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Trial of Phytohormones to Improve Tomato Fruitset in Guadeloupe

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INTRODUCTION

In the French Caribbean, tomato production is rather limited the year around. The main period of production is the dry season (November to May); in the rainy season there is very little production. Because of this fact, the results are high prices, (which fluctuate from about 05 US dollar per kilogram in the dry season, to 1.5 US dollar in the wet season), and imported tomatoes to supply the local market. Therefore, tomato production demands improvement in tropical countries.

In local areas where diseases are controlled, tomato yields are still low due to poor formation of flower clusters, the low level of fruit set, and insufficient development of fruits.

One of our objectives is to improve fruitset by various means. In countries in the temperate zone, phytohormones are used to improve tomato fruitset in adverse conditions. The present trial was to test such a method under our tropical environment.

MATERIALS AND METHODS

This trial was conducted at our main station at Duclos on a ferralitic soil. The tomato variety used was Floradel grafted on to CRA 66 a bacterial wilt resistant line, in order to avoid occurrence of this disease. These plants were set out in the field, on April 2nd after they had been grafted in the greenhouse.

The experiment consisted of blocks with 4 replicates of 5 plants each. The plants were staked and pruned up to 4 clusters of flowers. The phytohormones tested were: Beta Napthoxy Acetic Acid (Blossom-Set) and N-meta-Tolylphthalamic Acid (Tomaset). These two plant hormones are also known as Duraset and BNOA, respectively. The treatments consisted in spraying flower clusters at the recommended rates, three times a week with a hand sprayer beginning when the first flower was fully open. These treatments were as follows:

a) Unsprayed (control
b) Blossomset
c) Tomaset
d) Blossomset and Tomaset

1/ The authors are greatful, and wish to express their thanks for the technical aid rendered by C. Vincent and J. Manyri.

After setting of fruit, they were counted to determine percentage of fruitset. The meteorological data for the 60 day experiment period following planting was 429mm of precipitation and a temperature average minimum of 20 deg. C., and an average maximum of 27.5 deg. C.

RESULTS

The data indicates that there are no significant differences in the treatments (see tables 1, 2 & 3).

DISCUSSION

The use of phytohormones was demonstrated to be ineffective on improving fruitset under the conditions of this experiment. Also it was observed that the hormone sprays did not increase the formation of flowers.

Table 1 - Fruit setting

	Bloc 1	Bloc 2	Bloc 3	Bloc 4	Mean
Control	62.4	51.8	56.3	58.1	57.2
Blossomset	53.1	54.7	50.0	56.3	53.5
Tomatoset	56.7	60.3	54.0	57.1	57.0
Blossomset + Tomatoset	66.7	54.7	60.0	58.8	60.0

- Percentage of fruitset for 3 clusters.

Table 2 - Statistical data

Origine	Square	LD	Variance	F	F5%	
Total	4,909	15				
Treatment	2,926	3	975,33	1,78	3,29	NS
Blocs	1,983	3	661,00	1,21	3,29	NS
Error	3,979	9	545,44			

Table 3 - Number of flowers per treatment

	Bloc 1	Bloc 2	Bloc 3	Bloc 4	Total
Control	93	85	71	86	335
Blossomset	81	75	78	64	298
Tomatoset	67	63	76	77	283
Blossomset + Tomatoset	75	75	80	68	298

F = 0,33 - F5% = 3,29