University of Novi Sad
Faculty of Agriculture

ORGANIC AGRICULTURE FOR AGROBIODIVERSITY PRESERVATION

3rd International Conference Agrobiodiversity

Novi Sad, Serbia, 1st – 3rd June 2017

BOOK OF ABSTRACTS

CIP - Каталогизација у публикацији
Библиотека Матице српске, Нови Сад

631.147:574(048.3)

INTERNATIONAL Conference Agrobiodiversity "Organic Agriculture for Agrobiodiversity Preservation" (3 ; 2017 ; Novi Sad)
Book of abstracts / 3rd International Conference Agrobiodiversity "Organic Agriculture for Agrobiodiversity Preservation", 1st-3rd June 2017 Novi Sad, Serbia. - Novi Sad : Faculty of Agriculture, 2017 (Novi Sad : Alfagraf). - 140 str. ; 30 cm

Tiraž 100. - Registar.

ISBN 978-86-7520-398-8

a) Пољопривреда - Органска производња - Биодиверзитет - Апстракти

COBISS.SR-ID 314689799

Organic Agriculture for Agrobiodiversity Preservation. 3rd International Conference Agrobiodiversity (2017; Novi Sad)

BOOK OF ABSTRACTS

Editor: Maja Manojlović

Publisher
Web: http://polj.uns.ac.rs/
Sq. D. Obradovica 8, 21000 NOVI SAD, Serbia
Tel.: +381(0)21 4853-500; Fax: +381 (0)21 454-442
e-mail: dean@polj.uns.ac.rs

EFFECTS OF *Pseudomonas* sp. AND *Pseudomonas chlororaphis* STRAINS TO CARROT SEED GERMINATION AND INFECTION BY *Fusarium* spp.

Dragana Jošić[1], Dejan Cvikić[2], Đorđe Kuzmanović[1], Jasmina Zdravković[2], Milan Zdravković[1], Magdalena Knežević[1], Snežana Pavlović[1]
[1] Institute of Soil Science Teodora Drajzera 7, Belgrade
[2]Institute for Vegetable Crops Karađorđeva 71, Smederevska Palanka
Email: dragana.josic@yahoo.com

Pseudomonas is one of the most commonly used genera for biological control, with strains known as a fungal antagonist due to its wide spectrum of antifungal activity against soil-borne plant pathogens. Knowing that some *Pseudomonas* can cause damage to the host plants by inhibiting seed emergence and the growth of plant seedlings, it is necessary to choose strains beneficial to germination and vigour of seeds and antagonistic to seed pathogens. Phytopathogenic fungi that belong to *Fusarium* genus affect numerous agriculturally important plants including carrot. The aim of this study was to examine natural infection of *Daucus carrota* L. cv. Vizija seeds, antagonistic activity of *Pseudomonas* sp. and *P. chlororaphis* strains toward pathogens and bacterial effect on seed germination. Vizija, a new variety of carrot used for this study, reflects a modern approach in vegetable breeding techniques. It has intense dark purple roots, that are over 25 cm long. Vizija is meant to be consumed in a form of fresh vegetable, when its antioxidant activity is the strongest. Also, it can be industrially processed, by drying or freezing. Vizija has a great yield potential, and can be cultivated in unfavorable conditions as well. Three *Fusarium* species were isolated from seeds, as natural infection: *F. solani, F. oxy*sporum and *F. sub*glutinans. Different fraction and concentration of one *Pseudomonas* sp. and two *P. chlororaphis* strains were tested for fungal growth inhibition assay and improvement of seed germination and seedling growth. Pure culture (10^6 CFUmL-1) and cell-free supernatant in two concentrations (10^6 and 10^8 CFUmL-1) of each strain were applied to seed for 30 min before germination test. Germination tests were carried out by the paper towel method. The ratio of seed germination was measured after 7 and 14 days of incubation in the dark at 25°C. All tested fractions *of P. chlororaphis* strains improved germination rate comparing to control. All tested fractions of *Pseudomonas* sp. Ek1 induced low increases of germination after 7 days, while overnight culture decreased germination in 5% after 14 days. *P. chlororaphis* strains significantly affected germination and, depending on fraction applied, showed 8-22% and 24-43% higher values than control after 7days, as well as 30-38% and 36-72% higher values (14d) for K35 and Q16 strains, respectively. All strains significantly improved seedling growth and reduced seed infection by three *Fusarium* species observed in control. The best antagonism was observed for K35 strain with average values of 0.5 and 1.25% of infection after 7 and 14 days of germination, following by Q16 (1 and 2.5%) and Ek1 (3 and 8%), while 20 and 54% of infection was counted for control. Based on results obtained in this study, *P. chlororaphis* Q16 and K35 strains improve seed germination and are also effective as biocontrol agents against carrot seed pathogens *F. solani, F. oxysporum* and *F. subglutinans*.

Key words: *Pseudomonas chlororaphis, Fusarium spp., germination, seed, Daucus carrota L.*

Acknowledgment: This work was supported by the Ministry of Education, Science and Technological Development, Republic of Serbia, Project III46007.