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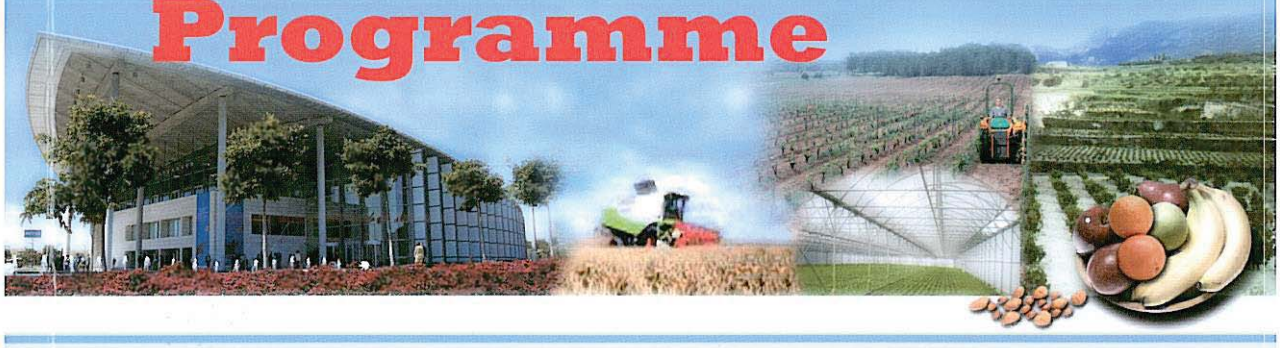

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Influence of e-beam irradiation processing on chestnuts color and texture

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Chestnut (*Castanea sativa* Mill.) fruit is a seasonal product with some storage problems, such as those related with the infestation by insects and developing of moulds. This fact makes that chestnut must be post-harvested treated, in order to meet the international trade fitossanitary regulations. Fumigation with methyl bromide, performed in closed chambers, was commonly used. Recently, March 2010, this treatment process was forbidden by the European Commission [1], given no or few alternatives to the industries processing this product. Food irradiation has been considered an alternative processing food technology to increase the shelf life. It has been used with the aim of disinfestation or decontamination. The objective of the present work is to study the influence of e-beam processing on the texture and color parameters of chestnuts since these parameters are the most valued by the consumers.

Chestnut fruits were collected in the region of Trás-os-Montes, Portugal, and were divided in four sets: non-irradiated (control) and irradiated at 0.5 1.0, 3.0, 6.0 kGy. For each dose it was done a replicate with three sets, each set containing 27 fruits (about 500 g). For the irradiation process it was used a Linac – Linear Accelerator electron beam, during different times to give the intended dose. For performing the texture analysis, it was used a texturometer, being measured the maximum force. For colour measurement was used a colorimeter, being the Hunter parameters (L, a, b) determined. along time storage for 0, 30 and 60 days after irradiation.

We have performed a previous study using gamma radiation, observing no significant color changes in chestnuts skins and fruits, for two tested varieties from Portugal and Turkey [2, 3]. For the texture, with gamma radiation, was observed a tendency of softening with the radiation dose. The analysis for e-beam irradiated samples along time storage is still in progress, but we expect similar results, also documented by other authors using e-beam [4, 5]. And if it happens could validate also this technology for the post-harvest treatment of this fruit, since for fitossanitary disinfestation the doses used are lower.

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