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

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**Abstract**

Crowdsourced citizen science is an emerging topic in plant sciences. Recently, a novel method called *tricot* (triadic comparison of technologies) has been successfully utilised by demand-driven breeding programmes to identify varieties for dissemination suited to specific geographic and climatic regions. An important feature of the method is the independent way in which farmers each evaluate the varieties on their own farms as “citizen scientists”. So far, no study has focused specifically on using tricot for consumer and markets preferences. In this study, we evaluated if *tricot* can produce reliable information about consumer preferences on released varieties and advanced selections of sweetpotato (*Ipomoea batatas* (L.) Lam.). We studied consumer preferences related to boiled sweetpotato prepared from 27 genotypes in Ghana and 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* 420 participants received raw roots in randomised variety combinations to cook, taste and score at their homes whilst in *Community tasting*, 1041 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 model which estimates the *worth* parameter, or the probability that one variety wins against all others in the set. The results show significant differences based on district, highlighting the importance of citizen science trials in identifying consumer preference based on geographic location. Both *Home tasting* and *Community tasting* approaches gave similar rankings for best overall acceptability, which was strongly correlated to taste. 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. Our results show that the tricot approach can be successfully applied to consumer preference studies. 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 citizen science to identify favourable consumer quality traits to target in demand-led breeding programmes, leading to increased uptake of new varieties.

**Keywords**: crop breeding, consumer preference, food security, underutilised crops, rankings, taste