

# AGRICULTURE & TURF — TECHNICAL FAQ

## Surface-Applied SiO<sub>2</sub> Performance & Stress-Mitigation Systems

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### 1. What is this agriculture and turf technology?

This platform consists of **surface-applied, aqueous silicon dioxide (SiO<sub>2</sub>) systems** engineered to improve performance by **modifying the surface where environmental stress occurs first**.

These products are applied directly to:

- Crop foliage
- Turfgrass blades
- Turf infill and playing surfaces
- Bedding and surface environments

They do **not** treat irrigation water, soil chemistry, or plumbing systems.

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### 2. What problems are these products designed to address?

They are designed to reduce **surface-level abiotic stress**, including:

- Heat stress
- Drought and moisture imbalance
- UV exposure
- Mechanical wear (turf and infill)
- Environmental variability

They work by improving how surfaces interact with their environment, not by altering plant metabolism.

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### 3. Are these products fertilizers or nutrients?

No.

These products:

- Do **not** supply N, P, K, or micronutrients
- Do **not** replace fertilizer programs
- Do **not** act as nutrient sources

They complement existing fertility programs by helping plants and turf **cope with stress more efficiently**.

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### 4. Are these products pesticides, fungicides, or antimicrobials?

No.

They:

- Do not make pesticidal claims
- Do not kill insects, fungi, or pathogens
- Do not function as registered crop-protection products

Any observed improvements in resilience are the result of **reduced abiotic stress**, not pest control.

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### 5. Are these products biostimulants?

They are best described as **biostimulant-adjacent**, but not classical biostimulants.

They:

- Deliver biostimulant-type outcomes (stress tolerance, recovery, consistency)
- Work through **physical, inorganic surface chemistry**
- Do **not** rely on hormones, microbes, or biochemical stimulation

**Regulatory-safe positioning:**

*Inorganic, surface-applied SiO<sub>2</sub> performance enhancers for abiotic stress mitigation.*

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## 6. How do these products work? (Mechanism of Action)

After application, the system forms a **sub-micron inorganic SiO<sub>2</sub> microlayer** on the treated surface.

This microlayer:

- Chemically anchors to the surface
- Modifies surface energy and moisture interaction
- Reduces uncontrolled water loss
- Buffers heat and UV exposure
- Improves surface durability

It is **not a polymer film**, remains **breathable**, and does **not clog stomata**.

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## 7. What agricultural and turf surfaces can be treated?

The platform is designed for:

- Crop foliage (row and specialty crops)
- Turfgrass blades (sports, landscape, sod)
- Turf infill materials
- Bedding and surface environments

Each application uses the **same surface-engineering philosophy**, with formulation tuning for the specific surface.

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**8. Do these products replace other agricultural inputs?** They do **not** replace core agronomic inputs, but they can **replace or reduce stress-management products**, including:

- ✓ Anti-transpirants
- ✓ Kelp / seaweed biostimulants
- ✓ Amino-acid heat stress sprays
- ✓ Some moisture-retention surface additives

They do **not** replace fertilizers or pesticides.

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## 9. How are these products applied?

These systems are:

- **Surface-applied** (spray or treatment)
- Supplied as **aqueous concentrates or RTU**
- Diluted and applied using **standard spray equipment**

They are **not** installed into irrigation systems and are **not water-conditioning products**.

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## 10. Does application require DI water or special water quality?

No.

For dilution and application:

- Standard agricultural spray water is acceptable
- Deionized (DI) water is **not required**
- Typical field water quality is sufficient

This is intentional to support real-world farm and turf operations.

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## 11. Are these products PFAS-free?

Yes.

All agriculture and turf surface-applied systems:

- Are **PFAS-free**
- Do **not** use fluorinated silanes
- Do **not** rely on fluorinated surfactants

Hydrophobicity and durability are achieved through **engineered inorganic SiO<sub>2</sub> structure**, not fluorine.

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## 12. Are these products safe for crops, turf, and animals?

When used as directed, they are:

- Non-nutritive
- Non-film-forming
- Free of aggressive solvents
- Designed for **repeated use without surface damage**

They are engineered to be **surface-compatible**, not extractive or harsh.

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## 13. How are these different from traditional silicon products?

Traditional silicon products often:

- Act as nutrient sources
- Depend on uptake and metabolism
- Are highly alkaline

This platform:

- Works at the **surface interface**
  - Uses engineered inorganic SiO<sub>2</sub> networks
  - Focuses on **stress buffering**, not nutrition
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## 14. What this platform is NOT (important clarification)

These products are **not**:

- Water treatment systems
- Irrigation line conditioners
- Soil amendments
- Fertilizers or pesticides
- Film-forming coatings

They are **surface-engineering systems**.

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## **15. Key takeaway for agriculture and turf users**

These products improve performance by engineering the surface where environmental stress first occurs. They do not treat water, do not replace fertilizers, and do not act as pesticides. They reduce stress through physical, inorganic surface interaction.

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