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**Selection of cocoa (*Theobroma cacao*. L) varieties/lines based on pod and bean physical characteristics**

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Cocoa is one of the major export agricultural crops introduced to Sri Lanka in nineteenth century and present land area under cocoa is around 6500 ha. Annual export earning from cocoa is Rs 28.2 million and total production is about 1100 t. Currently, local consumption through cocoa based industries has been increased while traders' need is to collect fresh pods to process them in large scale processing units, but both farmers and traders facing a problem for estimating the dry weight of the beans to do the payments. At present, 86 important cocoa varieties/lines of both Forastero and Trinitario type are available but they were not characterized. The objectives of the current study were to select the best cocoa varieties/lines based on the some physical characteristics of pod and bean as well as to determine correlations between dry bean weight into wet bean weight and fresh pod weight in selected available cocoa varieties/lines.

Thirty four different cocoa varieties/lines available in the germplasm of the Department of Export Agriculture were selected as the treatments of the study during the year 2007. Ten cocoa pods were randomly collected from those varieties/lines to record data for one replicate of the study. Fresh pod weight and fresh bean weight with mucilage and oven dry bean weight were recorded. The experiment was conducted in three replicates.

Fourteen varieties/lines which are having less than 26 pod value were selected as the promising lines. Out of that, line Wk2 shows the lowest pod value (14 - number of pods that are needed for producing 1 kg of processed cocoa beans) having the greatest fresh pod weight (727g/pod), fresh bean weight with mucilage (222 g/pod) and the bean dry weight (71 g/pod). The highest number of beans per pod (50) was observed in the variety W6/456. Therefore, the line Wk2 could be selected as the best cocoa line having the lowest pod value (14) and the greatest bean dry weight (71 g/pod). However the lines NA32\*ICS95, ICS1\*NA32, W5/395, Wk6, W6/456, PA7\*UIT 2, ICS6\*ICS95, EARS181, W5/5, NA32\*UIT1, EARS143 and EARS229 can be selected as other good varieties/lines having the pod value less than 25. Dry bean weight (Y) can be estimated taking the fresh bean weight with mucilage (X) using the equation  $Y = 0.291X + 2.5361$  irrespective of the variety/line. Ratio between fresh pod weight and dry bean weight of cocoa is between 10-15 in 89 % of the varieties/lines studied.

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