MANEUVER™

Mi-Fi™ NETWORK

MICROBIAL ACQUIRED NUTRITION

Maneuver™ makes critical nutrients more available for soybean uptake.

This occurs throughout the growing season, deploying complementary modes of action, including nitrogen fixation, for enhanced uptake of nutrients. Maneuver is different than any other products in the market today.

3 MODES OF ACTION

N-Fixation

Converting atmospheric N_2 gas into plant available nitrogen

Effects: Nitrogen

Mineralization

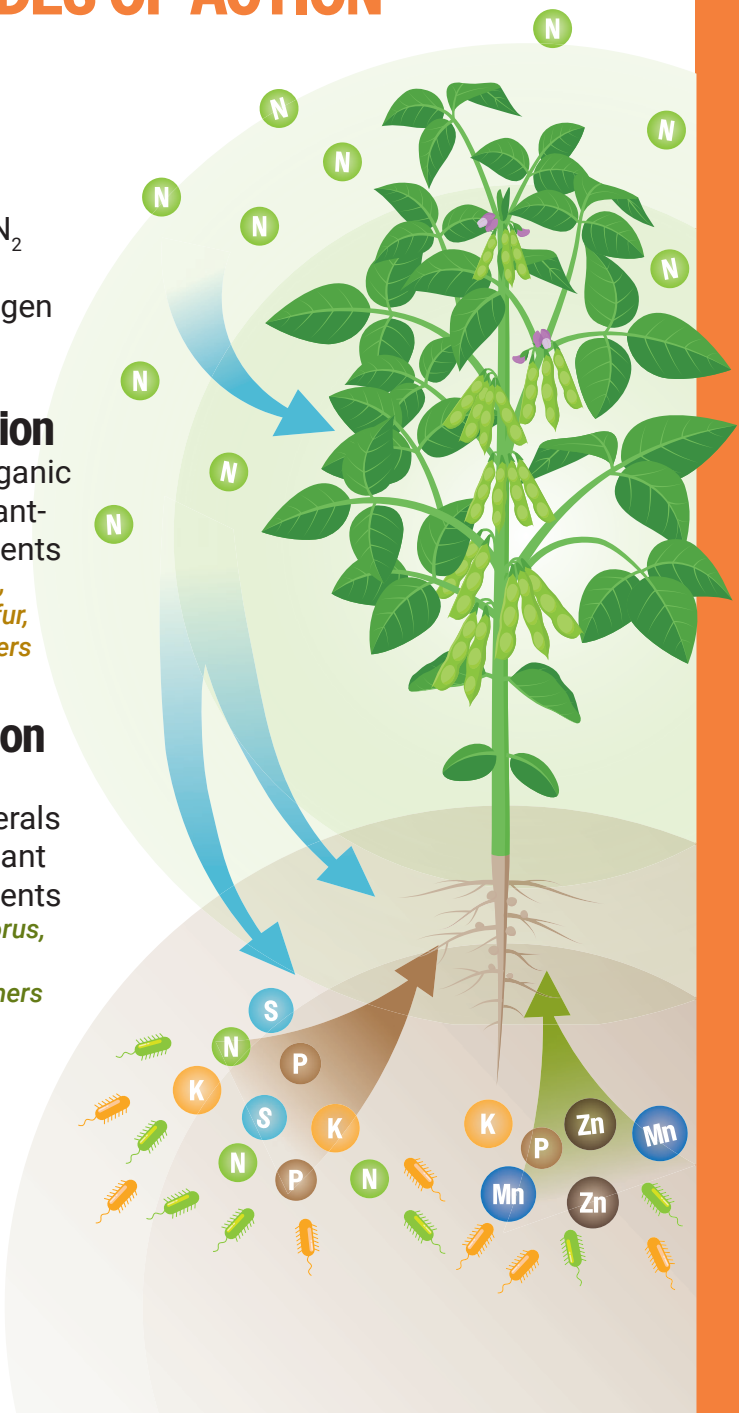
Converting organic matter into plant-available nutrients

Effects: Nitrogen, Phosphorus, Sulfur, Potassium & others

Solubilization

Converting insoluble minerals into soluble plant available nutrients

Effects: Phosphorus, Potassium, Zinc, Manganese & others



SEASON-LONG NUTRIENT ACCESS

- Promotes the availability of key nutrients, including nitrogen, throughout the growing season
- Maneuver colonizes in the rhizosphere and plant tissues, promoting season-long benefits
- Supplements rhizobia efforts utilizing different mechanisms for nitrogen uptake

RESILIENT MICROBES

- Maneuver microbes are in a protected form for maximum viability
- Safe to mix with fertilizers, pesticides, adjuvants, and more
- Vigorous microbes and high CFU's promote quick colonization

APPLICATION FLEXIBILITY

- Easy-to-use product that can fit multiple application types
  - Starter
  - Pre Broadcast
  - Seed Treatment
  - Early Post
  - Fertigation

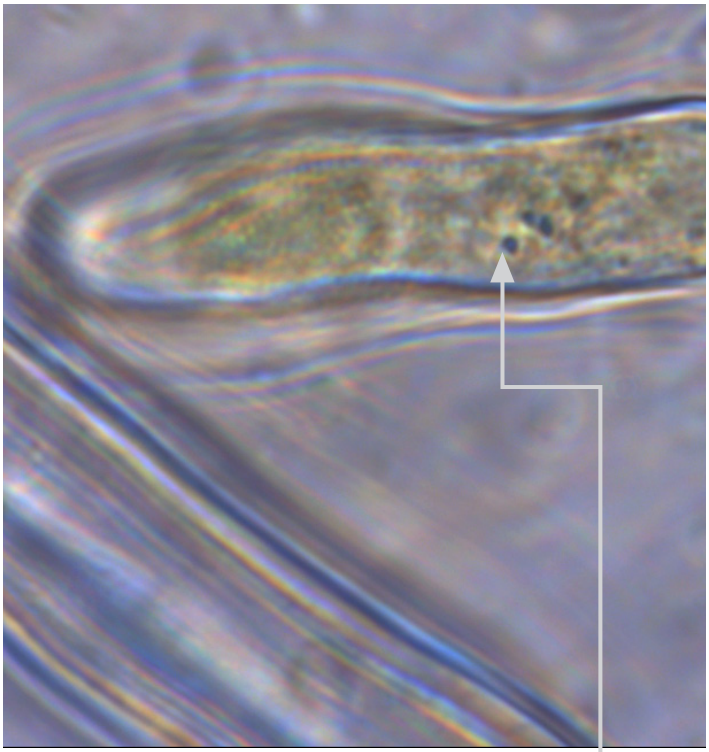
USE RATE

6 grams/A

For broadcast applications, a use-rate up to **8 grams/A** may be used.

STUDIES SHOW NITROGEN FIXATION WITH MANEUVER

Maneuver strain shown growing on “nitrogen-free” media, supports microbes sourcing nitrogen needed for growth from the air.

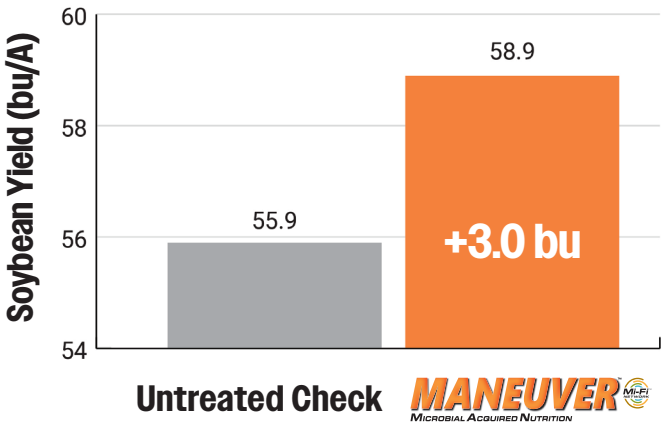


Soybean root hair showing ammonium (purple) around bacteria.

White J., Chang X. (2023) Laboratory Tests Using Bacteria Isolated from Maneuver. Department of Plant Biology. Rutgers University, New Brunswick, NJ 08901.

Maneuver Effect on Soybean Yield: Pre-Broadcast & In-Furrow

10 Replicated Soybean Trials at 6 or 8 grams/A 2022 & 2023
Includes data points with & without starter fertilizer



MANEUVER Microbial Acquired Nutrition

Untreated

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TH020124

Microbial Acquired Nutrition

ROSEN'S INC.
Quality Agricultural Products

WHAT IS MICROBIAL ACQUIRED NUTRITION?

As average crop yield potentials continue to increase with improved genetics and management strategies, nutrient resources available can become yield limiting despite the efforts of fertilization. Row crops in the United States are exposed to substantial nutrient pools within the environment. The air plants breathe is composed of 78% nitrogen, while within the soil resides substantial levels of minerals as well as organic materials that are rich in nutrition. Microbial Acquired Nutrition highlights the three primary mechanisms (mineralization, solubilization, & fixation) in which specific microbes can tap into these natural nutrient pools to generate plant available nutrients.

N-Fixation

- Converting atmospheric N_2 gas into plant available nitrogen
  Effects: Nitrogen

Mineralization

- Converting organic matter into plant available nutrients
  Effects: Nitrogen, Phosphorus, Sulfur, Potassium & others

Solubilization

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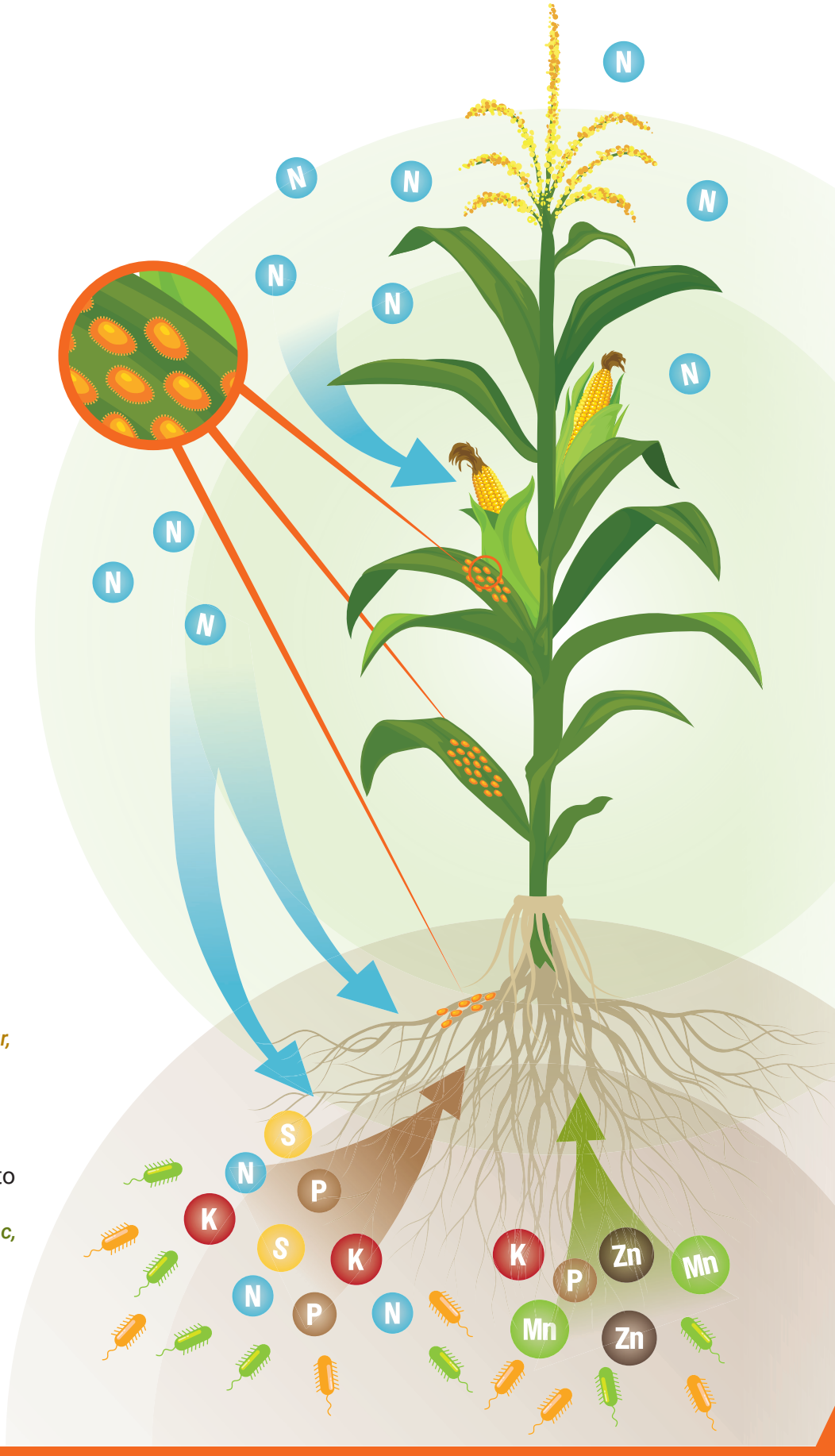
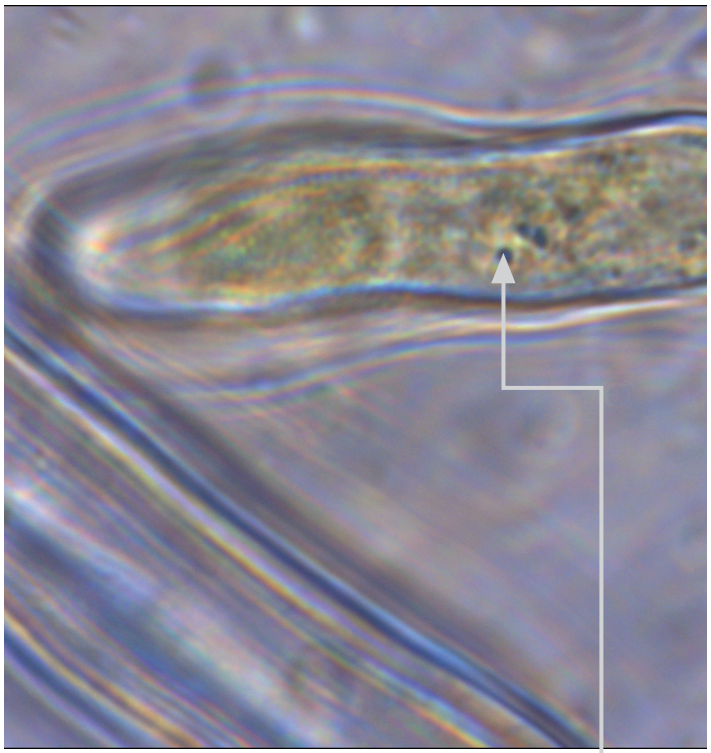


NITROGEN FIXATION

Nitrogen is well known as a primary nutrient for crop production. The process of converting nitrogen from the atmosphere (78% N_2) into plant available forms is a process called nitrogen fixation. The utilization of nitrogen fixing microbes is not a new phenomenon. Rhizobia inoculants have been used as microbial amendments for years in soybean production. In recent years further research has evaluated other (non-rhizobia) microbes for their ability to supplement the use of synthetic nitrogen fertilizer in different cropping systems. Certain nitrogen fixing bacteria, such as those within Maneuver, colonize within the rhizosphere, as well as within plant tissues, where they fix atmospheric nitrogen for plant utilization.

STUDIES SHOW NITROGEN FIXATION WITH MANEUVER

Maneuver strain shown growing on “nitrogen-free” media, supports microbes sourcing nitrogen needed for growth from the air.

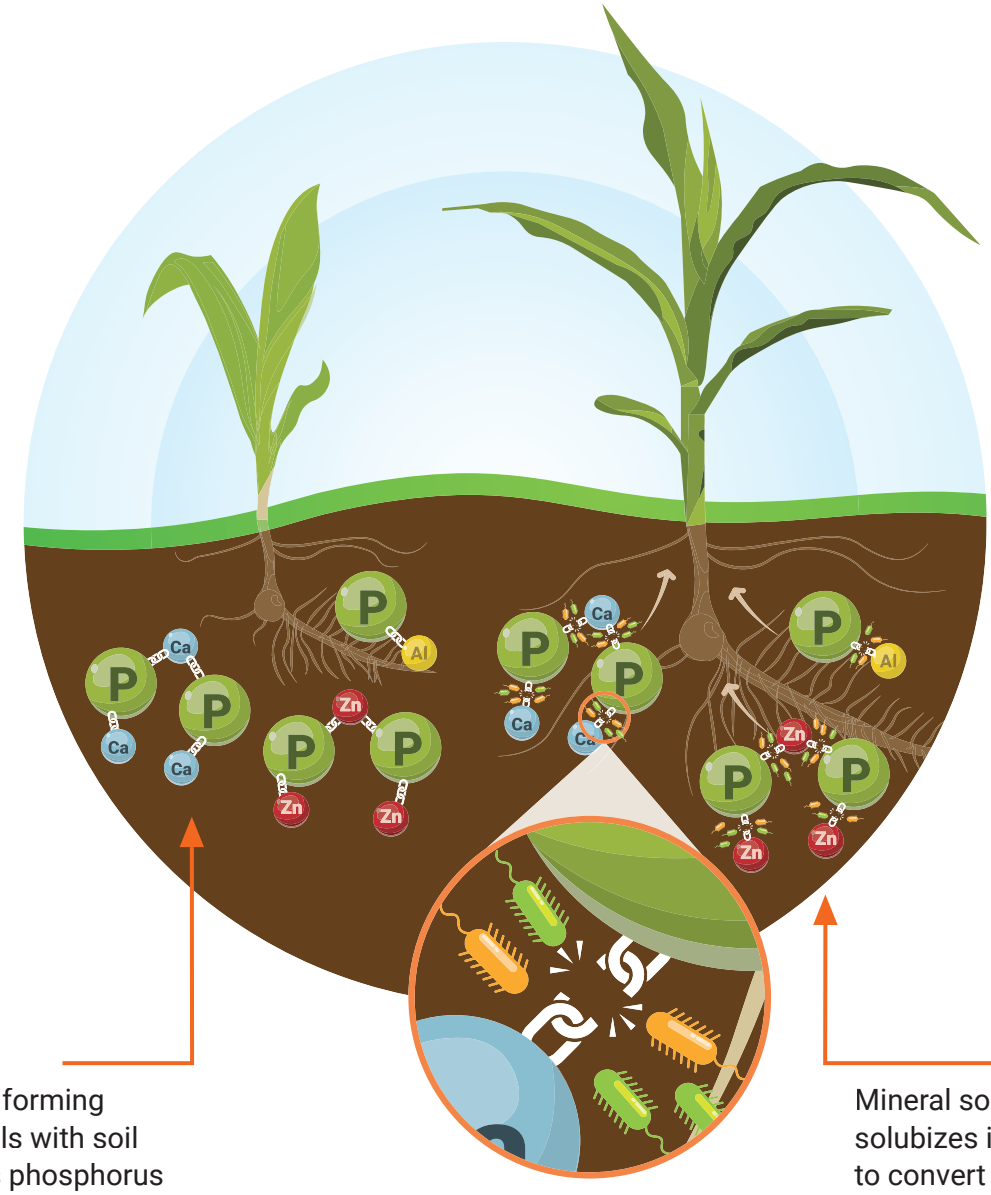


Soybean root hair showing ammonium (purple) around bacteria.

White J., Chang X. (2023) Laboratory Tests Using Bacteria Isolated from Maneuver. Department of Plant Biology. Rutgers University, New Brunswick, NJ 08901.

SOLUBILIZATION

Agricultural soils in the U.S. often hold significant quantities of essential nutrients for crop production, however without microorganisms, many soil nutrients would remain as insoluble mineral forms that plants can not access. Mineral solubilizing bacteria, like those in Maneuver, have different mechanisms to solubilize inorganic minerals such as the production of specific enzymes, organic acids, as well as biopolymers.

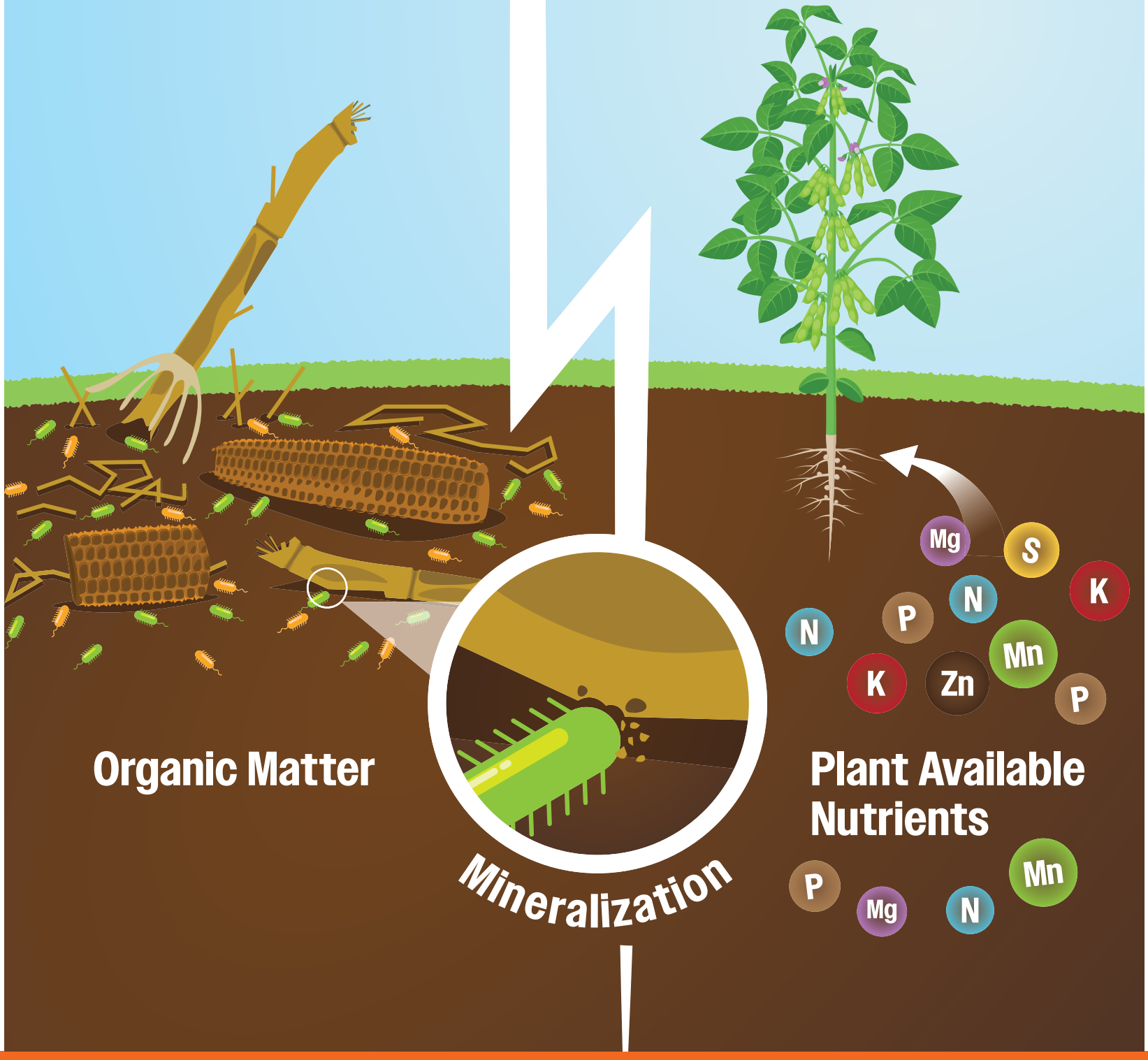


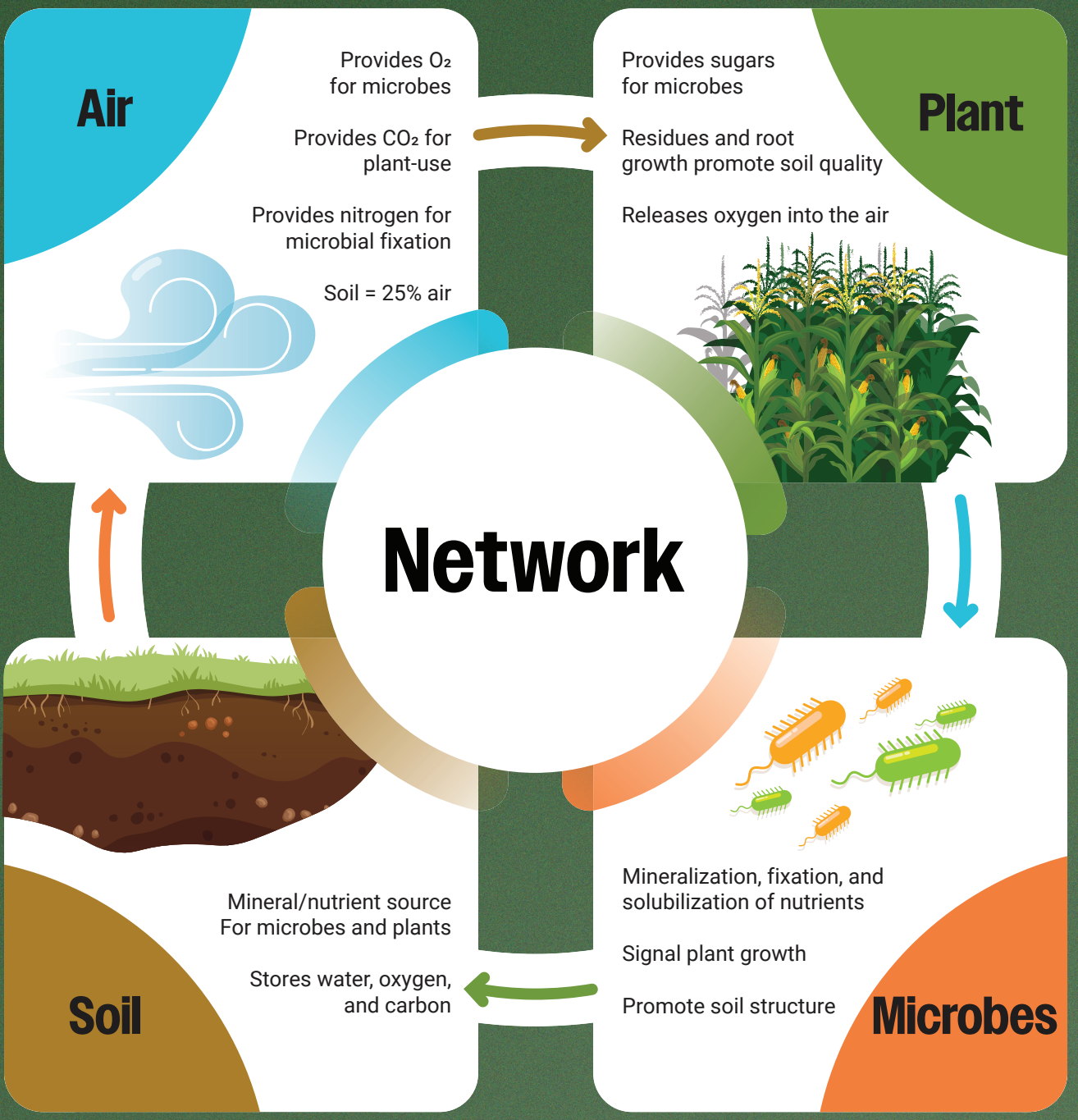
Soil phosphates forming insoluble minerals with soil cations prevents phosphorus from being absorbed by the plant's roots.

Mineral solubizing bacteria solubizes inorganic minerals to convert them into nutrients that are plant available.

MINERALIZATION

Mineralization is the microbial driven process that decomposes organic material into inorganic nutrients that the plant can utilize. The specific content of nutrients that are generated in this process will vary by the nutrient content of the organic matter being decomposed. For example, nutrients that are derived from corn residues will vary in concentration and quantity than nutrients derived from soybean or other crop residues.




Air
Provides O_2 for microbes
Provides CO_2 for plant-use
Provides nitrogen for microbial fixation
Soil = 25% air
Plant
Provides sugars for microbes
Residues and root growth promote soil quality
Releases oxygen into the air
Network
Soil
Mineral/nutrient source For microbes and plants
Stores water, oxygen, and carbon
Microbes
Mineralization, fixation, and solubilization of nutrients
Signal plant growth
Promote soil structure

MANEUVER™

MICROBIAL ACQUIRED NUTRITION

Maneuver makes critical nutrients more plant available. This occurs throughout the growing season, deploying complementary modes of action, including nitrogen fixation, for enhanced uptake of nutrients.

SEASON LONG NUTRIENT ACCESS

Season-long source of supplemental nutrition for crop use

MULTIPLE MODES OF ACTION

Multiple modes and sites of action for more consistent results

RESILIENT MICROBES

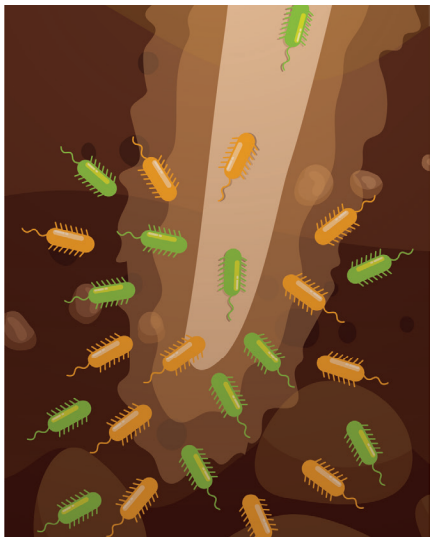
Resilient bacteria, in a protected form, safe to mix with all tank mix partners

MI-FI NETWORK

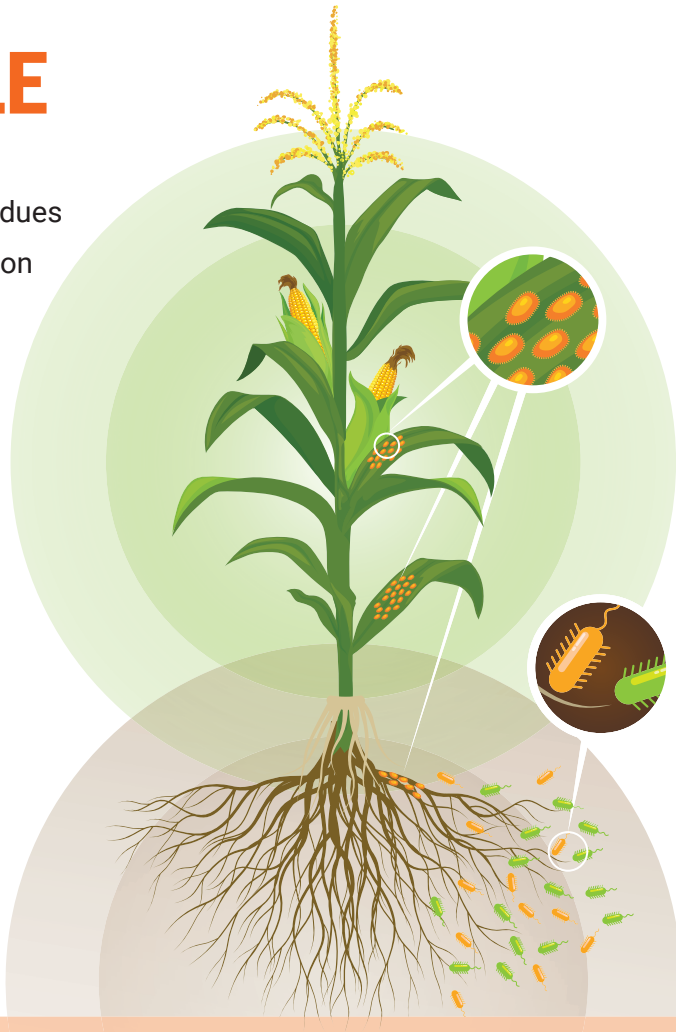
Mi-Fi Network harnesses the synergy that exists among soil, plant, air, and microbe partners

MANEUVER'S LIFE CYCLE

1. Maneuver is applied to the soil
2. Bacteria are activated by carbon source from soil and residues
3. Within a few days, bacteria germinate and begin cell division
4. The rate of division is dependent primarily on soil temperature and moisture
5. As the bacteria populate, they move toward carbon sources (ex. root exudates)
6. Exponential growth and colonization occurs for 1-2 months until the population becomes stable
7. Established bacteria begin to decline as crops reach maturation



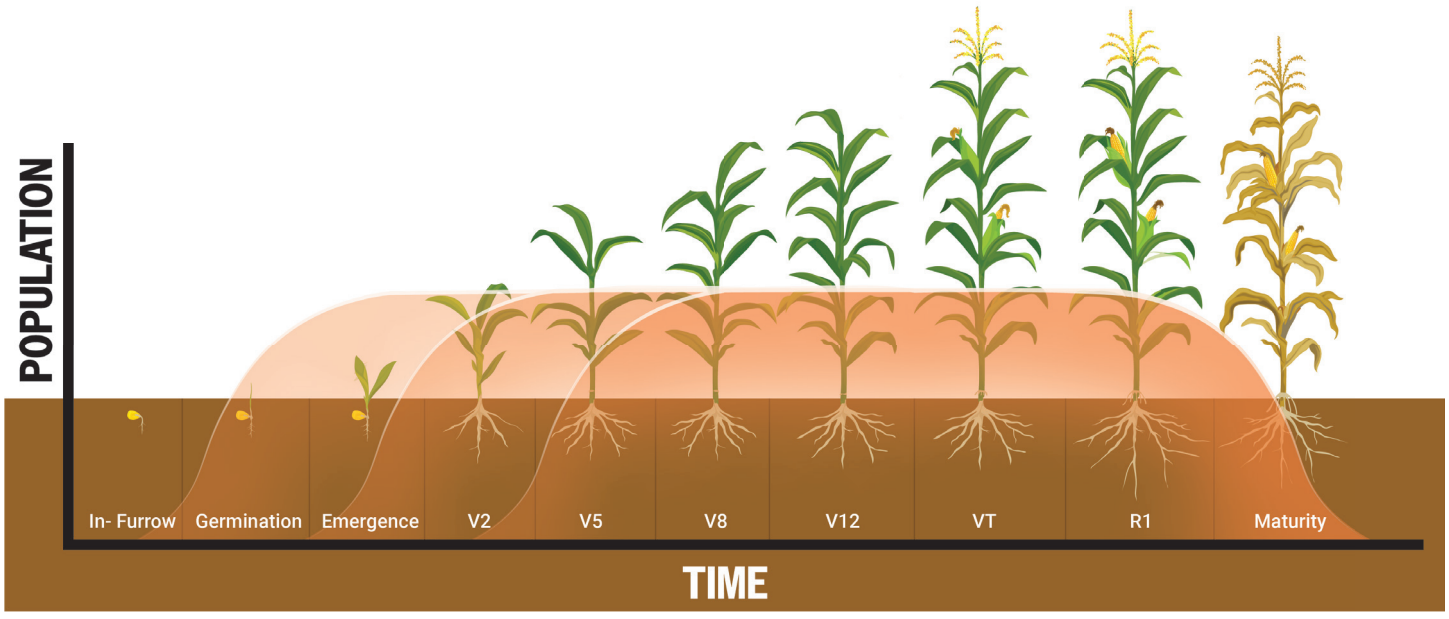
Maneuver bacteria colonize in the rhizosphere where roots release sugar.



3 SITES OF ACTION

- Leaves & Stems
- Roots
- Rhizosphere

SEASON-LONG RELATIONSHIP



PHYSICAL ATTRIBUTES OF MANEUVER

- Dry formulation with 3 year shelf life
- High CFU count, for improved colonization and establishment
- Endospore formulation keeps bacteria viable
- Compatible to tank-mix with fertilizers, pesticides & adjuvants

APPLICATION FLEXIBILITY

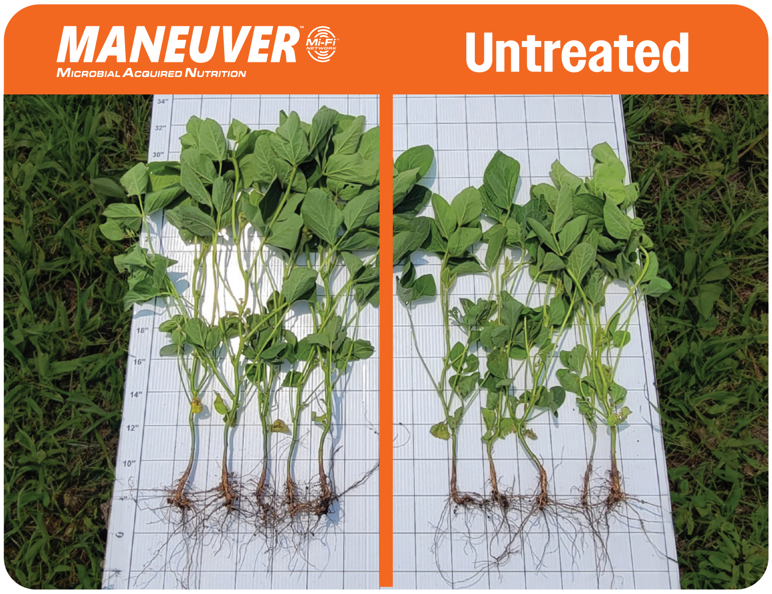
- Maneuver has proven to enhance crop development and yield potential in a number of different application types
- Apply in-furrow, 2x2, seed treatment, soil broadcast, side-dress, early post, fertigation, or dry fertilizer impregnation
- For best results, apply Maneuver earlier in the growing season to reap the benefits of early and season-long colonization

TECHNICAL INFORMATION

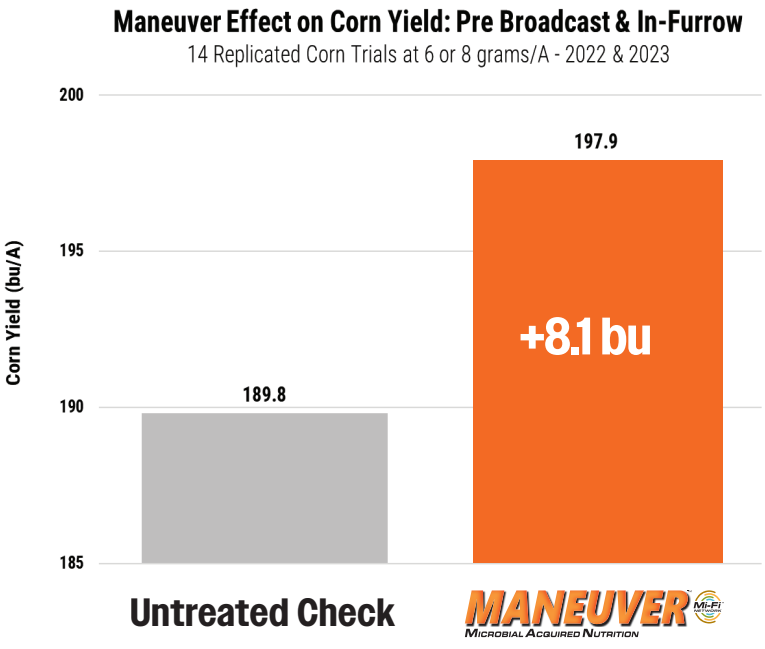
- Use rate: Maneuver should be applied at 6 grams per acre
- For soil broadcast applications, a use-rate up to 8 grams per acre may be used

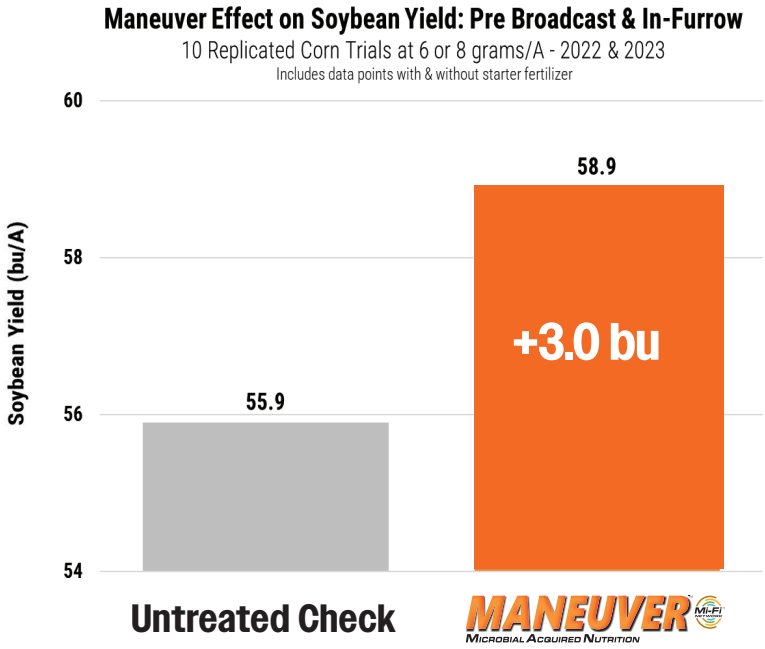
Use Rates:	6 grams/Acre	8 grams/Acre
1 bottle	30 Acres	22.5 Acres
1 case (4 Bottles)	120 Acres	90 Acres
Mag-Pack (20 lbs)	1,513 Acres	1,135 Acres

THE POWER OF MICROBIAL ACQUIRED NUTRITION



MANEUVER EFFECT ON YIELD:



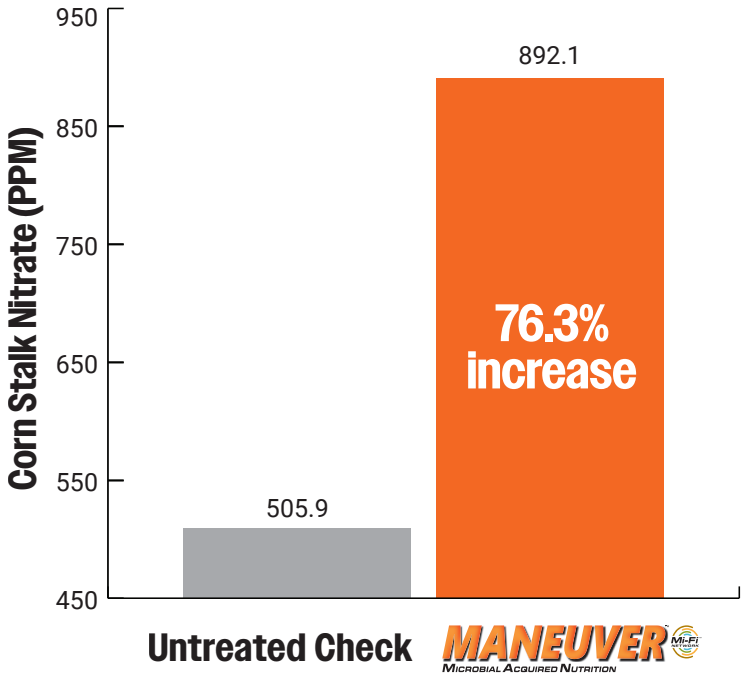


MANEUVER EFFECT ON STALK NITRATE LEVELS (NO_3-N)

16 Locations at 6 or 8 grams/A

Nitrate Concentration	Nitrate Level Interpretation
<250 ppm	Low
250 - 700	Marginal
700 - 2000 ppm	Optimal
>2000 ppm	Excessive

Source: Kaiser, D. and Fernandez, F. (2020). University of Minnesota.



MANEUVER™

Mi-Fi™ NETWORK

MICROBIAL ACQUIRED NUTRITION

SEASON-LONG NUTRIENT ACCESS

Promotes the availability of key nutrients, including nitrogen, throughout the growing season

Maneuver functions in the rhizosphere as well as within plant roots and leaves

Improves nutrient uptake, which drives plant growth, grain fill, and yield

RESILIENT MICROBES

Maneuver microbes are in a protected form for maximum viability

Safe to mix with fertilizers, pesticides, adjuvants, and more.

Vigorous microbes and high CFU's promote quick colonization

APPLICATION FLEXIBILITY

Easy-to-use product that can fit multiple application types

- Starter (IF or 2x2)
- Pre-Broadcast
- Seed Treatment
- Early Post
- Sidedress
- Fertigation

RETURN ON INVESTMENT

Provides a unique opportunity to bring value to your operation through a new technology

Learn more about Maneuver & Mi-Fi on our splash page

ROSEN'S INC.
Quality Agricultural Products

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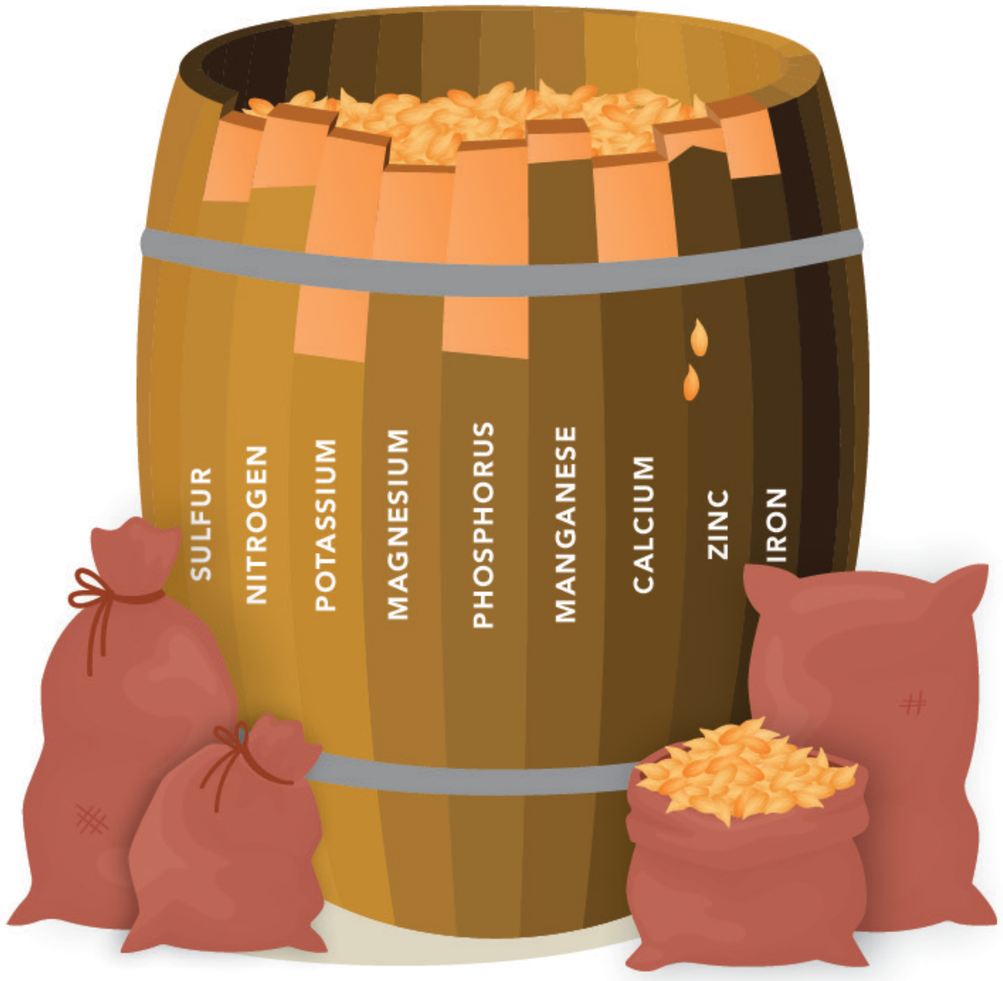
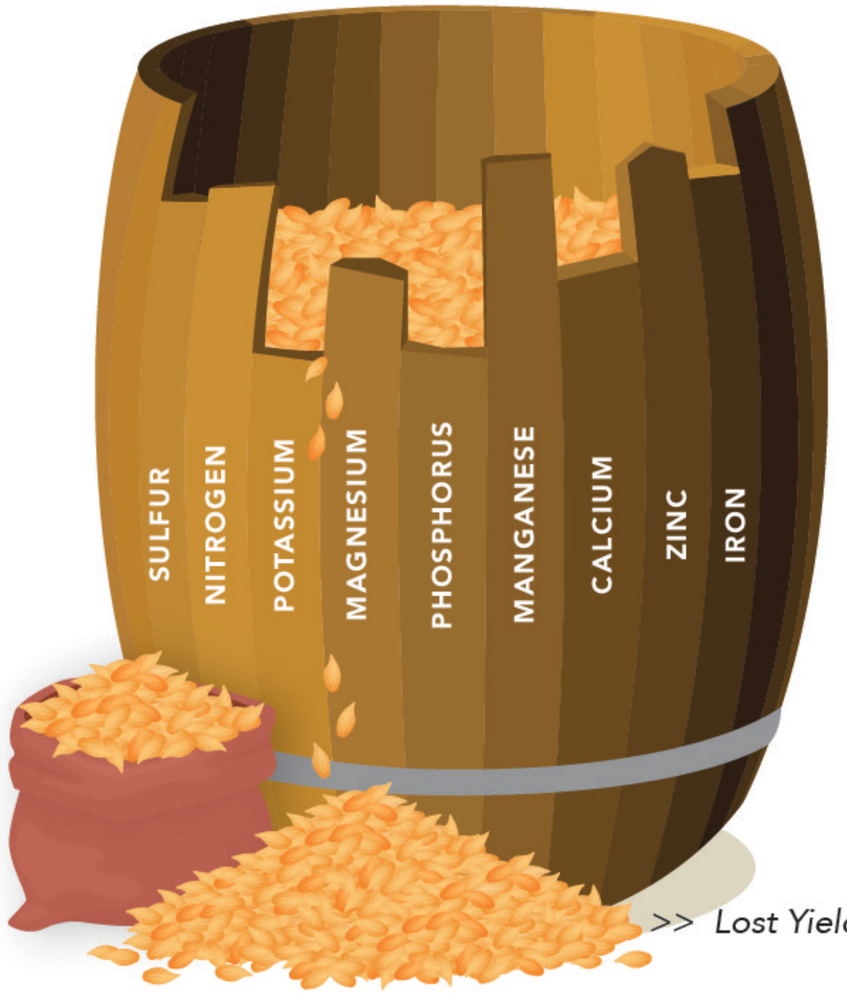
With **MANEUVER**™ Mi-Fi NETWORK

MICROBIAL ACQUIRED NUTRITION

Supplements Critical Nutrients



Without Maneuver™



>> Lost Yield Potential

MANEUVER™ Mi-Fi NETWORK

MICROBIAL ACQUIRED NUTRITION

12 Unique Strains of Bacteria Focused on Nutrient Acquisition

Bacterial Strain	Description of Primary Microbial Functions
Bacillus formis	Nitrogen fixer; colonizes within the plant in below ground vegetation (roots).
Bacillus azotofixans	Nitrogen fixer; functions in the plant rhizosphere; also facilitates mineralization mechanisms promoting the cycling of organic materials.
Bacillus polymyxa	Nitrogen fixer; colonizes above ground foliage; after soil application, *Bacillus polymyxa* enters the plant through the root tip and translocates its way into above ground plant foliage.
Bacillus composti	Decomposer of organic materials, showing prolific nitrogen mineralization characteristics.
Bacillus coagulans	Boosts phosphorus solubilization, solubilizes zinc, manganese and potassium for improved plant uptake.
Bacillus licheniformis	Promotes root establishment; aids in soil mineralization; nutritionally adaptive; strong composter of organic polymers in the soil to convert nutrients into plant available forms.
Streptomyces rimosus	Produces large amounts of enzymes to protect root zone; strong fungal remediation activity; uses alternate forms of organic carbohydrates.
Streptomyces violalascens	Strong secretor of enzymes for the breakdown of complex polymers and chitin in the soil. Excellent colonizer and decomposer for extensive nutrient recycling and breakdown of organic matter.
Thermobacillus composti	Boosts plant biomass; strong secretor of enzymes that breakdown organic matter for better conversion to plant usable forms.
Thiobacillus ferrooxidans	Improves and accelerates iron solubility. Works to chelate calcium, magnesium, manganese and zinc from the soil and into a soluble form. Strong colonizer of the root zone for enhanced nutrient recycling.
Pseudomonas putida	Improves phosphorus and potassium solubilization; boosts plant biomass and photosynthesis; accelerates composting.
Rhodopseudomonas capsulatus	Boosts nitrogen assimilation at the rootzone for improved nitrogen uptake. Strong recycler of organic nutrients and minerals in the soil for rapid nutrient availability and uptake.

Maneuver is Built Different

Resilient (Endospore) Form

Multiple Sites-of-Action

Product Integrity

Synergistic Modes-of-Action

Application Flexibility

Remains Viable
in the case, in tank mixes, & in the field

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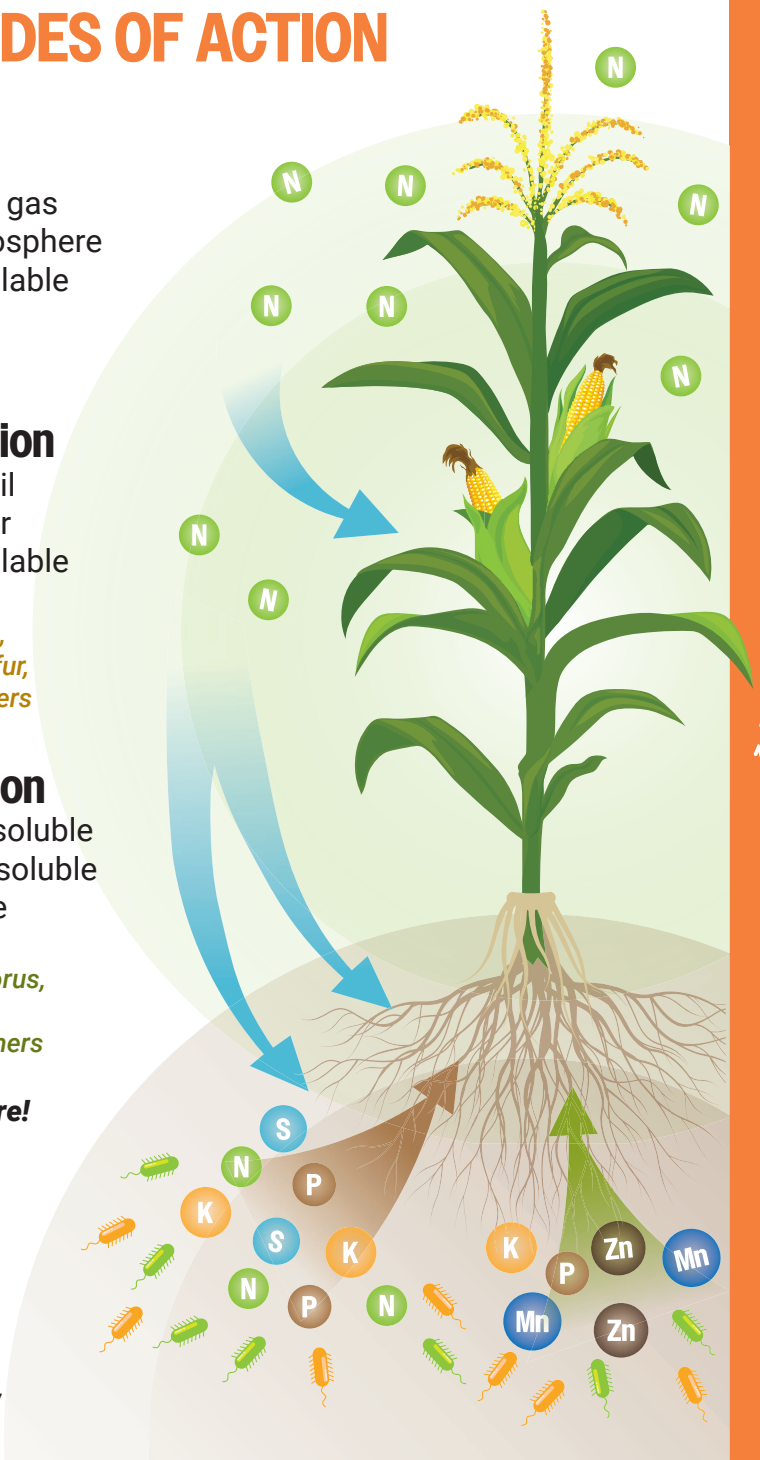

Scan to learn more!

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SEASON-LONG NUTRIENT ACCESS

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APPLICATION FLEXIBILITY

- Easy-to-use product that can fit multiple application methods
  - Starter (IF or 2x2)
  - Seed Treatment
  - Pre Broadcast
  - Early Post
  - Side-dress
  - Fertigation

USE RATE

6 grams/A

For broadcast applications a use rate up to 8 grams/A may be used

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MICROBIAL ACQUIRED NUTRITION

GUARANTEED ANALYSIS

NON-PLANT FOOD INGREDIENTS:.....95%

Beneficial Microbial Strains

Bacillus polymyxa	7.8 X 10^9 CFU/g
Bacillus composti	7.8 X 10^9 CFU/g
Bacillus azotofixans	7.8 X 10^9 CFU/g
Bacillus formis	7.8 X 10^9 CFU/g
Bacillus coagulans	5.5 X 10^9 CFU/g
Bacillus licheniformis	5.5 X 10^9 CFU/g
Streptomyces rimosus	5.5 X 10^9 CFU/g
Streptomyces violascens	5.5 X 10^9 CFU/g
Thermobacillus composti	5.5 X 10^9 CFU/g
Thiobacillus ferooxidans	5.5 X 10^9 CFU/g
Pseudomonas putida	5.5 X 10^9 CFU/g
Rhodopseudomonas capsulatus	5.5 X 10^9 CFU/g

INERT INGREDIENTS:.....5%

CAUTION

KEEP OUT OF REACH OF CHILDREN

GENERAL INFORMATION

Maneuver is a dry, concentrated microbial blend designed for use in all agricultural crops. **Maneuver** is a customized blend of bacteria that improve crop acquisition of nutrients through mineralization, solubilization, and nitrogen fixation. This formula contains rhizospheric and endophytic bacteria that have been specifically selected to improve nutrient-use-efficiency and rhizosphere health throughout the crop life cycle.

DIRECTIONS FOR USE

- Can be applied in in-furrow, 2x2, side-dress, liquid broadcast, dry impregnation, drip and pivot irrigation applications.
- Tank mix compatible with liquid fertilizers, herbicides, insecticides, fungicides and adjuvants.
- Agitate well before use.
- Can be used on all soil and crop types.

APPLICATION RATES

Apply 6 grams per acre.

For dry impregnation and liquid broadcast applications, a use-rate up to 8 grams per acre may be used.

MIXING INSTRUCTIONS

Fill tank with one-half the desired amount liquid carrier. Add the required amount of **Maneuver**. Add the remaining amount of liquid carrier while allowing the agitation to thoroughly mix **Maneuver** into the liquid carrier.

NET CONTENTS: _____

STORAGE & DISPOSAL

Store product in original container. Keep out of reach of children. Dry product has a shelf life of three years. Does not require refrigeration. Keep container tightly closed in a cool and dry area. See Safety Data Sheet for further details regarding safe use of this product. Containers are filled by weight. Settling will occur.

This material is not considered hazardous, poses no environmental risks and may be disposed of in landfills or sanitary services.

FIRST AID

IF SWALLOWED:

- Call a poison control center or doctor if feeling unwell. Rinse mouth.
- Do not give anything to drink.
- Do not induce vomiting without medical advice.
- Do not give anything by mouth to an unconscious person.

IF IN EYES:

- Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If irritation persists, call a poison control center or doctor for treatment advice.

IF ON SKIN:

- Wash skin immediately with clean water and soap.
- If irritation occurs, call a poison control center or doctor for treatment advice.
- Take off contaminated clothing and wash it before reuse.

IF INHALED:

- Remove person to fresh air and keep comfortable for breathing. Call a poison control center or doctor if feeling unwell.
- If person is not breathing call 911 and give CPR (cardio-pulmonary resuscitation).

CONDITIONS OF SALE AND LIMITATIONS OF WARRANTY AND LIABILITY

Acceptance of Terms - By purchase or use of this product, buyer and user accept these conditions of sale and limitations of warranty and liability. If these terms are unacceptable, return the product unopened for a refund.

Warranty Disclaimers - Rosen's Inc. and seller (collectively "Vendors") warrant that this product conforms to the chemical description on the label. THIS PRODUCT IS SOLD "AS IS" AND VENDORS MAKE NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIM THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT.

Inherent Risks - The directions for use must be followed carefully. It is impossible to eliminate all risks associated with this product. Crop injury, ineffectiveness, or other unintended consequences may result due to factors beyond the control of Vendors. Buyer and user assume all risks associated with the use or handling of this product.

Limitations of Liability - To the extent consistent with applicable law, buyer or user's exclusive remedy for any and all claims, losses, injuries, or damages resulting from the use or handling of this product shall be limited to the purchase price paid, or at the election of Vendors, the replacement of this product. Vendors are not liable for any consequential, incidental, or special damages, including lost profits.

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For Chemical Emergency:
Call CHEMTREC day or night.
1-800-424-9300

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