

2. Utilization of Available Data in Experiments with Plantation Crops

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Special features of perennial plantation crops make experimentation difficult in such crops. Also because of the limitations of time, land etc. there are restrictions on starting new experiments, as and when required. Therefore, researchers are forced to critically look into old experimental data, to draw information regarding points, not originally envisaged, while starting the experiment. Some such instances, where old experimental data have been made use of to obtain information about optimum plot size, competition and border effect, method of compilation of annual yield, crop losses etc. are discussed below.

Uniformity trial data and optimum plot size.

Uniformity trials are intended to get an idea about the nature and extent of fertility variation in land. From the data collected from such trials, fertility contour maps showing lines passing through areas of equal fertility are generally prepared. In most cases, this variation in fertility, optimum size and shape of plots and blocks are determined. In plantation crops like coconut and oil palm, where the palm to palm distance is 7 to 9 m., in order to have a uniformity trial, at least 2 ha of land will be required. Usually it will be difficult to get this much of area under uniform management, and with individual tree yield records. Koch and Rogney (1951) and Ray et al. (1973) have suggested techniques to obtain uniformity trial data from experimental data, by eliminating the treatment effects, from the yield of individual palms. The resultant data are considered as uniformity trial data, and is used to estimate optimum size and shape of plots. Nambiar (1986, 1989) has used fertilizer trial data to estimate the optimum size of plots in the case of DXT and W.C. Tall palms. This technique will hold good only when the number of palms per plot is constant, and the yield figures are available for individual palms.

Border/competition effect

Owing to the border effect, the yield or other characters of the plants near the borders differ from those at the centre of the plot. To overcome these problems, non-experimental guard rows are usually suggested. It can be easily seen that when gross plot is smaller in size, a great proportion of the experimental area would be discarded as non-experimental margins. Gomez and Gomez (1984) have mentioned that competition effect can arise due to non-planted borders, varietal competition, fertilizer competition and missing plots, and have suggested experiments to measure competition effects. They have also suggested techniques to estimate this competition effects from the data available from other experiments. Data from an irrigation-cum-fertilizer-cum-variety experiment was made use of to study the necessity or otherwise of external guard rows and guard rows between unirrigated and irrigated plots in coconut field experiments (Jacob Mathew et al. unpublished). Similarly, data from a cocoa+areca mixed cropping experiment was used by Jose et al. (1993) to study intra and inter component competition.

Crop loss assessment

Crop loss assessment requires the collection of large amount of data in order to understand the interaction of factors that may be affecting the yield. These data need to be collected through surveys and field experiments. Field experiments tend to be more limited in scope, providing data on few specific factors affecting particular crop, and their relationship to that crop yield. Recently data collected from a fertilizer experiment was made use of to study the impact of root (wilt) disease on the yield of young coconut palms (Jacob Mathew et al. 1993). Data from some of the field experiments in the disciplines of crop improvement and crop production have also been made use to study the extent of bienniality in different varieties of coconut (Jacob Mathew & Jose 1990) method of compilation of annual yield (Jacob Mathew et al. 1990) etc. Thus it is clear that in the case of plantation crops, the necessity is more and the possibilities are also plenty for the use of data available from different experiments, for purposes other than what was originally envisaged for, while starting the experiment.