

ADDENDUM

This is to certify that the necessary corrections/
revisions as suggested in the report have
been made. *Bhattacharya*
23/5/96

TITLE OF THE THESIS : Studies on nutritional and cultural requirements of cigar wrapper tobacco in West Bengal.

NAME OF THE CANDIDATE : SRI BARE LAL SINGH

1. Data collected on most of the important parameters were subjected to Bartlett's Homogeneity Test, since this has been the standard practice in statistical analysis of data collected from agronomic experiments carried out over 2 to 3 years. Accordingly, in the event of similar trend of treatment variations, C.D. values have been presented for mean values of two years data, while the C.D. values for two individual years have been presented in case of significant variation in error MS under Homogeneity Test.

The seeds of tobacco in these areas are sown in August. This period is characterised by high intensity of monsoon rains but with wide variations in its amount between the years. It may be revealed from the meteorological data, that the year 1982 received 243 mm while the year of 1983 received 453 mm rainfall. Such a high rainfall occasionally damages the tender sprouts with the beating action of rain drops. This was our experience in raising transplants of tobacco for the last 15 years of

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association with tobacco research. The ultimate objective is, however, to raise 300 - 350 vigorous tobacco seedlings per sq.m. at the farmer's level. The result of this experiment is encouraging enough in the sense that, though there were seasonal variations at the statistical point of view, the young seedlings overcoming the ill effect of beating rains in the second year of experiment, recovered in the long run and produced as high as 500 to 600 vigorous transplants per sq.m. This was brought about presumably due to beneficial effects of higher levels of (90 kg P_2O_5 and 40 kg K_2O /ha) phosphate and potassic fertilizers and finally, resulting into an additional net profit of Rs. 10,000/- per hectare over control.

The same explanations also apply to the data presented in table 3.2. Since the data under the two individual years were statistically homogenous in respect of the treatment effects, interpretations on mean values of the two years from a combined ANOVA was considered to avoid repetitions and redundancy in the write-up. Regarding the response to lime pre-treatment and application of Boron in the acid soil of Terai region having wide spread Boron deficiency, statistically significant variations was noted for total cured leaf and 1st grade leaf yields. The upto-date literatures on the response to Boron on quality criteria of tobacco leaves is however, controversial. To this end, negative results also have considerable importance in formulating package of

practices of crops. As a consequence, the author was tempted to present data in the text on those aspects in table 2.21 and 2.23 for a better understanding of the leaf yields and quality criteria.

Some of the growth parameters like RGR, LAE, NAR were recorded on seedling growth under the experiment carried out on nursery management. The variation due to P and K application was negligible. Hence, statistical analysis was found to be of less important.

I consulted with senior statistician and also Agricultural Statistician at every step during the course of the research work. I reiterate the fact that in the tropical region of India (Himalayan Plains) fluctuations in monsoon rains between the years are usual characteristic. Apparently, variations in crop performances are also inevitable unless adequate irrigation/drainage and land development facilities are extended to about 70 million hectares net cultivated area of these regions. The treatment effects under all sets of experiments were, however, homogeneous and to project that effects, results with statistical, analytical values have been presented in the text.

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2. Presentation of Results and Discussion in two separate sections of the thesis has been made as per existing Ph.D. Regulation of the University of Calcutta.
3. 'Polish' the thesis - is a relative term in this case because of the fact the Calcutta University does not believe, in taking up of the write up of the thesis for final preparation on behalf of the candidate by the supervisor, since, in principal this is also an examination on the part of the Ph.D. candidate.

Points relating to 'Specific Comments and Questions :

1. Two years experiments in each set were carried out in two separate plots but in the next adjacent plot.
2. On P.6 no where " 4 x 4 factorial" has been written. In fact, this was a 4 x 4 Randomised Factorial Design.
3. This has already been explained in the aforesaid paragraph.
4. This has also been explained in the preceding paragraphs.

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5. Complied with.
6. I agree that, this could be avoided, but for a better understanding of the effects of P and K this has been incorporated in the table.
7. While analysing the economics on the effects of agronomic factors, cost on extra labour input is also taken into consideration.
8. Since this piece of research work has been carried out on fresh plot of land every year, the point raised is beyond the scope of this thesis.
9. The doses were determined on the basis of past work done and the boron content of the experimental soil.
10. Split application means applying the total amount in two split doses, which has been pointed out in the Materials and Methods section.
11. There was a variation in total cured leaf yield between NoKo and N_2K_2 treatments by 116 kg leaf per hectare and the C.D. value for this interaction effect was worked out at 77 Kg/ha (Table 2.4a). The data manifest a highly significant variations in total cured leaf yield between the treatments.

12. Leaf Area was determined following Tejwani et al. (1957) (vide P.51). The linear variations between length and width of leaves were smaller, which when multiplied together with the calculated 'constant value', the graphical representations obviously be magnified to a few folds.
13. Though the data pertaining to smoking scores were statistically non-significant, under lime pre-treatment the values were visually slightly less than no-lime pre-treated plots.
14. If the lower leaf yield and nicotine content under lower level of N (60 Kg/ha) were the results of excess rainfall or late planting of the crop, the same would have reflected on the data under 120 and 180 kg N/ha. There was a linear increase in leaf yields being, 1.4, 1.7 and 1.9 tonnes/ha and 0.85%, 0.95% and 1.01% nicotine, corresponding to the increased doses of N from 60 kg to 120 kg and to 180 kg per hectare. Hence, this was a very spectacular result of N-response, normally expected in crop yields.

15. Interpretation on the effects of season and other agronomic factors cannot be taken up from the results of individual year data. Such interpretations could only be taken up from a combined ANOVA of both the two years of observations. Accordingly, emphasis has been put on two years data instead of the two individual years. There was no error in the data of the table 3.2 but typographic error. The reason for lower leaf yields in 1985-86 as compared to 1984-85 may principally be accounted for lower rainfall of the cropping season 1985-86, being 484 mm as against 1082 mm of 1984-85. Hence, under greater population per unit area, competition set in for soil moisture as well as for nutrients.
16. Considering the data in tables, 3.2, 3.4 and 3.5 if an estimation of nitrogen content is taken up, the figure under D_3 of table 3.4 would work out at 35.75 kg/ha. In reality, it was worked out at 53.89 kg N/ha. Hence, it was uptake of N for the whole plant.

The typographic corrections as pointed by the other Examiner has been taken up very carefully in the enclosed copy of the thesis.

Dated 22-05-96.

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