Abstract

In this trial we studied the ability of penetrometry and uniaxial compression for measuring texture changes of three apple cultivars during cooled room (CR) and shelflife (SL) storage. A large set of piresical parameters has been extracted and analyzed. Finally, because these tests remained destructive for fruits we attempted to predict the most efficient physical parameters by near infrared reflectance spectroscopy which is a non destructive method. Experimental Young modulus parameter (E*) from penetrometry and F_c^1, $Grad^1$, F_c^2 from uniaxial compression were the most efficient ones to describe storage effect whatever the apple cultivar. Some other parameters as F_p, D_p were only correlated to one of the three studied cultivar, showing the differences existing between cultivars and the complementarily of parameters. This complementarily lights the composite nature of fruit texture and justify a multifactorial approach. NIRS showed a good ability to predict E* whatever the cultivar with R value of 0.91, 0.85, 0.83 and RMSECV values of 0.95, 0.74, 1.02 N.mm^{-1} for *Ga, Sm* and *El* cultivar, respectively. parameters from compression test showed poor correlation with NIRS data.