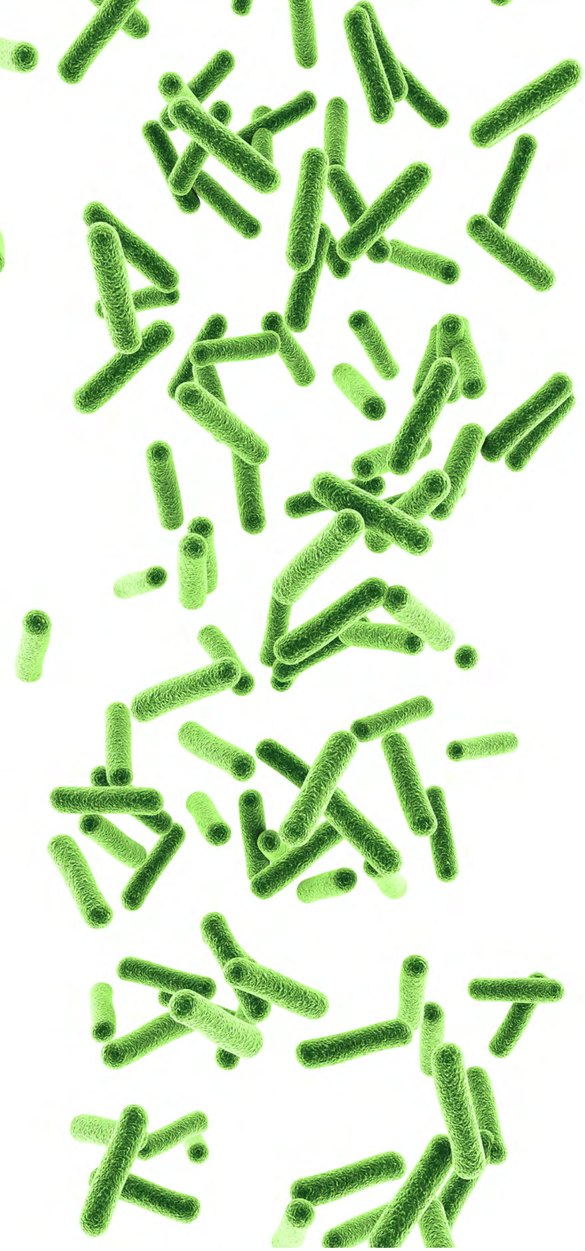
BioNorth Solutions

Corporate Presentation 2021

bionorthsolutions.com



The World is Turning to Microbes

HYDROCARBON REMEDIATION

Bioremediation is a process used to treat contaminated media, including water, soil and subsurface material, by altering environmental conditions to stimulate growth of microorganisms and degrade the target pollutants.

- North America is the leading contributor to the global bioremediation market
- The 2018 global market was projected to exceed $186.3 Billion
- 2018 North America bioremediation market was valued at $9.66 billion which is anticipated to grow at a CAGR (Compound Annual Growth Rate) of 6.52%
- Asia-Pacific is the fastest-growing region, growing with a CAGR of 9.86%
- 2023 global market is projected to approach $302.4 Billion

*researchandmarkets.com
*businesswire.com

PLANT GROWTH ENHANCEMENT

Plant growth promoting bacteria (PGPB) provide multiple & significant benefits in agriculture by enhancing crop productivity, yield and nutrient uptake while at the same time, suppressing the growth of pathogens.

- Agriculture is the largest global industry at over $1.3 trillion dollars annually
- 50% of global habitable land is used for agriculture
- Projections of 9.1 billion people by 2050 would require raising overall food production by 70%
- 2019 Global fertilizer market valued at USD 155.80 billion

*worldfertilizer.com

BioNorth Solutions

About BioNorth Solutions

Science Based • Environmentally Focused • Solutions Driven

BioNorth Solutions Inc. is a Federally registered, Canadian manufacturing company, specializing in microbial science, more specifically, the development and production of “packaged microbes”. Our proprietary microbes provide hydrocarbon soil remediation and plant growth enhancement solutions worldwide.

BROWN TO GREEN

Our Value Proposition

Through direct B2B & B2C marketing and agency sales channels, we aim to provide **environmentally friendly, cost effective and proven** hydrocarbon soil remediation and plant growth promotion solutions for industrial & agriculture end users.

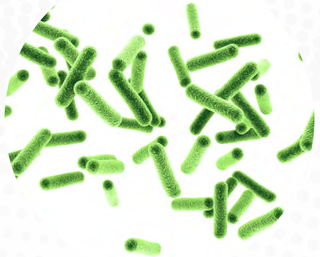
Our Core Values

INTEGRITY

Accountability, responsibility and transparency are core to our way of doing business. We are committed to do what we say we will do.

SOLUTIONS

We thrive on providing simple solutions to complex industry and agriculture problems.



SCIENCE

Simply put, we love everything about microbial science. We are committed to serious research & development as evidenced by our 6 year product development journey prior to going to market.

ENVIRONMENT

We cherish our environment, recognize the challenges we face today and work hard to be “change agents” in everything we do.

STEWARDSHIP

It is our responsibility. We stand shoulder to shoulder with industry, government, First Nations and all who work tirelessly as stewards of our land.

Our Microbes

6 Years in Development

BNS produces some of the most aggressive, consistent and effective microbes available in the hydrocarbon remediation & agriculture space today.

Our Microbes Stand Out Above Others

- Activate and vigorously operate in a wide range of temperatures and climates (.01° - 49°)*

  * lowest operational temperature rating on the market

- Products contain multiple & complimentary strains of bacteria designed to increase efficacy

- Requires 30% less moisture to activate & operate than all others on the market

- Microbiate HS™ Hard Surface Oil Spill Absorbent

- Microbiate SG™ Soil & Gravel

- PGP4™

- PGP2R™

Our Bacterial Solutions

HYDROCARBON REMEDIATION

Our In Situ Microbiate™ products have been developed to provide end users significant savings over traditional and costly “Dig & Dump” remediation methodology, while providing a much more aggressive and environmentally friendly hydrocarbon remediation solution.

- In Situ hydrocarbon remediation vs. soil removal and replacement
- 30% - 50% cost savings vs. traditional “Dig & Dump” methods
- BNS “Dig & Dump” Estimator Tool
- BNS proprietary microbes activate and aggressively operate in a wide range of temperatures and climates (.01°C – 49°C)
- BNS microbes require 30% less moisture to activate and operate
- Unlimited treatment area
- Hydrocarbon breakdown offers back to the environment Hydrogen, Oxygen and trace amounts of CO2

PLANT GROWTH PROMOTION

Our PGP4™ and PGP2R™ products have been developed to provide crop growers increased nutrient uptake, enhanced yields, larger plant volume, additional planting & harvest cycles and added resistors to plant pathogens and disease while reducing the volume of fertilizer required.

- Up to 30% increase in plant volume
- Up to 30% increase in yield
- Up to 20% decrease in fertilizer usage
- Increased resistance to bacterial and fungal pathogens
- Enhanced soil ecosystem
- Granular mix to form concentrate
- Soil & Hydroponics

Our Products

HYDROCARBON REMEDIATION

Microbiate SG™ offers an effective, aggressive and environmentally friendly solution to remediate hydrocarbon spills in soil and gravel. Effective on a wide variety of hydrocarbons: gasoline, diesel, hydraulic, engine and many mixed oils.

Hard Surface Oil Spill Absorbent

MICROBIATE HS™

Microbiate HS™ Hard Surface Oil Spill Absorbent provides the same benefits as our proven hydrocarbon remediator for soil & gravel but has been developed for use on concrete and asphalt. Microbiate HS™ has up to 8x the absorbency of similar granular products on the market today.

Microbiate Differentiator

Product	Microbiate	Oil Buster PRP	**Oil Gator	Liquid Remediact	**Remediact Dry	Zymobac VICRO**	Micro-Blaze
Product Form	Dry	Dry	Dry Fibres	Liquid	Dry	Dry	Liquid
Absorbs Hydrocarbons	✓	✓	✓	X	X	X	X
Working Temperatures	0.1 - 49° C	5 - 35° C	5 - 49° C	5 - 49° C	10 - 32° C	Not Available	Not Available
Optimum Temperature	15 - 35° C	Not Available	Not Available	warmer=faster	warmer=faster	Not Available	Not Available
Moisture Level	12 - 15%	20%	30%	30%	30%	30-40%	30-40%
Treatment Area	0.2 lbs/cubic yard	1:2 by weight	50 lbs/cubic yard	1 gallon/ cubic yard	2 lbs/cubic yard	0.11 lbs/cubic yard	0.1 gallon/ cubic yard
Price per Cubic Yard * (CAD)	$25	$321	$58	$138	$19	Not Available	$55

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“Dig & Dump” Estimator Tool

Client:					
Date:					
Prepared By:					
Remediation Details	**Units**	**Notes**			
Total Volume of Soil (m^3)	**800**	only enter volume in this cell, all other cells will self-calculate			
Total Volume per Dump Truck Load (m^3)	10				
Total Dump Truck Loads to be Removed	80				
Average Dump Truck Loads Out/Hour	3	using 3 dump trucks with 1 hour landfill site turnaround time			
Estimated Remediation Hours	27	average 10 hour working days			
Estimated Equipment Hours	27				
Estimated Remediation Area (m^2)	400	based on remediaiton depth of 2m			
Remediation Contractor Costs					
Expenses	**Quantity**	**Rate**	**Unit**	**Total**	**Notes**
Excavator	27	135	/hour	$3,600	
Dozer	13	125	/hour	$1,667	
Skid Steer	13	$100	/hour	$1,333	
Compactor	13	$125	/hour	$1,667	
Private Underground Utility Locates	1	$300	/unit	$300	
Soil Disposal Milne	80	$701	/load	$56,080	includes 15% mark up
Backfill (B)	88	$125	/load	$11,000	10% more than loads out
Construction Fencing	27	$40	/hour	$1,067	
Dump Truck					
Subtotal				**$76,713**	
Environmental Consultant Costs					
Fees	**Quantity**	**Rate**	**Unit**	**Total**	
Field Work	27	$125	/hour	$3,333	min 4 hours
Remediation Report	1	$10,000	/unit	$10,000	
Laboratory Analysis (BTEX and PHCs)	20	$150	/sample	$3,000	based on remediation area
PID Meter	2.7	$100	/day	$267	min 0.5 days
Disposables	2.7	$150	/box	$400	min 0.5 boxes
Vehicle	2.7	$150	/day	$400	min 0.5 days
Subtotal				**$17,400**	
Total Remediation Costs				**$94,113**	

Plant Growth Promoters

PGP4™ and PGP2R™ are agricultural bio-stimulants derived from indigenous microbes.

PGP4™ includes 4 strains of bacteria geared to enhance plant growth from roots, to stem, to fruit.

PGP2R™ contains a plant growth promotion strain, with an added resistance strain, working to improve plant growth while inhibiting pathogens and disease.

Fostering plant growth from seed germination to plant maturity by influencing the following factors:

- Improves metabolic efficiency to increase yield and enhance crop quality
- Increases plant tolerance to and recovery from stressors
- Facilitates nutrient uptake, absorption, and use
- Enhances produce characteristics, including sugar and nutrient content, colour, size, etc.
- Decreases use (cost) of fertilizers
- Enhances soil fertility, by promoting the development of a healthy soil ecosystem.
- Environmentally friendly, natural products that are complementary to crop nutrition

*nutrient sources (reduced) are to be used in conjunction with PGP4™ and PGP2R™

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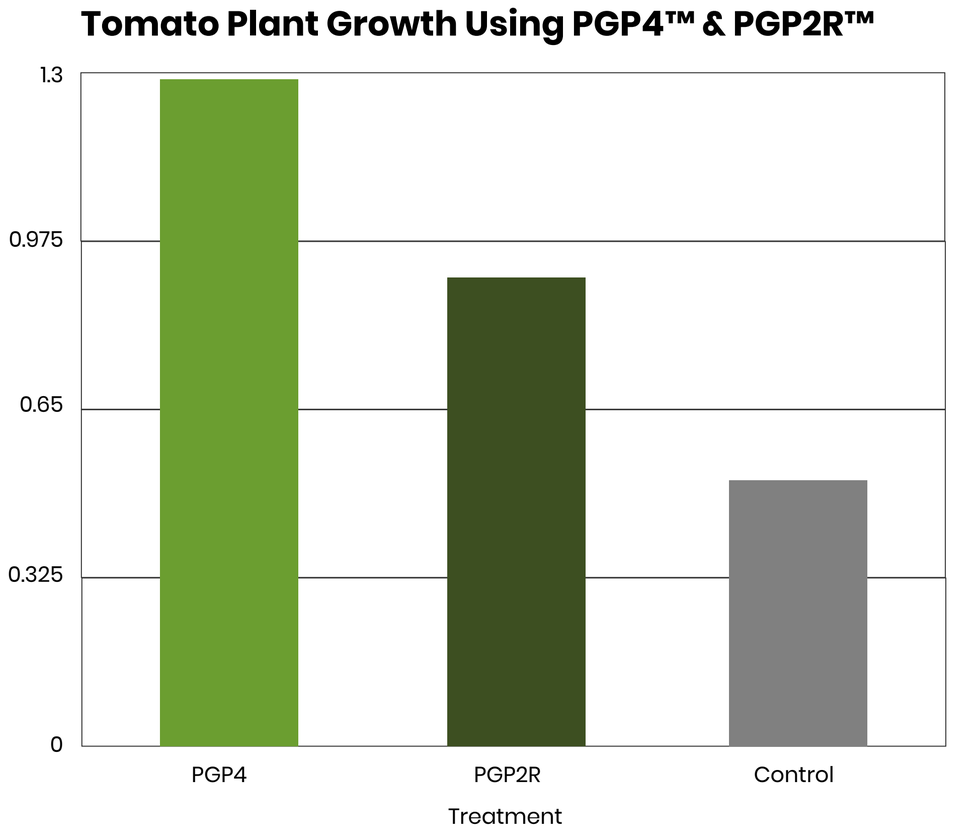
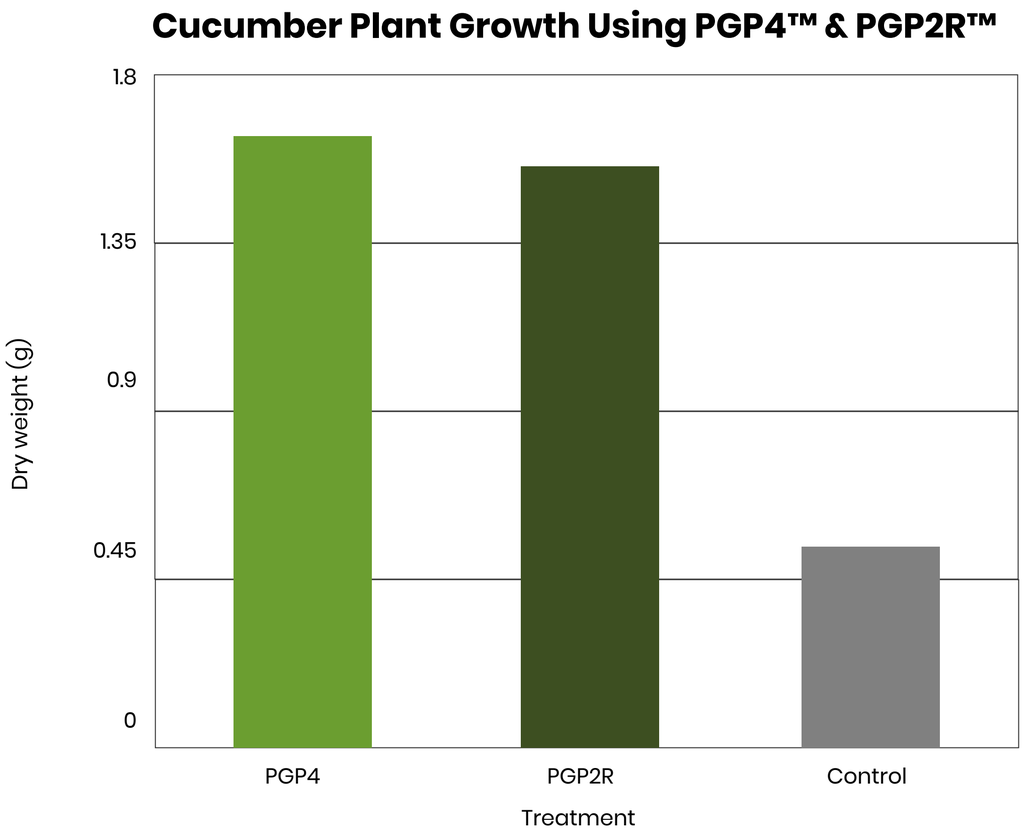
PGP4™ and PGP2R™ Results





BioNorth Solutions Private Label & Boutique Programs

BioNorth Solutions Private Label Program

For bioremediation and agriculture supply companies wishing to package and re-sell BNS Microbiate™ or PGP4™/PGP2R™ product under their own label and brand.

BioNorth Solutions Boutique Program

Working directly with our founding geneticists, our Boutique Program is offered to companies wishing to create their own “Boutique Bugs” developed specifically for their unique application.

*Product Minimums Apply

Go-To-Market Strategy (GTM)

1. Understand Target Market, Users & Their Journey
2. Solidify Messaging, Positioning & Branding
3. Determine Pricing Strategy
4. Create Sales Channel Strategy via Global Agents (N. America, S. America, EU, Asia-Pacific)
5. Create Customer & Agent Support
6. Optimize Marketing (SEO, Collateral Material, Social Media, Blog Posts, Reviews, Global Conferences, Speaking Engagements)
7. Build Brand Awareness Via Inbound/Outbound Methodologies
8. Create New Content
9. Optimize Pipeline & Increase Conversion Rates
10. Analyze & Shorten Sales Cycles
11. Reduce Customer Acquisition Cost
12. Leverage Existing Customers, JV's, Agents & Partners

Awards

2017 Nominee:
RBC (Royal Bank of Canada)
Innovation Award's
"Innovative Project of the Year"

2017 Recipient:
"The New Business Enterprising Women Award"

2018 Nominee:
Thunder Bay Chamber of Commerce
"Environmental Stewardship Award"

2018 Finalist:
OPG (Ontario Provincial Government)
"Ignite Competition"

2019 Nominee:
RBC (Royal Bank of Canada)
Innovation Award's
"Innovative Company of the Year"

Management Team

Amber Kivisto, M.SC
Co-founder, President & COO

Amber began her career as a Registered Nurse graduating with honours, from Confederate College. She went on to obtain her Master's degree in Biology, from Lakehead University. Amber is currently a PhD candidate in Environmental Biotechnology (Lakehead University), taking a hiatus to pursue the launch of BioNorth Solutions. In her spare time Amber enjoys time with family and friends, her 4 active dogs, and all things water.

Dr. Miranda Lock, PhD
Co-founder & Chief Science Officer

Miranda has over 15 years' experience in applied microbiology working with a diverse group of microorganisms. She obtained her MSc. in Applied Microbiology, followed by a PhD in Environmental Biotechnology from Lakehead University. Miranda has 11 first-authored, peer-reviewed publications from her academics and a huge passion for the environment stemming from her love for the outdoors. Miranda can be found spending weekends, fishing with her husband Bryan and their young son Braydon.

Dan Bissonnette
EVP of Sales and Business Development

Dan has enjoyed a successful 25+ year career in International business development and sales management while with global consumer packaged goods giant, the Coca-Cola Company and later Oncology startup VieCure. He attended both Lakehead University and the University of Manitoba on athletic scholarship (hockey) and went on to play professionally in both Europe and North America. Dan spends his personal time with wife Deb and their family and friends, has a love of the northern outdoors and has been an avid runner and cyclist.

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