MOLEAER
ADVANCING NANOBUBBLE TECHNOLOGY

kapicua

NANOBUBBLES REDUCE SOIL COMPACTION BY MORE THAN 20%

Client Case Study: Giddings, Chile

Crop:	Flow:	Unit Type:	Installed:	Results:
Blueberries	25 GPM	Bloom 25	2020-2021	• 20% reduction in soil compaction • 17% improvement in fruit caliber • 13% increase in new shoot growth

Challenge

Growing in native soils can be challenging, especially in farming regions with cyclical drought and less than ideal soil conditions. Poor soil structure and microbiology contribute to lower root and plant health due to reduced water infiltration, percolation, and nutrient availability. Improving soil structure has traditionally taken years to achieve and can impact the bottom line.

Giddings sought a sustainable solution to improve soil growing conditions and irrigation water efficiency for their blueberry farm in Chile.

Solution

Kapicua and Giddings conducted a commercial application study from July 2020 to April 2021. The following variables were tracked: soil compaction, new shoot growth, fruit caliber (curd to pre-harvest) and phenology (curd to pre-harvest). Oxygen nanobubbles were injected into the main irrigation storage tank with a 50 % increase in dissolved oxygen (DO).

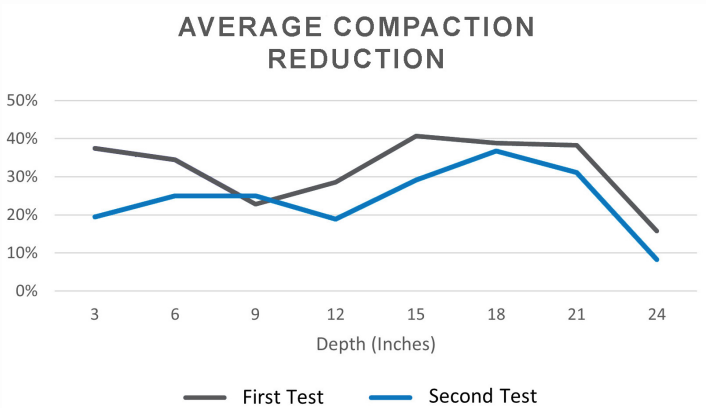
Nanobubbles increase soil flocculation, a natural process that pulls together individual clay particles into larger aggregates. Soil flocculation provides more soil pore space resulting in better water infiltration, root development and reduced soil compaction. Additionally, nanobubbles improve the soil rhizosphere by increasing microbial activity through improved aerobic conditions and soil fertility by breaking down larger aggregates of nutrients, making them more available to the roots.

Nanobubbles also reduce the surface tension and contact angle of water to improve penetration and infiltration of water through the soil profile. Nanobubble irrigation water helps to eliminate surface runoff and deep percolation losses leading to increased water application efficiency.

In this study, Giddings saw an over reduction in soil compaction of 20% compared to the control, 32% in the first round and 24% in the second. Reduction in soil compaction contributed to more water and nutrient availability to the roots leading to a 17% improvement in fruit caliber and a 13% increase in new shoot growth compared to the control.

The soil was tested by inserting a soil probe and analyzing the samples.

Moleaer's 25 GPM nanobubble generator was installed next to an irrigation water tank for continuous water treatment during the testing.



The first test reported a 32% decrease in soil compaction and the second test reported a 24% decrease as shown on this graph.

"Reduction in soil compaction had a significant impact on overall crop performance shown by increased new shoot growth and beneficial microbial soil activity resulting in improved fruit production and caliber. These results led to an interesting return on investment," stated Benjamin Labbe, founder and sales manager at Kapicua.

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