EFFECTS OF TREATMENTS OF BANANA "BITS" FOR NEMATODE CONTROL ON EMERGENCE AND YIELD

Root-rot of bananas due to the burrowing nematode (*Radopholus similis* (Cobb)) is important in many Queensland plantations. The spread of this parasite is caused primarily by the use of infested planting material, and disinfestation of such stock is the basis of control. Paring to remove discoloured "corm" tissue followed by immersion in water at 53-55°C for 20 min (Colbran and Saunders 1961) or in DBCP (2 pints of a concentrate containing 85·9 per cent. v/v 1,2, dibromo-3-chloropropane in 100 gal of water for 1 min) (after Loos and Loos 1960) have been recommended. DBCP acts as a surface decontaminant. Hot-water therapy was first used commercially in Queensland in 1955, but since 1961 has given way to the DBCP treatment, which is more suited to field practice.

Following isolated reports of poor strikes of DBCP and hot-water treated planting material, a trial was set out in virgin soil at Narangba to compare the effects of the treatments listed in Table 1. The design was a 5 x 4 randomized block with 18 plants per plot and a plant spacing of 10 ft x 5 ft. "Bits" were taken from a plantation of Williams Hybrid where there was a moderate infestation of *R. similis*. These were collected and pared free of rot on November 2, 1960; the pared bits ranged in weight from 2 lb to 4 lb, with an average of 2 lb 11 oz. Hot-water treatments were carried out on November 2 in a thermostatically-controlled hot-water tank. DBCP treatments were applied on November 3, and the trial was planted on that date.

On March 27, 1962, a composite sample of 4 oz of cord roots was taken from nine stools in each plot, sliced lengthwise and incubated for 5 days in jars at room temperature. No specimen of *R. similis* was obtained, indicating the efficacies of the five treatments.

Data on the numbers of plants "showing" 35 days after planting, and numbers and weights of bunches harvested between June 19 and October 1, 1962, are presented in Table 1.

Emergence was retarded by dipping in hot water or in the higher concentration of DBCP but eventual stands were not affected. Bunch weights were not influenced by the two treatments currently recommended.

Results from this trial and inspections of areas where poor stands had resulted from DBCP treatments indicate that the factors responsible were the use of higher concentrations and/or longer times than recommended, and the use of undersized bits. On one plantation many of the treated bits which failed to germinate were less than 1 lb in weight; a minimum size of 2 lb after paring should be used.

Field experience and results from other trials have shown that suckers are also tolerant to the recommended DBCP and hot-water treatments.

TABLE 1

Field Trial, Narangba, 1960–61: Emergence, and Harvesting Results

Treatment	Emergence at 35 days		No. of Replants per Plot	No. of Bunches per Plot	Mean Bunch Weight (lb)
	Trans-formed Mean*	Equival-ent No.			
Pared and immersed in hot water at 53–55°C for 20 min	2·49	5·7	2·1	11·5	56·25
Pared and immersed in hot water at 58–60°C for 10 min	2·63	6·4	1·7	10·7	46·00
Pared and dipped in 0·21% DBCP† for 1 min ..	3·00	8·5	0	11·0	50·00
Pared and dipped in 0·32% DBCP‡ for 1 min ..	2·29	4·8	1·4	8·5	54·00
Pared	3·19	9·7	1·1	10·7	50·75
Necessary differences ⎰ 5%	0·53		N.S.	N.S.	5·65
for significance ⎱ 1%	0·74				7·91

* $\sqrt{x + \tfrac{1}{2}}$ transformation.

† 2 pints of an emulsifiable concentrate containing 85·9 per cent. v/v of 1,2,dibromo–3–chloropropane + 12 oz " Triton 100 " wetting agent in 100 gal water.

‡ 3 pints of an emulsifiable concentrate containing 85·9 per cent. v/v 1,2,dibromo–3–chloropropane + 12 oz " Triton 100 " in 100 gal water.

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