



# Oxygen Engineering for the Root Zone

## Patent-protected

Nanobubble technology improving irrigation efficiency and crop performance.

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# Modern agriculture is optimized above ground, but hidden inefficiencies in the root zone are quietly limiting performance.



## Above Ground: Highly Optimized

- ✓ Machinery and automation
- ✓ Advanced inputs (seeds, fertilizers)
- ✓ Data analytics & monitoring
- ✓ Logistics and supply chain



## Below the Surface: Systems Underperform

- ⚠ Soil compaction and intensive irrigation
- ⚠ Reduced Oxygen and Carbon flow in root zone
- ⚠ Roots cannot access Oxygen efficiently
- ⚠ Restricted root development
- ⚠ Lower nutrient availability
- ⚠ Increased plant stress



Farmers compensate → more fertilizer • more water • more treatments → **higher costs, diminishing returns**

# We improve Oxygen availability in the root zone using nanobubble technology integrated directly into existing irrigation systems.



## Nanobubble Injection

Low-energy nanobubbles injected into irrigation water deliver Oxygen and Carbon directly to the root zone.



## Soil & Root Dynamics

Changes how water behaves in soil, improving Oxygen availability and overall soil water dynamics.



## Plug-in Integration

No change to existing farming practices. Seamlessly integrates with existing irrigation systems.



A facilitating layer, **not a replacement**

# Independent testing confirms that Bibtex improves root-zone efficiency, advancing the technology to TRL 5.

## Validation Partners



BGI Sustainable Foods Testbed



AmpliAqua Research Facility

## Rigorous Controlled Testing Methodology



Controlled hydroponic and bioptic environment with two identical production lines: a **Control group** and a **Bibtex-treated group**.



Shorter, denser root systems



Same total plant biomass



Less energy spent searching for nutrients



Confirmed mechanism: when Oxygen and nutrients are available in the root zone, plants no longer need to extend roots in search of resources.

TRL Progress

1

4

5

Current

8

Target



Granted Patents: US | EU | China | India | Brazil

## ✗ Limited Oxygen



Energy spent searching for resources.  
Results in elongated roots and greater plant stress.



### Same biomass, different energy allocation.

More energy directed to productive growth and less to searching for resources.

## ✓ Oxygen Available (Bubtex)



Energy focused on productive growth.  
Results in shorter, denser, and more efficient root systems.



Lower plant stress



Better nutrient absorption and use



Potential reduction in fertilizer and water demand



Hydroponic validation completed → **Next step:** soil trials (field testing)

# The same mechanism proven in controlled trials delivers fast and visible results in real agricultural environments.



## Field Validation

Effectiveness observed and confirmed in irrigated crops and turf systems in real-world conditions.



## Rapid Response

Consistent and visible biological responses within 24 to 48 hours after applying the technology.



## Agonomic Confirmation

Substantial improvement in root-zone conditions in real irrigation systems.



**Objective: Supporting the transition toward TRL 8**

# Improving root-zone Oxygen stabilizes the interaction between water, nutrients, and soil biology, increasing efficiency efficiency across system.



Bubtex acts as a **system** enabler. Improving Oxygen availability fundamentally changes the interaction between **water, nutrients, and soil biology.**



Fewer corrective interventions



Better response to fertilizers and treatments



Faster recovery from stress



Greater crop consistency

✓ Lower plant stress | ✓ Greater consistency | ✓ More efficient use of inputs

# With the technology validated, the focus now shifts from proving it works to scaling where it creates the most value.

Shift in focus: From “Does it work?” → “Where does it create the most value?”



## 1. Validate

High-impact use cases: water-intensive agriculture and controlled environments.



## 2. Optimize

Refine deployment models and optimize integration with irrigation systems.



## 3. Partner

Scale through irrigation providers and strategic global agricultural partnerships.



## 4. Adopt

Broad market adoption across multiple crops and geographies.

 **Long-term vision:** Bubtex as part of the core infrastructure for water and agricultural inputs.

# We are building a scalable platform to improve root-zone efficiency in water-intensive agricultural systems.



Scientifically validated root-zone technology



Protected intellectual property (20+ countries)



Compatible with existing irrigation infrastructure



Relevance confirmed in real agricultural systems



Target markets: Water-intensive agriculture | Controlled growing environments

We are seeking



Partners



Investors



Strategic collaborators

Our Mission

Building the future of root-zone efficiency in agriculture.

Why Now

Water scarcity makes root-zone efficiency more important than ever.

# Contact Us

 [In the Media](#)



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