

THE USE OF A NEW MOLECULAR MARKER FOR ASSISTED SELECTION OF SAN MARZANO, THE MOST FAMOUS TOMATO IN THE WORLD

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Tomato is one of the most important vegetable crop in the world and particularly in the countries of the Mediterranean basin. Approximately 65% of the tomatoes grown in the Mediterranean countries are for processing, while the rest are marketed fresh. The Campania region in Italy produces 37.400 tons of tomatoes for processing, which represents 6% of Italy's total production.

The typical and famous peeled tomato grown for processing in Italy and particularly in the Campania region is the San Marzano variety. This traditional variety, grown for fresh market too, has been awarded the protected origin label "Pomodoro San Marzano Dell'Agro Sarnese Nocerino".

The San Marzano fruit is thin, elongated and pointed. The conjecture is that this tomato resulted from a spontaneous hybridization of two other varieties and was distinct from both of them and from the Roma plum tomato. The pulp has a distinctive taste: it has less sugar than other tomato varieties. According to Neapolitan tradition, pizza was invented as a vehicle for the consumption of the San Marzano.

S. Marzano production in the Campania region has declined significantly in the last decades due to high sensibility to vascular diseases and to epidemics of cucumber mosaic virus. In the 1980s, this region was the number one for peeled tomatoes production in Italy. Now, Campania is the 4th or 5th produced with 35% of the peeled tomatoes grown in Italy. Production of typical S.Marzano variety in Campania is declining at a rate of about 12-16% a year. The concern is that the San Marzano tomato will disappear from the Campania region.

Therefore, for processing and for fresh market consumption, new F1 hybrids, with similar shape, have been preferred to the original San Marzano; these hybrids have a different taste and are often genetically far from San Marzano, but possess genetic resistance to the most threatening tomato pathogens.

Some genetic tools have already been developed to characterize the original accessions. These methods are mainly based on the characterisation of hyper variable regions of the genome, like SSR, but are less used in marker assisted selection for the introgression of genetic resistances, where a fast and high-throughput method is required.

We developed a CAPS marker for the “ovate” gene in tomato (Sabatini et al, 2005). It was developed to assist selection when genetic resistances or other features are introgressed from elongated or round-fruited cultivar to neck-constricted ones.

Here we report the finding that the original accessions of San Marzano carry the *ovate* gene in its mutated form, which confer neck constriction, while the most modern F1 hybrids, resembling San Marzano, do not. This CAPS marker can be usefully exploited for genetic improvement of the original San Marzano.

Sabatini E., G.L. Rotino, S. Voltattorni and N. Acciarri, 2005. A novel CAPS marker derived from the ovate gene in tomato (*L. esculentum* M.) is useful to distinguish two Italian ecotypes and to recover “pear” shape in marker assisted selection. *European Journal of Horticultural Science*, *in press*.