

POSTHARVEST TECHNOLOGIES

NPARR 2(4), 2011-0472, Kinetics of quality changes of pumpkin (*Curcubita maxima* L.) stored under isothermal and non-isothermal frozen conditions

The effects of freezing process and frozen storage at isothermal (−7, −15 and −25 °C) and non-isothermal (accelerated life testing with step-stress methodology; temperature range from −30 to −5 °C) conditions on pumpkin quality were investigated. Storage temperature conditions were selected to embrace the limits practiced in the cold chain. Quality changes, such as texture, colour CIE *Lab* and vitamin C (ascorbic acid) content, were evaluated for both frozen storage regimes. The freezing process (that included a pre-blanching step) and subsequent frozen storage had significant impacts on all quality parameters analysed. A fractional conversion kinetic model was adequate in colour, texture and vitamin C data fits. The storage temperature effect was successfully described by the Arrhenius law. This study shows that non-isothermal frozen storage has a marked effect on pumpkin quality [E.M. Gonçalves*, Pinheiro, M. Abreu, T.R.S. Brandão, C.L.M. Silva (Unidade de Investigação de Tecnologia Alimentar, Instituto Nacional de Recursos Biológicos, Estrada do Paço do Lumiar, 22, 1649-038 Lisboa, Portugal), *Journal of Food Engineering*, 2011, **106**(1), 40-47].

NPARR 2(4), 2011-0473, Application of oven drying method on moisture content of ungrounded and grounded (long and short) rice for storage

This study was conducted on ungrounded, grounded, long and short rice grains to determine the moisture content for storage. The rice samples were dried in an oven at 105°C; in this regard every sample was divided in 6 parts with equal volume. The moisture contents were measured in six different ways such as 1st part with 1 h interval, 2nd with 2 h, 3rd with 4 h, 4th with 6 h, 5th with 12 h and 6th part after 24 h. It is observed that an ungrounded grain sample with weight of 28.9 g showed in 1, 2, 4, 6, 12, and 24 h moisture release 5.81, 7.82, 9.10, 9.62, 10.48, and 11.11%, respectively. However, long grains weighing 44.86 g released moisture in 1, 2, 4, 6, 12, 24 h as 4.41, 6.87, 8.76, 9.59, 10.63 and 11.39% respectively. While the short grains with weight of 45.68 g showed

moisture release in the interval of 1, 2, 4, 6, 12 and 24 h as 3.96, 6.17, 7.99, 8.76, 9.68 and 10.29% respectively. It is evident from the study that ungrounded grains may be stored for long time as the moisture is easily released from them and they may retain the quality as compared to grounded short grains [M. A Talpur, J Changying*, F. A Chandio, S. A Junejo and I. A Mari (Department of Agricultural Mechanization, College of Engineering, Nanjing Agricultural University, Post Code 210031, Nanjing, Peoples Republic of China), *Journal of Stored Products and Postharvest Research*, 2011, **2**(12),245-247].

NPARR 2(4), 2011-0474, The quality of maize stored using roof and sack storage methods in Katumba Ward, Rungwe District, Tanzania: Implications on household food security

The quality of maize stored using sack and roof storage methods was studied by investigating the presence of *Fusarium*, *Aspergillus* and *Penicillium* infections using qualitative methods in 130 maize samples that were randomly collected from the roof and sack storage facilities in Katumba ward, Rungwe district, Tanzania. Levels of fumonisins, aflatoxins, ochratoxins and T-2 toxins were determined using quantitative methods on selected 77 maize samples. It was found that 86% of the selected maize samples were infected by one, two or all of the three pathogenic fungi investigated, whereas 88% were contaminated by one, two or three types of the investigated mycotoxins. The average concentrations of the mycotoxins were as follows: 596.48 ± 38.85 µg/kg of aflatoxins, 745.73 ± 105.57 µg/kg of ochratoxins 87717.95 ± 14984.32 µg/kg (or 87.2 ± 15 mg/kg) of fumonisins, and 1803.77 ± 244.56 µg/kg (or 1.8 ± 0.241 mg/kg) of T-2 toxins. The concentrations of the mycotoxins were a lot higher than the internationally accepted levels. These observations indicated that in Katumba ward, maize stored using roof and sack storage methods was exposed to infection by *Fusarium*, *Aspergillus* and *Penicillium* species, and that the farm households were at risk of ill health due to the mycotoxins [Rose Mboya*, Pangirayi Tongoona, Kwasi Sackey Yobo, John Derera, Maxwell Mudhara and Augustine Langyintuo (Food Security, University of KwaZulu-Natal, Pietermaritzburg, South Africa), *Journal of Stored Products and Postharvest Research*, 2011, **2**(9), 189 – 199].