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**PROCEEDINGS
OF THE
CARIBBEAN FOOD CROPS SOCIETY**



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Phoma destructiva Plowr. is commonly described as a tomato -- fruit rot fungus (GGVI 1953 GUNTHER & GRUMMER 1958, CIFFERI 1959, - GROVER 1965, AULAKH, MALHOTRA & GROVER 1969). Often confused with the pycnidial stage of Didymella lycopersici Kleb. (JONES, OVERMAN & GERALDSON 1966) it can be distinguished from it, following KNIGHT - (1960) by its virulence on tomato fruits, its incapacity to produce stem cankers and its always unicellular conidia. In the caribbean area, Phoma destructiva seems to be mostly a leaf pathogen. Fruits can be invaded, but in most instances from wounds. Leafspots were also described in Italy by CECI (1955), in Hawaii by OBRERO, TRUJILLO & ARAGAKI (1968).

In the rainy areas of Guadeloupe this fungus is one of the most serious leaf pathogens of Tomato. In dry areas, where it is seldom observed, non-negligible damage can however occur in overhead irrigated crops.

SYMPTOMS

Phoma leaf spots in Guadeloupe are of the same shape that those described by OBRERO, TRUJILLO & ARAGAKI (1968) and CECI (1955); they are very similar to Alternaria solani leaf spots, or to spots caused by a Corynespora sp., recently observed in Guadeloupe.

The spots are first dark, very little, surrounded by a yellow - halo, then enlarge with concentric zonation to a diameter of one or two cm. Sometimes pycnidia can be observed in transmitted light with the naked eye.

On stems and petioles the spots remain generally small, longitudinally elongated. When the spots are very numerous the leaves become yellow and wilt.

ARTIFICIAL INOCULATION

When a conidial suspension (prepared from a test-tube culture - on oatmeal agar) is sprayed on plants which are incubated under 100% R.H. (relative humidity), the first little dark spots appear after 48 hours. If the plants are incubated only 24 hours at 100% R.H. - and then placed in dry atmosphere the spots do not appear; but the symptoms are quickly observed if the plants are placed again under saturated humidity. A statistical study has shown us that the contaminations, which can remain latent in dry air, are strongly improved by a first exposition of 24 hours at 100% R.H., and by the presence of an aqueous extract of the conidial matrix.

Wet conditions are therefore necessary not only for spore germination, but also penetration into the leaf and for disease symptoms appearance.;

Nevertheless the inoculum sprayed on tomato plants placed immediately in non-saturated conditions can remain alive more than 4 - weeks (under cover). Probably, in the field the fungus is not destroyed by dry periods which in rainy areas are seldom longer than one month.

FUNGICIDE TRIALS

MESSIAEN, BEYRIES & BERAMIS (CFCS Vth Annual Meeting, Fort-de-France, July 1969) have tried fungicide spraying with Daconil, Maneb and TMTD; Daconil was the best. This fungicide trial was done during a moderately dry season (December to February).

We have realized a second trial during the rainy season (April to June).

Design of the Experimental Plots

4 randomized blocks with 5 treatments (20 plots of 20 plants).

The tomato variety was an F_1 hybrid Floralou x UPR 199-15, resistant to southern bacterial wilt.

4 fungicides were compared with the check:

Benomyl (Benlate)	50% (100 gr./100 liters)
Mancozebe	80% (300 gr./100 liters)
Daconyl	75% (300 gr./100 liters)
Methylzineb (Anthracol)	70% (300 gr./100 liters)

The transplantation was done at the end of March, and the Phoma inoculum introduced on April 20th (Solanum torvum stem pieces, 2 to 3 cm. long were sterilised, Phoma destructiva grown on them before hanging one of them above each tomato plant).

Fungicides were sprayed every week and once more if a rainfall superior to 20 mm occurred (April 23rd, 30th, May 5th, 8th, 14th, 19th, 21th, 26th, 29th, June 8th). The mean frequency was every 5th or 6th day between inoculum introduction and the last fruit harvest (June 15th).

10 plants in each plot were chosen for notations. The severity of the disease on leaves was evaluated on each plant on the 3 leaves immediately above the 3 first fruit trusses and on the last well developed leaf with the following scale: 0-no spot, 1- 1 to 10 spots, 2- more than 10 spots, 3- yellowing of the whole leaf, and 4-drying of the leaf.

We evaluated also the yield of fruits per plant, the number of the fruits/plant, the mean weight of the one fruit (for this criterion the last harvest was left out of the calculation, since little green fruits were harvested together with mature ones). Then mean weight of leaves and stem for one plant after the last harvest was also evaluated.

These results can be seen on Table I.

Table I	Check	Benomyl	Daconil	Mancozeb	Methylzineb
Disease severity on leaves on May 25th	3.47 a	2.44 b	2.32 b	2.03 bc	1.94 c
Yield kg. fruits/ plant.	0.57 a	0.83 b	0.84 bc	0.80 b	0.90 c
Number of fruits/ plant.	8.37 a	11.38 bc	11.40 bc	10.80 b	11.70 c
Mean weight of fruits (g.)	68.5 a	80.8 c	78.5 b	80.8 bc	83.0 c
Mean weight of stem and leaves kg/plant	0.027*a	0.160 b	0.75 bc	0.180 bc	0.190 c

* Complete drying of plants.

The best fungicide is therefore Methylzineb (Anthracol). For most of the criteria, Mancozeb, Daconil and Benomyl are similar - (accidental degradation of the Maneb fungicide used in the 1969 experiment accounted probably for its inferior performance compared - to Daconil).

It can also be observed that the disease severity is higher and the fruit yield inferior compared to the 1969 trial. It may be caused by the use of a different tomato variety, and also be the rainy season during the experiment which surely enhanced the virulence of Phoma destructiva.

R E S U M E N

El Phoma destructiva es un importante patógeno, que ataca las - hojas del Tomate, sobre todo en las zonas lluviosas de Guadalupe; - la humedad del aire favorece todas las fases de la enfermedad. Cuando los ataques son graves, las pérdidas en la cosecha resultan muy importantes.

Una prueba en el campo demostró que el Methylzineb (Anthracol) resultó más efectivo para contener el P. destructiva que el Benomyl el Daconil y el Mancozeb; esos tres fungicidas son equivalentes.