

# Effect of different storage conditions on hazelnut quality

D. Ghirardello, G. Zeppa, L. Rolle, V. Gerbi, C. Contessa, N. Valentini, R. Botta, G. Griseri

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## Abstract

The aim of this study was to evaluate the effect of different storage conditions on the quality of the hazelnut cultivar 'Tonda Gentile delle Langhe'. The traditional method of in-shell nut storage, in storage room at ambient temperature, was compared with preservation of shelled nuts in refrigerated room at 4°C and 55% RH with or without modified atmosphere (1% oxygen, 99% nitrogen). In order to evaluate nut quality, the following parameters were considered: humidity, lipid content, total phenolic content and antioxidant capacity of the seed; acidity and peroxide value of the oil. The results showed that the acidity and the peroxide value were the most discriminating parameters. After one year of storage, the acidity of hazelnuts stored at ambient temperature (0.47% oleic acid) was higher than the value considered the acceptable limit after storage (0.40% oleic acid), while the storage at low temperature permitted to maintain a low level of acidity and lipid oxidation, with the best performance in modified atmosphere (0.13% of oleic acid and 0.11 mEq O<sub>2</sub>/kg). In conclusion, the in-shell storage of hazelnuts at ambient temperature was able to preserve the kernel below threshold limits of acidity and oxidative degradation up to a period of 8 months; the application of refrigeration was necessary to maintain a high quality up to one year. The use of modified atmosphere is recommended for a longer period of storage.