ABSTRACT

The Influence of Fermentation and Drying on
the Flavour and Quality of Selected
Cacao (Theobroma cacao L.) Genotypes

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The main aim of this study was to address concerns regarding the quality of cocoa in Trinidad and to
investigate the effect of certain fermentation and drying regimes on both the quality and maximum
expression of the full genetic flavour potential of selected cacao genotypes.

This investigation used standardised procedures for fermentation, sample preparation and sensory
evaluation which was supported by physical quality assessment and chemical analysis.

Three (3) fermentation regimes were investigated using discrete samples of 5 Trinidad Selected Hybrid
(TSH) Clones and Imperial College Selection (ICS) 1 in nylon net bags placed at the centre of a
fermenting mass of mixed beans in baskets for a 5 day, and extended 7 day, fermentation as well as a
double walled sweat box for 7 days.

Beans from the 5 day and 7 day basket fermentation were dried using (i) an electrically heated
convection dryer and (ii) a cocoa house with a moving roof system respectively. Beans from the sweat
box were dried using a diesel powered artificial dryer.

Temperature, pH and moisture levels were measured during the course of the trials and were found to
be consistent with previous research studies. The results from the cut test showed that the sweat box
gave beans of better physical quality. The float test did not give comparable results to the cut test.
Standardised procedures for cocoa liquor preparation and sensory evaluation were followed with 8 flavour profiles being investigated and the results showed that the sweat box gave beans of best quality.

The results prove that the various methods of assessing quality via physical, chemical and sensory measurements can be combined to give a holistic means of assessing quality in fine and flavour cocoa.

Furthermore, the sweat box fermentation and drying treatment combination best expressed the flavour potential of the cacao genotypes investigated.