



COST

Vegetable Grafting to Improve Yield and Fruit Quality under Biotic and Abiotic Stress Conditions

Action number FA1204

Start date: 01/10/2012

End date: 30/09/2016

Year: 2nd (01/10/2013 - 30/09/2014)

Presenter's Name

Function in the Action (Chair): Dr. Giuseppe Colla

Country: Italy



Scientific context and objectives (1/4)

Background / Problem statement:

- Cucurbits and solanaceous crops are frequently cultivated under unfavorable soil and environmental conditions.
- Grafting represents a practical, and effective tool to reduce the losses in production caused by adverse conditions.
- The Action promotes advanced knowledge gathering and exchanging through a multidisciplinary network of partners in order to identifying and understanding how rootstock-mediated traits can improve vegetable crop yield and quality under (a)biotic adverse conditions.



Scientific context and objectives (2/4)

Brief reminder of MoU objectives:

- Identify germplasm available and ongoing breeding programs
- Define root-shoot signaling and grafting compatibility
- Determine root-shoot interaction under (a)biotic stresses
- Identify effects of rootstocks on fruit quality
- Create an international database
- Transfer available knowledge into the practice
- Identify particular topics for new research projects



Scientific context and objectives (3/4)

Research directions:

Create a multidisciplinary network of scientists and experts to:

- understand the biological basis of rootstock-mediated improvement of vegetable crops and their compatibility by merging already existing scientific information;
- translate into practice the advanced scientific understanding on vegetable grafting with the aim of promoting the integration of this technique as an effective tool for sustainable production of vegetable crops.



Scientific context and objectives (4/4)

Research directions:

- The innovative work proposed by this Action is to reduce fragmentation of the research groups and enhance cooperation within participating Countries to build up a basis for collaborative network which is able to define common strategies for generating more efficient rootstocks.
- This unique team work will increase the sustainability and competitiveness of Seed Companies, Nursery Companies and vegetable growers.



Working groups

WG1 - Genetic resources and rootstock breeding

Leader: Andrew J. Thompson, Cranfield University, UK

Co-Leader: Halit Yetisir, University of Erciyes Melikgazi, Turkey

WG2 - Rootstock-scion interactions and graft compatibility

Leader: Jan Henk Venema, University of Groningen, The Netherlands

Co-Leader: Ian C. Dodd, Lancaster University, UK

WG3 – Rootstock-mediated resistance to (a)biotic stresses

Leader: Dietmar Schwarz, Institute of Vegetable and Ornamental Crops, Germany

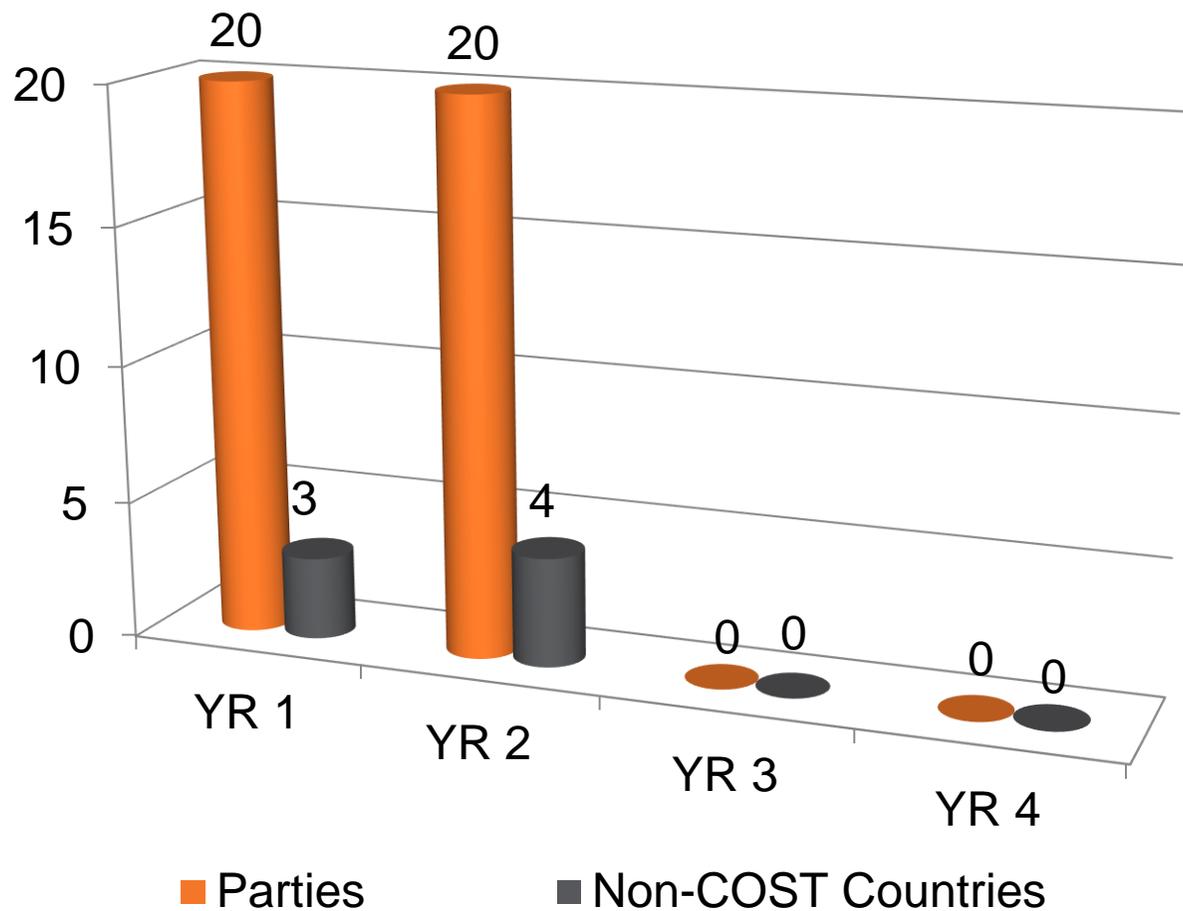
Co-Leader: Roni Cohen, ARO, Newe Ya'ar Research Center, Israel

WG4 - Rootstock-mediated improvement of fruit quality

Leader: Cherubino Leonardi, University of Catania, Italy

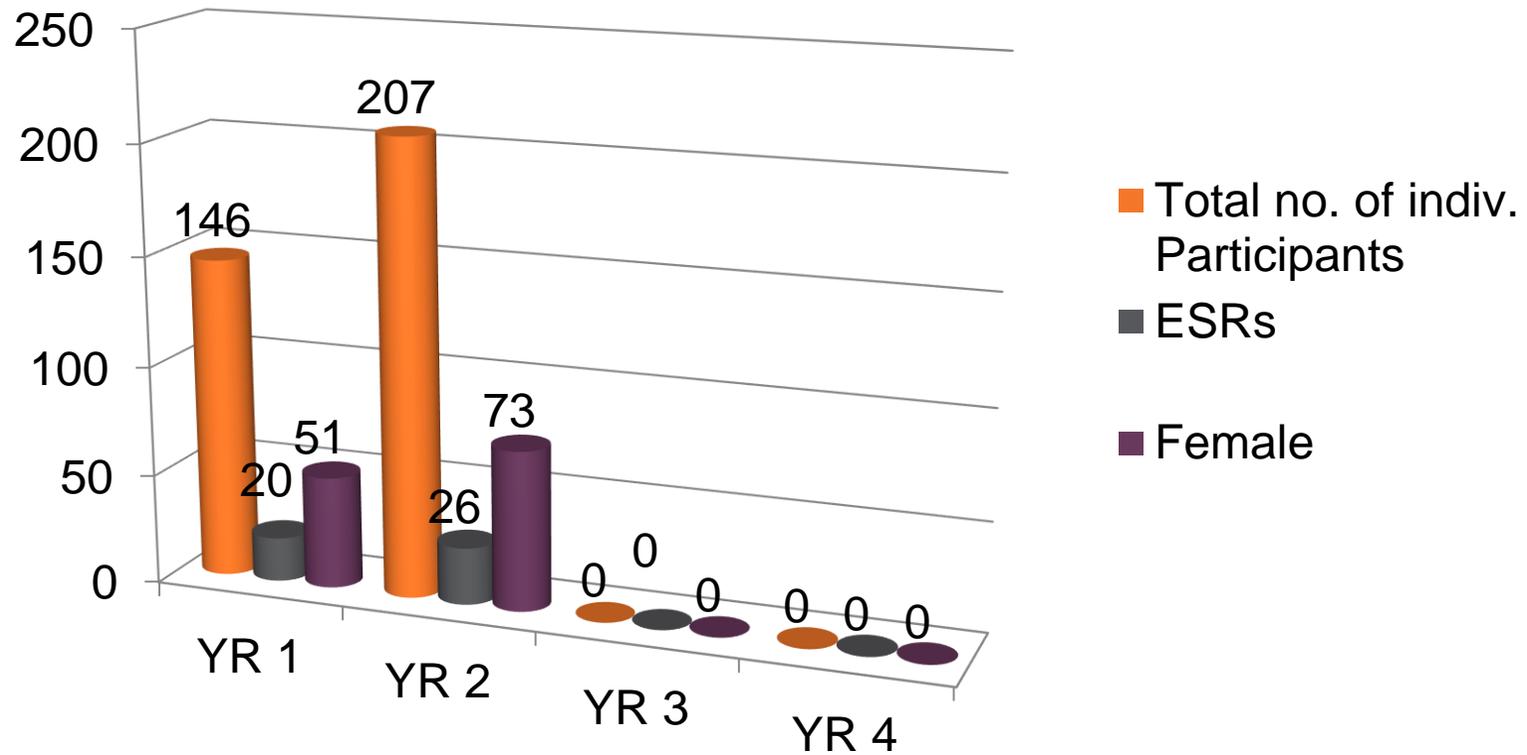
Co-Leader: Carmina Gisbert, COMAV, Valencia, Spain

Action Parties



Grant Holder:
University of Tuscia
Leonardo Varvaro
(Legal Representative)
Italy

Action participants



Use of COST Instruments

Activity (No.)	Year 1	Year 2 (ongoing)	Year 3	Year 4
MC/WG Meetings	1	2		
STSMs	3	4 (+1)		
Training Schools	0	(+1)		
Workshops or Conferences	0	1		
Joint Publications	~20	~30		



Results vs. Objectives

The second year of the COST Action permitted to achieve the following results:

- increase the network of experts by 42%
- relevant presence of private companies (20% of WG participants)
- enhancement of research collaborations (5 STSMs, Joint research projects) and publications
- identification of Private Companies' research interests
- establish interaction with the COST Action (FA1105) "Biogreenhouse: towards a sustainable and productive EU organic greenhouse horticulture"
- definition of the first training school objectives and contents



Significant Highlights in Science or Networking (1/2)

First Annual COST Conference jointly organized with the first ROOTOPOWER Workshop (FP7 R&I) in Murcia on 12-14 November 2013 with 110 participants, 75 presentations from 25 Countries.

The Conference permitted to enlarge the network and to achieve a broader scientific base from which started the action. Innovative knowledge: a) genetic basis of root traits; b) hormonal signals in root-shoot communication; c) biochemical markers of grafting compatibility; d) rootstock mediated improvement of resistance to viruses and new races of soilborne pathogens; e) effect of rootstocks on secondary metabolites related to nutritional quality of the fruits; f) the use of grafting in new vegetable crops.



Significant Highlights in Science or Networking (2/2)

Dissemination event at the 1st ISHS International Symposium on Vegetable Grafting held in Wuhan (China) 17-21 March 2014. Participation of the Chair, Vice-Chair, Leader and co-Leader of WG3, WG4 Leader and other WG participants.

The presentation of the COST Action results permitted to raise the COST network's international status and to exchange ideas and knowledge for developing collaboration activities in the field of genetic resources, rootstock breeding, root-shoot communication, rootstock-mediated improvement of (a)biotic stress resistance, and rootstock effects on fruit quality.



Challenges

The critical aspects for the third year are:

- implementation of database
- drafting of the final book
- increase the participation of ESR
- development of research projects especially in the frame of Horizon 2020 (Societal Challenge 2 – Sustainable Food Security)