HAL open science

Resistance against melon chlorotic mosaic virus and tomato leaf curl New Delhi virus in melon

Cecile Desbiez, Gustavo Romay, Hervé Lecoq, Catherine Wipf-Scheibel, Pauline Millot, Gregory Girardot, Michel Pitrat

To cite this version:

Cecile Desbiez, Gustavo Romay, Hervé Lecoq, Catherine Wipf-Scheibel, Pauline Millot, et al.. Resistance against melon chlorotic mosaic virus and tomato leaf curl New Delhi virus in melon. International Advances in Plant Virology 2019, Oct 2019, Rome, Italy. , 128 p., 2019, International Advances in Plant Virology 2019 at Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria, Centro di ricerca Difesa e Certificazion Via C.G. Bertero 22, 00156 Roma Italy. Programme, abstracts & delegate list. 29-31 October 2019. hal-02735214

HAL Id: hal-02735214

https://hal.inrae.fr/hal-02735214v1

Submitted on 2 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License

Resistance against melon chlorotic mosaic virus and tomato leaf curl New Delhi virus in melon

C DESBIEZ[1], G ROMAY[1,3], H LECOQ[1], C WIPF-SCHEIBEL[1], P MILLOT[1], G GIRARDOT[1] and M PITRAT[2]

[1]*INRA, Unité de Pathologie Végétale, CS60094, 84143 Montfavet cedex, France*
[2]*INRA, Unité de Génétique et Amélioration des Fruits et Légumes, CS60094, 84143 Montfavet cedex, France*
[3]*Université catholique de Louvain, Earth and Life Institute, Phytopathology, Croix du Sud 2 Bte·L07.05.03, 1348 Louvain-la-Neuve Belgium*

ABSTRACT

Cucurbit diseases caused by begomoviruses (genus *Begomovirus*, family *Geminiviridae*) are a new threat to cucurbit production worldwide. Some begomoviruses have a narrow geographic distribution despite a high local prevalence and agronomic impact, like the New World World begomovirus melon chlorotic mosaic virus (MeCMV) observed only in Venezuela so far; others have a larger geographic range. The Old World tomato leaf curl New Delhi virus (ToLCNDV), first described in India, was more recently reported in Europe and in Northern Africa where it has rapidly become a major agronomic problem. Control of begomoviruses relies on the limitation of their vector *Bemisia tabaci* –mostly by intensive insecticide treatments-, and on genetic resistance when available. Considering the frequent emergence of highly damaging begomoviruses, breeding for resistance is a key factor for a durable control, particularly if broad-spectrum resistances effective against several viruses at once can be found.

Thirty-one melon accessions were screened for resistance to MeCMV and ToLCNDV. Five accessions presented nearly complete resistance to both viruses. Accession IC-274014, showing the highest level of resistance to both viruses, was crossed with the susceptible cultivar Védrantais. The F_1, F_2, F_3/F_4 and both back-cross progenies were mechanically inoculated with MeCMV. Plants without symptoms nor virus detection by ELISA and/or PCR were considered as resistant. The segregations were compatible with two recessive and one dominant independent genes simultaneously required for resistance. Inheritance of resistance to ToLCNDV in the F_2 was best explained by one recessive gene and two independent dominant genes simultaneously required. Some F_3 and F_4 families selected for resistance to MeCMV were also resistant to ToLCNDV, suggesting that common or tightly linked genes were involved in resistance to both viruses.

Our results suggest that although some resistance factors to begomoviruses are specific, common broad-spectrum resistance genes may be present in melon germplasm and could constitute interesting tools for breeders.

Association of Applied Biologists

President: Stuart Knight

crea
Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

Presentation of Crea-dc
by Pio Federico Roversi

ABIOPEP PLANT HEALTH

EMERAMB
Emergent viruses and virus vectors in Mediterranean Basin crops, an ARIMNet2 project
Coordinator Miguel A. Aranda, CSIC, Spain

AGRITEST
PLANT HEALTH MANAGEMENT

agdia EMEA
EUROPE • MIDDLE EAST • AFRICA

International Advances in Plant Virology 2019

at Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria, Centro di ricerca Difesa e Certificazione Via C.G. Bertero 22, 00156 Roma, Italy

PROGRAMME, ABSTRACTS & DELEGATE LIST

29-31 October 2019

Association of Applied Biologists
Warwick Enterprise Park, Wellesbourne, Warwick, CV35 9EF
Registered Charity No. 275655 Contact: john@aab.org.uk. Tel: +44 (0)2476 999485 http://www.aab.org.uk