

INNOVATION

Effective, safe biofungicide formulations (Serenade ASO® and Serenade Max®) for use in fruit, nut, vine, and vegetable crops based on a naturally occurring soil microorganism (*Bacillus subtilis* QST713).

ACCOMPLISHMENTS

- ▶ Serenade biofungicides have been tested in over 1200 field trials on 53 crops in 23 countries, including the US.
- ▶ AgraQuest, Inc. was awarded the 2003 EPA Presidential Green Chemistry Award in 2003 for developing these bacterial-derived fungicides.
- ▶ Serenade biofungicides have been approved for use in both organic and conventional production systems.

COMMERCIALIZATION

- ▶ Serenade ASO® was registered by the US EPA in 2000 and is registered for use on 139 crops and over 50 diseases. It is now sold in 15 countries.
- ▶ In 2003, Serenade® biofungicides were used on 78.2% of Florida tomato acres, 15.1% of California premium wine grape acres, and 17.4% of California lettuce acres.
- ▶ Serenade Max® is a new concentrated wettable powder that is approved for organic production to prevent fungal and bacterial diseases of fruit, nut, vine, and vegetable crops.



SERENADE® TREATED GRAPES WITH UNTREATED CONTROL

IMPACTS

- ▶ Serenade® formulations are non-toxic to animals and to beneficial organisms including lady beetles, lacewings, parasitic wasps, earthworms, and honey bees. The use of Serenade® formulations as fungicides in agriculture will reduce toxic effects and preserve biodiversity.
- ▶ Due to their complex, novel modes of action, use of Serenade® formulations in Integrated Pest Management programs can help limit development of resistance to synthetic fungicides.
- ▶ Serenade® formulations are approved for use in organic production and provide organic growers, who have few product choices, with important tools for combating disease, improving quality, and increasing yields.

SBIR COMPETITIVELY AWARDS SMALL BUSINESS GRANTS FOR INNOVATIVE RESEARCH THAT HAS THE POTENTIAL OF SOLVING IMPORTANT AGRICULTURE AND RURAL DEVELOPMENT PROBLEMS.