

Pomological characterisation of pear varieties of “Lubenicarka” group

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Summary

Pomological characterisation of pears of the so-called “Lubenicarka” (watermelon pear) group has been based on three genotypes identified in numerous vegetative progeny as part of the native assortment of Bosnia and Herzegovina. “Krupna Lubenicarka” (common watermelon pear) variety was recommended for the expansion of production at the beginning of the XX century, and there were two more genotypes (“Crna Lubenicarka” (black watermelon pear) and “Bijela Lubenicarka” (white watermelon pear)) that were listed under the common name of “Lubenicarka”. The research results show that “Krupna Lubenicarka” variety has vegetative progeny characterised by stable pomological features which clearly and reliably determine this variety. “Crna” and “Bijela Lubenicarka” genotypes are characterised by certain pomological distinctions that clearly make them different, but also by some similarities, whose variability raises up the question of their reliable pomological and genetic characterisation. Morphometric analyses of the fruit and leaf of “Krupna Lubenicarka” variety and “Crna” and “Bijela Lubenicarka” genotypes represent their first pomological characterisation that can be adopted as a reliable foundation for collecting, further pomological studies and genetic characterisation.

Key words: “Krupna lubenicarka”, “Crna lubenicarka” and “Bijela lubenicarka”

Introduction

According to the specific fruit features, pear varieties are traditionally divided into a number of different groups: “Maslovka”, “Vodenjaca” (“Jeribasma”), “Bergamotka” (Bergamot), “Karamanka”, “Muskatnica”, “Lubenicarka”, “Mostaca”, etc. (Todorović, 1899; Vitolović, 1949; Bubić, 1952). This classification of pear varieties is not up to date in terms of contemporary fruit production,

primarily because culinary use, post-harvest handling and marketing led to the introduction of completely new assortments in the production; hence most varieties that the said classifications were based on practically became extinct. However, realising the importance of biodiversity conservation and development of modern genetic methods, the old or abandoned varieties, as well as the native ones, are of more interest to geneticists and selectors, for the most part as a potential source of genes, but also because of possible patenting and protection of copyright. This renewed interest in abandoned and native varieties has opened up a number of questions, chiefly methodological ones, that need to be cleared out before general confusion arises that may bring about far-reaching adverse consequences. Namely, every genetic characterisation of such assortment, that is, assortment with no established nor identified pomological standard, including native and autochthonous genotypes that need to be preserved because of their properties or recognised as a new variety, must be done according to the following algorithm: collecting (vegetative progeny with the aim of verification of inheritable properties) → morphological – pomological characterisation (identification of specific inheritable and pomological properties central to fruit growing science and production) → genetic characterisation (molecular marking of specific genetic properties – genes), that is, the genotype standard defined and verified – varieties. In this paper, the pears of “Lubenicarka” group served as an example for discussion of the said algorithm.

“Lubenicarka” pear varieties include those that accumulate anthocyanins in the flesh and seed cases in the final stages of physiological ripening so the flesh acquires red colour similar to that of watermelons. In the current literature and fruit growing practice, there is neither scientifically, nor professionally elaborated pomological characterisation, nor specific genotype standardisation of “Lubenicarka” pears based on which characterisation of their numerous vegetative progeny could be done. However, a lot of information can be found under the name “Lubenicarka” at ardent local fruit growers, especially on the Internet, that, under a unique name “Lubenicarka”, refers to a number of various pear genotypes with red coloured flesh, but also, completely incorrectly, to some genotypes having bright red skin, and even to some commercial varieties.

Consulting the literature from the time when “Lubenicarka” varieties were part of the then assortment (Lolić, 1934; Lukman, 1937), it is evident that the general term “Lubenicarka” mainly refers to “Krupna Lubenicarka” variety that was widely recommended in the former Yugoslavia in the first half of the XX century. Apart from “Krupna Lubenicarka” variety, the same authors specifically mention “Lubenicarka” variety, as a variety of no particular interest to the fruit production of that period. Seventy years later, “Lubenicarka” pear varieties appeared again in the fruit growing literature, although this time, they were included into the native assortment of Serbia and Bosnia and Herzegovina (Mratinić, 2000; Beširević, 2009; Kanlić, 2010). These sources of literature provide description of “Krupna Lubenicarka” variety and “Lubenicarka” variety in terms of visual description of the fruit and some consumption properties, but without pomological description and scientific characterisation of the morphometric and organoleptic ones. Further,