

A NOTE ON THE MANUFACTURE OF LEAF FROM SELECTED INDIVIDUAL BUSHES

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Two years ago, in the Annual Report for 1937, a reference was made to a method which had been devised in the Biochemical Department for the manufacture of leaf gathered from single bushes. It was explained that the object of the method was to enable the question of quality to be tackled as soon as selection work reached the stage at which other factors besides yield could be taken into consideration.

The selection work of the Plant Physiology Department has now reached this stage and it is intended in this article to give a brief account of the activities of the Biochemical Department in assessing the quality of bushes selected as high yielders. Emphasis must be laid on the fact that the work is in its early stages and that this article is intended solely as a progress report provided for those people who have shown marked interest in this sphere of activities. Such inferences as are to be drawn from the matter are intended as food for thought rather than action. The few results available do not afford any means of developing a sense of proportion, as we have as yet no idea of the extent to which the more extraordinary types of bushes occur in our present fields.

The method used for manufacturing these small quantities of leaf will not be dealt with at any length, and it is sufficient to say that any quantity of leaf down to the bare minimum required for one Taster's cup can be satisfactorily dealt with. The minimum quantity will normally be some 20-40 pieces of flush and since the bushes have already been selected for yield it is hoped that the minimum quantity will always be available. In order thoroughly to test the method, the leaf from four different bushes has been manufactured repeatedly over the past two years. A professional Tea Taster has examined the teas and the conclusion was that they maintained certain characteristics which would only be the result of bush type or jât. Sufficient confidence was thus engendered in the method of manufacture to warrant its application to an attempt to select for quality, from bushes which have been proved high yielders by the Physiology Department.

This confidence has so far been justified by results, especially since it has been found possible to forecast Tasters' opinion, with some considerable success, entirely on the bases of various observations made during the course of manufacture. In short the behaviour of leaf uniform in botanical type is much more rational than the behaviour of the mixed leaf from the huge number of hybrid types which we have to deal with in present day commercial manufacture.

The variations of quality so far encountered have been little short amazing, and few people can have realised the full extent of the heterogeneity with regard to quality which exists in the tea bushes now cultivated in Ceylon. In order to give a clear impression of the extremities of the variations so far encountered, a few types are described below in some detail. The numbers given to types described are only applied for the purpose of this article as so far we have not made any attempt to classify types of quality; it should also be clearly understood that at present there is not any reliable information about the relative proportions of these types in cultivation.

Type 1.—A non-fermenting type which remains green after the most severe rolling and does not show any sign of developing the colour of normal fermented leaf even up to the time when mould growths appear. When fired after allowing a standard period for fermentation, it gives thin worthless liquors.

A few of these bushes in any field will possibly spoil all infusions although some fermentation is induced by contact with juice from other actively fermenting types. The green particles observed in many commercial infusions, the elimination of which has been the object of so many experiments, may originate from bushes of this type.

Biochemical investigations of this particular type have indicated the lack of the normal oxidase system. Peroxidase and ascorbic acid (Vitamin D) are both present.

Type 2.—A type in which fermentation does not appear to be very active under any circumstances. Three variations of this type have been encountered which become evident when fired after a standard period of fermentation.

- (a) Giving poor liquors.
- (b) Giving a good quality liquor.
- (c) Giving a liquor with a distinctive greenish character.

The infusions of these teas are all poor although they may vary in brightness. Liquors are invariably thin but Type 2(b) has notable quality and is remarkable for the association of quality with a poor infusion, a combination which at first puzzled the Taster.

Type 2(c) is not so rational in behaviour as the others and it is not so easy to predict the Tasters' opinion from the observations made during manufacture. This type often has a green, grass-like "nose," but sometimes, apparently owing to the presence of quality in the liquor, the Taster will class the liquor as above average although remarking on the greenish character. Most often, however, the greenish character of these teas is undesirable.

Type 3.—A type which ferments very rapidly and gives excellent infusions with coloury liquors after standard fermentation and firing. The main variations are:—

- (a) Good quality.
- (b) Poor quality.

Type 3(a) represents a good all-round tea and is probably the variety which will eventually be chosen for clonal propagation. It is, however, possible that a mixture of Types 2(b) and 3(b) when quality and colour are outstanding might give a better liquor than any single clone of Type 3(a). The problem may eventually arise as to whether we are to concentrate our energies on a good all-round type or on separate quality and colour types, should separate material which is outstanding with regard to these two characters be discovered during our investigations.

The presence of quality in Type 3 teas is evident during manufacture by reason of the "nose" on the fermenting leaf. A good nose assuredly indicates the presence of quality, and conversely the absence of any marked aroma in this type enables one to predict that although infusion and liquor colour will be good, quality will be lacking.

In one or two cases a rather interesting variation of Type 3(a) has been encountered where the aroma of the fermenting leaf is very marked in the early stages but disappears before firing which is carried out at the end of a period standard for all these experiments. Separate experiments are to be carried out with this particular leaf since the fermentation may be ultra rapid and constitute a type which would be called Type 4 in the series described above.

Sufficient has been said to indicate the degree of variation in type found in our Ceylon hybrids and to anyone saddled with the task of manufacture, the discernible differences between, say, Types 2(a) and 3(a) when manufactured side by side, are at present very disconcerting. However, should it prove feasible to replant with clonal material in the years to come, the process of teamaking will be simplified and teas improved to an extent which is impossible at present even with the most elaborate machinery the wit of man may devise.