AVIV™

ADVANCED MICROBIAL FUNGICIDE

PRODUCT OVERVIEW

AVIV™ - ADVANCED MICROBIAL FUNGICIDE

A potent strain of beneficial bacteria and patented formulation combine to create a microbial fungicide *unlike any other.*

OVERVIEW

AVIV is a microbial fungicide based on a patented strain of *Bacillus subtilis.* AVIV delivers broad spectrum disease control both in soil and on plant surfaces. AVIV is offered as a suspension concentrate (SC) produced using a patent-protected process that results in a very efficient formulation, using about 40% less product than leading competitors.

AVIV's biological nature makes it the ideal complement to both organic and conventional production programs. With no MRL and short preharvest and re-entry intervals, AVIV can easily be integrated into production programs to improve yields and disease control results.

POWERFUL STRAIN

The active ingredient in AVIV is a powerful strain of *Bacillus subtilis* IAB/BS03. The strain in AVIV is especially prolific, meaning far smaller amounts of AVIV's AI are needed per acre than similar microbial fungicides. The unique manufacturing process of AVIV results in an endospore that is resistant to unfavorable environmental conditions such as drought, salinity, extreme pH, radiation, and solvents. AVIV can be tank-mixed with a wide variety of other crop protection products, including bactericides like copper.

ADVANCED FORMULATION

AVIV uses a patented manufacturing process to optimize the bioavailability of the product's active ingredient. This advanced process means AVIV solubilizes completely in the spray tank, minimizing the risk of clogged application equipment and eliminating deposit on treated crops. AVIV is colorless and odorless. Most importantly, increased bioavailability of the AI means AVIV use rates are much lower than those of other *Bacillus*-based fungicides.

BENEFITS OF AVIV

- Effective against both bacterial & fungal diseases
- One product to control both soil-borne and foliar diseases
- No MRL, exempt from residue tolerance
- Very low use rate
- Approved for greenhouse and aerial uses
- Restricted-entry interval (REI) of 4 hours
- Pre-harvest interval (PHI) of 0 days
- For use in conventional, sustainable and organic production models

THREE WAY CONTROL

❶ BIO-ACTIVE MOLECULES	❷ PLANT DEFENSE	❸ BIO-ARMOR
Multiple classes of natural chemistry are produced by AVIV both during the manufacturing process and on the treated crop. These molecules work synergistically to degrade pathogen membranes.	Crops treated with AVIV are primed to defend themselves against pathogens. Molecules in AVIV trigger plant metabolic processes which result in reduced infection.	AVIV is based on a beneficial bacterium that quickly colonizes treated plant parts and builds a defensive film, preventing pathogens from gaining access to the crop.
Direct Effect	Induced Effect	Direct Effect

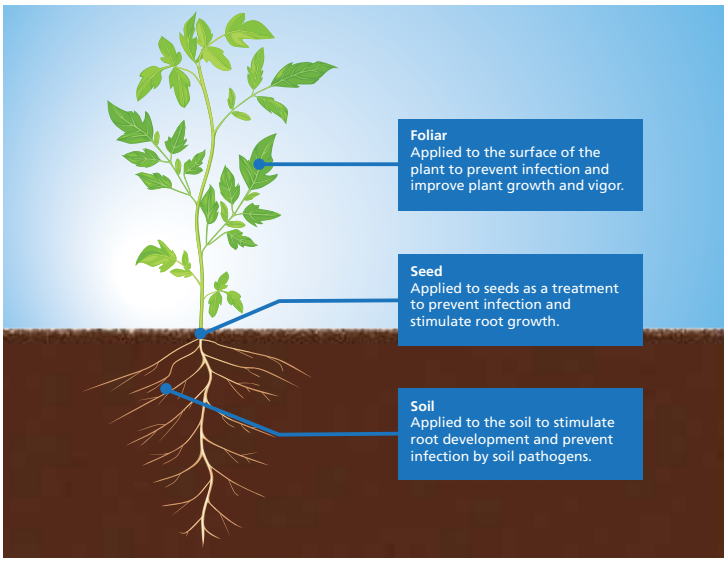
DISEASES CONTROLLED

AVIV is effective against a wide spectrum of fungal and bacterial diseases, both in the soil and on the surface of plants. AVIV should be applied preventatively, when climactic conditions favor the development of disease.

Diseases Controlled
Rot diseases like *Botrytis*, *Sclerotinia* and *Monolinia*
Powdery mildews
Downy mildews
Apple scab (*Venturia inequalis*)
Bacterial diseases like *Xanthomonas*, *Pseudomonas*, *Clavibacter* and *Erwinia*
Late blight (*Phytophthora infestans*)
Anthracnose
Alternaria
Soil diseases like *Rhizoctonia*, *Pythium*, *Phytophthora* and *Verticillium*

USES

- Applied in preventative programs by foliar application, soil drench, soil injection or in-furrow spray, AVIV protects against fungal, bacterial and soil-borne diseases and improves crop health.
- Within integrated pest management programs, AVIV can be used to replace other fungicides, reducing overall chemical load and residue.
- AVIV is part of FRAC Group F6 (membrane disruption) and can help prevent the development of resistance to chemical fungicides.
- Applications of AVIV 1-2 weeks prior to harvest reduce the pathogen load on harvested fruit, extending shelf-life and suppressing storage diseases.



GROWTH PROMOTION

The active ingredient in AVIV is a Plant Growth Promoting Rhizobacterium. PGPRs live in soil and along the surfaces of roots and promote plant growth directly by increasing levels of important nutrients like nitrogen, phosphorus, potassium and essential minerals. PGPRs also modulate levels of plant hormones like auxins, cytokinins, gibberellins and others. These hormones directly influence plant growth processes.

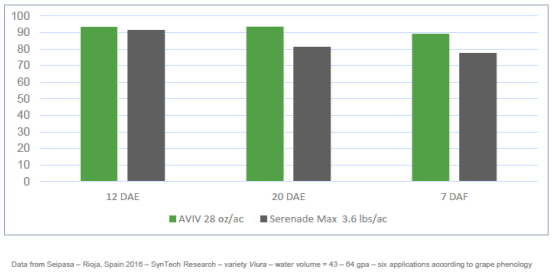
SAFETY PROFILE

AVIV offers a high degree of safety to growers, treated crops, the environment, pollinators and neighbors. The active ingredient in AVIV, *Bacillus subtilis*, is rated generally regarded as safe (GRAS) by US-FDA and is presumed safe by the European Commission. *Bacillus subtilis* strains are used as probiotics in human and animal health.

OMRI LISTED® For Organic Use

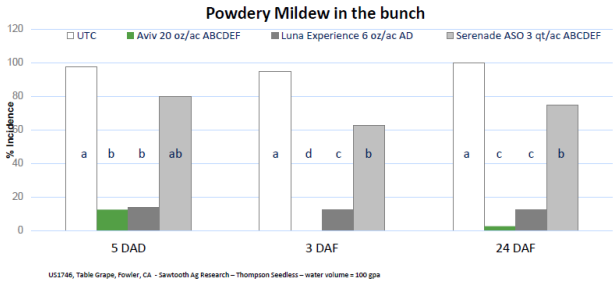
Can be used for organic production.

AVIV delivers control of *Botrytis cinerea* ≥ the biopesticide standard (grape)



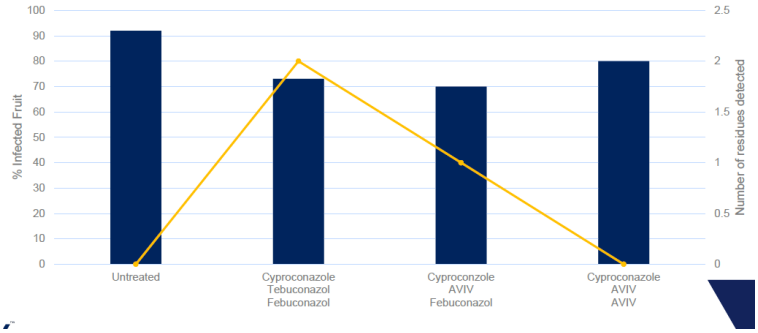
Data from Seipasa – Rioja, Spain 2016 – SynTech Research – variety *Viura* – water volume = 43 – 64 gpa – six applications according to grape phenology

AVIV Controls Vine Powdery Mildew on par with leading Chemical Fungicides (grape)

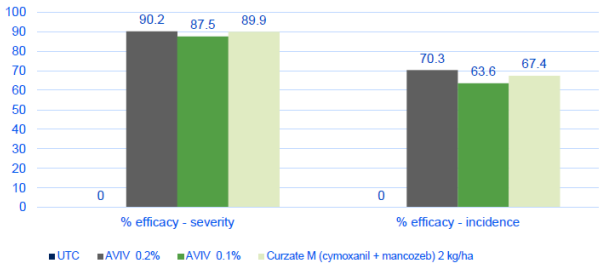


US1746, Table Grape, Fowler, CA - Sawtooth Ag Research – Thompson Seedless – water volume = 100 gpa

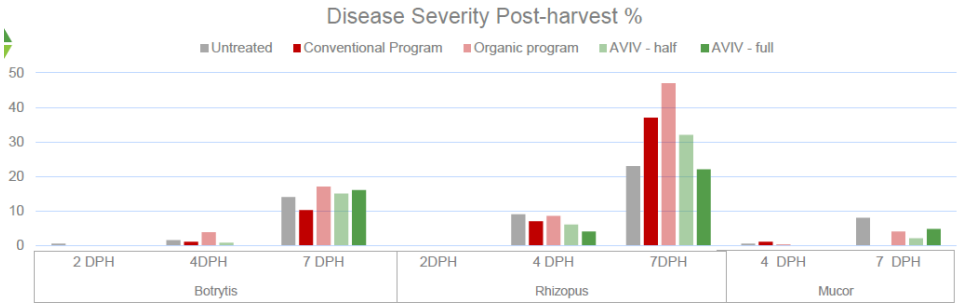
Reduction of post-harvest *monilinia* in peaches with reduced detectable residue



AVIV controls downy mildew of lettuce (*Bremia lactucae*) comparably to synthetic standards



Reduction of post-harvest infection in strawberries



	A	B	C	D	E	F	G
Untreated	Untreated	Untreated	Untreated	Untreated	Untreated	Untreated	Untreated
Conventional Program	Rovral	Elevate	Switch	Elevate	Switch	Elevate	Switch
Organic Program	Serenade Optimum	Serenade Optimum	Serenade Optimum	Serenade Optimum	Serenade Optimum	Serenade Optimum	Serenade Optimum
AVIV Program – half dose	AVIV 15 oz	AVIV 15 oz	AVIV 15 oz	AVIV 15 oz	AVIV 15 oz	AVIV 15 oz	AVIV 15 oz
AVIV Program – full dose	AVIV 30 oz	AVIV 30 oz	AVIV 30 oz	AVIV 30 oz	AVIV 30 oz	AVIV 30 oz	AVIV 30 oz

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