QUALITY OF HABANERO CHILI BY TEXTURE MEASUREMENTS. FRESH-CUT AND POST-HARVEST STUDY

Ramírez-Sucre M.O.[1]*, Baeza-Melchor, T. [1], Echevarria, I.[2], and Rodríguez-Buenfil, I.M. [1]

[1] *Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, CIATEJ (Research Center, MX)*
[2] *Centro de Investigación Científica de Yucatán, CICY (Research Center, MX)*

Abstract

Texture is one of the most critical attribute when referring to crops maturation. In Mexico the Habanero chili (*Capsicum chinense*) of the Yucatan Peninsula achieve the appellation of origin (2010) which makes it susceptible for exportation. The compounds (like capsaicinoids) varies depending on the variety of chili, climate, maturation stage and type of soil. The aim of this study was to measure the texture in terms of hardness of 1) habanero chili fruits cultivated in three types of soils (lu'um): brown (Ch'ich), black (Box) and red (K'áankab) during the development of the plant/fruit, and of 2) orange chilies in a post-harvest study, for later correlation to the maturity state. The hardness was measured using a downward compression polarity and a displacement and speed limit of 1.0cm/min and 2.0cm, respectively, to chili fruits from greenhouse plants.
Hardness was greater in fresh-cut orange chilies than in coloring (semi-mature) and green chilies, reaching average values of 50.0, 30.7 and 33.7, respectively; without significant differences between soils. However, a mayor production was presented in red soils (14 orange chilies vs 8 of black and brown soils) (Fig. 1). The mayor hardness during storage was presented in 2nd week for black and red soils, rapidly than in brown soil (Fig. 2). Hardness of post-harvest study in commercial chilies showed a maximum of 52.2N in orange chilies, most of them remained green (Fig. 3). The hardness incremented even in old chilies (up to 98N) with an elastic and hard-to-penetrate skin. Conclusion: Habanero plants develop texture with time in fresh-cut fruits. Two week were enough for the fruit hardness development (>50N). Hardness is recommended to measure chili texture until it reaches 50-60N; hardness more than 70N should be measured with a more sophisticated technique, registering the elasticity of the chili skin like texture profile analysis (TPA).
Keywords— *Capsicum chinense, hardness of crops, quality of Habanero chili, texture of chili fruits.*

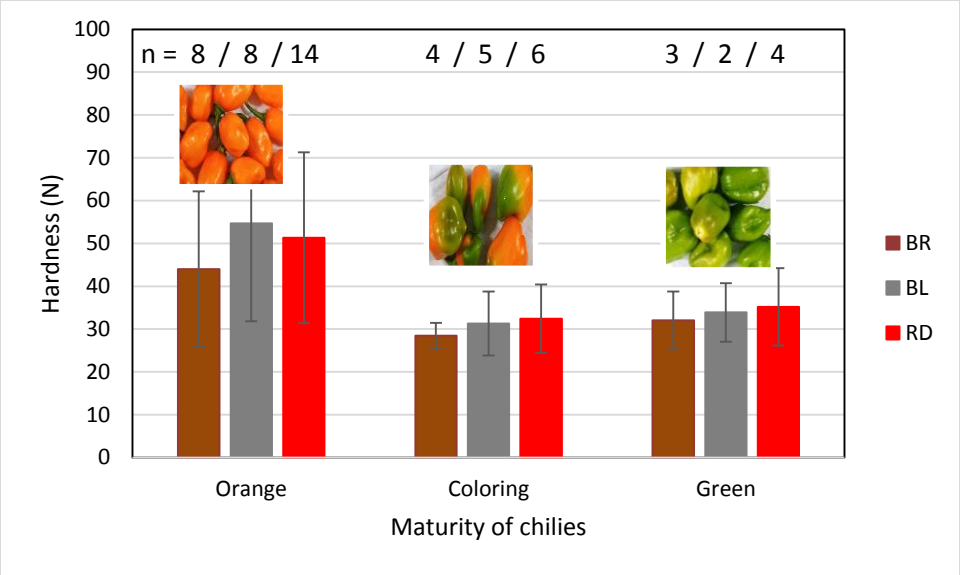


Fig. 1. Hardness of habanero chili fruits cultivated in three type of soils: brown (BR); black (BL) or red (RD) as a function of maturity (n=number of measurements)

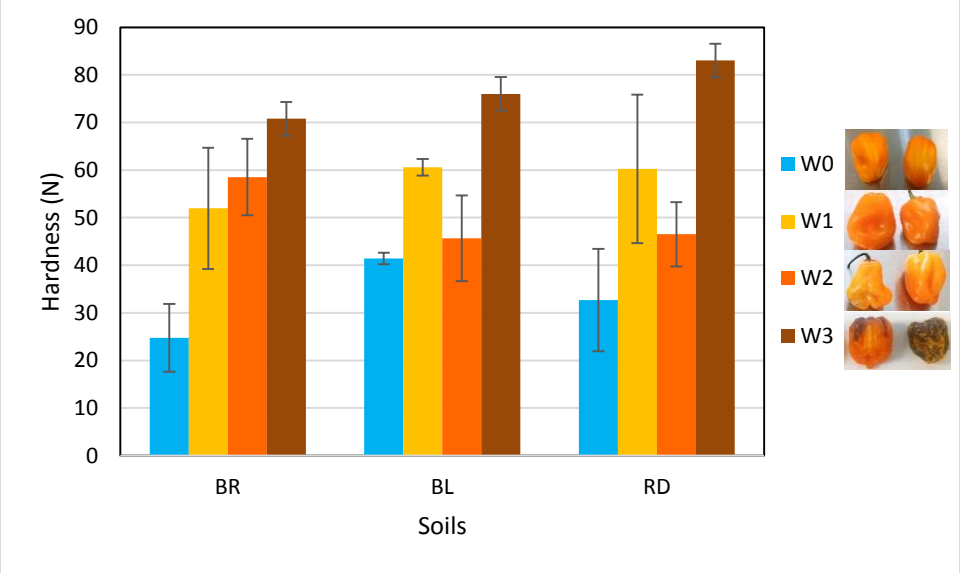


Fig. 2. Hardness of oranges habanero chilies during three weeks (W0, W1, W2, W3) of storage at room temperature (25o C)

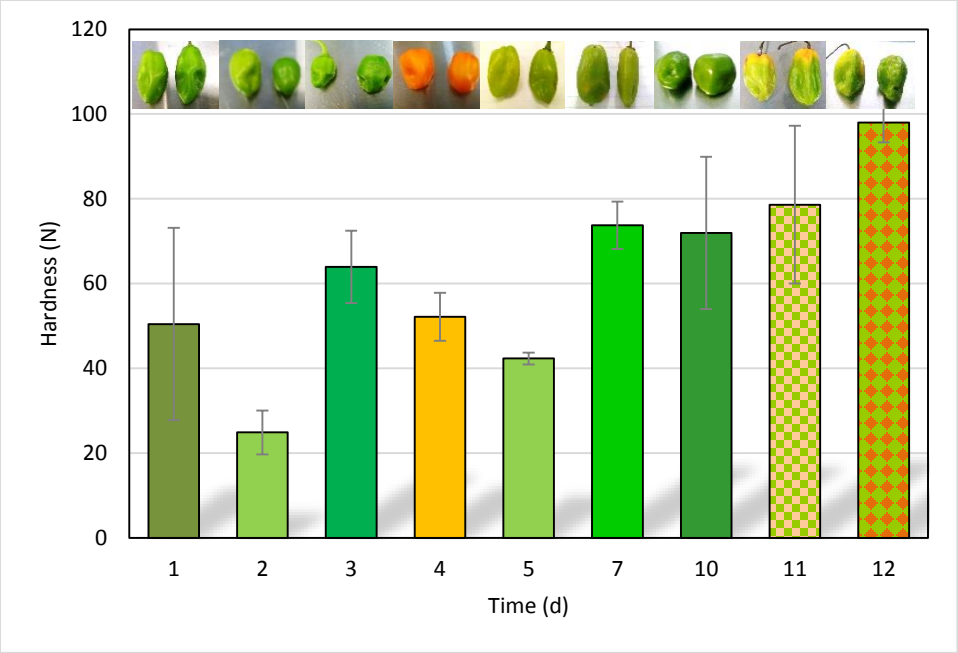


Fig. 3. Hardness of commercial habanero chilies (Post-harvest study) during 12 days of storage at room temperature

Professional Biography

Manuel Ramírez-Sucre work in rheological/physicochemical evaluations. Member of to the National Research System (MX) 2013-2016. Coordinator of the Strategic Alliance for the Sustainable Development of the South Pacific Region (ADESUR) in Acapulco, MX in 2016 which deals with added value of tropical fruits. Four years in charge of the food pilot plant in the Southeast Unit of CIATEJ; Responsible of 5 projects, two with technological developments; 8 international publications related to rheological and mechanical properties; One patent application (MX / a / 2014/015444: Microaspersion Drying Process of the Hesperidin / Cyclodextrin complex); One academic exchange (Institute of Agrochemistry and Food Technology, Valencia, Spain) for the study of protein-hydrocolloid interactions; Director of 4 thesis. Coordinator of various subjects (Food Physics, Food Chemistry, Economic Engineering).



Email Id: oramirez@ciatej.mx