EuroMed CitrusNet

Safe and High Quality Supply Chains and Networks for the Citrus Industry between Mediterranean Partner Countries and Europe

This project is funded by the European Commission under the Thematic Priority 5: Food Quality and Safety

Newsletter nr 1 / 2007

EUROMEDCITRUSNET FIRST PROJECT MEETING

In March, the EuroMedCitrusNet project Partners met for the first time at the Ipanema Hotel Porto to discuss citrus supply chain safety and quality of between Mediterranean Partner Countries and Europe.

EuroMedCitrusNet aims to promote stronger research collaboration between the EU and Mediterranean Partner Countries to improve the quality and safety of citrus supply chains. The project, is funded by the European Commission's 6th Framework Programme under the Food Safety and Quality priority.

In addition to the coordinator SPI, Portugal, the project is being conducted by a number of highly prestigious institutions including:

- University of Catania, Italy; Cukurova University, Turkey;
- National Agricultural Research Foundation, Greece;
- Euroquality, France;
- Asociacion de Investigacion de la Industria Agroalimentaria ainia, Spain;
- Institut Agronomique et Veterinaire Hassan II, Morocco;
- Horticultural Research Institute, Egypt;
- Institut National Agronomique de Tunisie, Tunisia;
- Conzorcio Euroagrumi O. P., Italy;
- Station D'Emballage D'Agrumes Kabbage Souss, Morocco.

The first meeting was attended by organizations from France, Spain, Italy, Greece, Turkey and Morocco. These organizations aim to create a sustainable network for the Mediterranean citrus sector.

EU - MEDITERRANEAN NETWORK OF KEY CITRUS STAKEHOLDERS

The EuroMedCitrusNet project aims to create a database of individuals and organisations relevant to the citrus sector to support research and development to improve the quality and safety of citrus supply chains between Mediterranean Partner Countries and the EU.

This database will allow members to identify partners in other regions or countries of the Mediterranean for establishing partnerships or developing project proposals. If you are conducting research related to improving quality and safety of citrus supply chains you are invited to enter your details. There is no charge for membership.

The database will contain citrus research organizations and companies including SMEs, business support organizations, and other organizations related to the safety and quality of citrus supply chains including training organizations.

Users can add research projects, which will be associated with their organisations. It will also include capabilities for the user to search for existing projects. All registrations will be validated by our team of experts as a means to ensure that users are provided with quality information.

As a registered user, in addition to information on the public website, you have full access to the following database services including:

- Search online database – Search for individuals or organisations through a series of criteria (e.g. Name, Research Interest, and Country).
- Update Personal Registration Details – Update information submitted under your registration such as contact details, areas of interest, projects, activities or facilities.
- Change Account Details Consult and update account settings (e.g. password and login settings).

Interested? Please follow the link and make your registration

http://www2.spi.pt/euromedcitrusnet/newuser1.as

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IMPROVING WATER-USE EFFICIENCY OF LEMON TREES BY SHADING WITH NETS: AN IRRIQUAL STUDY

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There is increasing world-wide interest in improving plant water use efficiency, since water is increasingly scarce, especially in regions where precipitation is low, evapotranspiration is high and drought periods are frequent. Such is the case in many Mediterranean areas, which are characterized by long periods of intense irradiance and high temperatures, with average midday temperatures frequently reaching 30 ºC or more.

Citrus trees are characterized by a large canopy with a correspondingly large evaporative surface (Cohen and Fuchs, 1987). By contrast, stem and root hydraulic conductivities are low (Castle, 1978; Moreshet et al., 1990). In extreme conditions, such as those found in Mediterranean climates, these characteristics may result in a transpiration rate which exceeds the water absorption capacity, resulting in a high plant water deficit (Kriedemann and Barrs, 1981). To avoid such situations, shading nets have been used to reduce the radiation load in crops, since nets reduce and redistribute the radiation load more efficiently to the plants growing underneath (Allen and Lemon, 1974).

The influence of reflective aluminized poly-propylene shading nets on photosynthetic performance of citrus plants has been evaluated by measuring CO_2 assimilation, transpiration rates, stomatal conductance and leaf water potential. The experiment was carried out in a research field near Murcia, Spain. Measurements obtained by the continuous monitoring of sap flow were compared with discrete measurements of conventional plant water status indicators in potted young lemon trees (*Citrus limon* (l.) Burm. Fil, cv. Verna) grafted on sour orange (*C. aurantium* L.) rootstock. Eight trees were used in the experiment, four of which were placed under a rectangular shading net, while the other four were maintained in the open air. The decrease of sap flow in shaded trees with respect to the exposed trees was evident every day. High radiation reduced the leaf water potential. In the early morning, the shaded plants opened their stomata later that the plants growing in the open air, and so the transpiration in the latter was higher than in the former during the first hours of the day. However, the net photosynthesis rate was not increased in the exposed plants during these hours of the morning. In the central hours of the day, the leaf stomatal conductance values of exposed plants were lower, as were their instantaneous photosynthesis rates, than the corresponding values in the shaded trees. As a result of the photosynthesis/transpiration balance, it was observed that the best integrated daily water use efficiency corresponded to the shaded treatment.

Thus, although further field experiments are needed to evaluate the potential for using shading nets in citrus culture, we think that net shading could be extended in many areas in which irrigation water is scarce and insolation is high. According to our data, this culture practice will be especially useful to save water for summer conditions (with high radiation and high evapotranspiration tases) in the Mediterranean area.

This study has been supported by **IRRIQUAL (Project co-funded by the European Commission, DG Research, within the 6th Framework Programme of RTD, Priority 5 – Food Quality and safety).** The topic of interest of IRRIQUAL project deals with the valuation of new culture and irrigation practices (including water doses implementation, water quality use and fertigation management) The research methodology will be based on a combination of experiments, field surveys and modelling tools aimed at predicting the impact of a given irrigation practice on the relevant inputs (water, fertilizers) and outputs (yield, quality, safety) of four Mediterranean fruit trees species (Peach, Olive, Almond, Citrus). Previously to the establishment of such practices, a better knowledge of the effects of different irrigation strategies on crop physiological response, crop quality and crop safety are required. The resulting recommendations on irrigation design and practices will be transferred to farmers by the elaboration of Irrigation Best Management Practices for each target crop and location. The resulting data and know-how will be transferred also to the irrigation industries by the development of new irrigation technology (including hardware and software components for an automated irrigation equipment), and the optimisation of the irrigation water disinfection using ultrasound technology.

THE INSTITUTE OF OLIVE TREE AND SUBTROPICAL PLANTS, CHANIA

The Institute of Olive tree and Subtropical plants of Chania supports the development of citrus crops in Southern Greece with the research, study and selection of the suitable rootstocks and varieties for the various regions of the country. At the same time produces and provides to all the nurseries of the country the essential plant material for the reconstitution of the citrus orchards, scheduled and carried out from the Ministry of Agriculture from time to time. New varieties of orange (RO 25) and lemon (Zambetaki) which are adapted to the conditions of the country were created.

The research area and aim of the Sector of Citrus in the Institute are:

- The study of problems concerning the adaptation and evaluation of imported varieties as well as of the selected local ones.
- Use of biochemical and biotechnical methods (isoenzymes, RAPDs, PCR) for the production of healthy genetic material of citrus.
- Conservation of uninfected material for multiplication of citrus collection.
- Clonal selection from different varieties using nucelar plants.
- The study and evaluation of the rootstocks under the viewpoint of the tolerance to different diseases. Evaluation and propulsion of the rootstocks which show resistance at Mal Nero and tolerance at virus Exocortis, Cahexia and Tristeza. Selection of the most tolerant lemon and citrus cultivars to Mal nero disease.
- The study of different cultivation techniques.

- Evaluation of rootstocks which improve the quality and the earliness of different cultivars.
- Creation of new cultivars which adjust better in our country's conditions.

With the indexing checks performed constantly at the Institute is maintained one of the largest citrus plantation in the Mediterranean, which is free of diseases. At the same time virus checks have been performed at the commercial orchards of the county of Chania and the results are that 50% of them are infected by the exocortis viroid.

The different varieties (cultivars) and rootstocks that were imported from abroad were evaluated and the results were used by the Ministry of Agriculture in order to perform citrus reconstitutions. Also, there have been evaluated more favorable rootstocks, which can adapt in the conditions of Greece and which could replace in the case of a caradin programme for the conformation of the Tristeza disease.

Between the many results the following could be considered:

Evaluation of the new late navel orange varieties "Navel Late" and "Lane Late" as well as the super early clone of navel orange "RO 25" which is a choice of the Institute of Olive tree and Subtropical Plants of Chania.

Evaluation of the recommended cultivars "Marisol", "Nova", "Clasuelina" and "Miyagava wase". The cultivars "Marisol" and "Miyagava wase" reach maturity at October while the hybrid "Nova" allows picking in November and very well sustains its outstanding characteristics until February.

Study of new rootstocks; some of them were singled out for their good performance to the conditions of Crete. The rootstocks of Sour Oranges (varieties Brazilian and Bittersweet) are tolerant to saline soils. The rootstock citrange "Carrizo" is ideal for early varieties, while the citrumelo "Swingle" for the late ones.

Index for virus control. The disease "exocortis" is the most common one. Thus, as for the varieties which may be used in future programs for the reconstitution of citrus, it is necessary to use rootstocks tolerant to the viroid "exocortis". Laboratory's contribution to the sector is considerable.

Creation of new varieties using the method of nuclear plants. The navel variety RO 25 is one creation of our institute and it consists the earliest variety of navels of our country. Its maturity is 10 days earlier than the New Hall and its fruit is round with thin rind.

Introduction of citrus foreign varieties with commercial interest.

One small collection from the nucelar plants created by the Citrus Laboratory has been installed in the Monastery of Chrysopigi, so that this material has the possibility to be conservated for a future evaluation.

The lemon Zambetaki is created by a nucelar plant of the varieties Messara after one free pollination with the variety Eureka. Its fruit is seedless and most of the production is given during the summer months when there is little offer of lemons and thus high prices for the agricultural people.

Selection of rootstocks which are tolerant to humid soils where there is an intense problem of asphexy.

It was found that the rootstocks Carizo citrange favours the earliness of the Clementine mandarins one week earlier.

It is also found that many rootstocks that are used in other continents (America) or Spain-per example Rangpur lime and Rough lemon can't be used in our country because of the infection by *Phoma tracheiphilla* under the form of Mal nero.

Using he indicator plant (Citron Etrong) we found that the viroid Exocortis is hosted at most orchards of our country and causes considerable drying at citrons and lemons. The viroid is also hosted in many oranges orchards where it

causes degradation of the fruits' quality. Fruits of navel orange become more acids.

From the varieties evaluation it was found that the navel group of late oranges distinguish from the varieties Navel Late grafted on the rootstock Citrumelo and Volcameriana and Lane Late.

From the evaluation of Orange early varieties we distinguished RO25 and New Hall.

Elaborate studies for the improvement and the development of citrus cultivation in Crete.

From the evaluation of the very early mandarins we distinguish Marisol clementines and Satsuma Migagawa wase. From Normal season's pick Nova mandarin gives the best results. Its maturity starts at November and can be maintained on tree until February without noticing any alteration in its organoliptic characteristics.

Evaluation of grow regulations for the colour improvement and the size of the mandarin fruits.

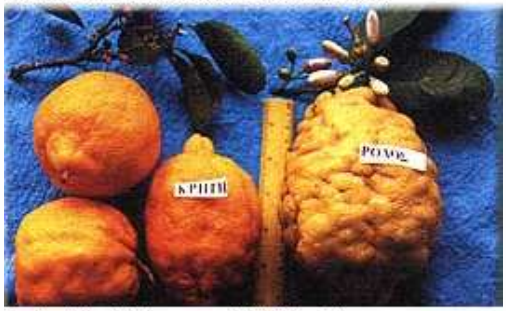
Use of the cover crops system for biological confronting of the dangerous weeds.

Research programs:

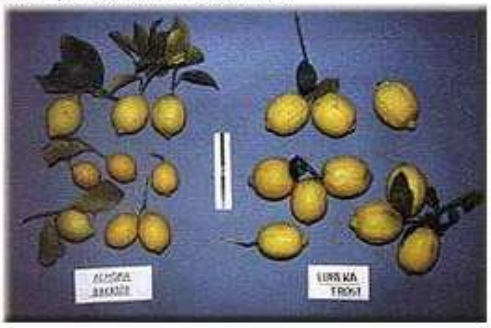
Viroids; Study of the molecular interactions with the vector and epidemiology of "Exocortis". G.G.R.T. - PENED 99.

"Hydrogenases and environmental biotechnology" COST 818 – E.E.

Varieties of "Bargamot" (collection of Institute)



Fruits of the late lemon variety "Vakalou" in comparison to the Eureka Frost



Fruits of the summer lemon variety 'Zambetak

"Comparative study of varieties and citrus species in the region of Crete". Ministry of Agriculture.

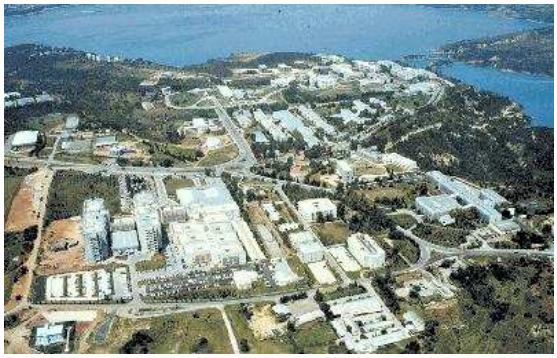
"Treatment of Tristeza virus of citrus in Greece and Cyprus. Bilateral collaboration of Greece-Cyprus

"New citrus rootstocks: micro-propagation, molecular-genetic identification and evaluation of them in biotic and abiotic conditions." The Research Promotion Foundation's Framework Programme for Research and Technological Development 2006 (RPF's FP 2006, "ΑΕΙΦΟ 0506" / www.research.org.cy/):

- In vitro breeding of 5 new rootstocks-breedings of Sour Orange.
- In vivo breeding of the breedings of Sour Orange and control of the product's genetic stability.
- Evaluation of the 5 new rootstocks-breedings of Sour Orange on the Citrus Tristeza Virus and on the Exocortis Viroid.
- -Evaluation of the 5 new rootstocks-breedings of Sour Orange on their resistance to the soil tenor of $CaCo_3$.
- Evaluation of the 5 new rootstocks-breedings of Sour Orange on their resistance to drought conditions.

EUROMEDCITRUSNET FIRST PROJECT WORKSHOP

The first project workshop of the EuroMedCitrusNet will be held at Cukurova University on 26th June 2007. This workshop will bring together citrus researchers and industry to discuss the challenges of the sector for improving the safety and quality of citrus supply chains and strategies for increasing future collaborative activities between the EU and Mediterranean Partner Countries.



The workshop discussions will centre on the mechanisms that foster the safety and quality of citrus supply chains between Mediterranean Partner Countries and Europe. These discussions will pave the way for the development of a Needs Assessment Survey, encompassing research, industry and government which will aim to provide guidance for future EU- Mediterranean Partner Country citrus research collaboration.

For further information about the project please visit the website at www2.spi.pt/euromedcitrusnet or contact Rachel Newton (rachelnewton@spi.pt) or the local organiser Prof. Turgut Yesiloglu (tyesil@mail.cu.edu.tr).

We hope that you will be able to attend very much look forward to your presence at this workshop.

OTHER EVENTS

15-17 October 2007

XV1th International Plant Protection Congress.
http://www.bcpc.org/IPPC2007/Exhibition/exhibition_home.asp

5-7 November 2007

International Organization for Biological Control of Noxious Animals and Plants (IOBC),
West Palaearctic Regional Section (WPRS)
University of Catania - Faculty of Agriculture

22-24 November 2007

5th International Congress of Mediterranean Group on Pesticide Research (MGPR),
Agadir, Morocco.
Contact: MGPR 2007 Secretariat, B.P: 1123 Agadir 80 000, Morocco.Tel: +21228241006/0155; Fax: +21228242243; Email: mgpr2007@gmail.com;
Website: www.mgpr2007.com
MGPR website http://mgpr.unica.it

6-10th May 2008

3rd European Whitefly Symposium, Aguadulce, Almeria, Spain
www.whitefly.org/EWSIII_2007/EWSIII.asp
contact Liz Robertson events@whitefly.org

24-29 August, 2008

The 9th International Congress of Plant Pathology (ICPP2008), Torino, Italy,
Contact: Prof. M.L. Gullino, University of Torino: marialodovica.gullino@unito.it
www.icpp2008.org

NEW PUBLICATIONS (2007 AND END OF 2006) – CITRUS TOPIC

See this link on CIRAD website:

http://agritrop.cirad.fr/lorisinternet/jsp/system/win_main.jsp?welcome_page=servlet%2FMenuManager%3Fmenu%3Dmenu_search

Title	Author	Where
Distribution and management of #Phaeoramularia# leaf and fruit spot disease of citrus in Ethiopia	Yesuf, Mohammed	In : Fruits = ISSN 0248-1294. - (2007)vol.62:n°2 - p. 99-106
Effect of seed coat removal and controlled-release fertilizer application on plant emergence and vegetative growth of two citrus rootstocks	Girardi, Eduardo Augusto De Assis Alves Mourao Filho, Francisco Kluge, Ricardo Alfredo	In : Fruits = ISSN 0248-1294. - (2007)vol.62:n°1 - p. 13-19
European market, December 2006 : indicators. Banana, avocado, orange, grapefruit, easy peelers, litchi, mango, pineapple, sea freight	Imbert, Eric Gerbaud, Pierre Paqui, Thierry Bright, Richard	In : Fruitrop = ISSN 1256-544X. - (2007)n°142 - p. 12-22
European market, November 2006 : indicators. Banana, avocado, orange, grapefruit, easy peelers, litchi, mango, pineapple, sea freight	Imbert, Eric Gerbaud, Pierre Paqui, Thierry Bright, Richard	Fruitrop = ISSN 1256-544X. - (2007)n°141 - p. 8-18
Statistics yearbook 2004 and 2005 EU-25 imports	CIRAD-FLHOR ** (Fort-de-France, Martinique)	In : Fruitrop = ISSN 1256-544X. - (2003)n°136, suppl - p. 1-36
Statistics yearbook. 2004 and 2005 EU-25 imports	CIRAD-FLHOR ** (Montpellier, France)	In : Fruitrop = ISSN 1256-544X. - (2006)n°137, suppl.
Fruit yield and quality of sweet oranges affected by nitrogen, phosphorus and potassium fertilization in tropical soils	Quaggio, José Antonio Mattos, Dirceu Cantarella, Heitor	In : Fruits = ISSN 0248-1294. - (2006)vol.61:n°5 . - p. 293-302
In vitro organogenesis from adult tissue of Bahia sweet orange (#Citrus sinensis# L. Osbeck)	Da Silva, Rosely Pereira De Almeida, Weliton Antonio Bastos Souza, Elma dos Santos De Assis Alves Mourao Filho, Francisco	In : Fruits = ISSN 0248-1294. - (2006)vol.61:n°6 - p. 367-371