

## RELATIVE GROWTH RESPONSE OF TEA CLONES GROWN IN SOIL FUMIGATED WITH DAZOMET 98% G AND METHYL BROMIDE AND IN UNINFESTED SOIL

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As reported earlier, the granular soil fumigant Dazomet 98% G had a marked influence on the growth of nursery plants resulting in a significant improvement in growth. Such effects were found to be more pronounced in the fast-growing clones, TRI 2024 and TRI 2025 and least in the slow growing clones like TRI 2142. No significant effects on growth was observed in the nematode resistant clone DT 95 grown in soils treated with either fumigant.

### INTRODUCTION

In general, the growth response of plants grown in fumigated soils has been reported to be superior to that observed in untreated soils (Pitcher, 1957; Firman & James, 1963; Sivapalan, 1969 b). In an earlier investigation the growth of nursery plants grown in soil infested with the root lesion nematode, *Pratylenchus loosi* and fumigated with Dazomet 98% G was found to be superior to those grown in such soil treated with Methyl bromide.

The present investigation was carried out to assess the effect of fumigation by itself on the growth performance of different categories of clones, following fumigation with Dazomet 98% G or with Methyl bromide, irrespective of nematode infestation. The clones include some fast-growing ones like the TRI 2024 and TRI 2025 and the slow-growing ones like the TRI 2142 and DT 95.

### MATERIALS AND METHODS

One thousand eight hundred nursery bags, 9 inches high and 4 inches in diameter and opened at both ends were filled with uninfested soil and stacked in 3 beds (600 plants per bed). The soil in the nursery bags of one of the beds was fumigated with Dazomet 98% G, at the rate of 0.5 kg/2.83 m<sup>3</sup> of soil (Sivapalan, *et al*, 1980) and those in the bags of the second bed were treated with Methyl bromide at the rate of 0.5 kg/2.83 m<sup>3</sup> of soil (Sivapalan, 1969 a). The third bed contained nursery bags filled with untreated soil.

The beds were each sub-divided into 12 sub-blocks (replicates), to accommodate 3 replicates each of the clones TRI 2024, 2025, 2142 and DT 95, with each clonal replicate having 50 nursery bags. Growth assessments of the plants were made at monthly intervals, 3 months from planting the cuttings and until the plants were one year old. At each assessment, 2 plants/clone/replicate were removed from the respective beds and their individual shoot and root weights were determined.

### RESULTS

The results of the above investigation are presented in Tables, 1 & 2.

TABLE 1 — *The overall mean shoot and root weight of nursery plants (irrespective of clones) grown in soil treated with Dazomet 98% G and Methyl bromide*

Treatment	Mean shoot weight (g) $\sqrt{n}$	Mean root weight (g) $\sqrt{n}$
Dazomet 98% G	2.66	1.71
Methyl bromide	2.30	1.57
Control	2.00	1.34
LSD (P=0.05)	0.22	0.61

As seen from Table 1, the overall treatment effects were such that shoot growth was significantly superior (P=0.05) following treatment with Dazomet 98% G than that observed in soils treated with Methyl bromide which was in turn significantly better than in the untreated soil. Though not statistically significant root growth was also superior in fumigated soils than in untreated soil.

TABLE 2 — *Relative mean shoot and root weights of different clones grown in soils treated with Dazomet 98% G and Methyl bromide as well as untreated ones.*

Clone	Shoot weight (g) $\sqrt{n}$			Root weight (g) $\sqrt{n}$		
	Dazomet	Mebr	Control	Dazomet	Mebr	Control
TRI 2024	3.02	2.44	1.94	1.89	1.62	1.43
TRI 2025	3.30	2.86	2.46	1.98	1.94	1.88
TRI 2142	2.67	2.42	1.99	1.72	1.56	1.10
DT 95	1.65	1.50	1.41	1.23	1.17	0.99
LSD (P=0.05)		0.38			0.45	

As seen from Table 2, on examining the treatment x clone interactions, the fast growing clones TRI 2024 and TRI 2025, growing in soil treated with Dazomet 98% G, had a statistically significant higher mean shoot weight than those growing in soil treated with methyl bromide, which in turn had a significantly superior mean shoot weight than those from untreated soil. However, even though a better root growth was observed in treated soils, with the best growth in those treated with Dazomet 98% G, no statistically significant improvement in root weights were observed with respect to the different treatments or clones, other than the fast-growing clone TRI 2024.

## DISCUSSION

As seen from the above results, fumigation of nursery soils, in general, results in a superior growth of plants and this was observed to be most pronounced in the fast-growing clones like TRI 2024 and TRI 2025. In this respect, of the tested fumigants, Dazomet 98% G was found to be superior to methyl bromide. As a result of such treatments, the nursery plants become ready for the field, at least 2 or 3 months earlier, thus resulting in a net saving on nursery costs. Such savings greatly off-set the cost of fumigation itself. Apart from the direct effect on growth, such treatments eliminate all contamination with nematodes and ensures the planting of nematode-free plants in the field.

Apart from its superior effects, Dazomet 98% G is much easier to handle than Methyl bromide, at comparable costs.

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