EVALUATION OF EAST AFRICAN HIGHLAND BANANA DERIVED SECONDARY TRIPLOID HYBRIDS FOR BLACK SIGATOKA RESISTANCE, YIELD, SENSORY ATTRIBUTES AND ACCEPTABILITY BY END USERS

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ABSTRACT

The East African highland banana (EAHB) is a major crop in Uganda but its production has declined mainly due to pests, diseases, poor management practices and social-economic problems. Among the diseases, black Sigatoka is the most important foliar disease. Breeding for host plant resistance against black Sigatoka has yielded several secondary triploid hybrids that must be evaluated for reaction to black Sigatoka and other attributes. This study was therefore conducted to evaluate EAHB derived secondary triploid hybrids for resistance to black Sigatoka, yield and sensory qualities and acceptability by end users.

Offspring from banana crosses usually consist of mixed ploidy levels. However, among the secondary hybrids, triploids are the preferred because of their seedless nature. Therefore, the ploidy levels of the 325 secondary hybrids generated by the breeding program were first determined by flow cytometry. The available 286 secondary triploid identified, were planted in a Complete Randomized Design in an Early Evaluation Trial. Of these, 213 survived up to flowering stage and were evaluated for black Sigatoka resistance. One hundred and three hybrids were harvested and their yield components (bunch weight, number of hands per bunch and number of fingers per hand) recorded. Fourty hybrids with well-filled fingers were evaluated for sensory qualities and acceptability in comparison with 'Mbwazirume' as a local check.

Out of the 325 hybrids 8% were diploids (2*x*), 4% were tetraploids (4*x*) and 88% were triploids (3*x*). Cluster analysis of black sigatoka data grouped hybrids into three clusters; susceptible, partially resistant and resistant. From the yield parameters, the bunches in 22.4% of the hybrids were heavier than that of local check, and the number of hands per bunch in 73.8% of the hybrids was higher than that of the local check, while the number of fingers per hand in 39.8% of the hybrids was higher than that of the local check. Two hybrids 2821k-10 and

12572s-28 were observed to have similar sensory attributes to Mbwazirume. Texture and colour of the cooked product were found to be the most important sensory parameters determining acceptability of cooking bananas.

In general, the results of this study indicate that several secondary triploid hybrids can be incorporated into the breeding program for further improvement.