



## INTERVIEW DR.CORINNE VACHER

**POSITION:** PhD engineer in Plant Pathology and Agronomy

**INSTITUTION:** INRA - UMR BioGeCo

**RESEARCH SUBJECT:** Phyllosphere Ecology

Dr. Corinne Vacher is a phyllosphere specialist, author of the review "The phyllosphere: microbial jungle at the plant-climate interface". We contacted her under the suggestion of Dr. Huyghe. We wanted to ask her questions about the phyllosphere and our chassis selection strategy. At this point we were searching for a universal chassis and did not yet consider the use of metagenomics. Miss Vacher gave us her time and enthusiasm and we want to thank her for that !

### **COULD WE DEFINE OUR SPRAY AS A BIOCONTROL SOLUTION EVEN THOUGH IT WILL PROBABLY CONTAIN GMOS?**

→ Technically, your solution can't be defined as a biocontrol tool, but you could say it is a biocontrol solution for abiotic stress. Using GMOs does not disqualify your product for any biocontrol classification.

### **WHEN DO YOU THINK WOULD BE THE BEST TIME TO APPLY OUR ORGANISMS?**

→ Try to apply your organism on young leaves as grapevine leaves begin to grow. Be careful about the development cycle of your organism: it needs to follow the one of the leaf otherwise the solution will be "diluted" by the growth. Hence it is necessary to know greatly the life cycle of your organism and of the leaf.

### **WHAT DO YOU THINK OF OUR STRATEGY OF CHASSIS SELECTION?**

→ The leaf surface is poor in nutrients and stress such as UV damages are to be avoided, so this seems to be a great strategy. Plus, there is no reason for an organism to change its behavior after genetic modification, so it could be a great thing to already know how the organism behaves naturally on the leaf.



### **WHAT PARAMETERS SHOULD WE CONSIDER IN OUR CHOICE?**

→Be aware of the negative effects of your organism. If it grows too much it would damage the phyllosphere. Rare microorganisms are very specific and it will be way harder to induce their development in a way that your treatment could become efficient. Moreover, if a rare microorganism grows too much, its impact on the flora will be likely to be more important on the balance of the phyllosphere.

By selecting a chassis like *Aureobasidium pullulans* of which the population can represent up to 90% of the total fungal phyllosphere population at the end of summer, could potentially be more effective and cause less damages.

Organisms can penetrate through stomata as well. Some bacteria can secrete biosurfactants that increase nutrient penetration. Organisms are located around stomata, wax crystals, and the phylloelma (the water microfilm at the leaf surface). Population vary according to the plant organs.

### **IS THERE ANY WAY WE COULD MODEL THE IMPACT OF OUR ORGANISM ON THE PHYLLOSHERE ?**

→It is currently impossible to predict such interaction and impact. Modeling the interactions between the organisms could be possible but not the whole community dynamic for now.

### **WHAT ARE THE IMPACT OF PESTICIDES ON THE PHYLLOSHERE?**

→There have been some studies on the impact of pesticides on the phyllosphere. Some indicate pesticides have no effect, some show the opposite. The only way to truly find out is to test empirically.

### **ANY ADDITIONAL DETAILS?**

→You should be careful about the similarities between your project Softer Shock and the Frostban project (see "Compound choice" report). You need to show what are the differences between your project and Frostban. Consider looking at the American Phytobiome, which has a similar approach as yours.

We want to thank Miss Vacher for the time she has given us and the interest she showed to our project !