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Mediterranean Network on Certification of Citrus MNCC



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Citrus is surely the most important and cultivated fruit crop in the Mediterranean and its sanitary status, relatively to infectious agents, is highly deteriorated compared to the other fruit crops in terms of number of severe graft-transmissible diseases which are responsible for the citrus industry crippling worldwide.

In the framework of the Mediterranean Networks on Integrated Pest Management (MNIPM) of Mediterranean fruit crops (citrus, grapevine, olive, stone fruits), CIHEAM, the Mediterranean Agronomic Institute of Bari (MAIB) has established and coordinated, since 1995, the sub-network "Mediterranean Network on Certification of Citrus (MNCC)", in order to address sanitary problems affecting citrus for a sustainable agriculture and free trade in the Mediterranean area.

Objectives of MNCC

MNCC aims at cooperating in the Mediterranean for the:

- training of researchers and technicians in topics related to citrus sanitary improvement;
- exchange of information, materials and experts;
- production, standardization and/or simplification of new diagnostic tools/technology;
- evaluation of the sanitary status of citrus crops;
- the establishment and/or harmonization of national sanitary certification schemes;
- the production and conservation of sanitarily improved native cultivars.

Participating countries and institutions

Much attention was paid to the choice of institutions and/or laboratories as MNCC members considering the experience of single laboratories and the skill of personnel involved. Since the beginning of its activity, the MNCC has involved many scientific institutions and at present 12 Mediterranean countries are represented (Albania, Algeria, Cyprus, Egypt, Greece, Iran, Italy, Jordan, Lebanon, Malta, Morocco, Turkey).

Activities

Since 1995 MNCC members have met six times in different Mediterranean locations (Italy, Lebanon, Turkey, Algeria, Egypt) in order to acquire information of utmost importance for the network tasks, discuss results obtained in each country, prioritize future research lines for the Mediterranean and mainly reinforce the link among participants.

The main topics identified as priority activities within MNCC are:

1. *assessing the sanitary status of citrus in countries where information is inadequate* (Albania, Algeria, Cyprus, Egypt, Greece, Italy, Lebanon, Malta, Morocco, Turkey)
2. *selection and conservation of native germplasm for nursery propagation* (Albania, Egypt, Italy, Lebanon, Malta)
3. *standardizing and validating protocols for the pathogen detection and sanitation* (i.e. *in vitro* somatic embryogenesis from stigma and style culture)
4. *promoting research on virus diseases of major importance in the Mediterranean basin* (i.e. improvement of serological detection of tristeza, psorosis, infectious variegation)
5. *harmonizing protocols for the production, conservation and use of citrus propagating materials*

Results and impact of network activity in the Mediterranean

Within MNCC (i) a protocol for the production, maintenance and utilization of healthy citrus selections in the Mediterranean was set up based on the experience acquired in the network partner laboratories and on the results obtained through specific trials; (ii) the standardization and validation of improved techniques for the serological detection of CTV, CPsV and CIVV was carried out; (iv) the serological characterization of several Mediterranean CPsV and CTV sources was also studied.

Through the Institutions involved, MNCC supplied reagents (monoclonal antibodies, probes, primers) not yet available on the market and allowed the application of methods for the (i) detection of CPsV, CTV and citrus viroids (various types of ELISA, cold probe hybridization etc), and (ii) sanitation of citrus graft-transmissible pathogens (somatic embryogenesis from stigma and style).

These data will empower actions for the sanitary improvement of local germplasm toward the establishment of certification programs to be developed by the network in the member countries.

Results of the network activity showed an updated picture of the citrus industry in the Mediterranean region, with particular reference to the sanitary aspects, giving practical indications of protocols for citrus clonal and sanitary selection, certification programs, diagnosis and characterization of quarantine agents in Mediterranean countries. These results have been published in specific proceedings (Martelli and D'Onghia eds. *Proceedings of the Mediterranean Network on Certification of Citrus : 1995-1997*. CIHEAM/MAIB publications *Options Méditerranéennes*, series B, 21: studies and research), in scientific magazines and presented at international meetings, and distributed to a broad public of researchers, Ministerial officers , fruit growers, nurserymen etc. in order to raise the awareness of countries on such topics of regional interest and to establish common control strategies for the preservation of the Mediterranean citrus germplasm from possible sanitary deterioration thus favoring the free exchange of healthy citrus propagating materials.

Mediterranean Network on Certification of Citrus (MNCC)

OVERALL GOAL

To promote sustainable agriculture and free trade in the Mediterranean

SPECIFIC GOALS

- To assess the sanitary status of citrus in Mediterranean countries
- To select and maintain native germplasm for nursery propagation
- To standardize and validate protocols for citrus virus and virus-like detection and sanitation
- To characterize specific diseases of economic importance
- To harmonize protocols for the production, conservation and use of healthy citrus germplasm

PARTNERS

Albania	Plant Protection Institute, Dures
Algeria	Centre Nationale de Certification (CNCC), Alger Institut Technique d'Arboriculture Fruitière (ITAF), Boufarik
Cyprus	Agricultural Research Institute (ARI), Nicosia
Egypt	Agricultural Research Center (ARC), Ministry of Agriculture and Land Reclamation, Cairo
Greece	Control Station for Vegetative Planting Materials, Aspropyrgos
Jordan	Ministry of Agriculture, Amman Department of Biotechnology, Faculty of Agricultural Technology, Al-Balqa Applied University
Iran	Citrus Research Institute of Iran, Ramsar
Italy	Mediterranean Agronomic Institute (MAIB), Bari Dipartimento di Protezione delle Piante e di Microbiologia Applicata (DPPM), University of Bari Istituto di Genetica degli Agrumi, CNR, Palermo
Lebanon	Direction Révolution Agraire, Beyrouth
Malta	Centre of Propagation, Ministry of Agriculture, Lija
Morocco	DPVCTRF - SCSP, Ministère de l'Agriculture, Rabat
Portugal	Universidade do Algarve, Fern
Turkey	Department of Plant Protection, University of Çukurova

MEETINGS

Bari - Italy	(January and July 1995)
Adana - Turkey	(September 1996)
Beirut- Lebanon	(December 1997)
Algiers- Algeria	(October 2000)
Cairo Egypt	(October 2001)