

Field Test of Tomato Pack House with Bluezone Fresh Preservation Technology

Bluezone's ultraviolet enhanced oxidation technology is a breakthrough approach to air purification; Bluezone kills or converts chemical and biological impurities inside a self-contained reaction chamber using both oxidation and ultraviolet irradiation.

Objective

Test the anti-microbial performance of the Bluezone® Fresh Preservation Technology Model 2400 in a packing shed where hydroponically grown tomatoes are packed and outbreaks of mold have led to losses of product.

Methods and Materials

The anti-microbial performance of Bluezone was evaluated by conducting before and after air sampling at three locations within the pack shed using standard bio-aerosol sampling procedures. To quantify Bluezone's impact, sample plates were incubated and counts made of the resulting colony forming units (CFUs).

The pack shed has dimensions of 45m x 35m and a ceiling height of 5.2m. Three Bluezone units were installed by placing these under conveyors and packing equipment.



Figure 1: Location of Bluezone Model 2400 under conveyor in tomato pack house

A MicroBio MB1 Bioaerosol Sampler was positioned inside the pack shed and connected to

a vacuum pump. The sampling procedure was as follows:

- Install a Potato Dextrose Agar (PDA) Petrie dish in the sampler and start the vacuum pump drawing 50 liters of air on to each dish.
- Remove PDA dish from the sampler, cover dish with lid and place in an incubator at 20°C for 72 hours.
- After 72 hours, remove PDA dish and count the colony forming units (CFUs).

Results

Results show a clear reduction in number of CFUs with Bluezone in operation, with quantitative reduction of at least 30% over the duration of the test. The molds pictured were identified as a mixture of *Penicillium* and *Rhizopus stolonifer*.



Figure 2: Sample plates from air sampling before Bluezone



Figure 3: Sample plates from air sampling after Bluezone

Conclusion

Installation of the Bluezone units in this environment resulted in significant reduction of mold CFUs and retardation of their growth time.