B-13: Variation in yield components of coconut and their implications on mass selection for crop improvement

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Coconut (*Cocos nucifera*) is a predominently cross pollinating perennial palm performing in an extremely heterogeneous manner. Since there are no true breeding lines and in the absence of viable vegetative propagation methods, the crop improvement is confined only to mass selection followed by inter and intra varietal hybridization.

The mass selection procedure (selection of superior mother palms) is presently based on the number of nuts and the weight of 3 husked nuts of a palm recorded in a single pick. Palms are identified as superior if they produce a minimum of 60 nuts/palm/year and an average husked nut weight of 675 g. The yearly yield of a palm is estimated from the yield in a single pick assuming the palms to behave in a general yield pattern.

A sample of 30 palms were randomly selected from 3 estates already selected as superior sources and data on number of nuts (NN) and husked nut weights (HW) were gathered over a period of 18 picks from 1984 to 1986 in order to test the selection criteria used and to check whether the same pool of palms would be selected repetitively at any time of selection.

Analysis of variance and time series plots for both NN and HW showed highly significant variation between picks, between years and between sites and their interactions, even for a single palm, but HW in a low magnitude indicating its appropriateness as a more reliable trait than NN for selection of superior palms. These results indicate that a generalized yield pattern could not be assumed for coconut palm populations and therefore the extrapolation of single pick yield data in the estimation of annual yield is not reasonable. Moreover the ranking of palms at one pick or fewer picks is likely to be different from ranking at another. Thus selection of superior palms based on single pick data or fewer picks is ineffective.

In view of the wide fluctuation of the traits under consideration over the picks and over the years, it is suggested that selection of superior palms should be based on prolonged observation of individuals for a realistic evaluation.