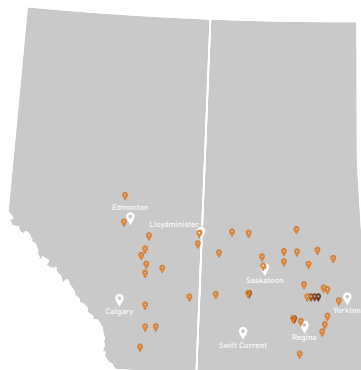
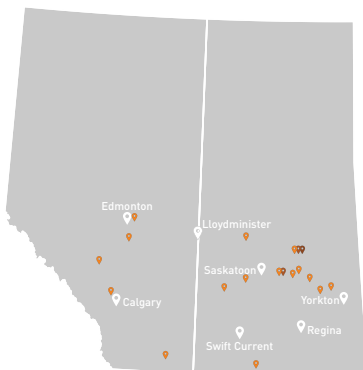


Win Rate



Yield Advantage

Source: Results were collected from 87 farmer-conducted, large-scale, side-by-side BioAdvantage Trials conducted in Western and Eastern Canada from 2017-2022.



### BioniQ ROI

Barley	\$13.89/ac
Wheat	\$22.20/ac
Canola	\$21.74/ac

BioniQ improves nutrient availability and uptake resulting in higher yields – we have large-scale field trials in 46 locations across the prairies since 2017 to prove it.

\*ROI calculated on the 2024 SRP published by NexusBioAg and BAT data on file. Crop Pricing Source: Rayglen Commodities November 2023.

# BioniQ Application: Step-by-Step

## Product Packaging



## Instructions

1. When ready to use, check the expiration date.



2. Prepare your equipment: BioniQ can be applied to the seed utilizing commercial on-seed application equipment. If your applicator was previously used for seed treatments, it should be triple rinsed before treating with BioniQ. Ensure that your treater is calibrated for the correct cereal crop, clean the filter, and secure the seed output chute. You will also require a clean container or bucket, and a paint mixer or a squirrel cage attachment to blend the two wettable powders with water.

**Review Application Table:** Review the application table to determine the application rate and necessary water volume required. See Table 1. for application rates and water volumes per co-pack to achieve uniform distribution and ensure viability of BioniQ.

\* When mixing BioniQ into a seed treatment slurry, reduce the amount of water listed in table 1 by the volume of seed treatment. Consult the seed treatment manufacturers label for proper rates of seed treatments.

## BioniQ Wettable Powder Application

783 g co-pack			
Crop	Seed treated/one 783g co-pack		Water (litres)
Barley	250 bu	12,000 lb	34
Canola/mustard	10 bags	500 lb	5
Oats	250 bu	8,500 lb	24
Rye	250 bu	14,000 lb	39
Wheat	250 bu	15,000 lb	42

3. Thoroughly mix the entire contents of both Active Powder A (333 g) and Active Powder B (450 g) with a minimum of 5 litres of water in a clean container.



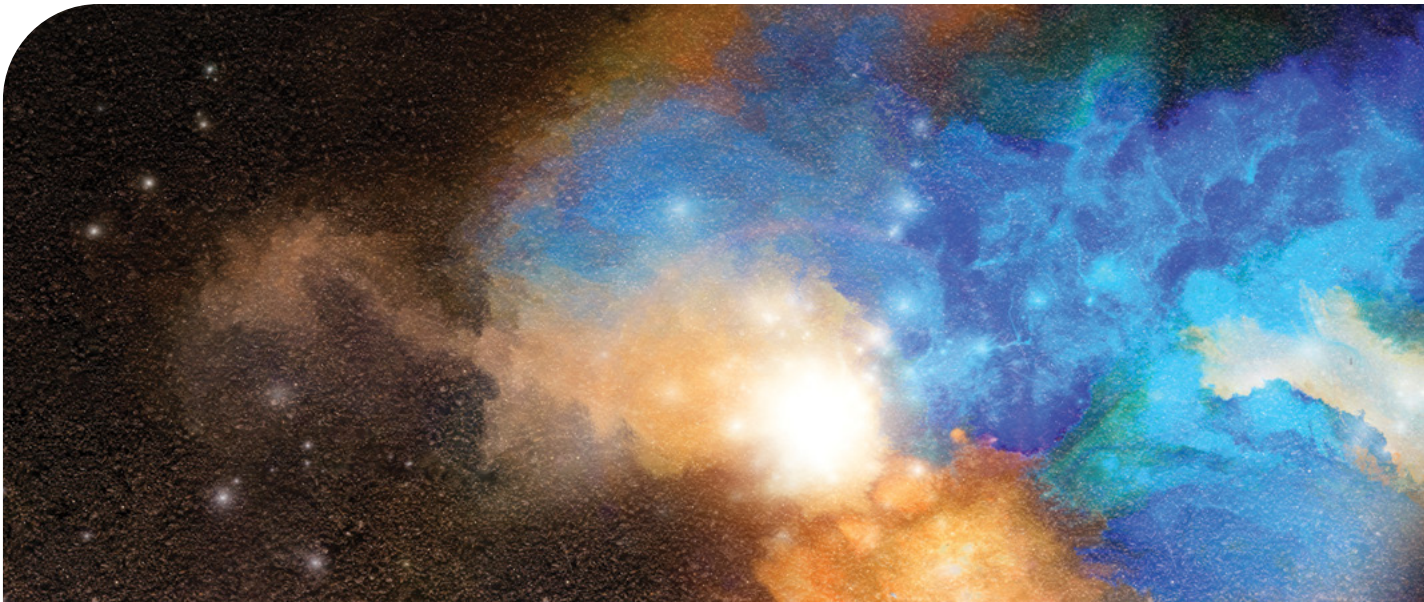
4. Add remaining water and/or seed treatment.



5. Mix thoroughly with a paint mixer or a squirrel cage attachment until all the powder has dissolved. Additional mixing time is required if using manual instruments.



6. Load the seed treater with seed and the appropriate amount of BioniQ mixture. Your seed-treating equipment will evenly coat the seed with BioniQ.





## Key Reminders

- BioniQ dissolved in water should be applied to seed within 1-2 hours of mixing.
- Allow sufficient drying time before re-bagging or transferring into drill hopper.
- Open package only when ready to use. Use before expiration date. Apply this product only as specified on the label. Reference the specified application rate to determine the proper amount needed.
- BioniQ can be applied utilizing commercial on seed inoculant application equipment.
- BioniQ can be used with many different seed treatments. See the [Seed Treatment Compatibility Guide](#) on page 13 or visit [nexusbioag.com](https://nexusbioag.com) for the most up-to-date information on seed treatment compatibility.
- Do not mix BioniQ directly into seed treatments.
- Follow at least a 1:1 ration of BioniQ + water to seed treatment if tank mixing with compatible commercial seed treatments. Please see the [Seed Treatment Compatibility Guide](#) on page 13 or [nexusbioag.com](https://nexusbioag.com) for the most up-to-date information on seed treatment compatibility.

## FAQ

### **Does BioniQ make the seed treatment more or less sticky?**

BioniQ does not affect the seed treatment and will not make it more or less sticky.

### **How well does it go through a seed treater?**

BioniQ mixes well with compatible seed treatments and there are typically no issues going through a seed treater. To see all compatible seed treatments refer to our [Compatibility Guide](#).

### **Should you let it dry before seeding? Can it plug up the augers, manifolds or metering systems in seeders?**

Do not treat directly into an air seeder tank. Transfer treated seed from the treater to a truck. By the time seed is transferred to the air seeder tank it should be dry. **Ensure treated seed is dry before seeding.** This is crucial, as this is where plugging or build-up on augers and metering systems may take place. On warm days it will dry quickly, but on cloudy or humid days it needs time to dry.

### **How much water should you use when making a slurry?**

When applying BioniQ alone, use the water volumes per box found on page 10 to achieve uniform distribution and to ensure viability of BioniQ.

### **What is the optimal water volume with BioniQ and seed treatment?**

When mixing BioniQ into a seed treatment slurry, reduce the amount of water listed in the above table by the volume of seed treatment. Consult the seed treatment manufacturers label for proper rates of seed treatments.

# Seed Treatment Compatibility

## Wheat, Barley, Oats

SEED TREATMENT	PLANTING WINDOW		
	SEQUENTIAL APPLICATION	SIMULTANEOUS APPLICATION	TANK MIX APPLICATION
Cruiser® Vibrance® Quattro	60 days	60 days	60 days
Dividend Extreme®	30 days	30 days	Not Recommended
EverGol® Energy	60 days	60 days	60 days
Insure® Cereals FX4	60 days	60 days	60 days
Lumivia™ CPL	60 days	60 days	60 days
NipsiT™ Suite	10 days	10 days	Not Recommended
Rancona® Trio	60 days	60 days	30 days
Raxil® Pro MD	60 days	60 days	30 days
Raxil® Pro Shield	60 days	60 days	30 days
Teraxxa™ F4	60 days	60 days	Not Recommended
Vibrance® Quattro	60 days	60 days	60 days
Vibrance® Quattro + Cruiser® 5FS	60 days	60 days	60 days
VitaFlo® 280	Not Recommended	Not Recommended	Not Recommended

## Canola

SEED TREATMENT	PLANTING WINDOW	
	SEQUENTIAL APPLICATION	
Helix® Vibrance®	60 days	
Helix® Vibrance® + Buteo™	60 days	
Helix® Vibrance® + Fortenza®	60 days	
Helix® Vibrance® + Lumiderm	60 days	
Prosper® EverGol®	60 days	
Prosper® EverGol® + Buteo™	30 days	
Prosper® EverGol® + Fortenza®	60 days	
Prosper® EverGol® + Lumiderm	60 days	
Vercoras®	40 days*	
Visivio™	60 days	
Visivio™ + Fortenza®	60 days	
Visivio™ + Lumiderm	60 days	

\*Interim results; tests are ongoing.  
Visit [nexusbioag.com](https://nexusbioag.com) for the most up-to-date seed treatment compatibility.

## Application methods

**Sequential application** means the seed treatment must be applied and allowed to dry before the inoculant is applied.

**Simultaneous application** means the seed treatment can be applied at the same time as the inoculant but separate applicators must be used.

**Tank Mix application** means the inoculant can be mixed directly with the seed treatment and applied as one solution, using one applicator.

For a full list of seed treatment compatibility, please visit [nexusbioag.com](https://nexusbioag.com)

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# Personal Protective Equipment (PPE)

Please refer to the safety data sheets (SDS) for health and safety product information prior to handling and use of the products. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear eye protection and face protection, protective gloves, and protective clothing.

Recommended Personal Protective Equipment for handling BioniQ:

- Eye / Face protection: Protective eye-goggles and dust mask.
- Skin and hand protection: Long-sleeve shirts, pants, gloves (e.g. Polyethylene / ethylene vinyl alcohol) and boots are recommended.





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# Safe Handling and Storage

Precautions for safe handling: Ensure adequate ventilation. Avoid dust formation. Avoid contact with eyes, skin, and clothing. Avoid breathing dust. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and when leaving work.

The active ingredients in our inoculants are living organisms and require specific storage conditions to ensure viability and product performance. To maintain product viability in packaging:

## Storage of Wettable Powder Inoculants

- Store unopened containers in a cool dry place, less than 20°C or 68°F away from sunlight and heat sources.
- Minimize temperature fluctuations.
- Avoid freeze/thaw cycles.
- Use before expiration date.
- Expiration date is valid for unopened containers stored according to conditions listed above.

## Storage of Seed Treated with Wettable Powder Inoculants

- Store in cool, dry conditions.
- May be stored in unheated storage.
- May be frozen; if frozen, keep frozen until shortly before use.



# NexusBioAg Equipment Recommendations

BioniQ can be applied to the seed utilizing commercial on-seed application equipment. If your applicator was previously used for seed treatments, it should be triple rinsed before treating with BioniQ. You will also require a container or bucket, and a paint mixer or a squirrel cage attachment to blend the two wettable powders with water.

Reach out to your local NexusBioAg rep to learn more about equipment options for treating your crop with BioniQ.



If you would like more information or have questions, contact your local NexusBioAg Representative or visit [nexusbioag.com](https://nexusbioag.com)



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