

# REDSTAR BioPHY

## TECHNICAL INFORMATION

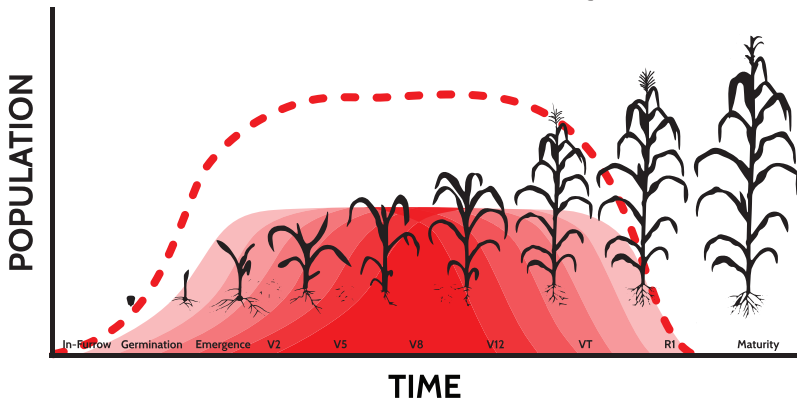
- Microbial enhanced fertilizer blend
- Creates a more productive soil environment
- Provides beneficial bacteria to the soil increasing the rate of nutrient uptake
- REDSTAR BioPHY is designed to:
  - Improve microbial diversity in the soil
  - Enhance nutrient mineralization
  - Increase nutrient availability and uptake

## MICROBIAL ANALYSIS

### Beneficial Microbe Strains

<i>Bacillus coagulans</i>	3.3x10 <sup>10</sup> CFU/acre
<i>Bacillus licheniformis</i>	3.3x10 <sup>10</sup> CFU/acre
<i>Streptomyces rimosus</i>	3.3x10 <sup>10</sup> CFU/acre
<i>Streptomyces violascens</i>	3.3x10 <sup>10</sup> CFU/acre
<i>Thermobacillus composti</i>	3.3x10 <sup>10</sup> CFU/acre
<i>Thiobacillus ferrooxidans</i>	3.3x10 <sup>10</sup> CFU/acre
<i>Pseudomonas putida</i>	3.3x10 <sup>10</sup> CFU/acre
<i>Rhodopseudomonas capsulatus</i>	3.3x10 <sup>10</sup> CFU/acre

### REDSTAR BioPHY Life-Cycle



- Activated by low carbon source, such as soil and residue
- Within 3 days, REDSTAR BioPHY bacteria sporulate and begin dividing
- Division speed will depend on many factors such as soil temperature and moisture
- REDSTAR BioPHY bacteria population will grow for 3 months then begin to level off
- At 6 months, the bacteria population will begin to decline

### **REDSTAR BioPHY Provides Perimeter Protection**

REDSTAR BioPHY's consortium of bacteria have been selected to out-compete the "bad" microorganisms already present in the soil, while not affecting the beneficial microbes. This allows REDSTAR BioPHY to "clean the root zone" while also helping reduce stress on the plant's roots.

# BioPHY

## TECHNICAL INFORMATION MICROBIAL FUNCTIONS

MICROORGANISM	MICROBE FUNCTION DESCRIPTION
<b><i>Bacillus coagulans</i></b>	Boosts phosphorus solubilization, solubilizes zinc, manganese and potassium for improved plant uptake.
<b><i>Bacillus licheniformis</i></b>	Promotes root establishment; aides in soil mineralization; nutritionally adaptive; strong composer of organic poly-mers in the soil to convert nutrients into plant available forms.
<b><i>Streptomyces rimosus</i></b>	Produces large amounts of enzymes to protect root zone; strong fungal remediation activity; uses alternate forms of organic carbohydrates.
<b><i>Streptomyces violascens</i></b>	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.
<b><i>Thermobacillus composti</i></b>	Boosts plant biomass; strong secretor of enzymes that breakdown organic matter for better conversion to plant useable forms.
<b><i>Thiobacillus feroxidans</i></b>	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 rootzone for enhanced nutrient recycling.
<b><i>Pseudomonas putida</i></b>	Improves phosphorus and potassium solubilization from soil (phosphorus availability); boosts plant biomass and photosynthesis; accelerates composting.
<b><i>Rhodopseudomonas capsulatus</i></b>	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 up-take.