Hot pepper x: Assessment of postharvest losses of hot peppers at seven market outlets in Trinidad

[1]Majeed Mohammed, [2]Puran Bridgemohan, [3]Ronell S.H. Bridgemohan and [4]Zareef Mohammed

[1]Department of Food Production, Faculty of Food and Agriculture, University of the West Indies, Trinidad.
[2]Biosciences Agriculture and Food Technology, The University of Trinidad and Tobago Waterloo Research Campus, Carapichaima
[3]Georgia College and State University, GA, USA. [4]University of Miami, USA.

Introduction:

Hot pepper fruits are highly perishable resulting in losses at different stages in the postharvest handling system. Assessment of qualitative and quantitative losses at critical control points in the value chain is necessary to optimize quality and reduce losses.

Materials and Methods:

Postharvest losses were measured for hot peppers at seven market outlets in Trinidad using the Commodity System Assessment Methodology (CSAM) (LaGra et. al. 2016).

Results and Discussion:

Postharvest losses of hot peppers were highest at roadside markets compared to those at other outlets in the dry and wet seasons respectively. Losses in the west season at roadside outlets were 6.2% greater than those recorded in the dry season. The outlet with the second highest losses in hot peppers was supermarkets with chain stores (SWCS) with 24.1% in the dry season and 29.4% in the wet season. Wholesale markets showed the lowest losses in both seasons. Physical damages such as split and decapped pedicels and calices, fruit cracks and to a lesser extent bruising occurred more often in wholesale markets than in the other outlets in the dry season. Physiological damage due to chilling injury expressed visibly as darkened pedicels and calices, seed discolouration, translucency of pericarp and pitting were most evident from samples taken at roadside outlets and at supermarkets with and without chain stores. As a result, losses due to physiological damages were higher at roadside outlets in both seasons compared with those from physical and pathological damages respectively. Other physiological disorders such as desiccation, sunscald and deformed fruits were prevalent at the other outlets. Pathological losses due to Anthracnose, bacterial soft rots and virus-induced infection from thrips and mite attacks, were more prevalent, and therefore accounted for higher incidence of losses, in the wet than in dry seasons at each market outlet. Anthracnose infected fruits initiated in the field which were barely visible at harvest became more obvious at later stages in the handling system and eventually resulted in a total loss.

Conclusion:

The CSAM methodology provided the template for identification of the dynamics and logistical factors underlining the causes of losses as well as corrective actions to minimize such losses (Mohammed and Craig, 2014). By prioritizing the factors one can judge the immediate necessary action and also which area is to be focused for best results of the action. Commodity Systems Assessment Methodology (CSAM) can be widely used to conduct postharvest losses analysis of different crops, to know the reasons of loss, extent of loss (both physically and financially) and to act appropriately after suitable prioritization in order to overcome the losses.

References:

LaGra, J., Kitinoja, L., & Alpizar, K. (2016). Commodity Systems Assessment Methodology for value chain problem and project identification: a first step in food loss reduction. Costa Rica: IICA. Retrieved from http://repiica.iica.int/docs/B4232i/B4232i.pdf

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Plate 1. Decapped pedicel

Plate 2. Translucency of pericarp due to CI.

Plate 3. Seed discolouration due to CI

Plate 4. Pitting due to CI

Plate 5. Anthracnose infection.

Table 1. Postharvest losses of hot peppers

Market outlets	Postharvest losses of hot peppers (%)	
	Dry season	Wet season
Farmer's market	7.7b	15.8cd
Roadside market	28.3e	34.5f
Mobile market	8.4b	14.3cd
Supermarket with Chain stores	24.1de	29.4e
Supermarket without Chain stores	15.5cd	23.8d
Wholesale market	4.2a	6.3ab