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Sommario	<p>Genetic molecular markers (DNA markers) represent genetic differences between individual organisms or species placed directly into DNA sequence. They are widely used as powerful scientific instruments to accomplish different tasks, from genes mapping to forensic discrimination. The tremendous advance in DNA genotyping tools has lead to the development of impressive high- throughput technologies, such as Next Generation Sequencing platforms, that may revolutionize horticulture research and applications. However the cost of such technologies not always make them the most rationale approach, particularly when working on minor crop species or with large number of samples. The present work aims to the exploring a multi-purpose and cost-effective use of different kinds of molecular markers, for assisting fruit tree plants breeding and valorization. For this scope, three cases of study were presented, spanning from cultivar discrimination and phylogeny reconstruction to marker assisted selection (MAS) for Sharka resistance. D.NA markers such as SSR and AFLP, were successfully used to discriminate the 'common' Chinotto from 'Chinotto di Savona', an uninvestigated traditional Citrus species cultivated in Liguria (italy) that is gaining increasing interest for the production of high-quality</p>

niche food and beverages. New polymorphisms on candidate genes, that could explain some of observed differences between the two accessions, were suggested. SSR markers were used for the first time to the large-scale application of MAS on apricot (*Prunus armeniaca*) to boost the conventional breeding programmes. They were found new resistant breeding selections against the most important viral disease of stone fruits, Sharka, caused by Plum Pox Virus (PPV). Novel candidate accessions were also characterized for PPV-resistance, enriching and complementing the apricot germplasm available for breeding. Moreover the number of significant markers required for this task was reduced from seven to two, decreasing the overall cost, in terms of time and resources, usually required for the conventional breeding programmes. A further reduction of resources for the application of MAS in apricot was achieved developing new SNP markers linked to Sharka resistance, and able to be screened using fluorescence on Real Time PCR machine with or without High Resolution Melting (HRM) technology. The performed works demonstrate that the correct choice of molecular instruments together with the implementation of new techniques could easily led to cost-effective, time-saving, and reliable results even without the facility and resources reserved for main crops research and applications.

Localizzazioni e accesso

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