31. Repeatability of Annual Coconut Yield

K. Muralidharan and K. Vijaya Kumar
CPCRI, Kasaragod

The partitioning of variance into its components has many applications. When multiple measurements of a character like annual production of nuts in coconut is made, the partitioning of variance corresponding to 'repeatability' is of importance as the estimates of other genetic parameters are often not available. The biennial hearing tendency (high- and low-yields in successive years) and linear dependence of yield in the initial years of bearing with the 'hearing age' are the two systematic variations to he accounted for while estimating repeatability of annual coconut yield. There are many estimators suggested for repeatability which are derived according to the underlying linear model that describes the data and the method of estimation of variance components. The utility of these estimators to obtain the repeatability of annual coconut yield was examined based on two sets of experimental data. When data are summed over adjacent years (as in moving average) or the yields available for different sets of palms are not for a common period, estimates hased on the intraclass correlation or its modification to the case of moving averages are of practical importance. By making use of the expression for the asymptotic standard error of ANOVA- hased estimate of repeatability, the population size corresponding to varying number of years for fixed levels of significance (0.05 and 0.1) were worked out : For a moderate value of repeatability as 0.5 with 20 years of yield data the number of palms required are 225 and 60 in respective order. Estimates hased on yield data from initial years of hearing need special attention as palms came to hearing at different years. One way to overcome this situation is to express the second and later years yield as first year equivalents. This approach will not be practicable when the empirical ratios were alternatively high or low in magnitude, as can happen with marked biennial pattern of hearing.