

TEA MADE FROM CLONES — PART 2

E. L. Keegel

Since the first article on this subject was published (Keegel, 1959) more clones from the V.P. plots of the Plant Physiology Division and other estates have been tested for their potential quality; a list of them appears at the end of this article. Also included in the list are a few clones which have been previously tested and examined further. Whilst some have given consistent results, others have either not come up to expectations or have produced better teas. Those giving consistent results are listed in Table 1.

TABLE 1.—Clones which have confirmed previous results on re-examination

DT 1	(Group A1)
K 150	(„ A2)
DT 95	(„ B)
TRI 2016	(„ B)
„ 2022	(„ B)
„ 2025	(„ B)
K 136	(„ A2—previously promising).

Amongst the clones to be re-classified is TRI 2024, which has given rather disappointing results not only from bushes grown at St Coombs but also elsewhere. In the light of this additional evidence it appears necessary to transfer TRI 2024 to Group A2 for the time being. Some others need to have their rank changed, and these are listed in Table 2.

TABLE 2.—Clones which have to be re-classified

Clone	Previous rank	New classification
TRI 425 ...	A2	A1/2
„ 2024 ...	A1	A2
„ 1446 ...	C	A2
„ 2118 ...	C	B
K 145 ...	C	B
KEN 16/3 ...	C	B
QT 3/3 ...	Promising	B

It must not be thought, however, that the last word has been said on the quality of the foregoing clones. It is not possible to do so since inherent quality itself can be affected by environment, cultural treatment and many other factors which have yet to be investigated. A case in point is TRI 2024, which initially produced an attractive tea, but the quality of which for no apparent reason is now not so good as it used to be. On the other hand, the behaviour in quality of DT 1 has been so very consistent that we now use it as a standard for comparison with other clones. The grouping of the majority of the clones given in Table 4 has been based on such a comparison.

Classification

In the classification of clones, evidence is carefully sifted before a conclusion is drawn. One important factor which can affect a result appreciably is the weather, and seasonal effects have therefore to be taken into account when assessing quality. For example, a clone in Group A1 may very well produce a mediocre tea under adverse weather conditions, whilst a clone classified in Group B, given suitable weather, is capable of giving good quality. Then again, some clones may give good quality and flavour under favourable conditions but go down badly for the rest of the time. Assessment of the potential quality of a clone is accordingly done with due consideration to the influence of weather, and the classification of clones into groups is carried out somewhat on the following basis:—

- A1 —Fairly consistent throughout all seasons.
- A1/2—Potentially good quality, but more evidence required for classification in Group A1.
- A2 —Above average quality, and capable of producing a very good tea under favourable weather conditions.
- B —Average quality, but could have good quality at certain times.
- C —Below average, and compares unfavourably with a clone in Group A1.

Techniques

Another important factor is the method of manufacture. For example, in the mincing-machine technique the leaf does not attain the temperature in fermentation normally associated with full-scale manufacture; single-tray firing has also to be adopted because of the small quantity of leaf involved. Consequently it is too much to expect a product from a mincing machine similar in all respects to that manufactured on a commercial scale. Yet it has been possible by suitable modifications in the degree of mincing, period of fermentation, and firing temperature, to produce a tea with liquoring properties not much different from those to be expected from ordinary manufacture.

To satisfy ourselves and those who doubt the reliability of small-scale methods for the assessment of quality, a few experiments were conducted using ordinary estate leaf, which was manufactured as follows:—

1. on a commercial scale;
2. on an experimental scale, using rollers with a capacity of 30 lb withered leaf;
3. on a miniature scale—1 lb of withered leaf;
4. by the mincing-machine technique—1½ oz of withered leaf.

The results are published in our annual report for 1961 (Keegel, 1962) from which it will be seen that there is practically no difference between the various methods. The data were subsequently subjected to statistical analysis, which revealed the following information:—

Infusion	—	Method 4 (mincing machine) gives a significantly better infusion than the other three methods.
Colour	—	Method 1 (commercial) significantly inferior to the other three.
Strength Quality Valuation	} —	No significant difference between the four methods.

However encouraging these results, a point apt to be overlooked is that any characteristic of a tea can be altered appreciably not so much by the scale on which it is produced as by some change in a process. For instance, a change in the method of rolling or period of fermentation will influence quality, whether leaf is manufactured in small quantities or large quantities. So unless optimum conditions are given for the preservation of quality any method would be quite useless in dealing with this aspect of the work. The methods we have devised are the outcome of an extensive series of trials to determine the conditions of manufacture most suitable for assessing potential quality. That they are suitable for such a purpose is indicated by the results they have given when compared with those on a commercial scale at St Coombs. It does not necessarily follow, however, that the same results would be obtained on the same scales in another factory; a lot will depend on how the leaf is manufactured.

Clonal character

A matter arising from our observations and tasters' comments concerns the *character* of the liquor as distinct from such features as colour, strength and quality. Clones possess what a taster would describe as a clonal character, which is very pronounced in some clones and barely noticeable in others. No adequate description can be given for this character but it may be akin to rawness or greenness. It is likely that micro-methods of manufacture over-emphasize this character but the possibility of it being inherent cannot be ignored. If commercial scale manufacture does not eliminate this feature and it happens to be inherent, it might prove disastrous to rely on only a few clones in a replanting programme, however good their quality may be.

Quite obviously then, whatever may be the contributory causes of this so-called clonal character, it would be advisable to establish the largest possible number of clones. One clone by itself, or even a few, may not give a tea true to type, and dependence on any special outstanding feature may turn out to be a gamble. For example, certain clones may possess unusual scented flavours. Some tasters would call these taints whilst others would regard them as desirable. A field entirely planted with such types might constitute a problem, unless it is clearly established beforehand that they will readily be accepted by the trade. Even then, the evidence suggests that it would be preferable to use material derived from as many clonal stocks as possible in order to avoid the possible occurrence of an undesirable character originating from a single clone.

Selection for quality

The possibility of climate, shade, or some component in the soil, having some bearing not only on clonal character, but on quality as well, should not be lost sight of. A particular clone grown on one estate may therefore give a different result on another. Clone E 7/27 may be cited as an instance; when grown at St Coombs it produced only an average quality tea but manufacture tests carried out at St Coombs on the same clone grown in another estate gave better results. Therefore, the logical thing for an estate to do, when intending to use an outside clone, is first to test it on a small scale before embarking upon large-scale planting.

Quality being such an elusive character, dependent on so many factors, it need hardly be stressed that the classification given to the clones that we have tested should be taken only as a guide to selection. Before consistent behaviour in a clone can be claimed, clearly much more evidence is needed, and the co-operation of estates in this matter is therefore necessary. Quite a number of approved clones

have already been established in many estates and unless we know what type of teas these turn out under different conditions of growth it would not be possible to make a true assessment of any clone.

The Institute is willing to give all possible assistance to estates where manufacturing facilities are not available and, with this end in view, we are shortly introducing manufacturing equipment in the clonal testing stations at Kandy and Passara.

Until more information is available, we can recommend only those clones classified as A1, A1/2 and A/2 from the quality standpoint. Clone E 7/27 though classified as B may in the light of recent evidence be promoted to A2.

It will thus be seen that in the process of selection for quality we have to take certain risks with the material chosen at any time. This does not imply that, if a wrong choice is made, disastrous results would follow. But the possibility of one clone not giving the anticipated results or another surpassing expectations must always be expected. The list published in the first article (Keegel 1959) and that given here offers a wide selection to those estates that do not have their own clonal material. If the selection is confined to Groups A1, A1/2 and A2, the worst that can result is a tea of average quality.

Selection based on results of manufacture tests is therefore a long and continuous process. Biochemical analysis of certain constituents of the leaf (Ramaswamy 1962) may offer a short cut to any final conclusion, but at the moment the most that can be done is to use the best material available if progress in V.P. is not to be retarded.

Methods of accelerating the work by field observations have so far failed to yield conclusive results. Pubescence does not happen to be a determinant of quality, as it seems to be in N.E. India. No correlation appears to exist between size of leaf and quality. Anyway the search for some index of quality goes on.

Selection for tip

Besides these investigations on quality of high grown teas, observations have been made on the tip content of clones grown in the low country and manufactured at Pelmadulla Group. We are indebted to the former Superintendent, Mr. W. J. Craig, and the present Superintendent, Mr. A. L. Raffel, for the work they have carried out in this connection and for their permission to publish the results which are given in Table 3. The grouping has been done in the same way as the classification for quality, since this appears to be the simplest way of presenting the results.

The clones in question were all manufactured in an experimental roller—capacity 30 lb of withered leaf—and despite the small amount of leaf rolled, it was possible to obtain a representative selection of grades for the assessment of tip. It was observed that the tippy clones were generally inclined to be greyish in appearance, whilst the clones in Group TC were blacker, TRI 2024 having the blackest dry leaf appearance. Whether or not this difference in the colour of the made tea is due to an inherent character remains to be established. Another point of interest noted was that the colour of the tip of clone TRI 2043 was inclined to be golden whilst the others were silvery. This too is a matter requiring further examination since the value of a low grown tea is influenced, according to our information, not only by the quantity of tip but also by its colour.

TABLE 3.—Classification of clones into groups according to tip

Group TA 1—Clones with good tip
TRI 2043; TRI 2045.

Group TA 1/2—Clones with potentially good tip
TRI 1530; NIL seed 1950.

Group TA 2—Clones with very fair tip
TRI 25; TRI 2046; NIL seed 1951; NIL seed 1954.

Group TB—Clones with fair tip
TRI 1526; TRI 2016; TRI 2020; TRI 2025; TRI 2026;
NIL 235; NIL 263; NIL 274; NIL seed 1953; PO 26.

Group TC—Clones with little tip
TRI 2021; TRI 2022; TRI 2023; TRI 2024; TRI 2039;
NIL 4; NIL 12; NIL 15; NIL 275.

Note:—NIL — Nilagama Division of Pelmadulla Group
PO — Poronuwa

TABLE 4.—Classification of clones into groups according to quality

Group A 1—Clones of good quality
DT 1; NL 4/2; TC 9; WT 26.

Group A 1/2—Clones of potentially good quality
TRI 425; BW—(EM) 9; DUN 7; GLEA/6; MO 241.

Group A 2—Clones with very fair quality
TRI 1446; TRI 2024; ABB-AL 2/33; C 38; CAR-2/18;
CAR 7/10; EH 8/15; GF 7/6; GW 19; H 5/1; K-EEUD 65;
K 136; K 150; MO 20; MO 21; MO 110; MO 114;
MO 116; MO 134; MO 208; MO 209; NL 3/1; NL 8/3;
R-B/275; WT 36; WT 37.

Group B—Clones with fair quality

TRI 2016; TRI 2022; TRI 2025; TRI 2027; TRI 2118;
TRI 2120; AL 3/4; AL 10/24; BW-CB1 B2;
BW-CB2A1; BW-CB3B3; BW-DT1/47; BW-DT1/56;
C 33; CAR 7/3; CAR 7/4; CH 13; CW 21; DON 3N1;
DT 95; E 7/27; GLEN 6/3; K-EELD 163; K-EEUD 20;
K 145; KEN 16/3; LLF 14/2;
MO 16; MO 33; MO 146; MO 220; MT 18; QT 1/5;
QT 3/3; QT 4/4; SJ 2/28; SJ 2/30; TC 10; UH 3/4;
UH 3/7; UH 9/3; VO 33/3.

Group C—Clones with little quality
PA 22; QT 1/3.

Abbreviations used in Table 4

TRI	Tea Research Institute	GW	Great Western
ABB	Abbotsleigh	H	Harrow
AL	Aislaby	K	Kirkoswald
BW	Brunswick	KEN	Kenilworth
C	Chapelton	LLF	Luckyland
CAR	Carolina	MO	Mooloya
CH	Craighead	MT	Balangoda
CW	Coombeewood	NL	Neluwa
DON	Marigold	PA	Passara
DT	Drayton	QT	Queenstown
DUN	Dunsinane	R	Ragalla
E	Somerset	SJ	St James
EH	Eildon Hall	TC	Tillicoultry
GF	Gordon	UH	Uva Highlands
GLEA	Craigie Lea	VO	Vellai Oya
GLEN	Glentilt	WT	Waltrim

References

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