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FUNGICIDE FIELD TRIAL AGAINST EGGFRUIT ANTHRACNOSIS

J. Fournet[1/]

In a former paper (FOURNET 1970), we studied the causal organism of Eggfruit anthracnosis, one of the most destructive diseases of this crop in the Caribbean. This parasite proved to belong to the Colletotrichum gloeosporioides group, but all our isolates were specialized, and attacked only Eggfruit, Pepper fruits and Solanum torvum berries, the latter probably being the natural source of inoculum.

The present paper deals with a fungicide trial which was carried out in the field from December 1970 to February 1971.

Experimental design

The variety was "Violette longue", grafted on Solanum torvum, to avoid too strong mortality by Southern bacterial wilt, the soil being highly infested by Pseudomonas solanacearum. In a latin square design (4 x 4 - 20 plants/plot) three chemicals were tested.

Benomyl (Benlate)	50%	(100 g/hl)
Mancozeb (Dithane M 45)	80%	(300 g/hl)
Propineb (Antracol)	70%	(300 g/hl)

The whole being compared with a non-treated control.

The plants were placed in the field by the first day of October.

An equalizing Mancozeb spray (November 24) followed by an equalizing harvest (November 26) were done.

The inoculum (in vitro inoculated twig fragments of Solanum torvum) was placed above each plant (December 1). Fifteen treatments were done from December 8 until February 19 (73 days).

The mean frequency was about a treatment every 5 days; a weekly treatment proved insufficient on account of the very heavy rainfallas during December (510 mm).

Eight harvests were done during the notation period. On 10 plants per plot, chosen for their regularity, we noted:

The total weight harvested.
The total number of fruits harvested.

1/ INSTITUT NATIONAL DE LA RECHERCHE AGRONOMIQUE GRAAG - Domaine Duclos - Petit-Bourg - Guadeloupe.

The commercial weight (healthy fruits).
The number of salable fruits (healthy fruits).
The mean number of spots per fruit (noted on the 3 first harvests).

RESULTS

The results are summarized in Table I, and their statistical significance (tested by the DUNCAN test) is showed in Table II. The considerable amount of primary inoculum and the heavy rainfalls of December may explain the low harvests.

TABLE I

	Control	Benomyl	Mancozeb	Propineb
Total weight (kg/plant) harvested	0,659	0,937	1,083	1,667
Total number of fruits harvested per plant	7,75	9,27	10,20	13,77
Commercial weight (kg/plant)	0,085	0,179	0,431	0,969
Number of salable fruits per plant	0,80	1,65	3,47	7,60
Mean infection rate (spots/fruit) (3 first harvests)	16,75	12,26	3,03	1,31
Number of spots/plot (3 first harvests)	318,25	361,67	107,56	56,75

TABLE II

	Control	Benomyl	Mancozeb	Propineb
Total weight harvested	c	bc	b	a
Total number of fruits harvested	b	b	ab	a
Commercial weight/plant	c	bc	b	a
Number of salable fruits per plant	c	c	b	a

The numbers of spots/plot were studied by covariance analysis, because the number of fruits harvested were different. Highly significant diferences were found.

The total number of fruits harvested varies according to the more or less important young fruits' abortion. These very severe attacks mainly occur in the control plots. Furthermore, it may be said from the results that the more effective the treatment is, the bigger the fruits can grow.

The results show that the best chemical we tested was undoubtedly Propineb (Antracol); Mancozeb has a weaker effect, and Benomyl has but a very poor action. The weak effectiveness of Benomyl may be explained by the fact that this systemic fungicide is not transported into non-perspirating organs, as was shown by PETERSON AND EDGINTON (1971). Egg-fruit is known to be such an organ; we can therefore trust only the superficial preventive action of Benomyl, which proved to be very poor in our trial.

Other diseases

We observed the other diseases which occasionally occurred in the plots. The main disorfers were leaf necrotic spots, twig brown spots and twig wilt. Isolation showed that leaf spots were caused mainly by Corynespora sp., twig spots and wilb by Phomopsis vexans Sacc. & Syd., sometimes associated with the same Corynespora. We noted the importance of these symptoms in each plot. The results are summarized in Table III and their statistical significance is shown in Table IV.

TABLE III

	Control	Mancozeb	Propineb	Benomyl
Twig spots/plant	7,05	1,32	0,92	0,45
Spots per leaf	23,95	4,22	3,92	0,92

TABLE IV

	Control	Mancozeb	Propineb	Benomyl
Twig spots/plant	b	a	a	a
Spots per leaf	b	a	a	a

The three chemicals tested showed a very good effectiveness against leaf and twig spots; Benomyl seems to be better (which appears strikingly by a mere observation of the plots), but no significant differences could be shown between Mancozeb, Propineb and Benomyl. In this case, Benomyl probably exerts a systemic activity. On a few out-of-trial plants, we observed the same action of Benomyl by soil-drench.

LITERATURE CITED

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