



Stabilized Aqueous Ozone and the Shelf Life of Cut Roses



ROSE STATS

- Premature wilting of cut roses results in an economic loss for growers; on average about 20%, but up to 50%.
- Shelf-life of cut roses is directly related to water uptake.
- Addition of antibacterial compounds to cut rose storage water increases water uptake, enhancing shelf-life.





CURRENT ANTIBACTERIALS

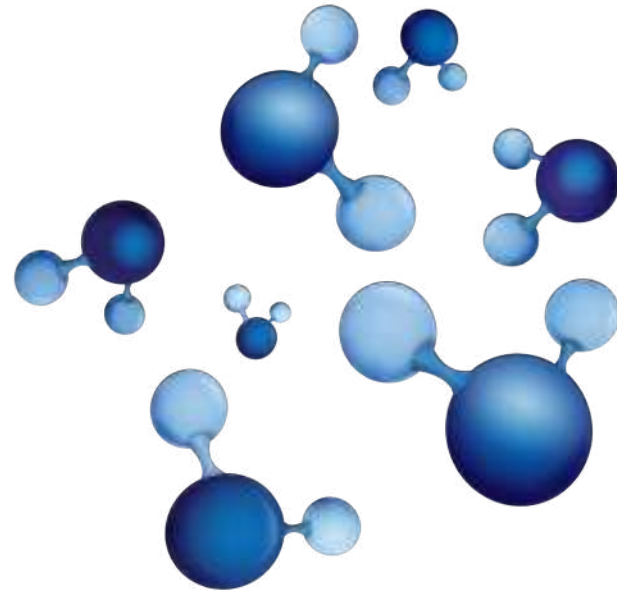
In the cut rose industry, a lot of money is spent on antibacterials that have limited effectiveness.

Antimicrobial Agent	Problem
HQC	Expensive, Resistance
Chlorine	Toxicity
Acid	Expensive, Moulds, Toxicity
Sugars	Provides bacteria with C



STABILIZED AQUEOUS OZONE (SAO™): An Ideal Candidate

- Less expensive than current antibacterials
- Safer for both roses and workers
- More effective





RESEARCH

To determine the efficacy of SAO at increasing the shelf-life of cut roses.





EXPERIMENTAL SET UP



Controlled Climate Chamber



RESULTS

Aesthetic Appearance



Day 5 – Deionized Water



Day 5 – SAO Water



RESULTS

Bacteria Problems



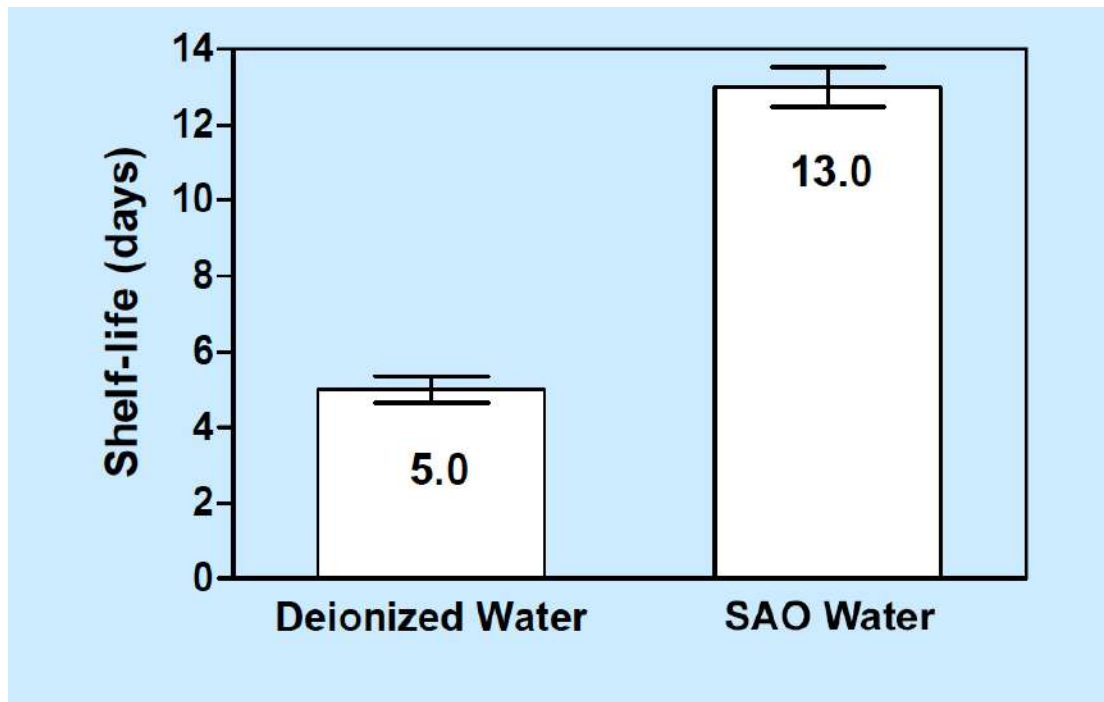
Cut rose end in
deionized water



Cut rose end in
SAO water



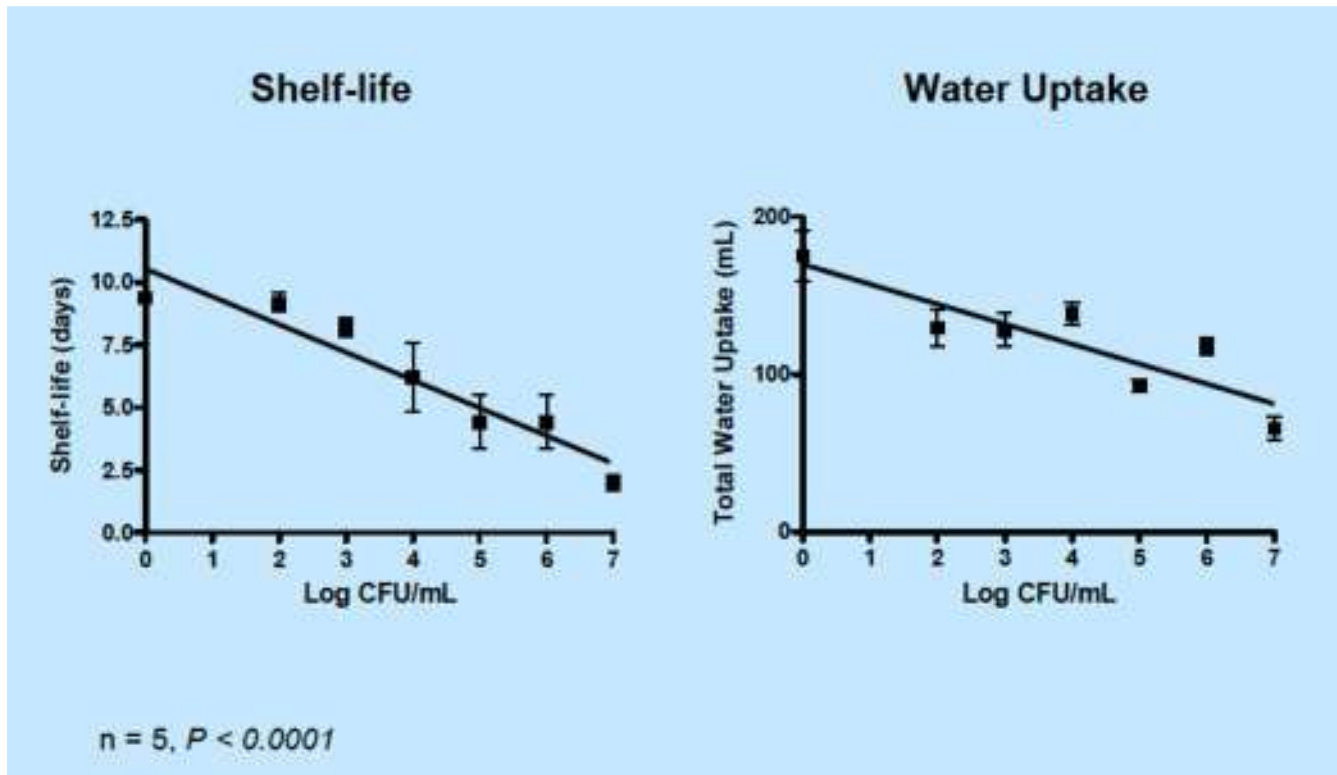
SHELF-LIFE



Criteria: Development of bent neck, petal/leaf discolouration, petal/leaf wilting, petal/leaf abscission

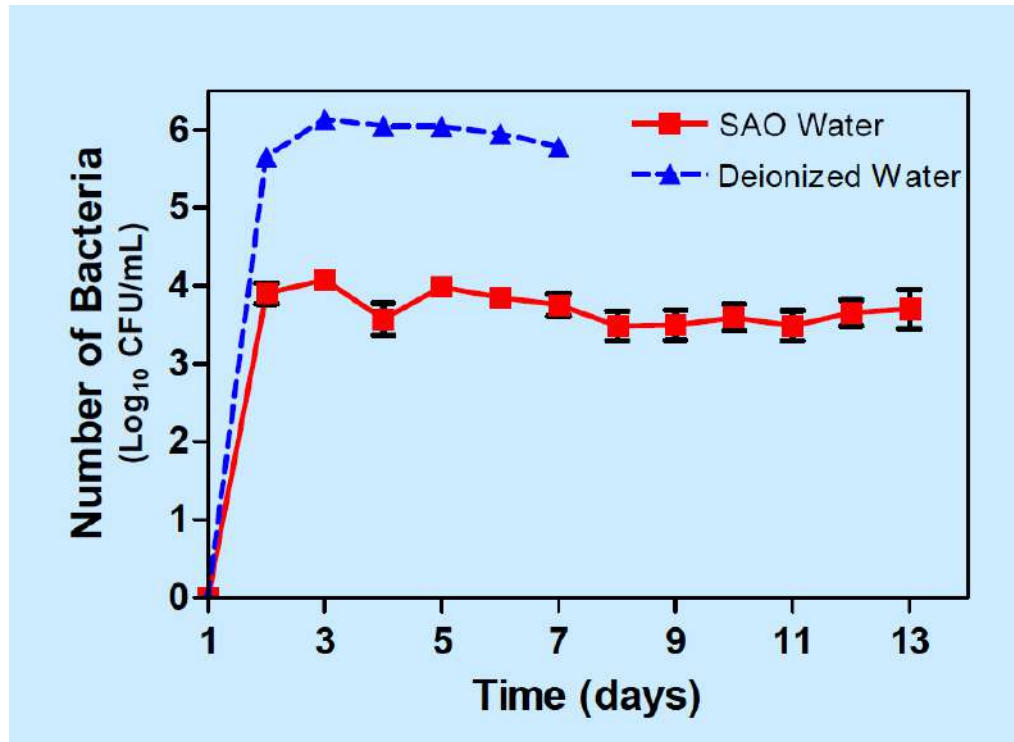


BACTERIA & ROSE HEALTH



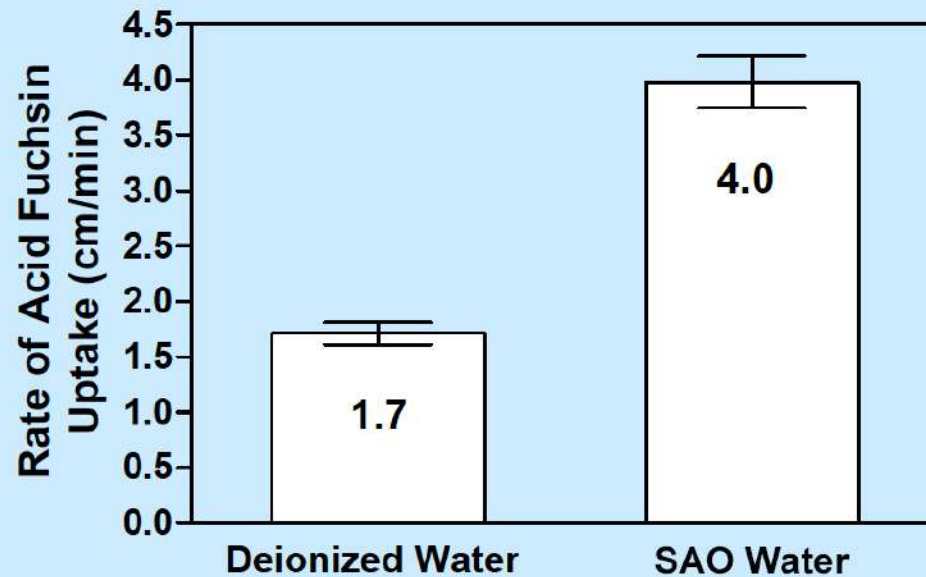


BACTERIA IN STORAGE WATER



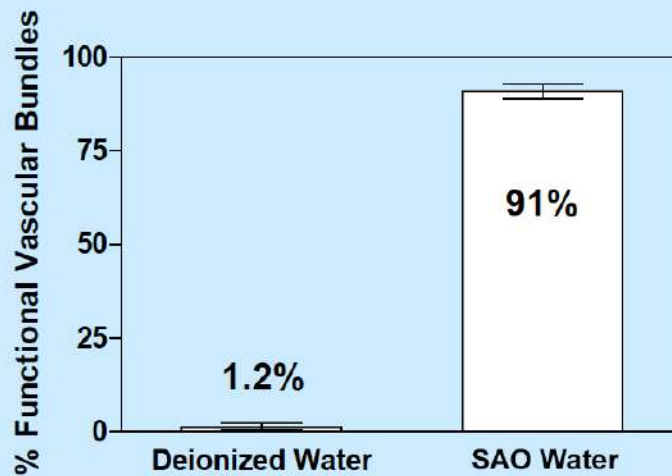


ACID FUCHSIN DYE UPTAKE



$n = 10, P < 0.0001$

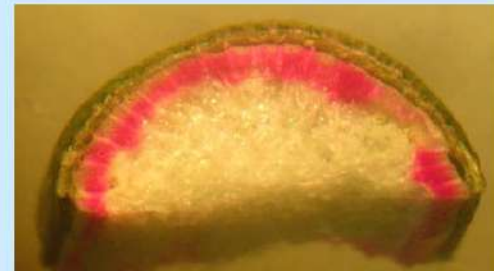
ACID FUCHSIN (cont'd)



Deionized Water



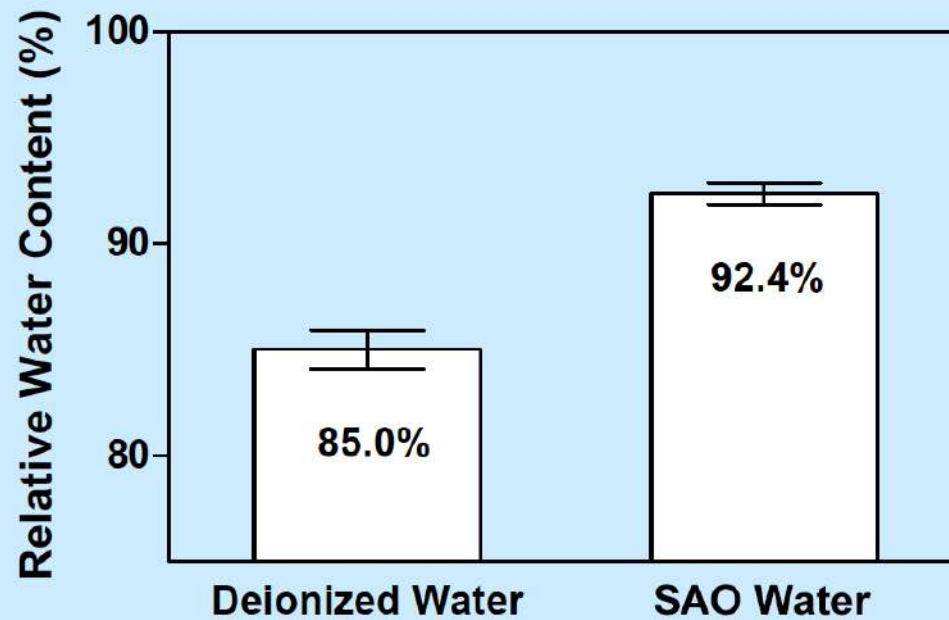
SAO Water



$n = 10, P < 0.0001$



RELATIVE WATER CONTENT



$n = 10, P < 0.0001$



EVALUATING SAO

- SAO™ (Stabilized Aqueous Ozone) was effective at reducing the bacterial load in rose storage water
- Roses treated with SAO had three times longer shelf-life
- No sign of toxicity to SAO was seen at concentrations up to 5.5 ppm

