

## Stoller Solution to improve plant defenses and its response capacity\*

### Can I defend my crop against pathogens only with proper nutrition?

The Stoller's Formulation Technology designed for **Defense** provides the micronutrients copper and manganese, responsible for activating enzymes that form biochemical (phytoalexins) and physical (lignin) barriers. This allows plants to improve their defenses naturally to face unfavorable situations. In addition, they participate in the antioxidant response that faces the attacks of pathogens, which favors the recovery of the plant.



### What barriers does my crop have to deal with pathogens?

- **Lignin:** it is a physical barrier that plants have against the entry of different pathogens.
- **Phytoalexins:** are antimicrobial compounds that accumulate in some plants after bacterial or fungal infections and help limit the spread of the pathogen.

- ✓ **Creation of lignin**, physical barrier of the plant.
- ✓ **Creation of phytoalexins**, chemical fight against pathogens.
- ✓ **Recovery of the plant.**
- ✓ **Better photosynthetic capacity** of the plant.

Stoller's Formulation Technology		
Nutrients	Cu	Mn
Content	2.5 %	2.5 %
Physiological properties	Formation of lignin. Antioxidant effect. Increase breathing. Increases photosynthesis.	Formation of lignin. Formation of phytoalexins. Antioxidant effect. Regulates energy transfer. Increases photosynthesis.

Density (kg/L): 1.24 ± 0.02

pH: 6.5 - 7.5

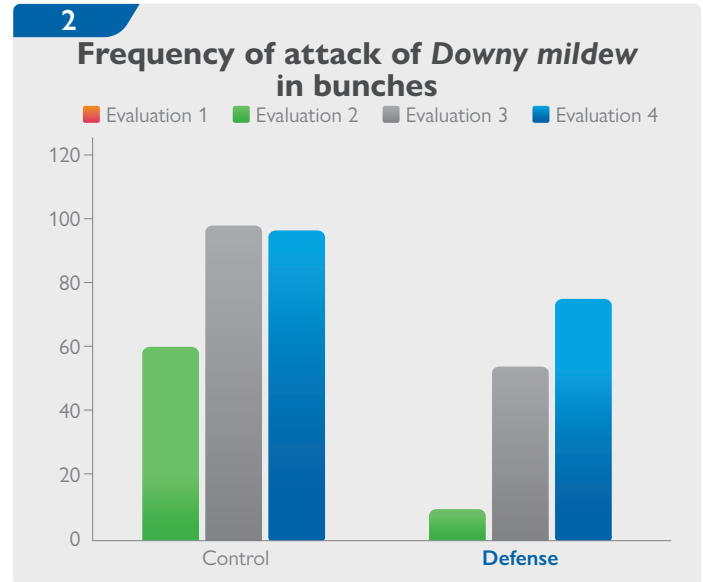
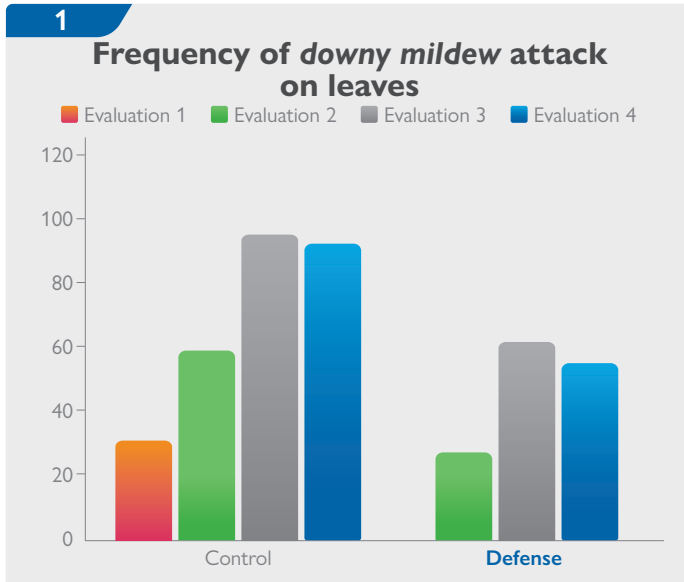
Conductivity (ms): 30 - 40



\*Thanks to Stoller Formulation Technology, we provide the appropriate nutrition that naturally intervenes in the physiological processes of the plants.

## Evidences

### • Wine grape



We can observe how through proper preventive nutrition, thanks to the micronutrients found in **Defense**, we improve the natural defenses of the plant and reduce the frequency of *Mildu* attack both in leaf (Fig.1) and bunch (Fig. 2).

### • Peach

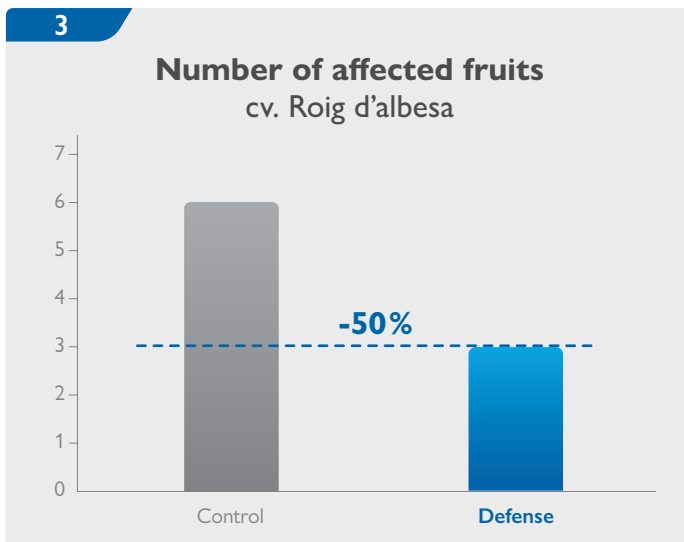


Fig. 3. Average number of fruits affected by *Monilinia* per tree in peach. N=200.

### • Almond

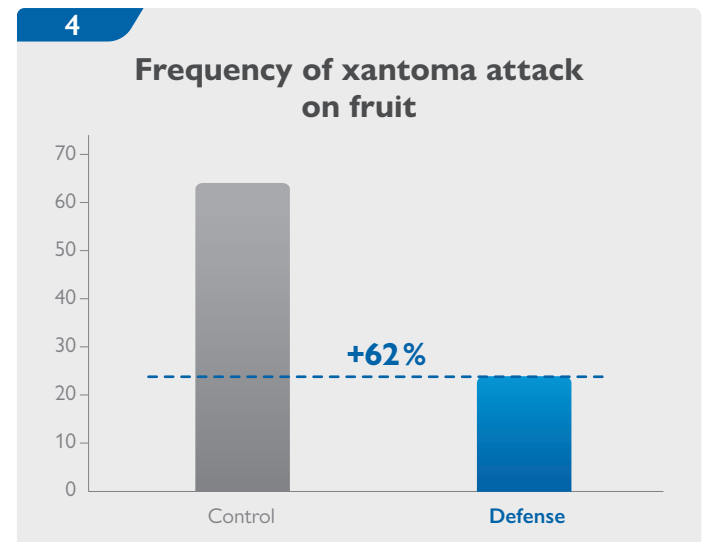


Fig. 4. Percentage incidence of *Xanthomonas* in almond fruit.

By combining the usual fungicidal applications (Fludixonil and Fluopyram. Fig. 3) (Cupric hydroxide, Mancozeb, Fenbuconazole, Copper-IDHA. Fig. 4) with the nutritional contributions found in **Defense**, we achieve a synergistic effect by reducing fungal attack in fruits by 50% and 62%.

**Stoller Solutions:** Stoller Solutions' value lies in our experience and understanding of plant hormone balance: how it relates to crop growth stages and the impact of the natural hormone activity on plant development and yield.

Our **patented technology** is effective to guarantee a optimal plant growth, getting every hectare, no matter what conditions or challenges we face during the season.