

Title Study and prediction of quality changes in garlic cv. Perla (*Allium sativum* L.) stored at different temperatures

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### Abstract

White and purple garlic is harvested in the Bajío region of Mexico from February to August and then stored at room temperature. A complete study of quality changes under different conditions and how these conditions interact to determine the shelf life of the product has been lacking, nor have objective parameters to predict shelf life been determined. Six batches of 360 bulbs of garlic (*Allium sativum* L.) cv. Perla were stored for 190 days at 0 °C, 0 °C and 70% relative humidity (RH), 5, 20, 30 °C, and at room temperature (RT) ( $17.7 \pm 7$  °C). The weight loss, subjective firmness of the bulbs, clove penetration resistance, hue value, internal sprouting index, soluble solids and dry matter content of the cloves were recorded periodically. The weight loss and internal sprouting index had a negative correlation on the subjective firmness, penetration resistance, and hue of the cloves. Storage at 5 °C, 20 °C, and RT induced sprouting, and subsequent growth had an effect on a loss of firmness and color. Complete sprouting (>100%) induced a weight loss of 9–11% at these temperatures. In order to maintain an adequate safety margin for marketing, we propose an internal sprouting index of 50% to determining the effective shelf life of garlic cv. 'Perla'. In accordance with this criterion and in conditions studying, shelf life at 0 °C was 155 days; at 5 °C and RT it was 80 days; and at 20 °C it was 60 days. These results lead us to conclude that it is possible to estimate the shelf life of garlic using the internal sprouting index.