AGRICULTURE | CANADA

REGENERATION IS THE NEXT GENERATION OF GROWTH.

2024 Product Guide

NexusBioAg

SUSTAIN YOUR LEGACY.

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NexusBioAg

NexusBioAg is proud to provide an extensive portfolio of innovative products which includes industry leading inoculants, micronutrients, nitrogen stabilizers, and foliar products.

NexusBioAg is committed to launching innovative products that focus on sustainability and regenerative agriculture because that's what it will take to keep farmers, the nation and the planet thriving.

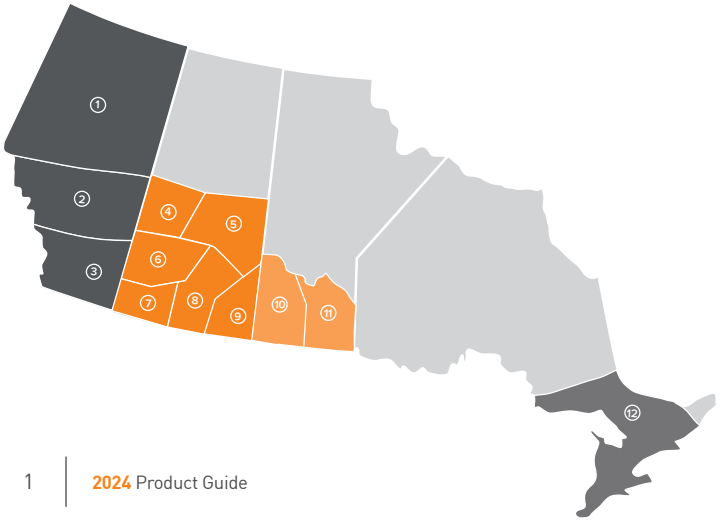
With innovative products in our commercial pipeline, our collaboration with customers and strategic suppliers through the BioAdvantage Trials (BAT) program has shown the validity and success of this multi-year large-scale field trials program conducted across Canada.

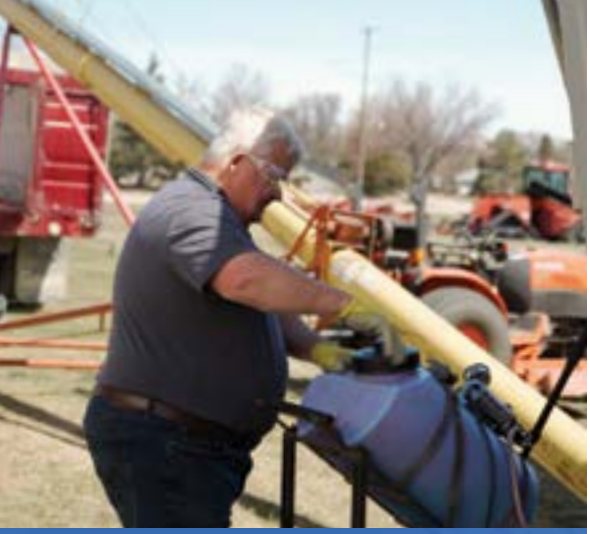
Proven research, testing and performance. That's what it takes to be the innovation leader in the agriculture market. Work with us and you'll be working with a dedicated team that provides solutions designed to help you unleash the true potential of your farm. And we help you do so in a sustainable way that benefits agriculture, the consumers, the environment, and society as a whole.

NexusBioAg strives to help meet the needs of increasingly unique agricultural businesses. Through best-in-class capabilities, a collaborative team-oriented approach, and our commitment to agricultural integrity, NexusBioAg is helping our customers innovate and grow. Thank you for your continued support and wishing you a prosperous 2024 growing season.

SUSTAIN YOUR LEGACY.

To contact your local NexusBioAg Representative and learn more about our product portfolio, visit **nexusbioag.com.**





BioAdvantage Trials

PROOF, NOT PROMISES.

Over the past 9 years, efforts from producers, retails, and agronomists have contributed to making the BioAdvantage Trials program the leading field scale testing program in the industry.

The successful development and testing of products has contributed to a deeper understanding of the agronomics, placement, and real-world performance of the portfolio. As a result of your commitment to the program, over **700** trials – across **6** provinces, with **17** different products on **13** different crops have been completed.

As we continue to invest in innovation and diversify our portfolio, we look forward to incorporating our new and exciting products into the BAT program. Since 2022, we added 10 new products to the program – including new inoculants and products from our micronutrient and nitrogen stabilizer portfolios.

Continuing for a fourth year is our Track-A-Trial program. Track-A-Trial follows featured trials from our BAT program throughout the growing season. These trials highlight key products and crops from seed, to root dig, all the way to harvest providing in-season updates from NexusBioAg team members. Thank you for your continued support, and we look forward to collaborating on future BioAdvantage Trials to test the new and exisiting products from the NexusBioAg portfolio.

Visit **BATResults.ca** to view BioAdvantage Trial results in your area.

Track-A-Trial
with NexusBioAg

TagTeam® BioniQ®

Chickpea · Faba bean · Lentil · Pea

Product Overview

Explore a New Frontier of Exceptional Growth

TagTeam BioniQ combines five biological actives to energize your pulse crop, helping maximize the effectiveness of inputs and improve yield potential. That's multiple ways to help you succeed, all in one inoculant.

A specially selected *Rhizobium* strain and the proven performance of LCO (lipochitooligosaccharide) technology are utilized to provide improved nodule formation and increased nitrogen fixation. TagTeam BioniQ contains the phosphate-solubilizing benefits of the *Penicillium bilaiae* fungi as well as the addition of the biologicals, *Bacillus amyloliquefaciens* and *Trichoderma virens* for increased availability and uptake of nitrogen, phosphate and potassium. The ability to release nutrients from the soil helps maximize the effectiveness of inputs and improve yield potential.

TagTeam BioniQ's 5 Biological Actives:

- *Rhizobium leguminosarum*
- LCO (lipochitooligosaccharide) technology
- *Penicillium bilaiae*
- *Bacillus amyloliquefaciens*
- *Trichoderma virens*

Note: TagTeam BioniQ chickpea and TagTeam BioniQ faba bean contain a rhizobia, *Penicillium bilaiae, Bacillus amyloliquefaciens* and *Trichoderma virens* only.

BioAdvantage Trials

PROOF, NOT PROMISES.

Producers, retailers, and agronomists all want the same thing - increased yield and performance for a greater return on investment. While many products on the market make these claims, TagTeam BioniQ has the large-scale field trials and data to back them.

Pea

Competitors	51.8 (bu/ac)
TagTeam® BioniQ®	54.5 (bu/ac)

65% Win Rate

+2.7 Yield Advantage

Source: Results were collected from 43 farmer-conducted, large-scale, side-by-side BioAdvantage Trials conducted in Western Canada from 2017-2022.

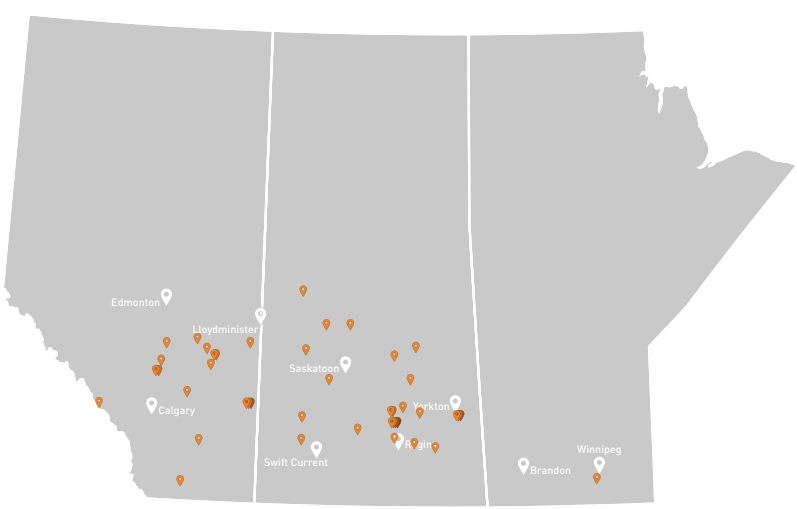
Lentil

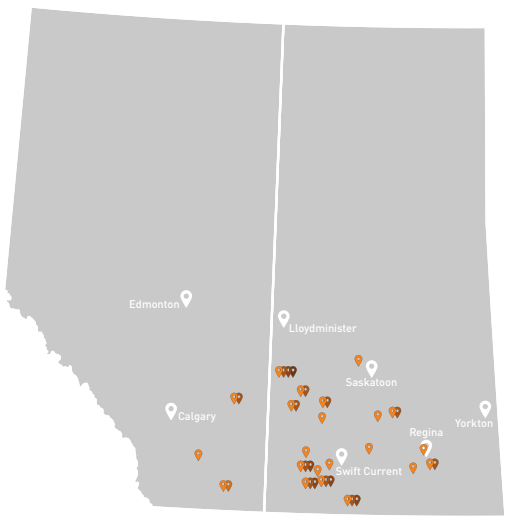
Competitors	24.2 (bu/ac)
TagTeam® BioniQ®	25.1 (bu/ac)

76% Win Rate

+0.9 Yield Advantage

Source: Results were collected from 41 farmer-conducted, large-scale, side-by-side BioAdvantage Trials conducted in Western Canada from 2017-2022.





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

Features & Benefits

- Increased yield and return on investment - see more at BATResults.ca
- Performance in a variety of soil conditions and types
- Improved nodule formation and nitrogen fixation
- Greater opportunity for earlier nodulation with LCO
- Improved availability of nitrogen, phosphate and potassium
- Earlier, more uniform maturity

Multiple Modes of Action

The *Bacillus amyloliquefaciens* and *Trichoderma virens* based treatments have the ability to solubilize organic nutrients and release phosphate in the soil not readily available to the plant.

With two strains of *Penicillium bilaiae* fungi, the biological is active in varying soil temperatures allowing for the promotion of phosphate availability all season long.

TagTeam BioniQ deploys multiple modes of action to solubilize all forms of phosphorus and increase nutrient availability in pulse crops.

Earlier Nodulation Development

LCO is a molecule involved in the rhizobia–legume nodulation system. LCO is an important component in nodulation as a key driver in the communication between plants and rhizobia. When the LCO molecule is present at the time of planting, it allows for the nodulation process to begin, independent of variety, soil and environmental conditions. The benefit of earlier nodulation formation is nitrogen availability to the plant, which supports plant growth such as root and shoot development.

Root and Shoot Development

Early-season phosphate availability is difficult when the plant does not have the ideal root mass. *Penicillium bilaiae* helps the plant harness the energy required to build root mass, by making phosphate available to the plant to support root and shoot growth.

Better Phosphate Uptake With TagTeam BioniQ

Tested for Performance - Over 250 strains of fungus and bacteria were tested to find the best combination of strains for TagTeam 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. Because TagTeam BioniQ is active under varying soil conditions and temperatures, phosphate availability is improved and there when your plant needs it most.

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 plants access moisture and nutrients more efficiently. TagTeam 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.

Phosphate Is Crucial To Nitrogen Fixation

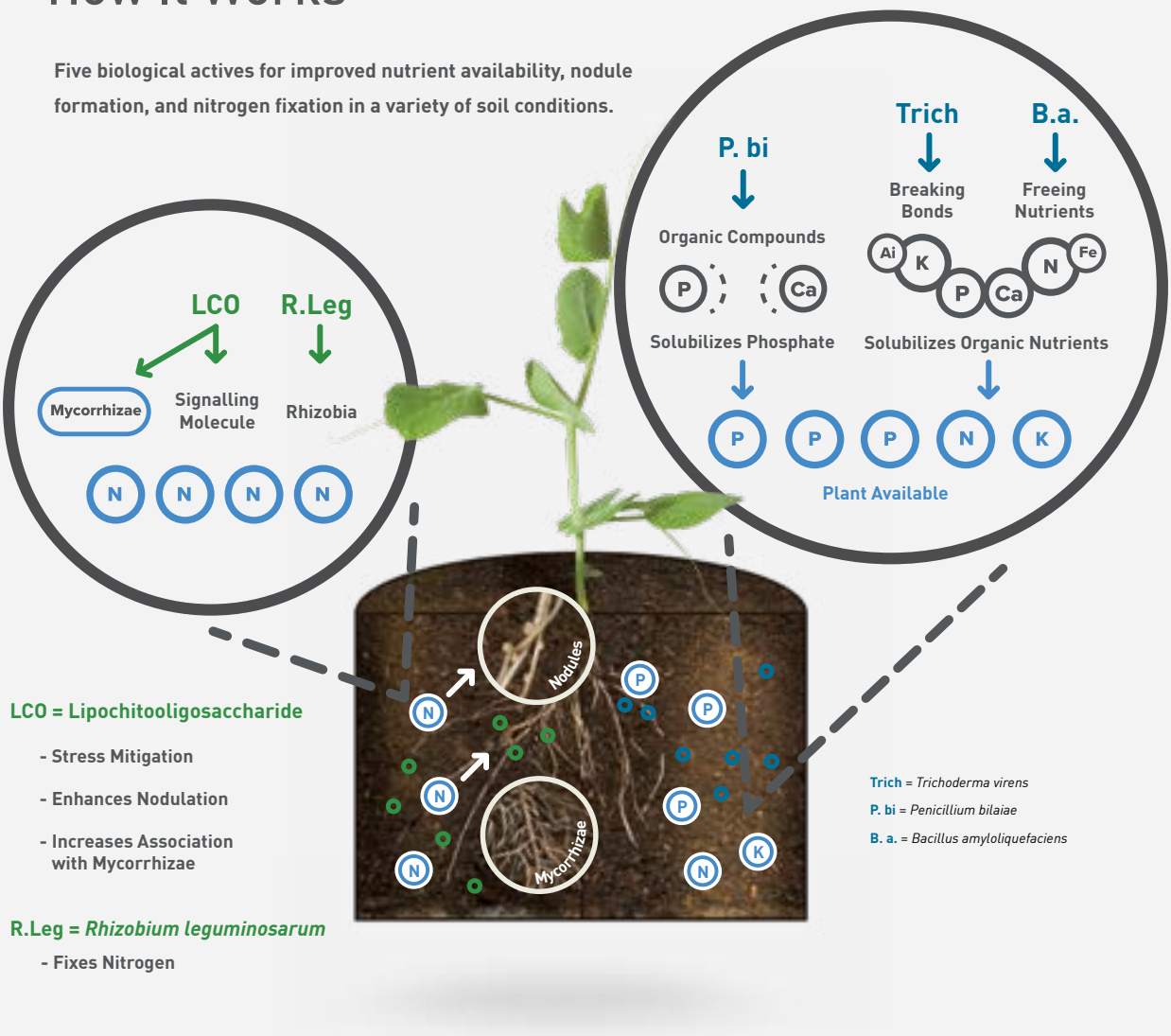
Research shows that phosphate nutrition has a significant, positive impact on nitrogen fixation.[1] Good phosphate nutrition results in more nodules being formed and more active nitrogen fixation.

- Phosphate helps move the energy from photosynthesis to the roots, where it is needed to fuel nitrogen fixation.
- More extensive root growth provides greater opportunity for the development of nitrogen-fixing nodules.
- Faster development of active nodules results in greater nitrogen fixation.
- Phosphate nutrition increases the number and size of nodules, and the amount of nitrogen fixed by the plant.

[1] Source: Phosphorus for Agriculture. Potash and Phosphate Institute. 1988. Reprinted from Fall 1988 issue of Better Crops with Plant Food magazine.

How It Works

Five biological actives for improved nutrient availability, nodule formation, and nitrogen fixation in a variety of soil conditions.



LCO = Lipochitooligosaccharide

- Stress Mitigation
- Enhances Nodulation
- Increases Association with Mycorrhizae

R.Leg = *Rhizobium leguminosarum*

- Fixes Nitrogen

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

TagTeam BioniQ Is Available In The Following Formulations

CROP	INOCULANT ACTIVES	TAGTEAM BIONIQ FORMULATIONS AVAILABLE
Pea, Lentil	*Penicillium bilaiae* + *Rhizobium leguminosarum* + *Bacillus amyloliquefaciens* + *Trichoderma virens* + lipochitooligosaccharide	Granular
Chickpea	*Penicillium bilaiae* + *Mesorhizobium ciceri* + *Bacillus amyloliquefaciens* + *Trichoderma virens*	Granular
Faba bean	*Penicillium bilaiae* + *Rhizobium leguminosarum* + *Bacillus amyloliquefaciens* + *Trichoderma virens*	Granular

Application

TagTeam BioniQ granular should be applied directly with the seed in the seed row using a granular tank for application. Application rates vary according to row spacing (refer to table). Please read the label before application for complete use instructions.

- Pour into tank through a screen.
- Fill the tank to match or slightly exceed seed requirements. Do not overfill the tank to avoid compaction.
- If augering TagTeam BioniQ granular, do so at low speeds to avoid damage to the granules.
- Do not mix TagTeam BioniQ granular in the same tank with seed or fertilizer.
- Do not leave TagTeam BioniQ granular in the tank overnight as condensation can cause lumps to form.

TagTeam BioniQ Application Rates

PACKAGE SIZE	18 KG (39.64 LB) BAG		454 KG (1,000.9 LB) BAG	
Row spacing	lb/ac	ac/bag	lb/ac	ac/bag
6 in	5.5	7.2	5.5	182.0
7 in	4.7	8.4	4.7	213.0
8 in	4.1	9.7	4.1	244.1
9 in	3.6	11.0	3.6	278.0
10 in	3.3	12.0	3.3	303.3
12 in	2.7	14.7	2.7	370.7
15 in	2.2	18.0	2.2	455.0

TagTeam BioniQ Product Packaging

Chickpea		Granular	1	x	18 kg	=	
		Granular	1	x	454 kg	=	
Faba bean		Granular	1	x	18 kg	=	
Pea/lentil		Granular	1	x	18 kg		
		Granular	1	x	454 kg		

TagTeam®

Chickpea · Lentil · Pea · Soybean

Product Overview

Balanced Nutrition

Balanced nutrition of phosphate and nitrogen is necessary to maximize your crop's yield potential. TagTeam inoculant provides this balanced nutrition by combining the active ingredient from JumpStart® inoculant with a nitrogen-fixing bacteria to produce a dual-action inoculant.

The active ingredient in JumpStart is the soil fungus, *Penicillium bilaiae*. This fungus and the rhizobia in TagTeam work together to create a unique value equation.

The soil fungus is the key to the equation. It grows along the plant roots and makes less-available forms of phosphate available to the plant. Phosphate is an important component that drives the needed energy for the nitrogen fixation process.

Early-season phosphate availability is difficult when the plant does not have the ideal root mass. *Penicillium bilaiae* helps the plant harness the energy required to build root mass, by making phosphate available to the plant to support root and shoot growth.

Phosphate Is Crucial To Nitrogen Fixation

Research shows that phosphate nutrition has a significant, positive impact on nitrogen fixation.[1] Good phosphate nutrition results in more nodules being formed and more active nitrogen fixation.

- Phosphate helps move the energy from photosynthesis to the roots, where it is needed to fuel nitrogen fixation.
- More extensive root growth provides greater opportunity for the development of nitrogen-fixing nodules.
- Faster development of active nodules results in greater nitrogen fixation.
- Phosphate nutrition increases the number and size of nodules and the resulting amount of nitrogen fixed by the plant.

Most phosphate fertilizer is banded during pea and lentil seeding, resulting in limited early-season availability to the plant. *Penicillium bilaiae* helps overcome this limitation by providing early-season access to soil and starter fertilizer phosphate.

[1] Source: Phosphorus for Agriculture. Potash and Phosphate Institute. 1988. Reprinted from Fall 1988 issue of Better Crops with Plant Food magazine.

TagTeam Inoculant Solves Starter Fertilizer Problems

TagTeam improves phosphate availability, even if starter phosphate fertilizer is used. TagTeam helps the developing primary roots access phosphate early in the growth stages before the root reaches the starter fertilizer band.

As the primary root develops, TagTeam provides greater availability of soil and fertilizer phosphate, allowing the root to better access phosphate nutrition throughout the rooting zone.

Features & Benefits

- **Improved nodule formation**
- **Improved phosphate availability**
- **Enhanced nutrient availability, which supports root and shoot growth**
- **Increased nitrogen fixation**

How It Works

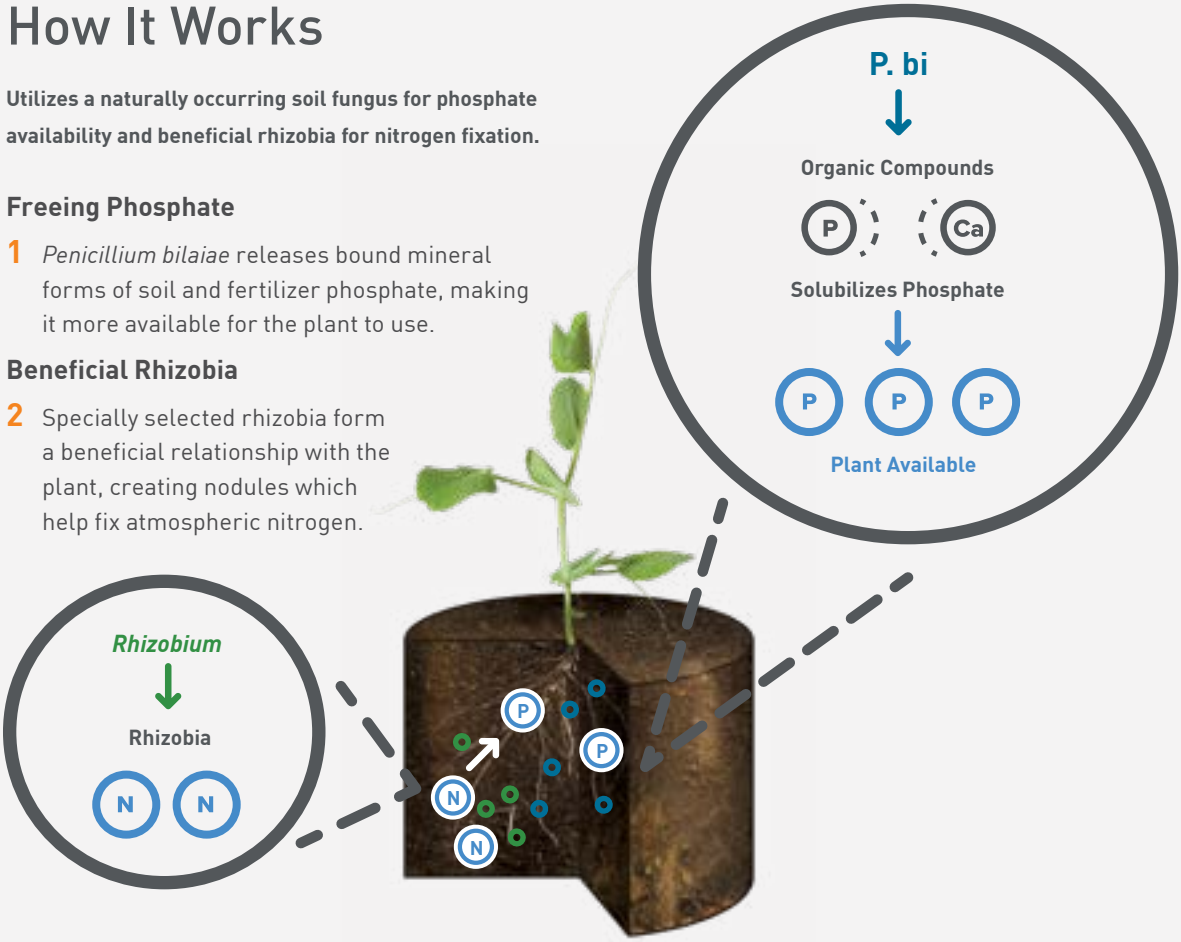
Utilizes a naturally occurring soil fungus for phosphate availability and beneficial rhizobia for nitrogen fixation.

Freeing Phosphate

1 *Penicillium bilaiae* releases bound mineral forms of soil and fertilizer phosphate, making it more available for the plant to use.

Beneficial Rhizobia

2 Specially selected rhizobia form a beneficial relationship with the plant, creating nodules which help fix atmospheric nitrogen.



Rhizobium

- Fixes Nitrogen

P. bi = *Penicillium bilaiae*

TagTeam Is Available In The Following Formulations

CROP	INOCULANT ACTIVES	TAGTEAM FORMULATIONS AVAILABLE
Chickpea	*Penicillium bilaiae* + *Mesorhizobium ciceri*	Peat
Pea, Lentil	*Penicillium bilaiae* + *Rhizobium leguminosarum*	Liquid, peat
Soybean	*Penicillium bilaiae* + *Bradyrhizobium japonicum*	Granular

TagTeam for Soybeans

TagTeam for soybeans combines the phosphate-solubilizing organism *Penicillium bilaiae* and *Bradyrhizobium japonicum* in one inoculant to help address your soybean crop's phosphate and nitrogen fertility needs.

Soybean Fertility

Phosphate fertility programs in soybeans must deal with several challenges that may limit phosphate availability and uptake.

- Soybean seed is very sensitive to fertilizer injury from applied phosphate fertilizer. If you are unable to seed-place phosphate effectively, or if you broadcast phosphate before seeding, TagTeam will help make phosphate available to your soybean crop at the critical early-season stage.
- Calcareous soils readily tie up phosphate. The phosphate-solubilizing component of TagTeam will help increase phosphate availability of both residual soil phosphate and incorporated phosphate in these types of soils.

Application

TagTeam is available in granular, peat and liquid formulations to meet your different crop and equipment needs. Please read the label before application for complete use instructions.

TagTeam Granular

TagTeam granular should be applied directly with the seed in the seed row using a granular tank for application. Application rates vary according to row spacing (refer to Table 1 below for details).

- Pour into tank through a screen.
- Fill tank to match or slightly exceed seed requirements. Do not overfill tank to avoid compaction.
- If auguring TagTeam granular, do so at low speeds to avoid damage to the granules.
- Do not mix TagTeam in the same tank with seed or fertilizer.
- Do not leave TagTeam granular in the tank overnight as condensation can cause lumps to form.

Table 1. TagTeam Granular Application Rates

CROP Package size	SOYBEAN 18 kg (39.68 lb) bag	
Row spacing	lb/ac	ac/bag
7 in	6.2	6.4
8 in	5.4	7.3
9 in	4.7	8.4
10 in	4.3	9.2
12 in	3.6	11.0
15 in	2.9	13.7
24 in	1.8	22.0
30 in	1.4	28.3

Note: The bulk density of TagTeam granular is approximately 0.6 g/cm^3 (37 lb/ft^3).

TagTeam Liquid

TagTeam liquid should be applied directly to the seed at a rate of 2.5 fluid ounces per bushel (75 ml/27 kg) of seed. Once applied to bare seed, plant within 48 hours.

Table 2. TagTeam Liquid Application

TAGTEAM LIQUID		AMOUNT OF SEED TREATED	
Crop	Size	bu	lb
Pea, Lentil	3.0 litre + 57 g WP	40	2,400

TagTeam Peat

TagTeam peat has its own sticker in the formulation. A separate sticker is not needed.

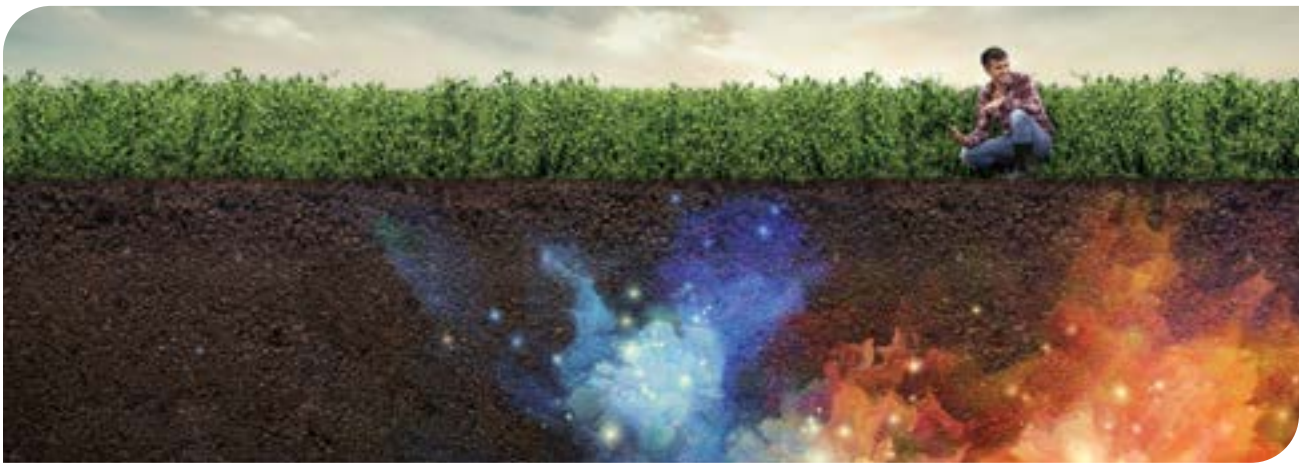
Apply TagTeam to pre-moistened seed, or add water while applying TagTeam, or mix TagTeam with cool, clean water and apply to seed as a slurry. Please refer to Table 3 for approximate water rates. Once TagTeam is mixed into water, apply to seed within six hours.

Table 3. TagTeam Peat Application

TAGTEAM PEAT		AMOUNT OF SEED TREATED/BAG			WATER RATE[1]
Crop	Bag size	Units	bu	lb	Litres
Chickpea	2.20 kg	–	50	3,000	4.0
Lentil	2.20 kg	–	30	1,800	2.5
Pea	2.20 kg	–	50	3,000	4.0

[1] Approximate water volume for peat slurry application.

TagTeam can be applied up to 48 hours before seeding, depending on crop, and can be used with many different seed treatments. Visit **nexusbioag.com** for the most up-to-date seed treatment compatibility information.



Product Packaging

Chickpea		Peat	**7**	x	**2.2 kg bag**	=	
Pea/Lentil		Peat	**7**	x	**2.2 kg bag**	=	
		Liquid	**4**	x	**3 L + 57 g wettable powder**	=	
Soybean		Granular	**1**	x	**18 kg**	=	

BioniQ®

Barley · Canola · Wheat

Product Overview

Tap Into the True Potential of Your Farm

BioniQ combines three biological actives to trigger powerful growth in your cereal and canola crops. Now, there's no need to miss out on better performance.

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's 3 Biological Actives:

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

Get The Most From BioniQ

- **Seeding into cold soils:** BioniQ is active in cool soil temperatures making soil phosphate available to the plant, helping to enhance early-season vigour.
- **Seed-placed phosphate is applied more than 1/5 inches from the seed:** Phosphate fertilizer is not close enough to the seed for early-stage growth. BioniQ makes the phosphate in the soil around the seed more available resulting in better, uniform emergence.
- **Maturity concerns:** An adequate early-season supply of phosphate shows up at harvest time as even maturity, and a more uniform seed set. BioniQ helps ensure phosphate is available to meet early-season needs.

Multiple Modes of Action

The *Bacillus amyloliquefaciens* and *Trichoderma virens* based treatments have the ability to solubilize organic nutrients and release phosphate in the soil not readily available to the plant.

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.

BioniQ deploys multiple modes of action to solubilize all forms of phosphorus and increase nutrient availability for cereal and canola crops.

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.

Canola

Untreated	44.9 (bu/ac)
BioniQ®	46.9 (bu/ac)

72% Win Rate

+2.0 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.

Wheat

Untreated	63.5 (bu/ac)
BioniQ®	66.6 (bu/ac)

78% Win Rate

+3.1 Yield Advantage

Source: Results were collected from 46 farmer-conducted, large-scale, side-by-side BioAdvantage Trials conducted in Western Canada from 2017-2022.

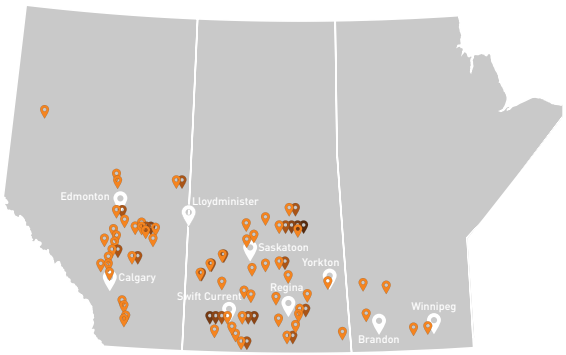
Barley

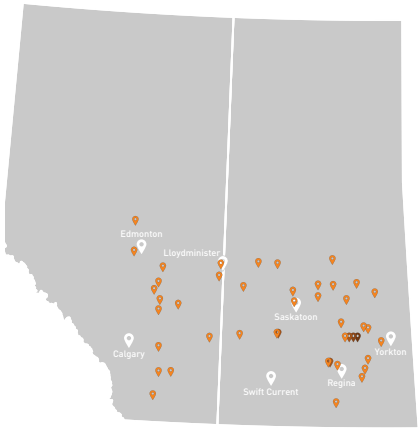
Untreated	77.0 (bu/ac)
BioniQ®	81.0 (bu/ac)

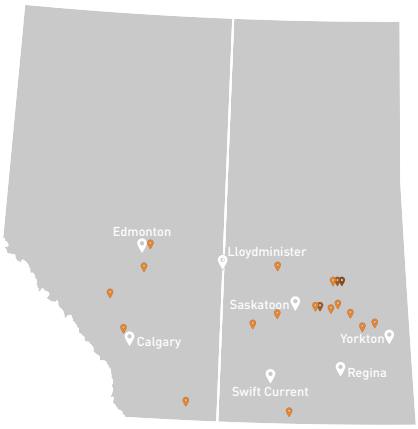
74% Win Rate

+3.9 Yield Advantage

Source: Results were collected from 19 farmer-conducted, large-scale, side-by-side BioAdvantage Trials conducted in Western Canada from 2017-2022.







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

Increased yield and return on investment - see more at BATResults.ca

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

Better Phosphate Uptake With BioniQ

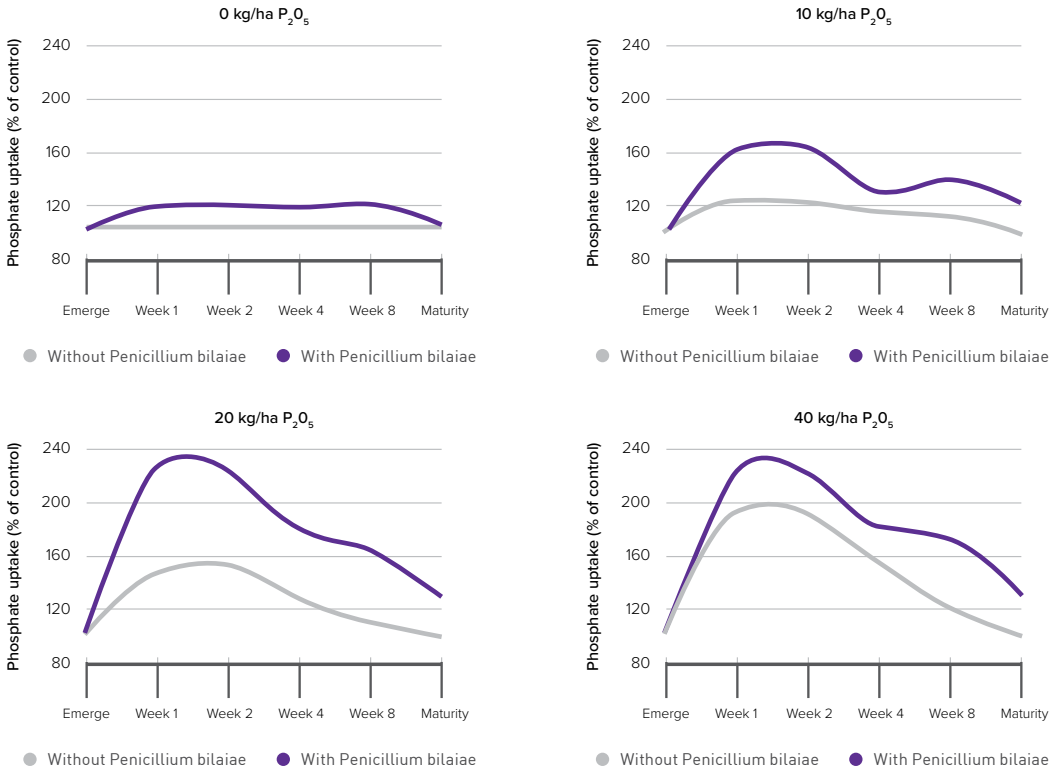
Tested for Performance - Over 250 strains of fungus and bacteria were tested to find the best combination of strains for BioniQ.

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. Because BioniQ is active under varying soil temperatures , or varying soil conditions, phosphate availability is improved and there when your plant needs it most.

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.

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.

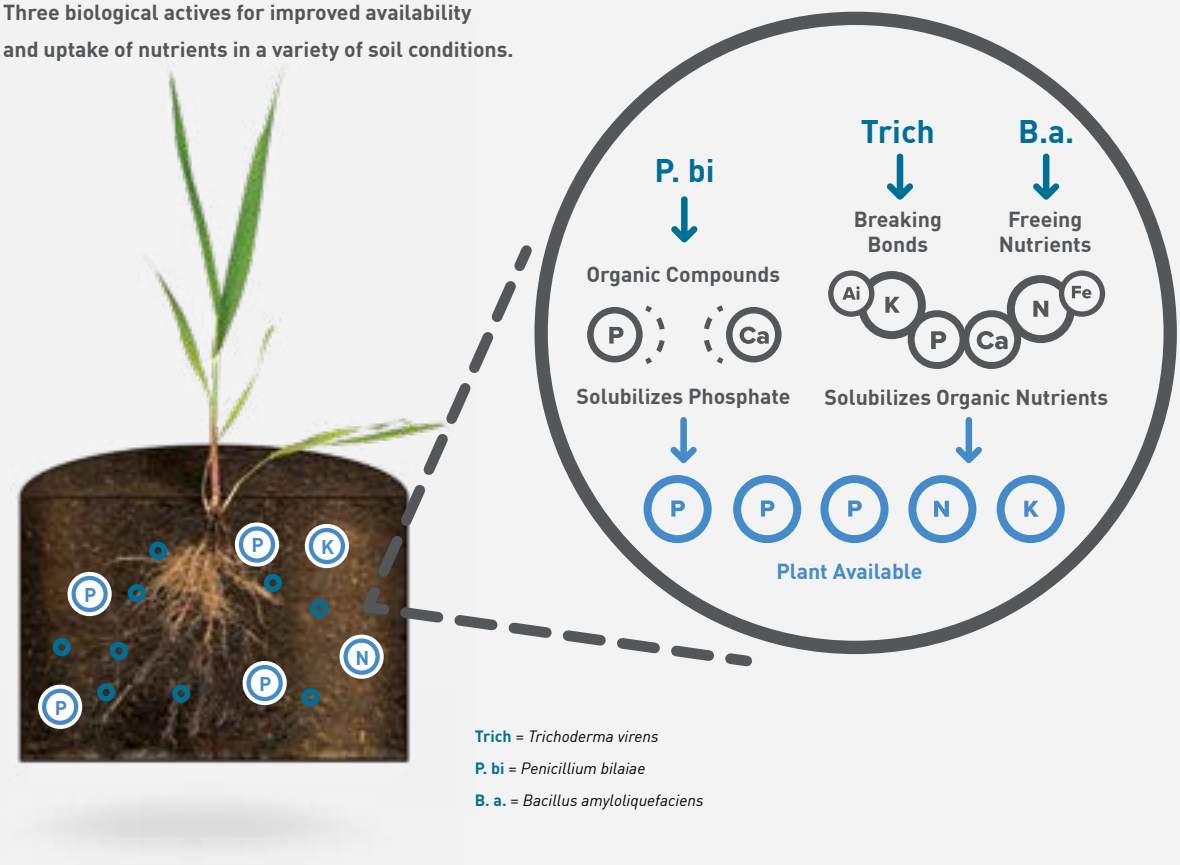
Factors Limiting Phosphate Availability In Canola

- 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 P_2O_5 per acre should be seed-placed[1]

[1]Source: Guidelines for Safe Rates of Fertilizer Placed with Seed, Saskatchewan Ministry of Agriculture.

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*

BioniQ On Winter Wheat

When it comes to a successful winter cereal crop, the beginning determines the end. Without good stand establishment in the fall, winter survival suffers and yields decline. Phosphate fertility and other key factors, including seeding date and planting depth, require careful attention to ensure a good start.

For the best winter survival, cereals must germinate uniformly in the fall and develop at least two to three leaves and crown tissue. Then, in the spring, the winter cereal plant re-grows from the crown tissue.

Development Of Root And Shoot Growth

Proper phosphate fertility helps winter 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.

Better Stand Establishment

Achieving high winter wheat yields requires two critical factors: winter hardiness and rapid spring re-growth. Both factors are directly influenced by the phosphate status in the plant. Adequate phosphate nutrition promotes rapid emergence and establishment in the fall, allowing the plants to achieve optimal root and shoot growth and nutrient uptake prior to dormancy. This promotes winter hardiness and a greater probability of the crop withstanding adverse environmental conditions. A healthy, well-established stand is better able to survive over winter and is better able to exhibit rapid re-growth in the spring to set up yield potential.

Application

BioniQ comes in a wettable powder co-pack that is optimally formulated for canola and cereal crops. The product is conveniently packaged for ease of use and can be applied similar to other wettable powder inoculants in the NexusBioAg portfolio. Please read the label before application for complete use instructions.

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 for seed.

Inoculate seed on-farm by adding and thoroughly mixing the entire contents of both Active Powder A (333 g) and Active Powder B (450 g) in the appropriate amount of water (refer to Table 1) prior to or during seeding.

- BioniQ can be applied utilizing commercial on-seed application equipment.
- Applicators used previously for pesticides should be triple rinsed before being used for BioniQ application.
- BioniQ can be applied up to 60 days prior to seeding (depending on seed type) and can be used with many different seed treatments. Visit **nexusbioag.com** for the most up-to-date information on seed treatment compatibility.

Table 1. BioniQ Wettable Powder Application

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

Product Packaging

All Crops

Wettable Powder	1	x	333 g bottle		= 
Wettable Powder	1	x	450 g bottle		

JumpStart®

JumpStart®

All Crops

Product Overview

Phosphate Fertilizer Use Efficiency

Up to 90% of applied phosphate fertilizer goes unused in the year of application as it gets tied (bound) to soil particles and other elements, making it unavailable to the crop. Some of this is used over subsequent years, but at least 25% never becomes available.[1] It is crucial to make the most efficient use of fertilizer phosphate to maximize yield potential.

JumpStart inoculant contains the naturally occurring soil fungus *Penicillium bilaiae,* discovered by Agriculture and Agri-Food Canada, which grows along plant roots, releasing phosphate bound in the soil, making it more readily available for the crop to use.

Penicillium bilaiae, the active ingredient in JumpStart, does not eliminate the need for phosphate fertilizer, but provides crops access to more phosphate for higher yield potential.

- JumpStart results are greatest in soils with lower levels of available phosphate and high to medium levels of bound/unavailable phosphate.
- JumpStart works at low soil temperatures when phosphate availability is normally limited.
- In independent research, JumpStart resulted in a 22% increase in the proportion of root that contained root hairs and a 33% increase in the mean root-hair length in field pea.[2]
- JumpStart can work in soils within a wide pH range. It is the level of available phosphate, not the pH, that determines the benefit of JumpStart.

[1] Source: Better Crops Vol. 86 (2002, No. 4), International Plant Nutrition Institute (formerly: Potash and Phosphate Institute).

[2] Source: *Penicillium bilaiae* inoculation increases root-hair production in field pea. Robert H. Gulden and J. Kevin Vessey. May 17, 2000.

Factors Affecting Phosphate Availability

Phosphate Is Less Available

- In soils containing high levels of cations, such as calcium, magnesium, iron or aluminum.
- In soils with high clay content.
- At colder soil temperatures.
- To crops with a tap root system.
- In dry soils.

Source: Phosphorous for Agriculture, International Plant Nutrition Institute (formerly: Potash and Phosphate Institute)

Features & Benefits

Benefits To Better Phosphate Uptake With JumpStart

JumpStart inoculant promotes greater phosphate availability, which results in early vigour, greater stress tolerance and earlier, more even maturity. JumpStart improves phosphate availability to plants at the most vulnerable stages and reduces the need to seed-place high rates of phosphate fertilizer with sensitive seeds like canola, pea, lentil and soybeans.

Early Vigour

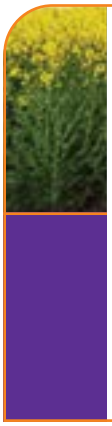
Cool soils, common under direct seeding or early seeding conditions, mean phosphate is less available to plants.

Cool soils are difficult on plants and can limit early-season phosphate availability. This can lead to reduced plant growth and, ultimately, crop yield. Because JumpStart is active under varying soil temperatures or varying soil conditions, phosphate availability is improved and there when your plant needs it most.

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 plants access moisture and nutrients more efficiently.

JumpStart 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.



Improved phosphate availability

Active in cool soil temps helping to enhance early-season vigour

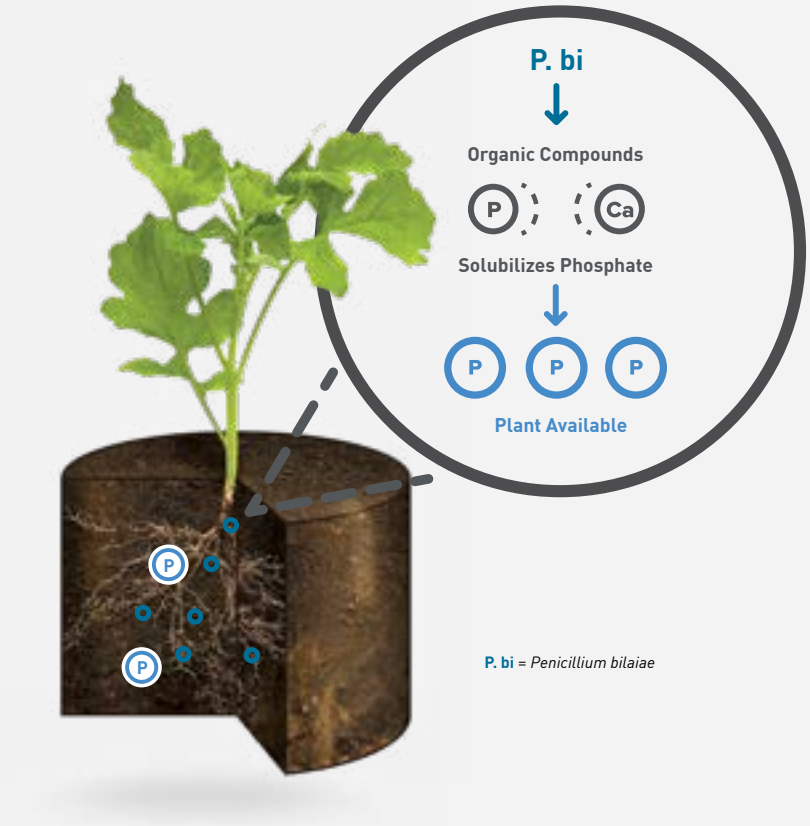
Earlier, more uniform maturity

How It Works

Naturally occurring soil fungus to release bound mineral forms of soil and fertilizer phosphate.

Freeing Phosphate

Penicillium bilaiae releases bound mineral forms of soil and fertilizer phosphate, making it more available to the plant to use.



Benefits of JumpStart on Canola

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 pounds of P_2O_5 per acre should be seed-placed.[1]

[1] Source: Guidelines for Safe Rates of Fertilizer Placed with Seed, Saskatchewan Ministry of Agriculture.

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 JumpStart 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.

More Even Supply Of Phosphate To Improve Crop Uniformity

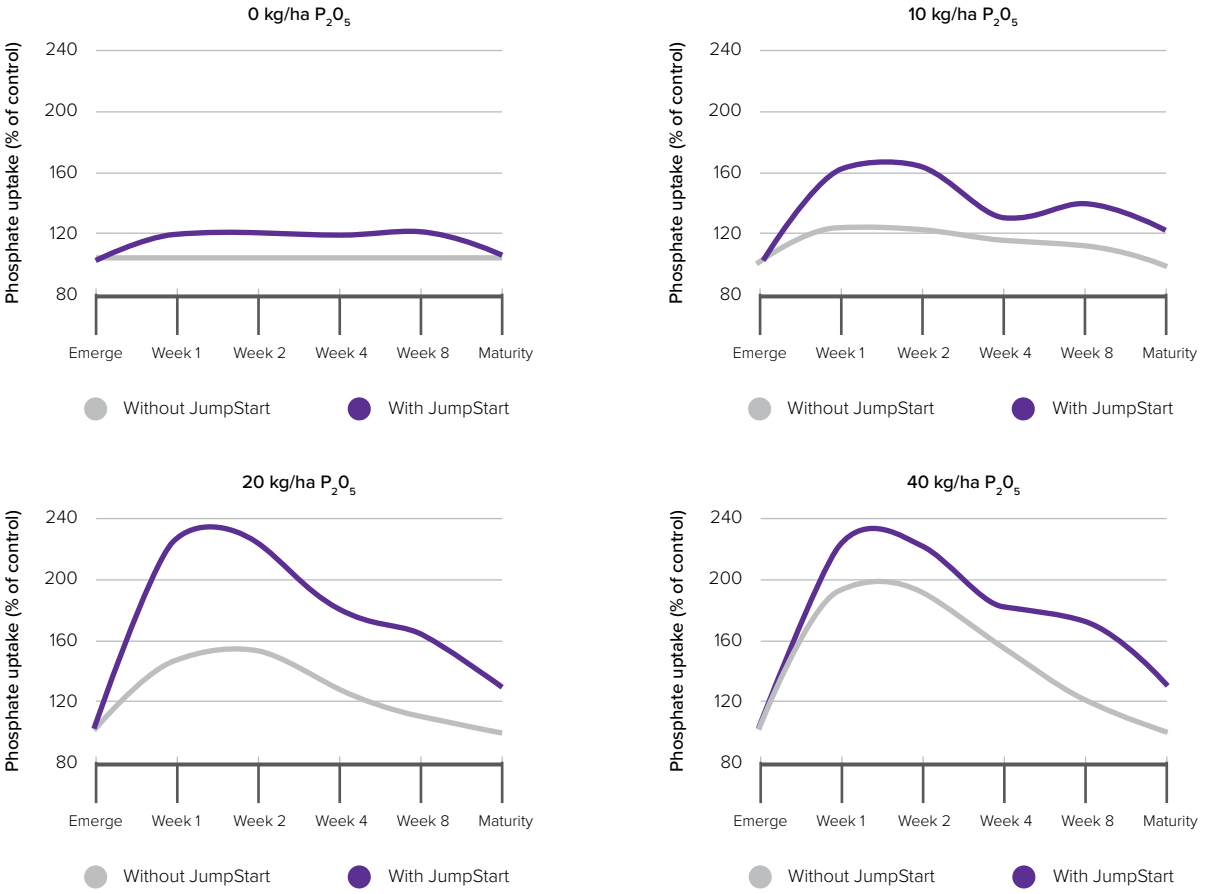
A healthy uniform canola crop has more potential to withstand weed, insect and disease pressures. Timing of pesticide applications, swathing and crop dry-down are easier to assess with a uniformly developed canola crop.

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 JumpStart will help address phosphate needs with sensitive seed.

JumpStart 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 JumpStart on wheat.



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

Get The Most From JumpStart

- **Seeding into cold soils:** JumpStart is active in cool soil temperatures making soil phosphate available to the plant, helping to enhance early-season vigour.
- **Seed-placed phosphate is applied more than 1.5 inches from the seed:** Phosphate fertilizer is not close enough to the seed for early-stage growth. JumpStart makes the phosphate in the soil around the seed more available resulting in better, uniform emergence.
- **Maturity concerns:** An adequate early-season supply of phosphate shows up at harvest time as even maturity, and a more uniform seed set. JumpStart helps ensure phosphate is available to meet early-season needs.

Application

JumpStart is not crop specific. JumpStart colonizes (grows along) the root system rather than infecting the root, so you do not have to purchase a specific type of JumpStart for a specific crop. Please see Table 2 for a list of registered crops and their application rates. Please read the label before application for complete use instructions.

JumpStart Granular

JumpStart is available in a granular formulation for canola, barley, flax, mustard, oat, pea, lentil, soybeans, wheat and canary seed. Application rates will vary according to row spacing; please refer to Table 1 for details.

Table 1. JumpStart Granular Application Rates

PACKAGE SIZE	18 KG (39.64 LB) BAG	
Row spacing	lb/ac	ac/bag
6 in	5.5	7.2
8 in	4.1	9.7
9 in	3.6	11.0
10 in	3.3	12.0
12 in	2.7	14.7

Note: The bulk density of JumpStart granular is approximately 0.6 g/cm^3 (37 lb/ft^3).

JumpStart Wettable Powder

JumpStart is available as a wettable powder that is mixed into water and applied to the seed as a liquid. Once JumpStart is mixed into the water, apply to the seed within 24 hours.

Water volume rates vary according to the type of seed treated. These water volumes can be adjusted according to your application methods, as long as the correct amount of JumpStart is applied to the seed. Please see Table 2 for approximate water volume rates.

When tank mixing a seed treatment with JumpStart, the total liquid volume should equal the water volume listed in the table. Example: if you are using JumpStart on wheat, the total water volume required is 50 litres. If you are tank mixing with a seed treatment with an application rate of 25 litres per 300 bushels of wheat, then you only need to add another 25 litres of water for a total liquid volume of 50 litres per every 300 bushels of wheat treated.

Apply the JumpStart suspension to seed when transferring seed from the bin or bag to the truck, or from the truck to the tank or seed cart. Applicators used previously for pesticides should be triple rinsed before being used for JumpStart application. To improve coverage on small-seeded crops like canola, mustard, alfalfa and sweetclover, we recommend using a batch-treating system or purchasing pre-treated seed where available.

JumpStart can be applied to bare seed up to 60 days prior to seeding (depending on seed type) and can be used with many different seed treatments.

Visit **nexusbioag.com** for the most up-to-date information on seed treatment compatibility.

Table 2. JumpStart Wettable Powder Application

CONTAINER SIZE / Crop	400 G CONTAINER		
	Seed treated/container		Water (litres)
	bu	lb	
Alfalfa/sweetclover	–	1,100	10
Canola/mustard	–	1,000	10
Chickpea	400	24,000	30
Corn	70 bags* (5,600,000 kernels)		19.6
Dry bean	300	18,000	25
Lentil	300	18,000	25
Pea	500	30,000	40
Soybean	300	18,000	25
Wheat	300	18,000	50

*80,000 kernels per bag.

Table 3. JumpStart Wettable Powder Application

Crop	57 G (2.0 OZ) CONTAINER	
	Seed treated/container	Approximate water volume
Soybean	50 units (1,135 kg, 2,500 lb, 42 bu)	3.5 litres (3.9 US quarts)

Product Packaging

All Crops

Wettable Powder	1	x	400 g bottle	=	
Granular	1	x	18 kg	=	

Soybean

Wettable Powder	4	x	57 g bottle	=	

Optimize® LV

Soybean

Product Overview

Expand Your Ability to Grow

Optimize LV is a concentrated formulation soybean inoculant, with a low application rate of 98 ml/100 kg (1.5 fl oz/100 lb).

Optimize LV is a retailer-applied dual-action product that delivers the benefits of a specially selected *Bradyrhizobium japonicum* inoculant along with LCO (lipochitooligosaccharide) technology – helping to improve your crop's potential by enhancing nutrient availability.

With Optimize LV, the plant does not need to wait for the LCO signal as it is delivered on the seed, potentially reducing the time required for this process to occur naturally and therefore, accelerating nodulation and nitrogen fixation to the young crop.

What Is LCO Technology?

LCO is a molecule involved in the rhizobia legume nodulation process. When the LCO molecule is present at the time of planting, it allows for the nodulation process to begin, independent of variety, soil and environmental conditions. The benefit of earlier nodulation initiation is earlier nitrogen availability to the plant, which supports plant growth such as root and shoot development. The result of this early-season activity is better plant performance. LCO is an important component in nodulation as a key driver in the communication between plants and rhizobia.

Features & Benefits

220

Broad seed treatment compatibility with 220-day on seed stability with additional extender for key seed treatments, otherwise 120-day on seed stability

Greater opportunity for the development of nitrogen-fixing nodules with LCO

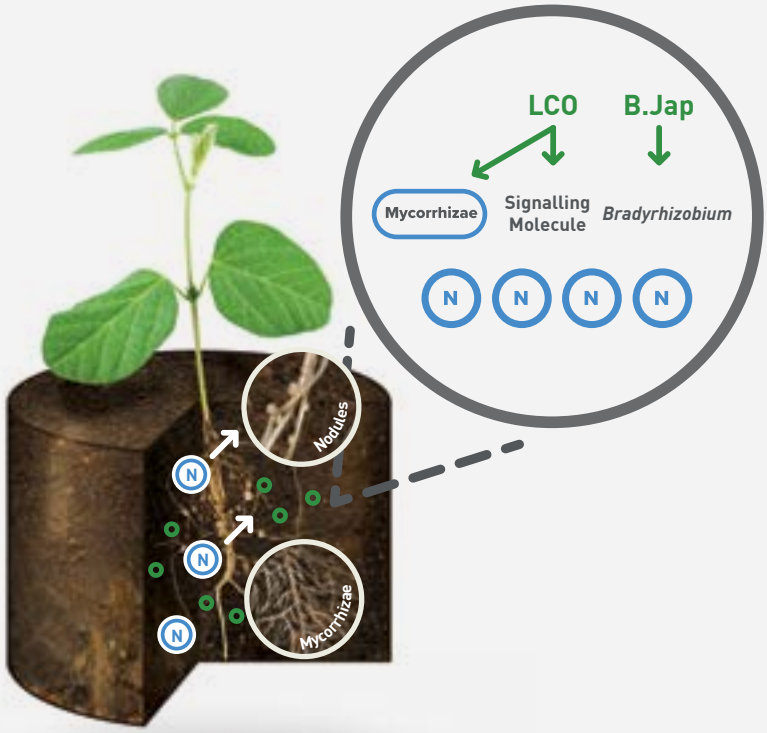
Enhanced nutrient capability, which supports root and shoot growth

Low application rate means more space on seed for other additives

How It Works

Dual-action inoculant to enhance nutrient availability and development of nitrogen-fixing nodules.

1. Needing nitrogen, the plant releases flavonoids to signal rhizobia.
2. Sensing the flavonoids, the rhizobia signal LCO back to the plant.
3. The plant can respond to the LCO, allowing the rhizobia to infect its roots.
4. This symbiotic relationship creates nodules, which can help fix atmospheric nitrogen.



LCO = Lipochitooligosaccharide

- Stress Mitigation
- Enhances Nodulation
- Increases Association with Mycorrhizae

B.Jap = *Bradyrhizobium japonicum*

- Fixes Nitrogen

Double Inoculate Your Soil To Help Maximize Yield Potential

Land that has been through less than ideal growing conditions, or has not had soybeans for a few years, requires special attention when it comes to inoculation. Double inoculation can help quickly establish high populations of rhizobia bacteria to help ensure the best possible nodulation and soybean performance. Land with a history of longer soybean rotations, or land with a history of flooding or longer periods of drought, is not conducive to rhizobia survival. It is in these soils that farmers will benefit greatly from the application of two formulations of inoculant.

Seed-applied inoculants tend to form nodules closer to where the seed is located (closer to the primary root); in-furrow applied granular inoculants tend to form nodules on the secondary or lateral roots. Combining the two formulations allows for wider distribution of nodules along the whole root system.

For best results, you may apply Optimize LV with Cell-Tech or TagTeam. Consult your local NexusBioAg representative or local retailer for a customized inoculant approach.

Application

Optimize LV is applied to soybean seed by retailers. Please contact your seed retailer to order. Please read the label before application for complete use instructions.

Table 1. Optimize LV Liquid Application

PACKAGE SIZE AND CONTENTS	AMOUNT OF SEED TREATED /INDIVIDUAL CASE	
2 x 0.686 Optimize LV liquid, plus 2 x 0.2 L Liquid Additive	80 units	4,000 lb
6.9 L Optimize LV liquid, plus 2 L Liquid Additive	400 units	20,000 lb

Product Packaging

Soybean		Liquid	1	x	6.9 L bag + 2 L jug (liquid additive)	=	
		Liquid	5	x	2 x 0.686 L bags + 2 x 0.2 L jugs (liquid additive)	=	

Cell-Tech®

Lentil · Pea · Soybean

Product Overview

Nitrogen-Fixing Inoculant

Cell-Tech is a single-action inoculant that contains specially selected rhizobia that can provide effective nodulation to enhance nitrogen-fixation, even in cooler soils – increasing yield potential as planting conditions change.

If phosphate is limited, Cell-Tech can be applied at the same time as JumpStart, for improved phosphate uptake.

Cell-Tech Is Available In The Following Formulations

CROP	INOCULANT SPECIES	CELL-TECH FORMULATIONS AVAILABLE
Pea, Lentil	*Rhizobium leguminosarum*	Liquid, peat, non-sterile peat and granular
Soybean	*Bradyrhizobium japonicum*	Liquid, peat, and granular

Application

Please read the label before application for complete use instructions.

Cell-Tech Pea/Lentil Liquid

Cell-Tech liquid should be applied directly to pea or lentil seed at a rate of 2.5 fluid ounces per bushel (60 lb) of seed (75 ml/27 kg) or 2.1 fluid ounces per 50 pounds (63 ml/23 kg). The planting window for Cell-Tech liquid on bare pea or lentil seed is 48 hours.

Cell-Tech Soybean Liquid

Cell-Tech liquid should be applied directly to soybean seed at a rate of 2.5 fluid ounces per bushel (60 lb) of seed (75 ml/27 kg) or 2.1 fluid ounces per 50 pounds (63 ml/23 kg) of seed. The planting window for Cell-Tech liquid on bare soybean seed is four days.

Cell-Tech liquid can be applied with other seed treatments, but the planting window may be reduced. Visit **nexusbioag.com** for more details.

Table 1. Cell-Tech Liquid Application

CELL-TECH LIQUID	PACKAGE SIZE	ONE PACKAGE INOCULATES		
Crop	Litres	Units	bu	lb
Pea, Lentil	3.0	–	40.0	2,400
	9.8	–	130.0	7,840
Soybean	3.1	50	41.7	2,502
	12.5	200	167.0	10,000

Cell-Tech Peat

Cell-Tech peat has its own sticker in the formulation, so no additional stickers are required. Apply Cell-Tech dry to pre-moistened seed, or add water while applying Cell-Tech, or mix with cool, clean water and apply to seed as a slurry (refer to Table 2). Make sure that inoculated seed is evenly coated. Inoculate bare seed with Cell-Tech peat up to 48 hours before seeding.

Table 2. Cell-Tech Peat Application

CELL-TECH PEAT	ONE 2.2 KG (4.8 LB) BAG INOCULATES			WATER
Crop	Unit	bu	lb	litres
Pea	–	50	3,000	4.0
Lentil	–	30	1,800	2.5
CELL-TECH PEAT	**ONE 2.32 KG (5.1 LB) BAG INOCULATES**			**WATER**
Crop	**Unit**	**bu**	**lb**	**litres**
Soybean	30	25	1,500	N/A

Cell-Tech NS (Non-Sterile) Peat

Cell-Tech NS peat has its own sticker in the formulation. A separate sticker is not needed. Apply Cell-Tech NS onto seed in the drill box and mix thoroughly until uniformly coated. Layering seed and inoculant while mixing will provide thorough coating of all seeds. Inoculate bare seed with Cell-Tech NS peat up to 48 hours prior to seeding.

Table 3. Cell-Tech NS (Non-Sterile) Peat Application

CELL-TECH NS PEAT	ONE 2.83 KG (6.2 LB) BAG INOCULATES	
Crop	bu	lb
Pea	25	1,500
Lentil	25	1,500

Cell-Tech and Cell-Tech NS peat can be used with different seed treatments, but planting windows vary according to type of seed treated and seed treatment used. Visit **nexusbioag.com** for the most up-to-date seed treatment compatibility information.

Cell-Tech Granular

Cell-Tech granular should be applied directly with the seed in the seed row using a granular tank for application. Application rates vary according to row spacing (refer to Table 4 below).

- Fill tank to match or slightly exceed seed requirements.
- Do not overfill tank to avoid compaction.
- Pour into tank through a screen.
- If augering, please do so at low speeds to avoid damage to Cell-Tech granular.
- Do not mix Cell-Tech granular in the same tank with seed or fertilizer.
- Do not leave Cell-Tech granular in the tank overnight as condensation can cause lumps to form.

Table 4. Cell-Tech Granular Application Rates

	CELL-TECH PEA/LENTIL			CELL-TECH SOYBEAN		
Package size	Application rate	18.0 kg bag	454 kg bag	Application rate	18.0 kg bag	454 kg bag
Row spacing	lb/ac	ac/bag	ac/bag	lb/ac	ac/bag	ac/bag
7 in	6.6	6.1	151.7	6.2	6.5	161.5
8 in	5.8	6.9	172.6	5.4	7.3	185.4
9 in	5.1	7.8	196.3	4.7	8.4	213.0
10 in	4.6	8.7	217.6	4.3	9.3	232.8
12 in	3.8	10.5	263.4	3.6	11.0	278.1
15 in	3.1	13.3	333.7	2.9	13.8	345.2
24 in	–	–	–	1.8	22.2	556.1
30 in	–	–	–	1.4	28.6	715.0

Note: The bulk density of Cell-Tech granular is approximately 0.6 g/cm^3 (37 lb/ft^3).

Product Packaging

Pea/Lentil

Peat	**7**	x	**2.2 kg bag**	=	
Non-sterile peat	**4**	x	**2.83 kg bag**	=	
Granular	**1**	x	**18 kg**	=	
Granular	**1**	x	**454 kg**	=	
Liquid	**4**	x	**3 L**	=	
Liquid	**1**	x	**9.8 L**	=	

Soybean

Peat	**7**	x	**2.32 kg bag**	=	
Granular	**1**	x	**18 kg**	=	
Granular	**1**	x	**454 kg**	=	
Liquid	**4**	x	**3.1 L**	=	
Liquid	**1**	x	**12.5 L**	=	

Nitragin® Gold

Alfalfa · Clover · Sweetclover

Product Overview

Nitragin Gold inoculant was developed for bulk treatment by the seed processor. It is a one-step system that provides a convenient and economical inoculant for your customers.

Order your alfalfa, sweetclover or clover seed pre-treated with Nitragin Gold.

OMRI LISTED
For Organic Use

Nitragin Gold alfalfa/sweetclover is OMRI Listed for organic use. It does not contain any genetically modified organisms, sludge or waste-derived products.

Note: Nitragin Gold clover is not OMRI Listed.

Benefits Of Nitragin Gold Inoculant

- **Yield:** Specially selected natural rhizobia strains result in high levels of nitrogen fixation for maximum yield potential.
- **Super seed adhesion:** Micron-sized particles provide optimal seed adhesion and minimal "dusting off".
- **Quality assurance:** Drying system assures customers of high rhizobia levels on the seed.
- **Apron® XL /Allegiance® FL compatible:** Compatibility with Nitragin Gold alfalfa/sweetclover and Apron XL and Allegiance FL seed treatments will allow the combined benefits of an inoculant and a fungicide where required.

Note: Nitragin Gold clover is not compatible.

Time on seed for alfalfa and sweetclover is 24 months and 6 months on clover. If you need more information or have questions about Nitragin Gold, visit **nexusbioag.com.**

Product Packaging

Alfalfa/ Sweetcover	Clay Powder	1	x	19 kg	=	
Clover	Clay Powder	1	x	19 kg	=	

LEVESOL® DFC ZN

Barley · Canola · Corn · Dry Beans · Oats · Potatoes
Sorghum · Soybeans · Sugarbeets · Sunflowers · Wheat

Product Overview

Harness the Power of Chelation

Zinc solution chelated with ortho-ortho EDDHA designed to be mixed directly with dry starter fertilizer.

An advanced fertilizer enhancer product with a powerful new way to maximize the effectiveness of your phosphate fertilizer, while enhancing nutrient availability and uptake to maximize yield potential.

Total Nitrogen 5%
4.0% Urea Nitrogen
1.0% Ammoniacal Nitrogen

Total Zinc 8%
8.0% Chelated Zinc
Derived from zinc EDTA
and zinc ortho-ortho EDDHA

Application

- 3 L/MT of dry phosphate fertilizer

Blending Instructions

- Fill blender with desired amount of phosphate fertilizer.
- Add 3 L/MT of Levesol DFC Zn through a sceen to the dry phosphate fertilizer while blending.
- Add other forms of dry fertilizer such as Urea Potash, AMS, Zinc, Sulphur, Micronutrients.
- Blend for 6 – 8 minutes to allow for uniform coverage of the Levesol DFC Zn.
- Clean equipment thoroughly after use to prevent build up.

Features & Benefits

Increased yield and return on investment

Improved availability of soil and fertilizer phosphorous

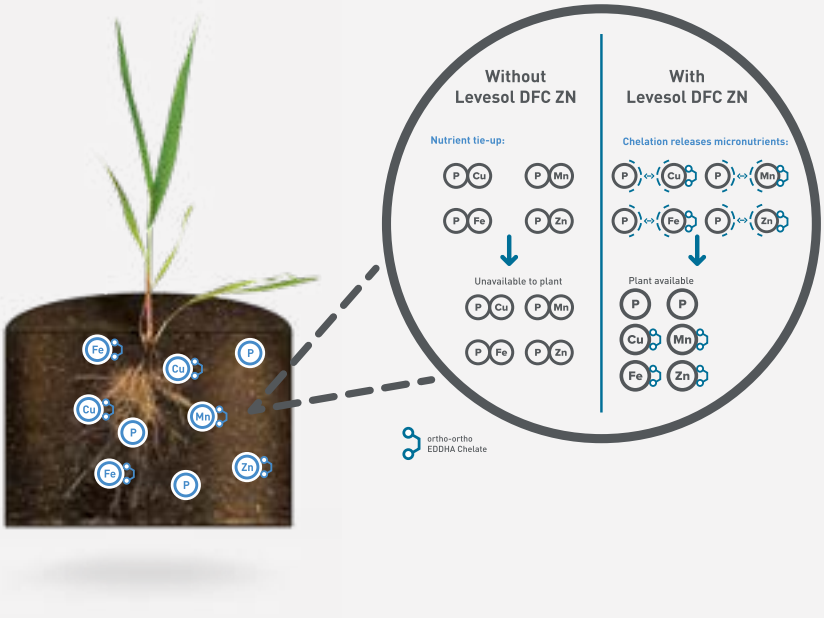
Enhanced nutrient (Cu, Zn, Mn, Fe) availability, through chelation

Increased rate of micronutrient translocation in the plant allowing developing crops to utilize micronutrients more efficiently during early development

Endorsed by Mosaic for use on their MicroEssentials Phosphate Fertilizer

How It Works

Ortho-ortho EDDHA chelate in Levesol DFC Zn enhances phosphorus availability by chelating micronutrients to reduce tie up in the soil and enable phosphorus and micronutrients to be more readily available for plant uptake.



MicroEssentials + LEVESOL DFC Zn on Wheat

MicroEssentials	57.1	(bu/ac)
MicroEssentials + Levesol DFC ZN	62.3	(bu/ac)

Yield Advantage

Average across sites showed 5.2 bu/ac increase with Levesol DFC Zn.

Data provided by CHS Inc.

- Years: 2015-2021 (3rd Party Replicated Research)
- Institutions Represented: NDSU, Montana State University, Washington State, 3rd Party Research Groups
- 11 trials

Micronutrients

Granular - Liquid - Foliar

Enhance the Future of Your Farm From the Ground Up

All Crops

Element Overview

Nutrients play a vital role in plant growth. When critical elements are deficient or not available, growth and yield is compromised. German organic chemist Justus von Liebig discovered the law known as *Law of the Minimum*: plant growth – and thus yield – will be poor if just one nutrient is deficient, even if all other factors and nutrients are adequate. Plant growth is improved when the supply of the deficient nutrient is increased.

NexusBioAg has a portfolio of products to help provide the most essential nutrients for healthy, productive plants.

Elements

B
BORON

- Essential for all plant growth, aiding in the transfer of sugars and nutrients from leaves to fruit, and for specific functions in yield production by increasing pollination and seed development.
- An important nutrient for root growth, cell division, and is key for optimum pod production.
- Its main function is for plant cell division (growth) in early growth stages.
- Plants have high requirements for boron during reproductive growth, specifically pollination and seed set.

Cu
COPPER

- Essential for cell wall strength, specifically in the anther where the viability of pollen formation is crucial to the yield of the plant.
- Important for chlorophyll production, protein synthesis, respiration, and the efficient use of nitrogen.
- It's essential for standability and the metabolism of carbohydrates and proteins.
- Required for respiration within the plant.

Zn
ZINC

- Essential in a wide range of plant functions as an enzyme co-factor, in protein synthesis and protein structure, hormone regulation, early root development, energy production, and is key for seed formation.
- Plants have a high requirement for zinc during seed development and formation.
- Necessary for chlorophyll and carbohydrate production.
- Deficiencies result in stunting and reduced seed set.

Mg
MAGNESIUM

- Vital for the photosynthesis process and is a building block of chlorophyll.
- Highly involved in nitrogen uptake.
- Plays a critical role in chlorophyll synthesis with nitrogen.
- An enzyme activator.
- Deficiencies result in reduced yield and greater susceptibility to plant disease.

Fe
IRON

- Essential for plant respiration, photosynthesis, and enzyme reactions in all crops.
- An important component of the enzymes used by nitrogen-fixing bacteria in legume crops.

Mn
MANGANESE

- Essential in enzyme systems, photosynthesis, and root growth.
- Important in the synthesis of lignin for strength and stiffness of plant cell walls.

S
SULPHUR

- Has many critical functions in the plant, including the formation of chlorophyll, which is essential for photosynthesis.
- Important for yield and crop quality, and essential for enzyme activation, nitrogen metabolism; in oilseeds, sulphur is crucial for oil synthesis.
- The majority of sulphur in crops is as a constituent of three S-containing amino acids (cysteine, cystine, and methionine), which are the building blocks of protein.

Mo
MOLYBDENUM

- Its main function is to convert unusable nitrogen forms to plant-available forms.
- Required for nitrogen fixation in pulses.
- Critical for early growth at internode elongation.

NexusBioAg Micronutrients

NexusBioAg has a range of micronutrients available, in both sulphate and oxy-sulphate forms. Sulphate form supplies nutrients to the plant when applied. Oxy-sulphate form supplies nutrients for immediate plant availability while helping with soil buildup and extended plant needs.

- Our low analysis micronutrient products ensure a better distribution throughout the fertilizer blend.
- With optimum water solubility, the products provide excellent plant availability.
- Compatible with all fertilizer blends.

The 3 Forms Of Granular Micronutrients

Not All Micronutrients Are Made Equal - The Importance of Solubility

The key to any fertilizer is how much of it is available to the plant in that growing year. Yield increases are the result of nutrient application in a plant-available form when applied at the appropriate rate and at the right time and place.

Plants are only able to take up nutrients that have been dissolved into the soil solution. This makes it imperative to evaluate the solubility of the fertilizer product to ensure the crop is receiving the necessary nutrients. Applying a low-solubility (i.e. less than 30% water soluble) micronutrient has very little benefit to the crop in the year of application and may result in that crop showing symptoms of micronutrient deficiency.

Forms Of Granular Micronutrients

Sulphates

- 100% water soluble and highly available to the crop in the year of application.
- Quickly provides nutrients to plants and soil building.

Oxides

- Relatively insoluble, making them unavailable to the crop in the year of application.
- Used to build soil nutrient levels on a long-term basis rather than to correct deficiencies in the year of application.

Oxy-Sulphates

- Combination of oxides and sulphates within the same granule.
- Availability in the year of application is dependent on the balance of sulphate and oxide nutrients.
- Effective in the correction of current deficiencies and in longer term soil building.

Application Of Granular Micronutrients

When soil tests identify a deficiency for the upcoming cropping season, a sulphate or oxy-sulphate granular micronutrient should be used to ensure the crops have sufficient nutrition for maximum yield potential. When it comes to copper, zinc, and manganese, placement is key as these nutrients only move through diffusion (even in their soluble sulphate form). The granules should be placed in the seed row – or in close proximity to the seed row – to ensure the plant roots intercept these feeding sites.

Levels In Soil (ppm)

	DEFICIENT*	MARGINAL*	ADEQUATE
Copper	0.0-0.3	0.3-1.0	1.0+
Zinc	0.0-0.5	0.5-1.0	1.0+
Iron	0.0-2.0	2.0-4.5	4.5+
Manganese	0.0-1.0	-	1.0+

*Soil micronutrient range based on DTPA extraction method

All three forms of granular micronutrients have a place for specific circumstances within a cropping system – it is vital to choose the correct form of micronutrient that will lead to the desired results.

GRANUBOR®

All Crops

Product Overview

Boron (B) 15%

Granubor provides boron to meet the crop's demands during the growing season providing immediate availability of boron and supply for extended plant needs.

Key Benefits At A Glance

- The ore is dissolved in water and re-crystallized, removing any impurities and creating an extremely pure natural product.
- Sodium based boron is nearly 100% water soluble.
- Granubor is OMRI Listed for organic use.

OMRI LISTED
For Organic Use

Element

B
BORON

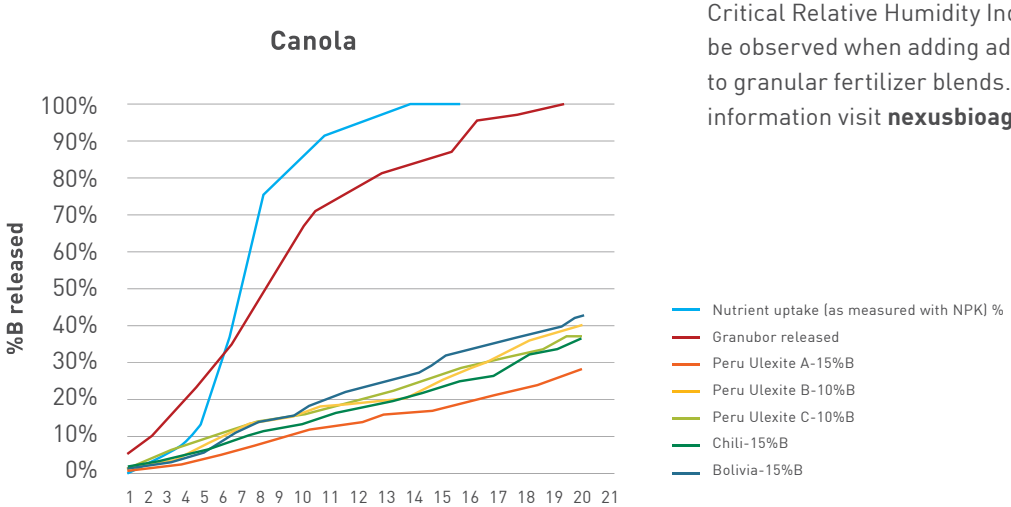
Application

- Use Granubor to match analysis where higher amounts of boron are needed.
- Can be broadcast or banded.
- 7 lbs of product = 1 lb actual.
- If Granubor is seed placed with canola, a maximum of 7 lbs per acre of product should be used.

Agronomic consideration: A granular boron with 100% solubility that provides excellent boron plant availability. Compatibility with all fertilizer blends and provides immediate availability of boron and extended plant needs.

Handling and blending considerations: Normal bulk blending procedures. Use Granubor to match analysis where higher amounts of boron are needed.

Critical Relative Humidity Index (CRHI) must be observed when adding additional products to granular fertilizer blends. For additional CRHI information visit **nexusbioag.com.**



F-212G

12.5% Copper

Barley · Wheat

Product Overview

Copper (Cu) 12.5%
Zinc (Zn) 4.5%
Sulphur (S) 4.5%

F-212G is a homogenous grade of copper oxide and copper sulphate with a low analysis to ensure a better distribution throughout the fertilizer blend.

Key Benefits At A Glance

- F-212G has optimum water solubility providing excellent plant availability and compatibility with all fertilizer blends.
- Supplies an initial amount of copper sulphate for immediate needs and copper oxide for soil buildup and extended plant needs.
- A homogenous blend with a low analysis, to ensure a better distribution and maximum feeding sites throughout the field.

Elements

Cu	S	Zn
COPPER	SULPHUR	ZINC

Application

- Normal bulk blending procedures.
  - Critical Relative Humidity Index (CRHI) must be observed when adding additional products to granular fertilizer blends. For additional CRHI information visit **nexusbioag.com**.
- This product is to be used in N-P-K blended fertilizer for soil application.
- Apply in the seed row or in close proximity to the seed row.
- 8 lbs of product = 1 lb actual copper.
- Use F-212G to match analysis where higher amounts of copper are needed.

How it works

1. Copper diffuses outside of granule up to 1/2".
2. This creates a 1" sized feeding site.
3. With root interception of the feeding site the plant will receive enough copper for that year.
4. Remaining copper is used for soil building for future crops.

F-156G

36% Magnesium

All Crops

Copper Deficiency Symptoms

1. Tips begin to spiral or twist.
2. Light green in colour.
3. Poor standability.
4. Empty bleach/grey heads can appear like grey patches called melanosis, you can also see this discoloring on cereal stubble fields suffering from copper deficiency. Copper deficiency is often correlated with diseases such as ergot.

Element

Mg
MAGNESIUM

Product Overview

Magnesium (Mg) 36%

F-156G is a moderately high analysis granular product for correcting magnesium deficiencies in the soil.

Key Benefits At A Glance

- A form of magnesium that resists leaching.
- Partly acidulated for immediate plant availability with the remaining magnesium in an oxide form to build soil magnesium reserves.
- Especially suitable for providing additional magnesium to grazing areas for livestock in areas susceptible to “grass tetany”.

Application

- Use according to soil test.
- The usual range of application is from 10 to 50 lbs magnesium per acre in bulk applications, or 2 to 5 lbs magnesium per acre in a blended starter fertilizer.
- Normal bulk blending procedures.
    - Critical Relative Humidity Index (CRHI) must be observed when adding additional products to granular fertilizer blends. For additional CRHI information visit **nexusbioag.com**.

F-227G

40% Iron

All Crops

Element

Fe
IRON

Product Overview

Iron (Fe) 40%

F-227G is a high analysis granular product used for short-term correction of iron deficiency symptoms in plants.

Key Benefits At A Glance

- Proactive prevention of deficiency in the plant is a better agronomic practice than trying to correct chlorosis once it appears.
- An acidic granule for solubilized iron is rapidly changed to insoluble phosphates, carbonates and bicarbonates.

Application

- Soil application as part of an N-P-K blend.
- 2.5 lbs of product = 1 lb actual.
- Normal bulk blending procedures.
    - Critical Relative Humidity Index (CRHI) must be observed when adding additional products to granular fertilizer blends. For additional CRHI information visit **nexusbioag.com**.

Agronomic considerations: Prevention of deficiency in the plant is a better practice than trying to correct chlorosis once it appears.

WARNING

This product will stain sidewalks and pools. It must be swept off before moisture reaches product. This product will "set-up" in storage or in final product.

F-287G

28% Manganese

All Crops

Elements

Mn
MANGANESE

S
SULPHUR

Product Overview

Manganese (Mn) 28%
Sulphur (S) 6%

F-287G is a high analysis granular product for correcting manganese deficiencies in the soil.

Key Benefits At A Glance

- Partly acidulated for rapid plant availability with the remaining manganese in finely divided oxide form for building soil reserves.
- F-287G is a form of manganese that resists leaching and resists conversion to unavailable forms.
- Approximately 40% water soluble.

Application

- Use product according to soil test.
- Typical broadcast rates are 4 to 20 lbs manganese per acre or about 1–4 lbs manganese per acre in the seed row.
- Soil application as part of an N-P-K blend.
- Normal bulk blending procedures.
    - Critical Relative Humidity Index (CRHI) must be observed when adding additional products to granular fertilizer blends. For additional CRHI information visit **nexusbioag.com**.

F-420G

20% Zinc

All Crops

Elements

Zn ZINC

S SULPHUR

Product Overview

Zinc (Zn) 20%
Sulphur (S) 8%

F-420G is a homogeneous grade of zinc sulphate and zinc oxide with a low analysis to ensure a better distribution throughout the fertilizer blend and in the field.

Key Benefits At A Glance

- Optimum water solubility provides excellent plant availability.
- Supplies initial plant needs with zinc sulphate and provides zinc oxide for soil buildup and extended plant needs.
- Compatibility with all fertilizer blends.

Application

- This product is to be used in N-P-K blended fertilizer for soil application.
- 5 lbs of product = 1 lb actual.
- Normally apply at a minimum of 2 lbs of actual zinc, 10 lbs of product per acre.
- Normal bulk blending procedures.
    - Critical Relative Humidity Index (CRHI) must be observed when adding additional products to granular fertilizer blends. For additional CRHI information visit **nexusbioag.com**.
- Use F-420G to match analysis where higher amounts of zinc are needed. Apply in the seed row or in close proximity.

Nexus Zinc Sulphate Granular

All Crops

Elements

Zn ZINC

S SULPHUR

Product Overview

Zinc (Zn) 35.5%
Sulphur (S) 18%

Nexus Zinc Sulphate Granular is derived from zinc sulphate monohydrate, designed for granular blends and direct field applications.

Key Benefits At A Glance

- Optimum water solubility provides excellent plant availability and compatibility with most fertilizer blends.
- Product analysis of 35.5% zinc will supply initial amount of zinc sulphate for immediate plant availability.

Application

- 2.8 lbs of product = 1 lb actual.
- Normally apply at a minimum of 3 lbs of actual zinc, 8.45 lbs of product per acre.
- Normal bulk blending procedures.
    - Critical Relative Humidity Index (CRHI) must be observed when adding additional products to granular fertilizer blends. For additional CRHI information visit **nexusbioag.com**.
- Use Nexus Zinc Sulphate Granular to match analysis where higher amounts of zinc are needed. Apply in the seed row or in close proximity to the seed row.

Nexus Copper

7.5% EDTA

All Crops

Element

Cu
COPPER

Product Overview

Copper (Cu) 7.5% EDTA

Key Benefits At A Glance

Nexus Copper 7.5% EDTA is a fully chelated solution of copper EDTA and is recommended for the prevention and correction of copper deficiency in crops.

Rates

Nexus Copper 7.5% EDTA Rates - Soil Applied

RATE	PRODUCT LITRES/ACRE	ACTUAL CU/ACRE (LBS)	ACRES PER 10 LITRES
Low rate	0.5	0.11	20
Medium low rate	0.66	0.15	15
Medium high rate	0.75	0.17	13
High rate	1	0.22	10

Application

For soil application in combination with liquid fertilizer blends.

General recommendations: Use rates vary from 0.5 litres to 1 litre/acre, depending on copper deficiency.

Handling and blending considerations: Best practice is to add the Nexus Copper 7.5% EDTA into the blend after the UAN, then the phosphate product, followed by the liquid sulphur. Do not exceed the sulphur product by more than 10% of the total blend.

Nexus Zinc

9% EDTA

All Crops

Element

Zn
ZINC

Product Overview

Zinc (Zn) 9% EDTA

Key Benefits At A Glance

Nexus Zinc 9% EDTA is a fully chelated solution of zinc EDTA and is recommended for the prevention and correction of zinc deficiencies in crops.

Rates

Nexus Zinc 9% EDTA Rates - Soil Applied

RATE	PRODUCT LITRES/ACRE	ACTUAL ZN/ACRE (LBS)	ACRES PER 10 LITRES
Low rate	0.5	0.13	20
Medium low rate	1	0.26	10
Medium high rate	1.5	0.39	6.67
High rate	2	0.52	5

Application

For soil application in combination with liquid fertilizer blends.

General recommendations: Use rates vary from 0.5 litres to 2 litres/acre, depending on zinc deficiency.

Handling and blending considerations: For blending with liquid fertilizer products. Order of adding products or the amount of various products does not matter.

Nexus Boron

10%

All Crops

Element

B
BORON

Product Overview

Boron (B) 10%

Key Benefits At A Glance

Nexus Boron 10% is an effective, readily available source of boron for soil and foliar applications to crops.

Rates

Nexus Boron 10% Rates - Soil Applied

RATE	PRODUCT LITRES/ACRE	ACTUAL B/ACRE (LBS)	ACRES PER 10 LITRES
Low rate	0.5	0.15	20
Medium rate	0.75	0.2	13.33
High rate	1	0.3	10

Application

Compatible with and may be applied in water or mixed with most liquid fertilizers, micronutrients, or crop production products.

General recommendations: Usage rates vary from 0.5 litres to 1 litre/acre, depending on boron deficiency.

Handling and blending considerations: For blending with liquid fertilizer products. The order in adding products or amounts does not matter.

Nexus Manganese

5% EDTA

All Crops

Element

Mn
MANGANESE

Product Overview

Manganese (Mn) 5% EDTA

Key Benefits At A Glance

Nexus Manganese 5% EDTA is a fully chelated solution of manganese EDTA and is recommended for the prevention and correction of manganese deficiency in crops.

Rates

Nexus Manganese 5% EDTA Rates - Soil Applied

RATE	PRODUCT LITRES/ACRE	ACTUAL MN/ACRE (LBS)	ACRES PER 10 LITRES
Low rate	0.75	0.1	13.33
Medium low rate	1	0.13	10
Medium high rate	1.5	0.2	6.66
High rate	2	0.26	5

Application

The preferred use is as a soil application to prevent deficiency and may also be used as a foliar spray to provide correction when a soil application is impractical.

General recommendations: Use rates vary from 0.75 litres to 2 litre/acre, depending on manganese deficiency.

Handling and blending considerations: For blending with liquid fertilizer products. The order in adding products or amounts does not matter.

YieldMax Liquid
10-10-10

YieldMax WS
18-20-20

All Crops

Product Overview

PRODUCT	YIELDMAX LIQUID	YIELDMAX WS
Nitrogen (N)	10%	18%
Phosphate (P)	10%	20%
Potassium (K)	10%	20%
Boron (B)	0.02%	0.08%
Copper (Cu)	0.05%	0.15%
Iron (Fe)	0.1%	0.1%
Manganese (Mn)	0.05%	0.1%
Zinc (Zn)	0.05%	0.1%
Molybdenum (Mo)	0.0005%	0.0005%

Complete package of macro and micronutrients which are essential building blocks to maximize yield potential. Feed the need with a foliar application of YieldMax.

Key Benefits At A Glance

- Variable rates to meet the specific nutrient needs of the crop.
- Flexible foliar application, compatible with crop protection products, with other fertilizers or can be applied alone.
- Flexible application by ground sprayer, airplane or overhead sprinklers.

Rates

YieldMax Liquid 10-10-10 rates - foliar

RATE	LITRES/ACRE
Low rate	1
Medium rate	2
High rate	3
Pea rate	1.5

Elements

N NITROGEN
P PHOSPHORUS
K POTASSIUM
B BORON
Fe IRON
Cu COPPER
Mn MANGANESE
Zn ZINC
Mo MOLYBDENUM

Application

YieldMax Liquid may be applied by ground sprayer, airplane or overhead sprinklers. YieldMax Liquid (10-10-10) is recommended for use as a source of plant nutrients in a fertilization program that relates to the fertility of the soil.

A normal rate of this product is 3.5 pounds per acre (5.61 kg/ha). YieldMax Liquid should be mixed with between 10 liters/ac and 100 liters/ac of water. YieldMax Liquid may be applied many times throughout the growing season. Applications are generally 10 to 14 days apart.

YieldMax WS is a foliar feed product and should be applied to green growing leaves. Can be applied alone, with pesticides, or with other fertilizers. YieldMax WS may be applied via ground sprayers (high-volume or low-volume), aircraft or fertigation systems.

Use rates vary from 2 lbs to 5 lbs/acre, depending on level of nutrient deficiency.

YieldMax WS 18-20-20 rates - foliar

RATE	PRODUCT PER ACRE (LBS)	ACRES PER BAG
Regular rate	5	11
Pea rate	2.75	20

Solubor®

All Crops

Product Overview

Boron (B) 20.5%

Key Benefits At A Glance

- Foliar applications of boron are effective in supplying sufficient boron for flowering and reproductive development in crops.
- The product has a fine particle size and is more soluble than Borax especially in cold water, making it the recommended choice for the application in solution.
- Solubor is one of the more commonly used product names for disodium octaborate tetrahydrate ($Na_2B_8O_{13}\cdot 4H_2O$).

Element

B
BORON

Application

Agronomic considerations: Used in soil and foliar sprays and in fertigation programs. Solubor is highly water soluble and is commonly applied in foliar sprays. Compatible with most pesticides.

General recommendations: Because the season for the most effective foliar application of boron is short, foliar sprays must be prepared quickly and accurately. Application rate is 2.4 lbs of Solubor, which provides 0.5 lb actual boron per acre.

Rates

Amounts of Solubor (20.5% B) to mix in spray tanks to supply of 0.5 lb of B/acre at various spray rates*

	SIZE OF TANK (GALLONS)					
SPRAY RATE (GALS/ACRE)	100	200	250	300	350	400
	POUNDS OF SOLUBOR REQUIRED					
10	24	49	61	73	85	97
15	17	33	41	49	57	65
20	12	24	30	36	43	49
25	10	20	24	29	34	39
30	8	16	20	24	28	32

*For tank sizes greater than 400 gallons, identify the desired spray rate and sum the pounds of Solubor required from the columns which add up to the size of a larger spray tank.

Ex) For a 750 gallon tank, sum the pounds of solubor required from the 400 gallon and 350 gallon columns.

Nexus Liquid

Copper 5%

All Crops

Product Overview

Copper (Cu) 5%
Sulphur (S) 3%

Key Benefits At A Glance

- Nexus Liquid Copper 5% is recommended to prevent and correct copper deficiencies of field, row, and turf crops.
- For foliar application in cereal crops.

Rates

Nexus Liquid Copper 5% Rates - Foliar

RATE	PRODUCT LITRES/ACRE	ACTUAL CU/ACRE (LBS)	ACRES PER 10 LITRES
Regular rate	1	0.13	10
Flag leaf rate wheat	0.5	0.065	20

Regular rate:

- Should be used on all crops prior to flag leaf.
- This rate can be used on barley at all stages.

Flag leaf rate on wheat:

- Should be used at flag leaf on Hard Red Spring Wheat prior to any head emergence.

Water volume:

- May use minimum of 5 gallons of water prior to flag leaf.
- May use a minimum of 10 gallons of water at flag leaf application.

*Do not apply to crops if the head has emerged from the boot.

Elements

Cu COPPER

S SULPHUR

Application

Agronomic considerations: Can be applied alone, with crop protection products, other fertilizers, or may be applied directly to the foliage of growing crops. Nexus Liquid Copper 5% may be applied via ground sprayers (high-volume or low-volume), aircraft or fertigation systems.

General recommendations: Use rates vary from 0.5 litres to 1 litre/acre, depending on copper deficiency.

Nexus Boron

10%

All Crops

Product Overview

Boron (B) 10%

Key Benefits At A Glance

- Nexus Boron 10% is an effective, readily available source of boron for soil and foliar applications to crops.

Rates

Nexus Liquid Boron 10% Rates - Foliar

RATE	PRODUCT LITRES/ACRE	ACTUAL B/ACRE (LBS)	ACRES PER 10 LITRES
Regular rate	0.5	0.15	20

Element

B

BORON

Application

Compatible with and may be applied in water or mixed with most liquid fertilizers, micronutrients, or crop production products.

Agronomic considerations: Nexus Boron 10% is an effective, readily available source of boron for soil and foliar applications for plants.

General recommendations: Use rates vary from 0.5 litres to 1 litre/acre, depending on boron deficiency.

Handling and blending considerations: For foliar application a rate of 0.5 litres/acre is generally adequate.

Nexus Liquid
Zinc 7%

All Crops

Product Overview

Zinc (Zn) 7%
Sulphur (S) 3.4%

Key Benefits At A Glance

- Nexus Liquid Zinc 7% is recommended to prevent and correct zinc deficiencies of field, row, vegetable and turf crops.
- For foliar application in all crops.

Rates

Nexus Liquid Zinc 7% Rates - Foliar

RATE	PRODUCT LITRES/ACRE	ACTUAL ZN/ACRE (LBS)	ACRES PER 10 LITRES
Regular rate	1	0.19	10
High rate	2	0.38	5

Elements

Zn ZINC

S SULPHUR

Application

Agronomic considerations: Can be applied alone, with crop protection products, other fertilizers, or may be applied directly to the foliage of growing crops. Nexus Liquid Zinc 7% may be applied via ground sprayers (high-volume or low-volume), aircraft or fertigation systems.

General recommendations: Use rates vary from 1 litre to 2 litres/acre, depending on level of zinc deficiency.

Nexus Liquid

Manganese 7.5%

All Crops

Product Overview

Manganese (Mn) 7.5%
Sulphur (S) 4%

Key Benefits At A Glance

- Nexus Liquid Manganese 7.5% is recommended to prevent and correct manganese deficiencies of field, row, vegetable, and turf crops.
- For foliar application in all crops and can be applied in combination with most crop protection products.

Rates

Nexus Liquid Manganese 7.5% Rates - Foliar

RATE	PRODUCT LITRES/ACRE	ACTUAL MN/ACRE (LBS)	ACRES PER 10 LITRES
Regular rate	0.67	0.14	15

Elements

Application

Agronomic considerations: Use alone, with crop protection products, with other fertilizers, or may be applied directly to the foliage of growing crops. Nexus Liquid Manganese 7.5% may be applied via ground sprayers (high-volume or low-volume), aircraft or fertigation systems. For foliar application in all crops excluding RoundUp Ready® crops.

General recommendations: Use rates vary from 0.5 litres to 1 litre/acre, depending on level of manganese deficiency.

Nitrogen Stabilizers

Protect Your Investment and Your World

All Crops

Product Overview

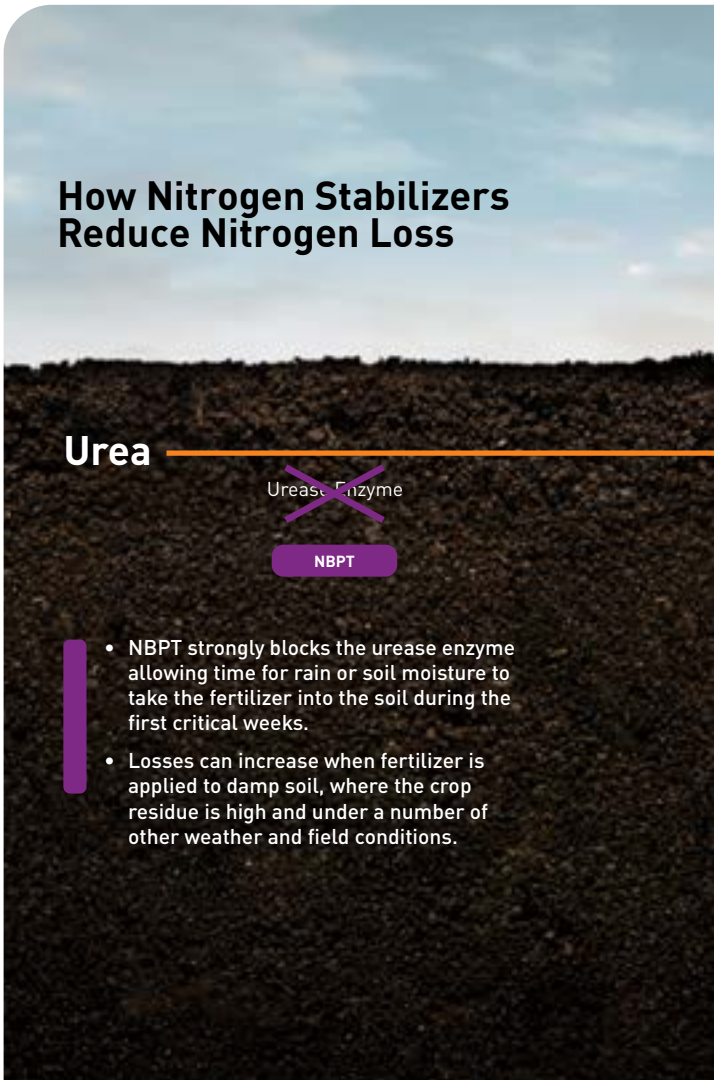
- Protect your nitrogen against leaching, denitrification and volatilization with our full line up of Nitrogen Stabilizer products.
- Triple action protection with our line up of NEON products.
- Flexible fall or spring application when tanked mixed with UAN, urea or NH3

Benefits of NexusBioAg's Line Up Of Nitrogen Stabilizers

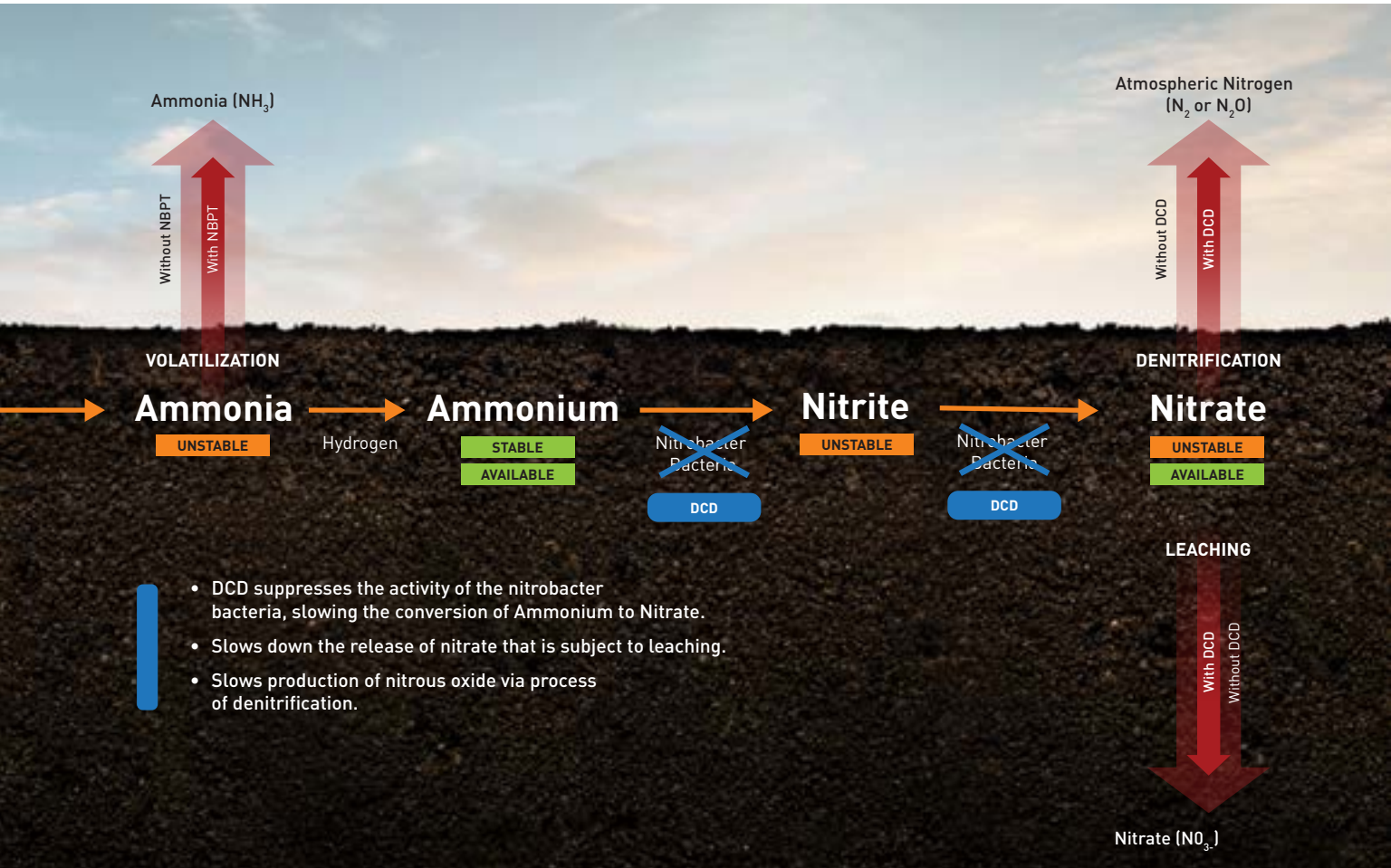
- Select the right stabilizer to protect nitrogen against loss.
- Take advantage of fall applications of nitrogen.
- Ensure that your plants have available nitrogen longer into the growing season for optimal yields and proteins.
- Using a stabilizer is insurance to protect your valuable nitrogen investment.
- We don't know what the growing season will bring, hedge your investment with the proper stabilizer.

Benefits of PENXCEL Technology:

- NEON Air, NEON Surface, and N-Yield use PENXCEL technology.
- PENXCEL drives active ingredients deeper into urea granules resulting in more effective protection of your investment.
- PENXCEL speeds the blending process.
  - With low viscosity, it pours quickly even in the cold weather. It easily coats and blends with fertilizer. It blends up to 25% faster than other industry standard formulations with granular fertilizer, saving time during the critical application season. It also is non-corrosive to your equipment.



PRODUCT	APPLICATION
NEON AIR	**Spring/Fall** Primary for applications on the soil surface where volatilization is the challenge, with the added protection from losses to denitrification and leaching.
NEON SURFACE	**Spring/Fall** Designed for broadcast or shallow banding applications, with triple protection against volatilization, leaching and denitrification.
N-YIELDOX NITROGEN STABILIZER	**Spring/Fall** Designed for application on the soil surface where volatilization is the challenge.



- DCD suppresses the activity of the nitrobacter bacteria, slowing the conversion of Ammonium to Nitrate.
- Slows down the release of nitrate that is subject to leaching.
- Slows production of nitrous oxide via process of denitrification.

Nitrogen Stabilizers

All Crops

Nitrogen

	UAN			UREA		
TIMING	Spring	Summer	Fall	Spring	Summer	Fall
METHOD	Band/Broadcast			Band/Broadcast		
STABILIZER	NEON SURFACE	NEON AIR	NEON SURFACE	NEON SURFACE	NEON AIR	NEON SURFACE
ACTIVES	17% NBPT & 25% DCD	30% NBPT & 15% DCD	17% NBPT & 25% DCD	17% NBPT & 25% DCD	30% NBPT & 15% DCD	17% NBPT & 25% DCD
RATE	1.5 L/MT	1 L/MT	1.5 L/MT	3 L/MT	2 L/MT	3 L/MT
WHY	UAN will be incorporated/banded in typically cool, wet soils. Provides balanced protection from losses if the weather turns hot, reducing dry volatilization. If the region receives rainfall, the DCD will aid in protection from leaching & denitrification.	UAN sideband or topdressed applications have high potential for volatilization losses if weather conditions are hot/dry. Get added protection from losses with NEON Air. If the nitrogen receives rainfall shortly after application, get added protection from leaching and denitrification.	Broadcast applications are highly not recommended. Banding UAN in fall/post harvest will require focused protection against losses to denitrification & leaching. Using NEON Surface will aid in keeping NH4 stable and also protect from volatlization losses.	UREA will be incorporated/banded in typically cool, wet soils. Ensure balanced protection from losses and reduce dry volatilization if the weather turns hot and dry with NEON Surface. If the region receives rainfall, the DCD will aid in protection from leaching & denitrification.	UREA sidebanded/top dressed will be applied with a large potential for volatilization losses if weather conditions are hot/dry. This is why there is the added protection in NEON Air. At the same time there is protection from leaching and denitrification, if the nitrogen receives rainfall shortly after application.	Broadcast and banding UREA in fall/post harvest will require a focused protection against losses to denitrification & leaching. Using NEON Surface will aid in keeping NH4 stable and also protect from volatlization losses.

DEFINITIONS

NBPT (N-butyl-thiophosphoric -triamide) strongly blocks the urease enzyme in soil, which in turn reduces nitrogen losses to volatilization. Keeping nitrogen in the stable NH4+ (Ammonium) form.

DCD (Dicyandiamide) inhibits the activity of the nitrosomonas bacteria in the soil, slowing the conversion of NH4+ (Ammonium) to NO3- (Nitrate), both of which are plant available forms. Once nitrogen is in the NO3- (Nitrate) form it is highly susceptible to rapid conversion to NO2- (Nitrogen Dioxide)/NO (Nitric Oxide)/N2O (Nitrous Oxide) all of which are easily lost due to being gaseous forms of nitrogen.

VOLATILIZATION is the loss of plant available nitrogen gassing off through the conversion of NH4+ (Ammonium) to NH3 (Ammonia).

DENITRIFICATION is the loss of nitrogen through the conversion of plant available nitrate to gaseous forms of N, such as: NO (Nitric Oxide), N2O (Nitrous Oxide), N2 (Dinitrogen gas).

LEACHING is the loss of plant available nitrogen in the form of nitrates, physically moving away from the root zone with water. Both nitrate and soil are negatively charged so NO3- (Nitrate) cannot be bound by the soil and is at risk of leaching.

NEON AIR

All Crops

Active Ingredients

NBPT 30%
DCD 15%

Primarily for application on the soil surface where volatilization is the challenge, with the added protection from losses to denitrification and leaching.

Features

- Protection of nitrogen from potential losses.
- Helps to create an efficient nitrogen source for all crops.
- Added to UAN to become a homogeneous liquid solution.
- Added to UREA to evenly coat and penetrate each granule to the core.
- Used in early spring and fall application of UREA or UAN
- Uses PENXCEL technology to penetrate granules deeper and improve blending.

Rates

NEON AIR Rates

FERTILIZER	LITRES/TONNE
Urea	2
UAN	1

Primary Protection From:

- Volatilization

Additional Protection From:

- Denitrification
- Leaching

Application

General recommendations: This nitrogen stabilizer is combined with urea or urea containing fertilizers prior to application. The combination, recognized as an enhanced efficiency fertilizer, can be incorporated or applied pre-plant, side-dress or used for surface applications. It helps to create an efficient nitrogen source for all crops. This product protects against nitrogen losses through volatilization, denitrification and leaching.

NEON SURFACE

All Crops

Active Ingredients

NBPT 17%
DCD 25%

Designed for broadcast or shallow banding applications with balanced protection against nitrogen loss.

Features

- Protection of nitrogen from potential losses.
- Helps to create an efficient nitrogen source for all crops.
- Added to UAN to become a homogeneous liquid solution.
- Added to UREA to evenly coat and penetrate each granule to the core.
- Used with early spring and fall applications of UREA or UAN.
- Uses PENXCEL technology to penetrate granules deeper and improve blending.

Rates

NEON SURFACE Rates

FERTILIZER	LITRES/TONNE
Urea	3
UAN	1.5

Protection From:

- Volatilization
- Denitrification
- Leaching

Application

General recommendations: This nitrogen stabilizer is combined with urea or urea containing fertilizers prior to application. The combination, recognized as an enhanced efficiency fertilizer, can be incorporated or applied pre-plant, side-dress or used for surface applications. It helps to create an efficient nitrogen source for all crops. This product protects against nitrogen losses through volatilization, denitrification and leaching.

Handling Conditions

General rate recommendations are based on average conditions. Rates may be adjusted higher as needed based on the field conditions, including the following:

1. Days of control needed: 20 millimeters of rain or irrigation are required to move urea into the soil.
2. Residue Level – Residues in excess of 30% present higher levels of urease and higher volatility can be expected.

N-YIELD CX™

NITROGEN STABILIZER

All Crops

Active Ingredients

NBPT 26.7%

Designed for application on the soil surface where volatilization is the challenge.

Features

- Helps to create an efficient nitrogen source for all crops.
- By slowing the urea conversion process to ammonia gas, less nitrogen is lost due to volatilization.
- Added to UAN to become a homogeneous liquid solution.
- Added to UREA to evenly coat and penetrate each granule to the core.
- Used in early spring and fall application of UREA or UAN.
- Uses PENXCEL technology to penetrate granules deeper and improve blending

Rates

N-Yield CX Rates

FERTILIZER	LITRES/TONNE
Urea	2
UAN	1.5

Protection From:

- Volatilization

Application

General recommendations: This nitrogen stabilizer is combined with urea or urea containing fertilizers prior to application. The combination, recognized as an enhanced efficiency fertilizer, can be incorporated or applied pre-plant, side-dress or used for surface applications. It helps to create an efficient nitrogen source for all crops. This product protects against nitrogen losses through volatilization.

3 Soil pH – Values higher than 7.0 pose risk of higher potential for volatility.

4 Poorly drained, waterlogged or heavily compacted soil.

5 Fields with porous soils, in areas with excessive water or rainfall.

6 Fields and crops that benefit from keeping the ammonium form of nitrogen available for a longer time.

NexusBioAg

SUSTAIN YOUR LEGACY.

If you would like more information or have questions, contact your local NexusBioAg Representative or visit nexusbioag.com

Inoculants | **Nitrogen Stabilizers** | **Micronutrients** | **Foliars**