Ion$_{fx}$™

For use on corn, sorghum, small grains (foliar), cotton, canola and flax

What is Ionfx and what does it do?

Ion$_{fx}$ is a mix of genetically identified and patented bacteria, along with archaea and fungi. While many microbes live naturally in a plant, this mix of microorganisms has been selected to support, enhance, or supplement plant functions. Ionfx unlocks a plants ability to produce growth regulators and metabolites. Some benefits include: phosphate solubilization through microbial activity, reduced ethylene production (associated with aging and senescence), pH regulation, reduced reactive oxygen species, and general stress mitigation. The less a crop is stressed the more resources it has for maximizing yield.

Mechanisms of actions:

- Plant pH regulation through the ability to exchange electrons in chemical pathways
    - Most photosynthesis down regulates during the heat of the day
    - pH regulation overcomes "slowdowns" during the heat of the day
- A unique microbe group triggers larger leaves early on and a thicker stalk later
- Movement of lignin on vascular bundles to the outer rind of the stem
    - This may aid in movement of nutrients and water through the plant
- Bacteria elicit a hormone response to insert the ear higher and support a second ear
- ROS (Reactive Oxygen Species) response microbes become more active later in the season
    - Stresses such as heat or drought increase become mitigated
- Slow acting, continuous action microbes facilitate micronutrient availability within the plant
    - Regulate the plant environment to support water movement and nutrient availability
    - Fields have shown reduction in temperature on hot Aug. days – less plant stress

What to watch for:

Improved seedling vigor with less purpling of plants due to phosphorus deficiency. Increased tillering on crops with such potential - when applied in furrow or as a seed treatment. Increased tonnage or improved forage quality, with larger pith area of stalks on corn for silage. Reduced daily heat stress symptoms. Improved leaf mass and nutrient transport to support yield.

Morphological response:

- Increased kernel size
- Second ear
- Additional set of brace roots
- Increased leaf size and surface area
- Better tip fill of the ear
- Thicker stalks
- Better root mass and standability

How to apply:

Seed: 1 fl. oz. per 80,000 seeds via seed treater. Can be co-applied with other products.
In furrow: 16 fl. oz. per acre and minimum of 5 gpa rate.
Foliar: 16 fl. oz. per acre with 10 to 20 gallons water. Ionfx may be applied with water alone or tank mixed with other products. While the window of application is not limited, earlier plant growth stages provide a better response. For corn or sorghum, V3-V7 would be ideal. For small grains an early tillering stage application leads to larger leaves, though applying up through flag leaf still favors yield.

Tank mixtures:

No surfactant is needed for the microbes to enter the plant, though a surfactant may be acceptable if tank mixing with other products. Perform a jar test to verify compatibility of product mixture. Do not use with antimicrobial water conditioners, or water containing levels not approved under EPA human drinking water standards. This includes copper, bleach, fluoride,

chloramines, chloride, bactericides, phosphoric or sulfuric acid. Do not use with propiconazole (Slant™, Tilt®, Quilt®…). Mixing with glyphosate may result in microbial mortality.

Cautions:
Should not use hormone-based plant growth regulators (PGRs) with this product because the combination may result in stunted plant growth. Conduct a jar test to verify tank mix compatibility.

Spray tip selection

TEEJET™ XR, XRC OR TEEJET TURBO		
	Line Pressure	Application Speed
Red Tip	20 psi	8 mph
Red Tip	30 psi	10 mph
Red Tip	Max 40 psi	12 mph
Brown Tip	20 psi	8 mph
Brown Tip	30 psi	10 mph
Brown Tip	Max 40 psi	12 mph

Application Standards:
Follow good sprayer (and line and nozzles) cleanout before using these biologicals. Don't mix concentrated microbials with concentrated pesticides or fertilizers.
For foliar application use a minimum of 10 gpa total solution
Aerial application is acceptable, but thoroughly clean the tank and line before using.
Screen size recommendation: Not smaller than 50 mesh. No tip screen required.
Residence time on the plant before rain (rainfast): 3 hrs.
Application temperature range: 40° to 85° F (4° to 29° C)

Improving yield:
For best results apply proper nutrient rates so they don't become the limiting factor. BioPryme can also support plant growth and maximize yield. BioPryme is applied later in the growing season, such as pre-tassel on corn or jointing on small grains. BioPryme contains plant nutrients and enzymes that enhance yield and facilitate movement of plant synthates to the grain.

Storage and use:
Store between 50° and 90° F in a place out of the sun. Use contents within 72 hrs. of opening the seal on the container. Shake container well before using. Keep jugs upright and don't "burp." This is a combination of living organisms in the jug so be mindful that it may swell or contract. The jug has a pressure sensitive seal and will self-regulate as designed.

Guaranteed Analysis:
Soluble Potash (K_20) 1.00% From potassium carbonate

Nonplant food:
Pseudomonas fluorescence 1.0×10^5 CFU/ml

Microorganisms exempt from CFR requirements – 40 CFR 725.

Packaging: 2 x 2.5g jugs, 275 gal. bulk shuttles