



Turn it On.

Questions and Answers

What is SYNC?

SYNC is a unique, proprietary adjuvant technology that is designed to enhance the performance and lengthen the disease control of both contact and systemic fungicides at reduced spray carrier volume. SYNC is a multi-component, 100% active surfactant system that is formulated to optimize the uptake and biological efficacy of a wide range of fungicides.

What are the components of SYNC?

SYNC's formulation is made up of three components that each play a specific role in optimizing fungicide efficacy. SYNC utilizes a two part surfactant system consisting of a carbohydrate-based surfactant (CBS) and an amine polymer complex (APC). SYNC also contains a pH buffer to optimize fungicide solubility.

What are carbohydrate-based surfactants?

Carbohydrate-based surfactants are organic compounds consisting of a chain of carbon atoms to which hydrogen and oxygen are attached in a 2:1 ratio, eg. sugars, starch, glycogen and cellulose.

What are amine polymer complex surfactants?

Amine polymers are large organic compounds containing nitrogen as the key atom in the amine functional group. They are polymerized by linking chains or rings of monomer units and can be further modified to alter their solubility under varying pH ranges.

What does each component do?

Each component plays a specific role in optimizing uptake. The CBS provides excellent spreading, wetting and sticking properties on the leaf surface. The APC modifies the leaf surface to ensure more rapid and efficient penetration of the fungicide active ingredient into the intracellular plant tissue, where the fungicide can effectively control the disease.



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How does SYNC work?

The CBS decreases spray droplet surface tension and optimizes the area of spray solution contact with the surface of the leaf. This exploits hydrophilic cutin and pectin channels in the leaf surface and facilitates the movement of water-soluble fungicides around waxy cuticle barriers and into the intracellular plant tissue. By optimizing the spray droplet's retention characteristics on the leaf surface and avoiding excessive spreading, and consequent run-off of the spray solution, the CBS provides a valuable function for contact fungicides as well.

The APC modifies the waxy cuticle on the leaf surface and optimizes the diffusion of oil-soluble fungicides through the waxy cuticle while preventing cellular damage beneath the spray deposit that could limit fungicide uptake and translocation.

Working together, the surfactants allow the fungicide to remain in a liquid phase that is available to the plant for a longer period of time.

The buffer component protects the fungicide from adverse pH ranges caused by variable spray water sources that could reduce fungicide solubility, availability and ultimately biological efficacy.

What makes SYNC different from other surfactants?

Ordinary nonionic surfactants, spreader-stickers, crop oils and drift retardants were not formulated to enhance the biological activity of the newer systemic fungicides, nor were they designed to optimize the performance of fungicides sprayed in reduced water volumes.

Ordinary surfactants may aid in enhancing coverage on the leaf surface but may not be capable of modifying the waxy cuticle to enhance the uptake of oil-soluble fungicides. Listed on the next page are the characteristics of ordinary adjuvants relative to fungicides:

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Answer continued:

Spreaders are old technology. They are designed to improve spray coverage but most likely will not be useful in improving penetration of both water-soluble and oil-soluble fungicides.

Super Spreaders have been used with fungicides in the past. They improve spray coverage; however, they either carry the fungicide off the leaf blade or they create an ultra-thin spray deposit that dries too quickly and traps the fungicide, hindering penetration into the plant.

Stickers are also old technology developed for contact fungicides.

While they may improve wash-off resistance of the spray deposit, they will likely trap systemic fungicides as they dry to a film-forming spray deposit.

Crop oils may improve the uptake of oil-soluble fungicides but have been shown to cause cellular damage under the spray deposit which has led to reduced translocation and bio-efficacy of the fungicide as well as phytotoxicity to the host plant.

Drift retardants alter spray droplet size and can limit both retention and coverage on the leaf surface.

SYNC was developed to optimize the biological efficacy of both the older contact fungicides and the newer fungicide technologies by avoiding the limiting attributes of existing adjuvant formulations. What makes SYNC a valuable tool is its proven ability to achieve as good as or better performance from fungicide applications at lower spray carrier water volumes. This allows superintendents to protect more turf, faster, with less interruption of play and with less labor.

Is SYNC a cationic surfactant?

No. SYNC is formulated as a nonionic surfactant. This avoids four key problems associated with cationic surfactants:

1. SYNC's nonionic formulation is compatible with a wide range of fungicide formulations. Cationic surfactants could cause physical incompatibility problems with the anionic inert components found in many fungicide formulations. This would manifest itself in plugged nozzles, messy sprayer cleanouts, disposal issues with unsprayable tankmixes and loss of valuable time in the battle of disease control.

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Answer continued:

2. Cationic surfactants have been found to cause significant phytotoxicity to host plants, causing many universities to specifically recommend against their use. SYNC has never demonstrated any risk of phytotoxicity in over 5 years of research.
3. Most fungicide labels specifically recommend the use of a nonionic surfactant, not a cationic surfactant. Using SYNC would not put superintendents at risk of being in violation of fungicide labels
4. Finally, cationic surfactants require a DANGER warning on their label because they are capable of causing severe and permanent eye injury. This may not be an appropriate or acceptable risk for superintendents to take with their staff.

What are the benefits of SYNC?

Because SYNC was formulated specifically for use with fungicides, it offers superintendents and other turf professionals

- Maximized fungicide performance against a wide range of turf diseases
- Greater longevity of disease control
- Improved turf health
- Optimized playing conditions
- Ability to reduce water volume, application time, labor, and interference with play

Where can I get more information on SYNC?

For more information about SYNC, please visit the Precision Laboratories website at www.precisionlab.com/sync or contact the Customer Service Team at 800-323-6280 for the name of your sales representative.