

# Virtual Open Day Questions & Responses

These are a selection of the questions asked by attendees at the CleanFruit Virtual Open Day, held on 15<sup>th</sup> October 2020.

Q1. Did the project manage to create an efficient tool to control brown marmorated stink bug in production of apples?

Brown marmorated stink bug (*Halyomorpha halys*) was not an issue for the project in 2020, so no strategy was adopted for it. It was more of a problem in 2019 before the trials began. The solution in other areas of Italy was to use trapping using pheromones – the pest is attracted with the pheromone treatment using single trees/ stable plants outside the field. Given the difficulty of containing BMSB infestations, in 2020, a three-year Italian project was launched for the multiplication and release of the egg parasitoid *Trissolcus japonicus*, which is considered the main natural enemy of this pest in the area of origin.

Q2. Relating to *Erwinia amylovora* in apples and the possible tools to prevent it, did the project have experience with use of antibiotics and the degradation of them leaving residues on the fruit? Should apples in a ZeR programme be analysed for residues of antibiotics as well?

Antibiotics cannot be used in Europe, so they are not included in the residues to be analysed.

To deal with fireblight (*Erwinia amylovora*) in Italy, in the region of the trials, if only one branch is affected with *Erwinia*, then it is dealt with by pruning the affected branch. In areas of high infestation then the whole plant should be eliminated and, as this is a quarantine pathogen, this needs to be reported to the regional authority.

Also we can use an ELISA test in order to diagnose the early presence of *Erwinia*. The use of copper could help in strengthening the plant. Pruning at the right time could also help reduce infection.

Q3. Did the project have any experience with use of *Melaleuca alternifolia* oil (Trade name Timorex Gold) against *Botrytis cinerea* in strawberries?

We do not have experience with this oil. Noli®, a new formulation based on the yeast *Metschnikowia fructicola*, could be used close to harvest to control botrytis and other post-harvest pathogens. It is registered for strawberries, and there could be an interest in increasing the registration to use on other fruit crops.

Another project has ongoing trials using other essential oils from thyme and savoury to control post-harvest diseases through bio-fumigation rather than direct contact, so this could be interesting research to follow up once that project has finished.

#### Q4. What are efficient strategies to avoid / reduce the use of captan against *Venturia*?

Captan residues are quite persistent, so treatments with this active ingredient should be avoided in ZeR strategies. Apple scab was well managed this year by adopting several products to control *Venturia inaequalis* without using captan. We used copper sulphate, calcium polysulphide and potassium carbonate throughout the season.

#### Q5. Are you confident that you will achieve Zero residues at the end of this trial, rather than reduced residues. Will this project need to be prolonged until you have no impact of persistent chemicals in the soil?

As this was our first experience with a zero residue strategy, technical consultancy from Koppert was useful. As you can see from the results on apple, the strategy was almost organic, so our idea for next year is to introduce some chemical treatments at the start of the season. This year we didn't find any residues above the permitted levels but we are trying to improve the strategy in order to permit more chemical products, particularly at the beginning of the season. For strawberry, we need to eliminate some of the treatments, which the farmers applied unnecessarily.

The main issue we face on strawberry comes from Fosetyl aluminium, because this product tends to accumulate in the soil. This product has been banned in organic farming. However, even if this product will not be applied any more, next year we will probably find some residues from previous years, so this could constitute an issue.

#### Q6. Is there some proposal or idea within the project on how to prevent storage diseases of apples?

We suggest for either organic or ZeR, growers make good selection before harvest, only taking the best quality fruit. We tend not to treat with any chemicals in the post-harvest phase but there are some commercially available options that could be used.

a. Biocontrol agents (*Metschnikowia fructicola*, *Aureobasidium pullulans* and *Candida oleophila*), which are registered for pre-harvest application and can be applied pre or post-harvest, depending on the product, to control diseases.

b. Thermotherapy has recently been trialled in Italy and Croatia and received good results on control of post-harvest disease on apples. A French company is commercialising a machine to treat fruit.

c. Using a machine to increase CO<sub>2</sub> and humidity levels during storage is also very effective at reducing post-harvest diseases.

#### Q7. How are we implementing the monitoring of the residuals of chlorates in fruits and vegetables?

We analysed the residues of hundreds of different pesticides and we only found residues from the products that were applied during the season. A residue can come from other sources rather than being a product which was applied, for example it could be added to some herbicides or fertilisers, or already present in the soil, so this is another issue to be solved.