

BIOLOGICAL POTENTIAL OF EUROPEAN FILBERT (*Corylus avellana* L.) GROWING WILD IN EASTERN SERBIA

R. Miletić,
ARI "Serbia", Agricultural and
Technological Research Centre,
19000 Zaječar, Yugoslavia

M. Mitrović, G. Djurić, N. Mičić
ARI "Serbia", Fruit and Grape Research
Centre, 32000 Čačak, Yugoslavia

Abstract

Research was carried out on European filbert (*C. avellana* L.) growing wild in eastern Serbia with particular stress laid on fertility potential and nut properties in dependence on number in inflorescence. Frequently, there are two nuts joined in cluster (42.1%) and single nut (35.0%). Size and weight of both nuts and kernel are reduced by number in inflorescence increase. Both mineral substances and crude proteins contents are decreased. Oil contents in kernel is in converse proportion to crude proteins contents.

1. Introduction

European filbert growing wild in eastern Serbia regions frequently thrives in phytocenosis with various European plants, but rarely in clear stands. Due to distinct arid conditions of the region, frequent localities are both river and stream valleys and moister expositions. Owing to generative propagation, there are a number of shrubs with various biological, pomological and productive traits in population. These facts were crucial for further detailed search of European filbert characteristics, with stress laid on biological potential and nut properties, working towards selection, better quality forms expansion and raw material provision for high quality food production.

Researches on European filbert population characteristics were carried out by Pejkić (1980), Mitreski et al. (1983), Krstić-Pavlović (1990) et al., while Miletić (1994) at the same time investigated traits of European filbert (*C. avellana* L.) and Turkish hazel (*C. colurna*) in comparison with fruits of cultivated cultivars.

2. Material and methods

European filbert fruits were gathered from spontaneous population shrubs from various localities and regions consequently from 1993 till 1995. During picking, nuts were set apart into separate groups dependent on number of nuts in inflorescence (single, two, three, four, five and more than five jointed) for pomological analysis. Furthermore, average fruit samples were gathered as to find out the basic traits of European filbert population. Upon setting apart husk and drying in a draft, both nut and kernel size were determined with micrometer. Weight was measured by using technical scale "Mettler". The contents of mineral substances was defined by using method of burning, crude

protein contents by Kjeldahl - method and oil contents by nuclear-magnetic resonance. Results were determined by using analyses of variance and LSD-Test.

3. Results

Results presented in Table 1 indicate that frequently there are both two nuts joined (42.1%) and single nuts (35.0%) in European filbert population. Conversely, four, five and more than five nuts in inflorescence appear in 6.7%, namely in 2.1% and 0.4%. There are no significant statistical differences among groups with a number of nuts in cluster.

Nut appearance in dependence on number in inflorescence are different. By analysing fruit and kernel size (length, width and thickness) a certain regularity is recorded that with a number in inflorescence increase studied indices are reduced. Hence, the length of the nuts was from 18.0 to 12.3 mm, their width from 15.4 to 10.3 mm and thickness from 13.1 to 9.1 mm. Kernel length was from 14.6 to 10.4 mm, its width from 10.3 to 6.0 mm and thickness from 9.2 to 5.6 mm. In almost all cases, the most significant statistical differences in a number of nuts in inflorescence were recorded among distant groups. Conversely, these differences were not noticed among adjacent groups.

Similar regularities were observed during both nut and kernel mass and kernel contents analysis. Differences in mass between single nuts and more than five joined ones were from 0.15 g to 0.87 g ; in kernel mass from 0.08 to 0.43 g and in kernel contents from 1.2 to 8.1 %. As far as nut size and kernel contents are considered, the most significant statistical differences were recorded among all nut groups as far as by analysis of fruit and kernel dimensions. The same differences were noticed during nut and kernel size analysis. Nevertheless, by using analysis of variance and LSD-test significant statistical differences were not recorded in kernel mass, excluding the ones among single nuts and groups with a number of nuts in inflorescence.

Empty nuts appear among groups with a larger number of fruits in inflorescence. Hence, in two in nuts bloom group there were 3.9% of empty fruits and among single nuts 5.3%, while in five and more than five nut groups there were 12.3%, namely 15.2% of empty ones. The most significant statistical differences regarding empty nuts appearance were recorded among all nut groups in inflorescence of European filbert.

With a number of nuts in inflorescence increase, both crude protein contents in kernel was reduced from 12.1 to 0.0% and the contents of mineral substances from 2.6 to 2.00%. Nevertheless, oil contents is not very regular and this was larger in groups with smaller number of nuts in inflorescence. Oil contents is in converse proportion to crude protein contents in kernel. By analysis of variance and LSD-test the most frequent significant statistical differences were recorded in oil, crude proteins and mineral substances contents among studied nut groups.

As far as fruit traits are considered, European filbert population is distinguished by high variability and heterogeneity. According to data given in Table 2, average nut size is $16.0 \times 13.3 \times 11.7$ mm, and kernel size is $12.7 \times 8.4 \times 7.3$ mm.

Average European filbert nut weight in this region is 1.31 g (0.79-1.71 g), the weight of the kernel is 0.49 g (0.29 - 0.79) and kernel contents is 37.4% (30.7 -46.2%). At the same time, there were in average 9.3% (3.1 - 12.5%) of empty nuts. Content of oil in nut is 46.6% (41.7 - 50.7%); 11.3% (0.7 -13.1 %) of crude proteins and 2.6% (2.4 -2.8%) of mineral substances.

