MODELLING APROACH IN ANALYSING FIELD EXPERIMENTAL DATA IN COCONUT.

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Coconut yield is harvested at bimonthly intervals (six picks per year) in all the field experiments carried out by the Coconut Research Institute (CRI). The variation in yield between picks within a year is less than the variation between years and also there is a seasonal pattern of the pick-wise yield. Nut yield in all the field experiments are recorded at each pick during the entire duration of the experiments. However, as the effect of treatments on pick-wise yield is little importance to the experimenter, in the ultimate evaluation of results of the experiment, only the total yield of the six picks is analysed.

Considering the fact that recording of individual picks is costly it would be useful to know whether the data, using in fewer picks can be analysed, to obtain the treatments effects on the total yield.

Using yield data from five long-term field experiments conducted by the institute at five different locations, it is shown that by eliminating the noise caused by presence of blocks and treatments effect, the mean weighted correlation coefficient weighted with respect to error degrees of freedom of the experiments is the highest ($r=0.922^{***}$) between the total annual yield (Y) and the sum of the yield in the combination of 1st, 3rd, and 5th picks (Y135). The model between Y and Y135 irrespective of the experiments is linear ($R2=96.02$).

Thus in the statistical data analysis of the field experiments in coconut Y can be replaced by Y135 in order to obtain the effect of treatments on the total annual yield. Consequently the cost of harvesting in an experiment could be reduced by 50%.