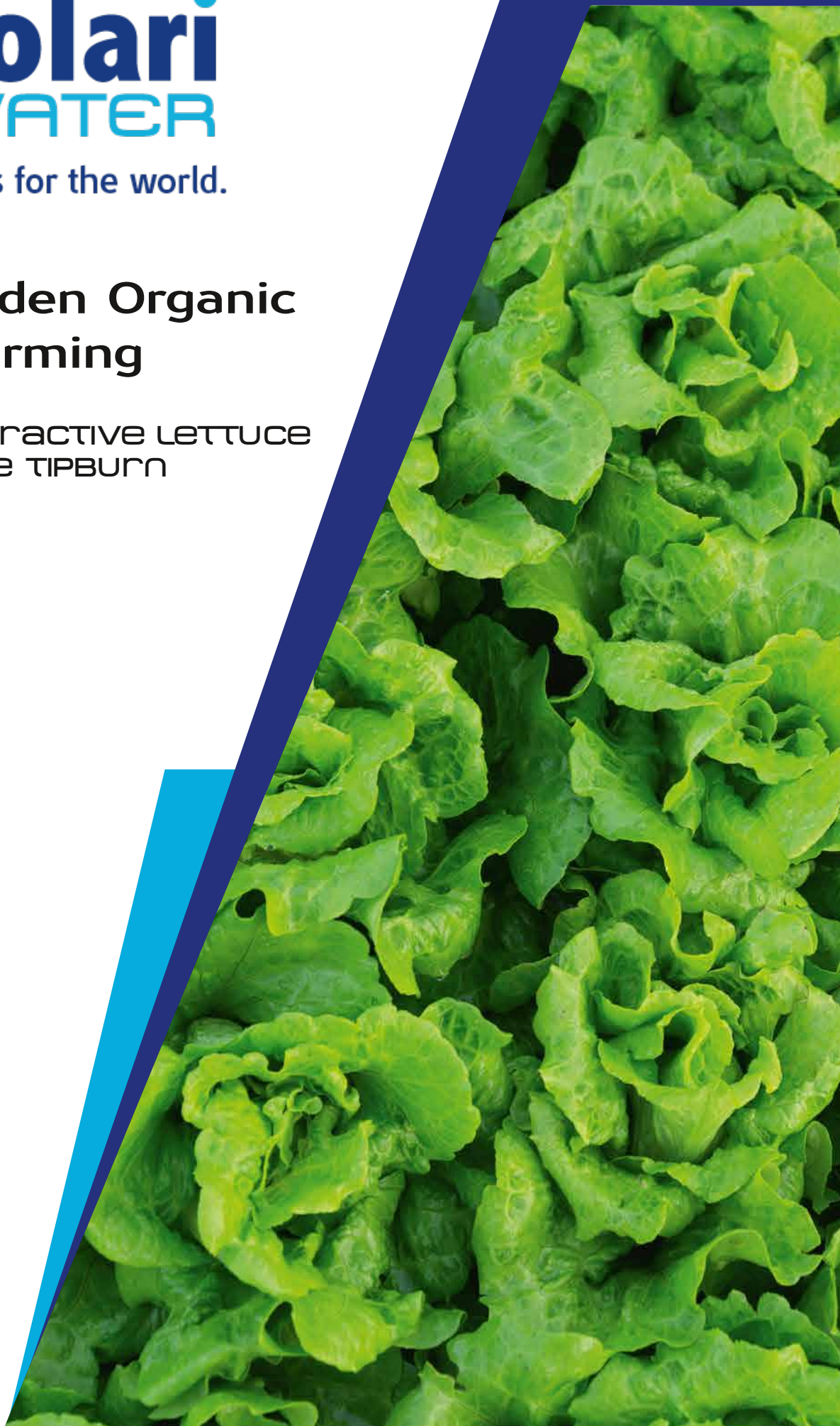




Water solutions for the world.

Mari's Garden Organic Lettuce Farming

CULTIVATE ATTRACTIVE LETTUCE
WITH NO MORE TIPBURN



Mari's Garden Organic Lettuce Farming

Mari's Gardens features a large selection of plants and produce on 18 acres. They specialize in organic farming and are the largest aquaponics farm in Hawaii. Aquaponics combines growing plants hydroponically, and growing fish through aquaculture. On their farm they produce tilapia and Chinese catfish. The water from the fish tanks they use to produce high-quality Manoa lettuce, green oak leaf, red oak leaf. Apart from lettuce, they also produce mizuna, spinach, tomatoes, cucumbers and lychees. Their method of farming is sustainable, organic and are food safety certified.



TIPBURN CHALLENGE

Manoa lettuce is a type of mini lettuce that has a uniform, compact, upright shape and is very popular in Hawaii. The manoa lettuce is locally grown in Hawaii. Consumers use manoa lettuce in place of any other lettuce, such as romaine and butter lettuce. Manoa lettuce is popular with the local consumers. The variety is susceptible to tipburn. Tipburn is the breakdown of leaf tissue and results in brown dried out spots on the leaves. Tipburn is a big problem as it is reducing the sellable product by 25%.

Tipburn also reduces growth and results in a smaller crop. A problem in Hawaii is that the irrigation water is warm 23.9 °C (75 °F). In the morning and in the afternoon, temperatures can go up to 26 °C (79 °F). Mari's Gardens goal was to improve the production quality by growing larger, sturdier crops and eliminating tipburn.



NANOBUDDLE BENEFITS

Mari's Garden opted for an agriGaLF. They installed the agriGaLF onto a 2.6 m³ (700 gallon) nutrient feed tank. The nutrient feed tank connects to a hydroponic rafts gutter system of 15,000 heads of lettuce. The nutrient feed water recirculates all the time in this closed loop system.

Mari's Garden started the trial recipe running the ultrafine bubble generator in intervals of 2 minutes on and 20 minutes off. The result was an increase of DO levels from 6.5 to 7.8 mg/liter. Higher DO levels reduced the amount of tipburn problems. After 2 weeks they increased the operation time from 2 minute to 10-minute intervals. Now the DO levels were up to 8.43 mg/liter.

Upon achieving these DO levels, the tipburn problems disappeared. Increasing their sellable product immediately by 25%. On top of that Mari's Garden was able to grow lettuce with a higher EC which resulted in a firmer crop. In consideration of these results, the agriGaLF can be a lucrative solution for many greenhouse operations. Especially those with warm irrigation water and low DO levels.



QUOTE

"I am proud to grow organic vegetables, including Manoa lettuce. The agriGaLF improves the quality of our produce greatly" — Fred Lau, owner of Mari's Garden



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