TAURUS

THE FERTILITY COMPANY



2027

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PRESIDENT'S MESSAGE

A NOTE FOR 2027.



CRAIG DAVIDSON,
Founding Partner and President of Taurus

If you base all your decisions on what is currently happening around you, chances are you are at least one to two steps behind... The challenge we have in agricultural production is that, far too often, decisions are made based on the current state of the environment. Though understandable, given the wide swings in markets, weather, geopolitical tensions, world wars, currency, input costs, etc., there are many variables that make it tough to think further into the future. Take the last year, when decisions made through the winter of 2026, based on the current environment, looked completely different six months later.

Here at Taurus, we have always focused on controlling what we can by understanding the whys behind the hows and have worked towards planning for success in both production volume and quality, while never taking our eye on ultimate measurable profitability for our progressive customers. We have sought out and created the best technologies that focus on optimizing Seed, Soil, and Plant Health to ensure every dollar spent can offer a measurable return in the year it is spent.

2027 will mark another year of growth for the Taurus Group of Companies as we continue to add regional expertise both here in Canada and Australia. Both markets continue to grow, and with added quality production on all fronts of our current business, we feel it is necessary to support our current customers at a deeper level and broaden our base as more and more farms implement our product solutions, allowing them to remain progressive while focusing on maximizing their return on investment per acre.

Today, we are fortunate to have our effective solutions working in countries around the world, including Sri Lanka, Ukraine, Germany, South Africa, Australia, Canada, and the USA.

Our 2027 Fertility Guide is our best yet, with agronomic, product, and usability information in the same place. We have added several new solutions for 2027 that we feel fit a broad range of farming operations:

- Multi-nutrient, seed-safe, highly efficient options for all growers. Check out TAPP 2X and PK Plus in this realm.
- We have refined our approach to foliar nutrition with an all-in-one foliar, GFB (GrainFill B), for seed filling during reproduction.
- We are adding a new biological called Uptake that is applied to fertilizer and enhances the uptake and usability of P, K, and N in all crops.
- Nitrogen management has never been more important with the nitrogen losses we witnessed in 2026 and the cost of inputs, which remains high. TSN is now a proven option, used on many acres in 2026 as both a broadcast and shallow-band application. The biggest grower opportunity in the future is managed N that is placed two inches or shallower.
- Our Stabilizer Line from Active Agri is proven both logistically and agronomically, so please treat your nitrogen, whether it be urea, UAN, or ammonia.

Use this Guide to start planning ahead, and don't be afraid to reach out to one of our area managers or dig deeper into one of our online resources at Taurus Ag to educate yourself!

Healthy soils lead to healthy plants, which lead to healthy economics and happy agriculturalists!

ENJOY TODAY, PURSUE TOMORROW!

OUR STORY

TAURUS GROUP OF COMPANIES.

Taurus Agricultural Marketing was founded in 2001 with a bold goal: to redefine fertility in Canadian agriculture. What began as two agronomists challenging the status quo has grown into a powerhouse of agronomic innovation, distribution, and product development.

Today, the Taurus Group of Companies (TGC) unites: Taurus Agricultural Marketing — our boots-on-the-ground, agronomy-first distribution and retail execution team Active AgriScience Canada — our science-driven research, formulation, and manufacturing division Active AgriScience Australia — our global extension, bringing made-in-Canada technology to new climates and regions In 2024, Taurus acquired full ownership of Active AgriScience, cementing a partnership over a decade in the making and laying the groundwork for future expansion.

2001
Taurus is founded.

2013
Strategic partnership with Active Agri-Science begins.

2024
Taurus acquires full ownership of Active AgriScience.

2025
Claude Sander, managing partner of TGC, is appointed President of Active AgriScience.

2026
Taurus Agricultural Marketing completes 25 years of business.

OUR CORE VALUES

TRANSPARENCY THAT BUILDS TRUST

Clear, data-driven insights empower every fertility recommendation we make. No guesswork, just honest solutions for crop nutrition.

INTEGRITY IN EVERY RELATIONSHIP

We're committed to long-term partnerships with retailers and growers, built on trust, consistency, and shared success in sustainable innovative agriculture.

FIELD-PROVEN AGRONOMY

Every fertility product is backed by rigorous validation and independent third-party research: real results, not just promises, for optimal crop performance.

FULL-SERVICE SUPPORT

We don't just sell products; we educate, empower, and stand behind every acre with end-to-end support for retail, agronomy, and growers alike.

OUR PARTNERS

MEET OUR VALUED PARTNERS.

ACTIVE AGRISCIENCE

Active AgriScience specializes in patented biostimulants, nitrogen stabilizers, and foliar nutrition products designed to help growers maintain yield potential and maximize crop performance.

activeagriscience.com

AGTIV® (BY PREMIER TECH)

AGTIV® provides both bacterial and fungal inoculants that boost plant growth, nutrient uptake, and nitrogen fixation, delivering effective biological solutions with measurable results.

ptagtiv.com

ICL GROWING SOLUTIONS

ICL is the exclusive miner of Polyhalite, a natural multi-nutrient mineral for season-long crop nutrition. Available in Polysulphate Premium®, Polysulphate® Granular, and ICL PKpluS®.

icl-growingsolutions.com

OSTARA

Ostara, known for commercializing Struvite, delivers a Root-Activated™ phosphorus solution that is efficient, seed-safe, and sustainable. Available in CG P2X, CG Synchro, and CG Pearl (organic).

ostara.com

SUL4R-PLUS®

SUL4R-PLUS® provides controlled-release sulphate nutrition for season-long crop availability, delivered to Canadian growers through our partnership with HELM.

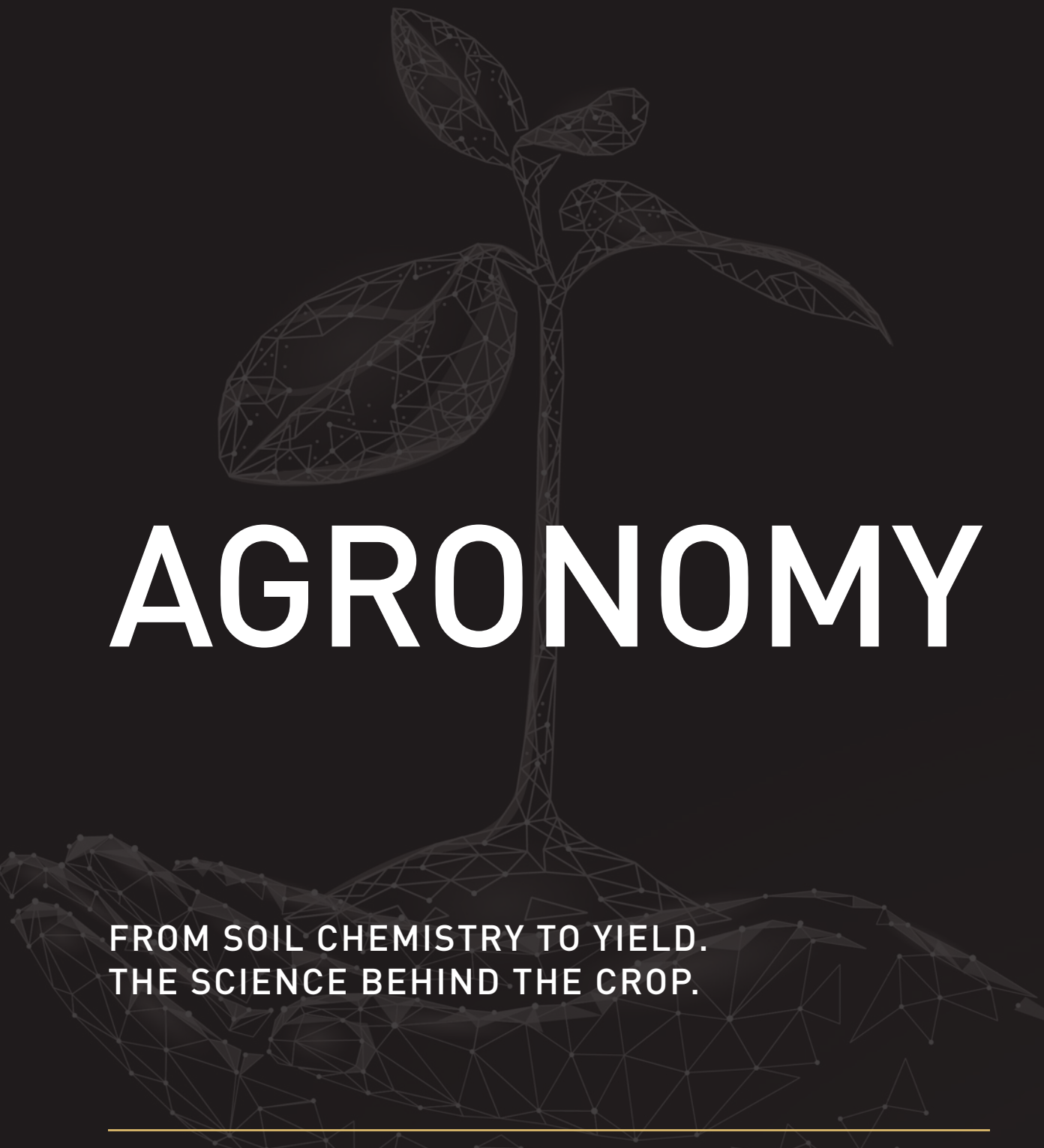
sul4r-plus.com

CORVIAN LABS

Corvian Labs, based in Winnipeg, MB, provides soil and plant analysis services, delivering prompt, reliable results that help growers optimize fertility, diagnose challenges, and maximize returns.

labs.corvian.com

NOTES



AGRONOMY

FROM SOIL CHEMISTRY TO YIELD.
THE SCIENCE BEHIND THE CROP.

SEED FERTILITY

Rhizobium, biological fixation, and the role of soil biology in crop establishment.

SOIL FERTILITY

pH, salt index, CEC, and the chemical foundations of nutrient availability

PLANT FERTILITY

Nutrient uptake, identifying deficiencies, and crop response by growth stage.

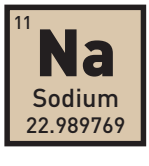
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Before you apply any fertilizer, understanding how salt index, soil pH, and product formulation affect nutrient availability can protect your investment. The following charts help ensure every dollar you spend translates to plant uptake, not waste.

Fertilizer Type	Analysis	Salt Index	Bulk Density
Nitrogen / Sulphur			
Ammonia	82% N	47.1	N/A
Ammonium nitrate	34% N	104	45-58 lbs
Urea	46% N	74.4	44-48 lbs
UAN	28-0-0-0 (39% ammonium nitrate, 31% urea)	63	N/A
Ammonium sulfate	21% N, 24% S	88.3	47-53 lbs
Ammonium thiosulfate	12% N, 26% S	90.4	N/A
Gypsum	23% Ca, 17% S	8.1	65-70 lbs
SUL4R-PLUS®	21% Ca, 17% S	5	58-60 lbs
Polysulphate® Granular	14% K, 19.2% S, 12.2% Ca, 3.6% Mg	34	93 lbs
Polysulphate® Premium	13.3% K, 18.2% S, 11.8% Ca, 3.3% Mg	34	85 lbs
TSN	46% N with DMPP & NBPT	74.4	44-48 lbs
ICL PK PLUS	24% P, 6% K, 9.1% S, 15.4% Ca, 1.8% Mg	17	68.4 lbs
TAPP 2X	6% N, 27% P, 7.5% K, 9% S, 5% Ca, 8% Mg	23	73 lbs
Phosphorus			
DAP	18% N, 46% P	29.2	55-60 lbs
MAP	11% N, 52% P	26.7	60-65 lbs
APP	10% N, 34% P	20	N/A
ICL PK PLUS	24% P, 6% K, 9.1% S, 15.4% Ca, 1.8% Mg	17	68.4 lbs
TAPP 2X	6% N, 27% P, 7.5% K, 9% S, 5% Ca, 8% Mg	23	73 lbs
CG Synchro 50 Max	10% N, 47% P, 5% Mg	8	55 lbs
CG P2X	9% N, 42% P, 9% Mg	7.7	60 lbs
CG Pearl	5% N, 28% P, 10% Mg	7	50 lbs (300 SGN)
Potassium			
Potassium chloride	62% K	120.1	58-65 lbs
Potassium sulfate	50% K, 18% S	42.6	42-48 lbs
Potassium thiosulfate	25% K, 17% S	68	N/A
Polysulphate® Granular	14% K, 19.2% S, 12.2% Ca, 3.6% Mg	34	93 lbs
Polysulphate® Premium	13.3% K, 18.2% S, 11.8% Ca, 3.4% Mg	34	85 lbs
Miscellaneous			
Manure salts (20%)		112.7	



SALT INDEX

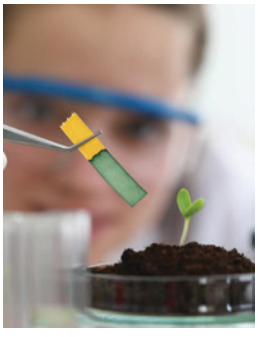
Measures the potential of a fertilizer to damage seeds or young plants through salt injury. Fertilizers with a high salt index can draw water away from roots, impacting germination and early growth. Choosing the right fertilizer with an appropriate salt index can protect stand establishment.

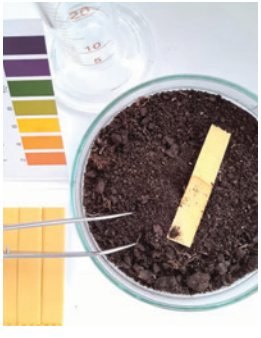
WHY DOES SALT INDEX MATTER? NUTRIENT EFFICIENCY STARTS HERE.

All fertilizers are salts. When applied to soil, they raise the salt concentration of the soil solution, which increases osmotic pressure and makes it harder for roots to absorb water. At high enough concentrations, this can pull water out of the plant instead, causing "fertilizer burn," poor germination, stunted growth, or plant death.

Seedlings are especially vulnerable. Choosing a lower salt index fertilizer reduces this risk, particularly on sandy soils, in dry conditions, or for in-furrow placement, where salts aren't diluted as much.

UNDERSTANDING SOIL pH AND ITS IMPACT ON NUTRIENT AVAILABILITY





Why Soil pH Matters

Soil pH measures acidity or alkalinity and directly affects nutrient availability. When pH is too low (acidic) or too high (alkaline), key nutrients can become "locked up" and unavailable to plants, even if present in the soil. The optimal pH range for most crops is 6.0 to 7.5, where nutrients like nitrogen, phosphorus, and potassium are most accessible.

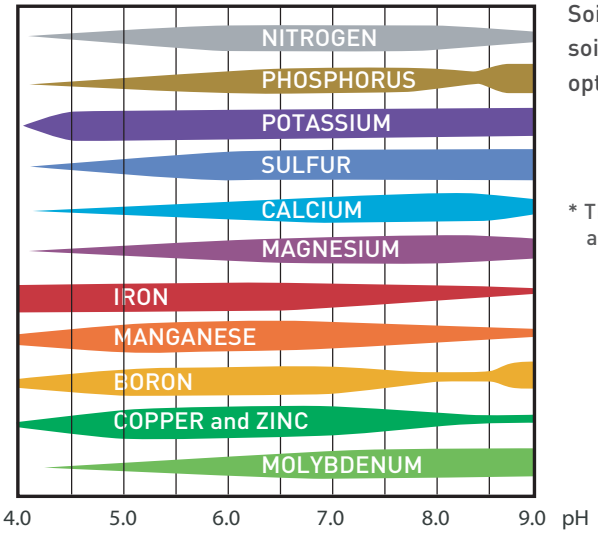
How pH Affects Your Crops

Acidic Soils (Low pH): Reduced availability of phosphorus, calcium, and magnesium. Toxic elements like aluminum may increase. Microbial activity and nitrogen fixation decline. Alkaline Soils (High pH): Micronutrients such as iron, manganese, zinc, and copper become less available. Phosphorus can bind with calcium, limiting uptake.

Understanding Fertilizer Efficiency and Soil pH

Dr. Cliff Snyder's chart highlights that nutrient efficiency is highest in the optimal pH range. Outside this range, efficiency drops sharply. For example, phosphorus availability declines in acidic soils, while micronutrient uptake is limited in alkaline conditions. Managing pH with the right amendments improves nutrient use efficiency, reduces input waste, and boosts return on investment.

pH EFFECT ON NUTRIENT AVAILABILITY*



Soil pH affects nutrient accessibility. Acidic or alkaline soils can lock nutrients away; this chart shows the optimal range for uptake.

* The width of bar represents relative availability of each nutrient.

Soil pH	% Fertilizer Efficiency			% Fertilizer Wasted
	N	P	K	
5.0	53	34	52	54
5.5	77	48	77	33
6.0	89	52	100	20
7.0	100	100	100	0

Dr. Cliff Snyder



FERTILIZER EFFICIENCY

This table represents the percentage of applied nutrients absorbed by the crop. The higher the efficiency, the greater the ROI.

HOW TO USE THIS INFORMATION ON YOUR FARM

Regular Soil Testing

The most important step is to conduct regular soil tests to determine the pH of your fields. This will give you a baseline to work from and help you make informed decisions.

Targeted Amendments

Based on your soil test results, you can apply amendments to adjust the pH to the optimal range for your crop

Improved Fertilizer Efficiency

By maintaining an optimal soil pH, you ensure that the fertilizers you apply are used more efficiently by your crops. This not only improves your yields but also maximizes your return on investment.

WHAT YOUR SOIL TEST ISN'T TELLING YOU (YET).

Soil tests show what's present. This chart shows what crops actually remove. Matching supply with demand by crop and season is the fastest path to ROI.

Part 1 of 2

Crop System		Pounds of Actual Macronutrients					
		Nitrogen	Phosphate	Potash	Sulfur	Calcium	Magnesium
Grains							
Spring Wheat (Per Bushel)	Uptake[1]	2.3	0.8	2	0.25	0.19	0.17
	Removal[2]	1.6	0.6	0.45	0.13	0.002	0.09
Winter Wheat (Per Bushel)	Uptake	1.4	0.6	1.42	0.2	0.16	0.15
	Removal	1.1	0.5	0.34	0.14	0.002	0.08
Barley (Per Bushel)	Uptake	1.4	0.55	1.35	0.16	0.11	0.08
	Removal	1	0.42	0.32	0.09	0.003	0.05
Oats (Per Bushel)	Uptake	1.1	0.4	1.45	0.13	0.13	0.07
	Removal	0.62	0.26	0.19	0.05	0.02	0.04
Corn (Per Bushel)	Uptake	1.53	0.63	1.28	0.15	0.07	0.16
	Removal	1	0.44	0.28	0.07	0.01	0.07
Fall Rye (Per Bushel)	Uptake	1.7	0.82	2.33	0.29	0.26	0.14
	Removal	1.14	0.45	0.36	0.09	0.06	0.08
OilSeeds							
Canola (Per Bushel)	Uptake	3.3	1.45	2.3	0.6	1.22	0.35
	Removal	1.92	1.05	0.52	0.34	0.13	0.15
Flax (Per Bushel)	Uptake	3	0.85	1.8	0.56	0.55	0.36
	Removal	2.2	0.65	0.6	0.23	0.14	0.22
Sunflower (1 - CWT)	Uptake	3.75	1.3	1.95	0.45	2.73	1.91
	Removal	2.7	0.8	0.6	0.25	0.16	0.35
Pulse Crops							
Peas (Per Bushel)	Uptake	3	0.83	2.75	0.25	0.48	0.16
	Removal	2.35	0.7	0.71	0.13	0.003	0.07
Lentils (Per Bushel)	Uptake	3.03	0.83	2.6	0.3	NA	NA
	Removal	2.03	0.63	1.1	0.17	NA	NA
Soybeans (Per Bushel)	Uptake	5.2	1	3.4	0.35	2.04	0.67
	Removal	3.8	0.84	0.83	0.11	0.11	0.17
Dry Beans (1 - CWT)	Uptake	4.67	1.39	3.95	0.34	3.07	0.71
	Removal	3.5	1.12	1.88	0.22	0.37	0.22
Faba Beans (1 - CWT)	Uptake	5.7	2.0	4.2	0.3	2.8	0.5
	Removal	3.4	1.2	1.0	0.1		
Forages - 1 Dry Tonne							
Alfalfa (Dry Basis)	Removal	60	15	63	6.6	30	7
Grass (Dry Basis)	Removal	37	11	47	4.67	16.25	4
Barley Silage (Dry Basis)	Removal	40	13.33	29.33	4.67	NA	NA
Corn Silage (Dry Basis)	Removal	34	14	44	2.8	5	3.25
Specialty Crops							
Potatoes (1 - CWT)	Uptake	0.56	0.17	0.75	0.05	0.12	0.09
	Removal	0.32	0.1	0.55	0.03	0.001	0.03
Sugarbeets (Per Tonne)	Uptake	10.5	3.4	19.25	1.65	NA	3
	Removal	4.45	2.05	7.25	0.65	NA	NA

*1 - Uptake = Total nutrient taken up by the crop to grow and develop.
*2 - Removal - Nutrient removed in harvested portion of the crop (grain, seed or fruit).
-There are 454 Grams in a lb to convert on the micronutrient range.
- Pulses and Legumes can achieve a high percentage of their nitrogen requirements from the atmosphere through inoculation.
-1 - CWT = 100 lbs of grain. Ex 20 CWT of Sunflowers = 2000 lbs of grain production.

Conversion Factors

Tonne (metric)/hectare x 0.446 = ton/acre
Ton/acre x 2.24 = tonne/hectare
Tonne x 1.102 = ton
Ton x 0.9072 = tonne
Kilogram (kg) x 2.205 = pound
Pound x 0.454 = kilogram (kg)
Hectare x 2.472 = acre
Kilogram/hectare x 0.891 = pound/acre
Pound/acre x 1.12 = kilogram/hectare
Acre x 0.405 = hectare
P x 2.3 = P_2O_5
P_2O_5 x 0.43 = P
K x 1.2 = K_2O
K_2O x 0.83 = K

Part 2 of 2

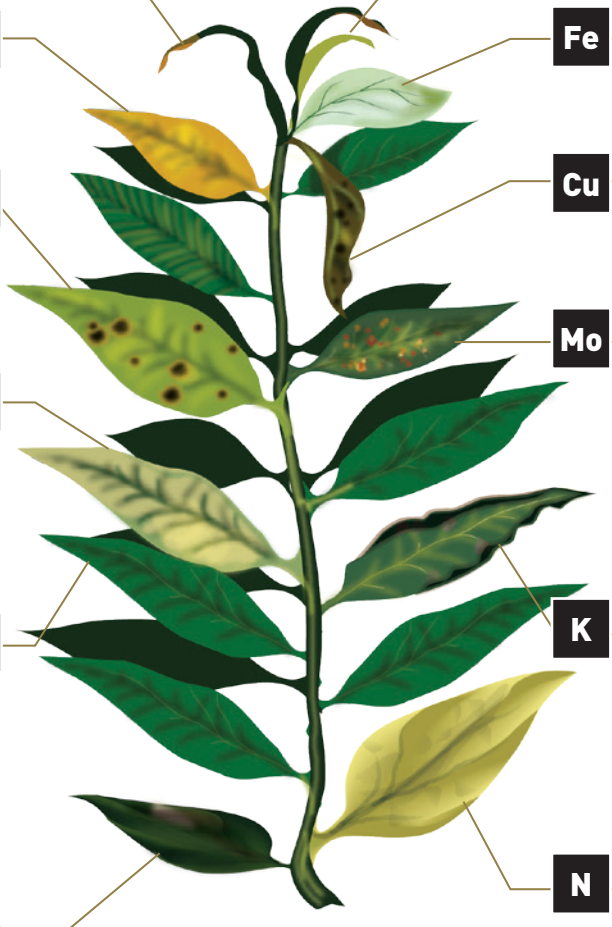
Crop System	Grams of Actual Micronutrients				
	Zinc	Manganese	Copper	Boron	Iron
Grains					
Spring Wheat (Per Bushel)	3.48	2.03	0.53	1.67	8.48
	1.55	1.08	0.15	0.48	3.58
Winter Wheat (Per Bushel)					
Barley (Per Bushel)	1.24	0.62	0.38	1.34	3.54
	0.86	0.48	0.34	0.67	2.05
Oats (Per Bushel)	0.99	1.04	0.36	1.04	9.13
	0.69	0.69	0.18	0.54	6.96
Corn (Per Bushel)	1.22	1.11	0.2	0.47	3.03
	0.96	0.12	0.06	0.15	0.76
Fall Rye (Per Bushel)					
OilSeeds					
Canola (Per Bushel)	3.58	1.67	0.6	3.7	20.55
	1.31	0.96	0.12	1.08	14.34
Flax (Per Bushel)	3.15	1.77	0.88	3.03	5.55
	2.4	0.63	0.25	0.76	2.65
Sunflower (1 - CWT)	2.7	4.29	1.72	6.38	12.27
	1.84	0.86	0.86	0.98	1.84
Pulse Crops					
Peas (Per Bushel)	4.54	0.76	0.34	1.58	4.61
	1.24	0.28	0.14	0.48	1.99
Lentils (Per Bushel)					
Soybeans (Per Bushel)	1.78	4.54	0.49	2.47	13.42
	1.18	0.69	0.3	0.79	7.11
Dry Beans (1 - CWT)	2.35	6.05	0.34	2.35	26.23
	1.68	1.01	0.24	0.67	3.36
Faba Beans (1 - CWT)					
Forages - 1 Dry Tonne					
Alfalfa (Dry Basis)					
Grass (Dry Basis)					
Barley Silage (Dry Basis)					
Corn Silage (Dry Basis)					
Specialty Crops					
Potatoes (1 - CWT)	0.8	2.04	0.16	0.31	3.54
	0.36	0.1	0.13	0.14	1.46
Sugarbeets (Per Tonne)					

The guidelines in nutrient uptake and removal values in this chart are general estimates. They are based on typical nutrient concentrations and yields for good growing conditions in Western Canada. Crop uptake and removal studies have been shown to vary 15% either way of the above listed numbers for different crops. Actual uptake and removal will vary with crop yield, crop variety and soil fertility from year to year. This chart is to accompany an in-depth soil analysis from an accredited lab. Crop fertility requirements will differ from these nutrient removal values. Crops are not able to extract all available plant nutrients from the soil, and fertilizers are not 100% efficient. For any given yield, the total nutrient supply in the soil (soil plus added fertilizer) will be somewhat greater than the amount removed by the crop. The best way to determine fertilizer requirements is regular soil and plant tissue analysis accompanied with a good Crop Nutrient Uptake and Removal Chart. Crop uptake and removal rates will vary by variety. Newer varieties and hybrid crops may have a more aggressive nutrient demand.

Chart References: CFI Nutrient Uptake and Removal - Western Canada 2001, Eastern Canada 2001 | A&L Agronomy Handbook | Nutrient Content, Uptake Pattern and Carbon: Nitrogen Ratios of Prairie Crops, Manitoba Agriculture, Food and Rural Initiatives 2007.

HOW TO DIAGNOSE & CORRECT HIDDEN YIELD LOSSES

Many deficiencies go unseen until yield suffers. Use this guide to spot the signs early and respond with targeted nutrition.



BORON – B
Discolouration of leaf buds. Breaking and dropping of buds.

SULPHUR – S
Leaves light green. Veins pale green. No spots.

MANGANESE – Mn
Leaves pale in colour. Veins and venules dark green and reticulated

ZINC – Zn
Leaves pale, narrow and short. Veins dark green. Dark spots on leaves and edges

MAGNESIUM – Mg
Paleness from leaf edges. No spots. Edges have cup shaped folds. Leaves die and drop in extreme deficiency

PHOSPHORUS – P
Plant short and dark green. In extreme deficiencies turn brown or black. Bronze colour under the leaf.

CALCIUM – Ca
Plant dark green. Tender leaves pale. Drying starts from the tips. Eventually leaf buds die.

IRON – Fe
Leaves pale. No Spots. Major veins green.

COPPER – Cu
Pale pink between the veins. Wilt and drop.

MOLYBDENUM – Mo
Leaves light green/ lemon yellow/ orange. Spots on whole leaf except veins. Sticky secretions from under the leaf.

POTASSIUM – K
Small spots on the tips, edges of pale leaves. Spots turn rusty. Folds at tips.

NITROGEN – N
Stunted growth. Extremely pale colour. Upright leaves with light green/yellowish. Appear burnt in extreme deficiency.

The colours represented are indicative. They may vary from plant to plant.

The nutrient deficiency chart helps identify symptoms in crops and match them to the lacking nutrient. If deficiencies are spotted mid-season, reference the Primers & Foliars section for spray solutions to correct the issue quickly.

DEFICIENCY SYMPTOMS		MADE WORSE BY
• Foliage yellowing first • Stunted plants • Smaller fruit, lower yields	**N**	• Extreme low or high pH • Fast growing crops
• Severe stunting, leaf die back • Leaves, stems and veins dark green to purple • Delayed maturity • Poor seed development	**P**	• Very acidic or calcareous condition • Cold conditions • Poorly developed root systems • Low Phosphorus, high Iron
• Leaf distortion & curling • Marginal leaf scorch • Late season blotchy chlorosis • Poorly developed root system	**K**	• Acidic conditions • High Calcuim and Magnesuim
• Leaves are light green / yellow • Plants are stunted • Delayed maturity	**S**	• Acidic conditions • Poor aeration
• Mottled chlorosis first on old leaves, moving to new growth • Crop stunting	**Mn**	• High pH • Organic conditions • Prolonged cold periods
• Stunted growth, small malformed leaves • Interveinal chlorosis, striping in grasses • Twig die-back	**Zn**	• Organic conditions • High pH • High Phosphorus fertilization
• Interveinal chlorosis and necrosis especially on older leaf tips • Drooping leaves • Excessive premature fruit drops	**Mg**	• Very acidic conditions • High Potassium or Calcuim
• Poor root development • Premature shedding of blossoms and buds • Deformed terminal leaves / dead terminal buds	**Ca**	• Acidic conditions • High Aluminum
• Death of terminal growth • Thick brittle leaves • Poor fruit set / malformed fruit	**B**	• High Nitrogen or Calcuim • High soil pH • Alkaline conditions
• Marginal chlorosis • Shoot die-back, stunted growth • Necrotic areas on terminal leaves	**Cu**	• Organic conditions • High Nitrogen application • Water stressed plants
• Interveinal chlorosis, young leaves first • Stunted growth	**Fe**	• High pH • Water logged soil • Calcareous conditions • High Copper, Mangnese, Zinc
• Reduced nodulation on legumes • Poor growth, pale leaves	**Mo**	• Low pH

NUTRIENT FUNCTIONS IN THE PLANT

UNDERSTANDING NUTRIENT FUNCTION INSIDE THE PLANT IMPROVES FERTILITY DECISIONS.

- Primary building block for amino acids, protein, & protoplasm
- Critical for flower differentiation, rapid shoot growth, bud vigor, & fruit set
- Acts as a catalyst for other elements

N

- Important for energy transfer & storage
- Formation of nucleic acids
- Promotes root, flower, & seed development

P

- Necessary for the formation of sugars & starches
- Essential for oil production
- Enzyme activator
- Improves cold weather tolerance

K

- Component of amino acids & proteins
- Aids in nodule formation of sugars & starches
- Stabilizes Nitrogen

S

- Necessary for the formation of sugars & starches
- Aids in Nitrogen utilization & assimilation
- Aids in chlorophyll synthesis

Mn

- Synthesis of Auxins & protein
- Needed for uniform maturity
- Important for Calcium translocation

Zn



THE ROLE OF EACH NUTRIENT. WHY IT MATTERS FOR ROI

EACH ELEMENT SUPPORTS YIELD, PROTEIN, AND STRESS TOLERANCE DIFFERENTLY.



Mg

- Enzyme activator
- Chlorophyll synthesis
- Aids in seed germination
- Aids in the use of Phosphorus

Ca

- Aids in cell wall structure
- Necessary for early root growth
- Regulates nutrient uptake and movement throughout the plant

B

- Pollen tube formation
- Important for early growth
- Necessary for cell division
- Aids in Calcium translocation

Cu

- Critical for photosynthesis
- Necessary for seed development
- Component for several enzymes

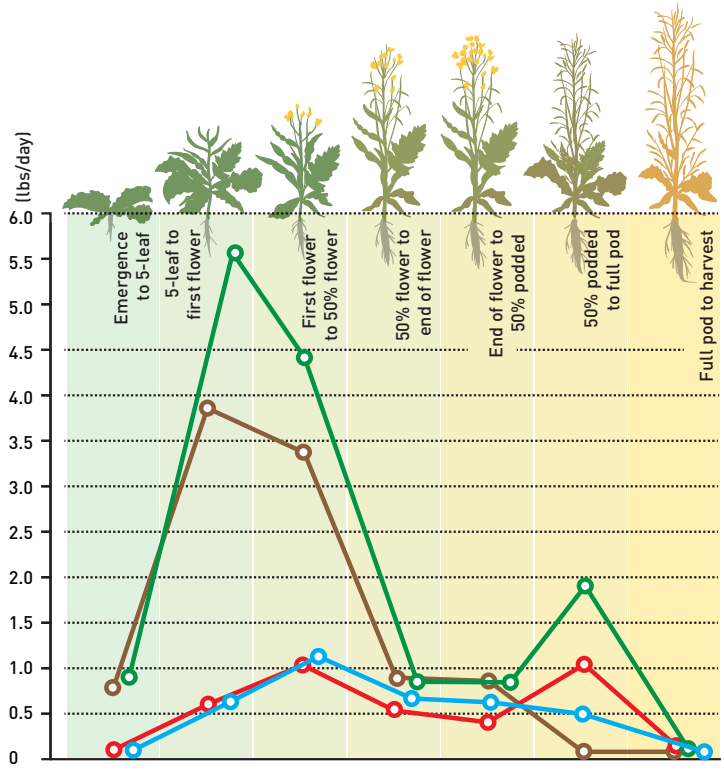
Fe

- Chlorophyll formation
- Activator for respiration
- Enzyme activation

Mo

- Nitrogen fixation and metabolism
- Iron and Phosphorus metabolism

NUTRIENT UPTAKE BY CROP DEVELOPMENT STAGE



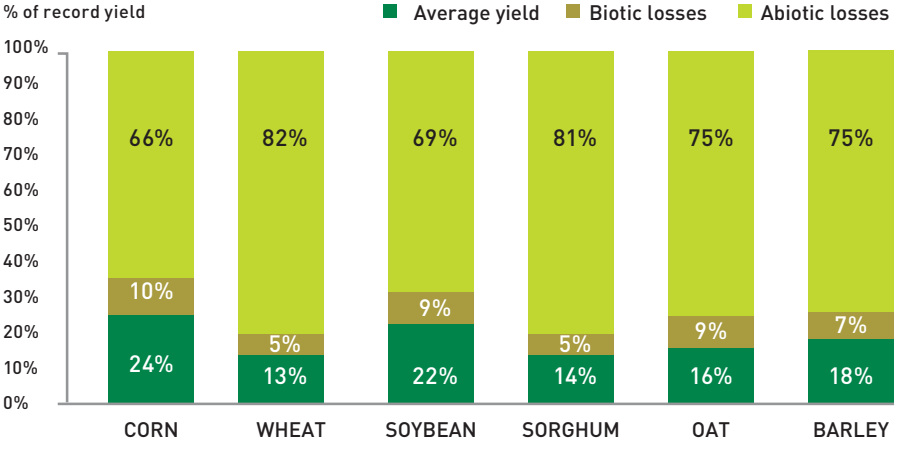
N	0.77	3.85	3.46	0.96	0.92	0.05	0.05
P_2O_5	0.14	0.66	1.01	0.57	0.48	1.08	0.14
K_2O	0.88	5.53	4.44	0.83	0.77	1.81	0.17
S	0.11	0.68	1.17	0.69	0.65	0.50	0.05

Align fertilizer timing to growth stages for efficiency.

Nutrient Uptake by Crop Development Stage. Canola, Melfort

Shows when canola takes up the most nutrients during its growth cycle. Matching fertilizer applications to peak uptake times ensures nutrients are available when the crop needs them most.

YIELD IMPACT FROM ABIOTIC LOSSES FOR MAJOR CROPS

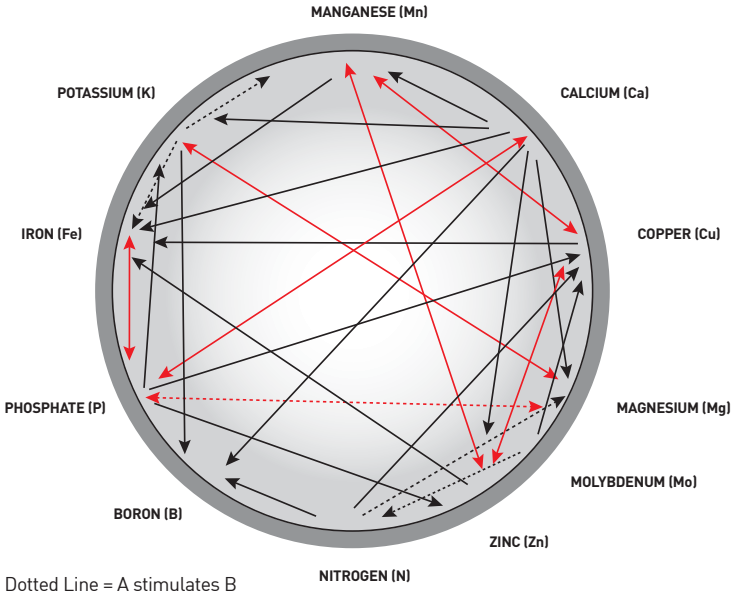


Yield Impact from Abiotic Losses

Illustrates how environmental stresses such as drought, heat, frost, and nutrient stress reduce yield potential. Recognizing and managing these stresses early can protect production.

Source: Biochemistry and Molecular Biology of Plants; Buchanan, Gruissem, Jones; American Society of Plant Physiologists, 2000

MULDER'S NUTRIENT INTERACTION CHART



Dotted Line = A stimulates B
Solid Line = A suppresses B
Red Line [dotted or solid] = mutual stimulation/suppression

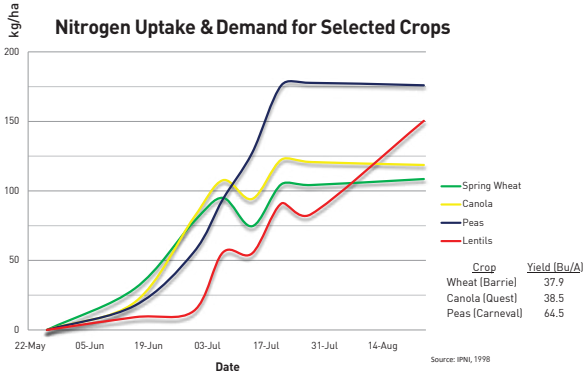
Nutrient Interactions: Why Balance Matters

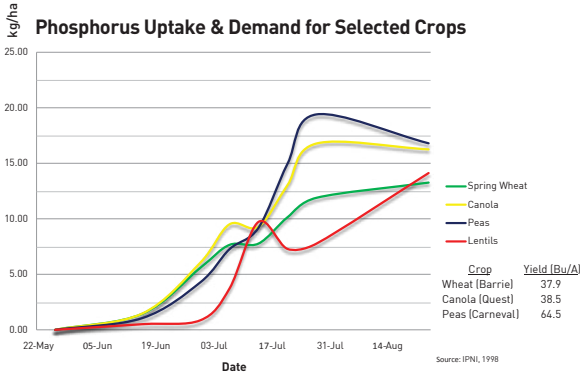
Too much of one nutrient can block another. This chart shows how to build balanced fertility programs and prevent antagonisms.

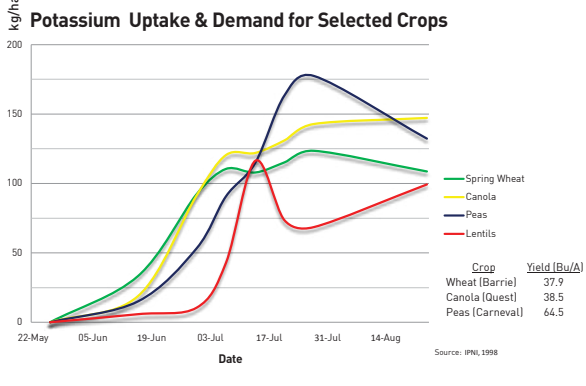
MULDER'S CHART illustrates how nutrients in the soil interact, showing which ones work synergistically and which can antagonize each other. For example, too much potassium can reduce magnesium uptake, while adequate phosphorus can enhance zinc availability. Understanding these interactions helps optimize fertility plans, prevent hidden deficiencies, and ensure that applied nutrients actually reach the crop.

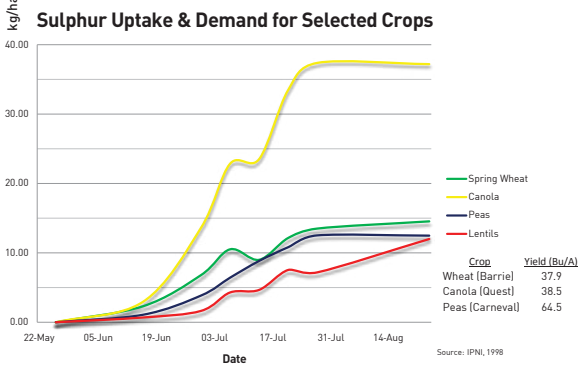
Do you know what nutrient is missing from the chart? Do you know why it's not listed?

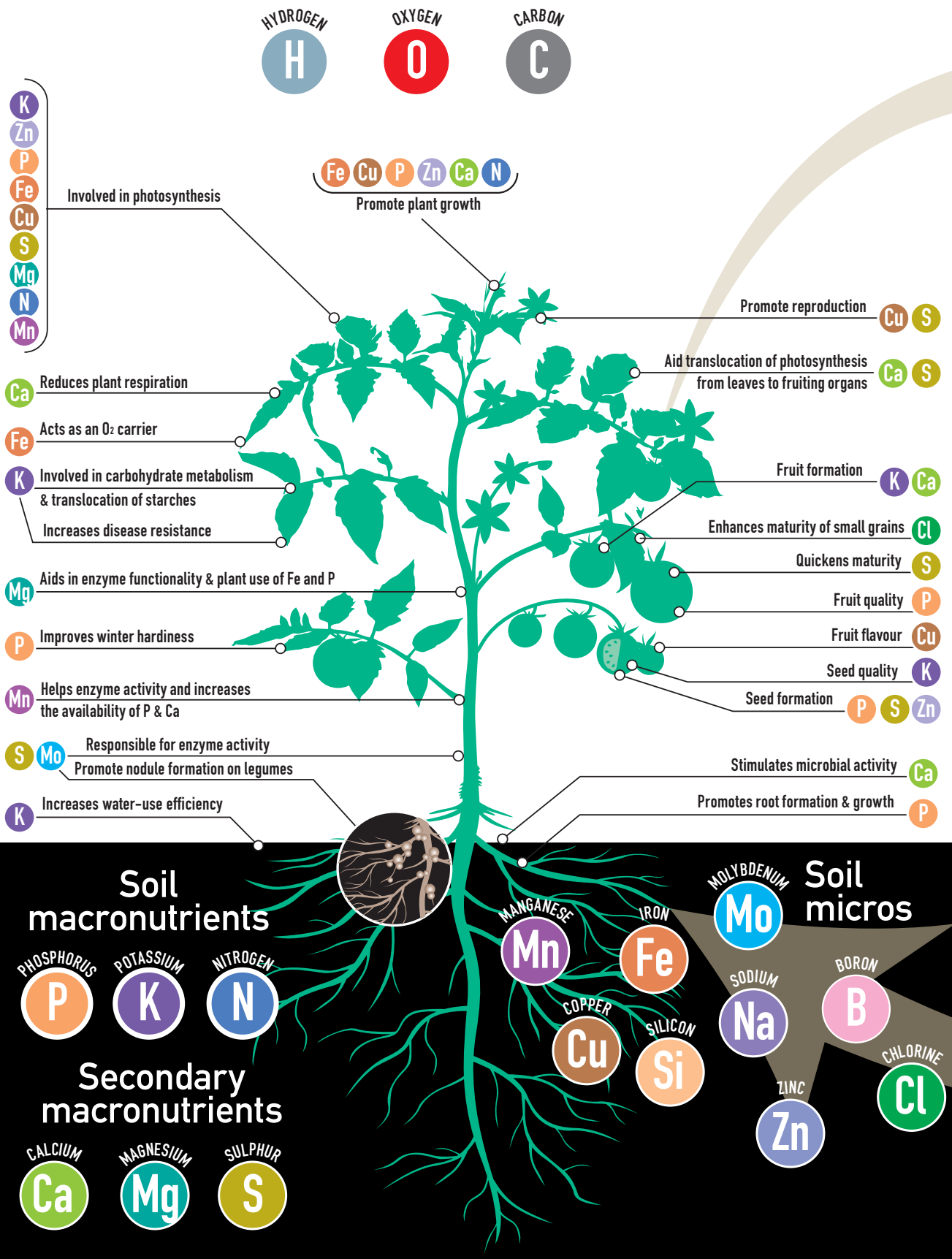
NUTRIENT DEMAND BY CROP

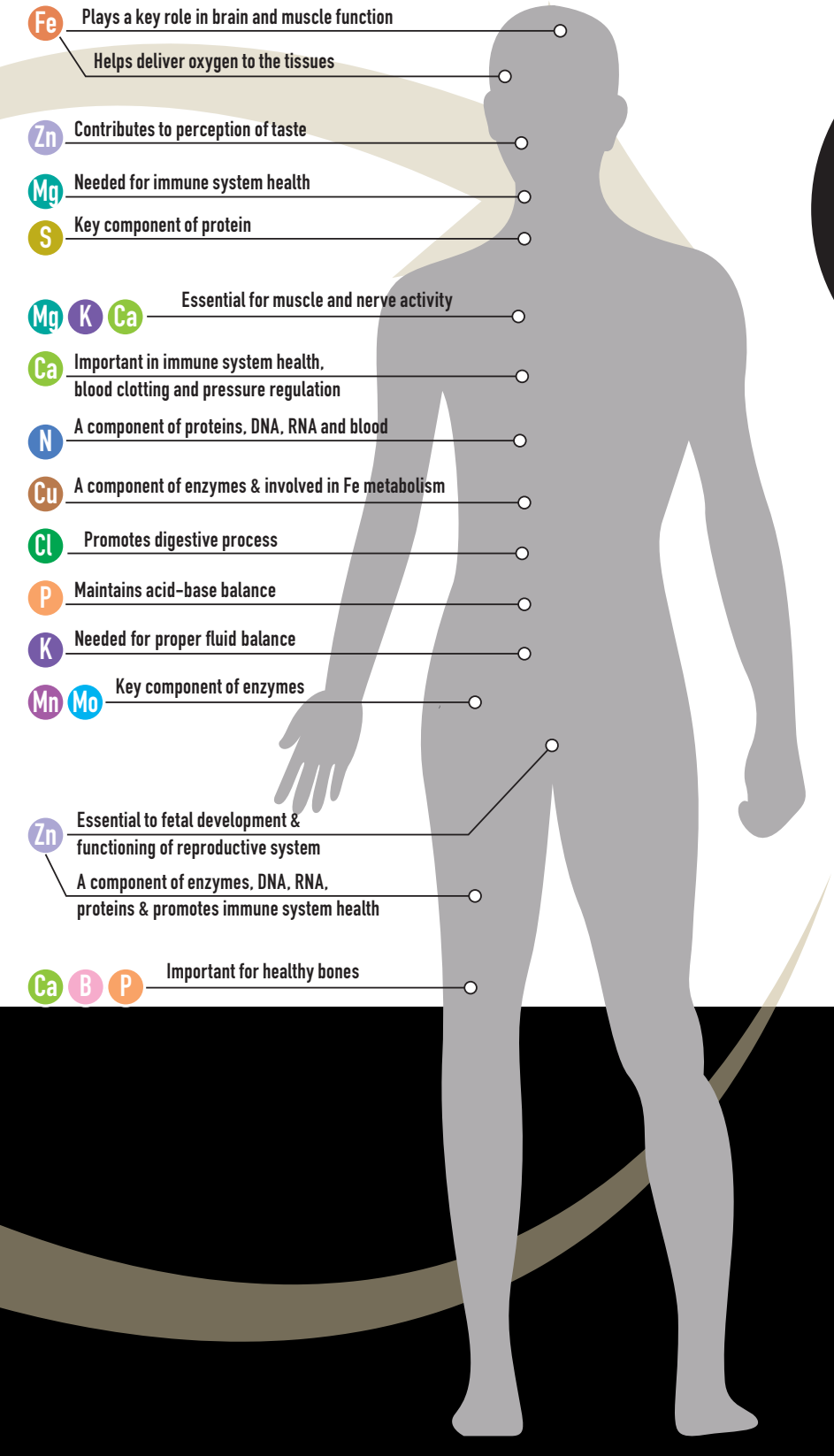









HYDROGEN
H
OXYGEN
O
CARBON
C
K Zn P Fe Cu S Mg N Mn
Involved in photosynthesis
Fe Cu P Zn Ca N
Promote plant growth
Promote reproduction
Cu S
Aid translocation of photosynthesis from leaves to fruiting organs
Ca S
Ca
Reduces plant respiration
Fe
Acts as an O2 carrier
K
Involved in carbohydrate metabolism & translocation of starches
Increases disease resistance
Fruit formation
K Ca
Enhances maturity of small grains
Cl
Quickens maturity
S
Fruit quality
P
Fruit flavour
Cu
Seed quality
K
Seed formation
P S Zn
Mg
Aids in enzyme functionality & plant use of Fe and P
P
Improves winter hardiness
Mn
Helps enzyme activity and increases the availability of P & Ca
S Mo
Responsible for enzyme activity
Promote nodule formation on legumes
Stimulates microbial activity
Ca
K
Increases water-use efficiency
Promotes root formation & growth
P
Soil macronutrients
PHOSPHORUS
P
POTASSIUM
K
NITROGEN
N
Secondary macronutrients
CALCIUM
Ca
MAGNESIUM
Mg
SULPHUR
S
MANGANESE
Mn
IRON
Fe
COPPER
Cu
SILICON
Si
Soil micros
MOLYBDENUM
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Na
BORON
B
ZINC
Zn
CHLORINE
Cl



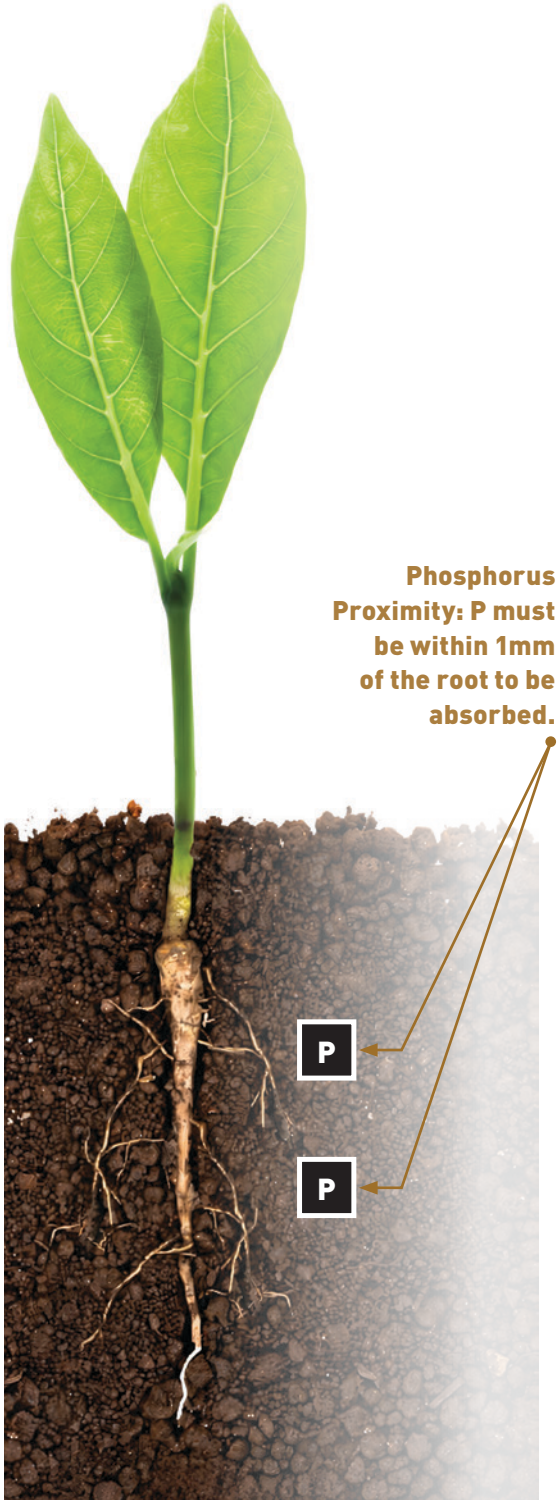
18 nutrients necessary for plant growth & human health

TAURUS

Plants and humans rely on many of the same essential nutrients. A shortage of these nutrients in soils reduces plant health and productivity, which in turn impacts human nutrition through the food supply.

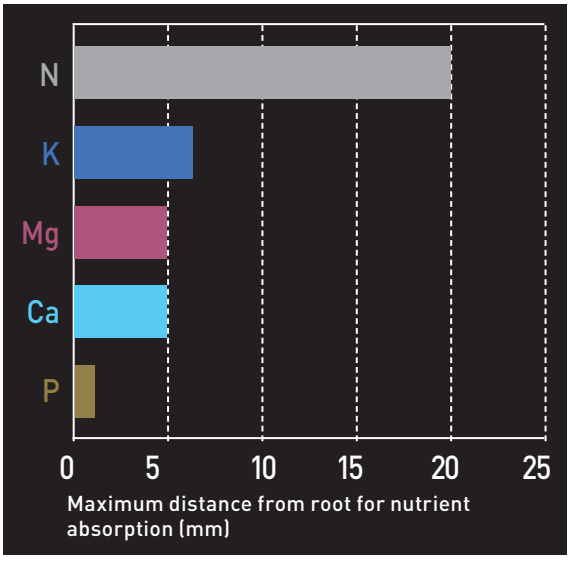
Unlock Your Soil's Full Potential

Understanding CEC and microbial partnerships helps maximize every pound of fertility for sustainable, high-performance farming.

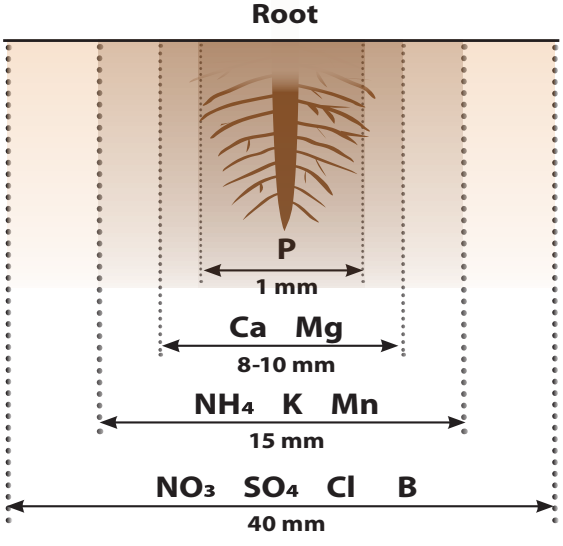


Nutrient Availability

Phosphorus must be within 1mm of the root surface to be absorbed, making placement critical for efficiency.



Nutrient Mobility and Plant Uptake

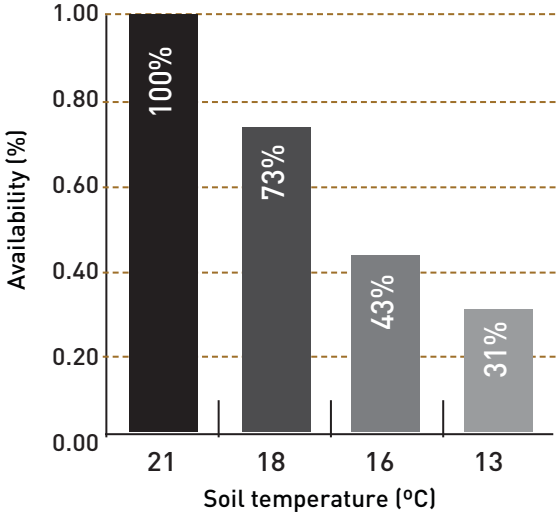


Higher CEC* = more nutrient holding capacity but slower exchange rates.

CEC					
PPM SOIL		0-6	7-15	16-25	26+
P	poor	0 - 25	0 - 23	0 - 18	0 - 13
	med	26 - 55	24 - 43	19 - 33	14 - 23
	good	56 - 93	44 - 83	34 - 55	24 - 43
	high	94 +	84+	56 +	44 +
K	poor	0 - 45	0 - 60	0 - 80	0 - 100
	med	46 - 90	61 - 120	81 - 160	101 - 200
	good	91 - 180	121 - 240	161 - 320	201 - 400
	high	181 +	241 +	321 +	401 +
Ca	poor	0 - 200	0 - 400	0 - 600	0 - 1000
	med	201 - 400	401 - 800	601 - 1200	1001 - 2000
	good	401 - 800	801 - 1600	1201-2400	2001 - 6000
	high	801 +	1600 +	2400 +	6000 +
Mg	poor	0 - 25	0 - 50	0 - 75	0 - 100
	med	26 - 50	51 - 100	76 - 150	101 - 200
	good	51 - 100	101 - 200	151 - 300	201 - 600
	high	101 +	201 +	301 +	601 +
% SATURATION of CATIONS					
% K Saturation		4 - 6	3 - 5	2 - 4	2 - 3
% Mg Saturation		10 - 20	8 - 20	5 - 20	5 - 20
% Ca Saturation		60 - 80	60 - 80	60 - 80	60 - 80

A&L Canada Labs Factsheet

Nutrient Availability



* Cation Exchange Capacity (CEC) measures a soil's ability to hold and exchange positively charged nutrients. Higher CEC soils can retain more nutrients, but may require different management than sandy, low-CEC soils.

A temperature drop from 21°C to 13°C can reduce phosphorus availability by up to 70%, impacting early crop growth.

A simple guide to beneficial bacteria and fungi.

DIFFERENT BIOLOGICALS. DIFFERENT JOBS.

Some supply nitrogen. Others help plants reach, absorb or use nutrients and water more effectively.

RHIZOBIUM

Supplies nitrogen | AGTIV FUEL

Develop a network that explores the soil and accesses more nutrients and water for the plant. Beneficial bacteria live in nodules on compatible legume roots. They convert nitrogen from the air into a form the plant can use. The plant supplies sugars in return.

Match the biological to the crop:
PTB160: Rhizobium leguminosarum biovar viciae (pulses)
PTB162: Bradyrhizobium japonicum (soybean)
PTB161: Mesorhizobium onobrychidis (chickpea)
Think of it as: a tiny nitrogen factory inside the roots.

MYCORRHIZAE

Reaches farther | AGTIV REACH

Beneficial fungi form a partnership with roots. Their fine threads extend into the soil, helping plants reach nutrients and water beyond the root surface.

Premier Tech technology:
PTB297: Rhizophagus irregularis
Think of it as: extra reach into the soil.

SERENDIPITA

Helps roots absorb | AGTIV IGNITE

This beneficial fungus lives within root tissue (endophyte). It activates plant processes that support water and nutrient uptake, photosynthesis and stress response.

Premier Tech technology:
PTB299: Serendipita indica
Former name: Piriformospora indica
Featured crops: canola and cereals.
Think of it as: a switch that activates the plant's own resource-management systems.

UPTAKE BACTERIA

Uses nutrients | AGTIV UPTAKE

A blend of three beneficial bacteria that helps plants take up nutrients from soil and fertilizer, supporting better fertilizer use, growth and stress resistance.

The three technologies:
PTB101: Bacillus velezensis
PTB108: Bacillus halotolerans
PTB124: Priestia megaterium
Check the label for approved uses.
Think of it as: a helper team that gets more value from soil nutrients and fertilizer.

How the Plant, Fungi and Bacteria Work Together

Tripartite symbiosis means a three-way partnership: plant + mycorrhizae + rhizobium. The plant supplies sugars, mycorrhizae help gather water and nutrients, and rhizobium fixes nitrogen. AGTIV THRIVE combines the two microbial partners.

NITROGEN MANAGEMENT: Protecting Every Pound, Every Pass

Stop Losing Nitrogen. Start Protecting Profits.

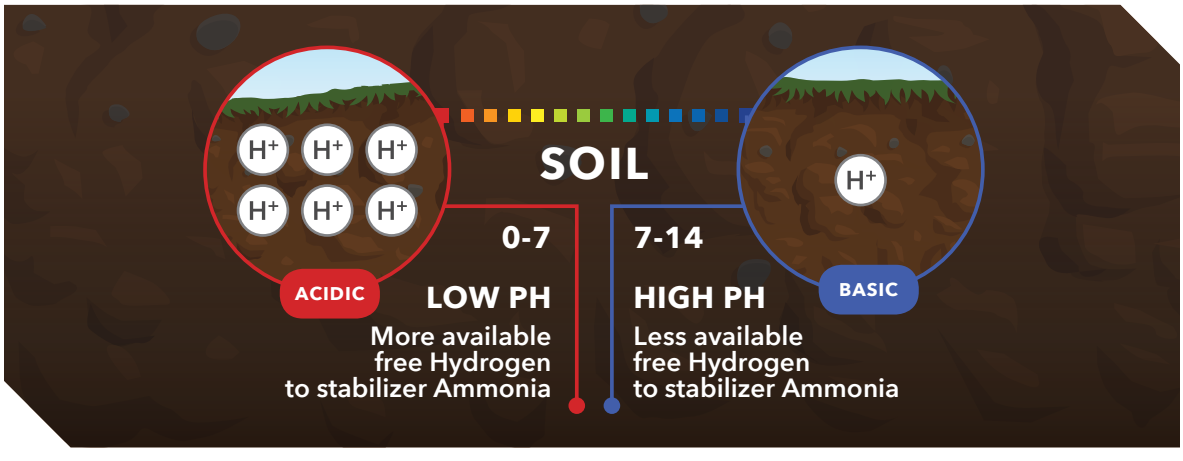
Nitrogen is your crop's most demanding nutrient—and your most vulnerable input. Without protection, as much as half of your applied nitrogen can be lost through volatilization, leaching, or denitrification. Every pound lost is money left in the field, not grain in the bin.

This section explains how soil pH, temperature, and timing affect nitrogen behavior and equips you to choose the right stabilizer or timing strategy.



Why Soil pH is Important?

There can be a wide variance between soils, even within the same field. Some soils have a higher potential for losses based on the pH. Less potential losses are associated with low pH soils than high pH, due to the amount of Hydrogen available in each soil.



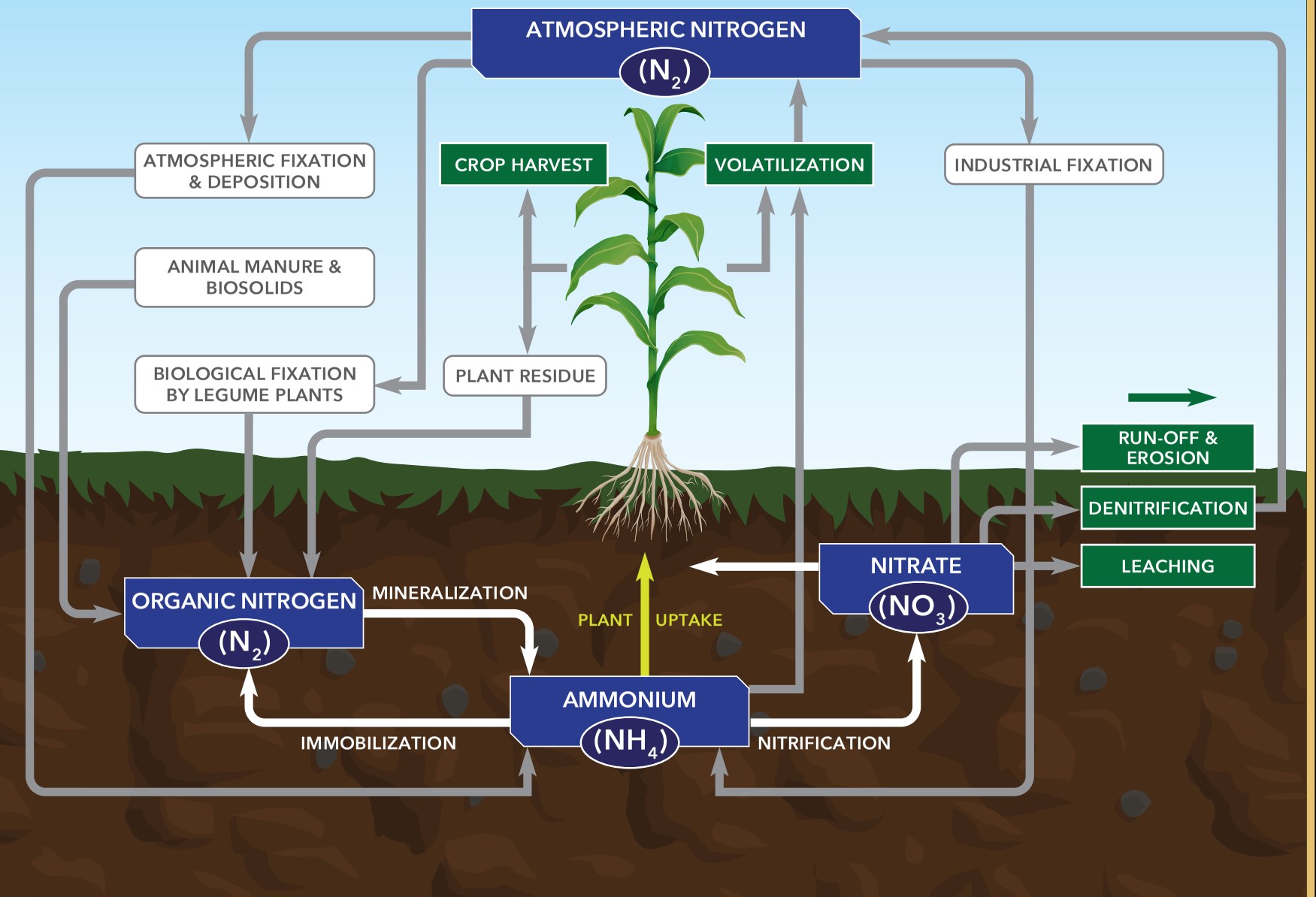
Considerations of Hydrolysis

- Soil pH
- Soil Moisture
- Soil Temperature (- 20°C)
- Thatch Cover — 20-30 times higher urease concentration than underlying soil*
- Placement & Concentration

Considerations of nitrification losses

- Soil type (CEC)
- Soil moisture
- Soil temperature: Nitrosomonas and Nitrobacter bacteria will remain active in soil as low as +4°C

NITROGEN MANAGEMENT



HYDROLYSIS

UREA or UAN (NH_2CONH_2) → AMMONIA (NH_3) → AMMONIUM (NH_4^+)

Urease Enzyme

H^+ Hydrogen Proton

BINDS TO NEGATIVELY CHARGED SOIL

NITRIFICATION

AMMONIUM (NH_4^+) → NITRITE (NO_2^-) → NITRATE (NO_3^-)

NitroSomonas Bacteria

NitroBacter Bacteria

DOESN'T BIND TO NEGATIVE-CHARGED SOIL

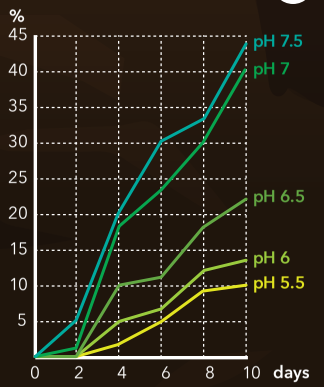
Plant Available | Not Plant Available | Unstable | Stable

CONSIDERATIONS WHEN APPLYING UREA, UAN, OR NH_3

- Soil Type, pH, Moisture, Organic Matter
- Nitrogen Placement and Concentration
- Thatch Cover
- Hydrolysis soil temperature: Urease Enzymes remain active in the soil as cold as -20° Celcius.[1]
- Nitrification soil temperature: *NitroSomonas* and *NitroBacter* Bacteria will remain active in soils as low as +4° Celcius.[2]

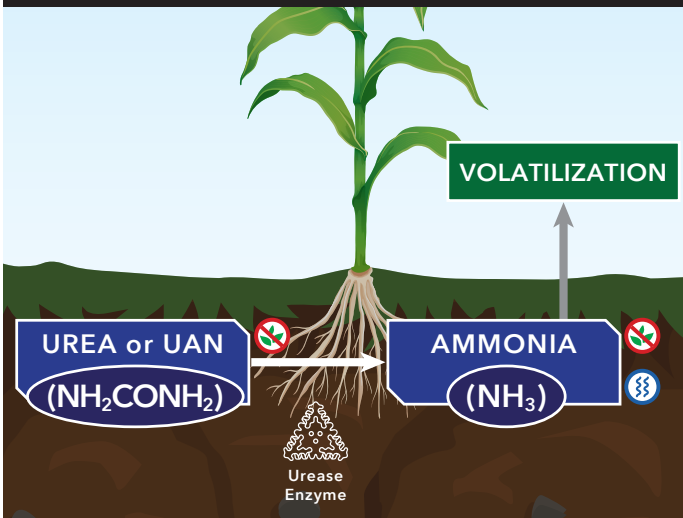
% Volatilization based upon soil pH[3]

Soil pH					
	5.5	6	6.5	7	7.5
Days	% of Added N Volatilized				
0	0	0	0	0	0
2	0	0	0	1	5
4	2	5	10	18	20
6	5	7	11	23	30
8	9	12	18	30	33
10	10	13	22	40	44



1 Enzyme Activity in Soils at Subzero Temperatures, J.M. Bremner & M.I. Zantua; Stability of Urease in Soils, M.I. Zantua & J.M. Bremner
2 Ammonia Oxidation in NitroSomonas at NH3 Concentrations near Km : Effects of pH and Temperature, Joost Groeneweg et al 1994; www.biocanlabs.com/nitribactfacts.html
3 Overdahl et al., 1960. Soil Sci. Soc. Am. Proc. 24:87-90

VOLATILIZATION



HYDROLYSIS

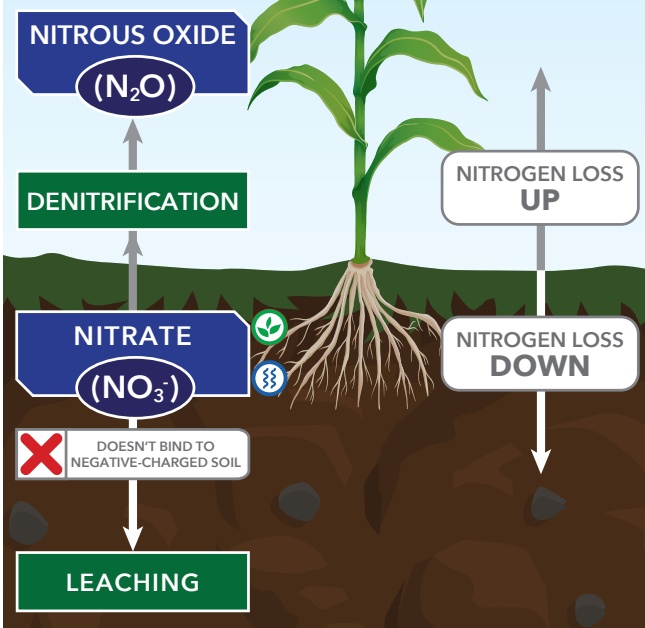
Greatly increases soil pH around urea granule.

AMMONIA VOLATILIZATION

- If this conversion takes place on or near soil surface, losses are highest.
- Urease enzyme catalyzes the hydrolysis of urea into carbon dioxide and ammonia.
- NH3 is extremely unstable and will try to get back into the atmosphere as a gas once the process begins.
- **Up to 50% of nitrogen can be lost due to ammonia volatilization.**

Plant Available | Not Plant Available | Unstable | Stable

POTENTIAL LOSS MECHANISMS OF NITRATE



DENITRIFICATION

- Denitrification is the process where bacteria strip oxygen from nitrate and **release N2 gas into atmosphere.**
- Denitrification favors conditions of **saturated/water logged soils.**
- Denitrification favors low oxygen or **heavy clay soils** (CEC > 23).

LEACHING

- Leaching occurs when negatively charged nitrate (cannot bind to soil particle) is **moved below the plant's root zone by water.**
- Leaching is most common in **coarse, textured soil (sandy soil)** (CEC < 10).
- Leaching favors conditions of **heavy rainfall** when in nitrate form.

Plant Available | Not Plant Available | Unstable | Stable

NOTES

NOTES

PHASE 01

SEED FERTILITY

HOW THE CROP STARTS IS HOW IT FINISHES.

AGRONOMICS

Stored energy runs out at V1. Acquired nutrition has to be ready.

ECONOMICS

Stand uniformity is the single biggest yield lever per dollar applied.

LOGISTICS

Seed-applied means one pass, at the drill, with no extra rig.

CONTENTS

SEED FERTILITY

About Active AgriScience 31
Application Timings 34

PRIMERS 35

Active PRIME 37
Active PRIME Dry 42
Active PLS 44

INTRODUCTION



ACTIVE™ AgriScience
activeagriscience.com

TECHNOLOGY BEYOND the POINT of NUTRITION™

Active AgriScience Inc. supports the farming community by providing innovative, effective and economical products. A leader in plant nutrient and bioactive compound research and technology, Active AgriScience uses rigorous scientific methods to develop full cycle fertilizer and nitrogen management solutions to help enhance crop potential while being mindful of environmental impacts.

Substantial, continuous investment into research, testing, and the development of cutting-edge technology allows us to confidently offer field tested, easily deployable products that directly benefit growers.

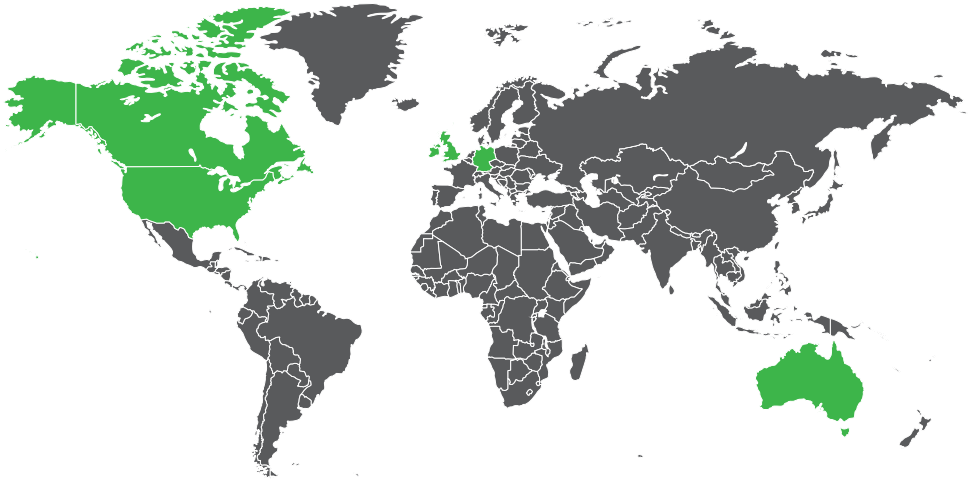
Active AgriScience's team of experts, with their hands-on experience in agriculture and horticulture in both temperate and tropical climates, have the breadth of experience needed to develop products that are efficacious in a wide range of growing environments.

INTRODUCTION



OUR GLOBAL RESEARCH SITES

Active AgriScience conducts research trials for their seed treatments, foliar nutrients and nitrogen stabilizers in locations across the globe. The relationships we have developed with our agricultural partners over the years are core to our mission.



3RD PARTY RESEARCH ORGANIZATIONS

Canada
Agquest (SK, MB)
SARDA (AB)
ICMS (AB)
MARA (AB)
Pier Management (BC)
New Era Ag Technologies (MB)
University of British Columbia
University of Alberta
University of Manitoba
University of Winnipeg
Simon Fraser University

Australia
Meag Soil Services
CSBP
Aglink
SEAR
TrialCo

USA
Illinois Ag Research
Pacific Ag
ABG Ag
Agvise Research
Cropwise Research
Hydrite Chemical Company
United Prairie
University of California Davis
University of Minnesota

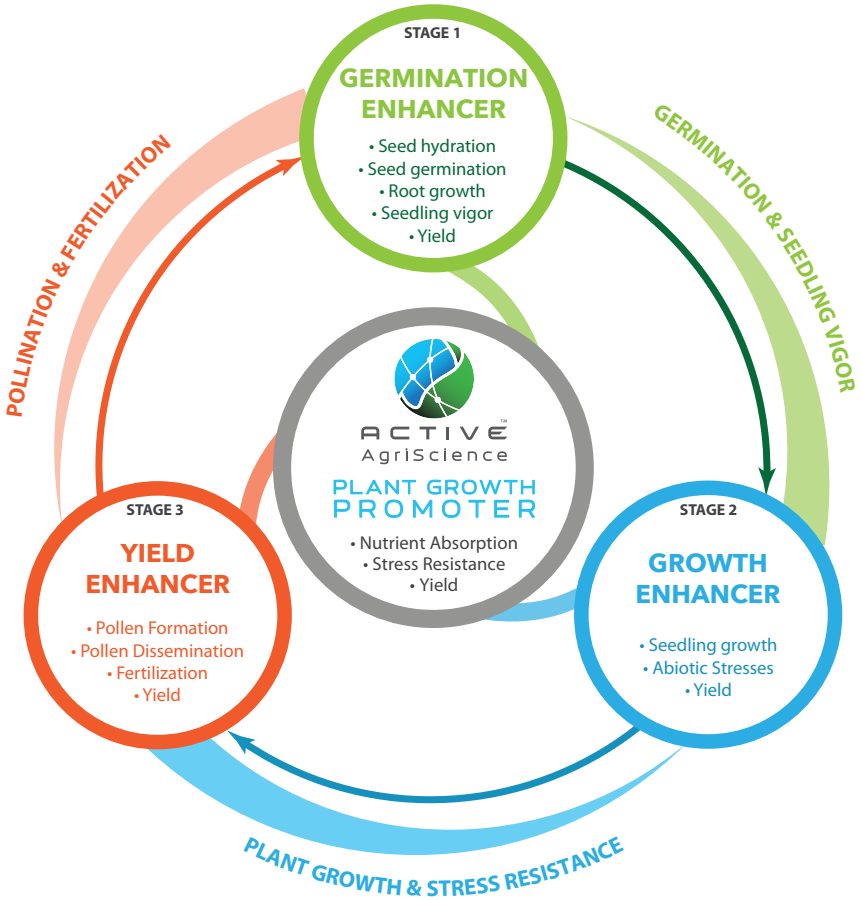
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INTRODUCTION

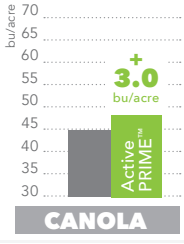
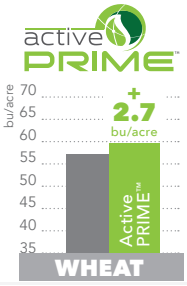
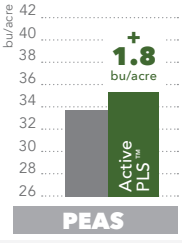
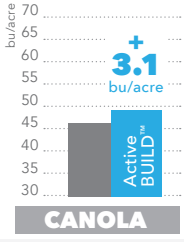
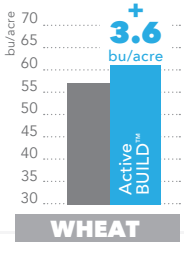
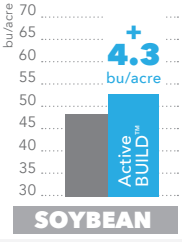
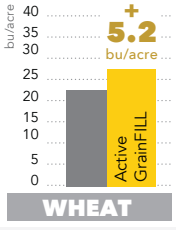


NUTRITIONAL CYCLE TECHNOLOGY

Active AgriScience's nutritional cycle consists of products designed for each phase of the growing cycle. Application timing conveniently coincides with existing agrochemical applications such as seed, herbicide, fungicide, and insecticide treatments. Active AgriScience's field-proven technology can help enhance yield, quality, and the genetic potential of the crop while improving the crop's ability to resist environmental stressors.



APPLICATION TIMINGS

	CANOLA & CORN	CEREALS	PULSES
SEEDING	**active PRIME** 4 ml/1 kg of seed 90 ml/bu 110 bags/10 L jug 	**WHEAT** 108 ml/bu 93 bu/10 L jug **BARLEY** 87 ml/bu 115 bu/10 L jug **OATS** 58 ml/bu 172 bu/10 L jug **active PRIME** 	**active PLS** 2 ml/1 kg of seed 54 ml/bu 184 bu/10 L jug 
HERBICIDE	**active BUILD** 0.5 L - 1 L/acre 3-4 weeks btwn applications 	**active BUILD** 0.5 L - 1 L/acre 3-4 weeks btwn applications 	**active BUILD** or **active VPR PLUS** 1 L/acre 3-4 weeks btwn applications 
FUNGICIDE	**active GFB** 1 L/acre	**active GFB** 1 L/acre 	**active GFB** 1 L/acre
HAIL EVENT	**active BUILD** **active GFB** Always use Active BUILD until flowering. If the plant has already begun to flower, use Active GFB.	**active BUILD** **active GFB** Always use Active BUILD until cereal heading.	**active BUILD** **active GFB** Always use Active BUILD until flowering. If the plant has already begun to flower, use Active GFB.

Apply at signs of nutrient deficiency

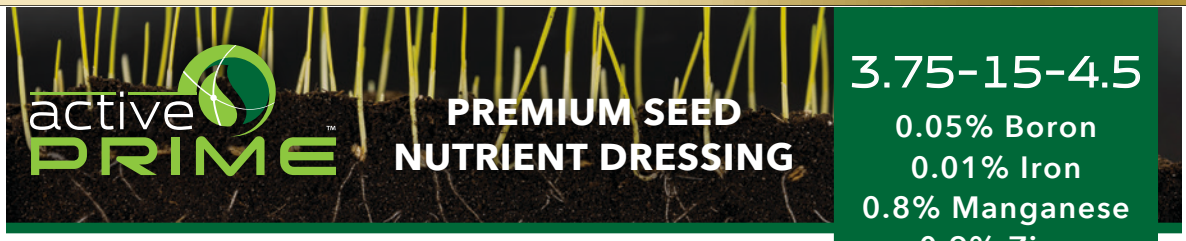
Proform N · active 10% Ca CALCIUM · active 10% B BORON · active 5.6% Cu COPPER · active 7% Mn MANGANESE · active KONNECT · active 4% Mg MAGNESIUM · active 14.2% Mo MOLYBDENUM · active 6% Fe IRON · active 9.8% Zn ZINC

PRIMERS



PRIMERS 35

Active PRIME 37
Active PRIME Dry 42
Active PLS 44



#1 SEED PRIMER IN CANADA

Leading logistical primer trusted by farmers for its reliability and effectiveness.

ECONOMICAL WITH HIGH RETURNS

Significant returns for farmers seeking optimal crop production at low costs.



FASTER EMERGENCE

Accelerates plant emergence and boosts fungicide performance.

TARGETED NUTRIENT DELIVERY

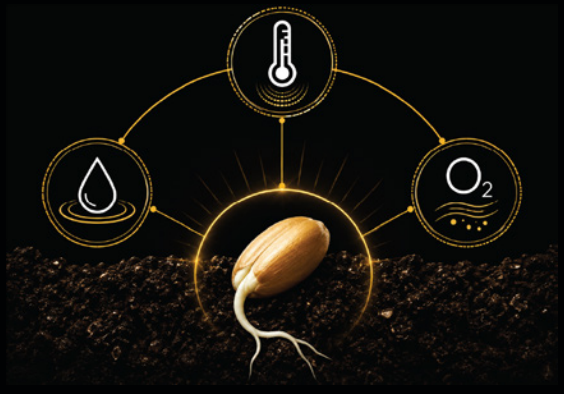
Delivers vital nutrients when they are needed most.

STIMULATED ROOT GROWTH

Stimulates root growth, allowing plants to quickly access the soil for optimal nutrient uptake.

ENSURES CROP CONSISTENCY

Evens the playing field by ensuring consistent crop establishment, giving every plant the best possible start.



GERMINATION TRIO

WATER, AIR, WARMTH WAKE A SEED

A dormant seed needs three things to wake up: water to swell and activate it, oxygen to power respiration, and warmth to drive the process. Waterlogged soil is a common trap, it drives out oxygen, so a moist but not saturated seedbed germinates best.

Source: Penn State Extension, "Seed and Seedling Biology," 2022.



Active PRIME™ HOW IT WORKS

NUTRIENT ANALYSIS

Total Nitrogen (N)	3.75%
Available Phosphate (P_2O_5)	15%
Soluble Potash (K_2O)	4.5%
Boron (B)(actual)	0.05%
Iron (Fe)(actual)	0.01%
Manganese (Mn)(actual)	0.8%
Zinc (Zn)(actual)	0.9%
Citric acid	0.5%
EDTA (chelating agent)	0.04%

MIXING INSTRUCTIONS

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

1. Apply as a seed nutrient dressing at the rate of 4 ml / kg of seed.
2. Seed coating can be done simultaneously with Active PRIME and compatible agrochemicals. If using Active PRIME without additional agrochemicals, dilute with water (1:1 ratio) to ensure uniform coverage of seeds.
3. Calibrate equipment to release the required amount of Active PRIME and other agrochemicals based on seed flow rate.
4. Thoroughly mix seeds with the Active PRIME (and other agrochemicals) mixture. A coloring additive allows a visual check to ensure all seeds are uniformly coated.
5. Allow treated seeds to air dry for 5-10 min before seeding.

Contains nutrients to support seed germination with greater root growth for hardier seedlings.

WHY TO USE

Active PRIME is a seed coating that contains nutrients to get your newly seeded crop off to a strong, healthy start. It improves germination, boosts root growth, and helps protect seeds and seedlings from unfavourable environmental conditions. The resulting robust young plants are now primed for growth.

WHEN TO USE

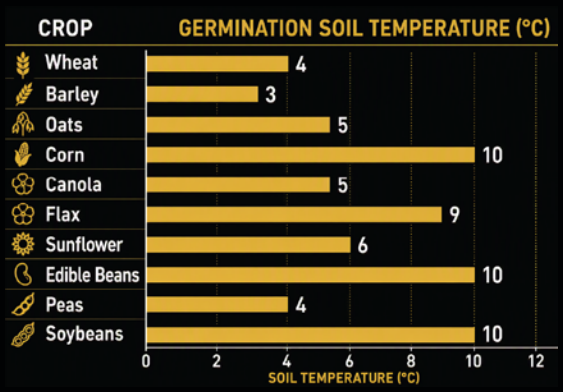
Prior to seeding wheat, canola, corn, barley, oat, flax, sunflower, and vegetable seeds.

HOW TO USE

Apply as a seed nutrient dressing to wheat, canola, corn, barley, oat, and vegetable seeds at the rate of 4 ml/kg of seed. Seed coating can be done simultaneously with Active PRIME and compatible chemicals (see compatibility chart). If applied alone, dilute with water (1:1 ratio) to ensure uniform coverage of seeds.

HOW IT WORKS

Active PRIME is a dressing applied to seeds before planting. It contains nutrients, organic acids, and Active AgriScience's proprietary activation formula. Active PRIME helps protect the seeds and allows the nutrients to be utilized, even in unfavourable conditions, producing an increased quantity and depth of roots.



COLD LIMITS

EACH CROP'S OWN SOIL-TEMP MINIMUM

Seeds won't start growing until soil at seeding depth hits a minimum temperature, and it differs by crop. Cool-season Prairie crops (barley, wheat, peas, canola) start at 3-5C; warm-season crops (corn, soybeans, beans) need about 10C. Plant colder than the crop's limit and emergence is slow and patchy.

Source: Manitoba Crop Alliance, "Crop Germination and Soil Temperatures," 2023.



Active PRIME™ COMPATIBILITY

Compatible with most seed treatments and fertilizers. Please review Compatibility Chart and conduct pre-testing if combination has not been previously used. As water composition can vary, always do a jar test with pesticides and spray water to ensure compatibility.

√ Compatible X Incompatible - Not Tested Caution

SEED TREATMENTS	ACTIVE INGREDIENTS	
APRON ADVANCE	Thiabendazole, fludioxonil, metalaxyl	-
APRON MAXX RTA	Fludioxonil, metalaxyl	√
CRUISER 5FS	Thiamethoxam	√
CRUISER MAXX VIBRANCE BEANS	Difenoconazole, metalaxyl, thiamethoxam	√
CRUISER MAXX VIBRANCE CEREALS	Difenoconazole, metalaxyl, thiamethoxam	√
CRUISER MAXX VIBRANCE PULSES	Difenoconazole, metalaxyl, thiamethoxam	√
CRUISER VIBRANCE QUATTRO	Thiamethoxam, difenoconazole, sedaxane, metalaxyl, fludioxonil	-
DIVIDEND XL RTA	Difenoconazole, metalaxyl	√
EVERGOL ENERGY	Penflufen, prothioconazole, metalaxyl	-
FORTENZA	Cyantraniliprole	-
INSURE CEREAL*	Pyraclostrobin, triticonazole, metalaxyl	√
INSURE PULSE*	Pyraclostrobin, fluxapyroxad, metalaxyl	√
RANCONA PINNACLE	Metalaxyl, ipconazole	√
RANCONA TRIO	Metalaxyl, ipconazole, carbathiin	√
RAXIL PRO	Tebuconazole, prothioconazole, metalaxyl	√
RAXIL PRO SHIELD	Imidacloprid, tebuconazole, prothioconazole, metalaxyl	√
TRILEX EVERGOL	Penflufen, trifloxystrobin, metalaxyl	√
TRILEX EVERGOL SHIELD	Imidacloprid, penflufen, trifloxystrobin, metalaxyl	√
VIBRANCE 500FS	Sedaxane	√
VIBRANCE MAXX	Metalaxyl, fludioxonil and sedaxane	√
VIBRANCE MAXX RFC	Metalaxyl, fludioxonil, sedaxane, and propane-1,2-diol	√
VIBRANCE QUATTRO	Difenoconazole, sedaxane, metalaxyl, fludioxonil	√
VISIVIO	Sulfoxaflor, thiamethoxam, difenoconazole, metalaxyl, fludioxonil and sedaxane	-
VITAFLO 280	Carbathiin, thiram	√

*Insure Pulse and Cereals are compatible but it is recommended to use the primer at 325ml instead of 400ml for optimal seed treatment.

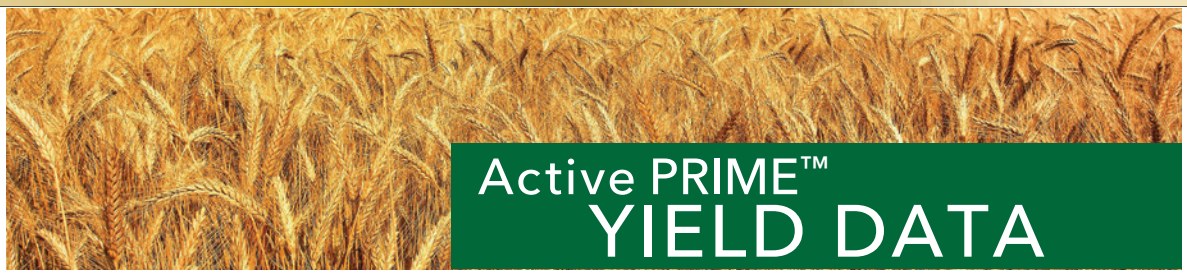


SHALLOW SEEDING

SMALL SEEDS CARRY LITTLE FUEL

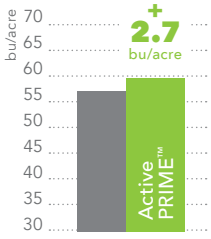
Small seeds carry little stored energy, so a seed placed too deep can run out of fuel before the shoot reaches the surface. In an AAFC study, canola emergence under moist soil nearly doubled at 1 cm versus 4 cm. Shallow, uniform placement into moisture gives faster, more even emergence.

Source: Canola Council of Canada, Canola Encyclopedia (Harker et al. 2012).



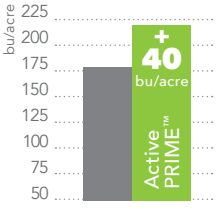
Active PRIME™ YIELD DATA

WHEAT



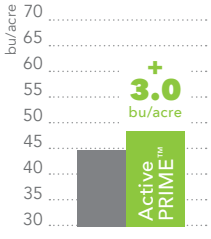
TREATMENTS	YIELD - 2013 (bu/acre)	YIELD - 2014 (bu/acre)	YIELD - 2015 (bu/acre)	YIELD - 2016 (bu/acre)	YIELD - 2017 (bu/acre)	YIELD - 2018 (bu/acre)	6 YEAR AVERAGE (bu/acre)	% CHANGE
Check	77.0	63.3	50.9	45.3	68.2	37.5	57.0	
Active PRIME™	81.0	66.1	54.2	47.3	70.9	38.8	59.7	4.7

CORN



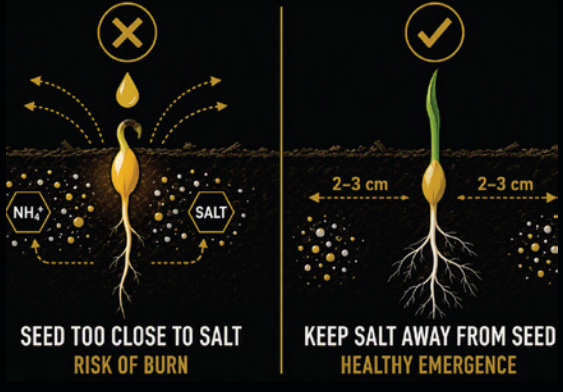
TREATMENT	RUTHERFORD AVG. YIELD (bu/acre)	WABASH AVG. YIELD (bu/acre)	TOTAL AVG. YIELD (bu/acre)	% CHANGE
Check	200.0	161.4	180.7	
Active PRIME™	251.0	191.2	221.1	22.4

CANOLA



TREATMENTS	YIELD - 2013 (bu/acre)	YIELD - 2014 (bu/acre)	YIELD - 2015 (bu/acre)	YIELD - 2016 (bu/acre)	YIELD - 2017 (bu/acre)	YIELD - 2018 (bu/acre)	6 YEAR AVERAGE (bu/acre)	% CHANGE
Check	45.0	52.0	42.3	33.8	57.7	38.85	44.9	
Active PRIME™	49.0	59.6	44.7	35.7	58.4	39.9	47.9	6.5

3RD party yield research with KentAg Research, Ag-Quest, BC Grain, ICMS, Mara and New-Marc Research.

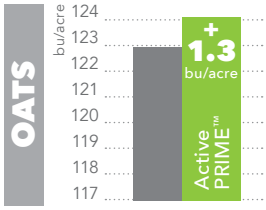


FERTILIZER BURN

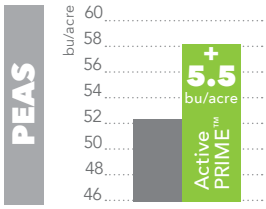
FERTILIZER WITH SEED CAN INJURE IT

Fertilizer placed right with the seed can injure it, especially in dry soil. Salts and ammonia pull moisture away from the germinating seed and can damage the seedling, thinning the stand. Risk climbs when soil is dry, rates are high, and seed and fertilizer are concentrated in a narrow band.

Source: Iowa State University Extension, Integrated Crop Management.



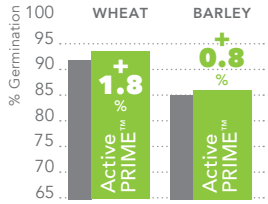
TREATMENTS	YIELD-2016 (bu/acre)	YIELD-2017 (bu/acre)	YIELD-2018 (bu/acre)	3 YEAR AVERAGE (bu/acre)	% CHANGE
Check	138.1	159.6	70.6	122.8	
Active PRIME™	143.5	157.7	71.2	124.1	1.1



TREATMENTS	YIELD-2016 (bu/acre)	YIELD-2017 (bu/acre)	2 YEAR AVERAGE (bu/acre)	% CHANGE
Check	51.3	54.5	52.9	
Active PRIME™	54.5	62.2	58.4	10.3

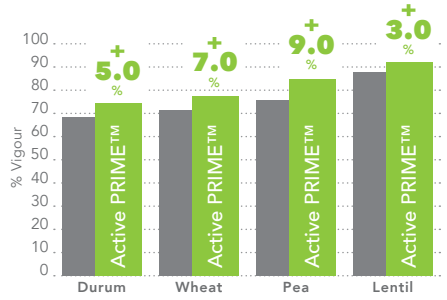
3RD party yield research with KentAg Research, Ag-Quest, BC Grain, ICMS, Mara and New-Marc Research.

GERMINATION INCREASE & DISEASE REDUCTION DATA*



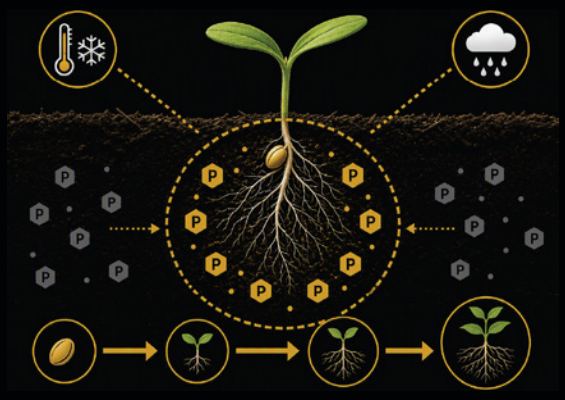
TREATMENT	GERMINATION AVG. WHEAT (%)	GERMINATION AVG. BARLEY (%)	Fusarium spp REDUCTION WHEAT (%)	C. Sativus REDUCTION BARLEY (%)
Check	92.0	85.0	14.4	41.9
Active PRIME™	93.75	85.75	15.4	50.4

VIGOUR INCREASE DATA*



TREATMENT	WHEAT-DURUM % VIGOUR	WHEAT-COMMON % VIGOUR	PEA % VIGOUR	LENTIL % VIGOUR
Check	69	71	76	88
Active PRIME™	74	78	85	91
% Difference	**5**	**7**	**9**	**3**

3RD party germination and vigour research with Discovery Seed Labs, and 20/20 Seed Labs.



FEED FIRST ROOTS

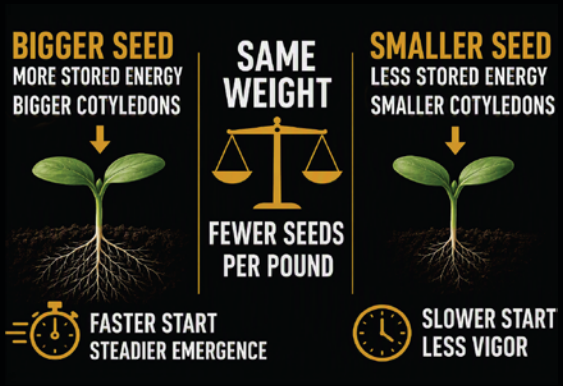
STARTER P NEAR THE SEED DRIVES GROWTH

Phosphorus barely moves in soil, so a tiny seedling with a small root system can struggle to reach enough, even where soil tests high. A little phosphorus near the seed row gives young roots easy access and vigorous early growth. It matters most in cold, wet soils where roots grow slowly.

Source: Penn State Extension, "Starter Fertilizer," 2023.







BIGGER SEED

SIZE LIFTS VIGOR, NOT SEED COUNT

Larger seed carries bigger cotyledons and more stored energy, giving seedlings a faster start and steadier emergence. But bigger seed also means fewer seeds per pound, so the same seeding weight puts fewer seeds in the ground. Size boosts vigor, but it doesn't replace a real seeding rate calculation.

Source: CSIRO, "Seed size, seed rate and seed quality – Canola establishment," 2026.



Active PRIME™ DRY HOW IT WORKS

NUTRIENT ANALYSIS

Boron (B)(actual)	0.25%
Copper (Cu) chelated (actual)	0.25%
Iron (Fe) chelated (actual)	1.5%
Manganese (Mn) chelated (actual)	1.5%
Molybdenum (Mo)(actual)	0.5%
Zinc (Zn) chelated (actual)	3.0%

MIXING INSTRUCTIONS

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.
To ensure uniform seed coverage, apply product in layers as seed is added to the planter box, seed box, or seed tender. Gently stir or tumble seed to evenly distribute the product. Dry powder applicator meters may also be used to apply the product evenly onto seed. Ensure all seeds are uniformly coated prior to planting.

APPLICATION

Apply at planting directly to seed in the planter box, seed box, or seed tender to ensure uniform coverage prior to planting. Product may be applied alone or in combination with compatible seed treatments and agrochemicals.

Apply at the following rates per 22 kg (50 lb) of seed: Corn: 50–75 g, Canola: 50–125 g, Soybean: 50–75 g. Do not exceed recommended application rates.

Powdered planter-box micronutrients to support fast germination, early root development, and strong establishment.

WHY TO USE

Active PRIME DRY is a powdered planter-box micronutrient blend designed to support crops during the critical early stages of growth. Applied directly to seed at planting, it delivers essential micronutrients that promote strong root development, uniform emergence, and early season vigor. Its graphite-based formulation also helps maintain smooth seed flow and consistent planter performance.

WHEN TO USE

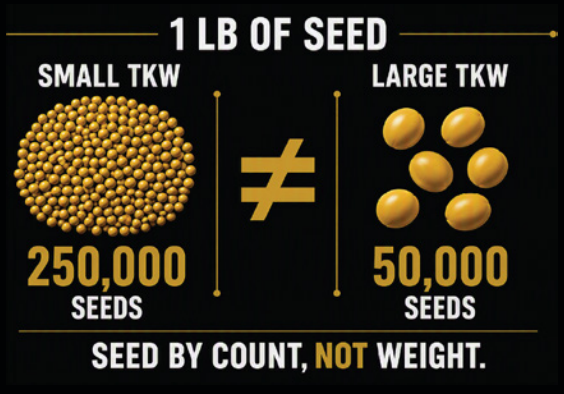
Apply at planting for corn, canola, soybean, and other crops requiring supplemental micronutrients to support early growth and establishment.

HOW TO USE

Apply at planting to deliver micronutrients directly to the seed. Use 50 to 75 g per 22 kg (50 lb) of corn or soybean seed and 50 to 125 g per 22 kg (50 lb) of canola seed. Mix for even coverage before planting.

HOW IT WORKS

Active PRIME DRY places chelated micronutrients directly in the seed zone at planting, making them readily available during germination and early growth. The combination of boron, copper, iron, manganese, molybdenum, and zinc supports root development, nutrient uptake, and seedling vigor. This targeted delivery helps young plants establish quickly and better manage early-season environmental and agronomic stresses while promoting consistent emergence and stand development.



SEED BY COUNT

TKW SETS THE REAL SEEDING RATE

A pound of seed can hold very different seed counts depending on thousand kernel weight (TKW). Setting a seeding rate means combining TKW with germination percentage and expected survival to hit a target plant stand, not just a flat weight per acre. Without those calculations, differences in seed size can lead to underseeding or overseeding.

Source: Saskatchewan Pulse Growers, "Calculating Seeding Rates."

active PLS™ PEAS LENTILS SOYBEANS

SEED DRESSING FOR LEGUME CROPS

2-10-10

0.1% Boron
0.04% Cobalt
0.005% Iron
0.1% Manganese
0.05% Molybdenum
0.001% Nickel
0.2% Zinc

ENHANCED GERMINATION

Supplies seeds with essential micronutrients and trace elements to improve germination rates.

PROMOTES EARLY GROWTH

Contains essential macronutrients and trace elements to promote vigorous early growth.

BALANCED PH

Maintains an ideal pH to enhance rhizobacterial growth and root-inoculant communication.



SUPERIOR NUTRIENTS

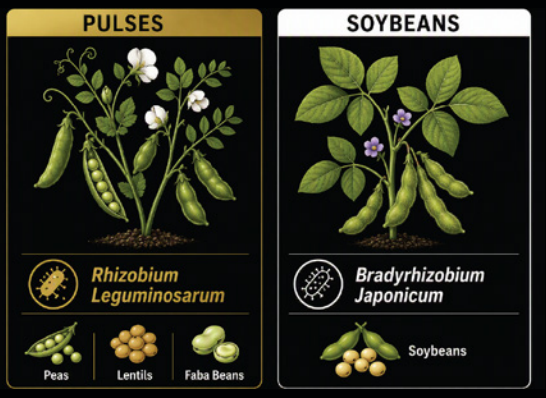
Superior nutrient composition enhances seed performance while offering excellent value.

IMPROVED STRESS RESISTANCE

Enhances plant performance under cold, wet, or drought conditions by upregulating desirable pathways.

OPTIMIZED BNF EFFICIENCY

Works synergistically with rhizobial inoculants to maximize Biological Nitrogen Fixation (BNF).



FREE NITROGEN

RHIZOBIA IN NODULES FIX AIR NITROGEN

Legumes such as peas, lentils and beans partner with Rhizobium bacteria in root nodules that turn nitrogen from the air into a form the plant can use. The bacteria barely move in soil, so inoculant must contact the seed or seed row. Each legume needs its matching type; nodules form within about three weeks.

Source: Government of Saskatchewan, "Inoculation of Pulse Crops."



Active PLS™ HOW IT WORKS

NUTRIENT ANALYSIS

Total Nitrogen (N)	2%
Available Phosphate (P_2O_5)	10%
Soluble Potash (K_2O)	10%
Boron (B)(actual)	0.1%
Cobalt (Co)(actual)	0.04%
Iron (Fe)(actual)	0.005%
Manganese (Mn)(actual)	0.1%
Molybdenum (Mo)(actual)	0.05%
Nickel (Ni)(actual)	0.001%
Zinc (Zn)(actual)	0.2%
Fulvic acid	1%
Lactic acid	1%
EDDHA	0.0125%
EDTA	0.36%

MIXING INSTRUCTIONS

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

Apply as a seed nutrient dressing at the rate of 2 ml / kg of seed. Seed coating can be done simultaneously with Active PLS and compatible agrochemicals. If using Active PLS without additional agrochemicals, dilute with water (1:1 ratio) to ensure uniform coverage of seeds. Calibrate equipment to release the required amount of Active PLS and other agrochemicals based on seed flow rate. Thoroughly mix seeds with the Active PLS (and other agrochemicals) mixture. A coloring additive allows a visual check to ensure all seeds are uniformly coated. Allow treated seeds to air dry for 5-10 min before seeding.

Contains nutrients to support seed germination and root growth and is compatible with inoculants.

WHY TO USE

Active PLS is a seed nutritional coating that supplies seeds with the micronutrients and trace elements needed to improve germination, early growth and the efficiency of Biological Nitrogen Fixation (BNF). Active PLS works synergistically with rhizobial inoculants to maximize BNF, leading to stronger plants and higher yields.

WHEN TO USE

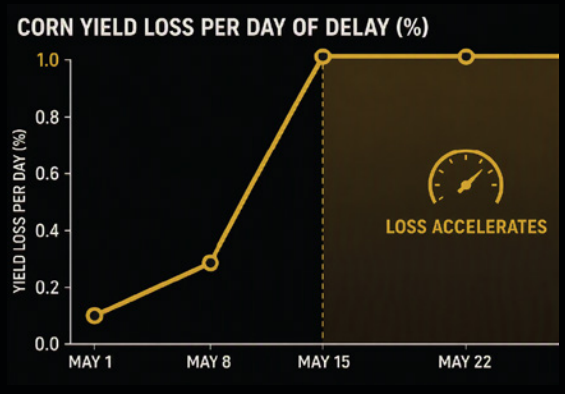
Prior to seeding soybeans, faba beans, peas, lentils, chickpeas and other beans.

HOW TO USE

Apply as a seed nutrient dressing to soybeans, faba beans, peas, lentils, chickpeas and other bean seeds at the rate of 2 ml/kg of seed. Seed coating can be done simultaneously with Active PLS and compatible chemicals (see compatibility chart). If applied alone, dilute with water (1:1 ratio) to ensure uniform coverage of seeds.

HOW IT WORKS

Active PLS has a pH ideally balanced to promote rhizobacterial growth on legumes and fosters better communication between the root and the inoculant. Active PLS maintains the ability to simultaneously up-regulate desirable pathways and down-regulate undesirable pathways, allowing plants to maximize their genetic potential under cold, wet or drought conditions.
Active PLS has a flexible formula which can be mixed either simultaneously or sequentially with rhizobial inoculants and compatible agrochemicals.



PLANT ON TIME

YIELD SLIPS EACH DAY PAST THE WINDOW

Many crops have a best planting window, and yield potential slips a little for each day past it. In corn, roughly 0.3%/day in early May, rising to about 1%/day by mid-May. Planting date matters, but it's only one of many yield factors, so mudding in a crop just to beat the calendar usually backfires.

Source: Purdue University Extension (R.L. Nielsen), 2024.

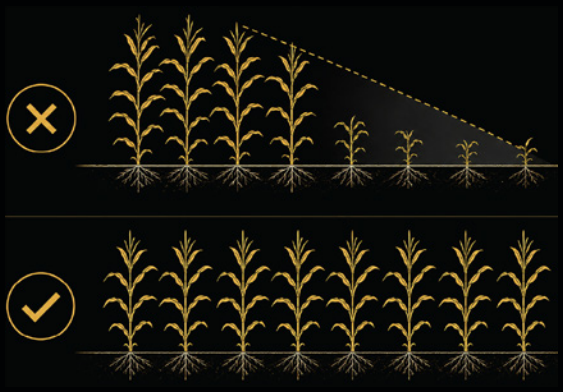


Active PLS™ COMPATIBILITY

Compatible with most seed treatments and fertilizers. Please review Compatibility Chart and conduct pre-testing if combination has not been previously used. As water composition can vary, always do a jar test with pesticides and spray water to ensure compatibility.

√ Compatible X Incompatible - Not Tested Caution

SEED TREATMENTS	ACTIVE INGREDIENTS	
APRON MAXX RTA	Fludioxonil, metalaxyl	√
CRUISER MAXX VIBRANCE BEANS	Difenoconazole, metalaxyl, thiamethoxam	√
CRUISER VIBRANCE QUATTRO	Thiamethoxam, difenoconazole, sedaxane, metalaxyl, fludioxonil	√
GAUCHO	Imidacloprid	√
INSURE PULSE	Pyraclostrobin, fluxapyroxad, metalaxyl	√
INTEGO PULSE	Ethaboxam, metalaxyl, mandestrobin	√
RANCONA TRIO	Ipconazole, carbathiin, metalaxyl	√
TRILEX	Trifloxystrobin	√
VIBRANCE MAXX	Metalaxyl, fludioxonil and sedaxane	√
VIBRANCE 500FS	Sedaxane	√
ZELTERA PULSE	Metalaxyl, inpyrfluxam, mandestrobin, ethaboxam	√



EVEN BEATS UNEVEN

LATE PLANTS GET SHADED AND YIELD LESS

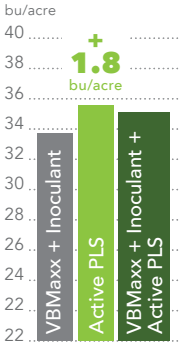
When some plants come up days late, bigger early neighbors shade and out-compete them, leaving low-yielding runts. In corn, if half or more of the stand emerges three weeks late, replanting an even stand can lift yield up to about 10%. Even emergence comes from uniform depth, good seed-to-soil contact, and steady moisture.

Source: Ohio State University Extension, Ohioline AGF-122, 2016.



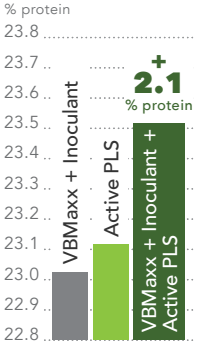
Active PLS™ YIELD DATA

PEAS - YIELD



TREATMENTS	YIELD REP 1 (bu/acre)	YIELD REP 2 (bu/acre)	YIELD REP 3 (bu/acre)	YIELD REP 4 (bu/acre)	AVERAGE YIELD (bu/acre)	% CHANGE
VBMaxx + Inoculant	36.3	31.2	38.4	28.7	33.7	
Active PLS	38.3	34.2	32.5	36.9	35.5	**5.4**
VBMaxx + Inoculant + Active PLS	39.5	30.8	31.4	39.0	35.2	**4.5**

PEAS - PROTEIN



TREATMENTS	PROTEIN REP 1 (%)	PROTEIN REP 2 (%)	PROTEIN REP 3 (%)	PROTEIN REP 4 (%)	AVERAGE PROTEIN (%)	% CHANGE
VBMaxx + Inoculant	23.45	22.99	22.43	23.25	23.03	
Active PLS	23.29	23.32	23.05	22.83	23.12	**0.40**
VBMaxx + Inoculant + Active PLS	23.22	24.28	23.15	23.41	23.52	**2.11**

3RD party yield research with Ag-Quest.



FIRM THE SEEDBED

VAPOR MOVES WATER TO THE SEED

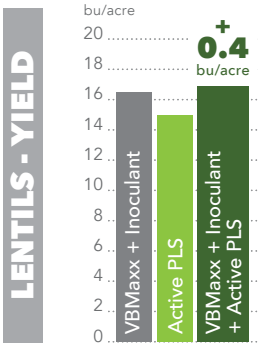
Seeds pull most of their water as vapor, not liquid. Soil air stays near 100% humidity across almost any moisture level you'll plant into. What actually slows emergence is distance: loose, cloddy soil and air pockets widen the gap vapor has to cross to reach the seed. Firming the seedbed closes that gap and holds humidity in the seed zone.

Source: Iowa State University Extension, Integrated Crop Management.



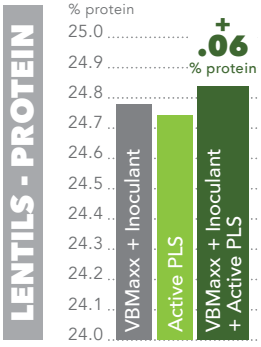
Active PLS™ YIELD DATA

LENTILS - YIELD



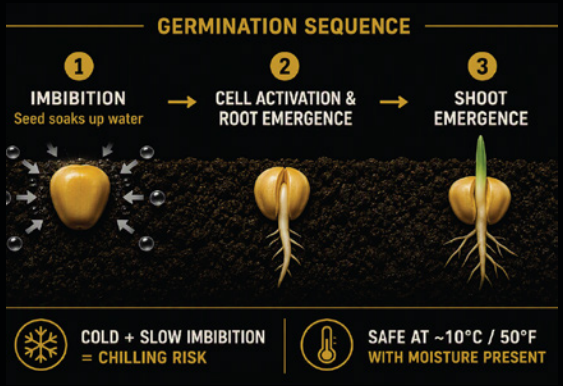
TREATMENTS	YIELD REP 1 (bu/acre)	YIELD REP 2 (bu/acre)	YIELD REP 3 (bu/acre)	YIELD REP 4 (bu/acre)	AVERAGE YIELD (bu/acre)	% CHANGE
VBMaxx + Inoculant	17.6	18.6	12.3	17.6	16.5	
Active PLS	16.2	13.2	15.0	16.4	15.2	**-8.0**
VBMaxx + Inoculant + Active PLS	18.7	18.2	13.4	17.2	16.9	**2.1**

LENTILS - PROTEIN



TREATMENTS	PROTEIN REP 1 (%)	PROTEIN REP 2 (%)	PROTEIN REP 3 (%)	PROTEIN REP 4 (%)	AVERAGE PROTEIN (%)	% CHANGE
VBMaxx + Inoculant	25.42	25.12	23.89	24.68	24.78	
Active PLS	25.29	24.77	24.87	24.01	24.74	**-0.17**
VBMaxx + Inoculant + Active PLS	25.22	24.31	24.21	25.60	24.84	**0.23**

3RD party yield research with Ag-Quest.



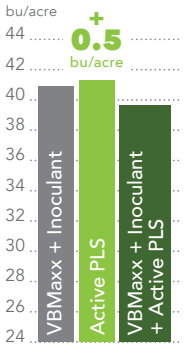
THE FIRST DRINK

FAST WATER UPTAKE SETS THE STAND

In the first hours after planting a seed rapidly soaks up water, a step called imbibition. Good moisture lets this happen fast and evenly, which lowers the chance of chilling injury in cold soils. That's why corn and soybeans are safest once soil at seed depth is about 10C (50F) with moisture present.

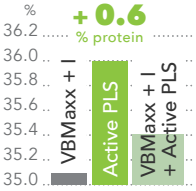
Source: University of Nebraska-Lincoln CropWatch, 2025.

SOYBEAN - YIELD



TREATMENTS	YIELD REP 1 (bu/acre)	YIELD REP 2 (bu/acre)	YIELD REP 3 (bu/acre)	YIELD REP 4 (bu/acre)	AVERAGE YIELD (bu/acre)	% CHANGE
VBMaxx + Inoculant	40.5	45.1	40.3	37.1	40.8	
Active PLS	38.7	44.2	40.4	41.7	41.3	**1.2**
VBMaxx + Inoculant + Active PLS	43.4	36.6	37.7	40.7	39.6	**-2.8**

SOYBEAN PROTEIN



TREATMENTS	AVERAGE PROTEIN (%)	% CHANGE
VBMaxx + Inoculant	35.40	
Active PLS	36.00	**1.69**
VBMaxx + Inoculant + Active PLS	35.10	**-0.85**

3RD party yield research with Ag-Quest.



Vibrance + Inoculant



Active PLS



Vibrance + Inoculant + Active PLS



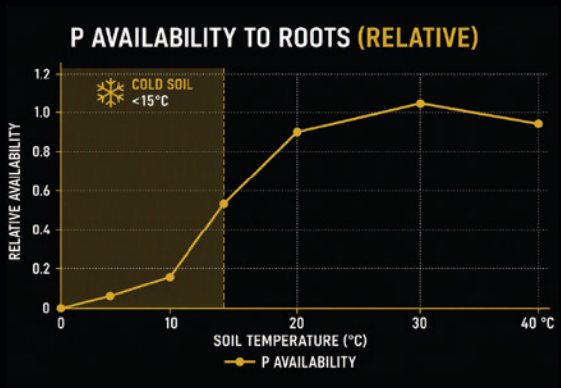
Vibrance + Inoculant



Active PLS



Vibrance + Inoculant + Active PLS



COLD LOCKS P

COLD SOIL SLOWS P UPTAKE

Phosphorus barely moves in cold soil, and roots take it up slowly until soils warm past roughly 12 to 15C. Since Prairie crops are often seeded into cold spring ground, seedlings can go short of P right when they need it for early root and shoot growth. A small amount of readily available starter phosphate near the seed bridges that gap.

Source: Canola Council of Canada, "Phosphorus" (Canola Encyclopedia).

NOTES

PHASE 02

SOIL FERTILITY

TEST WHAT'S THERE. MOVE WHAT'S LOCKED UP. REPLACE WHAT'S LEAVING.

AGRONOMICS

Tie-up, salt index, biology and pH decide what the plant actually gets.

ECONOMICS

Half of broadcast P never reaches the crop. Efficiency is the lever.

LOGISTICS

Drop-in placement. No new equipment. Same pass, more delivered.

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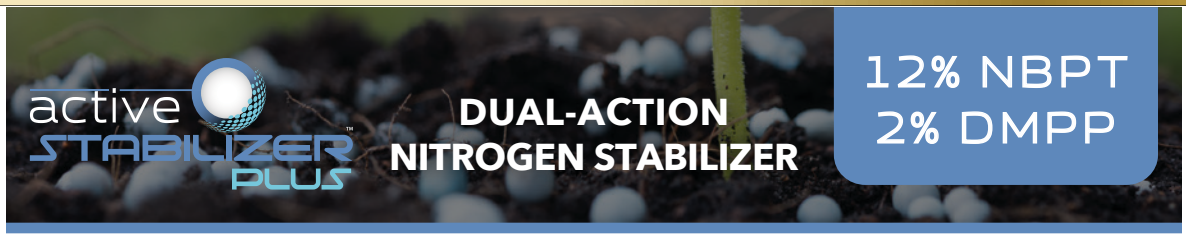
NITROGEN MANAGEMENT



NITROGEN MANAGEMENT

N MANAGEMENT 53

Stabilizer PLUS 55
ARM U 18% NBPT 59
ARM U 30% NBPT 63
ARM U 15% DMPP 67
ARM UAN 69



SLOWS DOWN THE N CYCLE
Inhibits nitrogen loss processes, keeping nitrogen available to plants longer.

2 IN 1 STABILIZER
Combines NBPT to prevent ammonia volatilization and DMPP to reduce leaching and denitrification.

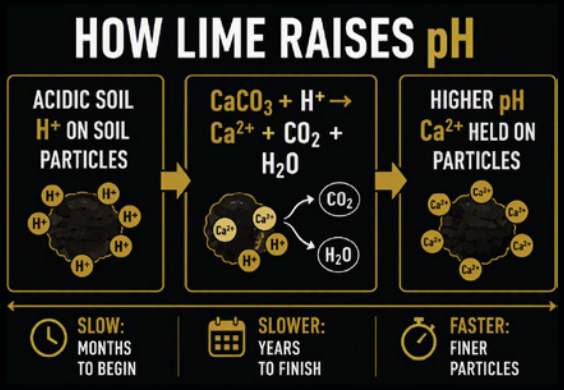


PAYS FOR ITSELF
Can pay for itself through n savings alone, reducing the amount of nitrogen fertilizer required.

INHIBITS NH_3 LOSS
Significantly reduces ammonia volatilization compared to untreated urea.

BEST NITROGEN MANAGEMENT ROI
Enhanced nitrogen fertilizer efficiency translates into a significant ROI.

REDUCES N_2O EMISSIONS
Significantly reduces in nitrous oxide emissions compared to untreated urea.



HOW LIME WORKS

CARBONATE NEUTRALIZES SOIL ACID

Ag lime is finely ground limestone (mostly calcium carbonate) that neutralizes acidity: the carbonate reacts with acidic hydrogen ions to form CO2 and water, raising pH. It dissolves slowly, months to start, years to fully react, and finer grinds act faster. Dolomitic lime also supplies magnesium.

Source: Ontario Soil & Crop Improvement Association, 2020.



Active STABILIZER™ PLUS HOW IT WORKS

NUTRIENT ANALYSIS

NBPT 12%
(N-(n-butyl) thiophosphoric triamide)
DMPP 2%
(3,4-dimethylpyrazole phosphate)

MIXING INSTRUCTIONS

Blending into Urea: Use 1.2 - 2.4 L Active STABILIZER™ PLUS / 1000 kg Urea. For uniform blending, use a blender with impregnation equipment. Weigh the urea and transfer to blender. Add the required amount of Active STABILIZER™ PLUS to the urea in the blender. Blend until the Active STABILIZER™ PLUS is uniformly mixed into the urea. Do not add any other fertilizer materials until Active STABILIZER™ PLUS is thoroughly distributed. If mixture appears wet or sticky, a drying agent may be added at this time.

Blending into UAN: Use 1 - 2 L of Active STABILIZER™ PLUS / 1000 kg UAN solution. Fill spray tank with half the desired amount of UAN. Measure the recommended quantity of Active STABILIZER™ PLUS and add to the tank. Mix well. Add other products at this stage, if needed. Add the second half of the UAN solution. Continue mixing until well blended. Keep agitator running while mixing.

COMPATIBILITY

Compatible with urea, urea ammonium nitrate and other urea based fertilizers.

A dual-action nitrogen saving technology that inhibits both ammonia volatilization and nitrification/denitrification.

WHY TO USE

Active STABILIZER™ PLUS prevents nitrogen loss through ammonia volatilization and nitrification/denitrification ensuring applied fertilizer is not wasted. In comparison to DCD products, the DMPP in Active STABILIZER™ PLUS offers superior efficacy and no bioaccumulation. With its low cost and unique variable application rate, farmers can treat as necessary to maximize their return on investment.

WHEN TO USE

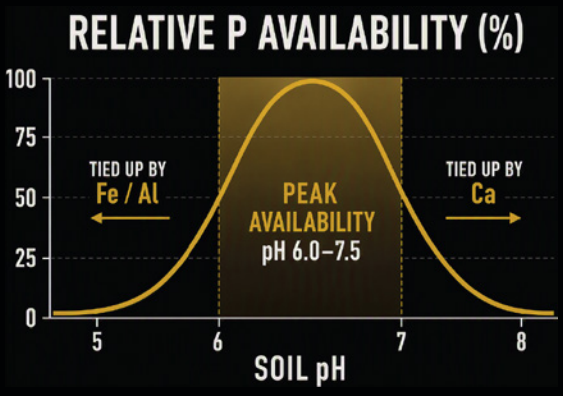
Whenever urea or UAN fertilizer is applied to soil.

HOW TO USE

To blend with urea, use 1.2–2.4 L of Active STABILIZER™ PLUS per 1000 kg. Add it to the urea in a blender and mix until evenly coated. Blend before adding any other fertilizers. If the mix feels wet or sticky, add a drying agent.
To blend with UAN, use 1–2 L per 1000 kg. Fill the tank halfway with UAN, add Active STABILIZER™ PLUS, and mix well. Add other products if needed, then add the rest of the UAN and continue mixing.

HOW IT WORKS

Active STABILIZER™ PLUS contains N-(n-butyl) thiophosphoric triamide (NBPT), which inhibits the urease enzyme activity that produces ammonia gas, preventing nitrogen loss through volatilization. With the addition of 3,4-Dimethylpyrazole phosphate, it also inhibits nitrogen oxidation or nitrification by inhibiting nitrosomonas and nitrobacter bacterial activity.



P PEAKS NEUTRAL

P IS MOST AVAILABLE NEAR PH 6.5

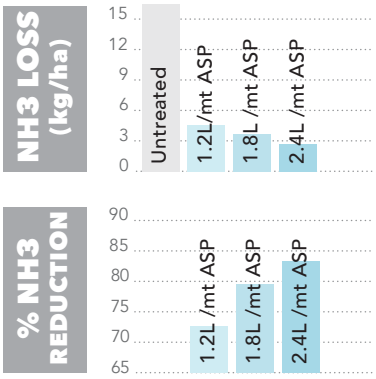
Phosphorus is most available around pH 6.0 to 7.5, peaking near 6.5. Below about pH 5.5, availability typically drops 30% or more as P gets tied up, and low pH also stunts the roots that must reach it. Liming an acid field toward neutral is one of the best ways to unlock P already there.

Source: USDA-NRCS, "Inherent Factors Affecting Soil Phosphorus," 2014.



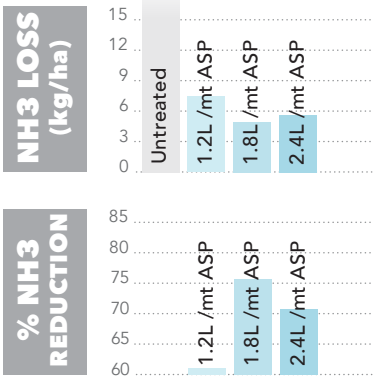
Active STABILIZER™ PLUS N LOSS DATA

CUMULATIVE NH3 LOSS FROM BANDED UREA*



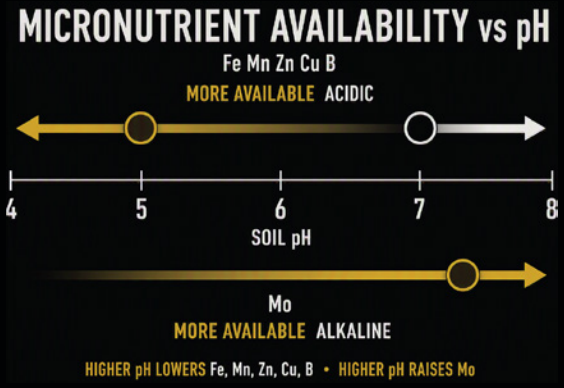
TREATMENTS	BANDED	
	NH3 loss (kg/ha)	% NH3 reduction
Untreated Urea	16.6	0.0
1.2L/mt Active STABILIZER PLUS (12% NBPT, 2% DMPP)	4.6	72.5
1.8L/mt Active STABILIZER PLUS (12% NBPT, 2% DMPP)	3.4	79.4
2.4L/mt Active STABILIZER PLUS (12% NBPT, 2% DMPP)	2.7	83.8

CUMULATIVE NH3 LOSS FROM BROADCASTED UREA*



TREATMENTS	BROADCAST	
	NH3 loss (kg/ha)	% NH3 reduction
Untreated Urea	19.2	0.0
1.2L/mt Active STABILIZER PLUS (12% NBPT, 2% DMPP)	7.4	61.5
1.8L/mt Active STABILIZER PLUS (12% NBPT, 2% DMPP)	4.8	75.2
2.4L/mt Active STABILIZER PLUS (12% NBPT, 2% DMPP)	5.7	70.3

**3RD party nitrogen emissions research with the University of Manitoba.*



METALS LOVE ACID

MICRONUTRIENTS RISE AS PH DROPS

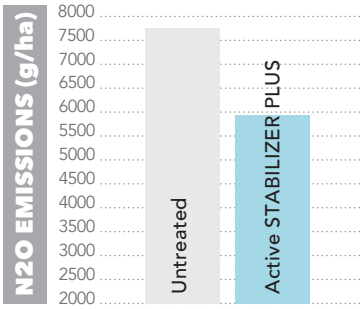
Most micronutrients behave opposite to what you'd expect. Iron, manganese, zinc, copper and boron become more available as soil turns acidic and less as pH climbs; molybdenum does the reverse. For the metals the effect is dramatic, availability can fall ~100-fold per one-unit pH rise, so high-pH fields can show deficiency even when the nutrient is present.

Source: University of Maryland Extension, FS-1054, 2021.



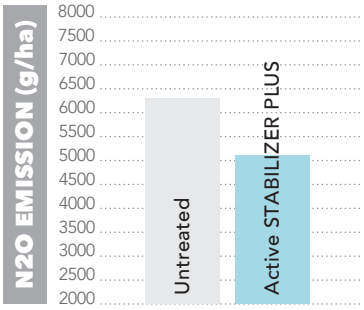
Active STABILIZER™ PLUS N LOSS DATA

NITROUS OXIDE EMISSIONS FROM BROADCASTED UREA*



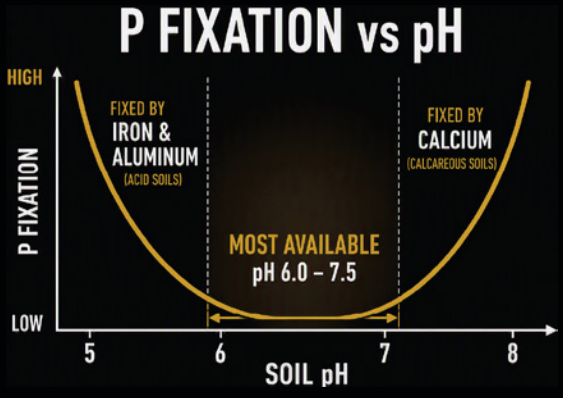
TREATMENT	N2O FLUX (g/ha)	DIFFERENCE (g/ha)	REDUCTION %
Untreated	7760		
Active STABILIZER PLUS	5965	1794	**23.1**

NITROUS OXIDE EMISSIONS FROM SHALLOW BANDED UREA*



TREATMENT	N2O FLUX (g/ha)	DIFFERENCE (g/ha)	REDUCTION %
Untreated	6301		
Active STABILIZER PLUS	5161	1141	**18.1**

**3RD party nitrogen emissions research with the University of Manitoba.*



TWO P TRAPS

ACID: Fe/Al LOCK P; ALKALINE: Ca

Phosphorus gets locked up at both ends of the pH scale, by different culprits. In acid soils, iron and aluminum bind it into insoluble compounds; in alkaline or calcareous soils, calcium does. That's why availability peaks in the middle, and why just adding more P to a very acid or calcareous field is inefficient without managing pH and placement.

Source: USDA-NRCS, "Inherent Factors Affecting Soil Phosphorus," 2014.



BEST INDUSTRY VOLATILIZATION PRODUCT
Leads the industry in preventing nitrogen loss via ammonia volatilization.

HIGHLY EFFICIENT
Requires less product per metric tonne of fertilizer compared to competitor brands.

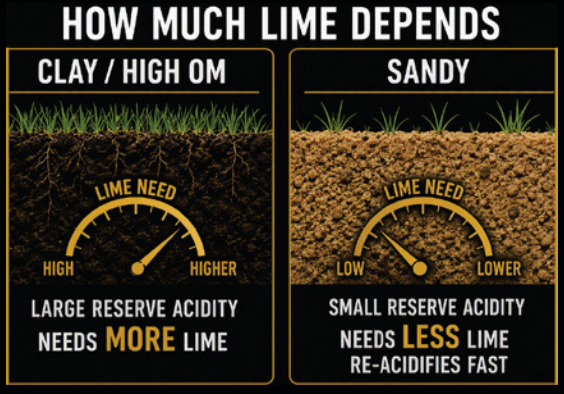


CANADIAN MADE
Made in Canada and designed specifically for North American conditions.

INHIBITS NH_3 LOSS
Significantly reduces ammonia volatilization compared to untreated urea.

BEST NITROGEN MANAGEMENT ROI
Enhanced nitrogen fertilizer efficiency translates into a significant ROI.

GREAT HANDLING
Easy to store, mix, and apply, offering reliable performance under various environmental conditions.

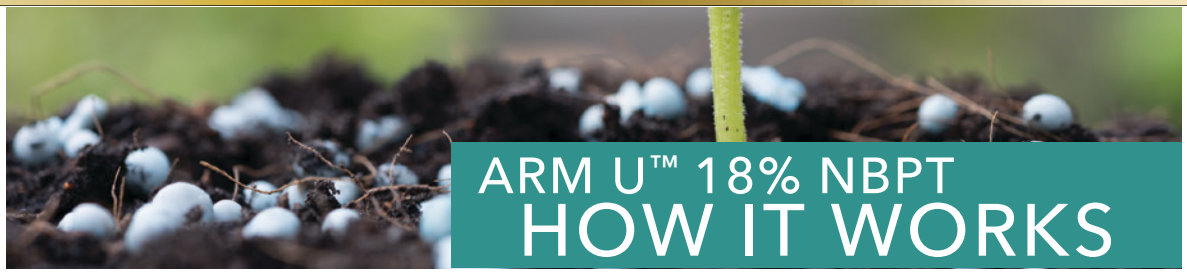


LIME RATES VARY

SAME PH, VERY DIFFERENT LIME NEEDS

Two fields at the same pH can need very different amounts of lime, because soil holds a hidden reserve acidity that resists change. Clay-rich and high-organic-matter soils have a large reserve and need much more lime; sandy soils change fast but re-acidify sooner. That's why labs run a separate buffer-pH test to set the rate.

Source: Oklahoma State University Extension, "Soil pH and Buffer Index."



ARM U™ 18% NBPT HOW IT WORKS

NUTRIENT ANALYSIS

NBPT 18%
(N-(n-butyl) thiophosphoric triamide)

MIXING INSTRUCTIONS

Blending into Urea: Use 2 L ARM U™ 18% NBPT/1000 kg Urea. For uniform blending, use a blender with impregnation equipment. Weigh the urea and transfer to blender. Add the required amount of ARM U™ to the urea in the blender. Blend until the ARM U™ is uniformly mixed into the urea. Do not add any other fertilizer materials until ARM U™ 18% NBPT is thoroughly distributed. If mixture appears wet or sticky, a drying agent may be added at this time.

Blending into UAN: Use 1.2 L ARM U™ 18% NBPT/ 1000 kg UAN solution. Fill spray tank with half the desired amount of UAN. Measure the recommended quantity of ARM U™ 18% NBPT and add to the tank. Mix well. Add other products at this stage, if needed. Add the second half of the UAN solution. Continue mixing until well blended. Keep agitator running while mixing.

COMPATIBILITY

Compatible with urea, urea ammonium nitrate and other urea based fertilizers.

NBPT fertilizer additive that helps crops use nitrogen more efficiently by reducing its loss as ammonia gas.

WHY TO USE

Nitrogen is vital for plant growth but up to 50% of soil-applied nitrogen is lost as ammonia gas. ARM U™ 18% NBPT blocks this loss by inhibiting the enzyme that converts nitrogen, helping plants absorb more through their roots.
ARM U™ 18% NBPT is a patented NBPT formulation with polymers that boost binding to the urease enzyme, improving effectiveness. This means lower active ingredient and use rates. It also buffers pH below 7 to protect and maximize nitrogen use.

WHEN TO USE

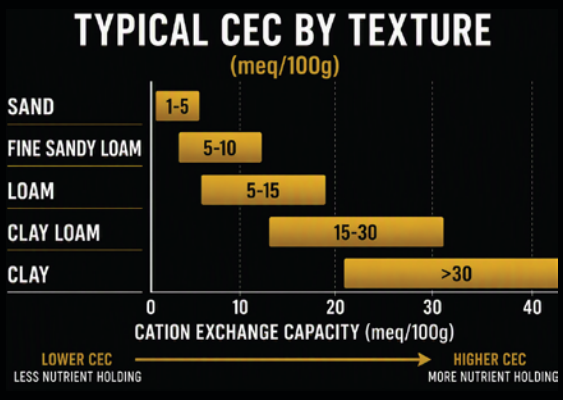
Whenever urea or UAN fertilizer is applied to soil.

HOW TO USE

To blend with urea, use 2 L of ARM U™ 18% NBPT per 1000 kg of urea. Add to a blender and mix until the product is evenly coated. Blend first before adding other fertilizers. If the mix is wet or sticky, add a drying agent. To blend with UAN, use 1.2 L per 1000 kg of UAN. Fill the tank halfway, add ARM U™ 18% NBPT, and mix well. Add other products if needed, then the rest of the UAN. Keep mixing until fully blended.

HOW IT WORKS

ARM U contains N-(n-butyl) thiophosphoric triamide (NBPT), which inhibits the urease enzyme activity that produces ammonia gas. By stopping nearly 96% of the volatilization loss, plants have the opportunity to absorb and utilize the nitrogen necessary for photosynthesis and production of protein.

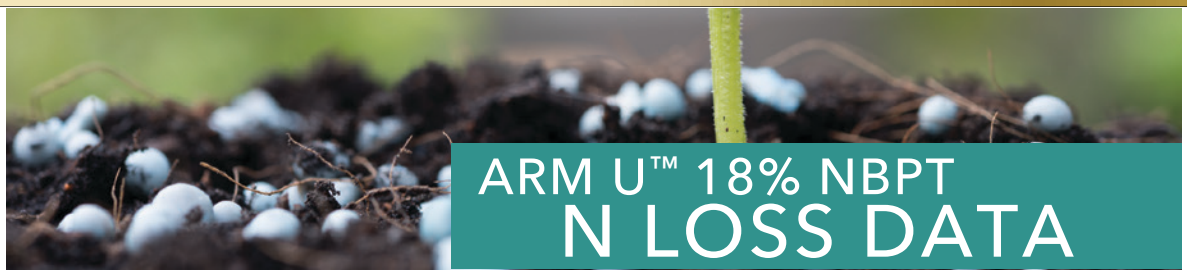


WHAT CEC MEANS

SOIL'S GRIP ON POSITIVE NUTRIENTS

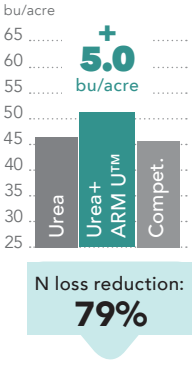
Cation exchange capacity (CEC) is the soil's ability to hold positively charged nutrients, calcium, magnesium, potassium, on clay and organic matter surfaces, keeping them available instead of leaching away. It's reported in meq/100g. Sandy soils are low (~1-5); clay- or organic-rich soils are much higher (~20-40+).

Source: University of Georgia Extension, Bulletin 1040.



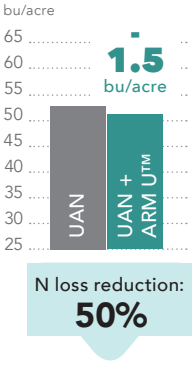
ARM U™ 18% NBPT N LOSS DATA

WHEAT



WHEAT • UREA - ARM U™, FALL APPLIED *

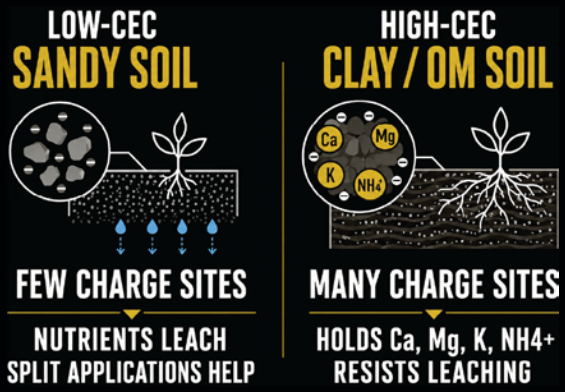
TREATMENT	2 YEAR AVG. NH3 LOSS (kg of N/ha)	% LOSS REDUCTION	2 YEAR AVG. YIELD (bu/acre)	% CHANGE
Untreated Urea	16.3		46.4	
Urea + ARM U	3.4	79.3	51.4	10.8
Urea + Competitor	4.0	75.8	45.9	-0.9



WHEAT • UAN - ARM U™, FALL APPLIED *

TREATMENT	2 YEAR AVG. NH3 LOSS (kg of N/ha)	% LOSS REDUCTION	2 YEAR AVG. YIELD (bu/acre)	% CHANGE
Untreated UAN	7.2		52.8	
UAN + ARM U	3.6	49.8	51.3	-2.9

*3RD party nitrogen emissions research with the University of Manitoba.

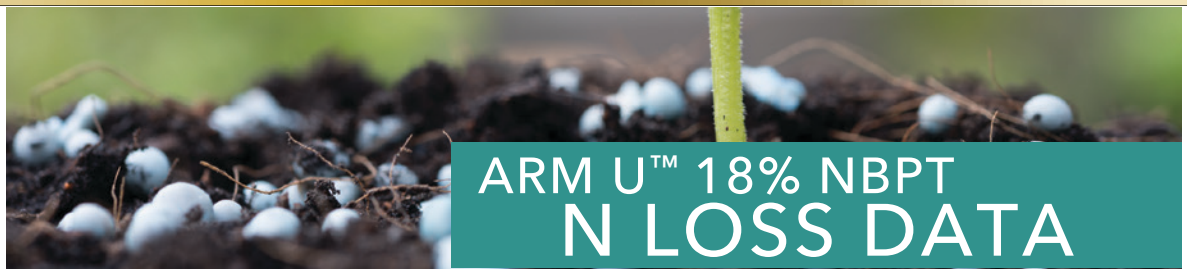


CLAY & HUMUS

BOTH CARRY THE NEGATIVE CHARGE

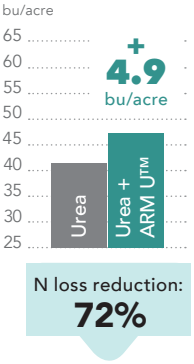
A soil's CEC comes almost entirely from clay minerals and organic matter, both carry negative charges that grab positively charged nutrients. Organic matter has a very high charge per unit weight, so building it (and having more clay) raises CEC. Low-CEC sandy soils leach easily, which is why lighter soils benefit from smaller, split applications.

Source: Soil Health Nexus (North Central Region Water Network).



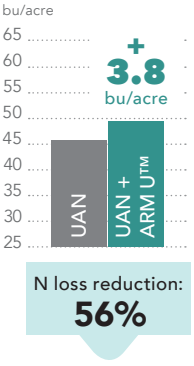
ARM U™ 18% NBPT N LOSS DATA

CANOLA



CANOLA • UREA - ARM U™, FALL APPLIED *

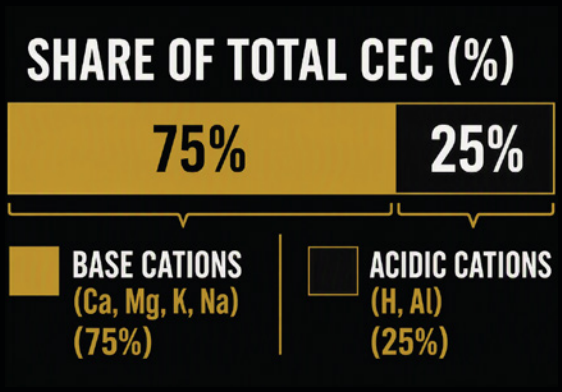
TREATMENT	2 YEAR AVG. NH3 LOSS (kg of N/ha)	% LOSS REDUCTION	2 YEAR AVG. YIELD (bu/acre)	% CHANGE
Untreated Urea	16.6		42.3	
Urea + ARM U	4.7	72.0	47.2	11.6



CANOLA • UAN - ARM U™, FALL APPLIED *

TREATMENT	2 YEAR AVG. NH3 LOSS (kg of N/ha)	% LOSS REDUCTION	2 YEAR AVG. YIELD (bu/acre)	% CHANGE
Untreated UAN	7.3		45.8	
UAN + ARM U	3.2	56.2	49.6	8.2

**3RD party nitrogen emissions research with the University of Manitoba.*

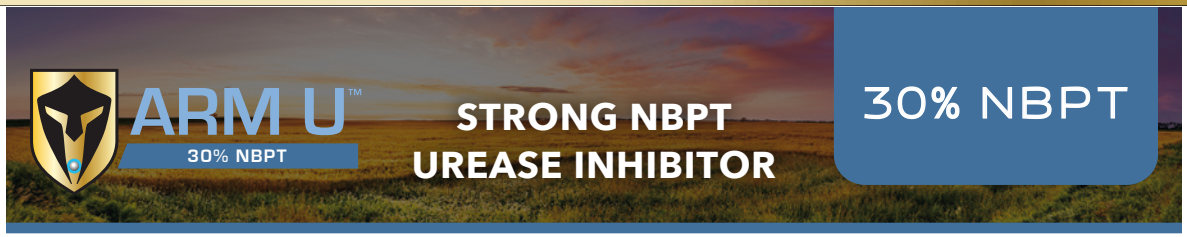


BASE SATURATION

SHARE OF SITES HELD BY BASE IONS

Base saturation is the share of a soil's CEC occupied by base cations, calcium, magnesium, potassium and sodium. The rest is held by acidic cations (hydrogen and aluminum), so base saturation tends to rise as pH rises. A base saturation of 75% means three of every four exchange sites are filled by base cations.

Source: Clemson University Agricultural Service Laboratory.



BEST FOR HIGH NITROGEN LOSS SITUATIONS

High concentration of NBPT is effective with high pH soils and low moisture.

MAXIMIZES FERTILIZER EFFICIENCY

Minimizes nitrogen loss, boosting fertilizer efficiency and reducing costs.



CANADIAN MADE

Made in Canada and designed specifically for North American conditions.

INHIBITS NH_3 LOSS

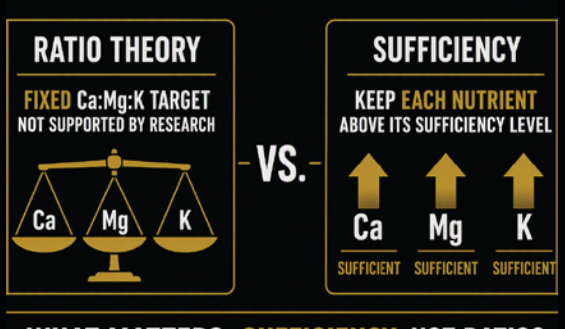
Significantly reduces ammonia volatilization compared to untreated urea.

CONSISTENT PERFORMANCE

Offers more reliable performance across a wider range of environmental conditions.

EFFORTLESS APPLICATION

Liquid formulation allows easy application with thorough coverage and minimal handling issues.

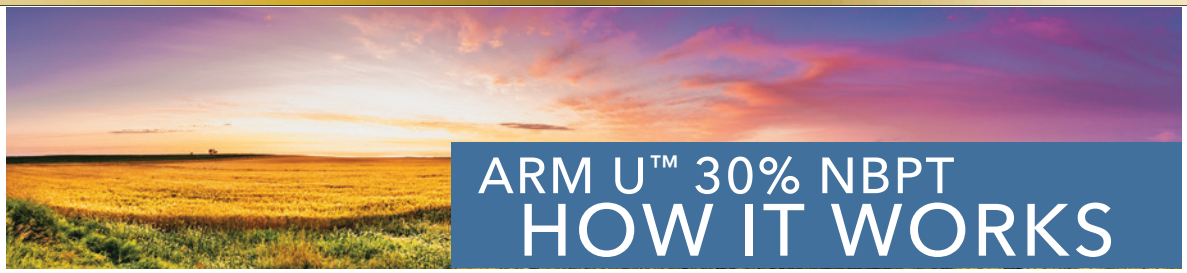


THE RATIO MYTH

SUFFICIENCY BEATS A FIXED RATIO

Some soil-balancing programs claim a fixed ideal ratio of calcium to magnesium to potassium is needed for top yields. Peer-reviewed reviews don't support this: within ranges normally found in soils, yield generally isn't controlled by the ratio. What matters is that each nutrient is present in sufficient amount. Chasing a ratio often means buying inputs the crop doesn't need.

Source: Michigan State Univ. Ext. (Kopittke & Menzies, SSSAJ 2007).



ARM U™ 30% NBPT HOW IT WORKS

NUTRIENT ANALYSIS

NBPT 30%
(N-(n-butyl) thiophosphoric triamide)

MIXING INSTRUCTIONS

Blending into Urea: Use 1.2 L ARM U™/1000 kg Urea. For uniform blending, use a blender with impregnation equipment. Weigh the urea and transfer to blender. Add the required amount of ARM U™ to the urea in the blender. Blend until the ARM U™ is uniformly mixed into the urea. Do not add any other fertilizer materials until ARM U™ is thoroughly distributed. If mixture appears wet or sticky, a drying agent may be added at this time.

Blending into UAN: Use 720 ml ARM U™/ 1000 kg UAN solution. Fill spray tank with half the desired amount of UAN. Measure the recommended quantity of ARM U™ and add to the tank. Mix well. Add other products at this stage, if needed. Add the second half of the UAN solution. Continue mixing until well blended. Keep agitator running while mixing.

COMPATIBILITY

Compatible with urea, urea ammonium nitrate and other urea based fertilizers.

A liquid fertilizer additive that controls ammonia volatilization from urea and urea ammonium nitrate (UAN) fertilizers.

WHY TO USE

Nitrogen is essential for plant life and growth and is therefore a component of many fertilizers. However, up to 50% of the nitrogen applied as soil fertilizer is unavailable to plants because it is quickly converted to ammonia gas and released into the atmosphere. ARM U 30% NBPT inhibits this enzymatic process, allowing nitrogen to be absorbed through the plant roots.

WHEN TO USE

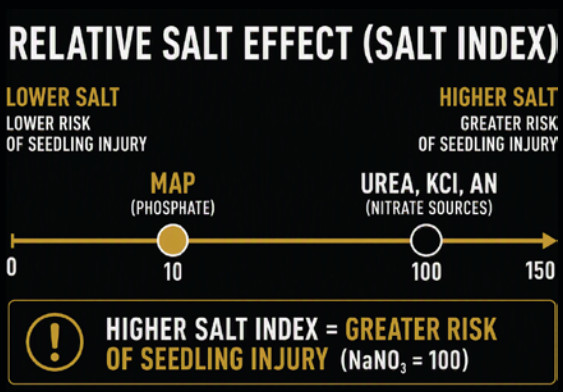
Whenever urea or UAN fertilizer is applied to soil.

HOW TO USE

To blend with urea, use 1.2 L of ARM U™ per 1000 kg of urea. Add to a blender and mix until granules are evenly coated. Blend first before adding other fertilizers. If the mix is wet or sticky, add a drying agent. To blend with UAN, use 720 mL per 1000 kg of UAN. Fill the tank halfway, add ARM U™, and mix well. Add other products if needed, then the rest of the UAN. Keep mixing until fully blended.

HOW IT WORKS

Unlike other NBPT formulations, ARM U 30% NBPT is patented and an improved formulation that contains polymers (spreader molecules) that increase NBPT's binding rates to urease enzyme leading to improved NBPT activity. This increased activity enables a lower active ingredient and a lower use rate. In addition, ARM U 30% NBPT is formulated to have a high buffering capacity to keep the solution pH below 7 and to protect and fully utilize the nitrogen present in the NBPT molecule.



THE SALT INDEX

SALT INDEX PREDICTS SEEDLING BURN

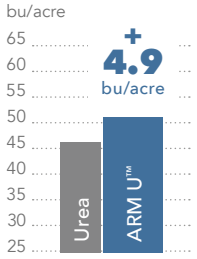
The salt index measures how much a fertilizer raises the salt concentration of the soil solution, compared with sodium nitrate set at 100. Highly soluble sources (some N and K fertilizers) tend to run higher; phosphates like MAP are lower. A high salt index near the seed can pull water away from seedlings and cause fertilizer burn.

Source: University of Wisconsin-Madison Soil Science Extension, 2008.



ARM U™ 30% NBPT N LOSS DATA

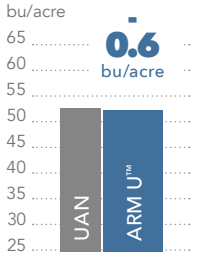
WHEAT



N loss reduction: **84%**

WHEAT • UREA - ARM U™ 30% NBPT & 15% DMPP - FALL APPLIED*

TREATMENT	2 YEAR AVG. NH3 LOSS (kg of N/ha)	% LOSS REDUCTION	2 YEAR AVG. YIELD (bu/acre)	% CHANGE
Untreated Urea	16.3		46.4	
ARM U™ 30%NBPT & 15%DMPP	2.7	83.5	51.2	10.5

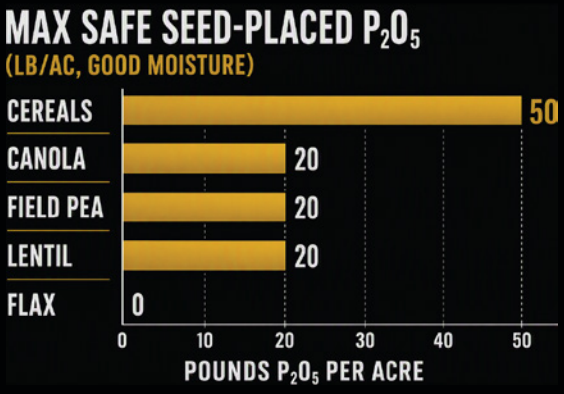


N loss reduction: **75%**

WHEAT • UAN - ARM U™ 30% NBPT & 15% DMPP - FALL APPLIED*

TREATMENT	2 YEAR AVG. NH3 LOSS (kg of N/ha)	% LOSS REDUCTION	2 YEAR AVG. YIELD (bu/acre)	% CHANGE
Untreated UAN	7.2		52.8	
ARM U™ 30%NBPT & 15%DMPP	1.8	75.3	52.2	-1.1

**3RD party nitrogen emissions research with the University of Manitoba.*



SAFE SEED RATES

TOO MUCH WITH SEED THINS THE STAND

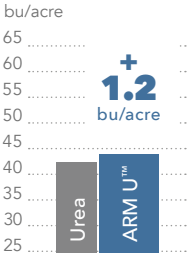
Too much fertilizer with the seed can injure or kill seedlings through ammonia and salt effects, cutting your stand. Safe rates depend on crop, source, soil moisture, and how widely seed and fertilizer are spread. On the Prairies canola is far more sensitive than cereals, roughly 20 lb/ac seed-placed phosphate for canola versus 50 for cereals.

Source: Manitoba Agriculture, "Safely Applying Fertilizer with Seed."



ARM U™ 30% NBPT N LOSS DATA

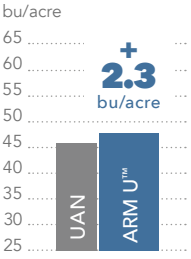
CANOLA



N loss reduction: **73%**

CANOLA • UREA - ARM U™ 30% NBPT & 15% DMPP - FALL APPLIED*

TREATMENT	2 YEAR AVG. NH3 LOSS (kg of N/ha)	% LOSS REDUCTION	2 YEAR AVG. YIELD (bu/acre)	% CHANGE
Untreated Urea	16.6		42.3	
ARM U™ 30%NBPT & 15%DMPP	4.5	72.8	43.6	2.9

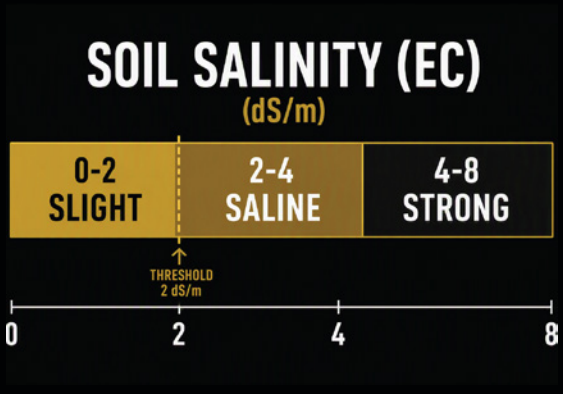


N loss reduction: **61%**

CANOLA • UAN - ARM U™ 30% NBPT & 15% DMPP - FALL APPLIED*

TREATMENT	2 YEAR AVG. NH3 LOSS (kg of N/ha)	% LOSS REDUCTION	2 YEAR AVG. YIELD (bu/acre)	% CHANGE
Untreated UAN	7.3		45.8	
ARM U™ 30%NBPT & 15%DMPP	2.9	60.7	48.1	5.1

**3RD party nitrogen emissions research with the University of Manitoba.*



MEASURING SALT

EC READS SOIL SALINITY IN DS/M

Electrical conductivity (EC) measures how well soil solution carries a current, which rises as dissolved salts increase, a direct read on salinity, reported in dS/m. By the common standard a soil is saline at 2 dS/m or more. High salt makes it harder for roots to pull in water, stressing crops even when moisture is present.

Source: North Dakota State University Extension, SF-1087.



SLOWS DOWN THE N CYCLE
Slows the conversion of ammonium to nitrate, enhancing the efficiency of nitrogen fertilizers.

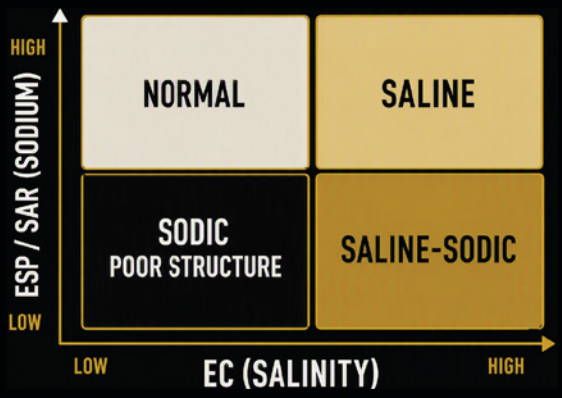
IMPROVES NITROGEN-USE EFFICIENCY
Maximizes fertilizer efficiency, lowering overall costs by reducing the amount needed.

CANADIAN MADE
Made in Canada and designed specifically for North American conditions.

REDUCES N_2O EMISSIONS
DMPP inhibits nitrification which reduces nitrous oxide emissions.

LESS PRODUCT, MORE IMPACT
Requires less product per metric tonne of fertilizer compared to competitor brands.

ADD NBPT FOR DUAL PROTECTION
Can be mixed with ARM U™ 18% NBPT or 30% NBPT to inhibit all forms of nitrogen loss.



SODIUM DAMAGE

EXCESS SODIUM DISPERSES CLAY

Sodicity is a sodium problem, not just a salt problem. It's measured by exchangeable sodium percentage (ESP) or sodium adsorption ratio (SAR); soil is generally sodic at ESP ~15+. Too much sodium makes clay disperse, destroying structure and creating dense, crusted, poorly draining soil. Unlike a saline soil, a sodic soil's main damage is physical.

Source: Soil Health Nexus (North Central Region Water Network).



ARM U™ 15% DMPP HOW IT WORKS

NUTRIENT ANALYSIS

DMPP 15%
(3,4-dimethylpyrazole phosphate)

MIXING INSTRUCTIONS

Blending into Urea: Use 0.6 L ARM U™/1000 kg Urea. For uniform blending, use a blender with impregnation equipment. Weigh the urea and transfer to blender. Add the required amount of ARM U™ to the urea in the blender. Blend until the ARM U™ is uniformly mixed into the urea. Do not add any other fertilizer materials until ARM U™ is thoroughly distributed. If mixture appears wet or sticky, a drying agent may be added at this time.

Blending into UAN: Use 0.35 L ARM U™/ 1000 kg UAN solution. Fill spray tank with half the desired amount of UAN. Measure the recommended quantity of ARM U™ and add to the tank. Mix well. Add other products at this stage, if needed. Add the second half of the UAN solution. Continue mixing until well blended. Keep agitator running while mixing.

COMPATIBILITY

Compatible with urea, urea ammonium nitrate and other urea based fertilizers. **This product can be mixed with ARM U™ 18% NBPT or ARM U™ 30% NBPT to mitigate the losses from ammonia volatilization along with nitrification and denitrification.**

A liquid additive for urea and UAN fertilizers that reduces nitrogen loss by inhibiting nitrification.

WHY TO USE

Nitrogen fertilizer applied in certain conditions is prone to losses through nitrification leading to runoff, leaching, and denitrification (N_2O emissions). ARM U™ 15% DMPP slows down the nitrification process, thereby extending the availability of nitrogen in the soil and reducing fertilizer loss. By doing so, it ensures that plants have continuous access to this critical nutrient, fostering healthier growth and maximizing yield potential.

WHEN TO USE

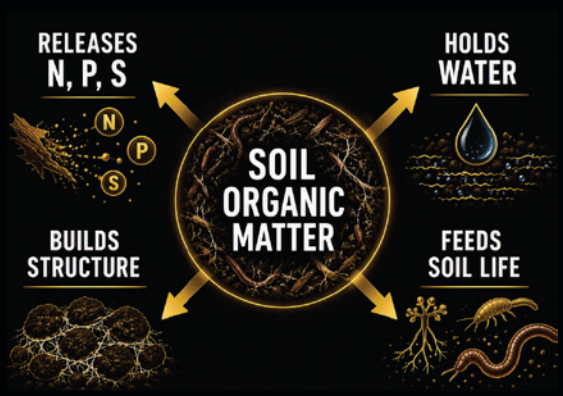
Whenever urea or UAN fertilizer is applied to soil.

HOW TO USE

To blend with urea, use 0.6 L of ARM U™ 15% DMPP mixture per 1000 kg of urea. Add to a blender and mix until granules are evenly coated. Blend first before adding other fertilizers. If the mix is wet or sticky, add a drying agent. To blend with UAN, use 0.35 L per 1000 kg of UAN. Fill the tank halfway, add ARM U™ 15% DMPP, and mix well. Add other products if needed, then the rest of the UAN. Keep mixing until fully blended.

HOW IT WORKS

ARM U 15% DMPP contains 3,4-Dimethylpyrazole phosphate (DMPP), which inhibits nitrogen oxidation or nitrification by eliminating nitrosomonas and nitrobacter bacterial activity.



THE VITAL 5%

ORGANIC MATTER DRIVES SOIL FUNCTION

Organic matter is usually just a few percent of soil by weight, but it punches far above that. It releases nutrients as it breaks down, binds particles into crumbs that resist erosion, improves water infiltration and holding capacity, and feeds the organisms that keep soil functioning.

Source: Province of Manitoba Agriculture, Soil Management Guide.

ARM UAN

18% NBPT | **3% DMPP**

Protect Your UAN Investment from Volatilization and Denitrification

ARM UAN is a dual-action nitrogen stabilizer engineered for UAN. It protects against both above-ground and below-ground nitrogen losses by slowing urea hydrolysis and inhibiting microbial conversion of ammonium to nitrate. With ARM UAN, more of your applied nitrogen stays available in the root zone—where your crop needs it most.



AGRONOMIC BENEFITS

- Reduces volatilization by blocking urease activity.
- Slows denitrification and leaching through nitrification inhibition.
- Enhances nitrogen availability during key growth stages.
- Supports stronger early growth, yield consistency, and protein levels.

ECONOMIC BENEFITS

- Protects your fertilizer investment by minimizing N loss.
- Increases nitrogen use efficiency and ROI.
- Reduces the need for supplemental applications.
- Optimizes performance under variable weather and soil conditions.

LOGISTICAL BENEFITS

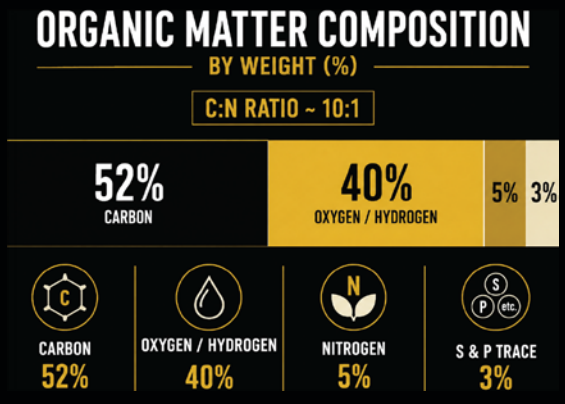
- Fully compatible with 28-0-0 and 32-0-0 UAN solutions.
- Tank-mixable and easy to apply during blending or in the field.
- Low use rate and excellent handling properties.
- Designed for seamless integration into spring or sidedress passes.

Active Ingredients

N-(n-butyl) thiophosphoric triamide (NBPT): 18%
3,4-dimethylpyrazole phosphate (DMPP): 3%
These two proven technologies work in tandem to delay nitrogen transformations, reduce environmental loss pathways, and extend availability for crop uptake.

Application Rate and Timing

Rate: Blend 1–2 L ARM UAN™ per 1000 kg UAN or 1.2–2.4 L per 1000 kg urea.
Timing: Apply directly to UAN at blending or just prior to application.
Placement: Compatible with broadcast, banded, or injected UAN delivery systems.



A NUTRIENT BANK

OM RELEASES N, P, S SLOWLY

Soil organic matter is roughly half carbon and about 5% nitrogen by weight, with a carbon-to-nitrogen ratio near 10:1, and it holds most of the soil's reserve sulfur. Because these nutrients are locked in organic form, microbes release them slowly as they decompose the material: a steady trickle rather than a quick dose.

Source: Univ. of Nebraska-Lincoln; USDA-NRCS Soil Tech Note 23A.

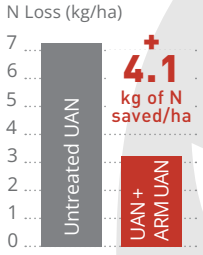
ARM UAN

18% NBPT **3% DMPP**

Protect Your UAN Investment from Volatilization and Denitrification

INDEPENDENT 3RD PARTY YIELD DATA

CANOLA

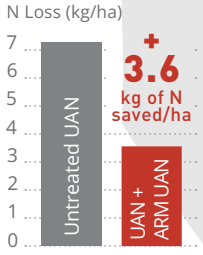


N loss reduction: **56%**

UAN, FALL APPLIED • 2 YEAR AVERAGE YIELD DATA*

TREATMENT	2 YEAR AVG. NH3 LOSS (kg of N/ha)	% LOSS REDUCTION	2 YEAR AVG. YIELD (bu/acre)	% CHANGE
Untreated UAN	7.3		45.8	
ARM UAN 18% NBPT	3.2	56.2	49.6	8.2

WHEAT

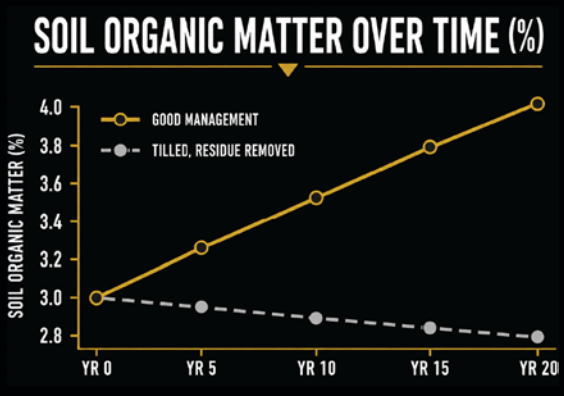


N loss reduction: **50%**

UAN, FALL APPLIED • 2 YEAR AVERAGE YIELD DATA*

TREATMENT	2 YEAR AVG. NH3 LOSS (kg of N/ha)	% LOSS REDUCTION	2 YEAR AVG. YIELD (bu/acre)	% CHANGE
Untreated UAN	7.2		52.8	
ARM UAN 18% NBPT	3.6	49.8	51.3	-2.9

**3RD party research by University of Manitoba and University of Winnipeg.*



BUILD IT SLOWLY

GAINING OM TAKES ABOUT 20 YEARS

Organic matter rises when you return more carbon than is lost, through residue, cover crops, forages in rotation, reduced tillage and manure. The catch is time: it can take around 20 years of good management to raise organic matter by one percentage point. The goal is steady maintenance and gradual gain, not a quick fix.

Source: Agriculture and Agri-Food Canada, "Soil organic matter."

GRANULAR FERTILITY



GRANULAR 71

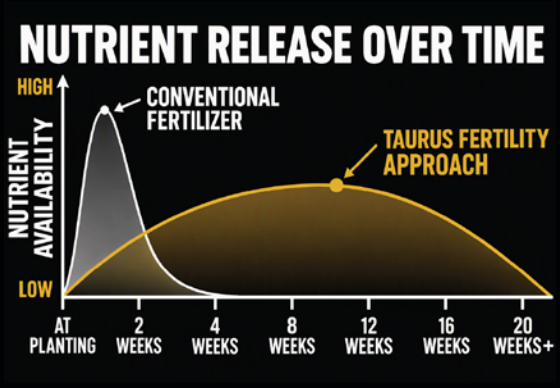
Granular Fertility 73
TSN 74
TAPP 2X 76
About OSTARA 78
CG P2X 79
CG SYNCHRO 50 MAX 82
CG PEARL 83
About ICL 85
Polysulphate® 86
Polysulphate Premium® 87
ICL PKpluS® 88
About SUL4R-PLUS® 89
SUL4R-PLUS® 90

FERTILIZER vs FERTILITY

There's a difference.

Our granular fertility portfolio is built around seed safety, low salt, nutrient efficiency, and measured nutrient release, giving the crop access to nutrition as it grows rather than delivering a large concentration of soluble nutrients to the soil all at once.

FERTILIZER	FERTILITY
ALL UP FRONT Traditional soluble fertilizers are designed to dissolve quickly and deliver a large amount of nutrition up front.	**CROP-CENTERED NUTRITION** We focus on fertilizer technologies that work with crop establishment, root development and nutrient demand.
HIGHER SALT More concentrated salts around the seed can increase the risk of seedling injury and limit safe seed-row rates.	**LOW SALT + SEED SAFE** Flexibility to place nutrition where young roots can access it without creating the same salt load as conventional fertilizer sources.
UNCONTROLLED RELEASE A large portion of the nutrient supply becomes soluble soon after application, whether the crop needs it yet or not.	**MEASURED NUTRIENT RELEASE** Nutrition remains available over a longer portion of the growing season instead of relying on one large initial release.
APPLICATION ≠ UPTAKE Not all applied nutrients reach the crop. They can become tied up, move beyond the root zone, or be lost before use.	**BUILT FOR NUTRIENT EFFICIENCY** The goal isn't simply to apply pounds of nutrient. **The goal is to get more of those pounds into the plant.**



TAURUS FERTILITY

NUTRITION WHEN CROPS NEED IT MOST

Traditional fertilizer programs can deliver a large nutrient flush early in the season, followed by a rapid decline. Taurus fertility technologies are designed to promote a more balanced release pattern, helping maintain nutrient availability during key growth stages and supporting season-long crop performance. **Go to page 7 in the Agronomy section to compare salt content in fertilizers.**

TSN

FIELD READY 46-0-0 with DMPP & NBPT



SENSIBLE ECONOMICS

With TSN, you're not applying more, you're applying agronomics that your accountant can get behind:

- Stabilized nitrogen reduces input waste, especially in dry or wet conditions.
- Delivers more yield per pound applied.
- Works across fall, winter, and spring programs.
- No extra steps or equipment needed: just load, apply, and grow.

You're not just buying fertilizer—you're investing in higher returns.

SUPERIOR LOGISTICS

Fertilizer shouldn't create friction. TSN keeps it simple. 46-0-0 with built-in protection:

- Dry and free-flowing: no clumps, no headaches.
- No coating to crack. No treatment delays.
- Whether you're applying now or next month, TSN fits your plan and your equipment.

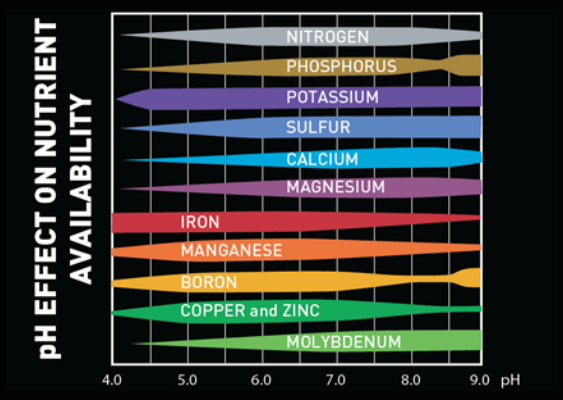
One decision now protects your acres all season long.

SOUND AGRONOMY

Nitrogen that stays where it's needed—in your soil and in your crop. Every time you apply untreated urea, you're gambling with your fertility investment:

- TSN is designed to protect against those losses with dual-action stabilization.
- NBPT guards against ammonia volatilization.
- DMPP slows conversion to nitrate, minimizing leaching and denitrification.
- Keeps nitrogen in the root zone longer — where it drives yield, not loss.

No coatings. No weather-lagged release. Just proven, responsive agronomy.



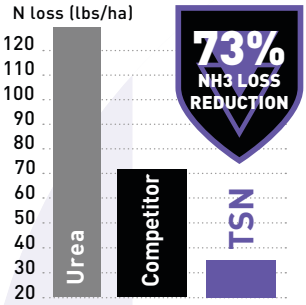
pH SETS THE TABLE

pH CONTROLS WHAT ROOTS CAN ABSORB

Soil pH controls how easily nutrients dissolve into the soil water where roots can reach them. Drift too low or too high and nutrients lock into forms plants can't absorb, so a fertilized field can still show hidden deficiencies. Most nutrients are most available from slightly acidic to neutral.

Source: University of Maryland Extension, FS-1054, 2021.

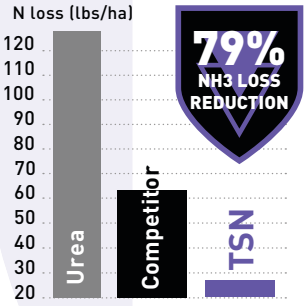
INDEPENDENT YIELD DATA



NH3 LOSS - BROADCAST UREA • SANDY SOIL*

Roseisle MB; pH-7.4, OM-2.5%, CEC-12.5;

TREATMENT	NH3 LOSS (lbs of N/ha)	% NH3 LOSS REDUCTION	N2O LOSS (lbs of N/ha)	% N2O LOSS REDUCTION	REMAINING (lbs of N/ha)	% REMAINING (lbs of N/ha)
Untreated	131.9		16.7		164.5	52.5
Competitor	71.9	45.5	14.3	14.4	226.9	72.5
TSN	35.1	73.4	13.7	18.0	264.3	84.4



NH3 LOSS - BROADCAST UREA • LOAMY SOIL*

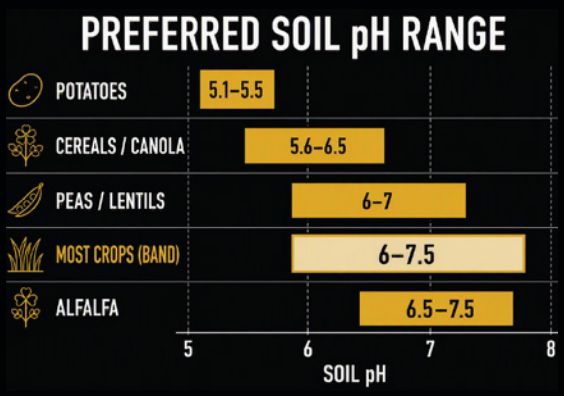
Carman MB; pH-7.4, OM-2.5%, CEC-12.5;

TREATMENT	NH3 LOSS (lbs of N/ha)	% NH3 LOSS REDUCTION	N2O LOSS (lbs of N/ha)	% N2O LOSS REDUCTION	REMAINING (lbs of N/ha)	% REMAINING (lbs of N/ha)
Untreated	129.9		9.4		165.6	54.3
Competitor	62.5	51.9	6.1	35.1	236.3	77.5
TSN	26.9	79.3	7.8	17.0	270.2	88.6

SECURE YOUR NITROGEN ADVANTAGE

When it comes to protecting your nitrogen investment, there's no second chance. TSN is the solution, engineered to keep more N in the soil, and more yield in the bin. No coatings. No weather-lagged release. Just proven, responsive agronomy.

PICK THE TIME - PICK THE APPLICATION - PICK THE PURPLE.



AIM SIX TO SEVEN

MOST CROPS PREFER PH 6.0 TO 7.5

There's no single perfect pH, but most field crops take up what they need at roughly pH 6.0 to 7.5. A few differ: potatoes tolerate more acidic soil (~5.5), while alfalfa prefers the upper end (6.5+). A soil test tells you where a field sits.

Source: Ontario Soil & Crop Improvement Assoc. / OMAFRA Pub. 611, 2020.

TAPP 2X

JUST ADD NITROGEN

N 6 **P** 27 **K** 7.5 **S** 9 **Ca** 5 **Mg** 8

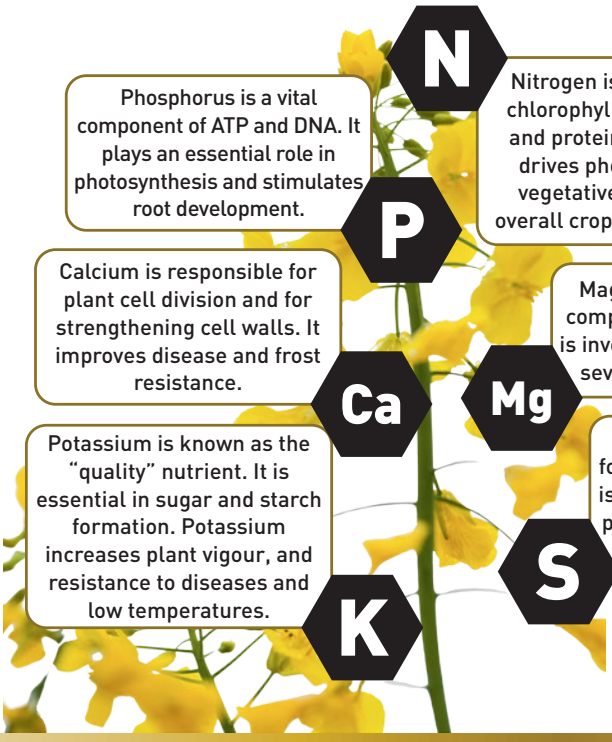
Applied at 100lbs per acre.

Taurus Ag Poly Phosphate (TAPP) 2X is a unique source of seed safe essential plant nutrients.

TAPP 2X is a customized fertility product formed into a single prill by combining Polyhalite and Struvite Phosphate, the technology in CG P2X.

TAPP ensures optimal season-long nutrient delivery of Nitrogen, Phosphorus, Potassium, Sulfur, Calcium, Magnesium, Chloride, Boron, & Zinc - right when the plant needs them most.





N Nitrogen is essential for chlorophyll, amino acids, and protein formation. It drives photosynthesis, vegetative growth, and overall crop yield potential.

P Phosphorus is a vital component of ATP and DNA. It plays an essential role in photosynthesis and stimulates root development.

Ca Calcium is responsible for plant cell division and for strengthening cell walls. It improves disease and frost resistance.

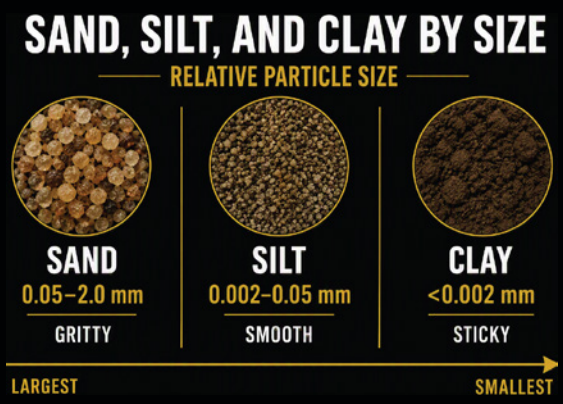
Mg Magnesium is the central component of chlorophyll. It is involved in the activation of several enzyme systems.

S Sulphur is vital to the formation of amino acids and is crucial in the production of proteins. It has an important role in stress management.

K Potassium is known as the "quality" nutrient. It is essential in sugar and starch formation. Potassium increases plant vigour, and resistance to diseases and low temperatures.

Bulk Density: 73 lb/ft³
Salt Index: 23

Manufactured by OSTARA



SAND, SILT, CLAY

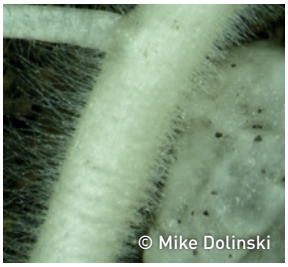
THREE MINERAL PARTICLE SIZES

Soil texture describes the proportion of three mineral particle sizes. Sand is largest (0.05-2.0 mm) and feels gritty; silt is medium (0.002-0.05 mm) and feels smooth; clay is smallest (under 0.002 mm) and feels sticky when wet. Texture is set by the parent material and doesn't change with management.

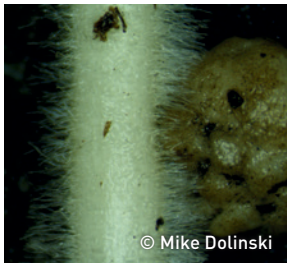
Source: University of Nebraska-Lincoln (USDA particle-size classes).

TAPP 2X

JUST ADD NITROGEN



Pea root interacting with Polyhalite.



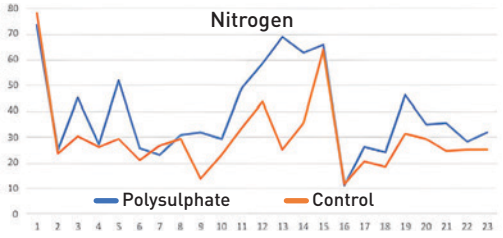
Pea root interacting with Struvite from CG P2X.

- Seed safe fertility.
- Balanced macro nutrients and micronutrients in one application.
- Ideal for air seeders, bulk mixing, and field application.
- 100% nutrient availability.
- Extended nutrient availability reduces sulfate loss.
- Better nutrient use efficiency.
- Increased yield potential.
- Zinc, iron, and boron uniformly distributed throughout each granule.
- Suited for all crop and soil types.

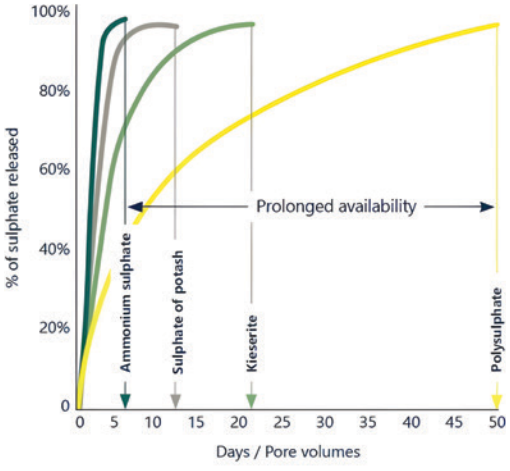
TAPP 2X facilitates root growth, nutrient and water uptake. Across two years and a cross section of soils in the UK, cereal root and above ground growth increased with Polyhalite as well as increased the nutrient uptake of N and P in the plants (higher NUE-nutrient use efficiency).

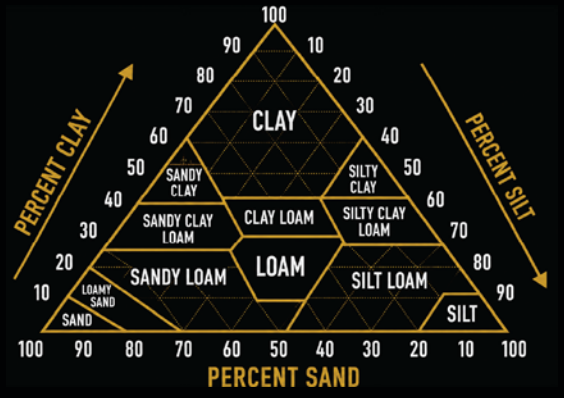


Polysulphate increased N uptake by 36% and P uptake by 41% and 34%.



Polyhalite releases sulfur gradually to support crop uptake.





READING TEXTURE

PERCENTAGES NAME 1 OF 12 CLASSES

Because the three particle percentages always add to 100%, any soil can be plotted on a triangular chart to find its class. You read percent sand, silt and clay along the three sides; where they cross names one of 12 classes, from sand to clay, with loams in the middle. Loams are prized for blending the strengths of all three.

Source: USDA Natural Resources Conservation Service, Texture Calculator.

CRYSTAL GREEN™ TECHNOLOGY FROM OSTARA

Smarter Phosphorus. Better Soil. Bigger Yields.

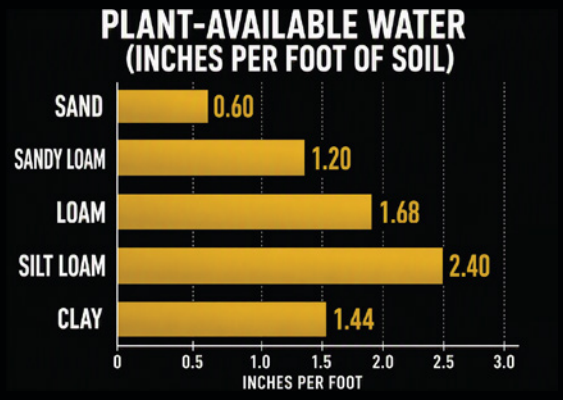
Conventional phosphorus fertilizers can quickly become tied up in the soil after application, reducing efficiency and increasing nutrient losses. Crystal Green™ uses a purified, root-activated form of phosphorus that releases nutrients only in the presence of growing roots, improving phosphorus availability, reducing waste, and supporting stronger crop performance throughout the season.

Product	Analysis	How it's Manufactured	SGN	SKU
CG P2X	9-42-0-0 9% Mg	Produced through a patented controlled chemical reaction of magnesium, ammonium, and phosphate to form uniform struvite granules without using wastewater.	300	Bulk
Synchro	10-47-0-0 5% Mg	Manufactured as a homogeneous granule that combines Crystal Green with monoammonium phosphate (MAP) for dual nutrient release.	300	Bulk
Pearl	5-28-0-0 10%Mg	Recovered from municipal wastewater using Ostara's Pearl™ process, where struvite crystals form and are harvested into fertilizer granules.	90, 150, 250-300	Mini Bulk Bags



OSTARA

Ostara pioneered nutrient-recovery fertilizer technology, marketed as Crystal Green®, the first slow-release phosphorus fertilizer to release nutrients in response to plant demand.



LOAM WINS WATER

LOAM HOLDS THE MOST USABLE WATER

Sandy soils drain fast and hold little water for plants. Clay soils hold a large total amount but grip much of it too tightly for roots to pull out. Medium-textured soils like loams and silt loams strike the best balance, holding the most water plants can actually use.

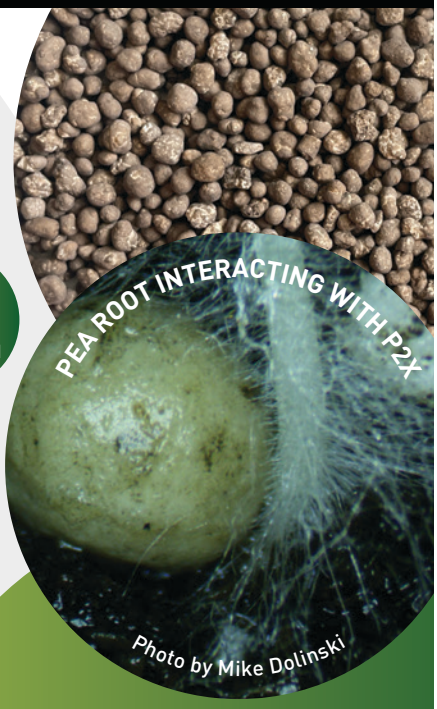
Source: South Dakota State University Extension.

CG P2X REPLACES MAP WITH 2x EFFICIENCY & PROVEN ROI

CG P2X

PHOSPHATE PERFECTED

9	42	0	0	9
NITROGEN	PHOSPHORUS	POTASSIUM	SULFUR	MAGNESIUM



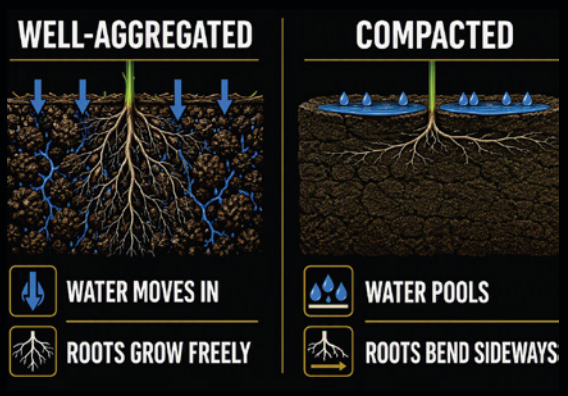
The Most Efficient Phosphate Available. Period.

- **APPLY LESS, GET MORE** – Twice the efficiency of MAP allows you to cut your phosphorus rates without sacrificing yield.
- **SEED-SAFE FORMULATION** – Apply in-furrow with confidence, eliminating the risk of seedling damage.
- **INCREASES SOIL BIOLOGY** – P2X ™ promotes a healthier soil microbiome, enhancing nutrient cycling and long-term soil fertility.
- **CONTROLLED, SEASON-LONG FEEDING** – Phosphorus remains plant-accessible all season, reducing tie-up and leaching losses.

Unlike conventional phosphorus fertilizers that become locked in the soil and require heavy applications, P2X™ remains in the root zone, releasing nutrients only when roots excrete citric and other organic acids. This ensures phosphorus is available exactly when and where plants need it most—improving efficiency, maximizing uptake, and minimizing loss.

7.7	60lbs	300
SALT INDEX	BULK DENSITY	SGN

from OSTARA



CRUMBS BREATHE

AGGREGATES OPEN PORE SPACE

Aggregates are small clumps where sand, silt, clay and organic matter are glued together by roots, fungal threads and microbial secretions. The spaces between and within them let water soak in, air reach roots, and roots grow freely. Well-aggregated soil resists erosion and crusting; compacted soil chokes off water and air.

Source: USDA-NRCS, "Aggregate Stability" Soil Quality sheet.

MAXIMUM YIELD. MICROBIAL POWER. PROFIT-DRIVEN PERFORMANCE

2.9	2.7	2.1	2.9	5.1	7.9
bu/acre yield increase	bu/acre yield increase	bu/acre yield increase	bu/acre yield increase	bu/acre yield increase	bu/acre yield increase
WHEAT	CANOLA	PEAS	SOYBEANS	LENTILS	CORN

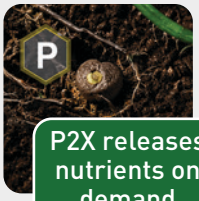
How it Works



P2X is applied in the fall or spring.



Crops naturally release weak organic acids to solubilize P2X.



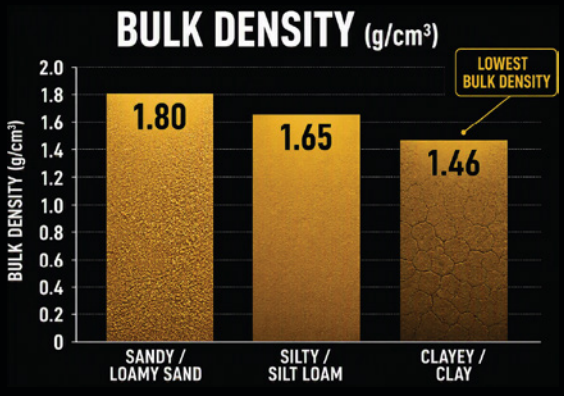
P2X releases nutrients on demand throughout the growing season.



P2X that is not needed this season is available for future crops.

CG P2X vs MAP

	CG P2X	MAP
Solubility	Organic acid soluble, root-activated	Water soluble
Phosphorus tie-up	Low – does not fix in soil	High tie-up in acidic/alkaline soils
Nutrient Loss Risk	Low	High in wet conditions
Environmental Safety	Reduced leaching/runoff risk	Higher leaching potential
Additional Nutrients	Magnesium	-
Placement Flexibility	Seed-safe, low salt index	Higher salt index, not seed-safe



COMPACTION

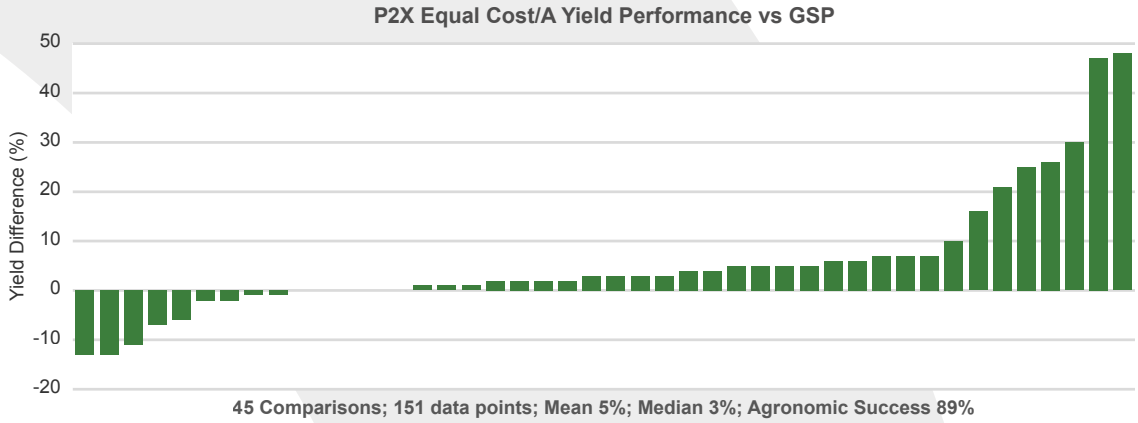
COMPACTION STOPS ROOTS PUSHING

Compaction from equipment or livestock, especially on wet soil, packs particles together and raises bulk density (dry soil weight per unit volume). Past a threshold, roots can no longer push through, cutting off water and nutrient uptake and lowering yield. That threshold is lower for clay-rich soils than for sandy ones.

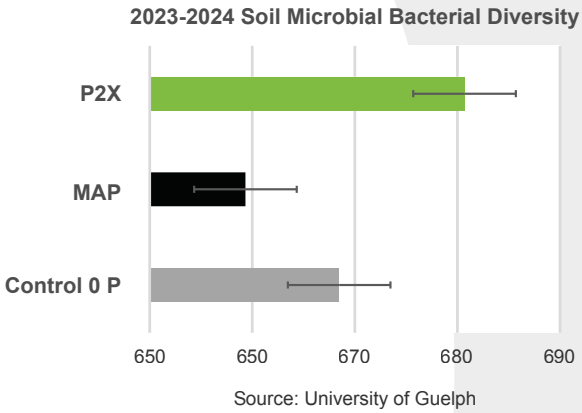
Source: USDA-NRCS, "Bulk Density" Soil Health guide.

THE PHOSPHATE THAT DOESN'T GET TIED UP.

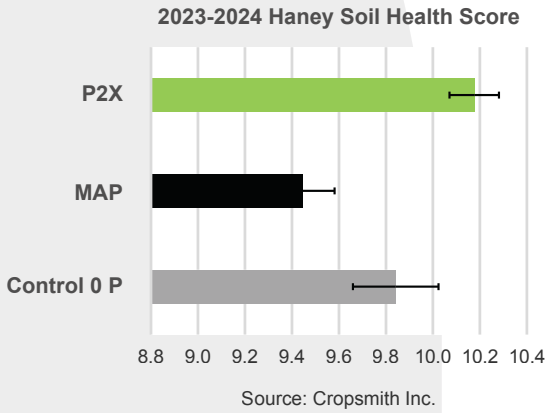
CG P2X Keeps Nutrients Available



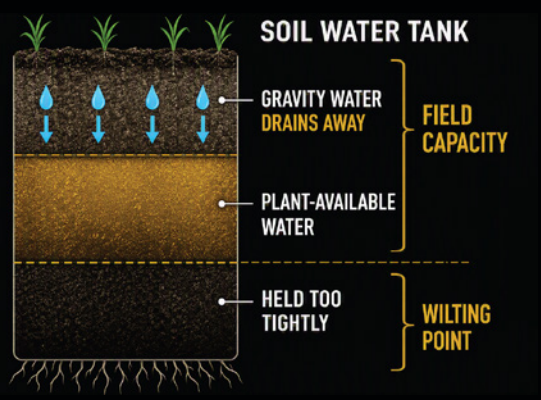
P2X increased bacterial diversity & increased microbial activity for healthier soils and crops



Source: University of Guelph



Source: Cropsmith Inc.



USABLE WATER

WATER HELD FOR PLANTS TO USE

After soil is soaked and free water drains by gravity, the moisture left is field capacity, the full tank. As plants and evaporation draw it down they reach the permanent wilting point, where the rest is held too tightly for roots. The water between those two points is the plant-available water, the part farmers manage.

Source: FAO, "Glossary of Soil Moisture Terms."

TWO FORMS OF PHOSPHATE: TOGETHER IN ONE PRILL

Crystal Green® Synchro 50 MAX from OSTARA

10	47	0	0	5
NITROGEN	PHOSPHORUS	POTASSIUM	SULFUR	MAGNESIUM



Reliable Nutrition when Crops Need it Most.

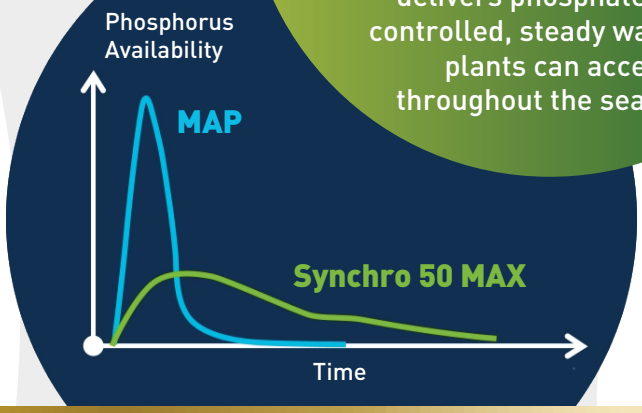
- **STEADY RELEASE PATTERN** – Reduces the risk of early tie-up and ensures phosphate is available across critical growth stages.
- **ROOT-FOCUSED NUTRITION** – Supports strong root systems, improved nutrient uptake, and higher yield potential.
- **FLEXIBLE FIT** – Works across multiple crops and regions, designed for easy blending and handling.

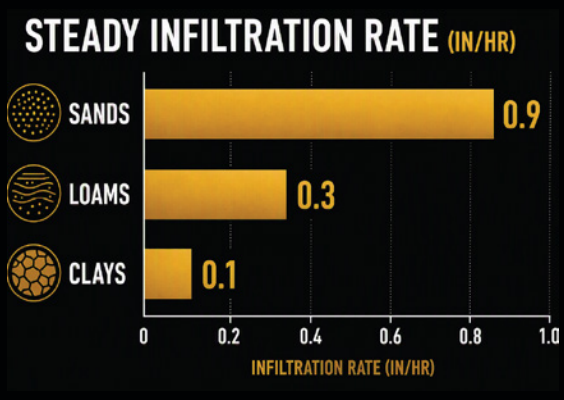
8	55lbs	300
SALT INDEX	BULK DENSITY	SGN

Synchro is a granular phosphate designed for consistent release and availability. Unlike traditional sources that quickly dissolve and tie up in the soil, Synchro delivers phosphate in a controlled, steady way so plants can access it throughout the season.

Why Synchro?

Phosphate only pays if it's available to the crop. Synchro keeps nutrients working long after traditional sources have tied up, protecting your investment and supporting stronger roots, healthier plants, and higher yield potential.





GETTING RAIN IN

HOW FAST WATER ENTERS SOIL

Infiltration is how fast water enters the soil surface, usually in inches per hour. Coarse sandy soils take water quickly through large pores; dense or crusted clay soils take it slowly. Good structure, surface residue and higher organic matter all speed infiltration, bare ground, crusting and compaction slow it and send water off as runoff.

Source: USDA-NRCS, "Soil Quality Indicators: Infiltration," 2008.

FEED YOUR CROP WITH SUSTAINABILITY IN MIND.

Crystal Green® Pearl



5	28	0	0	10
NITROGEN	PHOSPHORUS	POTASSIUM	SULFUR	MAGNESIUM

HOW IT'S MADE

Crystal Green PEARL™ is produced using Ostara's Pearl® nutrient recovery technology, which captures phosphorus, ammonium, and magnesium from wastewater treatment streams. These nutrients are combined in a fluidized bed reactor, where struvite granules grow layer by layer under controlled pH conditions—just like a pearl. The result is a high-purity, citrate-soluble fertilizer that delivers season-long nutrition.

7	50lbs	300
SALT INDEX	BULK DENSITY	SGN

from OSTARA

LOGISTICS

Mini bulks per truck: 22
Total truckload weight: 22 tonnes

WHY IT MATTERS ON YOUR FARM

Crystal Green PEARL™ delivers phosphorus that stays plant-available, rather than getting tied up in the soil. That means better early root development, sustained uptake through the growing season, and reduced losses to runoff or fixation. With 10% magnesium, it also supports chlorophyll production and photosynthesis for better plant health and stress tolerance.

HIGH PURITY & LOW SALT INDEX
Safe for seed row placement.

ECO-FRIENDLY
Recycles waste into a high efficiency crop input.

AVAILABLE SGNs
90, 150, 300, 450



THE 4RS

RIGHT SOURCE, RATE, TIME, PLACE

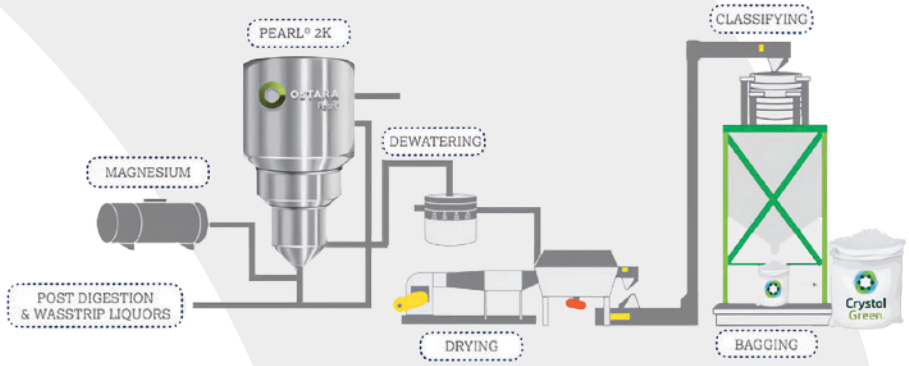
4R Nutrient Stewardship is a science-based framework for managing fertilizer: the Right Source at the Right Rate, the Right Time, and in the Right Place. The goal is to match nutrient supply to what the crop needs while protecting air and water. It's site-specific, so the right choices change from field to field.

Source: Fertilizer Canada, "4R Nutrient Stewardship," 2024.

RECOVERED WITH PRECISION. DELIVERED WITH PURPOSE.

HOW IT WORKS

Ostara's Pearl® process transforms nutrient-rich wastewater into a high-purity, crop-available fertilizer. By combining phosphorus, ammonium, and added magnesium under the right conditions, the system rapidly forms struvite granules: a slow-release, root-activated source of phosphorus and magnesium. These granules grow layer by layer, just like a pearl, and are harvested as Crystal Green Pearl®. What starts as a waste stream ends up as a premium fertilizer that delivers season-long nutrition and minimizes tie-up in your soil.



CG PEARL VS MAP

01 / 03 — 3-YEAR RESULTS

Crystal Green Pearl® vs MAP

AVG. YIELD INCREASE

↑ **2.7** bu / acre

APPLICATION	In-furrow
UNITS OF P	25–58 lbs/acre
SOIL TEST P	6–34 ppm
SOIL PH	6.2–8.1

LOCATIONS	TRIAL YEARS
8 sites - MB, SK, North Dakota	2016 – 2018

• AGGREGATE — N = 8 SITES

02 / 03 — SINGLE-SITE · 2017

Crystal Green Pearl® vs MAP

STAND COUNT INCREASE

↑ **54,977** plants / acre

LOCATION	YEAR
Manitoba	2017
RESEARCHER	**METHOD**
AgQuest	In-furrow application

• REPLICATED TRIAL — Δ VS MAP

03 / 03 — SINGLE-SITE · 2018

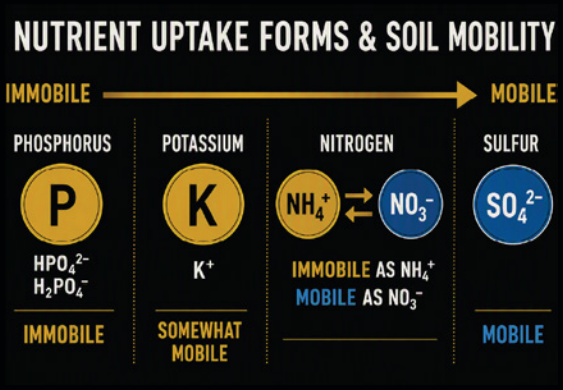
Crystal Green Pearl® vs MAP

STAND COUNT INCREASE

↑ **60,690** plants / acre

LOCATION	YEAR
Manitoba	2018
RESEARCHER	**METHOD**
New Era Technologies	In-furrow application

• REPLICATED TRIAL — Δ VS MAP



MOVE OR STAY

NITRATE LEACHES; PHOSPHATE STAYS

Nutrients travel through soil at very different speeds. Nitrate is highly mobile and moves with soil water, so it can leach below the root zone in wet conditions. Phosphate is nearly immobile, it binds tightly to soil minerals and stays put, while potassium sits in between, held on soil but somewhat leachable in sandy, low-CEC soils.

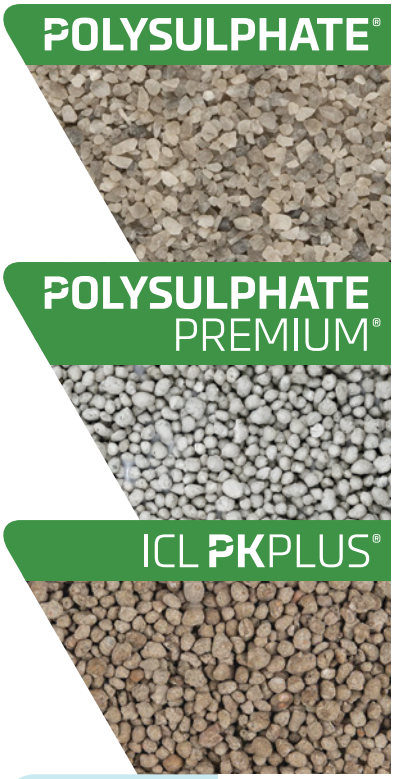
Source: Cornell University Nutrient Management Spear Program / NRCCA.

POLYSULPHATE® TECHNOLOGY FROM ICL

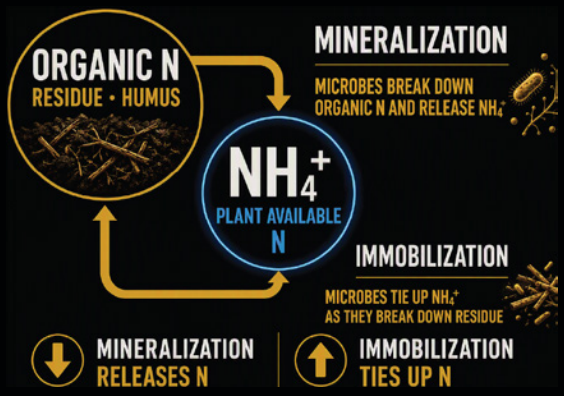
Agronomic Advantage. Logistical Simplicity. Cost Effective for Broad-Acre.

Traditional sulfur fertilizers often provide only one nutrient and may be prone to leaching, reducing availability and requiring multiple applications. Polysulphate®, a natural polyhalite fertilizer, delivers sulfur, potassium, calcium, and magnesium in a single granule, providing season-long nutrient release, improved uptake, reduced nutrient loss, and more efficient crop nutrition.

Product	Analysis	How it's Manufactured	SGN	SKU
Polysulphate	0-0-14 19.2% S 12.2% Ca 3.6% Mg	Polysulphate is a natural multi-nutrient fertilizer mined as polyhalite exclusively by ICL	300	Bulk
Polysulphate Premium	0-0-13 18.2% S 11.8% Ca 3.4% Mg	Exclusively mined by ICL, polyhalite is granulated into smooth, durable granules for consistent quality and balanced nutrient release.	300	Bulk
ICL PK-PLUS	0-24-6 9.1% S 15.4% Ca 1.8% Mg	Manufactured by combining Polysulphate® Premium with phosphorus to create a uniform, durable prill that delivers five essential nutrients: P, K, S, Ca, and Mg, in every granule.	300	Bulk



ICL
icl-growingsolutions.com



RELEASE & TIE-UP

MICROBES FREE OR LOCK UP N

Soil organic matter is a big nitrogen reservoir, but plants can't use it directly. Mineralization is when soil microbes break down organic N and release plant-available ammonium. Immobilization is the reverse, microbes tie up available N as they decompose high-carbon residues like straw, temporarily making it unavailable to the crop.

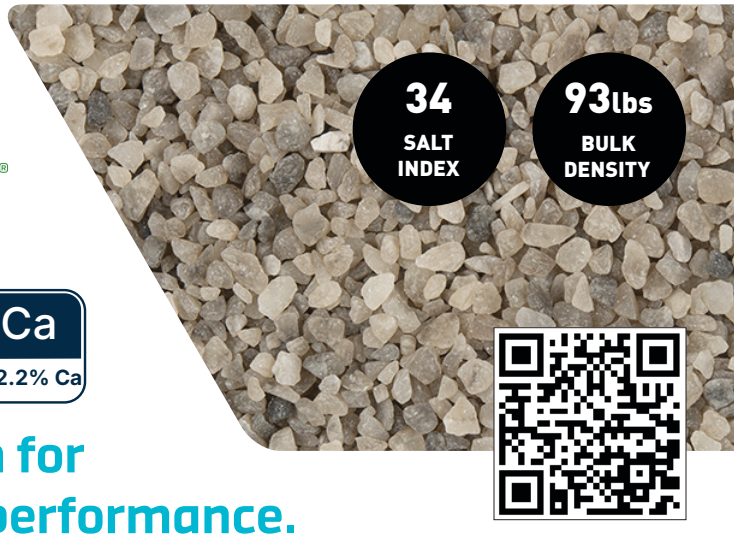
Source: Penn State Extension, "Immobilization and Mineralization of N."

ICL

POLYSULPHATE®

4-in-1 fertilizer

S	K	Mg	Ca
19.2% S	14% K_2O	3.6% Mg	12.2% Ca



Natural nutrition for Consistent crop performance.

Polysulphate® is a natural mineral, multi-nutrient fertilizer mined exclusively by ICL. Providing four plant-available nutrients, sulfur, potassium, magnesium, and calcium, all in sulfate form, Polysulphate delivers balanced nutrition through a natural gradual-release pattern that aligns with crop demand throughout the growing season.

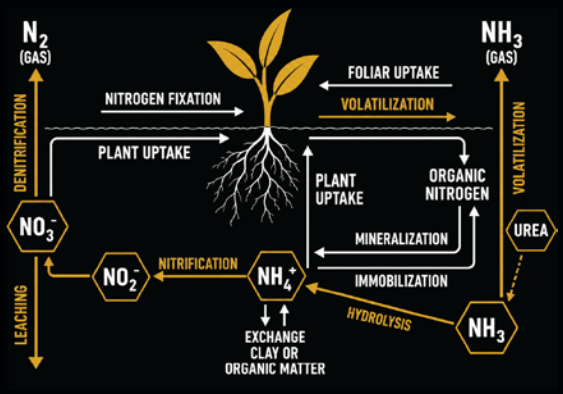
With excellent spreading characteristics, it can be applied straight or used in blends.

Polysulphate's exceptionally low carbon footprint, sustainable production and proven crop nutrition support improved crop performance while helping growers meet their environmental goals.

www.icl-growingsolutions.ca

A naturally plant-available, gradual release fertilizer with S, K, Mg and Ca

- **Nutrient absorption —** a slow sustained release pattern results in less leaching, lowering your input costs, and improving soil health
- **Seed safe —** low chloride fertilizer that is safe to apply to all crop types
- **Organic approved —** naturally mined without chemical processing so it's safe to use in your organic farming systems
- **pH neutral —** calcium sulfate creates a slow-release fertilizer, remediates sodic soils, and improves soil structure



HOW N IS LOST

THREE WAYS NITROGEN ESCAPES SOIL

Once nitrogen is in the soil, several processes move it out of reach. Nitrification converts ammonium to nitrate, which is plant-available but leachable. Denitrification turns nitrate into nitrogen gases in waterlogged soils, and volatilization releases ammonia gas from surface-applied urea or manure that isn't incorporated.

Source: North Dakota State University Extension.

POLYSULPHATE PREMIUM®

4-in-1 fertilizer

S	K	Mg	Ca
18.2% S	13.3% K_2O	3.4% Mg	11.8% Ca



Superior nutrition. Premium granule versatility.

Polysulphate Premium® delivers all the proven benefits of Polysulphate in a premium spherical granule. This highly efficient multi-nutrient fertilizer supplies sulfur, magnesium, calcium, and potassium, while offering exceptional handling, blending, and spreading performance.

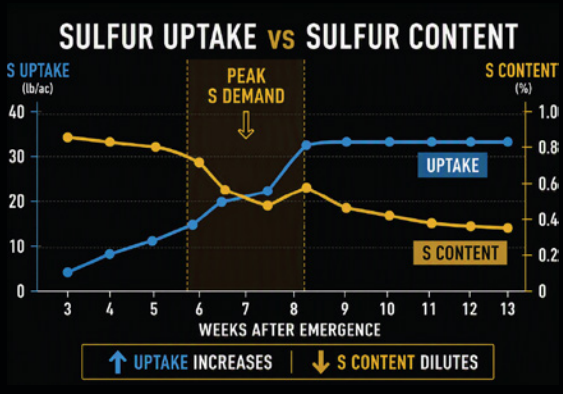
Polysulphate Premium delivers a season-long release of essential nutrients that are fully soluble, low in salt, chloride-free, and suitable for all crops and soil types.

Ideal for fertilizer blending, Polysulphate Premium has been proven to improve crop yield and quality.

www.icl-growingsolutions.ca

A 4-in-1 source of S, Mg, Ca, and K in one uniform sphere

- **Balanced Nutrients —** A naturally mined multi-nutrient mineral (polyhalite); composed of sulfur-based potassium, magnesium and calcium
- **Safe —** Low chloride, very low salt index, neutral pH, no liming effect
- **Season-Long Release —** Unique release pattern aligns with crop demand ensuring nutrient availability during critical development periods
- **High Blendability —** Well suited for blending with most conventional fertilizers



SULFUR LEACHES

SULFATE MOVES MUCH LIKE NITRATE

Plants take up sulfur mainly as sulfate, which behaves much like nitrate: mobile and able to leach below the root zone, especially in sandy, low-organic-matter soils. Sulfur deficiency has grown as atmospheric sulfur deposition has declined. On the Prairies, canola has a high sulfur demand and is very sensitive to shortages.

Source: Canola Council of Canada, "Sulphur" (Canola Encyclopedia).

ICL

ICL PKPLUS

5-in-1 fertilizer

P	K	Ca	Mg	S
24% P_2O_5	6% K_2O	15.4% Ca	1.8% Mg	9.1% S



Complete nutrition. Nitrogen source flexibility.

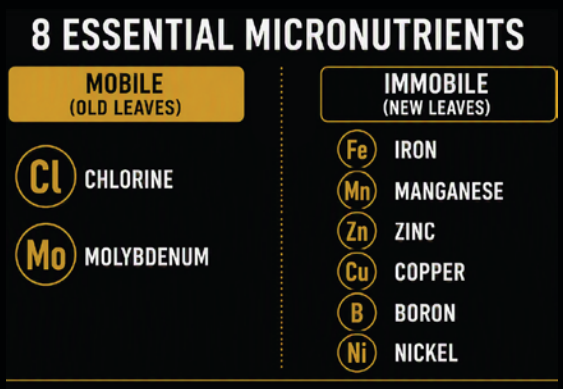
ICL PKpluS® combines the power of natural mineral polyhalite (sulfur, potassium, magnesium, and calciums) with superphosphate in one low-salt, seed safe granule. ICL PKpluS provide multi-nutrient nutrition in one convenient application and the N-free formulation means nitrogen applications can be managed independently and flexibly.

ICL PKpluS's streamlined approach reduces the need for multiple applications saving both time and effort. With all nutrients in one granule, ICL PKpluS improves balanced uptake, ensuring roots can access the nutrients they need, when they need them most.

www.icl-growingsolutions.ca

The power of Polysulphate with a boost of P for season-long nutrition.

- **Gradual Release —** Matches nutrient demands during the season for plant development and reproduction
- **Seed safe —** Low chloride, very low salinity index, neutral pH, no liming effect
- **Prolonged Nutrient Release —** Season-long availability plus reduced risk of nutrient leaching loss
- **High Blendability —** Good hardness and handling for air seeders, bulk blending and field application



EIGHT MICROS

EIGHT TRACE ELEMENTS, ALL VITAL

Plants need eight micronutrients in very small quantities: iron, manganese, zinc, copper, boron, molybdenum, chlorine and nickel. Micro refers to the amount, not the importance, a shortage of any one can limit yield. For scouting: chlorine and molybdenum move readily (deficiency in old leaves), while the others are immobile (deficiency in new growth).

Source: Cornell University NRCCA, Competency Area 1.

SUL4R-PLUS®
FERTILIZER

CONTROLLED RELEASE SULFATE

0-0-0-17%S, 21%Ca

SUL4R-PLUS® delivers season-long sulfur nutrition through controlled-release sulfate technology, ensuring plants have access to sulfate when they need it most.

GRANULAR ANALYSIS

Calcium	21%
Sulfur	17%
pH	7 - 8
Granular Range (1SD) (SGN)	250 - 280
Crush Strength	8 lbs.
Uniformity Index (UI)	> 50
Bulk Density	58 - 60 lbs/ft^3
Salt Index	5
Ammonium Lignosulfonate Binder (Fulvic Acid)	10%

RATE of APPLICATION

Optimum use rate varies according to crop need. As the chart below indicates, 100 lbs. of SUL4R-PLUS® fertilizer per acre delivers 21 lbs. of Calcium and 17 lbs. of Sulfur per acre.

SUL4R-PLUS® lbs/Acre	Calcium lbs/Acre	Sulfur lbs/Acre
100	21.0	17.0
200	42.0	34.0

• HIGH PURITY SYNTHETIC CALCIUM SULFATE
Providing immediate and season long availability, matching the nutrient uptake of crops closer than any other sulfate on the market

• AMMONIUM LIGNOSULFONATE BINDER
Contributing to controlled release and feeding the healthy soil microbiology

• LOW SALT INDEX (5)
Greater seed safety benefiting soil health

• SOIL AMENDMENT PROPERTIES
Amending the soil instead of contributing to problems in both saline and compacted soils

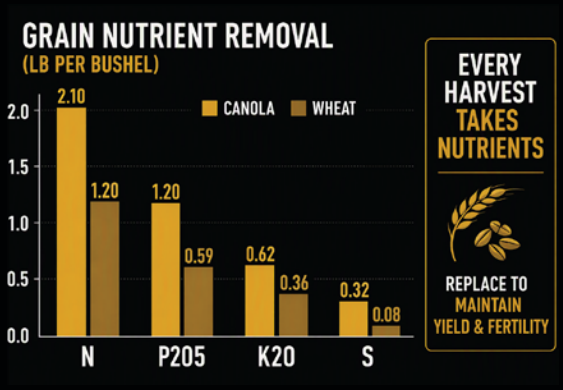
* Additional research available from your Taurus Rep & online

www.sul4r-plus.com

• HANDLING CHARACTERISTICS
Great handling, blending and storage qualities with a dust free design.

- Highly soluble granules - provides immediate and season long nutrition to all crops
- Uniform feeding across wide spread pattern 20 to 30 granules per square foot (based on 100 lb/acre application)
- Nutrient releasing characteristics best mimic the crop nutrient uptake curves
- Uniform granule size ensures product blends well and spreads evenly





HARVEST TAKES

GRAIN HAULS NUTRIENTS OFF-FIELD

When grain leaves the field it carries nutrients with it, and those must be replaced to keep fertility from declining. Removal differs by crop, canola takes about 2.1 lb N, 1.2 lb P2O5 and 0.62 lb K2O per bushel, while wheat takes roughly 1.2, 0.59 and 0.36. Knowing your removal helps budget P and K so soil-test levels hold steady.

Source: OMAFRA, "Crop Removal Values," Field Crop News, 2025.

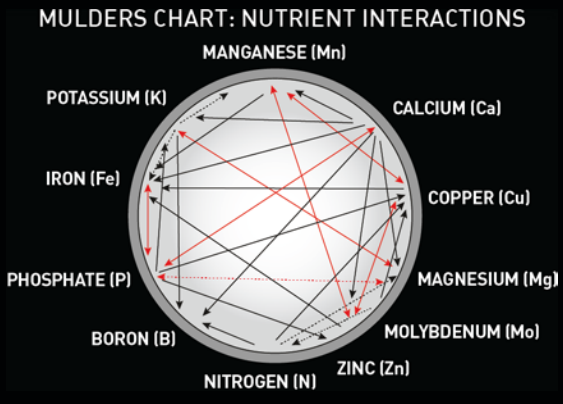
SUL4R-PLUS® TECHNOLOGY

What Crops Need, When They Need It. All Season.

Traditional fertilizers can release nutrients too quickly, leading to inefficiencies, soil acidification, and handling challenges. SUL4R-PLUS® uses patented calcium-sulfate technology to provide extended-release sulfur and calcium in a durable, low-salt pellet, delivering season-long nutrient availability, reducing the need for lime, improving handling, and safely supporting crop growth from planting through harvest.

Product	Product Characteristics	Soil-Stable	Plant Available	Leaching Potential
SUL4R-PLUS	**High-quality granules, consistent size, blends easily with micros, fulvic acid binder, highly soluble**	**Yes**	**Yes**	**LOW**
Ammonium Sulfate (AMS)	No consistent pellet size, high salt content, reduces soil pH	No	Yes	HIGH
ATS	High salt content, reduces soil pH	No	Yes	HIGH
Gypsum	Inconsistent pellet size and inconsistent manufacturing process, product absorbs water in humid conditions	No	Yes	MODERATE
Elemental Sulfur	Oxidation to sulfate highly dependent on particle size, combustibility risks, dusty to mix and apply	Yes	No	LOW





EXCESS BLOCKS

ONE NUTRIENT CAN BLOCK ANOTHER

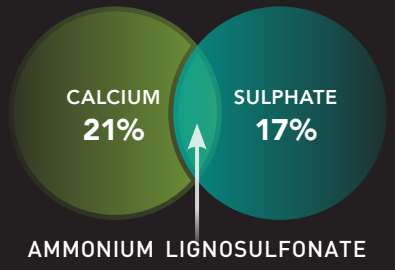
Nutrients don't act alone, an excess of one can interfere with a plant's uptake of another, a relationship mapped in Mulder's Chart. For example, very high potassium can reduce magnesium and calcium uptake, and high soil phosphorus can trigger zinc deficiency. Balance matters: piling on one nutrient can accidentally create a shortage of another.

Source: Nutrient antagonism (Mulder's Chart concept, 1953).

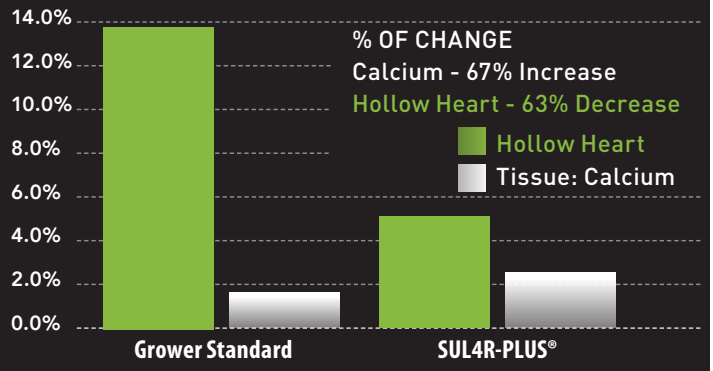


AGRONOMY OF SUL4R-PLUS®

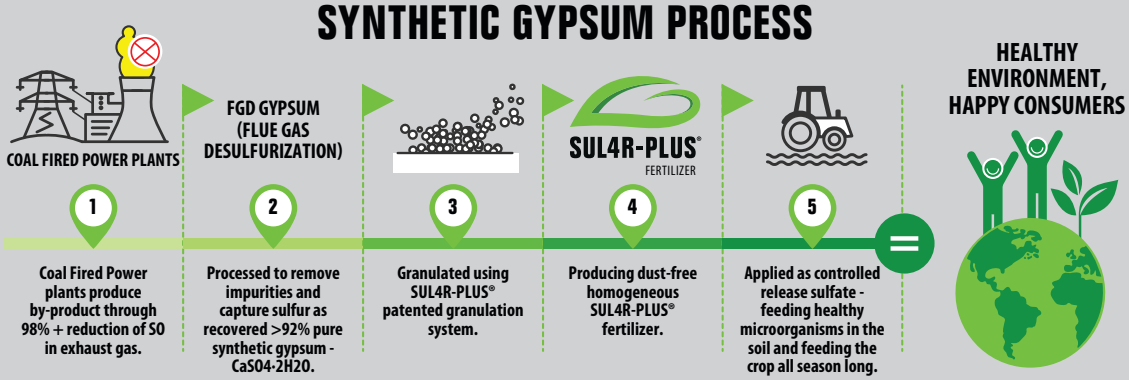
- "Value of Oxygen" in the Seed Row
- Increased Water Infiltration in Compacted Soils
- Ammonium Lignosulphonate Binder – Fulvic Acid
- Controlled Release Curve of Sulphate
- Salt Index – Salinity & Seeding Rates
- Soil Amendment Properties from Gypsum
- Calcium in the Plant

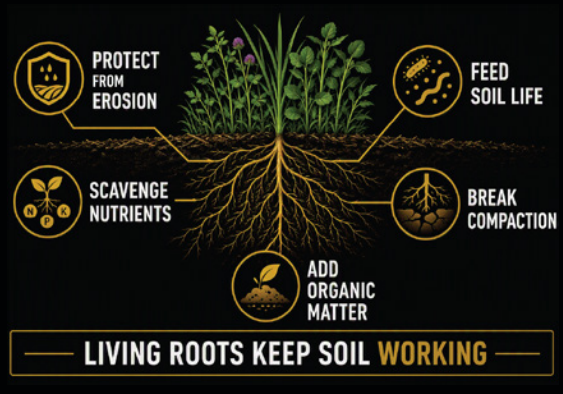


Calcium Uptake vs Hollow Heart



SYNTHETIC GYPSUM PROCESS





COVER CROPS

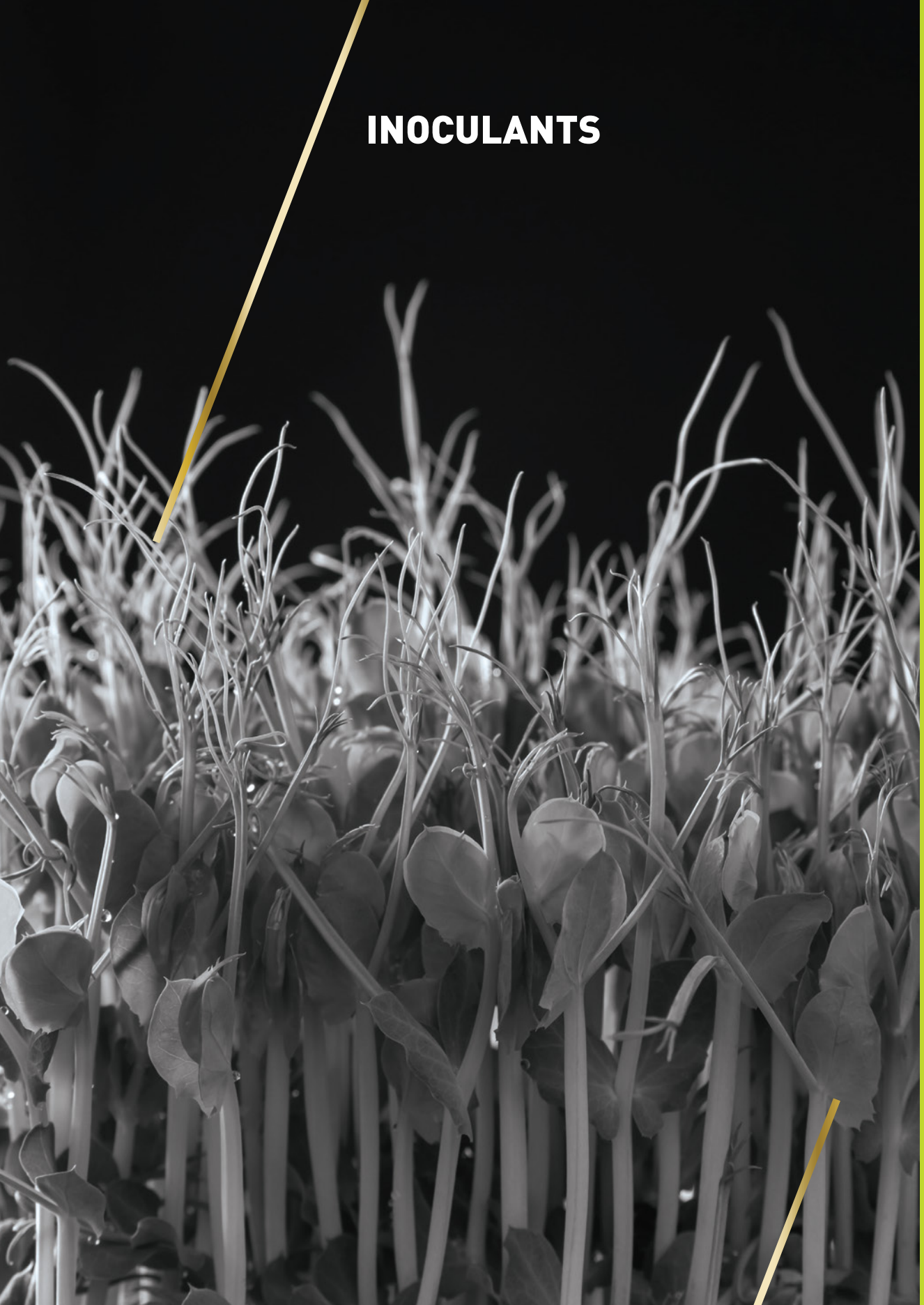
THEY PROTECT AND FEED THE SOIL

Cover crops are fast-growing plants, rye, clover, radish, grown when a cash crop isn't in the ground. They shield soil from erosion, scavenge leftover nitrogen so it isn't lost to water, and add organic matter that feeds soil life. Their living roots also loosen compaction and build structure, often more effectively than tillage.

Source: SARE, "10 Ways Cover Crops Enhance Soil Health," 2024.

NOTES

INOCULANTS



INOCULANTS 93

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Specialty Crops 116
Potato 118

AGTIV®

DESIGNED BY NATURE. PERFECTED BY SCIENCE.



EMPOWERING GROWERS

Born from **nature** and perfected by **science**, AGTIV® is an innovative technology brand made of high-quality and proven biological active ingredients that deliver superior **performance** for agricultural producers.

GET THE INFO YOU NEED AT **PTAGTIV.COM**

TOOLBOX

- Brochures & data reports
- Organic certificates
- Labels & SDS

PTAGTIV.COM**/en/toolbox**

EDUCATION

- Agronomic articles
- Case studies

PTAGTIV.COM**/en/blog**

PROGRAMS

- Liquid injection kit
- Retailer fridge

PTAGTIV.COM**/en/program**

COMPATIBILITY

- Pesticides
- Fertilizers
- On-seed longevity & seeding window

PTAGTIV.COM**/en/compatibility**



AGTIV THRIVE

AGTIV THRIVE® POWERS PLANTS BY BOOSTING NITROGEN FIXATION, NUTRIENT AND WATER ABSORPTION THANKS TO **MYCORRHIZAE & RHIZOBIUM**

MYCORRHIZAE + RHIZOBIUM

PTB297 Technology
+
PTB160 (pea & lentil)
PTB161 (chickpea)
PTB162 (soybean)

- Enhances P uptake
- Provides more energy for better nitrogen fixation
- Increases photosynthesis



AGTIV ENRICH

AGTIV ENRICH® STRENGTHENS LEGUME NITROGEN FIXATION AND PROVIDES A VIGOROUS ROOT SYSTEM THANKS TO **RHIZOBIUM & BACILLUS**

RHIZOBIUM + BACILLUS

PTB162 Technology
+
PTB180 Technology

- Increases nodulation and nitrogen fixation
- Improves rooting environment
- Enhances plant vigor and productivity



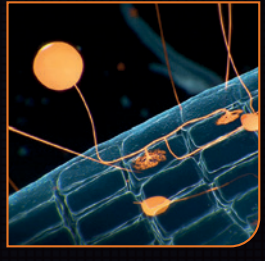
AGTIV REACH

AGTIV REACH® HELPS PLANTS REACH AND ABSORB MORE NUTRIENTS AND WATER THANKS TO **MYCORRHIZAE**

M MYCORRHIZAE

PTB297 Technology, *Rhizophagus irregularis* (formerly known as *Glomus intraradices*)

- Expands root system
- Enhances nutrient and water uptake
- Promotes plant robustness and vigor



Learn more at

PTAGTIV.COM/**en/technologies**

Discover each technology's mode of action.

AGTIV® TECHNOLOGIES

MORE THAN **40** years
OF EXPERTISE IN ACTIVE INGREDIENTS

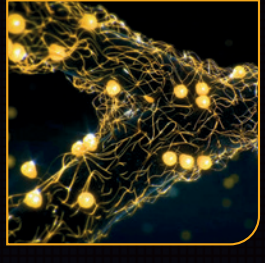
AGTIV IGNITE

AGTIV IGNITE® IMPROVES PHOTOSYNTHESIS AND MITIGATES IMPACT OF ENVIRONMENTAL STRESSES THANKS TO **SERENDIPITA**

S SERENDIPITA

PTB299 Technology,
Serendipita indica

- Mitigates abiotic stresses
- Increases photosynthesis rate
- Enhances plant establishment, growth and yield



AGTIV FUEL

AGTIV FUEL® FEEDS LEGUMES BY FIXING ATMOSPHERIC NITROGEN THANKS TO **RHIZOBIUM**

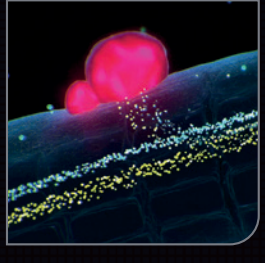
R RHIZOBIUM

PTB160 Technology
(pea & lentil) *Rhizobium leguminosarum* biovar *viciae*

PTB161 Technology (chickpea)
Mesorhizobium onobrychidis

PTB162 Technology (soybean)
Bradyrhizobium japonicum

- Increases nodulation
- Fixes nitrogen
- Provides nutrients to pulses



AGTIV STIMULATE

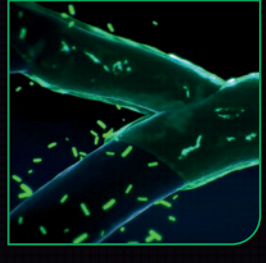
AGTIV STIMULATE® REINFORCES PLANTS WITH A HEALTHY ROOT ZONE THANKS TO **BACILLUS**

B BACILLUS

PTB180 Technology,
Bacillus pumilus

PTB185 Technology,
Bacillus inaquosorum

- Stimulates rooting environment
- Improves plant establishment
- Increases plant vigor and productivity



AGTIV UPTAKE

AGTIV UPTAKE® ENHANCES FERTILIZER AND SOIL NUTRIENT UPTAKE THANKS TO BENEFICIAL **BACTERIA**

B BACTERIA

PTB101 Technology,
Bacillus velezensis

PTB108 Technology,
Bacillus halotolerans

PTB124 Technology,
Priestia megaterium

- Improves soil nutrient assimilation
- Promotes better fertilizer use
- Enhances plant stress resistance and growth



EXPERTISE, AUTONOMY, AND RELIABILITY AT EVERY STEP

As an established manufacturer and marketer, Premier Tech offers reliable, high-quality inoculants through innovation and collaboration with local partners and growers. From the lab to the field, our team transforms research into impactful, results-driven solutions.

Our recent innovation, Premier Tech peat granules for AGTIV® inoculants, is engineered to be robust and free-flowing, ensuring biological viability and delivering excellent agronomic performance. From peat harvest to inoculant production, we guarantee consistent quality at every step, supported by a fully controlled, dependable supply chain.

Every day, we deliver products that enhance crop performance and profitability.

PTAGTIV.COM/**en/expertise**



PRODUCTION

In 2000, Premier Tech set up a world-first endomycorrhizal inoculum plant, developing a new mycoreactor process for industrial scale production. Backed by more than 40 years of expertise in active ingredients, Premier Tech constantly develops and innovates in terms of production of MYCORRHIZAE, RHIZOBIUM, BACILLUS, SERENDIPITA and other active ingredients:

- No contamination through a strictly controlled and aseptic environment
- Large-scale manufacturing production
- Adapted quality control for each step of the production processes, ensuring consistent high-quality inoculum

PREMIER TECH — RENOWN **BRANDS**



FORMULATION

Premier Tech's know-how makes it possible to adapt formulations with multiple active ingredients, concentrations and carriers tailored to different crops and application methods. Because a quality inoculant makes all the difference, our proven formulations are based on these important elements:

- Carriers compatible with the active ingredients
- Formulations that guarantee active ingredient viability until use
- Quality control at several key points ensuring the performance of active ingredients
- Various formulations tailored for organic production



APPLICATION

Caring about our clients' crop performance, each recommendation for product use takes into consideration validation by our field experts and by farmers themselves, which ensures:

- Effective application rates, at the right time and place, with the right inoculant
- Products adapted to growers' equipment
- Easy integration into farming practices
- Validation of compatibility with other agricultural inputs



SERVICE

The AGTIV® experience combines highly effective value-added products and the access to a team of field experts dedicated to supporting your growth. From our management and research teams to our field specialists, our multidisciplinary team is listening to growers' needs to continuously improve our products and level of service:

- Technical support for product application, equipment compatibility and field demonstration
- Proud promoter of science education and knowledge sharing
- Partnership with agriculture retailers throughout Canada, the United States and Europe

AGTIV® PRO-MIX®

C-I-L® wilson® ALASKAN®

AGTIV® RELIABLE INOCULANTS

		ACTIVE INGREDIENT(S)	ORGANIC	APPLICATION MODE: IN-FURROW	MIXING WITH SEEDS	LIQUID ON SEED	LIQUID ON FERTILIZERS	FORMULATION
PEA, LENTIL & FABA BEAN	**AGTIV THRIVE® P** PEA & LENTIL F: Powder (peat) S: 4.7 kg (10.3 lb) pail - 2.4 kg (5.3 lb) pail C: **Pea & faba bean:** Pail 4.7 kg: **16 ha (40 ac)** - Pail 2.4 kg: **8 ha (20 ac)** **Lentil:** Pail 4.7 kg: **24 ha (60 ac)**	M R	✓		●			
	AGTIV THRIVE® G PEA & LENTIL F: Granules (peat) S: 18.2 kg (40 lb) bag - 364 kg (800 lb) tote bag C: **Pea, lentil & faba bean:** Bag: **4 ha (10 ac)** - Tote bag: **80 ha (200 ac)**	M R	✓	●				
	AGTIV THRIVE® PEA & LENTIL F: Liquid S: Combo box: 8 L (8 kg) bag-in-box + 4 x 950 ml (4 x 32 fl. oz) bottles C: **Pea, lentil & faba bean: 32 ha (80 ac)**	M R	✓	●				
	AGTIV FUEL® P PEA & LENTIL F: Powder (peat) S: 4.7 kg (10.3 lb) pail C: **Pea & faba bean: 16 ha (40 ac)** **Lentil: 24 ha (60 ac)**	R	✓		●			
	AGTIV FUEL® G PEA & LENTIL F: Granules (peat) S: 18.2 kg (40 lb) bag - 364 kg (800 lb) tote bag C: **Pea, lentil & faba bean:** Bag: **4 ha (10 ac)** - Tote bag: **80 ha (200 ac)**	R	✓	●				
	AGTIV FUEL® L PEA & LENTIL ✪ F: Liquid S: 8 L (8 kg) bag-in-box C: **Pea, lentil & faba bean: 32 ha (80 ac)** or **6530 kg of seeds (240 bu)**	R	✓	●		●		
SOYBEAN	**AGTIV THRIVE® P** SOYBEAN F: Powder (peat) S: 4.7 kg (10.3 lb) pail C: **Soybean: 16 ha (40 ac)**	M R	✓		●			
	AGTIV THRIVE® G SOYBEAN F: Granules (peat) S: 18.2 kg (40 lb) bag - 364 kg (800 lb) tote bag C: **Soybean:** Bag: **4 ha (10 ac)** - Tote bag: **80 ha (200 ac)**	M R	✓	●				
	AGTIV THRIVE® SOYBEAN F: Liquid S: Combo box: 8 L (8 kg) bag-in-box + 2 x 950 ml (2 x 32 fl. oz) bottles C: **Soybean: 16 ha (40 ac)**	M R	✓	●				
	AGTIV FUEL® G SOYBEAN F: Granules (peat) S: 18.2 kg (40 lb) bag - 364 kg (800 lb) tote bag C: **Soybean:** Bag: **4 ha (10 ac)** - Tote bag: **80 ha (200 ac)**	R	✓	●				
	AGTIV FUEL® L SOYBEAN ✪ F: Liquid S: 8 L (8 kg) bag-in-box C: **Soybean: 16 ha (40 ac)** or **5680 kg of seeds (250 units)**	R	✓	●		●		
	AGTIV ENRICH® SOYBEAN ✪ F: Liquid S: Combo box: 8 L (8 kg) bag-in-box + 300 ml bottle C: **Soybean: 16 ha (40 ac)** or **5680 kg of seeds (250 units)**	R B	✓	●		●		

Learn more at
PTAGTIV.COM/**en/products**



		ACTIVE INGREDIENT(S)	ORGANIC	APPLICATION MODE: IN-FURROW	MIXING WITH SEEDS	LIQUID ON SEED	LIQUID ON FERTILIZERS	FORMULATION
CHICKPEA	**AGTIV THRIVE® P** CHICKPEA F: Powder (peat) S: 4.7 kg (10.3 lb) pail C: **Chickpea: 16 ha (40 ac)**	M R	✓		●			Powder
	AGTIV THRIVE® G CHICKPEA F: Granules (peat) S: 18.2 kg (40 lb) bag - 364 kg (800 lb) tote bag C: **Chickpea:** Bag: **4 ha (10 ac)** - Tote bag: **80 ha (200 ac)**	M R	✓	●				Granular
CANOLA, CORN & CEREALS	**AGTIV IGNITE® L** F: Liquid S: 11 L (11 kg) bag-in-box C: **Canola: 454 kg (1000 lb) of seeds** or **81 ha (200 ac)** **Cereal: 9165 kg (20 205 lb) of seeds** or **81 ha (200 ac)** **Corn: 3000 kg (6614 lb) of seeds** or **121 ha (300 ac)**	S	✓			●		Liquid
FERTILIZER COMPLEMENT	**AGTIV UPTAKE®** F: Liquid S: Combo box: 3.5 L (3.5 kg) + 3.5 L (3.5 kg) + 7 L (7 kg) bags-in-box C: **Fertilizer: 7 to 50 metric tons,** see page "FERTILIZER COMPLEMENT" for details.	B	✓	●		●	●	Liquid
FIELD & SPECIALTY CROPS	**AGTIV REACH® P** F: Powder (peat) S: Case of 4 x 800 g (4 x 1.75 lb) pails C: **Cereal, flax & dry bean: 32 ha (80 ac)** **Alfalfa, mix forages & grass: 16 ha (40 ac)** **Vegetables, berries & garlic:** see page "SPECIALTY CROPS" for details.	M	✓		●			Powder
	AGTIV REACH® G F: Granules (peat) S: 6 kg (13.2 lb) pail - 18.2 kg (40 lb) bag - 364 kg (800 lb) tote bag C: **Cereal, flax & dry bean:** Bag: **4 ha (10 ac)** - Tote bag: **80 ha (200 ac)** **Alfalfa, mix forages & grass:** Bag: **45 kg of seeds (99 lb)** - Tote bag: **720 kg of seeds (1584 lb)** **Vegetables, herbs, berries & fruit trees:** see page "SPECIALTY CROPS" for details.	M	✓	●				Granular
	AGTIV REACH® L F: Liquid (spores in suspension) S: Case of 2 x 950 ml (2 x 32 fl. oz) bottles C: **Cereal, flax & bean: 16 ha (40 ac)**	M	✓	●				Liquid
POTATO	**AGTIV REACH® L** POTATO F: Liquid (spores in suspension) S: Case of 2 x 950 ml (2 x 32 fl. oz) bottles C: **Potato: 8 ha (20 ac)**	M	✓	●		●		Liquid
	AGTIV REACH® P POTATO F: Powder (diatomaceous earth) S: Case of 2 x 300 g (2 x 10.5 oz) bag C: **Potato: 16 ha (40 ac)**	M	*	●	●			Powder
	AGTIV STIMULATE® L POTATO F: Liquid S: 8 L (8 kg) bag-in-box C: **Potato: 8 ha (20 ac)**	B	✓	●				Liquid

See last page for complete product recommendations.

ACTIVE INGREDIENTS

M **MYCORRHIZAE**
PTB297 Technology

R **RHIZOBIUM**
PTB160 Technology (pea & lentil)
PTB161 Technology (chickpea)
PTB162 Technology (soybean)

S **SERENDIPITA**
PTB299 Technology

B **BACTERIA**
PTB101 Technology
PTB108 Technology
PTB124 Technology
PTB180 Technology
PTB185 Technology

LEGEND

F: Formulation
S: Size
C: Crop/Coverage

FORMULATIONS

Liquid | Granular | Powder

Available with EXTENDER™ L for AGTIV® inoculants

✓ For organic use

* Not eligible for organic use. Contact us for more details.

PEA & LENTIL



- Early P uptake
- Increased nodulation
- Better pod fill

3.5 bu/ac **6.1%**

2.7 bu/ac **8.6%**

SOYBEAN



- More nodules and larger leaves
- Quicker row closure
- Fuller pods

3.3 bu/ac **6.7%**

1.8 bu/ac **3.3%**

CHICKPEA



- Bigger root system
- More branching
- More pods

3.1 bu/ac **8.7%**

CANOLA, CORN, WHEAT & BARLEY



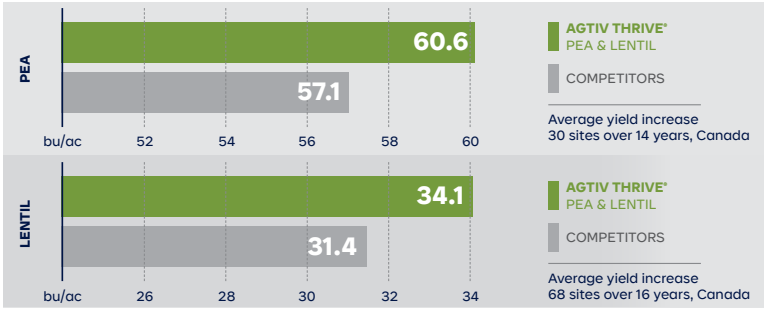
- Improved nitrogen use efficiency
- Increased sulfur absorption
- Better plant establishment, growth, and yield

2.5 bu/ac **6.5%**

7.2 bu/ac **4.2%**

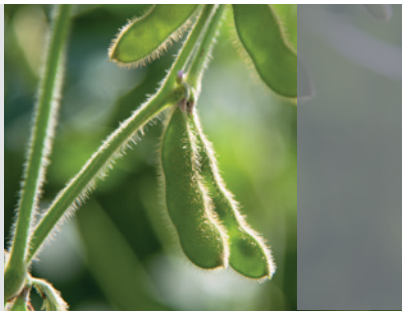
4.0 bu/ac **8.5%**

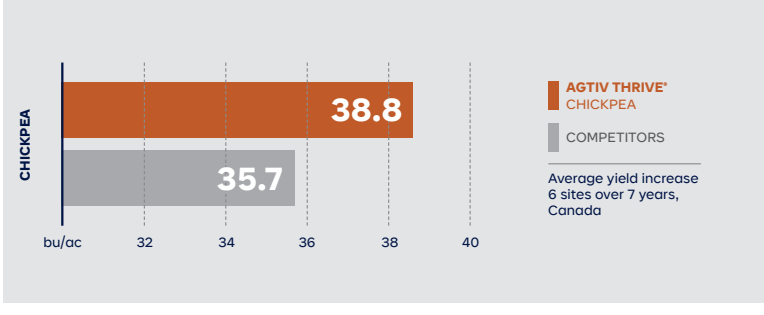
4.3 bu/ac **5.3%**


PEA
60.6
57.1
bu/ac 52 54 56 58 60
AGTIV THRIVE® PEA & LENTIL
COMPETITORS
Average yield increase
30 sites over 14 years, Canada
LENTIL
34.1
31.4
bu/ac 26 28 30 32 34
AGTIV THRIVE® PEA & LENTIL
COMPETITORS
Average yield increase
68 sites over 16 years, Canada

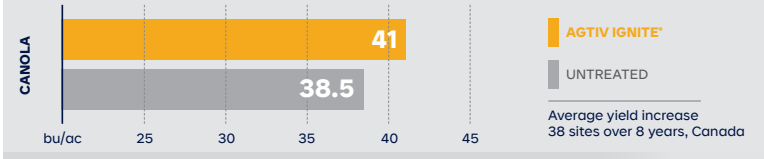



SOYBEAN
52.6
49.3
bu/ac 35 40 45 50 55
AGTIV THRIVE® SOYBEAN
COMPETITORS
Average yield increase
94 sites over 12 years,
Canada and Europe
SOYBEAN
56.1
54.3
bu/ac 45 50 55 60 65
AGTIV ENRICH® SOYBEAN
COMPETITORS AVERAGE
Average yield increase
11 third-party trials over 5 years,
Canada

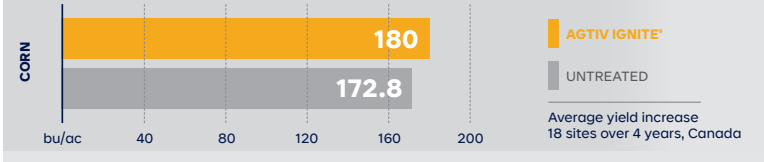



CHICKPEA
38.8
35.7
bu/ac 32 34 36 38 40
AGTIV THRIVE® CHICKPEA
COMPETITORS
Average yield increase
6 sites over 7 years,
Canada

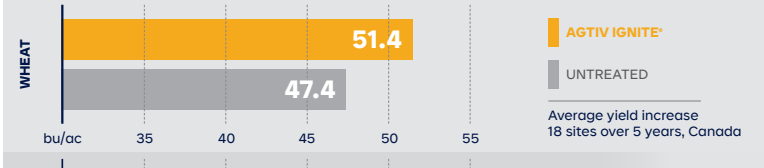



CANOLA
41
38.5
bu/ac 25 30 35 40 45
AGTIV IGNITE®
UNTREATED
Average yield increase
38 sites over 8 years, Canada

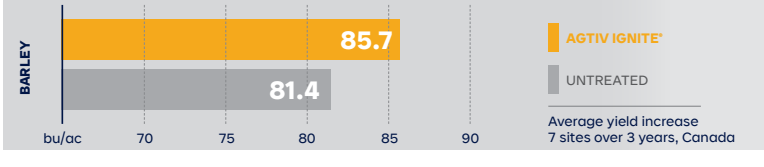



CORN
180
172.8
bu/ac 40 80 120 160 200
AGTIV IGNITE®
UNTREATED
Average yield increase
18 sites over 4 years, Canada




WHEAT
51.4
47.4
bu/ac 35 40 45 50 55
AGTIV IGNITE®
UNTREATED
Average yield increase
18 sites over 5 years, Canada




BARLEY
85.7
81.4
bu/ac 70 75 80 85 90
AGTIV IGNITE®
UNTREATED
Average yield increase
7 sites over 3 years, Canada



DURUM WHEAT



- Expanded root system
- Enhanced nutrient and water uptake
- More robust and vigorous plants

3.5 bu/ac **5.8%**

FORAGE



- Increased plant establishment and survival
- Better growth
- Increased crop yield

514 lb/ac **16.0%**

DRY BEAN



- Stronger plants
- Bigger branches and greener leaves
- More yield per plant

266 lb/ac **9.1%**

ONION & CARROT



- More developed root system
- Quicker plant establishment
- Increased marketable yields

2766 lb/ac **6.8%**

3837 lb/ac **9.4%**

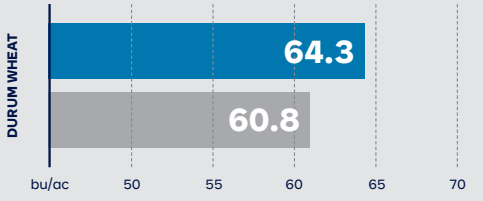
POTATO



- Faster germination
- Improved crop yield, quality and uniformity

31.5 cwt/ac **9.1%**

+10.3 cwt/ac

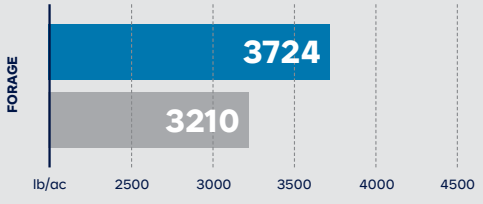


AGTIV REACH®

UNTREATED

Average yield increase
14 sites over 12 years,
North America



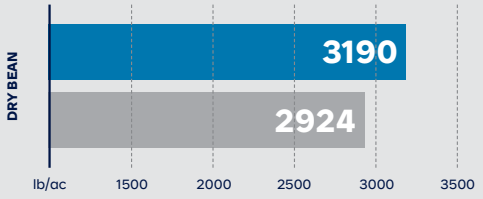


AGTIV REACH® P

UNTREATED

Average yield increase
47 sites over 2 years,
Canada



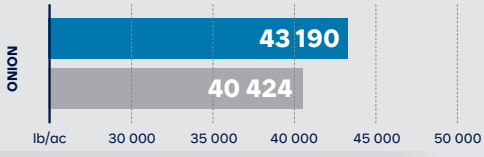


AGTIV REACH®

UNTREATED

Average yield increase
18 sites over 12 years,
North America

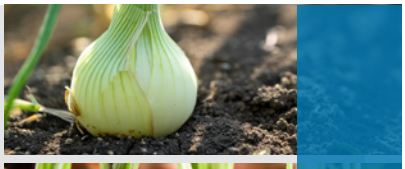


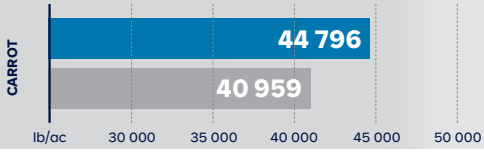


AGTIV REACH®

UNTREATED

Average yield increase
20 sites over 9 years,
Canada and Europe



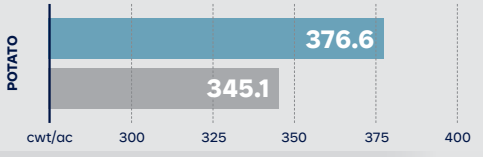


AGTIV REACH®

UNTREATED

9 sites over 6 years,
North America and Europe

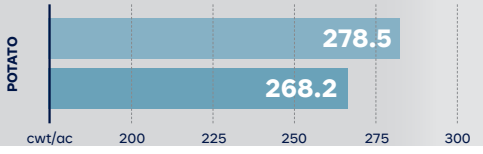




AGTIV REACH® POTATO

UNTREATED

Average yield increase
1202 sites over 15 years,
North America and Europe



AGTIV REACH® POTATO
+ AGTIV STIMULATE® POTATO

AGTIV REACH® POTATO

16 third-party trials over
4 years, North America





PEA LENTIL & FABA BEAN

ON-FARM MIXING WITH SEEDS

AGTIV THRIVE® P
PEA & LENTIL

COVERS 20 - 60 acres

ACTIVE INGREDIENTS:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 2750 viable spores/g

R **RHIZOBIUM** – PTB160 Technology
Rhizobium leguminosarum bv. *viciae:* 1.6 x 10^9 active cells/g

INERT INGREDIENT: Peat
PARTICLE SIZE: < 1 mm (18 mesh)
BULK DENSITY: 400 g/L (1 lb/US dry qt)

SIZE	COVERS	CODE
4.7 kg (10.3 lb) - pail	**Pea & faba bean:** 16 ha (40 ac) **Lentil:** 24 ha (60 ac)	710303
2.4 kg (5.3 lb) - pail	**Pea & faba bean:** 8 ha (20 ac)	710313

ON-FARM MIXING WITH SEEDS

AGTIV FUEL® P
PEA & LENTIL

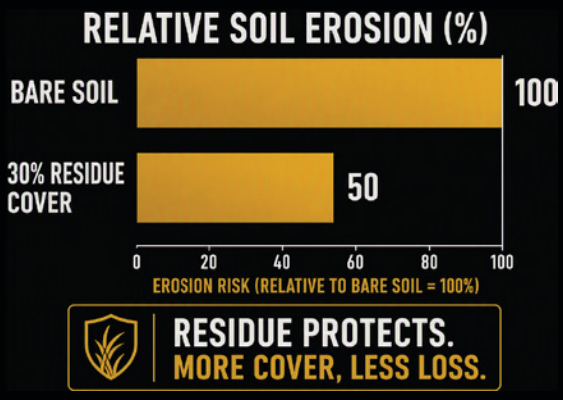
COVERS 40/60 acres

ACTIVE INGREDIENT:

R **RHIZOBIUM** – PTB160 Technology
Rhizobium leguminosarum bv. *viciae:* 1.6 x 10^9 active cells/g

INERT INGREDIENT: Peat
PARTICLE SIZE: < 1 mm (18 mesh)
BULK DENSITY: 400 g/L (1 lb/US dry qt)

SIZE	COVERS	CODE
4.7 kg (10.3 lb) - pail	**Pea & faba bean:** 16 ha (40 ac) **Lentil:** 24 ha (60 ac)	710403



RESIDUE GUARDS

RESIDUE ABSORBS RAIN AND RUNOFF

Crop residue left on the surface absorbs the impact of raindrops and slows runoff, so soil stays put instead of washing or blowing away. Keeping at least 30% of the field covered after planting cuts soil erosion by at least half compared with bare, tilled ground. More cover means more protection.

Source: University of Missouri Extension, G1650.

GRANULAR IN-FURROW

AGTIV THRIVE® G
PEA & LENTIL

COVERS 10/200 acres

ACTIVE INGREDIENTS:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 178 viable spores/g

R **RHIZOBIUM** – PTB160 Technology
Rhizobium leguminosarum bv. *viciae:* 1.3 x 10^8 viable cells/g

INERT INGREDIENT: Peat
PARTICLE SIZE: 0.5 mm to 2.5 mm (8 - 30 mesh)
BULK DENSITY: 600 g/L (37.4 lb/ft^3)

SIZE	COVERS	CODE
18.2 kg (40 lb) - bag	4 ha (10 ac)	710101
364 kg (800 lb) - tote bag	80 ha (200 ac)	710102

COMBO LIQUID FOR IN-FURROW

AGTIV THRIVE®
PEA & LENTIL

COVERS 80 acres

ACTIVE INGREDIENTS:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 6400 viable spores/g

R **RHIZOBIUM** – PTB160 Technology
Rhizobium leguminosarum bv. *viciae:* 6 x 10^9 viable cells/g

INERT INGREDIENT: Water
PARTICLE SIZE: < 0.2 mm (70 mesh) – PTB297 Technology
< 0.1 mm (150 mesh) – PTB160 Technology
Contains non-soluble particles

SIZE	COVERS	CODE
Combo box: 4 x 950 ml (4 x 32 fl. oz) - bottles 8 L (8 kg) - bag-in-box	32 ha (80 ac)	710214

GRANULAR IN-FURROW

AGTIV FUEL® G
PEA & LENTIL

COVERS 10/200 acres

ACTIVE INGREDIENT:

R **RHIZOBIUM** – PTB160 Technology
Rhizobium leguminosarum bv. *viciae:* 1.3 x 10^8 viable cells/g

INERT INGREDIENT: Peat
PARTICLE SIZE: 0.5 mm to 2.5 mm (8 - 30 mesh)
BULK DENSITY: 600 g/L (37.4 lb/ft^3)

SIZE	COVERS	CODE
18.2 kg (40 lb) - bag	4 ha (10 ac)	710111
364 kg (800 lb) - tote bag	80 ha (200 ac)	710112

LIQUID FOR IN-FURROW OR ON SEED

AGTIV FUEL® L
PEA & LENTIL

TREATS 240 bushels

ACTIVE INGREDIENT:

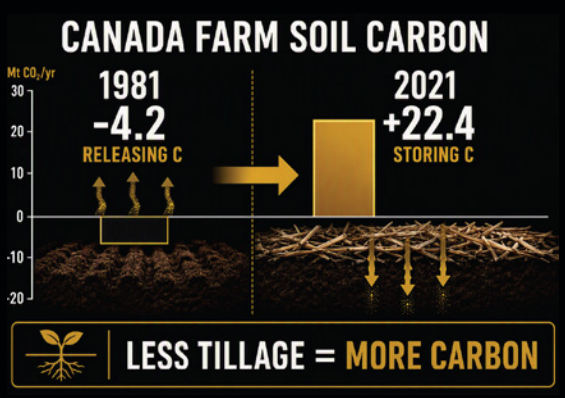
R **RHIZOBIUM** – PTB160 Technology
Rhizobium leguminosarum bv. *viciae:* 6 x 10^9 viable cells/g

PARTICLE SIZE: < 0.1 mm (150 mesh)
Contains non-soluble particles

SIZE	COVERS	CODE
8 L (8 kg) - bag-in-box	In-furrow: 32 ha (80 ac) On seed✪: 6530 kg of seeds (240 bu)	710204

✪ Use EXTENDER™ L to prevent desiccation and extend seeding window up to 90 days.

Apply 122 ml / 100 kg of seed.



LESS TILLAGE

BUILDING CARBON, HOLDING SOIL

Intensive tillage breaks down structure, speeds organic-matter loss and leaves soil bare to erosion. Reducing tillage keeps residue on top, lets carbon build and holds soil in place. On the Prairies, less tillage plus less summerfallow helped Canada's farm soils shift from a net carbon source in 1981 to a net sink capturing 22.4 Mt CO2/yr by 2021.

Source: Agriculture and Agri-Food Canada, 2024.



SOYBEAN

ON-FARM MIXING WITH SEEDS

AGTIV THRIVE® P
SOYBEAN

COVERS 40 acres

ACTIVE INGREDIENTS:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 2750 viable spores/g

R **RHIZOBIUM** – PTB162 Technology
Bradyrhizobium japonicum: 2.5 x 10^9 active cells/g

INERT INGREDIENT: Peat
PARTICLE SIZE: < 1 mm (18 mesh)
BULK DENSITY: 400 g/L (1 lb/US dry qt)

SIZE	COVERS	CODE
4.7 kg (10.3 lb) – pail	16 ha (40 ac)	710703

GRANULAR IN-FURROW

AGTIV FUEL® G
SOYBEAN

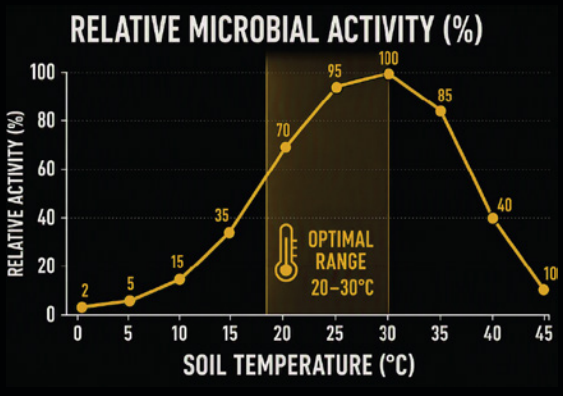
COVERS 10/200 acres

ACTIVE INGREDIENT:

R **RHIZOBIUM** – PTB162 Technology
Bradyrhizobium japonicum: 1.1 x 10^8 viable cells/g

INERT INGREDIENT: Peat
PARTICLE SIZE: 0.5 mm to 2.5 mm (8 - 30 mesh)
BULK DENSITY: 600 g/L (37.4 lb/ft³)

SIZE	COVERS	CODE
18.2 kg (40 lb) – bag	4 ha (10 ac)	710511
364 kg (800 lb) – tote bag	80 ha (200 ac)	710512



WARM & MOIST

MICROBES WAKE WITH WARMTH

Soil life runs on warmth and moisture. Microbial activity, and the nutrient release it drives, roughly doubles for each 10C rise until it gets too hot, and slows to a crawl in cold or bone-dry soil. That's why nitrogen mineralized from organic matter shows up mainly once soils warm and stay moist in spring.

Source: USDA-NRCS Soil Biology Primer; soil microbiology.

GRANULAR IN-FURROW

AGTIV THRIVE® G
SOYBEAN

COVERS 10/200 acres

ACTIVE INGREDIENTS:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 178 viable spores/g

R **RHIZOBIUM** – PTB162 Technology
Bradyrhizobium japonicum: 1.1 x 10^8 viable cells/g

INERT INGREDIENT: Peat
PARTICLE SIZE: 0.5 mm to 2.5 mm (8 - 30 mesh)
BULK DENSITY: 600 g/L (37.4 lb/ft³)

SIZE	COVERS	CODE
18.2 kg (40 lb) – bag	4 ha (10 ac)	710501
364 kg (800 lb) – tote bag	80 ha (200 ac)	710502

COMBO LIQUID FOR IN-FURROW

AGTIV THRIVE®
SOYBEAN

COVERS 40 acres

ACTIVE INGREDIENTS:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 6400 viable spores/g

R **RHIZOBIUM** – PTB162 Technology
Bradyrhizobium japonicum: 8 x 10^9 viable cells/g

INERT INGREDIENT: Water
PARTICLE SIZE: < 0.2 mm (70 mesh) – PTB297 Technology
< 0.1 mm (150 mesh) – PTB162 Technology
Contains non-soluble particles

SIZE	COVERS	CODE
Combo box: 2 x 950 ml (2 x 32 fl. oz) – bottles 8 L (8 kg) – bag-in-box	16 ha (40 ac)	710614

LIQUID FOR IN-FURROW OR ON SEED

AGTIV FUEL® L
SOYBEAN

TREATS 250 units

ACTIVE INGREDIENT:

R **RHIZOBIUM** – PTB162 Technology
Bradyrhizobium japonicum: 8 x 10^9 viable cells/g

PARTICLE SIZE: < 0.1 mm (150 mesh)
Contains non-soluble particles

SIZE	COVERS	CODE
8 L (8 kg) – bag-in-box	In-furrow: 16 ha (40 ac) On seed✪: 5680 kg of seeds (250 units)	710604

✪ Use EXTENDER™ L to prevent desiccation and extend seeding window up to 240 days.

COMBO LIQUID FOR IN-FURROW OR ON SEED

AGTIV ENRICH®
SOYBEAN

TREATS 250 units

ACTIVE INGREDIENTS:

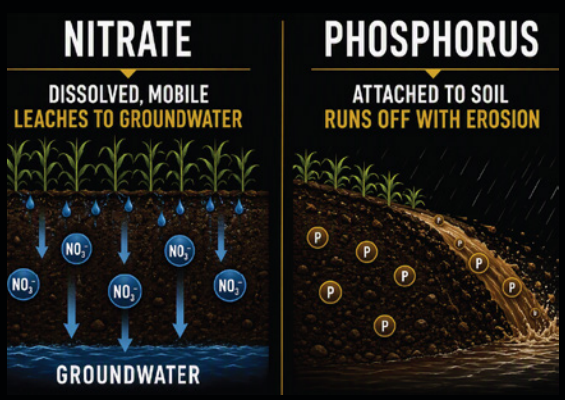
B **BACILLUS** – PTB180 Technology
Bacillus pumilus: 3 x 10^9 viable spores/g

R **RHIZOBIUM** – PTB162 Technology
Bradyrhizobium japonicum: 8 x 10^9 viable cells/g

PARTICLE SIZE: < 0.1 mm (150 mesh)
Contains non-soluble particles

SIZE	COVERS	CODE
Combo box: 8 L (8 kg) – bag-in-box 300 ml – bottle	In-furrow: 16 ha (40 ac) On seed✪: 5680 kg of seeds (250 units)	710814

✪ Use EXTENDER™ L to prevent desiccation and extend seeding window up to 240 days.



PROTECT WATER

KEEP NUTRIENTS OUT OF WATER

Nutrients that leave the field can end up in water. Nitrate leaches into groundwater, while phosphorus attached to eroding soil runs off into surface water and can fuel algae blooms. Matching rate and timing to crop need, keeping soil covered, and placing nutrients below the surface all keep fertility in the field and out of the water.

Source: USDA-NRCS; Fertilizer Canada 4R Stewardship.



CHICKPEA

ON-FARM MIXING WITH SEEDS

AGTIV THRIVE® P
CHICKPEA

COVERS 40 acres

ACTIVE INGREDIENTS:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 2750 viable spores/g

R **RHIZOBIUM** – PTB161 Technology
Mesorhizobium onobrychidis: 7.0 x 10^8 active cells/g

INERT INGREDIENT: Peat
PARTICLE SIZE: < 1 mm (18 mesh)
BULK DENSITY: 400 g/L (1 lb/US dry qt)

SIZE	COVERS	CODE
4.7 kg (10.3 lb) – pail	16 ha (40 ac)	713103

GRANULAR IN-FURROW

AGTIV THRIVE® G
CHICKPEA

COVERS 10/200 acres

ACTIVE INGREDIENTS:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 178 viable spores/g

R **RHIZOBIUM** – PTB161 Technology
Mesorhizobium onobrychidis: 1.6 x 10^8 viable cells/g

INERT INGREDIENT: Peat
PARTICLE SIZE: 0.5 mm to 2.5 mm (8 - 30 mesh)
BULK DENSITY: 600 g/L (37.4 lb/ft³)

SIZE	COVERS	CODE
18.2 kg (40 lb) – bag	4 ha (10 ac)	712901
364 kg (800 lb) – tote bag	80 ha (200 ac)	712902



FIVE FORCES

CLORPT SHAPES EVERY SOIL

Every soil is the product of five factors, remembered as CLORPT: Climate, Organisms, Relief (slope), Parent material and Time. That's why two fields a mile apart can differ sharply. Knowing these forces explains a soil's natural texture, depth and fertility before you ever fertilize.

Source: University of Minnesota Extension, "Five factors of soil formation," 2024.



LIQUID ON SEED

AGTIV IGNITE® L

COVERS 200/300 acres

ACTIVE INGREDIENT:

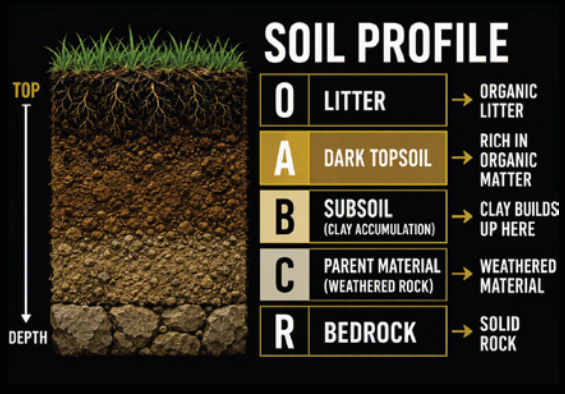
S **SERENDIPITA** – PTB299 Technology
Serendipita indica: 2 x 10^6 viable spores/g

INERT INGREDIENT: Water
PARTICLE SIZE: < 1 mm (18 mesh)
Contains non-soluble particles

SIZE	COVERS	CODE
11 L (11 kg) bag-in-box	**Canola & brassicacea:** 454 kg (1000 lb) of seeds or 81 ha (200 ac) **Wheat & cereals:** 9165 kg (20 205 lb) of seeds or 81 ha (200 ac) **Corn:** 3000 kg (6614 lb) of seeds or 121 ha (300 ac)	714114

CANOLA, CORN & CEREAL

(DURUM WHEAT, SPRING WHEAT & BARLEY)



SOIL LAYERS

HORIZONS FROM LITTER TO BEDROCK

Dig a pit and you see distinct layers, called horizons, that make up the soil profile. From the top: O (organic litter), A (dark topsoil rich in organic matter), B (subsoil where clay accumulates), C (weathered parent material) and R (bedrock). The A horizon is your most productive layer, so protecting topsoil protects yield.

Source: USDA Natural Resources Conservation Service, "A Soil Profile."



FERTILIZER COMPLEMENT

LIQUID

AGTIV UPTAKE®

TREATS 7 - 50 metric tons

ACTIVE INGREDIENTS:

B **BACTERIA** – PTB101 Technology
Bacillus velezensis: 5 x 10^8 viable spores/g

BACTERIA – PTB108 Technology
Bacillus halotolerans: 2.5 x 10^8 viable spores/g

BACTERIA – PTB124 Technology
Priestia megaterium: 2.5 x 10^8 viable spores/g

INERT INGREDIENT: Water
PARTICLE SIZE: < 0.1 mm (150 mesh)
Contains non-soluble particles

SIZE	COVERS	CODE
Combo box: 3.5 kg (3.5 L) + 3.5 kg (3.5 L) + 7 kg (7 L) bags-in-box	**Fertilizer:** 7-50 metric tons **Corn, wheat & barley:** 50 ha (123 ac)	711504



READ THE COLOR

COLOR HINTS AT DRAINAGE AND OM

Soil color is a free diagnostic. Dark brown to black usually signals higher organic matter; red and bright brown mean well-oxidized iron and good drainage; gray, blue-gray or mottled colors (gleying) point to waterlogging and poor aeration. Checking subsoil color helps you judge natural drainage with no special tools.

Source: Purdue University, Soil Judging Manual (Natural Drainage).

DIRECTIONS FOR USE

Before use, shake well and mix the content of all three bags together in a clean tank and use within 24 hours. For agricultural crops, the product is stable on fertilizers and seeds up to 12 months.

MIXING WITH SEEDS

Apply to seeds according to the following table. If necessary, the product can be diluted in a volume of non-chlorinated water to ensure good seed coverage.

	AGTIV UPTAKE® Application rate on seeds
	ml/kg
Corn	10
Wheat & Barley	1.6

IN-FURROW APPLICATION

Apply the inoculant in the furrow, directly onto the seed, at a rate of 0.28 L/ha (0.11 L/acre).

APPLICATION ON FERTILIZER

- **Liquid fertilizer:** Incorporate at a rate of 0.28 L/ha (0.11L/acre).
- **Granular fertilizer:** Apply according to the following table. If necessary, the product can be diluted in a volume of non-chlorinated water to reach a minimum of 0.5 ml/kg to ensure good fertilizer coverage.

Fertilizer Application rate		AGTIV UPTAKE® Application rate
kg/ha	lb/ac	ml/kg
100-249	89-222	1.80
250-499	223-445	0.80
500-749	446-668	0.50
750-999	669-891	0.32
+1000	+892	0.26

Compatible fertilizers (examples)*

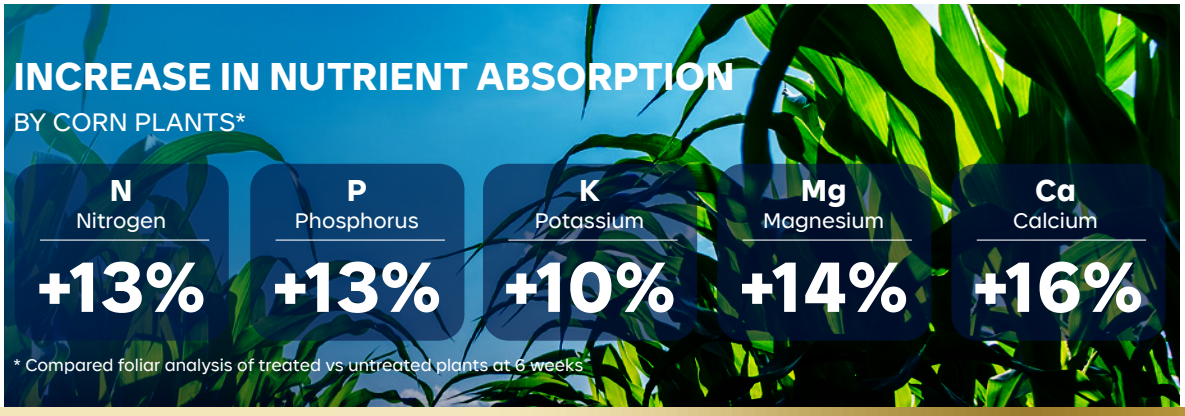
Granular:

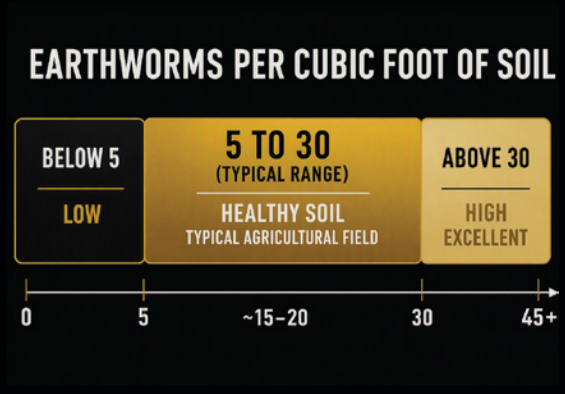
Crystal Green®, MAP, DAP, K-Mag, MESZ, MOP, Ammonium sulfate, Coated urea (PurYield)

Liquid:

- 25-0-3
- 7-25-3

* Ask your representative for the complete list.





EARTHWORMS

A QUICK, CHEAP SOIL-HEALTH CHECK

Earthworms are a quick, low-cost indicator of soil health. They shred residue, mix organic matter and create channels that improve air and water movement. A common field check is to dig a cubic foot of moist soil and hand-sort, roughly 5 to 30 worms is typical, with numbers rising under reduced tillage and higher organic matter.

Source: Kansas State University Extension, Agronomy eUpdate.



FIELD CROPS

ON-FARM MIXING WITH SEEDS

AGTIV REACH® P

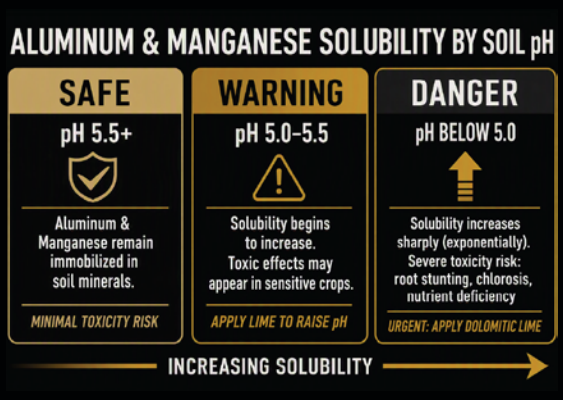
COVERS 80 acres

ACTIVE INGREDIENT:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 8000 viable spores/g

INERT INGREDIENT: Peat
PARTICLE SIZE: < 1 mm (18 mesh)
BULK DENSITY: 500 g/L (1.2 lb/US dry qt)

SIZE	COVERS	CODE
4 x 800 g (4 x 1.75 lb) pails	**Cereal, flax & dry bean:** 32 ha (80 ac) **Alfalfa, mix forages & grass:** 16 ha (40 ac)	712324



BELOW 5.5

ACID FREES TOXIC AL AND MN

When soil pH drops below about 5.5, aluminum and manganese become far more soluble and can reach levels toxic to roots. Toxic aluminum prunes roots, stunting them so plants can't take up water and nutrients, often mimicking a phosphorus shortage. It's a key reason to monitor and lime strongly acid soils.

Source: Michigan State University Extension, "Soil pH and aluminum toxicity."

GRANULAR IN-FURROW

AGTIV REACH® G

COVERS 10/200 acres

ACTIVE INGREDIENT:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 178 viable spores/g

INERT INGREDIENT: Peat
PARTICLE SIZE: 0.5 mm to 2.5 mm (8 - 30 mesh)
BULK DENSITY: 600 g/L (37.4 lb/ft³)

SIZE	COVERS	CODE
18.2 kg (40 lb) bag	**Cereal, flax & dry bean:** 4 ha (10 ac) **Alfalfa, mix forages & grass:** 45 kg of seeds (99 lb)	712101
364 kg (800 lb) tote bag	**Cereal, flax & dry bean:** 80 ha (200 ac) **Alfalfa, mix forages & grass:** 720 kg of seeds (1584 lb)	712102

LIQUID FOR IN-FURROW

AGTIV REACH® L

COVERS 40 acres

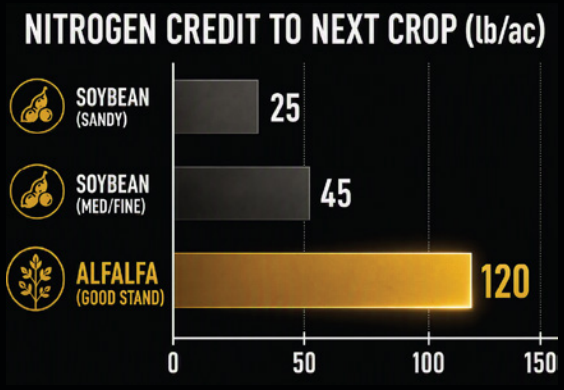
ACTIVE INGREDIENT:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 6400 viable spores/g

INERT INGREDIENT: Water
PARTICLE SIZE: < 0.2 mm (70 mesh)
Contains non-soluble particles

SIZE	COVERS	CODE
2 x 950 ml (2 x 32 fl. oz) – bottles	16 ha (40 ac)	712204





LEGUME BONUS

LEGUMES CREDIT THE NEXT CROP

A legume in the rotation leaves nitrogen behind for the next crop, so you can cut fertilizer accordingly. Guidance credits corn after soybean roughly 45 lb N/ac on medium-to-fine soils (about 25 on sandy), while a good alfalfa stand can credit 90 lb N/ac or more. Taking the credit saves money and avoids over-applying.

Source: University of Nebraska-Lincoln CropWatch.



GRANULAR

AGTIV REACH® G

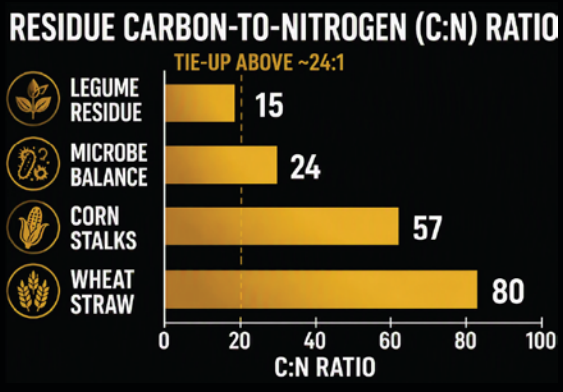
ACTIVE INGREDIENT:

MYCORRHIZAE - PTB297 Technology
Rhizophagus irregularis: 178 viable spores/g

INERT INGREDIENT: Peat
PARTICLE SIZE: 0.5 mm to 2.5 mm (8 - 30 mesh)
BULK DENSITY: 600 g/L (37.4 lb/ft³)

SIZE	CODE
6 kg (13.2 lb) - pail	712103

SPECIALTY CROPS
(FRUITS & VEGETABLES)



CARBON TIES N

STRAW LOCKS UP SOIL NITROGEN

How fast residue breaks down depends on its carbon-to-nitrogen ratio. Microbes need roughly 24 parts carbon to 1 part nitrogen; residues above that (wheat straw ~80:1, corn stalks ~57:1) decompose slowly and temporarily tie up soil nitrogen, while low-C:N legume residue breaks down fast and releases nitrogen.

Source: Kansas State University Extension, Agronomy eUpdate.

ON-FARM MIXING WITH SEEDS

AGTIV REACH® P

ACTIVE INGREDIENT:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 8000 viable spores/g

INERT INGREDIENT: Peat
PARTICLE SIZE: < 1 mm (18 mesh)
BULK DENSITY: 500 g/L (1.2 lb/US dry qt)

SIZE	CODE
4 x 800 g (4 x 1.75 lb) – pails	712324

TREATED SEEDS

AGTIV REACH®
AGTIV STIMULATE®



ACTIVE INGREDIENTS:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 6000 viable spores/g

B **BACILLUS** – PTB180 Technology
Bacillus pumilus: 3 x 10^9 viable spores/g

Ask for AGTIV REACH® (Mycorrhizae) & AGTIV STIMULATE® (*Bacillus*) combined on your treated seeds

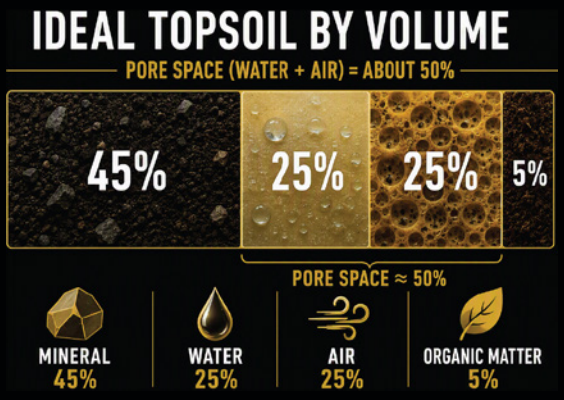
AGTIV® inoculants are specially designed seed-applied technologies integrating biological active ingredients to promote healthy emergence and greater seedling vigor that increases: UNIFORMITY • YIELD • QUALITY.

With the AGTIV® proven technologies, you have access to certified inoculants backed by a close partnership with seed treaters for technology integration, compatibility with other inputs and quality control.

Validate with your representative which active ingredients are currently available for your specialty crops.



The following plant families cannot be colonized (no effect on plant) by the mycorrhizal fungi contained in AGTIV®: *Brassicaceae* (broccoli, cabbages, cauliflower, radish, rutabaga, watercress), *Chenopodiaceae* (beets, spinach), *Ericaceae* (blueberries, cranberries).



HALF IS EMPTY

HALF OF TOPSOIL IS PORE SPACE

In an ideal topsoil about half the volume is solid (roughly 45% mineral, 5% organic matter) and half is pore space split between water and air (about 25% each). Those pores are where roots breathe and where water moves and is stored. Big pores drain and let air in; small pores hold water for plants.

Source: University of Illinois Extension, "Soil and Ecosystems."



POTATO

IN-FURROW APPLICATION OR SEED-PIECE TREATMENT

AGTIV REACH® L POTATO

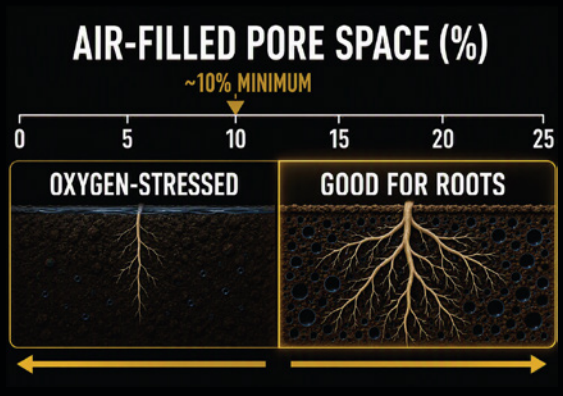
COVERS 20 acres

ACTIVE INGREDIENT:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 10 500 viable spores/g

INERT INGREDIENT: Water
PARTICLE SIZE: < 0.2 mm (70 mesh)
Contains non-soluble particles

SIZE	COVERS	CODE
2 x 950 ml (2 x 32 fl. oz) - bottles	8 ha (20 ac)	711004



ROOTS NEED AIR

ROOTS NEED ~10% AIR-FILLED PORES

Roots respire, they use oxygen to make the energy needed to take up water and nutrients. Oxygen reaches them through air-filled pores, and soils generally need at least about 10% air-filled pore space for good growth. Because oxygen moves roughly 10,000 times slower through water than air, waterlogged or compacted soil quickly starves roots.

Source: Iowa State University, Introduction to Soil Science (Aeration).

IN-FURROW APPLICATION OR SEED-PIECE TREATMENT

AGTIV REACH® P POTATO

COVERS 40 acres

ACTIVE INGREDIENT:

M **MYCORRHIZAE** – PTB297 Technology
Rhizophagus irregularis: 67 000 viable spores/g

INERT INGREDIENT: Diatomaceous earth
PARTICLE SIZE: < 0.2 mm (70 mesh)

SIZE	COVERS	CODE
2 x 300 g (2 x 10.5 oz) – pouches	16 ha (40 ac)	711104

IN-FURROW APPLICATION

AGTIV STIMULATE® L POTATO

COVERS 20 acres

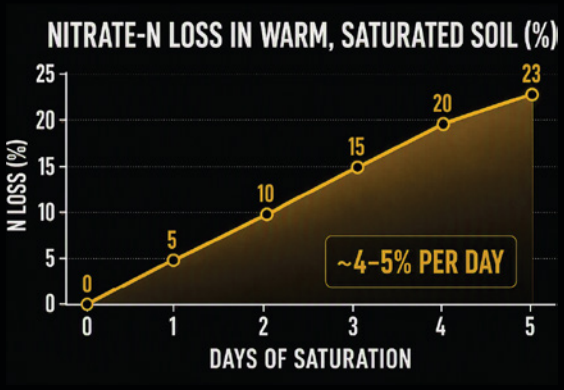
ACTIVE INGREDIENT:

B **BACILLUS** – PTB185 Technology
Bacillus inaquosorum: 2 x 10^9 viable spores/g

INERT INGREDIENT: Water
PARTICLE SIZE: < 0.1 mm (150 mesh)
Contains non-soluble particles

SIZE	COVERS	CODE
8 L (8 kg) – bag-in-box	8 ha (20 ac)	711021





WET SOIL LOSES N

SATURATED SOIL VENTS N AS GAS

When soil stays saturated, pores fill with water and oxygen runs out. Bacteria then strip oxygen from nitrate and release nitrogen to the air as gas, de-nitrification, permanently losing it from the field. In warm soils (above about 18C / 65F), an estimated 4 to 5% of nitrate-nitrogen can be lost per day of saturation.

Source: OMAFRA / Field Crop News (Ontario), 2023.

NOTES

PHASE 03

PLANT FERTILITY

BUILD THROUGH STRESS. PROTECT THE FINISH.

AGRONOMICS

In season function decides yield from V4 to pod fill.

ECONOMICS

Recovery from stress is measured in bushels, not symptoms.

LOGISTICS

Tank-mix on existing passes — no extra trips across the field.

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CORVIAN TAURUS

Trusted Lab Insights

FOR CANADIAN AGRICULTURE

Corvian Labs delivers precise, reliable analysis to help Canadian growers, agronomists, and enterprises make confident, data-driven decisions that improve productivity and sustain long-term soil health.



15+ YEARS OF TRUSTED EXPERIENCE

7+ MILLION SOIL TESTS ANALYZED

RAPID TURNAROUND TIMES

CANADIAN DESIGNED FOR CANADIAN AG

Value of a Soil Test

7 Reasons to Soil Test

OPTIMIZE NUTRIENT MANAGEMENT
Identify nutrient levels and imbalances to apply the right nutrients, at the right rate, in the right place.

REDUCE INPUT COSTS
Avoid over-application and unnecessary expenses by using data to guide your fertility program.

IMPROVE CROP PERFORMANCE
Balanced soil fertility supports stronger root development, higher yields, and better quality.

SUPPORT SOIL HEALTH
Track changes over time to build healthier soils and improve long-term productivity.

MEET REGULATORY REQUIREMENTS
Soil testing provides the documentation needed for compliance and nutrient management plans.

PROMOTE ENVIRONMENTAL STEWARDSHIP
Make informed decisions that help minimize nutrient loss and protect water quality.

MAKE DATA-DRIVEN DECISIONS
Accurate soil data gives you confidence to make better decisions for every acre.

Our Approach

Designed for Agriculture

From family farms to enterprise research, Corvian Labs delivers the accurate, defensible data needed to make confident decisions.

1 COLLECT SAMPLES
Collect samples using the appropriate sampling process. We provide the guidance and instructions for best practices with each type of testing solution.

2 YOU SUBMIT, WE ANALYZE
Send your samples with the appropriate submission form. Our team reviews each submission to ensure everything is in place before analysis begins.

3 RECEIVE RESULTS
Receive clear, easy-to-understand reports that provide the information needed to support agronomic decisions, nutrient management, and regulatory requirements.

Our Services

Soil Testing & Analysis

AGRICULTURAL SOIL ANALYSIS
Complete soil testing packages for fertility planning, nutrient management, and crop performance.

SOIL HEALTH & CARBON ANALYSIS
Measure key soil health indicators, carbon levels, and nitrogen dynamics.

PHYSICAL SOIL PROPERTIES
Analyze soil texture, moisture, bulk density, and particle size.

Crop & Nutrient Management

IN-SEASON NITROGEN TESTING
Monitor nitrogen availability to improve fertilizer efficiency and crop response.

PLANT TISSUE ANALYSIS
Evaluate nutrient uptake and identify deficiencies throughout the growing season.

LIQUID MANURE ANALYSIS
Determine nutrient content for accurate manure management and application planning.

Environmental & Regulatory Testing

ENVIRONMENTAL SOIL TESTING
Support environmental monitoring, stewardship programs, and compliance requirements.

SEPTIC FIELD TESTING
Particle size analysis for septic system and regulatory applications.

Advanced Soil Biology

METAGENOMIC ANALYSIS
Miraterra® metagenomic analysis is available as an add-on through Corvian Labs, delivering deeper insights into soil microbial activity and biology.

miraterra
Trace Genomics



Why Test with Corvian Labs?

15+ YEARS OF EXPERIENCE
Decades of agricultural laboratory expertise delivering reliable results across North America.

7+ MILLION TESTS ANALYZED
A proven track record of supporting growers, retailers, researchers, and enterprises with accurate data.

RAPID TURNAROUND TIMES
Timely results so you can make decisions and keep operations moving.

QUALITY YOU CAN COUNT ON
Accredited labs, standardized methods, and rigorous quality control at every step.

LABORATORIES IN CANADA & THE U.S.
Local support with the scale and infrastructure to serve all your needs.

CORVIAN

Tailored Testing Solutions. Flexible Service Options.

We offer a full range of test packages and custom solutions to meet your unique needs. Contact Taurus Ag to request a quote or build a testing program that works for you.

TAURUS REP

TAURUS

Taurus Agricultural Marketing is the exclusive sales representative for Corvian Labs in Canada.

KNOW BEFORE YOU GROW

UNLOCK
THE POWER OF PRECISE SOIL DATA
BEFORE YOU SEED.

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NOTES

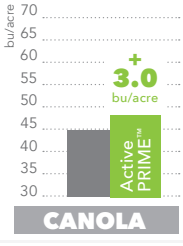
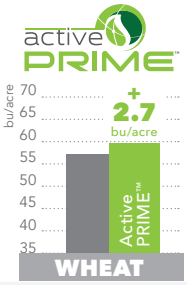
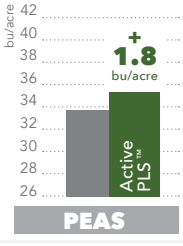
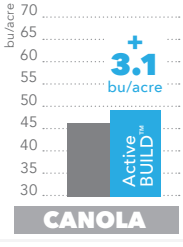
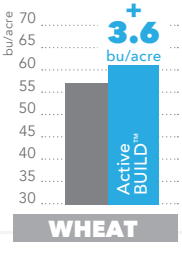
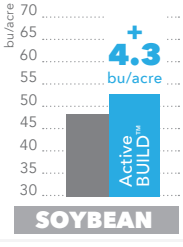
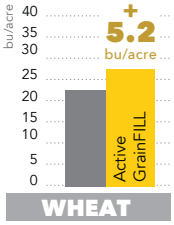
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APPLICATION TIMINGS

	CANOLA & CORN	CEREALS	PULSES
SEEDING	active PRIME™ 4 ml/1 kg of seed 90 ml/bu 110 bags/10 L jug 	WHEAT 108 ml/bu 93 bu/10 L jug BARLEY 87 ml/bu 115 bu/10 L jug OATS 58 ml/bu 172 bu/10 L jug 	active PLS™ PEAS LENTILS SOYBEANS 2 ml/1 kg of seed 54 ml/bu 184 bu/10 L jug 
HERBICIDE	active BUILD™ 0.5 L - 1 L/acre 3-4 weeks btwn applications 	active BUILD™ 0.5 L - 1 L/acre 3-4 weeks btwn applications 	active BUILD™ or active VPR™ PLUS 1 L/acre 3-4 weeks btwn applications 
FUNGICIDE	active GFB™ 1 L/acre	active GFB™ 1 L/acre 	active GFB™ 1 L/acre
HAIL EVENT	active BUILD™ active GFB™ Always use Active BUILD until flowering. If the plant has already begun to flower, use Active GFB.	active BUILD™ active GFB™ Always use Active BUILD until cereal heading.	active BUILD™ active GFB™ Always use Active BUILD until flowering. If the plant has already begun to flower, use Active GFB.

Apply at signs of nutrient deficiency

Proform N™ · active CALCIUM 10% Ca · active BORON 10% B · active COPPER 5.6% Cu · active MANGANESE 7% Mn · active KONNECT™ · active MAGNESIUM 4% Mg · active MOLYBDENUM 14.2% Mo · active IRON 6% Fe · active ZINC 9.8% Zn



DRIVES ROOT GROWTH
Provides essential nutrients for young plants to establish strong, healthy root systems.

REDUCES CROP STRESS
Helps plants manage stress caused by rapid growth, herbicides, and harsh environmental conditions.



PROMOTES RAPID DEVELOPMENT
Accelerates plant emergence and boosts fungicide performance.

DESIGNED FOR ALL CROPS
Works with all crops providing nutrients needed during an aggressive growth stage.

STRONGER GROWTH
N-P-K supplemented with B, Mg, Mo and Z, supports root growth, strong stalks and increased leafing.

BOOSTS CHLOROPHYLL
Assists plants in chlorophyll production, even in the absence of optimal soil conditions.



17 ELEMENTS

ALL 17 NUTRIENTS ARE ESSENTIAL

Every crop needs 17 essential nutrients to complete its life cycle. Carbon, hydrogen and oxygen come from air and water; the other 14 come from the soil. The ones used in large amounts are macronutrients (N, P, K, plus secondary S, Ca, Mg); the ones used in tiny amounts are micronutrients. Essential means the plant can't finish growing without each one.

Source: University of Wisconsin-Madison Extension, "Crop Nutrients 101."



Active BUILD™ HOW IT WORKS

NUTRIENT ANALYSIS

Total Nitrogen (N)	2%
Available Phosphate (P_2O_5)	30%
Soluble Potash (K_2O)	6%
Boron (B)(actual)	0.3%
Manganese (Mn)(actual)	1.0%
Molybdenum (Mo)(actual)	0.13%
Zinc (Zn)(actual)	2.3%

MIXING INSTRUCTIONS

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

Add tank mix partners in the following order: Water, Agrochemical, Active BUILD. Keep agitator running while mixing and spraying.

Mix 1L/acre of Active BUILD with a minimum of 20L/acre of water for ground applications and 12L/acre for aerial applications.

APPLICATION

Apply at herbicide timing as a foliar spray.

Spray early morning or late afternoon when the sun is lower in the sky. Do not apply when air temperatures are above 29°C (85°F). Avoid spraying on windy days.

Allow at least 3-4 weeks between applications.

Contains nutrients that promote growth above and below ground while protecting young plants from stressors.

WHY TO USE

Active BUILD provides the nutrients that young plants need to continue strong, healthy growth and overcome the stress caused by rapid growth, herbicides, and unfavourable environmental conditions. Roots continue to deepen, while stalks strengthen and foliage increases.

WHEN TO USE

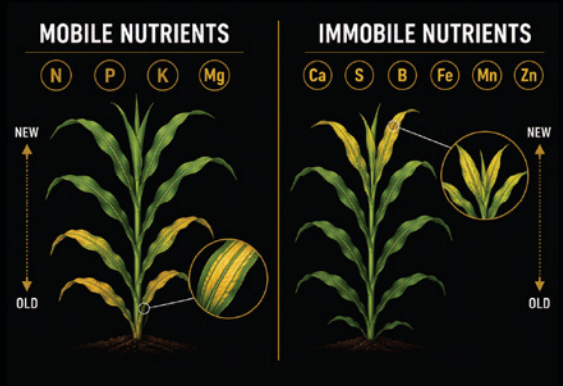
Apply Active BUILD once during herbicide timing as a foliar spray. For wheat, apply at BBCH 13-15 (3-5 leaf stage). For canola, apply at BBCH 12-14 (2-4 leaf stage). For soybean, apply at V1-V2 (first-second trifoliate). For pulse crops, potatoes, and corn, apply at the 4-5 leaf stage.

HOW TO USE

Apply 1L/acre of Active BUILD with a minimum of 20L/acre of water for ground applications and 12L/acre for aerial applications.

HOW IT WORKS

Active BUILD provides a highly concentrated nutrient package in a liquid mixture along with Active AgriScience's proprietary activation formula. Nitrogen, phosphorus and potassium are provided in easy-to-absorb complexes and added organic acids enhance photosynthetic capacity, allowing plants to benefit from more energy. Active BUILD also reduces evapotranspiration, helping to protect plants from drought conditions.



OLD OR NEW?

WHERE SYMPTOMS SHOW TELLS YOU

Some nutrients move freely inside the plant and some don't, which tells you where to look for trouble. Mobile nutrients (N, P, K, Mg) get pulled from older leaves to feed new growth when supply is short, so deficiency shows in the lower, older leaves first. Immobile nutrients (Ca, S, B, Fe, Mn, Zn) stay put, so deficiency shows first in the newest top leaves.

Source: Michigan State University Extension, 2015.

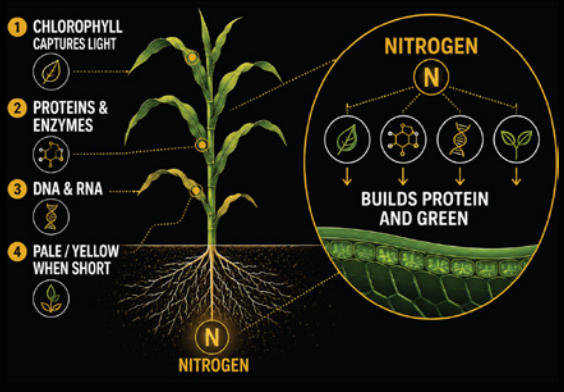


Active BUILD™ COMPATIBILITY

Compatible with most herbicides and fertilizers. Please review Compatibility Chart and conduct pre-testing if combination has not been previously used. As water composition can vary, always do a jar test with pesticides and spray water to ensure compatibility.

√ Compatible X Incompatible - Not Tested ! Caution

HERBICIDES	ACTIVE INGREDIENTS		HERBICIDES	ACTIVE INGREDIENTS	
ACHIEVE	Tralkoxydim	√	ENFORCER D	2,4-D ester, fluroxypyr, bromoxynil	-
ALLY	Metsulfuron methyl	√	ENFORCER M	MCPA ester, fluroxypyr, bromoxynil	-
AGRAL 90 OR AGSURF II	Nonylphenoxy polyethoxy ethanol	√	ENGENIA	Dicamba	-
ALTITUDE FX2	Imazamox	-	ENLIST	2,4-D Choline	X
ARMEZON	Topramezone	√	ESTAPROP XT	2,4-D, dichlorprop-P	!
ARES	Imazamox, imazethapyr	√	EQUINOX	Tepraloxydim	√
ASSERT SC	Imazamethabenz-methyl	-	EVEREST/SIERRA	Flucarbazone-sodium	√
ASSURE II	Quizalofop-P-ethyl	-	EVEREST GBX	Flucarbazone	-
ATTAIN XCA (FLUROXYPYR)	Fluroxypyr	√	FACET L	Quinclorac	-
ATTAIN XCB (2,4-D LV ESTER)	2,4-D	√	FRONTLINE	Florasulam, MCPA	√
AVENGE 200 C	Difenzoquat	√	FLAX MAX	Clopyralid, MCPA	√
AXIAL	Pinoxaden	√	GLYPHOSATE	Glyphosate, N-(phosphonomethyl) glycine	√
AXIAL XTREME IPAK	Pinoxaden, fluroxypyr, pyrasulfotole, bromoxynil	-	HORIZON NG	Clodinafop-propargyl	-
AXIAL XTREME	Pinoxaden and fluroxypyr	-	INFINITY	Bromoxynil, pyrasulfotole	√
BANVEL II	Dicamba	√	INFINITY FX	Pyrasulfotole, bromoxynil, fluroxypyr	-
BARRICADE II	Tribenuronmethyl, thifensulfuron-methyl	√	LIBERTY	Glufosinate ammonium	√
BASAGRAN	Bentazon	X	LONTREL	Clopyralid	-
BASAGRAN FORTE	Bentazon	X	LUXXUR	Tribenuronmethyl, thiencarbazonemethyl	-
BROADBAND	Pinoxaden, florasulam	-	MANIPULATOR 620	Chlormequat chloride	-
BUCTRIL M	Bromoxynil	√	MCPA AMINE 500	MCPA amine	√
CENTURIAN	Clethodim	√	MCPA ESTER 500	MCPA ester	√
CIRPREME XC	Arylex™ active, florasulam, clopyralid	-	MCPA SODIUM 300	MCPA sodium	-
CLEVER	Quinclorac	√	OCTTAIN XL	Fluroxypyr, 2,4-D ester	-
CURTAIL M	Clopyralid, MCPA	√	ODYSSEY	Imazamox, imazethapyr	√
DEPLOY	Thifensulfuron-methyl, tribenuronmethyl	-	ODYSSEY NXT	Imazamox, imazethapyr	√
DYVEL DS	Dicamba, 2,4-D, Mecoprop-P	!	ODYSSEY ULTRA	Sethoxydim	√
ECLIPSE XC	Clopyralid	-	PARADIGM	Halauxifen, florasulam	-
EMBUTOX	2,4-DB	-	PARDNER	Bromoxynil	-



N BUILDS GREEN

N MAKES CHLOROPHYLL AND PROTEIN

Nitrogen is a building block of chlorophyll, the green pigment that captures sunlight, and of the proteins and enzymes that run the plant's machinery. That's why a nitrogen-short plant turns pale green to yellow and grows slowly. Because nitrogen is mobile, yellowing appears on the older, lower leaves first.

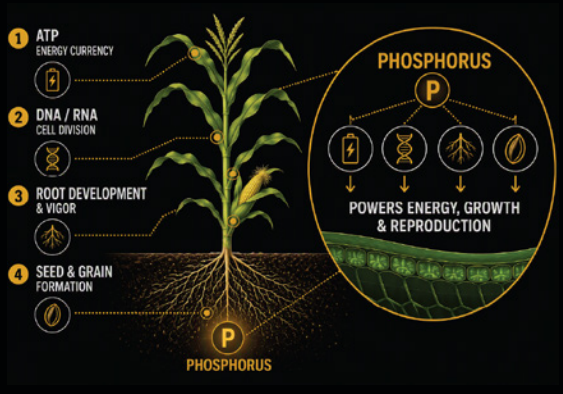
Source: University of Missouri Extension, WQ259.

HERBICIDES	ACTIVE INGREDIENTS	
PIXXARO	Halauxifen, florasulam	√
POAST ULTRA	Sethoxydim	√
PRESTIGE XCA	Fluroxypyr	!
PRESTIGE XCB	Clopyralid	!
PUMA ADVANCE	Fenoxaprop-p-ethyl/safener	√
PURSUIT 240	Imazethapyr	√
REFINE SG	Thifensulfuron-methyl, tribenuronmethyl	√
REFINE M	Thifensulfuron-methyl, tribenuronmethyl	-
REFLEX	Fomesafen	√
REXADE	Pyroxsulam, Arylex™ active, 2, 4-d ester	-
SENCOR 75 DF	Metribuzin	!
SIMPLICITY	Pyroxsulam	√
SOLO	Imazamox	√
SPECTRUM A	Florasulam	!
SPECTRUM B	Clopyralid, MCPA	!
STELLAR	Forasulam, fluroxypyr	√
TANDEM	Pyroxsulam, fluroxypyr	-
TARGET	MCPA, mecoprop-P, dicamba	!
THUMPER	Bromoxynil, 2,4-D ester	!
TRAVALLAS	Fluroxypyrmeptyl, thifensulfuron-methyl,metsulfuronmethyl	-
TRAXOS	Pinoxaden, clodinafop-propargyl	√
TUNDRA	Bromoxynil, fenoxaprop-p-ethyl, pyrasulfotole	-
ULTRA BLAZER	Acifluorfen, acifluorfen-sodium	X
VARRO	Thiencarbazone-methyl	√
VELOCITY	Thiencarbazone-methyl, pyrasulfotole	√
VENTURE	Fluazifop-P-butyl, S-isomer	√
VIPER ADV	Imazamox, bentazon	X

FUNGICIDES	ACTIVE INGREDIENTS	
ROVRAL FLO	Iprodione	√
SERENADE MAX	Bacillus subtilis	-
SERENADE CPB	Bacillus subtilis	-
TILT 250 E	Propiconazole	√
TRIVAPRO	Azoxystrobin, propiconazole, solatenol	-
TWINLINE	Pyraclostrobin, metconazole	√
VERTISAN	Penthiopyrad	√

FUNGICIDES	ACTIVE INGREDIENTS	
ACAPELA	Picoxystrobin	√
ALLEGRO 500 F	Fluazinam	√
ASTOUND	Cyprodinil, Fludioxonil	!
BRAVO 500	Chlorothalonil	√
CARAMBA	Metconazole	√
COTEGRA	Boscalid, prothioconazole	-
DELARO 325 SC	Prothioconazole, trifloxystrobin	√
DITHANE	Mancozeb	√
DITHANE RAINSHIELD	Mancozeb	-
DYAX	Fluxapyroxad, pyraclostrobin	-
ELATUS	Azoxystrobin, benzovindiflupyr	-
EVITO	Fluoxastrobin	-
FOLICUR 250 EC	Tebuconazole	√
FOLICUR 250 EW	Tebuconazole	-
FUSE	Tebuconazole	-
HEADLINE EC	Pyraclostrobin	√
KUMULUS DF	Sulphur	-
LANCE AG	Boscalid, pyraclostrobin	-
LANCE WDG	Boscalid	!
MANZATE	Mancozeb	!
NEXICOR	Fluxapyroxad, pyraclostrobin, propiconazole	-
PRIAXOR	Fluxapyroxad, pyraclostrobin	√
PROLINE 480 SC	Prothioconazole	√
PROSARO 250 EC	Prothioconazole, tebuconazole	√
PROSARO XTR	Prothioconazole, tebuconazole	-
QUADRIS	Azoxystrobin	√
QUASH	Metconazole	!
QUILT	Azoxystrobin, propiconazole	√

INSECTIICIDES	ACTIVE INGREDIENTS	
CORAGEN	Chlorantraniliprole	!
CYGON 480 / LAGON 480 E	Dimethoate	-
DECIS 5 EC	Deltamethrin	√
DIAZANON	Diazinon	√
FURADAN	Carbofuran	!
LANNATE	Methomyl	√
LORSBAN NT	Chlorpyrifos	!
MALATHION 85 E	Malathion	√
MALATHION 500 EC	Malathion	√
MATADOR 120 EC	Lambda-cyhalothrin	√
POUNCE 384 EC	Permethrin	√
SEVIN XLR	Carbaryl	-
SEVIN XLR PLUS	Carbaryl	√



P POWERS ENERGY

P DRIVES ATP, DNA AND ROOTS

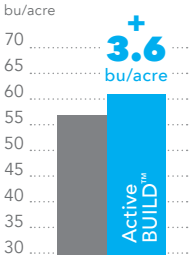
Phosphorus is central to ATP, the molecule plants use to store and move energy, and it's part of the DNA and RNA copied every time a cell divides. That makes it especially important for early root growth, seedling vigor and reproduction. Demand is highest during rapid early growth and again during grain and seed formation.

Source: Iowa State University Extension, "Phosphorus Basics."



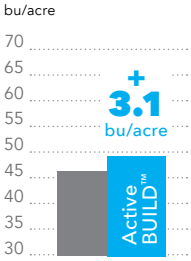
Active BUILD™ YIELD DATA

WHEAT



TREATMENTS	YIELD - 2013 (bu/acre)	YIELD - 2014 (bu/acre)	YIELD - 2015 (bu/acre)	YIELD - 2016 (bu/acre)	YIELD - 2017 (bu/acre)	YIELD - 2018 (bu/acre)	6 YEAR AVERAGE (bu/acre)	% CHANGE
Check	77.0	63.3	54.2	45.3	68.2	37.5	57.0	0
Active BUILD™	81.0	69.3	57.2	47.8	69.0	39.1	60.6	5

CANOLA

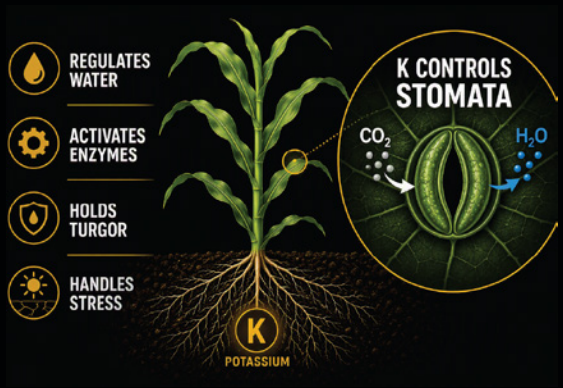


TREATMENTS	YIELD - 2013 (bu/acre)	YIELD - 2014 (bu/acre)	YIELD - 2015 (bu/acre)	YIELD - 2016 (bu/acre)	YIELD - 2017 (bu/acre)	YIELD - 2018 (bu/acre)	6 YEAR AVERAGE (bu/acre)	% CHANGE
Check	45.0	52.0	44.7	33.8	57.7	42.5	46.0	0
Active BUILD™	49.5	55.7	46.2	38.4	61.9	43.0	49.1	7

3RD party yield research with Ag-Quest, BC Grain, ICMS, Mara and New-Marc Research.







K MANAGES WATER

K RUNS THE LEAF'S STOMATA

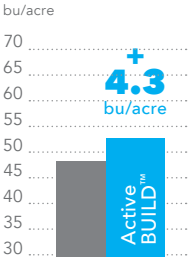
Potassium doesn't build tissue, it regulates water and activates dozens of enzymes. It controls the guard cells that open and close leaf pores (stomata), so the plant can take in carbon dioxide while limiting water loss. Well-supplied plants hold turgor and handle heat and drought better; potassium-short plants wilt sooner and are more stress-prone.

Source: University of Minnesota Extension; Agronomy 8(3):31, 2018.



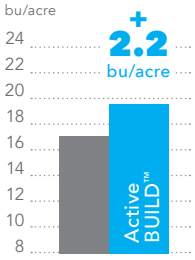
Active BUILD™ YIELD DATA

SOYBEAN



TREATMENTS	YIELD - 2013 (bu/acre)	YIELD - 2014 (bu/acre)	YIELD - 2015 (bu/acre)	YIELD - 2016 (bu/acre)	YIELD - 2017 (bu/acre)	YIELD - 2018 (bu/acre)	6 YEAR AVERAGE (bu/acre)	% CHANGE
Check	68.0	10.1	60.6	68.7	38.3	42.0	48.0	0
Active BUILD™	72.0	17.6	62.1	72.6	46.0	43.6	52.3	9

LENTILS

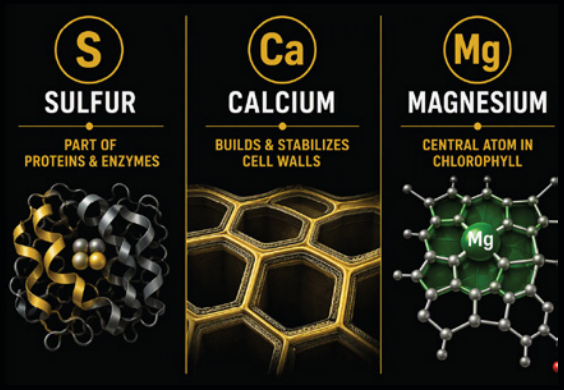


TREATMENTS	YIELD-2016 (bu/acre)	YIELD-2017 (bu/acre)	YIELD-2018 (bu/acre)	3 YEAR AVERAGE (bu/acre)	% CHANGE
Check	10.4	19.8	22.0	17.4	0
Active BUILD™	11.9	23.0	24.0	19.6	13

3RD party yield research with Ag-Quest, BC Grain, ICMS, Mara and New-Marc Research.







SECONDARY THREE

S, CA, MG MATTER AS MUCH

Sulfur, calcium and magnesium are secondary only because plants use less of them than N, P and K, not because they matter less. Sulfur is part of proteins and enzymes; calcium builds and stabilizes cell walls; magnesium sits at the center of the chlorophyll molecule and activates many enzymes. A shortage of any one can cap yield.

Source: Mississippi State University Extension Service.

active VPR PLUS

LEGUME EARLY GROWTH ENHANCER

14-10-10
Maximizes Herbicide Performance

SUPERIOR TANK MIX VS UAN
Superior nutrient composition (14-10-10) vs UAN (28-0-0) with nitrogen exclusively sourced from urea.

TAILORED FOR PULSE CROPS
Formula customized for peas, soybeans, and other dry edible beans.

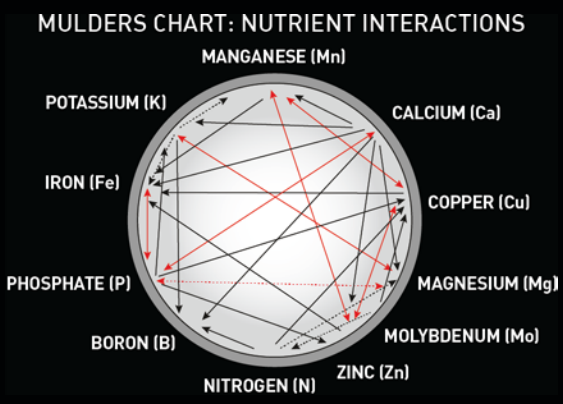


ACCELERATES CROP MATURITY
Accelerates root growth and helps the crop establish quicker.

BEST-IN-CLASS STRESS REDUCER
Reduces herbicide stress, promotes crop growth, and aids herbicide metabolism.

OPTIMIZES WEED CONTROL
Ensures optimal weed control while promoting overall plant health.

ELIMINATES HERBICIDE FLASH
Efficiently moves the herbicide into the plant, reducing the risk of flash-off.



TINY DOSES

TRACE AMOUNTS, STILL ESSENTIAL

Plants need micronutrients, iron, manganese, zinc, copper, boron, molybdenum, chlorine, nickel, in very small amounts, yet each does a job no other element can fill. Most act as helpers inside enzymes or as catalysts for reactions like photosynthesis, hormone production and nitrogen use. Because so little is needed, over-applying one can trigger a shortage of another.

Source: Iowa State University, Introduction to Soil Science.



Active VPR™ PLUS HOW IT WORKS

NUTRIENT ANALYSIS

Total Nitrogen (N). 14%
Available Phosphate (P_2O_5). 10%
Soluble Potash (K_2O). 10%

MIXING INSTRUCTIONS

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

Add tank mix partners in the following order: Water, Agrochemical, Active VPR PLUS. Keep agitator running while mixing and spraying.

Mix 1L/acre of Active VPR PLUS with a minimum of 20L/acre of water for ground applications and 12L/acre for aerial applications.

APPLICATION

Apply once to pulse crops at the 4-5 leaf stage (herbicide timing) as a foliar spray.

Mix well for 5 minutes before spraying on crop. If spraying is delayed, or interrupted, mix for a further 5 minute before resuming spraying. Spray early morning or late afternoon when the sun is lower in the sky. Do not apply when air temperatures are above 29°C (85°F). Avoid spraying on windy days.

Allow at least 3-4 weeks between applications.

Contains urea-potassium phosphate to promote early plant vigor and help plants overcome herbicide stress.

WHY TO USE

Active VPR PLUS is an essential tank mix partner with your post-emergent herbicide application. Crops undergo stress as they go through the process of breaking down herbicide into less toxic components. Active VPR PLUS acts as a herbicide stress reliever with added Urea-Potassium Phosphate to effectively replace UAN as tank mix partner. Loaded with the three essential nutrients (N-P-K), Active VPR PLUS enhances herbicidal activity on weeds and improves stress resistance and root growth.

WHEN TO USE

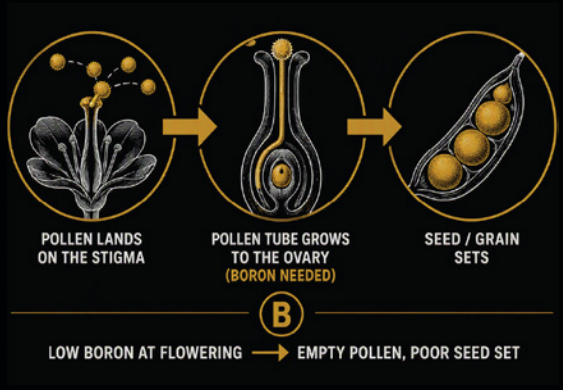
Apply Active VPR PLUS once annually as a foliar spray. Apply at the 4-5 leaf stage (herbicide timing) for Field Peas and Succulent Peas, or at the V1-V2 (first-second trifoliate/herbicide timing) stage for Soybean and other Dry Edible Beans.

HOW TO USE

Mix one of the compatible agrochemical combinations then add Active VPR PLUS at the rate of 1 L per acre with a minimum of 40 L of water per acre for ground applications and 12 L of water per acre for aerial applications.

HOW IT WORKS

Loaded with phosphorus and potassium, key elements for root and shoot growth, Active VPR PLUS contains molecules that enhance plants' ability to better respond to abiotic and biotic stressors. Added Urea-Potassium-Phosphate helps herbicidal chemicals, Bentazon and Imazamox, to better bind and penetrate through cuticles to reach target sites. Plants treated with Active VPR PLUS will experience less herbicidal stress and can utilize more of their energy towards growth.



BORON SETS SEED

BORON DRIVES POLLEN AND SEED SET

Boron helps build and cross-link cell walls and is critical for pollen viability and pollen-tube growth, so it has an outsized effect at flowering and seed set. When boron is short during flowering, crops can produce empty pollen, poor pollination and reduced seed. Because boron barely moves in the plant, symptoms appear in the newest growth and flowers.

Source: Canola Council of Canada, "Micronutrients."

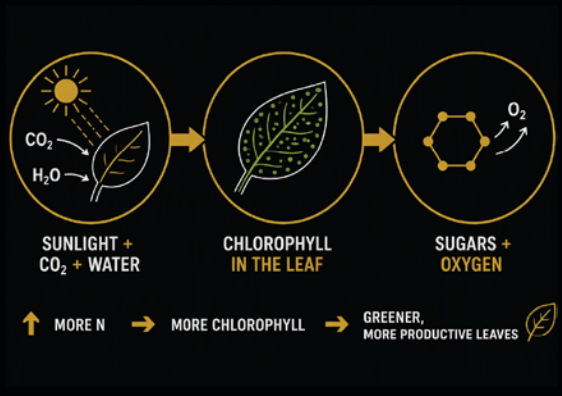


Active VPR™ PLUS COMPATIBILITY

Compatible with most herbicides and fertilizers. Please review Compatibility Chart and conduct pre-testing if combination has not been previously used. As water composition can vary, always do a jar test with pesticides and spray water to ensure compatibility.

√ Compatible X Incompatible - Not Tested Caution

HERBICIDES	ACTIVE INGREDIENTS	
BASAGRAN	Bentazon	√
BASAGRAN FORTE	Bentazon	√
BENZ	Imazamox, bentazon	√
GLYPHOSATE	Glyphosate, N-(phosphonomethyl) glycine	√
LIBERTY 150SN	Glufosinate ammonium	√
ODYSSEY NXT	Imazamox, imazethapyr	√
ODYSSEY ULTRA	Sethoxydim	√
PYTHON A	Imazamox	√
PYTHON B	Bentazon	√
RANSACK	Imazamox, bentazon	√
VIPER ADV	Imazamox, bentazon	√



GREEN = WORKING

GREENNESS TRACKS NITROGEN

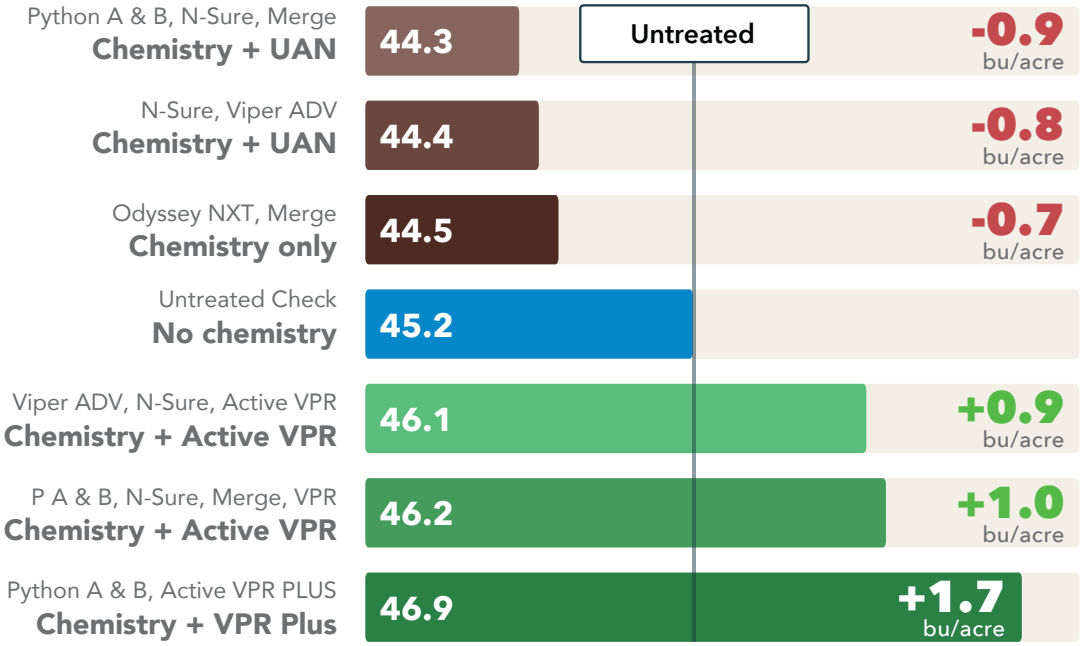
In photosynthesis, chlorophyll captures sunlight and the plant turns carbon dioxide and water into sugars. Most of a leaf's nitrogen sits in chlorophyll and photosynthetic enzymes, so leaf greenness closely tracks nitrogen status. That link is why chlorophyll meters can flag nitrogen shortfalls, compared against a well-fertilized reference strip.

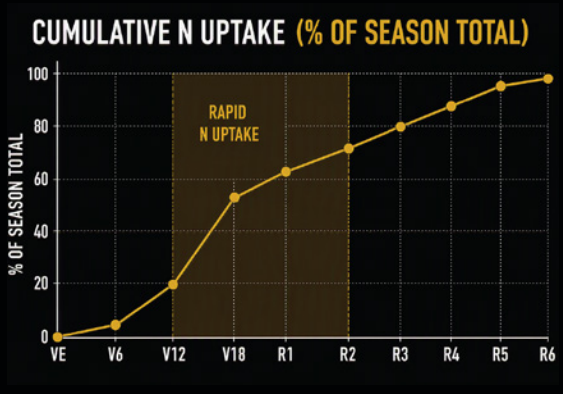
Source: Michigan State University Extension.



Active VPR™ PLUS YIELD DATA

PEAS • Yield Data (Michael Steckler, Horizon Ag, 2021) – Herbicide Timing*





CORN'S N SURGE

CORN TAKES N IN MID-SEASON

A corn plant takes up very little nitrogen early, then demand surges during rapid vegetative growth. Only about 5% of season-total N is taken up by the V3 stage, but roughly two-thirds is absorbed between V6 and tasseling, with uptake continuing more slowly through grain fill. Matching nitrogen supply to this curve improves efficiency and cuts loss.

Source: Cornell Nutrient Management Spear Program, Fact Sheet 98, 2017.

activeGFB

SUPPORTS REPRODUCTIVE GROWTH

10-0-16

5% Sulfur
0.05% Kinetin
2.0% Boron
0.0004% Iron
0.02% Amino Acids

EXTENDED CROP ACTIVITY
Supports continued plant productivity during critical growth stages.

ENHANCED FLOWERING
High boron promotes nutrient movement and healthy flowering.

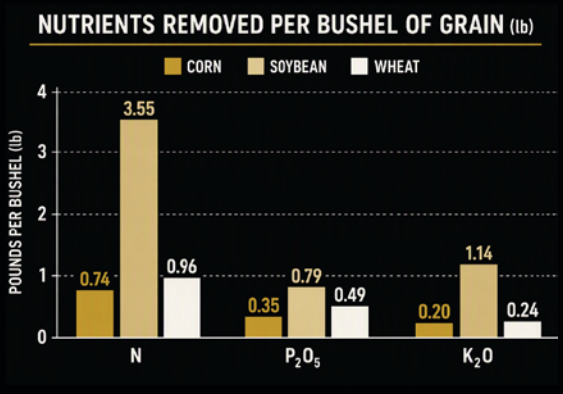


IMPROVED STRESS RESILIENCE
Helps crops manage stress and maintain performance.

CONVENIENT APPLICATION
Compatible with most fungicides for easy tank-mix applications.

STAY GREEN LONGER
Helps maintain photosynthesis and overall crop vitality.

SUPPORTS YIELD FORMATION
Delivers key nutrients for seed, fruit, and grain development.



BUSHELS HAUL

GRAIN DRAWS DOWN FERTILITY

When grain leaves the field, the nutrients stored in it leave too, drawing down soil fertility over time. Ohio on-farm data show corn grain removes about 0.74 lb N, 0.35 lb P2O5 and 0.20 lb K2O per bushel; soybean removes far more per bushel; wheat sits in between. Grain removal is only part of total uptake, but it's the part you must replace to keep soils in balance.

Source: Ohio State University Extension, Ohioline ANR-74, 2019.



Active GFB™ HOW IT WORKS

NUTRIENT ANALYSIS

Total Nitrogen (N)	10%
Soluble Potash (K_2O)	16%
Sulfur (S)	5%
Cytokinin - Kinetin	0.05%
Boron (B)(actual)	2.0%
Iron (Fe)(actual)	0.0004%
Amino acids	0.02%
Vitamin B complex	0.02%

MIXING INSTRUCTIONS

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

Add tank mix partners in the following order: Water, Agrochemical, Active GFB. Keep agitator running while mixing and spraying.

Mix 1L/acre of Active GFB with a minimum of 20L/acre of water for ground applications and 12L/acre for aerial applications.

APPLICATION

Apply at fungicide timing as a foliar spray.

Spray early morning or late afternoon when the sun is lower in the sky. Do not apply when air temperatures are above 29°C (84°F). Avoid spraying on windy days. Do not apply within 21 days to harvest.

Supports reproductive development, nutrient movement, and crop productivity across a wide range of crops.

WHY TO USE

Crop productivity depends on genetics, environmental conditions, and nutrient availability during reproductive development. Active GFB contains nitrogen, potassium, sulphur, 12 amino acids, 3 vitamins, boron, iron, and kinetin to support flowering, pollination, fruit and seed development, and overall crop performance.

WHEN TO USE

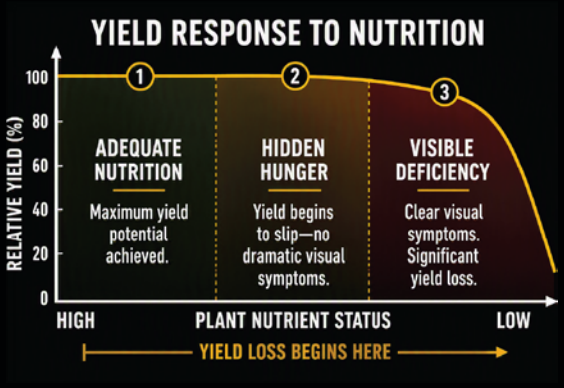
Wheat, barley, oats: BBCH 60-65 (anthesis to end flowering). **Canola, soybean, peas, lentils, pulse crops:** 5-30% bloom. **Corn:** tassel stage. **Flax:** 5% bloom; repeat once if needed. **Hops:** 5-30% bloom. **Berries:** 5% bloom and again at 50% bloom. **Fruit and nut trees:** 10% bloom using a minimum of 300 L/ha (120 L/ac) water; repeat at 50% bloom if needed. **Tomatoes:** 5-20% bloom.

HOW TO USE

Apply at fungicide timing as a foliar spray at 1 L per acre with a minimum of 20 L of water per acre for ground applications and 12 L of water per acre for aerial applications.

HOW IT WORKS

Active GFB delivers key nutrients required during reproductive development. Potassium supports the movement of carbohydrates and nutrients throughout the plant, while nitrogen supplied as free amino acids provides readily available building blocks for protein synthesis and new tissue growth. Boron supports flowering and reproductive processes, while kinetin helps maintain plant vigor during periods of high nutrient demand. Together, these nutrients support crop resilience, reproductive development, and yield formation across a wide range of crops.



HIDDEN HUNGER

YIELD DROPS BEFORE SYMPTOMS

A crop can be short on a nutrient and losing yield well before any leaf shows a symptom, this is hidden hunger. By the time yellowing or stunting is visible, the plant has already been running below its potential for some time. Soil and tissue testing catch these shortfalls early, when they can still be corrected.

Source: University of Wisconsin-Madison Extension, Crops & Soils.



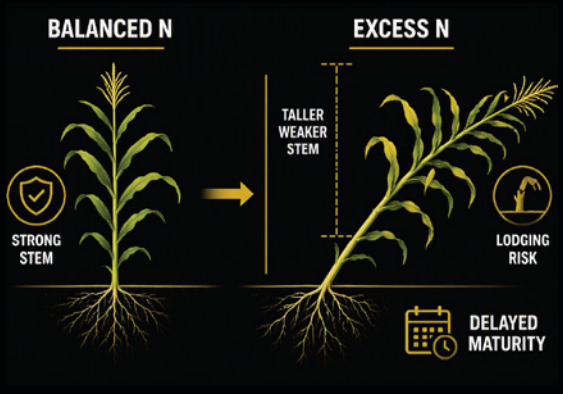
Active GFB™ COMPATIBILITY

Compatible with most fungicides and fertilizers. Please review Compatibility Chart and conduct pre-testing if combination has not been previously used. As water composition can vary, always do a jar test with pesticides and spray water to ensure compatibility.

√ Compatible X Incompatible - Not Tested ! Caution

FUNGICIDES	ACTIVE INGREDIENTS	
ACAPELA	Picoxystrobin	!
ALLEGRO 500 F	Fluazinam	-
ASTOUND	Cyprodinil, Fludioxonil	-
BRAVO 500	Chlorothalonil	√
CARAMBA	Metconazole	√
COTEGRA	Boscalid, prothioconazole	-
DELARO 325 SC	Prothioconazole, trifloxystrobin	√
DITHANE	Mancozeb	X
DITHANE RAINSHIELD	Mancozeb	-
DYAX	Fluxapyroxad, pyraclostrobin	-
ELATUS A & B	Azoxystrobin, benzovindiflupyr	-
EVITO 480 SC	Fluoxastrobin	-
FOLICUR 250 EC	Tebuconazole	√
FOLICUR 250 EW	Tebuconazole	-
FUSE	Tebuconazole	√
HEADLINE EC	Pyraclostrobin	-
HORNET	Tebuconazole	√
KUMULUS DF	Sulphur	-
LANCE AG	Boscalid, pyraclostrobin	-
LANCE WDG	Boscalid	-
MANZATE	Mancozeb	X
MIRAVIS ACE	Pydiflumetofen, propiconazole	√
MIRAVIS NEO	Pydiflumetofen, azoxystrobin, propiconazole	√
NEXICOR	Fluxapyroxad, pyraclostrobin, propiconazole	-
PRIAXOR	Fluxapyroxad, pyraclostrobin	√
PROLINE 480 SC	Prothioconazole	√
PROSARO 250 EC	Prothioconazole, tebuconazole	!
PROSARO XTR	Prothioconazole, tebuconazole	-

FUNGICIDES	ACTIVE INGREDIENTS	
QUADRIS	Azoxystrobin	!
QUASH	Metconazole	-
QUILT	Azoxystrobin, propiconazole	√
ROVRAL FLO	Iprodione	-
SERENADE MAX	Bacillus subtilis	-
SERENADE CPB	Bacillus subtilis	-
TILT 250 E	Propiconazole	√
TRIVAPRO	Azoxystrobin, propiconazole, solatenol	-
TWINLINE	Pyraclostrobin, metconazole	!
VELTYMA DLX 1	Mefentrifluconazole, pyraclostrobin	√
VELTYMA DLX 2	Metconazole	√
VERTISAN	Penthiopyrad	√



MORE ISN'T BETTER

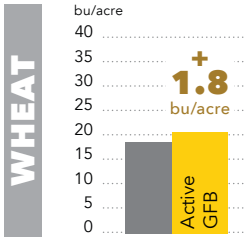
EXCESS N LODGES AND DELAYS CROPS

Excess nitrogen pushes lush, tall growth with longer, weaker lower stem internodes, raising the risk the crop lodges, falls over, before harvest. Over-application can also stretch out vegetative growth and delay maturity. Matching nitrogen rate and timing to crop demand protects both standability and timely ripening.

Source: Zheng et al., Plant Production Science, 2020.

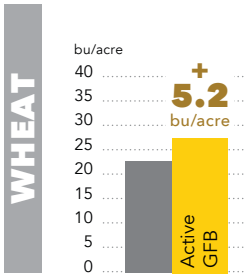


Active GFB™ YIELD DATA



2020 YIELD DATA

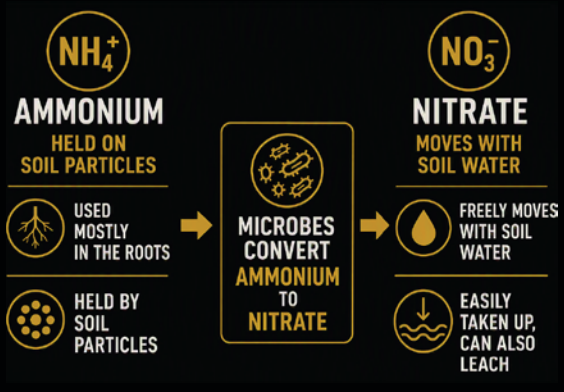
TREATMENTS	REP 1 (bu/acre)	REP 2 (bu/acre)	REP 3 (bu/acre)	REP 4 (bu/acre)	AVERAGE YIELD (bu/acre)	% CHANGE
Check	34	14	12	14	18.5	
Active GFB™	40	14	13	14	20.3	9.5



2021 YIELD DATA

TREATMENTS	Application timing - Anthesis			Application timing - Milk stage		
	YIELD (bu/acre)	INCREASE (bu/acre)	% CHANGE	YIELD (bu/acre)	INCREASE (bu/acre)	% CHANGE
Check	22.6			22.6		
Active GFB™	27.8	5.2	23.0	23.9	1.3	5.8

3RD party yield research with Ag-Quest and the University of British Columbia.



TWO FORMS OF N

NITRATE AND AMMONIUM BOTH WORK

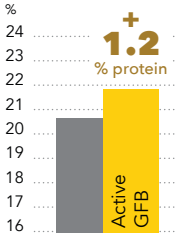
Roots take up nitrogen in two forms: nitrate and ammonium. Ammonium is held on soil particles and is used mostly in the roots, while nitrate moves freely with soil water and is easily taken up, but can also leach. In most field soils, microbes steadily convert ammonium to nitrate, so plants often absorb much of their nitrogen as nitrate.

Source: Fan et al., Frontiers in Plant Science, 2024.



Active GFB™ YIELD DATA

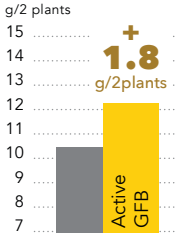
WHEAT



2021 PROTEIN DATA

TREATMENTS	AVERAGE PROTEIN (%)	PROTEIN INCREASE (%)	% CHANGE
Check	20.7		
Active GFB™	21.9	1.2	5.9

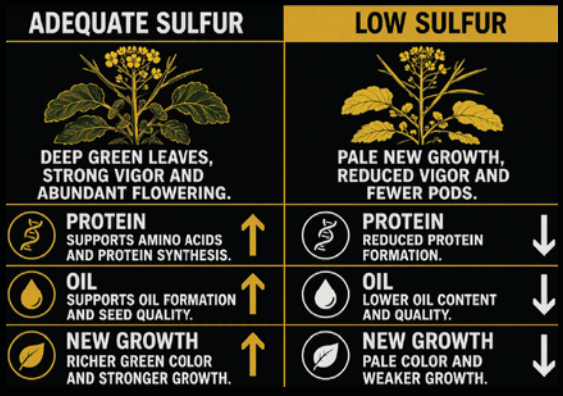
WHEAT



2021 SEED WEIGHT DATA

TREATMENTS	Weight of seeds (g/2 plants)								
	REP 1	REP 2	REP 3	REP 4	REP 5	REP 6	REP 7	AVERAGE WEIGHT	% CHANGE
Check	8.4	9.1	10.3	14.0	8.7	12.1	10.2	10.4	
Active GFB™	9.5	13.4	14.0	10.4	11.9	9.2	17.1	12.2	17.5

3RD party yield research with Ag-Quest and the University of British Columbia.



SULFUR & OIL

SULFUR BUILDS PROTEIN AND OIL

Sulfur is a building block of the amino acids cysteine and methionine, so plants need it to make protein. Canola is especially sulfur-hungry, and on the Canadian Prairies sulfur ranks as the third most limiting nutrient. A short sulfur supply hits canola's seed set, oil and protein hardest during flowering and pod fill.

Source: Canola Council of Canada, Canola Encyclopedia, 2024.



EXTENDS POLLINATION
Extends the pollination window giving plants a greater opportunity for successful fertilization.

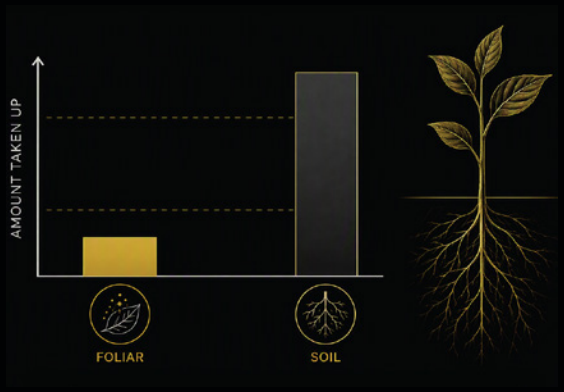
ENHANCES FERTILIZATION
Improves pollen adhesion and pollen tube growth, increasing the likelihood of successful fertilization.

HIGHER YIELDS
Produces more fruit sets and larger, more uniform pods and seeds.

IMPROVES STRESS RESILIENCE
Proprietary activation formula alleviates stress at multiple levels.

CONVENIENT APPLICATION
Designed to be applied with most fungicides for easy application.

OPTIMIZES NUTRITION
Provides essential nutrients at a crucial stage to enhance pollination, fertilization, and reproduction.



FOLIAR LIMITS

LEAVES ABSORB ONLY A LITTLE

Leaves can absorb small amounts of nutrients sprayed on them, entering mainly through the waxy cuticle. Foliar feeding is most useful as a quick, short-term fix, correcting a micronutrient shortage when roots can't keep up during stress or in high-pH soils. Its limit is capacity: the amounts a leaf takes in are far too small to replace a sound soil program for N, P and K.

Source: Washington State University Extension (L. Chalker-Scott).



Active PodFILL X™ HOW IT WORKS

NUTRIENT ANALYSIS

Total Nitrogen (N)	8%
Available Phosphate (P_2O_5)	4%
Soluble Potash (K_2O)	12%
Boron (B)(actual)	2.0%
Copper (Cu) chelated(actual)	0.05%
Iron (Fe) chelated(actual)	0.09%
Manganese (Mn) chelated(actual)	0.1%
Zinc (Zn) chelated(actual)	0.05%
Amino acids	0.01%
Ascorbic acid	0.001%
Vitamin B complex	0.01%
EDTA (chelating agent)	1.42%

MIXING INSTRUCTIONS

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

Add tank mix partners in the following order: Water, Agrochemical, Active PodFILL X. Keep agitator running while mixing and spraying.

Mix 1L/acre of Active PodFILL X with a minimum of 20L/acre of water for ground applications and 12L/acre for aerial applications.

APPLICATION

Apply as a foliar spray at fungicide timing.

Allow a minimum of 3 weeks between applications.

Always test a small plot prior to commercial application and observe for 7-10 days for symptoms of phytotoxicity.

Contains nutrients to support pollen development, fertilization, and fruit, pod, and seed production.

WHY TO USE

Provides nutrients, polyamines and organic acids to support and enhance plant fertility. It improves pollen hydration, germination, pollen tube growth and viability, and encourages bee foraging activity which increases fertilization.

WHEN TO USE

Canola, soybean, peas, lentils and other pulse crops: apply once at the 5% - 30% bloom stage. Corn: apply once at the tassels stage. **Flax:** apply 1-2 times, once beginning at the 5% blooming stage. Repeat once more as needed. **Hops:** apply once at the 5-30% bloom stage. **Berry:** apply twice, once beginning at the 5% bloom stage and again beginning at the 50% bloom stage. **Fruit and nut trees:** apply once at the 10% bloom stage using a minimum of 120L of water per acre. Repeat once more at the 50% bloom stage as needed. **Tomato:** apply once at the 5% - 20% bloom stage.

HOW TO USE

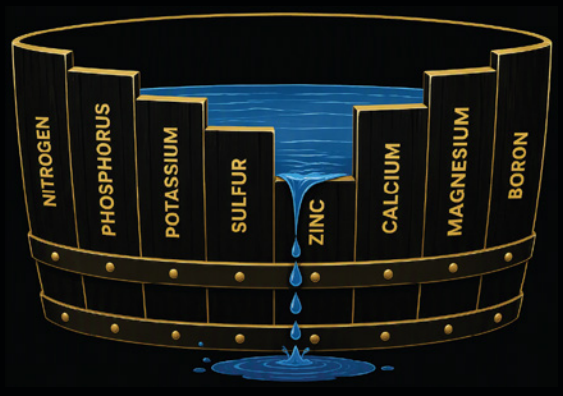
Apply as a foliar spray at the rate of 1 L per acre with a minimum of 20 L water per acre for ground applications and 12 L of water per acre for aerial applications.

HOW IT WORKS

Active PodFILL X contains nitrogen in the form of amine and micronutrients to maintain high enzymatic and hormonal activity during the reproductive phase of plant growth.

Potassium is provided to regulate anther dehiscence, pollen hydration/imbibition, and pollen tube growth, needed for successful fertilization, and to promote uniform fruit size and quality.

Easy to absorb and penetrate through membranes where it is needed, a boron-amine complex fosters pollen viability, seed set, carbohydrate and nucleic acid metabolism, cell differentiation and maturity, sugar transport, uptake of calcium, magnesium, potassium, synthesis of cytokinins, translocation of auxins, and root tip initiation.



SHORTEST STAVE

LOWEST NUTRIENT CAPS YIELD

Liebig's Law of the Minimum says yield is limited by whichever essential nutrient is shortest relative to the plant's need, not the total present. Picture a barrel with staves of different heights: water (yield) spills out at the shortest stave. Adding nutrients that are already adequate won't raise yield; only fixing the true limiting factor will.

Source: University of Wisconsin-Madison, Dept. of Soil Science.



Active PodFILL X™ COMPATIBILITY

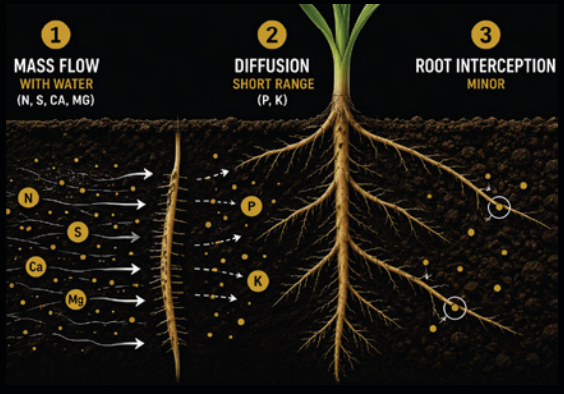
Compatible with most pesticides and fertilizers. Conduct pre-testing if combination has not been previously used. As water composition can vary, always do a jar test with pesticides and spray water to ensure compatibility.

√ Compatible X Incompatible - Not Tested ! Caution

FUNGICIDES	ACTIVE INGREDIENTS	
ACAPELA	Picoxystrobin	√
ALLEGRO 500 F	Fluazinam	!
ASTOUND	Cyprodinil, Fludioxonil	X
BRAVO 500	Chlorothalonil	√
CARAMBA	Metconazole	√
COTEGRA	Boscalid, prothioconazole	-
DELARO 325 SC	Prothioconazole, trifloxystrobin	√
DITHANE	Mancozeb	√
DITHANE RAINSHIELD	Mancozeb	-
DYAX	Fluxapyroxad, pyraclostrobin	-
ELATUS A & B	Azoxystrobin, benzovindiflupyr	-
EVITO 480 SC	Fluoxastrobin	-
FOLICUR 250 EC	Tebuconazole	√
FOLICUR 250 EW	Tebuconazole	-
FUSE	Tebuconazole	-
HEADLINE EC	Pyraclostrobin	√
KUMULUS DF	Sulphur	-
LANCE AG	Boscalid, pyraclostrobin	-
LANCE WDG	Boscalid	!
MANZATE	Mancozeb	!
MIRAVIS ACE BOLD	Pydiflumetofen, propiconazole	√
MIRAVIS NEO	ADEPIDYN®, azoxystrobin, propiconazole	√
NEXICOR	Fluxapyroxad, pyraclostrobin, propiconazole	-
PRIAXOR	Fluxapyroxad, pyraclostrobin	√
PROLINE 480 SC	Prothioconazole	√
PROSARO 250 EC	Prothioconazole, tebuconazole	√
PROSARO XTR	Prothioconazole, tebuconazole	-
QUADRIS	Azoxystrobin	√
QUASH	Metconazole	!
QUILT	Azoxystrobin, propiconazole	√
ROVRAL FLO	Iprodione	√
SERENADE MAX	Bacillus subtilis	-
SERENADE CPB	Bacillus subtilis	-
TILT 250 E	Propiconazole	√
TRIVAPRO	Azoxystrobin, propiconazole, solatenol	-
TWINLINE	Pyraclostrobin, metconazole	√
VERTISAN	Penthiopyrad	√

INSECTICIDES	ACTIVE INGREDIENTS	
CORAGEN	Chlorantraniliprole	√
CYGON/LAGON	Dimethoate	-
DECIS	Deltamethrin	√
DIAZINON	Diazinon	√
FURADAN	Carbofuran	!
LANNATE	Methomyl	√
LORSBAN	Chlorpyrifos	√
MALATHION 85E	Malathion	√
MALATHION 500	Malathion	√
MATADOR	Lambda-cyhalothrin	√
POUNCE	Permethrin	√
RIPCORD	Cypermethrin	√
SEVIN XLR	Carbaryl	-
SEVIN XLR PLUS	Carbaryl	√
SILENCER	Lambda-cyhalothrin	√

NOTE: It's crucial to avoid direct contact between Active PodFILL X and other chemistry. The best practice is to add a chemistry flush first, followed by the addition of Active PodFILL X.



REACHING ROOTS

MASS FLOW, DIFFUSION, CONTACT

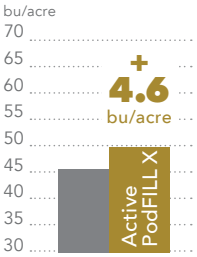
Nutrients get to roots by three routes. Mass flow carries dissolved nutrients along with the water a plant pulls in for transpiration, moving most of the nitrate, sulfate, calcium and magnesium. Diffusion moves nutrients a short distance toward the root when levels there drop, the main route for phosphorus and potassium. Root interception, where a root touches nutrients directly, is minor.

Source: Cornell University NRCCA, Competency Area 2.



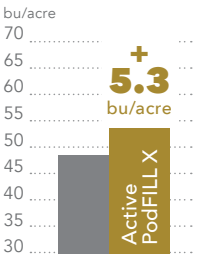
Active PodFILL X™ YIELD DATA

CANOLA



TREATMENTS	YIELD - 2013 (bu/acre)	YIELD - 2014 (bu/acre)	YIELD - 2015 (bu/acre)	YIELD - 2016 (bu/acre)	YIELD - 2017 (bu/acre)	YIELD - 2018 (bu/acre)	6 YEAR AVERAGE (bu/acre)	% CHANGE
Check	45.0	52.0	44.7	33.8	57.7	38.85	45.3	0
Active	49.5	63.1	48.0	38.8	59.3	40.85	49.9	10

SOYBEAN

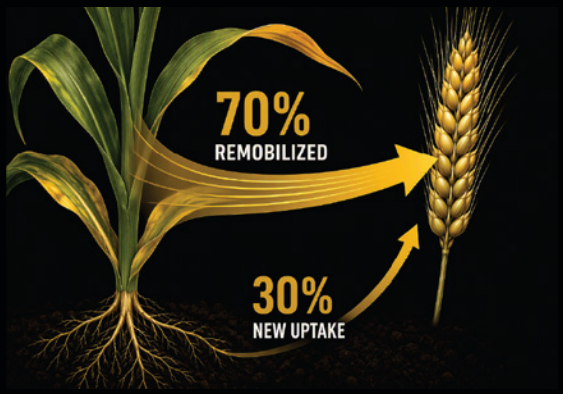


TREATMENTS	YIELD - 2013 (bu/acre)	YIELD - 2014 (bu/acre)	YIELD - 2015 (bu/acre)	YIELD - 2016 (bu/acre)	YIELD - 2017 (bu/acre)	YIELD - 2018 (bu/acre)	6 YEAR AVERAGE (bu/acre)	% CHANGE
Check	68.0	10.1	60.6	68.7	38.3	42.0	48.0	0
Active PodFILL X	74.0	20.8	61.9	72.1	46.5	44.6	53.3	11

3RD party yield research with Ag-Quest, BC Grain, ICMS, Mara and New-Marc Research.







GRAIN ROBS LEAVES

SEEDS PULL STORES FROM LEAVES

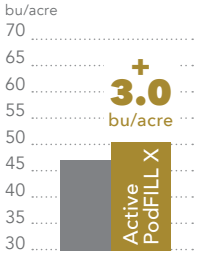
Once a crop starts filling grain, the developing seeds become a powerful sink that pulls stored nutrients out of the leaves and stems. Much of the nitrogen and phosphorus in the grain is remobilized from these vegetative parts rather than freshly taken up. This internal recycling drives normal late-season leaf yellowing, and means late-season nutrient status still shapes yield and protein.

Source: Journal of Experimental Botany 65:3783, 2014.



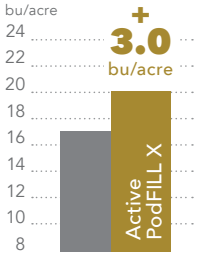
Active PodFILL X™ YIELD DATA

PEAS



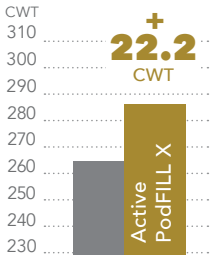
TREATMENTS	YIELD-2016 (bu/acre)	YIELD-2017 (bu/acre)	YIELD-2018 (bu/acre)	3 YEAR AVERAGE (bu/acre)	% CHANGE
Check	51.8	54.5	35.0	47.0	0
Active PodFILL X	56.0	56.9	37.0	50.0	6.2

LENTILS



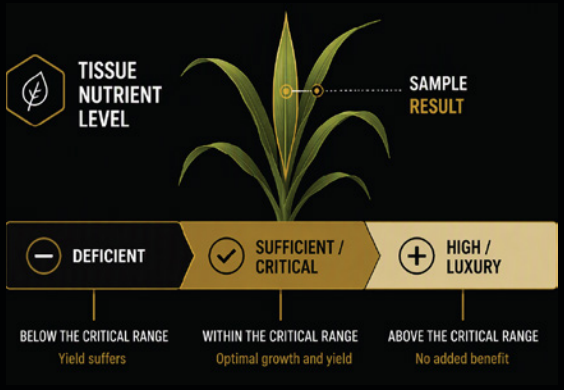
TREATMENTS	YIELD-2016 (bu/acre)	YIELD-2017 (bu/acre)	YIELD-2018 (bu/acre)	3 YEAR AVERAGE (bu/acre)	% CHANGE
Check	10.4	19.8	22.0	17.0	0
Active PodFILL X	11.8	23.8	24.0	20.0	14.4

POTATOES



TREATMENTS	YIELD-2018 (CWT)	YIELD-2019 (CWT)	2 YEAR AVERAGE (CWT)	% CHANGE
Check	253.1	274.8	264.0	0
Active PodFILL X	266.9	305.4	286.2	8.4

3RD party yield research with Ag-Quest, BC Grain, ICMS, Mara and New-Marc Research.



ASK THE PLANT

TISSUE SHOWS REAL UPTAKE

Plant tissue analysis measures the nutrient levels actually inside the crop, so it shows what the plant is taking up, not just what's sitting in the soil. Results are compared against a critical or sufficiency range for that crop and growth stage; below the critical level, yield suffers. Because normal values shift with crop and stage, always record the stage and sample the right plant part.

Source: University of Minnesota Extension.

active KONNECT™

FRUIT, GRAIN & NUT DEVELOPMENT

0 - 0 - 29
12% Sulfur
0.05% Kinetin

ENHANCED FRUIT & GRAIN GROWTH
Supports fruit, grain, and nut growth, improving yield and size.

BOOSTS POTASSIUM LEVELS
Supplies readily available potassium to strengthen plants and improve stress tolerance.

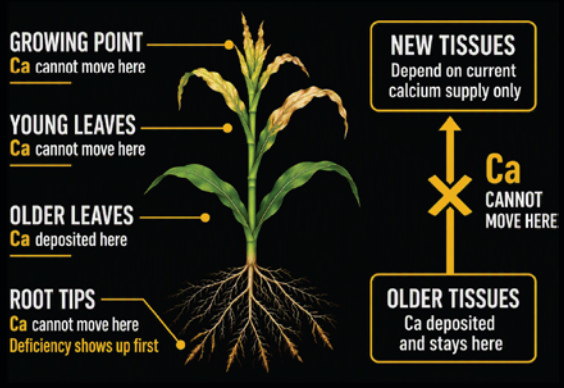


ALL-SEASON USE
Apply at multiple growth stages to support plant vigor, productivity, and quality.

ENHANCES SUGAR USE
Enhances sugar movement and conversion for more efficient energy use.

CONVENIENT APPLICATION
Compatible with most fungicides, simplifying the application process.

PROMOTES BRANCHING & BUD GROWTH
Cytokinins activate lateral buds for more branches, flowers, and pods.



CALCIUM STAYS

SET CALCIUM CAN'T RELOCATE

Once calcium is built into a cell wall it stays put, the plant can't pull it out and move it to newer tissue. So when calcium supply or delivery falls short, the youngest, fastest-growing parts suffer first, causing disorders like blossom-end rot and tip burn. Steady water and calcium keep it flowing to growing points.

Source: Michigan State University Extension.



Active KONNECT™ HOW IT WORKS

NUTRIENT ANALYSIS

Soluble Potash (K_2O) 29%
Sulfur (S) 12%
Cytokinin - Kinetin 0.05%
L-Glutamine 0.051%
Seaweed extract
(Ascophyllum nodosum) 1.0%

MIXING INSTRUCTIONS

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

Add tank mix partners in the following order: Water, Agrochemical, Active KONNECT.

Mix 1L/acre of Active KONNECT with a minimum of 40L/acre of water.

Keep agitator running while mixing and spraying.

APPLICATION

Apply at herbicide and/or fungicide timing as a foliar spray.

Allow 14-20 days between applications.

Do not apply when air temperatures are above 29°C (85°F) and avoid spraying on windy days. Do not apply within 21 days to harvest.

Contains potassium and the plant growth regulator Kinetin which help enhance crop size and volume.

WHY TO USE

Help enhance the potential volume and quality of your crop. The application of this specially designed formula gives a boost to the final stages of the plant reproduction cycle, helping to increase fruit, pod, and seed growth.

WHEN TO USE

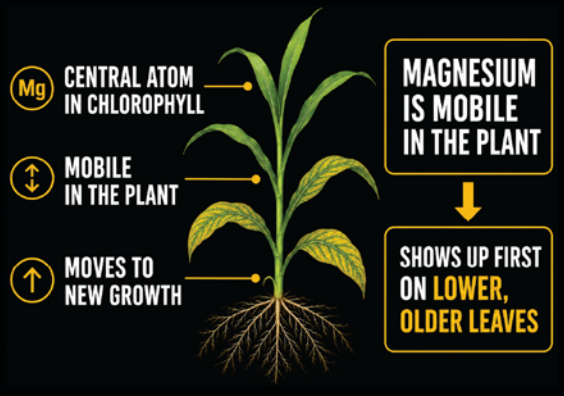
Apply twice per crop at key growth stages:
Wheat, oats, barley, corn: Tillering and grain filling.
Canola, flax, sunflowers: Herbicide timing and early flowering.
Soybeans, pulses: Herbicide timing and pod filling.
Fruit, nuts, berries: Between fruit set and ripening.
Tomatoes, vegetables: Early growth and flowering, with 14–20 days between applications.

HOW TO USE

Apply at herbicide or fungicide timing as a foliar spray at 1 L per acre with a minimum of 40 L of water per acre.

HOW IT WORKS

Active KONNECT™ provides chelated potassium, cytokinins (kinetin), amino acids, simple sugars and organic acids. Potassium allows production of protein, while kinetin enhances cell division and growth, and stimulates branching. This specially designed combination of ingredients allows for rapid uptake and utilization.



YELLOW VEINS

MG YELLOWS OLDER LEAVES FIRST

Magnesium is the central atom in every chlorophyll molecule, and it's mobile in the plant. When it runs short, the plant moves magnesium out of older leaves to feed new growth, so the classic symptom, yellowing between the veins while the veins stay green, shows up on the lower, older leaves first.

Source: NC State Extension; Penn State Extension.

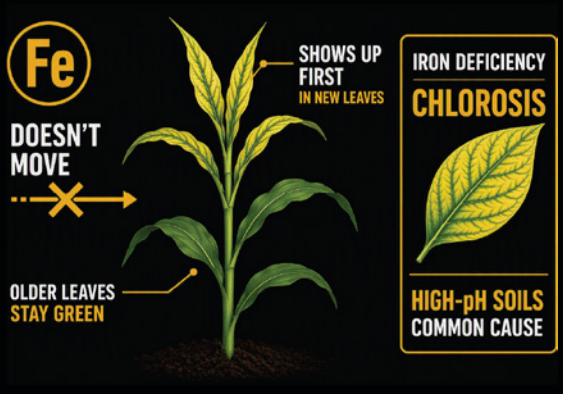


Active KONNECT™ COMPATIBILITY

Compatible with most herbicides and fertilizers. Please review Compatibility Chart and conduct pre-testing if combination has not been previously used. As water composition can vary, always do a jar test with pesticides and spray water to ensure compatibility.

√ Compatible | X Incompatible | - Not Tested | Caution

HERBICIDES	ACTIVE INGREDIENTS		HERBICIDES	ACTIVE INGREDIENTS	
2,4-D AMINE	2,4-D	√	INFINITY	Bromoxynil, pyrasulfotole	!
2,4-D ESTER	2,4-D	√	LIBERTY 150 SN	Glufosinate ammonium	√
ACHIEVE	Tralkoxydim	√	LONTREL	Clopyralid	√
ALLY	Metsulfuron methyl	√	MANIPULATOR 620	Chlormequat chloride	√
AGRAL 90 OR AGSURF II	Nonylphenoxy polyethoxy ethanol	√	MCPA AMINE 500	MCPA amine	√
ARMEZON	Topramezone	√	MCPA ESTER 500	MCPA ester	!
ASSIST	Paraffin Base Mineral Oil	√	MERGE	Surfactant blend	√
ASSURE II	Quizalofop-P-ethyl	√	OCTTAIN XL	Octane	√
ATTAIN XC A	Fluroxypyr	√	ODYSSEY	Imazamox, imazethapyr	√
ATTAIN XC B	2,4-D ester	√	ODYSSEY ULTRA	Sethoxydim	√
AVENGE 200 C	Difenzoquat	√	POAST ULTRA	Sethoxydim	√
AXIAL	Pinoxaden	√	PRESTIGE XCA	Fluroxypyr	√
BANVEL II	Dicamba	√	PRESTIGE XCB	Clopyralid	√
BARRICADE II	Tribenuronmethyl, thifensulfuronmethyl	√	PUMA ADVANCE	Fenoxaprop-p-ethyl/safener	√
BASAGRAN	Bentazon	√	PURSUIT	Imazethapyr	√
BUCTRIL M	Bromoxynil	√	REFINE SG	Thifensulfuronmethyl, tribenuronmethyl	√
CENTURION	Clethodim	√	REFLEX	Fomesafen	√
CLEVER	Quinclorac	√	SENCOR 75 DF	Metribuzin	√
CURTAIL M	Clopyralid, MCPA	√	SIMPLICITY	Pyroxsulam	√
DYVEL DS	Dicamba, 2,4-D, Mecoprop-P	√	SOLO ADV	Imazamox	√
ESTAPROP XT	2,4-D, dichlorprop-P	√	SPECTRUM A (FLOROSULAM)	Florasulam	√
EQUINOX	Tepraloxydim	√	SPECTRUM B	Clopyralid, MCPA	√
EVEREST GBX	Flucarbazone	√	STELLAR	Forasulam, fluroxypyr	√
FLAX MAX	Clopyralid, MCPA	√	TARGET	MCPA, mecoprop-P, dicamba	√
FRONTLINE	Florasulam, MCPA	√	THUMPER	Bromoxynil, 2,4-D ester	√
GLYPHOSATE	Glyphosate, N-(phosphonomethyl) glycine	√	TURBOCHARGE	Mineral oil, surfactant blend	√
HARMONY SG	Thifensulfuronmethy	√	VARRO	Thiencarbazone-methyl	!
HARMONY GRASS	Clodinafop-propargyl	√	VELOCITY 3M	Bromoxynil, pyrasulfotole, thiencarbazonemethyl	√
HORIZON NG	Clodinafop-propargyl	!	VIPER ADV	Imazamox, bentazon	√



PALE NEW LEAVES

IRON PALES THE NEWEST LEAVES

Unlike magnesium, iron barely moves within the plant, so a shortage shows up on the youngest leaves first, they turn pale yellow while the veins stay green. In field crops like soybean this iron deficiency chlorosis is most common on high-pH, calcareous soils where iron becomes hard for roots to take up.

Source: University of Minnesota Extension.

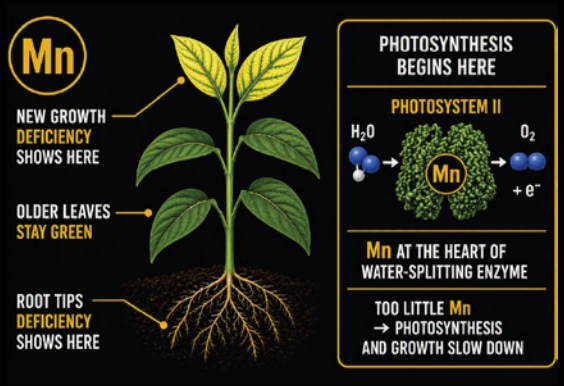


Active KONNECT™ COMPATIBILITY

Compatible with most pesticides and fertilizers. Please review Compatibility Chart and conduct pre-testing if combination has not been previously used. As water composition can vary, always do a jar test with pesticides and spray water to ensure compatibility.

√ Compatible X Incompatible - Not Tested ! Caution

FUNGICIDES	ACTIVE INGREDIENTS	
ACAPELA	Picoxystrobin	!
ALLEGRO 500 F	Fluazinam	!
AGSURF OR AGRAL 90	Nonylphenoxy polyethoxy ethanol	√
ASTOUND	Cyprodinil, Fludioxonil	X
BRAVO 500	Chlorothalonil	!
CARAMBA	Metconazole	√
DELARO 325 SC	Prothioconazole, trifloxystrobin	!
DITHANE	Mancozeb	!
FOLICUR 250 EC	Tebuconazole	√
FUSE	Tebuconazole	-
HEADLINE EC	Pyraclostrobin	√
KUMULUS DF	Sulphur	-
LANCE WDG	Boscalid	!
PRIAXOR	Fluxapyroxad, pyraclostrobin	!
PROLINE 480 SC	Prothioconazole	√
PROSARO 250 EC	Prothioconazole, tebuconazole	!
QUADRIS	Azoxystrobin	√
QUASH	Metconazole	!
QUILT	Azoxystrobin, propiconazole	!
ROVRAL FLO	Iprodione	!
SERENADE MAX	Bacillus subtilis	-
SERENADE CPB	Bacillus subtilis	-
TILT 250E	Propiconazole	√
TWINLINE	Pyraclostrobin, metconazole	√
VERTISAN	Penthiopyrad	√



MN SPLITS WATER

MANGANESE RUNS WATER-SPLITTING

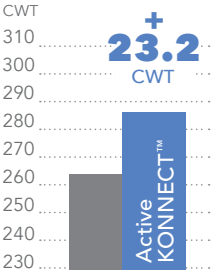
Photosynthesis begins by splitting water molecules to release oxygen and the electrons that power the process, and manganese sits at the heart of the enzyme complex that does the splitting. Without enough manganese, that oxygen-evolving step in Photosystem II stalls, so photosynthesis and growth slow down. It's a tiny requirement with an outsized job.

Source: Alejandro et al., Frontiers in Plant Science, 2020.



Active KONNECT™ YIELD DATA

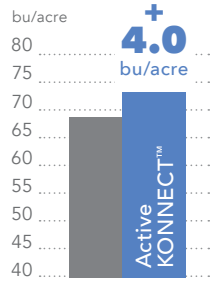
POTATOES



POTATOES • 2 YEAR AVERAGE YIELD DATA*

TREATMENTS	YIELD - 2018 (CWT)	YIELD - 2019 (CWT)	2 YEAR AVERAGE (CWT)	% CHANGE
Check	253.1	274.8	264.0	0
Active KONNECT™	266.1	308.2	287.2	8.8

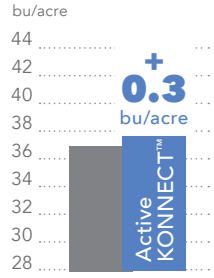
WHEAT



WHEAT • 2 YEAR AVERAGE YIELD DATA*

TREATMENTS	YIELD - 2017 (bu/acre)	YIELD - 2018 (bu/acre)	2 YEAR AVERAGE (bu/acre)	% CHANGE
Check	63.0	74.6	69.0	0
Active KONNECT™	67.2	78.7	73.0	6

SOYBEAN



SOYBEAN • YIELD DATA 2017*

TREATMENTS	YIELD - 2017 (bu/acre)	% CHANGE
Check	37.5	0
Active KONNECT™	37.8	1

3RD party yield research with Ag-Quest, BC Grain, ICMS, Mara and New-Marc Research.



ZINC FACTS

- ZINC IS NEEDED TO MAKE TRYPTOPHAN
- TRYPTOPHAN IS THE BUILDING BLOCK USED TO PRODUCE AUXIN
- AUXIN IS THE HORMONE THAT DRIVES CELL DIVISION AND STEM AND LEAF ELONGATION
- SMALL DOSES OF ZINC KEEP THE GROWTH SIGNALS WORKING

ZINC = GROWTH

ZINC BUILDS THE AUXIN HORMONE

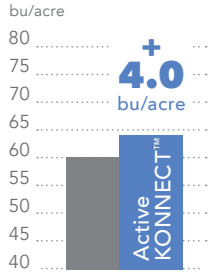
Zinc is needed to make tryptophan, the building block the plant uses to produce auxin, the hormone that drives cell division and stem and leaf elongation. When zinc is short, auxin production drops, which is why zinc-deficient plants show stunted growth, shortened stems and small leaves. Small doses of zinc keep the growth signals working.

Source: Lilay et al., New Phytologist, 2024.



Active KONNECT™ YIELD DATA

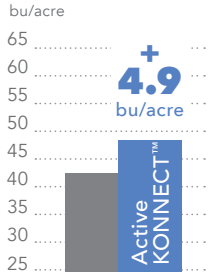
PEAS



PEAS • 3 YEAR AVERAGE YIELD DATA*

TREATMENTS	YIELD - 2016 (bu/acre)	YIELD - 2017 (bu/acre)	YIELD - 2018 (bu/acre)	3 YEAR AVERAGE (bu/acre)	% CHANGE
Check	55.1	64.5	61.6	60.0	0
Active KONNECT™	59.8	68.0	63.7	64.0	6

CANOLA



CANOLA • 2 YEAR AVERAGE YIELD DATA*

TREATMENTS	YIELD - 2016 (bu/acre)	YIELD - 2017 (bu/acre)	2 YEAR AVERAGE (bu/acre)	% CHANGE
Check	27.2	57.7	42.5	0
Active KONNECT™	34.0	60.8	47.4	12

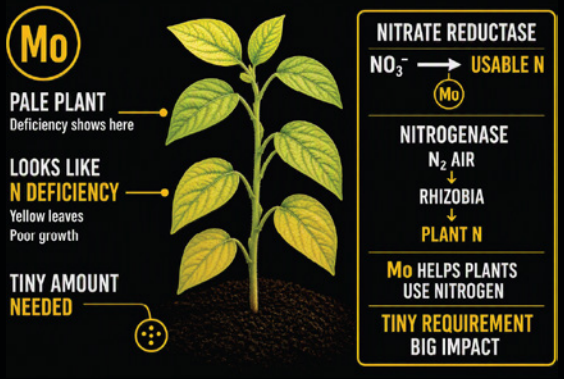
3RD party yield research with Ag-Quest, BC Grain, ICMS, Mara and New-Marc Research.



Check | Active KONNECT™



Check | Active KONNECT™



MOLY'S BIG JOB

TRACE METAL RUNS N ENZYMES

Molybdenum is needed by two key nitrogen enzymes: nitrate reductase, which lets the plant turn absorbed nitrate into a usable form, and nitrogenase, which lets rhizobia in legume nodules fix nitrogen from the air. So a molybdenum shortage can look like a nitrogen shortage, pale, poor growth, even when soil nitrogen is present. It's needed in tiny amounts.

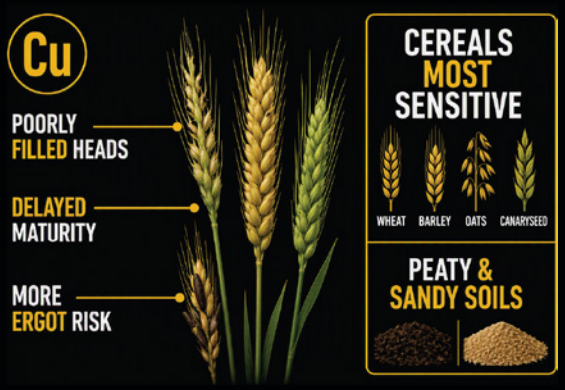
Source: NC State Extension (soybean molybdenum).

Proform N™

STEADY NITROGEN. STRONGER CROPS.

25-0-0
0.15% Magnesium
0.2% Sulfur
0.15% Boron
0.006% Iron



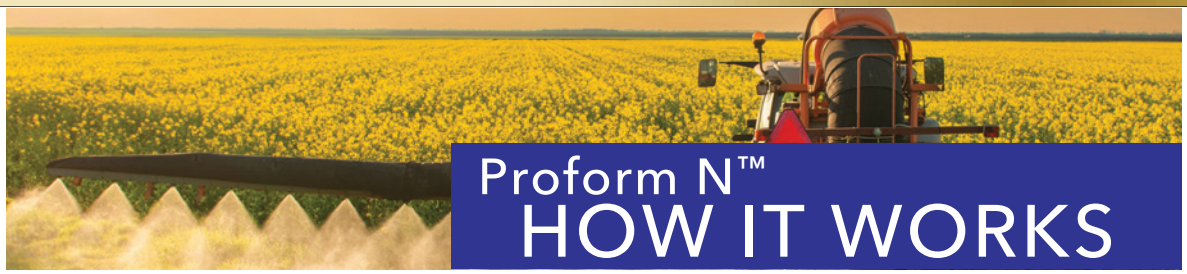


COPPER FILLS

COPPER FILLS CEREAL HEADS

Cereals, especially wheat, barley, oats and canaryseed, are the crops most sensitive to copper shortage. Copper is important for fertile pollen and grain set, so deficient plants show delayed maturity, prolonged flowering and poorly filled heads. On the Prairies, copper deficiency is most likely on peaty and sandy soils, and it's linked to more ergot.

Source: Government of Saskatchewan, "Micronutrients in Crop Production."



Proform N™ HOW IT WORKS

NUTRIENT ANALYSIS

Total Nitrogen (N)	25%
Magnesium (Mg)	0.15%
Sulfur (S)	0.2%
Boron (B)(actual)	0.15%
Iron (Fe)(actual)	0.006%
Amino acids	1.09%
Methionine	0.005%
EDDHA	0.006%

MIXING INSTRUCTIONS

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

Add tank mix partners in the following order: Water, Agrochemical, Proform N.

Mix 1L/acre of Proform N with a minimum of 20L/acre of water.

Keep agitator running while mixing and spraying.

APPLICATION

Apply during the early growth phase (herbicide timing) and after pollination (fungicide timing) as a foliar spray.

Spray early in the morning or late afternoon when the sun is lower in the sky. Do not apply when air temperatures are above 29°C. Avoid spraying on windy days.

Excellent source of readily available and slow-release nitrogen, providing consistent nutrition without leaf burn.

WHY TO USE

Give your crops the nitrogen they need for continuous strong, healthy growth, without the worry of leaf burn. Proform N is specially formulated to allow better nitrogen absorption without damaging leaf tissue.

WHEN TO USE

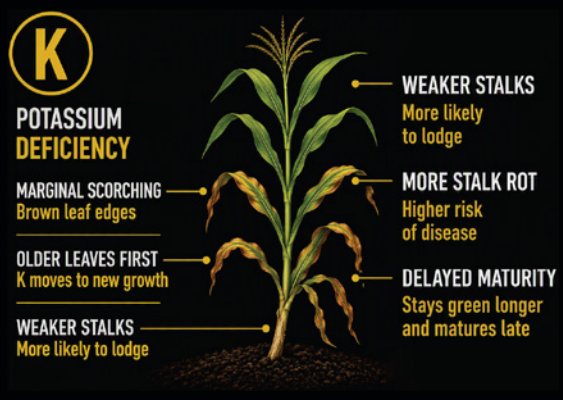
Apply during the early growth phase (herbicide timing) and after pollination (fungicide timing).

HOW TO USE

Wheat, Canola, Soybean, Peas, Lentils, Potatoes, Corn: add sufficient water to allow thorough coverage of the crop. A minimum of 20 L water per acre for ground applications and 12 L of water per acre for aerial applications is recommended.

HOW IT WORKS

The amino acids and urea nitrogen in Proform N provide for easy foliar absorption without leaf burn and allow more nitrogen to be absorbed through the plant leaves and translocate into nitrogen demanding tissues.



K HOLDS STALKS

K STIFFENS STALKS VS LODGING

Beyond managing water, potassium strengthens stalks and cell walls, which helps a crop stand and fend off disease. In corn and small grains, low potassium is linked to weaker stalks, more stalk rot and more lodging. Balancing potassium with nitrogen matters: without enough potassium the plant can't fully use its nitrogen, hurting stalk strength and yield.

Source: Penn State Extension, "Managing Potassium for Crop Production."

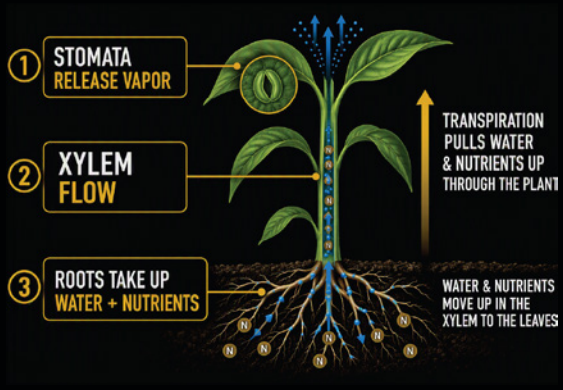


Proform N™ COMPATIBILITY

Compatible with most pesticides and fertilizers. Please review Compatibility Chart and conduct pre-testing if combination has not been previously used. As water composition can vary, always do a jar test with pesticides and spray water to ensure compatibility.

√ Compatible X Incompatible - Not Tested Caution

FUNGICIDES	ACTIVE INGREDIENTS		INSECTICIDES	ACTIVE INGREDIENTS	
ACAPELA	Picoxystrobin	√	CORAGEN	Chlorantraniliprole	√
ALLEGRO	Fluazinam		CYGON/LAGON	Dimethoate	-
AGSURF OR AGRAL 90	Nonylphenoxy polyethoxy ethar	√	DECIS	Deltamethrin	√
ASTOUND	Cyprodinil, Fludioxonil	X	DIAZANON	Diazinon	√
BRAVO 500	Chlorothalonil		FURADAN	Carbofuran	
CARAMBA	Metconazole	√	LANNATE	Methomyl	-
DELARO	Prothioconazole, trifloxystrobin	√	LORSBAN	Chlorpyrifos	√
DITHANE	Mancozeb		MALATHION	Malathion	√
FOLICUR 250 EC	Tebuconazole	√	MATADOR	Lambda-cyhalothrin	√
FUSE	Tebuconazole	-	POUNCE	Permethrin	√
HEADLINE EC	Pyraclostrobin	√	RIPCORD	Cypermethrin	-
KUMULUS DF	Sulphur	-	SEVIN XLR+	Carbaryl	
LANCE WDG	Boscalid				
PRIAXOR	Fluxapyroxad, pyraclostrobin	√			
PROLINE 480 SC	Prothioconazole	√			
PROSARO 250 EC	Prothioconazole, tebuconazole	√			
QUADRIS	Azoxystrobin	√			
QUASH	Metconazole				
QUILT	Azoxystrobin, propiconazole	√			
ROVRAL FLO	Iprodione	√			
SERENADE MAX	Bacillus subtilis	-			
SERENADE CPB	Bacillus subtilis	-			
TILT 250E	Propiconazole	√			
TWINLINE	Pyraclostrobin, metconazole	√			
VERTISAN	Penthiopyrad	√			



WATER PUMP

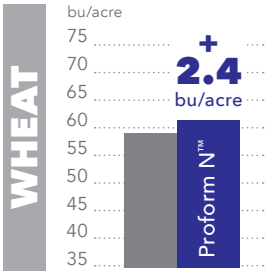
TRANSPIRATION LIFTS WATER UP

As water evaporates from tiny leaf pores (stomata), it pulls a continuous column of water up from the roots through the plant's xylem, this is transpiration, and it runs without the plant spending energy. That upward flow is also how many dissolved nutrients ride from soil to leaves. When heat or drought closes the stomata, both water use and that nutrient conveyor slow down.

Source: McElrone et al., Nature Education (Scitable), 2013.

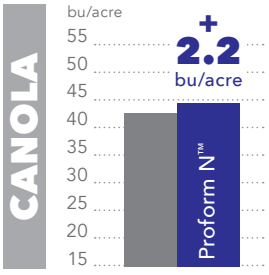


Proform N™ YIELD DATA



WHEAT • YIELD DATA - 2017*

TREATMENTS	YIELD - 2017 (bu/acre)	YIELD - 2018 (bu/acre) Ag-Quest	YIELD - 2018 (bu/acre) New Era Ag	2 YEAR AVERAGE (bu/acre)	% CHANGE
Check	63.0	74.6	37.5	58.4	0
Proform N™	65.6	77.7	39.2	60.8	5.9



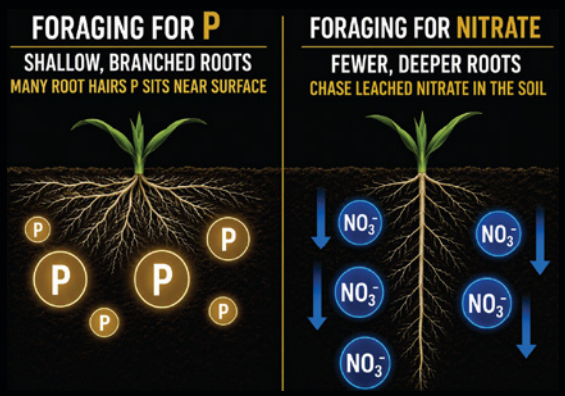
CANOLA • 2 YEAR AVERAGE YIELD DATA*

TREATMENTS	YIELD - 2016 (bu/acre)	YIELD - 2017 (bu/acre)	2 YEAR AVERAGE (bu/acre)	% CHANGE
Check	27.2	57.7	42.5	0
Proform N™	31.2	58.2	44.7	5.0

3RD party yield research with Ag-Quest, BC Grain, ICMS, Mara and New-Marc Research.



Proform N™



ROOTS HUNT P

ROOTS FORAGE FOR SCARCE P

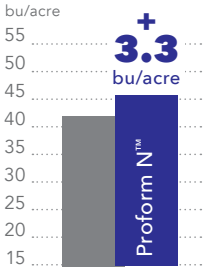
Roots don't grow randomly, their shape adapts to find what's scarce. Because phosphorus is nearly immobile and concentrates in the topsoil, plants short on phosphorus shift toward shallower, more-branched roots and more root hairs to forage the surface. For nitrate, which leaches deeper, plants instead push roots downward. Healthy root growth is a big part of uptake.

Source: Lynch & Brown, Plant and Soil, 2001.



Proform N™ YIELD DATA

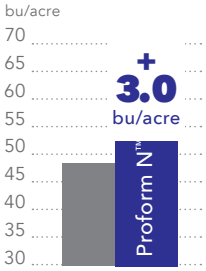
SOYBEAN



SOYBEAN • YIELD DATA - 2018*

TREATMENTS	YIELD - 2017 (bu/acre)	% CHANGE
Check	42.0	0
Proform N™	45.3	7.9

PEAS



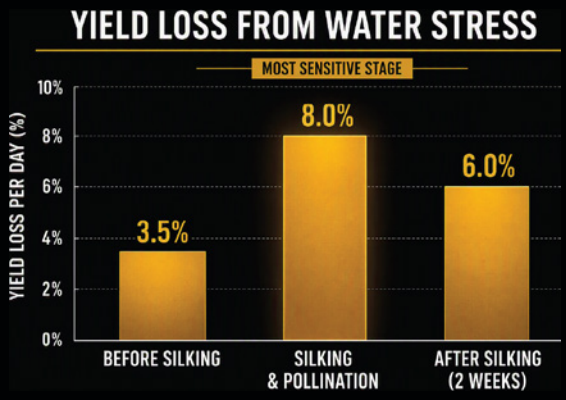
PEAS • 1 YEAR AVERAGE YIELD DATA*

TREATMENTS	YIELD - 2018 (bu/acre) Ag-Quest	YIELD - 2018 (bu/acre) New Era Ag	AVERAGE YIELD (bu/acre)	% CHANGE
Check	35.0	61.6	48.3	0
Proform N™	40.0	62.5	51.3	6.1

3RD party yield research with Ag-Quest, BC Grain, ICMS, Mara and New-Marc Research.



Proform N™



DANGER WINDOW

STRESS AT POLLINATION HURTS MOST

Crops have stages when water and nutrient stress does the most damage, for corn, that's pollination. Severe drought stress around silking and pollen shed can cut yield by roughly 3 to 8 percent per day, far more than the same stress at other stages. It also throws silk and pollen timing out of sync, leaving kernels unfertilized. This window matters most.

Source: Purdue University (R.L. Nielsen), corn pollination.

active micromatrix

CHELATED MICRO-NUTRIENT COMPLEX

0.25% Boron
1.30% Copper
3.0% Manganese
0.12% Molybdenum
1.50% Zinc
0.05% IBA

STRONGER ROOT GROWTH
IBA aids cell division and expansion, enhancing root initiation and growth.

BETTER NUTRIENT ABSORPTION
Encapsulation technology improves nutrient absorption and utilization.

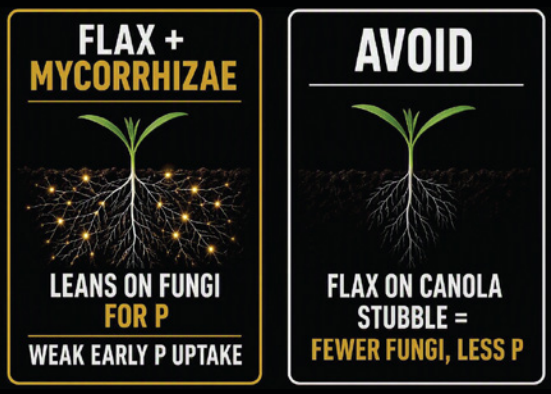


FLEXIBLE APPLICATION
Easily adaptable for foliar, fertigation, or in furrow applications.

HIGHER YIELDS
Optimized nutrient delivery helps plants reach their full yield potential.

ENHANCED STRESS RESILIENCE
Active AgriScience proprietary ingredient boosts plant resilience in challenging conditions.

VIGOROUS EARLY GROWTH
Supports strong early-stage development for healthier crops.



FLAX NEEDS FUNGI

FLAX LEANS ON MYCORRHIZAE FOR P

Flax removes relatively few nutrients per acre, but it is a poor early forager for phosphorus, especially in cold spring soils, and it depends heavily on mycorrhizal fungi to gather P. Growing flax after a non-mycorrhizal crop like canola weakens that partnership. A modest amount of starter phosphate near the seed helps flax through its slow early growth.

Source: Manitoba Crop Alliance, "Spring Tips for Flax Farming."



Active MICROMATRIX™ HOW IT WORKS

NUTRIENT ANALYSIS

Boron (B) (actual)	0.25%
Copper (Cu) (actual)	1.30%
Manganese (Mn) (actual)	3.0%
Molybdenum (Mo) (actual)	0.12%
Zinc (Zn) (actual)	1.50%
Indole-3-butyric acid (IBA)	0.05%
Monoethanolamine	12%
EDTA	6.7%

MIXING INSTRUCTIONS

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

If compatibility is uncertain, perform a jar test prior to mixing.

Add tank mix partners in the following order: Water, Agrochemical, Active MICROMATRIX™.

Keep agitator running while mixing and spraying.

APPLICATION

Apply as a foliar, fertigation, or in-furrow treatment as part of a regular nutrient or corrective spray program.

Application Rates:

Foliar application: 1 L / acre with a minimum of 40 L/acre of water.

Fertigation or in-furrow: 1–2 L / acre with a minimum of 100 L / acre of water.

Apply based on soil and tissue analysis or according to your approved nutrient management program.

Provides essential micronutrients and IBA to boost root growth, nutrient uptake, and stress resilience.

WHY TO USE

Active MICROMATRIX supports strong early growth and root development, enhancing nutrient uptake and helping plants overcome environmental and nutritional stress. Optimized nutrient delivery promotes healthier, more resilient crops and improved yield potential.

WHEN TO USE

Apply as a soil or foliar treatment in a regular spray program or as a corrective spray to alleviate nutritional deficiencies. Follow soil or tissue test results and the recommendations of a qualified advisor or your approved nutrient plan.

HOW TO USE

Mix according to desired application method:
Foliar: Apply 1.0 L/acre with 40 L water minimum.
Fertigation/In-furrow: Apply 1.0–2.0 L/acre with 100 L water minimum.

HOW IT WORKS

Active MICROMATRIX combines multiple micronutrients with IBA, a natural plant growth regulator that promotes cell division and root formation. The encapsulated nutrient technology enhances absorption and mobility within the plant, improving efficiency and uptake. Together, these components support stronger roots, increased nutrient utilization, and improved tolerance to environmental stress for higher yield potential.



PEAS PAY FORWARD

PULSES CREDIT THE NEXT CROP

Well-inoculated peas, lentils and chickpeas fix much of their own nitrogen, so they usually need little or no N fertilizer, extra N can actually suppress fixation. They still need phosphorus and sulfur like any crop. And because they leave residual nitrogen behind, Prairie soil-test labs apply a nitrogen credit to the following crop.

Source: Government of Saskatchewan, "Inoculation of Pulse Crops."

FOLIAR MICRONUTRIENTS

Rapid correction of in-season nutrient deficiencies.

active 10% B BORON™

Supports root growth, pollen tube development, photosynthesis, and the formation of flowers, seeds, and fruit.

Nitrogen (N) 4.75%
Boron (B) 10.0%

active 5.6% Cu COPPER™

Enhances photosynthesis, structural strength, respiration, pollen viability, flavor, and metabolism.

Copper (Cu) 5.6%
Sulfur (S) 2.75%

active 6% Fe IRON™

Supports stress resistance, enzyme activation, nitrogen metabolism, root development, and chlorophyll synthesis.

Sulfur (S) 3.5%
Iron (Fe) 6%

active 7% Mn MANGANESE™

Promotes growth, root development, photosynthesis, pollination, respiration, and stress resistance.

Manganese (Mn) 7%
Sulfur (S) 4%

active 14.2% Mo MOLYBDENUM™

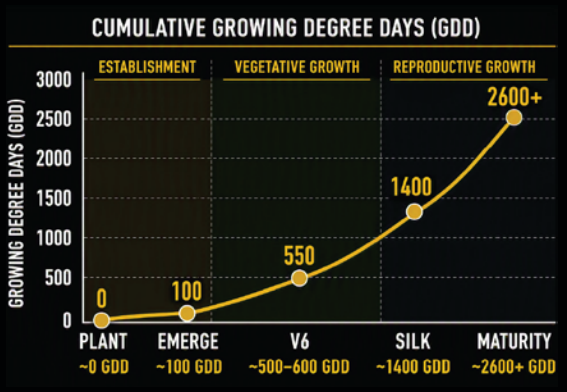
Boosts protein synthesis, stress resistance, nutrient-use efficiency, and promotes strong, healthy growth.

Phosphate (P_2O_5) 16.5%
Molybdenum (Mo) 14.2%

active 10% Zn ZINC™

Improves enzymatic processes, photosynthesis, stem growth, leaf size, yield, and indoleacetic acid production.

Zinc (Zn) 10%
Sulfur (S) 4.8%



HEAT, NOT DATES

GROWTH FOLLOWS HEAT UNITS

Crops develop in response to accumulated warmth, not the calendar. Growing degree days (GDD), or heat units, add up each day's average temperature above a crop's base. For corn the base is 50F (10C) and daily highs are capped at 86F (30C), because growth doesn't speed up beyond that. Tracking GDD predicts crop stages better than counting days.

Source: Purdue University (R.L. Nielsen), heat unit concepts.

EDTA MICRONUTRIENTS

Optimized for starter and liquid fertilizer blends.

activeEDTA COPPER™

Enhances copper availability and supports reproductive development under challenging soil conditions.

Copper (Cu) 7%

activeEDTA IRON™

Improves iron availability to support chlorophyll production and photosynthesis.

Iron (Fe) 4.5%

activeEDTA ZINC™

Improves zinc availability to support early growth and plant development.

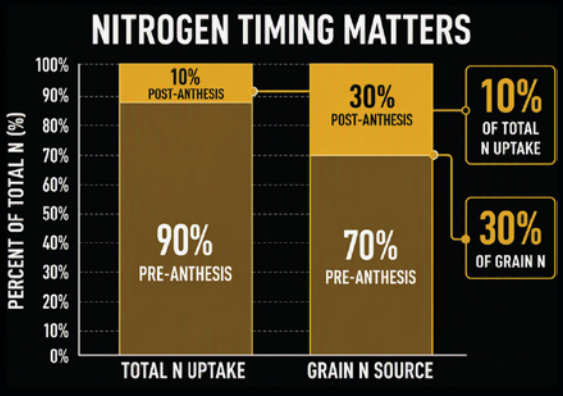
Zinc (Zn) 7%

activeEDTA MANGANESE™

Promotes manganese availability for efficient photosynthesis and metabolic activity.

Manganese (Mn) 5%

EDTA micronutrients are chelated for **MAXIMUM NUTRIENT ABSORPTION.**



LATE N, PROTEIN

POST-FLOWER N BUILDS PROTEIN

In spring and durum wheat, nitrogen taken up after flowering goes largely into building grain protein. Research shows only about 10% of total nitrogen uptake happens after anthesis, yet it can supply roughly 30% of the nitrogen that ends up in the grain. That's why a late, well-timed N application is used to raise protein, though it's usually too late to add yield.

Source: Field Crops Research, "Post-Anthesis Nitrogen Uptake and Remobilisation," 2007.

CAL-MAG-BOR NUTRIENTS

Promotes crop growth and development all season long.

active 10% Ca CALCIUM™

Enhances cell wall strength, nutrient transport, root development, stress resistance, and overall plant structure.

Nitrogen (N) 4.1%
Calcium (Ca). 10%

active 10% Ca 2% Mg CAL•MAG™

Enhances cell wall strength, nutrient transport, chlorophyll production, and resistance to environmental stress.

Nitrogen (N) . . 6.4% Magnesium (Mg) . 2%
Calcium (Ca). . . . 10%

active 4% Mg MAGNESIUM™

Improves photosynthesis, enzyme activation, nutrient transport, chlorophyll production, and energy metabolism.

Nitrogen (N) . . . . 2% Boron (B) 0.1%
Phosphate (P_2O_5) 12% Magnesium (Mg) 4.0%

active 5% Ca 0.5% B CAL•BOR™ +micros

Promotes cell wall integrity, pollination success, fruit set, and overall structural development.

Nitrogen (N) 4%
Boron (B) 0.5%
Calcium (Ca) 5.0%
Copper (Cu) 0.03%
Iron (Fe) 0.03%
Manganese (Mn) 0.03%
Zinc (Zn). 0.03%

active 10%Ca 0.5%Mg 2%B Ca•Mg•B +micros

Improves cell strength, reproductive development, photosynthesis, and nutrient transport.

Nitrogen (N) . . . 7.5% Calcium (Ca) . . 10.0% Iron (Fe). . . . . 0.05% Manganese (Mn)0.05%
Boron (B) . . . . . 2.0% Copper (Cu) . . . 0.05% Magnesium (Mg) 0.5% Zinc (Zn). 0.05%



HUNGRY, BURNABLE

FEEDS HEAVY BUT BURNS EASILY

Canola is a heavy feeder, needing about 2.5 to 3.5 lb of available nitrogen per bushel and having one of the highest sulfur demands of Prairie crops. But its seedlings are very sensitive to fertilizer placed with the seed, generally no more than about 10 lb/ac of seed-placed nitrogen is safe. Phosphate is the only nutrient safely seed-placed at meaningful rates; band the rest.

Source: Canola Council of Canada, "Seed-placed fertilizer."

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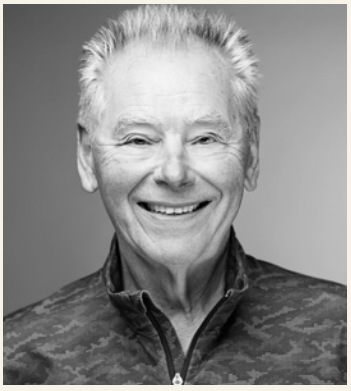


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