ENVIROTECH
an Arxada company

Safeguard Your Leafy Greens with Peracetic Acid

EBOOK

DISEASES AT EVERY STAGE OF THE growing process pose significant threats to crop yield, profitability, and food biosecurity. This is especially true for leafy greens, many of which are eaten raw and minimally processed. Harmful bacteria can make people sick and damage your reputation for quality and safety.

Traditionally, growers and processors have used bleach to protect their leafy greens from bacteria. However, these solutions can also be highly corrosive and damaging to the environment. Too much bleach usage can permanently damage soil and crops.

Peracetic acid (PAA) is the new "green standard" for protecting every phase of growing leafy greens, from seed and soil to harvest and transport. Its efficacy, safety, and ease of use are unmatched, and it's more highly oxidizing than bleach sanitizers, meaning a little goes a long way, and is more stable in dilutions with higher pH ranges, providing exceptional flexibility.

Here's how PAA can help safeguard your leafy greens:

Pre-Planting

Food safety best practices start in the field with effective seed and soil treatments to eliminate harmful contaminants. Unlike bleach and its alternatives, PAA is safer for regular use and has far fewer environmental impacts so that you can protect your valuable crop investments.

Seed and Soil Treatment

- **Challenges:** Soilborne diseases like damping-off, root rot, and vascular wilt can threaten crop production, jeopardizing the vitality and yield of leafy and cruciferous greens.

- **Solutions:** Embrace peracetic acid as a direct soil treatment and pre-plant application to fortify your leafy greens against soilborne diseases and ensure robust and thriving crops. **Peragreen® 5.6% sanitizer** may be used as a direct soil and seed treatment, pre-plant application during seeding or transplanting, and periodic soil treatment up to the day of harvest. It can be applied as a curative application or as a weekly preventative.

Irrigation

- **Challenges:** Leafy greens growers producing crops like spinach, cabbage, romaine and iceberg lettuce must prioritize clean, efficient irrigation—especially during drought conditions. Contamination from nearby animal farms also poses a risk, potentially leading to quarantined produce.

- **Solutions:** Our PAA-based products, **Peragreen® 5.6% sanitizer** and **Peragreen® 15% sanitizer**, can help improve water uptake and overall crop health when growing leafy greens under drought stress conditions. Additionally, **BioSide™ HS 15% antimicrobial solution** and **Perasan® A antimicrobial solution** help kill up to 99.9% of harmful bacteria such as *E.coli* and *Salmonella* in agricultural of pe-harvest irrigation water when used as directed. These versatile sanitizers can be used pre-harvest to post-harvest to help enhance crop health, reduce foodborne illness risk, and improve food safety.

Growing and Harvest

Keeping your leafy green vegetables thriving and hardy in the field — through multiple harvests — is the next step toward ensuring your leafy green crops stay healthy and safe to eat. Peracetic acid is ideal throughout the growing season to prevent foliar diseases every day until the final harvest.

Foliar Treatment

- **Challenges:** Devastating diseases can impact the health and productivity of leafy greens, presenting a formidable challenge for growers. Fungi, bacteria, or viruses can cause foliar diseases like powdery mildew, blight, and anthracnose. These diseases can spread quickly and easily from plant to plant, so taking measures to prevent them is essential.

- **Solutions:** By implementing proactive treatment schedules with PAA foliar applications like **Peragreen® 5.6% sanitizer**, you can effectively combat a broad spectrum of plant diseases, safeguarding the vigor and yield of your leafy green crops. Growers can apply PAA-based foliar treatments as a preventative measure every 5-7 days or as a rescue treatment for emergent foliar diseases. Once it oxidizes on the surface leaves of crops, there is no residual or residue left behind.

Post-Harvest

- **Challenges:** Post-harvest spoilage and contamination by bacteria can negatively impact leafy greens' quality and shelf life. Leafy vegetables undergo various stresses post-harvest, and further processing steps can cause leaves to tear and break. Breaching the epidermis alters the structural and nutrient conditions for leafy greens, resulting in increased leaf microbiota and entry of human pathogens.

- **Solutions:** Current measures to control the quality of lettuce during washing include the use of chemicals like bleach; however, questions regarding the harmful carcinogenic bleach byproducts such as dichloromethanes have prompted research for alternative solutions with peracetic acid (PAA). PAA-based sanitizers like **BioSide™ HS 15% antimicrobial solution** and **Perasan® A antimicrobial solution** effectively reduce harmful bacteria like *E. coli*, *Salmonella*, and *Listeria* during post-harvest processing of fresh-cut leafy greens. They are particularly useful in flume washes, enhancing food safety and reducing contamination.

Transport and Sale

The fight against harmful contaminants doesn't stop with the harvest; packing and transport can also invite disease and damage produce. Disinfecting and sanitizing crates, trucks, and buggies is essential for this final phase of leafy green protection.

- **Challenges:** Green leafy vegetables need an appetizing appearance to sell, and transportation can cause problems with biocontamination, wilt, and post-harvest foliar diseases. Fresh leafy greens like lettuce can be consumed raw and are susceptible to food-borne bacteria if contaminated.

- **Solutions:** Testing results at the laboratory and industrial scales confirmed that during the processing of fresh-cut produce, where the accumulation of soil, debris, and other plant exudates can negatively affect washing, a PAA solution is an effective and safe wash water sanitizer that can potentially be used at the industrial scale. (International Journal of Food Microbiology).

ENVIROTECH
an Arxada company

Put your new knowledge about PAA and leafy greens to work and enjoy safer, more abundant crops throughout the growing season.

Explore our full range of formulations, including **Peragreen® 15% sanitizer**, **Peragreen® 5.6% sanitizer**, **BioSide™ HS 15% antimicrobial solution,** and **Perasan® A antimicrobial solution**. Each product is designed explicitly for holistic crop protection from seed to post-harvest, including vegetable washing and sanitizing. These formulations help safeguard crops and reduce spoilage and losses at every growth stage.

Our proprietary PAA solutions are EPA-registered, and used by leafy green growers throughout the United States.

We are committed to agricultural excellence and food safety with our safeguards for everyday living. **Contact us** to learn more.

500 Winmoore Way
Modesto, CA, 95358, USA

envirotech-customerservice@arxada.com
envirotech.com

Toll Free: (888) 563-2254
Fax: (209) 581-9653