

Spain: Virus-resistant tomato thanks to genetic study

A Valencian tomato variety that is mostly known for its flavor and low acidity, the "Tomaca de Penjar d'Alcalà de Xivert", will improve its resistance to the tomato mosaic virus thanks to the genetic fingerprint obtained from it by researchers from the Polytechnic University of Valencia.

This variety also stands out for its high content of lycopene and antioxidants, according to data from the Institute for the Conservation and Improvement of the Valencian Agrodiversity (COMAV) of the UPV, which has led the most complete study made so far.

This type of horticultural product can also be kept in storage and preserve its quality characteristics for more than three months.

Salvador Soler, a researcher of the COMAV, explained that the obtainment of the genetic fingerprint will help prevent fraud in the market, and claimed that this genetic study is in its final phase.

In fact, the prospect is for seeds with the resistance to the tomato mosaic virus (ToMV) to become available in 2019. This virus is considered its most powerful enemy; a pathogen that attacks traditional varieties and can cause great productive losses.

For almost four years, the Valencian researchers, in close collaboration with the Association of Producers and Marketers of the Tomato d'Alcalà de Xivert (Castellón), have focused their efforts on obtaining new varieties of this tomato with a greater resistance to the virus.

"This is the most complete study on the "Tomaca de Penjar d'Alcalà de Xivert" made to date. We first worked on the physical and quality characterization, evaluating its degree of acidity, vitamin C content, pH, concentration of lycopene, etc.," says Soler.

This research work has served to determine the areas of the tomato's genome which are responsible for its quality characteristics, as well as its capacity for conservation.

According to Soler, to improve the resistance while preserving the intrinsic characteristics of the varieties, backcrossing programs have also been applied, as well as selection assisted by molecular markers.



"Starting with a donor variety that has the resistance gene, we take the traditional variety that doesn't have the resistance and an initial crossing is made between the two," he explains.

Subsequently, and once each crossing carrying the resistance gene has been selected, "these are again crossed with the original variety for several generations, allowing it to recover the original characteristics of the 'De Penjar' varieties, but incorporating the resistance of interest."

In 2019, selections will be made of the three varieties of tomatoes d'Alcalà de Xivert with a resistance to the ToMV virus, which will be evaluated in the field by growers, prior to their commercial use.

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