

KTC 30. Cuttings Resistance Trial No.1

Aim:

To determine the resistance to vascular - streak dieback (Oncobasidium theobromae) of twenty-five Trinitario selections.

Method:

Cuttings of the 25 test selections were set in the propagator in October 1966 and field planted in July 1967. The cuttings were past their best planting age at this stage but planting had to be delayed because of a severe dry spell. The design used was a 5 x 5 balanced lattice repeated twice with 5 trees per plot and a total of 12 replicates. An error at planting resulted in incomplete randomization of the selections so that, for example KA2-106 is in the same corner of each replicate and the same layouts are used for reps. 7-12 as for 1-6, respectively. More importantly, some pairs of selections are in adjacent plots in every block. The fact that the 12 replicates are scattered all over the station reduces the magnitude of this error in that any infection gradients would probably run in different directions at different sites.

The cuttings were planted at a spacing of 1.83 metres (actually 6 ft.) square, in anticipation of meaningful results before competition effects became significant the five cuttings of each selection in each replicate were planted in a continuous line. In June 1968, in an effort to increase the rate of dieback infection in the test plants, pod skins were laid around and across replicates 6, 7, 10 & 12, while dieback prunings were distributed similarly through the other 8 replicates. Dieback prunings were used for the obvious reason. Pod skins were used because at that time it was thought possible that the dieback disease resulted from infection of the branches by Botryodiplodia theobromae.

Neither the pods nor the prunings produced any noticeable increase in infection rate. In the light of present knowledge of vascular-streak dieback this is not surprising. The cuttings were inspected for dieback 6 weeks after planting out and thereafter every 4 weeks. All infected cuttings located at the first four readings would have died within a short time and were therefore removed. Later infections were recorded and marked but were not treated as it was desired to observe the reaction of the various selections to the disease. Naturally, some infected cuttings died, particularly in the early months of the trial. Symptoms of all infections were also described, on four occasions about 3 months apart during 1968. Growth measurements were made on all trees in

July 1968 and again in July 1969, the indicates measured being total height of plant and number of growing points. These measurements were taken to allow an objective assessment of relative vegour of the selections in the trial, as it is thought that the layer plants are liable to have more infections recorded ggainst them simply because of their greater potential (leaf area) for infection. Infections occurred at a very low rate for the first twenty readings, although sufficient information was gathered to allow the selections to be ranked with a four degree of certainty. During the period March - May 1969 a ten-fold increase in infections per reading occurred, corresponding with a marked increase in other trials in the area. Most selections retained their position on the scale although two or three were displaced a number of steps.

As the cuttings could not be raised under dieback-per conditions prior to field planting an exclusion period was allowed during which any infections recorded were not scored against the selections. As such scores could throw out the assessment of infection rate in any one replicate. This exclusion period covered the first two readings, as examination of the distribution of infections between two groups of replicates indicated that the pattern operating at the later readings was operative from the third reading onwards. The ranking of the selections based on the number of infections which were recorded at readings 3 to 22 inclusive (November 1967 to May 1969) is given in Table 1. Following analysis of these results the selection were re-ranked on the basis of their adjusted treatment means (Table 2) Table 1 & 2 about

Table 1. Number of Infections per selection (readings 3-22 inclusive).

<u>Selection</u>	<u>No.of infections</u>	<u>Selection</u>	<u>No.of infections</u>
KT 185	9		
K24-105	18	K28	64
KT 140	23	K24-103	67
KA2-201	26	K4-101	69
KA2-101	30	K13	72
K74	37	K73	79
K11-101	37	K4	94
K82	38	K83	102
K21	40	KA2-103	105
K24-106	45	KA2-106	109
KT143	58	K6	120
KA2-105	59	K11	130
K6-101	62	K1-102	134

Table 2. Tanking of clones on the basis of adjusted treatment means.

Selection	Adjusted treatment mean	Selection	Adjusted treatment mean
KT195	0.5675	K24-106	3.9155
KT143	1.5647	K73	3.9399
K24,105	1.6336	K4	4.0582
K4,101	1.6389	K24-103	4.1578
KA2-201	1.9998	K6-101	4.4827
K74	2.1624	K6	4.5319
K11-101	2.3090	KA2-106	4.6515
K28	2.3999	K1-102	5.2835
KA2-101	2.4385	K83	5.2845
KT140	2.4522	KA2-105	5.5619
K21	2.7533	KA2-103	6.5846
K82	3.1891	K11	7.9512
K13	3.4513		

L.S.D. = 0.53338 at 5% level.

In September 1969 the block was thinned in such a way as to produce a diamond pattern of trees with a spacing of about 2.4 metres. This was done to reduce inter-tree competition and allow an assessment of production from the clones which had not yet been yield-tested.