



## MEETING SYNGENTA - 02/10/17

**POSITION:** Mrs Lebas Marie-Cecile: Public Affairs Director, Mr Thevenot Xavier: Strategic Cooperation Director and Michel Petit : R&D Head.

**INSTITUTION:** SYNGENTA

### R&D

First important point: when we mentioned our cold system induced under 15°C to fight frost, interrogations have been raised. What is the point of a system that is induced at 15°C if the goal is to fight a phenomenon that happens under 0°C ? We really have to explain clearly that the system is preventive, in the way that the sooner the response is induced, the better because the temperatures can fall very quickly and there is a need of time for the proteins to be expressed.

Safety: Be very careful about off-targets from the synthetic amino-acid. It will be in contact with other organism and end up being metabolized by them by different selection mechanisms. It is hence necessary to evaluate its half-life and it can be degraded, because if we apply the amino acid every two weeks we would bioaccumulate it in the environment and the autotrophy property will be lost.

Study the possibility to introduce our amino acid system into the proteins sequences that we want to synthesize.

About the regulation, be sure that we are using sequences that are already regulated.

This part has to be precise in the oral presentation in Boston.

Try to prove the stability of the system over time by studying the life cycle of the organism and show its long-term viability and the rate of mutation.

GMO contouring: transforming an organism and then induce a horizontal gene transfer to our chassis could, according to them, limit the regulation problems we have around our GMOs, because it will be softer. → Directed Mutagenesis.

Protegrin: Be careful that it does not affect the yeasts that are responsible for the fermentation ! → problem of off-target again.

Know very well the wine cycle and the bacteria life cycle in order to predict how much will the bacteria live on the grape. Prepare well if the bacteria will follow the grape growth or not.



We have thought of introducing the GMO inside the plant the problem will be how to inhibit the genetic code in the plant before is taken to work with. Making our micro-organism penetrating the plant could circulate into the lifeblood and therefore allow a better distribution at the systemic level.

For the frost part: they advised us to target the fruits (grapes in growth phase and buds) instead of the leaves. Leaves are interesting targets for the heat part.

For the chassis, be careful to consider the storage and production steps as they are very important. and often the limiting steps in the biocontrol industry. We should precise our choice by prioritizing our criteria.

Use the term "formulation" for the part with composition, adjuvants, micro-encapsulation, medium, and then "application technique".

Adjuvants: according to them the spray drifting limiting adjuvants are irrelevant and do not work. However they encouraged us to use the sticking adjuvants. Anti-drift nozzles were also recommended as they appear more efficient and modern.

See if we could work introducing metal such as cobalt and sulfur. (already used by wine makers). They are associated with highly precise recommendations.

Compatibility of Softer Shock with other plant care products: we have to show that studies are possible and that this aspect is crucial.

Anti-freeze proteins and Ice-nucleating proteins: Try to assess their half-life to predict their behavior. For the INPs, if they are to be used with water to mimic water aspersion, try to quantify how much it can lower the amount of water used as opposed to traditional techniques to obtain the same effect. It could be very interesting to show the economic and ecological interest of such strategy. For example, proving that with our tool the volume needed for aspersion will be similar as a classical pulverization.

Really try to anticipate and prove the economic interest of your project, and prioritize its aspect:

What is essential? what is the target market? What is a great chassis?

Application to the contained system: we have to re-think the real interest for farmers to have a thermo-sensitive and autonomous system. Indeed, they fear extreme temperature events so much that they constantly keep an eye on the external temperature. It brings an additional comfort but it could be interesting to associate it with a tool of decision help.



## HUMAN PRACTICES

Add the consumers on the slide

Vocabulary is very important when getting people points of view. For example, talk about "Green Biotechnologies" rather than GMOs.

Institutes and organisations cited to help us : GISBV / France Biotech / AFBV (colloque soon)/ UIPP / IBMA / In Vivo / Europa Bio (eventual partnership in order to promote biotechnologies and synthetic biology to the general public)

Other ideas:

Talk about the possibilities for other crops (america: almonds in California that represent a large proportion of the global production). Do not hesitate to talk about the possibilities beyond plant protection (replacing cryolog for example)

Be careful not to amplify the safety part too much as the american mentality is quite different than the French one. They are more opened to new technologies and talking too much about safety could provoke the contrary effect (showing that it is highly dangerous)