



NANOBUBBLES LEAD TO 27% CALIBER INCREASE IN CHILEAN ALMONDS

Client Case Study: Prodalmen

Crop:	Unit Type:	Flow:	Installation:	Results:
Almonds	XTB 250	250 GPM	6.6-million-gallon reservoir	<ul style="list-style-type: none"> Significant improvement in the renewal of spurs and shoots 61.3% total production increase 27% cumulative production of fruit over 25/27 (13 mm) caliber

Almonds are in high market demand around the world with the rise in popularity of almond-based products. Almond milk alone has a projected annual growth rate of 15.2% globally from 2022-2030.¹

In Chile, a major producer of the tree nut, more than 8,000 hectares are planted with almond trees, ensuring a consistent annual production of around 10,000-metric tons. Chilean consumers account for around 40% of that amount, with the rest intended for export.²

Prodalmen is one of the Chilean producers supplying this eager market with almonds. Since the 1960s, they've focused on producing and processing almonds using state-of-the-art technology, making them a market leader in Chile.³

Nanobubble infusion

At Prodalmen, irrigation water for the almond plantation comes from a 6.6-million-gallon or 25,000 m³ reservoir. To improve the quality of the water, and thus the almond production, a Moleaer XTB™ 250 GPM (56 m³/h) nanobubble generator was installed to treat the reservoir.

Nanobubbles improve irrigation water in reservoirs by enhancing water quality, soil health, and plant health.

Nanobubbles Improve Water Quality

Nanobubbles increase dissolved oxygen (DO) levels in the irrigation reservoirs with much higher efficiency (over 85%) than traditional aeration methods (15-25%). Higher DO improves aerobic water conditions effectively reducing algae growth and controlling water-borne pathogens. These high DO concentrations remain consistent when water is transported to the root zone.

Nanobubbles Enhance Soil Health

After water is pumped from the irrigation reservoir to the crops, nanobubbles provide additional benefits for soil and plant health. Because nanobubbles have a long life in water, they are present at the root zone to promote soil oxygenation and increased microbial activity.

Nanobubbles also reduce the surface tension of water to improve water infiltration and flocculate soils to reduce compaction, improving water availability to the plant roots.

Nanobubbles Improve Plant Vigor

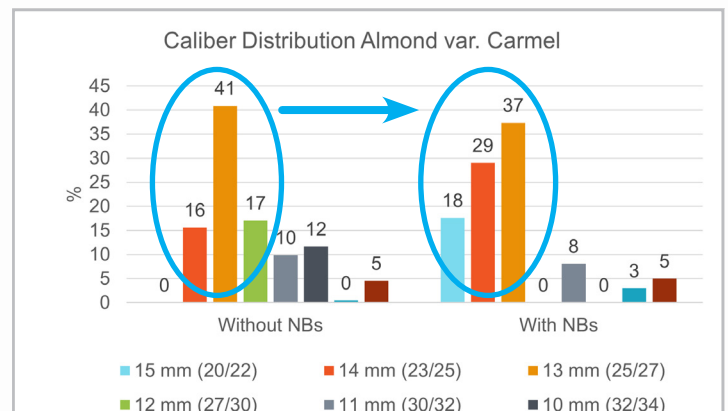
By improving water availability at the root zone and providing supersaturated levels of DO, nanobubbles boost plant vigor through better root development and improved nutrient and water uptake efficiency. The results are increased plant growth and crop quality.

Improved growth and production for almonds with nanobubbles

Nanobubble technology led to significant improvement in the renewal of spurs and shoots at Prodalmen. The almond grower saw a total production increase of 61.3% in the Non-Pareil variety.

The nanobubbles also led to larger caliber fruit. In the range of 25/27 (13 mm) and higher calibers, cumulative production of the Carmel variety was 83% versus 56% in the untreated crops – a 27% increase attributed to the application of nanobubbles.

Better quality fruit and higher crop production allow growers like Prodalmen to achieve higher returns and reduce their inputs.



¹ <https://straitresearch.com/report/almond-milk-market/>

² https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Tree%20Nuts%20Annual_Santiago_Chile_09-15-2020

³ <https://prodalmen.cl/>

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