

**ADVICE ON FERTILIZER POLICY:
SOME COMPLICATING FACTORS IN THE INTERPRETATION OF
GRAPHS OF THE YIELD/NITROGEN RELATIONSHIP PLOTTED
FROM ESTATE DATA**

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Nitrogen level in the fertilizer mixture has been used now for several years on Ceylon tea estates as the basis for fixing the quantity of mixture to be applied. Although the ratio method of application is no longer recommended by the Institute, the relationship between yield and nitrogen is still used as the main basis for giving advice on fertilizer policy. Amongst major nutrients, nitrogen is generally the most closely and commonly correlated with the yield of tea, as has been amply demonstrated by fertilizer field experiments conducted on tea in Ceylon and in other tea-producing countries. These field experiments, because of their careful statistical design enable the agricultural scientist to sort out the experimental errors by tests of significance and obtain the true effects of fertilizer application on yield.

With estate data obtained from estate records, however, the true effects of fertilizer application on yield cannot be sorted out statistically from effects produced, for example, by weather or by endemic pests and diseases. Neither is it practicable to conduct a fertilizer field experiment on every estate and field in order to separate true fertilizer from non-fertilizer effects. Therefore, in practice, the process of sorting out, for the purpose of giving advice on fertilizer policy based on estate data, can be done only by close enquiry. The object of such enquiry is not only to obtain some idea of the likely true yield performance in relation to fertilizer application, but also to pin-point factors limiting fertilizer response where they exist. It will be realized that yield-limiting factors are extremely important in connection with fertilizer expenditure and in saving money. On the other hand where no limiting factors, or at least only less important ones exist, it is common experience that yields increase usually with a corresponding expansion in fertilizer expenditure.

The non-fertilizer effects on yield, or complicating factors, which have to be taken into account when interpreting graphs of yield plotted against nitrogen, and in giving advice, are listed below. Estates sending in data should bear these complicating factors in mind, and we would particularly request that as much information as possible relating to these be submitted, in all cases where yields are likely to have been noticeably affected.

1. Whether teas sell as high, mid- or low country.
2. Proportions of the acreage between 0-2000, 2000-4000, 4000-6000, and above 6000 feet in plucked tea and in clearings not yet in plucking, for the whole estate or each separate division.
3. Total rainfall, and if possible the number of wet days for each year covered by the yield data, noting exceptionally dry and wet years.

4. Changes in management (*i.e.* Ownership, V.A., Superintendent or Agency) which may have occurred in any particular year.

5. Change in the general density of shade on the estate over the period, if the change has been appreciable, noting year or years of cutting-out or replanting and if possible the acreage affected in each year.

6. Any changes in pruning and plucking policy (type, length of cycle or of plucking round).

7. Number of fertilizer applications per year and any changes.

8. Outbreak of any pest or disease in any particular year, if yield dropped in that year appreciably.

9. Health and vigour of bushes generally, noting presence of any particularly persistent pest or disease which has been responsible for keeping average yield low, and its present extent. Has it become more serious in recent years, or has the situation improved?

10. Extent of re-supplying and replanting in each year, with clonal tea only.

11. Any nutrient deficiencies reported in different years, only if extensive, and whether now controlled.

12. Any strike at any particular time, if of protracted duration, noting the year or years.

13. Any deliberate reduction in fertilizer level of application over the estate or division as a whole, due to financial restriction, noting the year or years.

14. Any restriction in factory space or in available labour which has imposed a limit in the handling of more crop, or which may be likely to do so within the immediately foreseeable future.

15. Average selling price and cost of production.