

SOME OBSERVATIONS ON DROUGHT RESISTANCE OF TEA CLONES

A. V. Richards

It is common knowledge that tea clones show inherent differences not only in their habit of growth, leaf size, shape, colour *etc.*, but also in their yield potential and resistance to blister blight, nematodes and other pests and diseases. They also differ in their inherent ability to withstand drought, and this was strikingly shown by many of the clones in the 1961 clonal proving trial at St Coombs during a spell of drought last February (1964). There are in this trial 31 clones and the seedling progeny of a known seed bearer growing at Tocklai. Of the 31 clones seven are T.R.I. selections and the rest estate clones. They were planted in June 1961 in four randomized blocks of which two are under dadap shade and the rest without shade. Each block consists of 32 plots, and each plot has 36 plants of one clone or seedling progeny planted in six rows of six plants each at a spacing of 4' between the rows and 2' in the row. Each plot is surrounded by a border row of the red-leafed clone No. 26. The dadap shade trees are at a spacing of 14' x 14'. The tea was brought into weekly plucking in August 1963.

The trial plots are located on fairly sheltered tops of small hills with good *patana* soil originally planted in tea in 1926. The old tea was uprooted in November—December 1958 and the soil reconditioned by planting Guatemala grass at a spacing of 2' x 2' in January 1959. Manuring of Guatemala was done with 4 cwts. of standard Guatemala manure mixture per area in March and November 1960. The growth of Guatemala was particularly vigorous during the rehabilitation period of nearly 2½ years. The soil is still high in organic matter ranging up to 12% in the 0-6" layer.

The following table gives particulars of the monthly rainfall and number of rainy days during the period from November, 1963 to April, 1964.

TABLE 1

Months	Rainfall (inches)	No. of Rainy days
November, 1963	8.97	22
December, 1963	6.46	17
January, 1964	2.41	7
February, 1964	4.11	6
March, 1964	2.21	8
April, 1964	4.40	11

Definite signs of wilting were shown by about eight clones in February 1964 as the drought continued to extend from the end of December 1963, and they were first observed in the plots under dadap shade. Cracks began to appear in the surface soil in many places in these plots, and it became evident that the heavy moisture loss was due to additional competition by the roots of the dadap trees, in many of which the foliage itself was turning yellow and showing signs of moisture stress. Signs of wilting in the tea were observed a week or two later in the unshaded plots.

The clone which was most badly affected both in the shaded and unshaded plots was PO 26 (Poronuwa). The plants made no growth and remained in an almost permanently wilted condition with several branches showing die-back and leaf scorch (Plate I). The other clones which showed signs of wilting both in the shaded and unshaded plots were UH 9/3 (Uva Highlands) NL 4/2 (Neluwa) T 5/35 (Thotulagalla), and QT 1/5 (Queenstown).

The two clones NL 3/1 (Neluwa) and MT 18 (Balangoda Group) showed signs of wilting in both the shaded plots, while clone DG 39 (Balangoda Group) wilted slightly in only one of the shaded plots. All the T.R.I. clones, particularly T.R.I. 2025, showed no signs of wilting either in the shaded or unshaded plots. The drought ended with a shower of 2.60" of rain on February 26, and there were no deaths.

It is significant that these very same clones which were affected by drought at St Coombs showed signs of wilting nearly in the same order of susceptibility in the 1961 clonal proving trial of similar design at the T.R.I. substation at Passara where a spell of drought was experienced last May, 1964. The worst affected clones both in the shaded and unshaded plots were PO26 (Poronuwa) and NL 4/2 (Neluwa) followed by UH 9/3 (Uva Highlands) and T 5/35 (Thotulagalla).

Of the T.R.I. clones T.R.I. 2024 wilted badly in patches where the soil was shallow and gravelly, but T.R.I. 2025 and T.R.I. 2151 were appreciably resistant with T.R.I. 2023 showing only slight wilting. Of the estate clones Diyagama N and CY 9 (Tangakelle) were particularly fresh and green in all the plots. Wilting was again more pronounced in the plots shaded with *Gliricidia* than in the unshaded plots. There were no deaths as the drought was not prolonged, but the yields dropped considerably as the susceptible clones produced no flush during the drought period.

In view of the drought hazards even in areas which come under the influence of both the North-East and South West monsoons it is hardly necessary to emphasise the importance of estates making their own observations on drought resistance of their tea clones under local conditions, and selecting for planting in the new clearings only those clones which besides having desirable characteristics such as high potential yield, quality *etc.* are so inherently resistant as to produce a reasonable quantity of flush during the height of the drought.

Acknowledgement

The assistance given by Mr A. L. J. de Croos, Technical Assistant, St Coombs, and Mr D. D. Kroon, Technical Assistant, Passara in connection with these studies is gratefully acknowledged.



Plate 1.—Clone PO 26 (Poronuwa) showing dead twigs and leaf fall caused by a spell of drought.