

Differential sets

Passalora fulva (Pf) - Tomato

Passalora fulva races have previously been named using a complex scientific system and Hubbeling (1978) introduced a system of grouping them. However, in the end of the 90's and beginning of this century, new strains had been detected which attack previously resistant varieties with *Cf-9* or other resistant genes and could not be classified according to the old system with groups. Also companies started to develop varieties resistant to these *Cf-9* breaking isolates. To clarify the situation on isolates and differentials with *P. fulva* in tomato, ISF EG DRT carried out a project with ringtest from 2019 till 2021. In this project first the 6 existing isolates 0 and A to E and several new isolates were tested and characterized on the already existing differentials. Then in a ringtest the 6 previously defined isolates were validated and 5 new isolates (F to J) with distinct reaction on the differential hosts were identified and validated. As can be seen in the differential host table, only the most commonly used resistance genes in marketed varieties are included now in the table. Resistance genes *Cf-1* and *Cf-3* which were included in the old system were therefore not included anymore in this new table. It should be noted that in the new system the letters correspond to single isolates and not to a group of isolates as in the old situation.

It should be noted that in contradiction with ISF principles for *P. fulva*, naming of isolates is with letters instead of numbers because of broad commercial use and acceptance of the letters.

It should also be noted that regarding the resistance mechanisms of the resistance genes in the differentials, two different mechanisms exist which lead to two symptom classes (see protocol CPVO). As however both classes are interpreted as HR, an intermediate level is not included in the table.

Differential host	Cf-gene	Pf: 0*	Pf: A*	Pf: B*	Pf: C*	Pf: D*	Pf: E*	Pf: F*	Pf: G*	Pf: H*	Pf: I*	Pf: J*
Monalbo*	-	S	S	S	S	S	S	S	S	S	S	S
Véтомold*	<i>Cf-2</i>	HR	S	HR	S	HR	S	S	HR	HR	HR	S
Purdue 135*	<i>Cf-4</i>	HR	HR	S	S	HR	S	HR	HR	S	S	HR
IVT 1149*	<i>Cf-5</i>	HR	HR	HR	HR	S	S	HR	HR	HR	S	HR
Ontario 7818*	<i>Cf-6</i>	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	S
IVT 1154*	<i>Cf-9</i>	HR	HR	HR	HR	HR	HR	S	S	S	S	S

S = susceptible

HR = highly resistant

*differential hosts and isolates that are used by the seed sector

References:

Hubbeling, N. (1978). Breakdown of resistance of the Cf 5 gene in tomato by another new race of *Fulvia fulva*. Mededelingen, agris.fao.org.

Final report ISF EG DRT Project for characterization of existing and new strains and validation of a new differential set for *Passalora fulva* (Pf) – Tomato

Protocol

CPVO. See <http://www.cpvo.europa.eu/> for a protocol on disease resistance testing

For more information contact the ISF Secretariat at isf@worldseed.org

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