Book of Abstracts for the 14TH Symposium of the ISTRC-AB Zambia 2021

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PHT 002

Medium-throughput methods to predict cooking quality of boiled cassava for genotypes screening and selection

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Abstract

Cooking quality for consumer acceptance of boiled cassava is an essential criteria for breeding programs. Selecting improved genotypes for cooking quality is increasingly important to maximize the likelihood of adoption, in addition to agronomic criteria such as yields and tolerance to pests and diseases. Conventional tests of cooking quality, such as probing the product's softness with a fork to determine optimum cooking time (CT), are time-consuming and labor intensive; requiring up to one hour per genotype. Hence, in a standard food-quality lab, only a few dozen of samples can be screened per day, whereas selection for breeding requires testing up to several hundred genotypes. The RTBfoods project has developed a faster method by objectively measuring water absorption, root density and texture. Among these, water absorption and change in root density after 30 minutes of boiling significantly correlated with CT (R^2 = 0.60 to 0.66). Thus, this approach makes it possible to screen up to 80 genotypes per day by confidently classifying short-cooking and long-cooking behaviors of cassava roots, i.e. medium- throughput screening. Accumulating further cooking quality data will facilitate ongoing efforts to develop a true high-throughput phenotyping platform with the capacity to screen the target several hundred samples per day. A particularly promising approach is the ongoing investigation of correlations between cooking quality parameters and near-infrared spectroscopy (NIRS), which would reduce the analysis time from 30 to 2 minutes per genotype.

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PHT 003

Scaling flash drying of cassava starch and flour at small scale

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