

## ROCKY MOUNTAIN FRESH UPGRADES GREENHOUSE WITH INNOVATIVE NANOBUBBLE SOLUTION

Rocky Mountain Fresh, located in Longmont, Colorado, takes pride in delivering high-quality fresh produce. Specifically focusing on the farmer-to-consumer relationship, Rocky Mountain has developed direct sales channels with local partners that allow them to pick produce one day and deliver it to the customer's plate the next. Despite being a seasoned and successful grower, Rocky Mountain constantly strives to maximize the output of their facility and produce high-quality product all year-round. This commitment to excellence and innovative thinking made them the perfect candidate for Moleaer's innovative nanobubble solution.

Rocky Mountain focuses on growing primarily butter lettuce, swiss chard, kale, and basil in their 1040-square-foot deep-water culture tank in a basic hoop greenhouse. They had previously used standard diffusers to keep their water aerated but noted inconsistent growth throughout the year. Realizing the critical importance that oxygen plays in plant health and nutrient absorption, Rocky Mountain was looking for more effective ways to sustain higher levels of dissolved oxygen in the system. Recognizing the limitations of conventional aeration technologies, they selected Moleaer's innovative nanobubble generator to give them a competitive edge.

**Client:**

Rocky Mountain Fresh

**Type:**

Deep Water Culture

**Unit Type:**

25 XTB

**Installed:**

February 2018

**Benefits:**

400% Dissolved Oxygen Increase

25-33% Yield Improvement

6-Month Payback Period

**Tank Size:**

10,000 gallons



*Moleaer's nanobubble generator is easy to install and maintain, providing an immediate impact to Rocky Mountain Fresh's operation.*



*Rocky Mountain Fresh's grows several varieties of lettuce and other vegetables in their deep-water culture pond.*



*Nanobubbles super saturate the water with oxygen, making the plant roots healthier. This promotes better nutrient uptake and results in increased yield.*

Moleaer's 25-gallon-per-minute Boost nanobubble generator was quickly and easily installed in their deep-water culture tank. Compressed oxygen was supplied from a cylinder and injected into the water via the nanobubble generator to immediately increase the dissolved oxygen levels. Nanobubbles have several advantages compared to traditional aeration methods that make them ideal for hydroponic applications. First, the nanobubbles have neutral buoyancy, allowing them to stay suspended in water. As the plant roots absorb the dissolved oxygen, the nanobubbles continue to replace the lost oxygen, resulting in a stable elevated level of dissolved oxygen. Second, the Boost produces hundreds of millions of bubbles per milliliter, approximately 80nm (nanometers) in size. The large surface area of the bulk phase nanobubbles, which produce minimal off-gassing, contributes to the generator's near perfect oxygen transfer efficiency regardless of depth.

After installing the nanobubble generator, Rocky Mountain Fresh experienced a reduced growth cycle, from four weeks down to three weeks. They also saw an increase in volume per square foot of 25-33%. The reduced cycle combined with increased yield equated to an increase of over \$25,000 in revenue per year and a six-week payback period.

"We are thrilled with our results after installing the Moleaer nanobubble generator," said Jeremy Marsh, owner of Rocky Mountain Fresh. "Not only did we experience a 25% reduction in growth cycle, but we were able to achieve a higher yield per square foot as well. Combined with the easy installation and quick payback period, I see this as the new standard for hydroponic facilities around the world."

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