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DOI: 10.1007/s11270-014-2019-5

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Accumulation of Heavy Metals in Flowers of Fruit Species

Tomo Milošević · Milena Đurić · Nebojša Milošević

Received: 5 February 2014 / Accepted: 28 May 2014
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Abstract The main objective of the present study is to measure the levels of heavy metals in important fruit species such as apple, apricot, and nectarine and their nine, five, and six cultivars, respectively. This work investigates the accumulation of Fe, Cu, Zn, Ni, Cd, Pb, and Cr in flowers of above species, to measure the levels of heavy metal contamination. The obtained results revealed that amounts of heavy metals significantly varied among cultivars at the same species and were within the permissible amounts in general. The Cd was not detected in apricot, nectarine, and the most of apple cultivars. Results for floral Fe, and also for Cu and Zn, which are the most important micronutrients for fruit production, suggest that levels of these elements might be used for assessing the storage of these elements during the previous season. We assume that the production of apple, apricot, and nectarine is safe, and there is no risk of contamination with heavy metals.

Keywords Apple · Apricot · Flower contamination · Nectarine · Trace elements

1 Introduction

Recently, food contamination by heavy metals has become a very huge problem because of their potential accumulation in biosystems through contaminated water, soil, and air (Dhiman et al. 2011). Important foods in the diet of the world's population are fruits, and its consumption and production rapidly increase in the last 2 decades. There is an increasing rate of fruit production based on the intensive orchard management, which includes, among the rest, usage of mineral fertilizers, pesticides, fossil fuels, engine oil, and polluted water for irrigation, which basically may be high sources of chemical elements harmful to human health. Based on probability of potential toxicity impacts of heavy metals as a result of consumption of fruits, there is a need for fruit analyzing in order to determine the levels of heavy metals and to ensure that levels of these elements meet the agreed international standards for the safety of the consumers (Dhiman et al. 2011).

As known, fertilization is a preharvest and postharvest agro-technical practice which plays an important role in maintaining the fruit quality and its production (Milošević and Milošević 2013; Milošević et al. 2013a, b). In the past few decades, orchard nutrition has received an important attention due to its role in high fruit production as well as their relationship to physiological disorders and other impacts such as reduced respiration,

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