

#### Abstract:

A lot of factors influence the final quality of fruits, namely pears (*Pyrus communis* L. cv. Rocha). Controlled atmosphere (CA) reduces the rate of decline of fruit after harvest, but the evolution (maturation, ripening and senescence) of fruit attributes is also dependent on pears origin and optimal prediction of the harvest date. The present study intends to test the application of CA and compare fruit behaviour under CA and normal air atmosphere (NA) using pears picked at different orchards and at three harvest dates. Orchard has a high effect on fruit dimensions, pulp firmness, soluble solids and pH, as well as on disorders development. Harvest date limits the use of pears in post-harvest because early harvest is responsible for low weight and high number of fruits with scald despite of the highest fruit firmness. Meanwhile late harvest often increases the softening, the soluble solids content and the pH leading to most favourable conditions for microbial infections. CA is a good tool for the coming years but, it is important to adjust the conditions immediately after harvest and before CA begins as well as the best gases concentrations to avoid an higher firmness decrease of fruits compared to NA, after storage or even after shelf-life. However, fruits subjected to CA showed less number of fruits with microbiological diseases and physiological disorders than fruits under NA. It will be possible to extend the storage life of Rocha pear using adequate CA technology.