



NUT CROPS: NANO BUBBLES HELP LEACH SALTS BY IMPROVING WATER INFILTRATION

Client Case Study: Maricopa Orchards

Type:	Unit Type:	Installed:	Benefits:	Size:
Inline Drip Irrigation	XTB	June 2021	<ul style="list-style-type: none"> Better infiltration, 20-inch improvement over control Salts leached from soil up to 46 inches 	400 trees, 10 rows, 40 trees per row

Maricopa Orchards, a family-owned farm in Fresno, California that grows mostly pistachios and almonds, was able to increase water infiltration into the soil aiding in salts leaching after adding Moleaer's XTTM nanobubble generator with oxygen nanobubbles.

Problem: Like most farms in the Sacramento Delta, Maricopa struggled with reduced water allocations, increased drought conditions, and declining soil conditions from elevated levels of sodium, boron, chloride and bicarbonate salts brought in from well water. High levels of salinity in the soil negatively impact plant health and is attributed to crop reduction.

A common way to combat high salinity is to leach the salts below the root zone, but with poor infiltration, this was not always possible. Instead, Maricopa applied gypsum to the soil to break up clay particles and improve infiltration. This process can be costly with materials and labor, and applying too much gypsum can lead to the elimination of beneficial nutrients like magnesium, iron, and manganese.

Maricopa sought a sustainable way to achieve better infiltration, improve soil health and leach salts below the root zone to improve their nut trees' root health and crop quality.

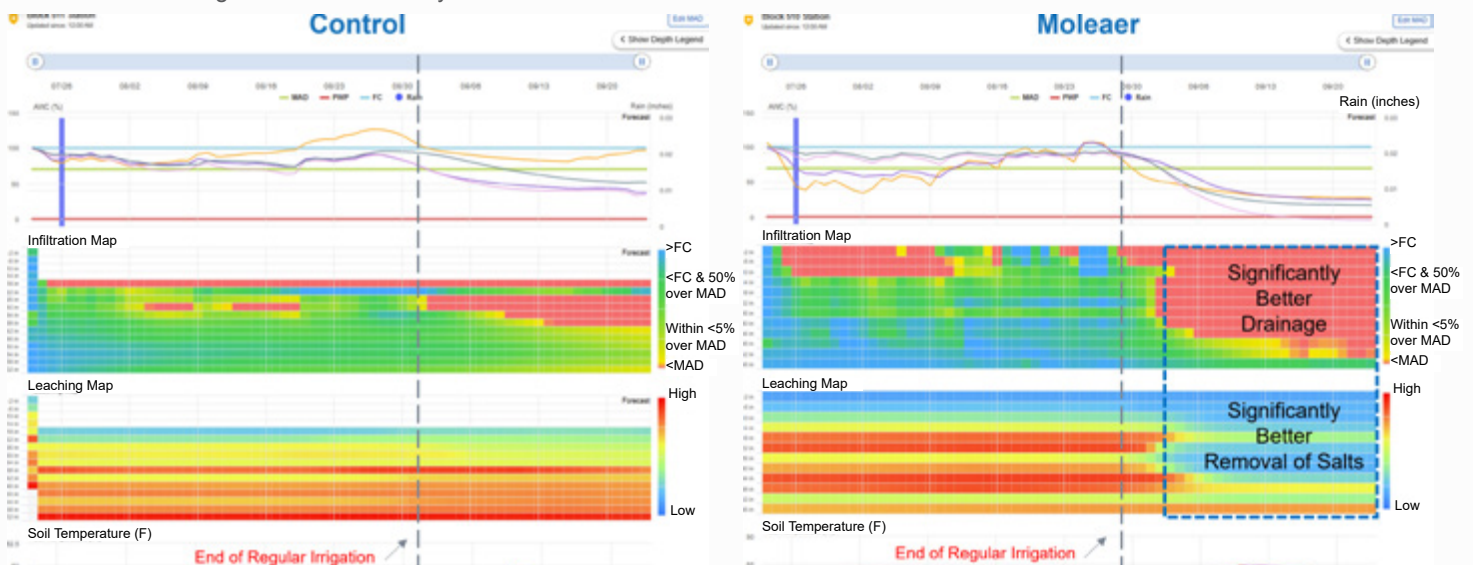
Solution: Joe Coelho, Maricopa's agronomy manager, selected Moleaer's nanobubble technology as a cost-effective solution because it delivers multiple benefits, including:

- Reduces the surface tension of water, allowing water to penetrate and infiltrate through the soil more easily

- Improves flocculation (or the aggregate of clay particles) of soils, improving soil structure and reducing soil compaction
- Increases ionic mobility of nutrients in the soil
- Increases dissolved oxygen (DO) levels in irrigation water
- Improves irrigation system hygiene through pathogen and biofilm control

During a trial period in one of the saltiest areas on the property, Coelho monitored the conditions of the soil, including moisture, infiltration, and salt levels at various depths. The nanobubble generator was installed inline in the drip irrigation system with an oxygen tank for pure oxygen gas. Oxygen nanobubbles were then injected directly into the irrigation system around 10 rows with 40 trees per row.

Coelho observed the nanobubble enriched water was able to infiltrate down to a depth of 46 inches, compared to only 26 for the control water. In addition, Joe saw that the 46-inch profile of soil was salt-free, showing that nanobubbles aided in leaching the salts below the root zone by reducing soil compaction, improving infiltration and increasing ionic mobility. The initial findings showed a significant improvement in water infiltration and salt leaching. With the consideration of many additional benefits, the Moleaer's nanobubble technology shows great promise," states Coelho, "The product could be a much more comprehensive solution to issues caused by soil and water salinity."



Learn how nanobubbles improve soil health with chemical-free nanobubbles. Download the eBook.

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