**Consumer preference testing of boiled sweetpotato (*Ipomoea batatas* (L.) Lam.) using crowdsourced citizen science in Uganda**

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**Abstract**

Triadic comparisons of technologies (tricot) is a crowdsourced citizen science approach that was developed to distribute agricultural technologies to farmers for large scale performance evaluation under different environmental conditions. An important feature of the method is the independent way in which farmers each evaluate the varieties on their own farm as “citizen scientists”. The approach has been successfully utilised by demand-driven breeding programmes to identify varieties for dissemination suited to specific geographic and climatic regions. Tricot involves each participant to grow and evaluated three blindly and randomly assigned varieties from a larger set of varieties (as incomplete blocks). Evaluations mainly take the form of rankings (ordering the varieties according to trait expression and/or performance). The evaluations are compiled and the results are used to inform breeders on the most suitable varieties for dissemination. So far, consumer and market preferences of crop varieties have only been taken into account as part of field evaluations and were done by farmers. No study has focused specifically on using tricot for consumer preferences. In this study, we evaluated if tricot can produce reliable information about consumer preferences. We study consumer preferences related to boiled sweetpotato (*Ipomoea batatas* (L.) Lam.) prepared from six orange fleshed varieties (Ejumula, Kakamega, NASPOT 8, 10, 12 and 13) in three geographic regions of Uganda. We were specifically interested in evaluating if a more independent style of evaluation (*Home tasting*) would produce results comparable to an approach that involves control over preparation (*Community tasting*). Two trials were performed and compared. In *Home tasting* 276 participants received raw roots in randomised variety combinations to cook, taste and score at their homes whilst in *Community tasting*, 144 participants received the boiled varieties to taste and score at a centralised location. Participants ranked the varieties in order of overall preference, color, and taste. The data was analysed using the Plackett-Luce which estimates the *worth* parameter, or the probability that one varitiety wins against all others in the set. Ejumula was ranked as the best for overall acceptability by 68.2% of participants in the *Home tasting* trial, rendering it a worth of 0.40 (a 40% probability winning against the other varieties). Participants in *Community tasting* trial also ranked Ejumula as the best in overall acceptability by 73% of those who evaluated it, rendering it a worth of 0.49. Taste was the main driver of participants’ preference in both trials, with a Kendall correlation of τ = 0.79 and τ = 0.81 in the *Home* *tasting* and *Community tasting* trials respectively. Colour rankings did not match overall acceptability rankings from both home and community tasting trials. Although there was gender balance amongst participants who took part in the *Home tasting* compared to the *Community tasting* exercise, no significant relationships between gender and the rankings for overall acceptability were observed. Significant differences based on district were identified, highlighting the need for future consumer preference studies using crowdsourced citizen science to consider geographic location as an important variable. Both *Home tasting* and *Community tasting* approaches gave similar rankings for best overall acceptability, which was strongly correlated to taste. [Do statistical test to see if differences are significant.] *Home tasting* provided a more gender-balanced sample and may represent better the variation in local cooking methods. *Community tasting* was more convenient for researchers and made the data available the same day, but represented only one cooking method (although this was determined in function of local practice). In conclusion, o Future studies should include more quality attributes to further decipher the taste attribute used by consumers in ranking the varieties. Overall, breeders can benefit from using the tricot approach to identify favourable consumer quality traits to target in demand-led breeding programmes, leading to increased uptake of new varieties.

**Keywords**: ranking, taste, variety, consumer, score