

BIODIVERSITY OF THE TURKISH HAZEL (*Corylus colurna* L.) IN SERBIA

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Abstract

The population of Turkish hazel (*Corylus colurna* L.) was studied in the conditions of western (Povlen-Bukovi, Čačak) and eastern Serbia (Tupižnica, Zaječar, Sto, Veliki Krš and Miroč). Selected types showed significant differences in the morphological properties of fruit, kernel percentage and chemical content. Fruit height varied between 13.8 mm and 19.1 mm while width and thickness ranged from 11.6 mm to 19.1 mm, and from 9.0 mm to 16.7 mm, respectively. Kernel size was as follows: height - 11.3-15.4 mm, width - 8.0 - 12.8 mm, and thickness - 5.7 - 8.5 mm. Fruit mass averaged 1.88 g (0.63-2.86 g), whereas average kernel mass was 0.52 g (0.24 - 0.86 g). Kernel percentage amounted to 38.1% in the best types (31.68% on average). Protein content was 16.96%, and varied from 16.0% to 18.0%. Oils averaged 56.37% (49.14 - 65.15%). Hazelnut fruits proved to have high mineral matter content (2.39%).

Key words: Turkish hazel, biodiversity, chemical composition

1. Introduction

Turkish hazel (*Corylus colurna* L.) is a fruit crop grown mostly in the southeastern parts of Europe and the Middle East (Turkey). In Yugoslavia it is widely spread and grown on limestone (up to 1200 m above sea level). Individual trees of great dimensions can be found in the parks. Some trees may be over 200 years old. Tree height amounts to 30 m, with the trunk diameter up to 1 m. The hazelnut is monoecious fruit tree. Catkin number per raceme is usually 2 - 3, catkin length and width amounting to 12 mm and 5 - 6 mm, respectively; 3 - 8 female flowers may be found in clusters. Fruits are roundish in shape and somewhat smaller than the fruits of European hazelnut (*C. avellana* L.), with thick and very hard pericarp. It ripens in late August and September. The fruits of this crop are used for eating and in food industry.

The tree of Turkish hazel is hard, sinewy, pink in colour. It is easily processed and therefore highly valued in furniture industry.

Turkish hazelnut has no suckers and its seedlings are used as rootstocks for *Corylus avellana* L.

This species grows together with a great number of forest and wild fruit species. The following associations, of different structure were described: *Fageto-hyrcaneto-columnetum* Jov., *Fagetum montanum-columnetosum* Jov., *Carpinetum orientalis serbicum-columnetosum* Jov., *Columneto-pinetum nigrae* Jov., *Fageto-columnetum*

mixtum Mišić, *Querceto- colurnetum mixtum* Mišić, *Syringo - colurneto mixtum* Mišić and others.

Many investigators studied Turkish hazel: Fukarek (1956), Milojević (1951), Veličković (1959), etc., analysed the distribution of Turkish hazel growing in various regions. Rivals (1979) recommended this fruit crop as a rootstock owing to the lack of suckers, good vigour and rooting. Anadoliev et al. (1982) described 4 types of mid vigorous and 3 of vigorous Turkish hazelnut rootstocks. Meis (1985) recommended grafting on Turkish hazel at 40 cm high in order to gain easier pruning, higher yields and better soil cultivation. Korać et al. (1973 - 1974) studied the effect of various factors on grafting, and Nikić - Todorović and Cerović (1987) recorded oil content in Turkish hazelnut.

2. Material and methods

The study on population of Turkish hazelnut was conducted in the region of western (Povlen - Bukovi and Čačak) and eastern Serbia (Tupižnica, Zaječar, Sto, Veliki Krš and Miroč). The localities of Turkish hazel growing were monitored during ripening, in August and September. The types with high cropping potential, large and high - quality fruits, were selected. From the selected trees, the fruits with shell were gathered and the shell was removed after a few days of drying. Fruit and kernel dimensions were measured using a micrometer. Proteins were determined according to the method of Kjeldahl, oils by means of nuclear - magnetic resonance, and mineral matter content was evaluated by the method of burning.

The results obtained at the localities Sto, Veliki Krš and Miroč, were not presented in the paper.

3. Results

The analysis of the results in Table 1 shows that there were great differences in fruit and kernel size in the studied types of Turkish hazel at some localities. The differences were also observed among the types monitored at the same locality.

Average fruit height in 10 studied types was 16.98 mm. The greatest length (19.1 mm) was obtained in the type Čačak 1, and the smallest (13.8 mm) in the type Tupižnica - 2 at Tupižnica mountain (the village of Marinovac). Fruit width amounted to 17.19 mm, varying between 11.6 mm (Tupižnica -2) and 19.1 mm (Čačak - 5). Fruit thickness was rather uniform, ranging from 9.0 mm in Tupižnica -2 to 16.7 mm in Čačak from the region of western Serbia. According to the fruit shape there were 2 groups of Turkish hazel: the types with roundish fruits (with uniform height and width), and the types with fruit width greater than fruit height (Čačak - 5 and Bukovi - 2). Fruit mass varied between 0.63 g (Tupižnica - 2) and 2.86 g (Čačak), the average for 10 studied types amounting to 1.88 g.

Kernel height was greater than width except for the type Čačak -5. It ranged from 11.3 mm to 15.4 mm (13.54 mm on average). The results obtained for kernel width and thickness were as follows: from 8.0 to 12.8 mm, and from 5.7 (Tupižnica - 2) to 8.5 mm (Čačak), respectively. Kernel mass was small and averaged 0.52 g. The greatest mass was recorded in the type Čačak (0.86 g) and the smallest in Tupižnica - 2 (0.24 g).

