

Genomics and Bio-informatics to fight the virus

Sicilian and Israeli researchers will cooperate against the tristeza disease of citrus

The scientist Moshe Bar Joseph will cooperate with **PST Sicily** to find a method for immunizing the plants. Professor Catara says: "Results are expected to be achieved in a short time".

Sicilian and Israeli's citrus pathologists will join forces to fight the *tristeza* disease of citrus. The Science and Technology Park of Sicily, PST, will cooperate with Professor Moshe Bar Joseph, a prominent Israeli expert on the disease, formerly serving as the Head of The S. Tolkowsky laboratory of Citrus Disease Research at the Volcani Centre, the scientific arm of the Israeli Department of Agriculture.



Moshe Bar Joseph explained: "Thanks to new technologies for genome analysis, we can now identify much quicker the molecules interfering with the virus replication (siRNA). We can isolate and use such information to develop means to protect the plants from later infections. The new methodologies could open the way for the continuous use of the sour orange rootstock. Sour orange is the most suitable rootstock, well adapted to Sicilian cultivars and soil conditions, yet unfortunately the sour orange rootstocks are also the most susceptible to *citrus tristeza virus*".



Professor Catara (second on the left), Professor Bar Joseph (in the middle) and some PST Sicily researchers.

Bar Joseph had already visited the laboratories of the Park during the recent Citrus Biotechnology meeting in November, 2009 and could analyse the state of the art of the research on the virus responsible for the destruction of dozens of million of plants worldwide. The virus has been increasingly spreading in Sicily where it is causing great damages and stirring concern among the producers.

That was a fruit-bearing visit, and the opportunity for Professor Bar Joseph to meet some local experts and follow the advances the scientific community cooperating with the Park has made. During the recent months discussions continued, these had led to establishment of a forum involving all the experts in the field, aimed to advance a rapid and effective solution of the epidemics.

Thanks to the new technologies of rapid sequencing, the genomes of the different isolates of the virus now spreading in Sicily will be analysed and, through a deep study of the data with some bioinformatics instruments, a framework of the existing strains and of their effects on the plants will be outlined. The short-term goal is to insert a mechanism interfering with the pathogenic action in the plants. It will be a sort of vaccination to stop the infection caused by aggressive viral strains. The technique will prove effective if at the same time the strains coming from other continents are stopped.



This is now possible since the first sequencing of the citrus fruits genome has been completed. The President of the PST Sicily professor Antonino Catara announced: "We have signed an agreement with the research centres that will publish the whole genome in a month, and they will make the analysis platform available to us. Today" said Mr Catara "around the world and in Sicily, there are all the skills and technologies suitable to continue citrus production in spite of *tristeza* infections. And pooling those competences together will be the winning strategy to solve the problem in a relatively short time."

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