Samples of soy-melon ‘gari’ a protein enriched, fermented and toasted cassava semolina were produced by toasting wet, fermented cassava meal together with the soy-melon supplements. They were packaged in Woven sack and HDPE Film and stored under three different temperatures of 10 ± 2, 30 ± 2, and 40 ± 2°C. A sample without any enrichment was used as a Control. Samples were withdrawn at weekly intervals and subjected to sensory evaluation over a period of 32 weeks by 20 member sensory panel of the Federal University of Technology, Akure, Nigeria in order to determine its shelf life. A nine-point hedonic scoring system was used for the evaluation, where 1 = extremely disliked and 9 = extremely liked. Results obtained from the replicate evaluations of each set of samples were pooled and statistically analyzed by a least significant difference technique. Other data on the flavour difference scores for each product were subjected to regression analysis based on the critical minimum panel mean score of 5.0 for shelf stability of the samples. The shelf lives for the samples at different storage conditions were determined from the slopes of the regression equations. Results showed that enrichment with soy-melon flour reduced the shelf life at a high temperature above 40°C from 148 weeks to 17 weeks. The shelf lives of samples packaged in HDPE were significantly higher than those packaged in woven sack. The shelf life was reduced significantly by increase in temperature which exhibited a negative correlation with the flavour scores. The sensory evaluation method of shelf life prediction were correlated with sorption isotherm, half life, shelf life plot and colour score methods already carried out in similar experiments. There were high positive correlations between the flavour score and half life method (+0.882), shelf life plot method (+0.816 and the colour score method (+0.937). This means that any of these methods that correlated positively with sensory evaluation could be used to predict the shelf life of soy-melon gari successfully.