

## **Actions to Promote Sanitary Improvement of Mediterranean Fruit Crops and to Ensure the Food Safety of Local Products**

*in*

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Production and exchange of virus-free plant propagating material in the Mediterranean region

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## Introduction

One of the long-term objectives set out in the Barcelona Declaration at the Euro-Mediterranean Conference (November 27-28, 1995) was the gradual establishment of the Mediterranean Free Trade Area. Co-operation measures with the Mediterranean countries have been adopted in the field of plant protection, with a view to facilitating free trade in plant products, without foregoing the precautionary principle so as to prevent the introduction of harmful organisms into undisturbed areas.

Therefore, three Mediterranean Research Networks have been promoted and co-ordinated by CIHEAM/Mediterranean Agronomic Institute of Bari in collaboration with the University of Bari, working on plant protection field. After three years of activity (1995-1997), the technicians and researchers of the scientific institutions and the Ministries involved in the networks have produced common certification schemes for the major Mediterranean

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fruit crops. In addition, within the framework of the MEDA programme, a study was carried out on the "*Production and exchange of virus-free plant propagating material in the Mediterranean region*" has been funded. The purpose of the study was to provide decision-makers with the necessary technical and logistic insights in order to bring up regulations, services and facilities related to nursery production to an internationally accepted standard.

## Justification

### a. The European context

The increasingly uncontrolled introduction of fruit tree propagating material from third countries is paving the way for the introduction into the European fruit growing areas of unknown pathogens. The Single Market, the abolition of intra-Community trade barriers and the imports of some plant products from third countries have posed additional strains. This has led to the strong need of the implementation of international prevention and surveillance measures and the upgrading of the existing regional and national facilities.

As a result, the production of nursery stock has been subjected to a splurge of controls to meet with minimum sanitary standards. This action should guarantee the absence of pathogens that affect the quality of productions and keep with the Community and national regulations in force (Dir. 91/683, 93/48, 93/49, 93/61, 93/62, 93/63, 93/64, 93/78, 93/79, M.D. 31.1.1996, M.D. 14.4.1997, M.D. 22.11.1996, M.D. 29.11.1996). The rules laid out in the *Conformitas Agricola Comunitatis* (M.D. 14.4.97) prescribe close nursery surveillance and the immediate adoption by the same of the agreed quality standards, failing which products are not marketable.

Great importance is also attached to the safety of agri-food products. The Community and national law in force set some thresholds for residues of pesticides in agri-food products to ensure health and consumer protection. An equal importance has the environmental sustainability of agricultural pro-

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duce via the adoption of preventive measures to reduce the use of plant products in agriculture. It is worth mentioning the EU Dir. 2092/91 (mod. 1488/97) on Organic Farming, Dir. 2078/92 - Regional Agri-Environmental Plan Measure 1 - aimed at significantly reducing the use of pesticides and the EEC Dir. 91/414 on the registration of plant protection products and microbial antagonists shall be mentioned as well.

#### b. The Regional-Mediterranean context

Owing to favourable soil and climatic conditions, the Mediterranean region has an age-old tradition in olive-, citrus-, fruit- and grapevine growing and amply supplies the European Union and the world markets.

However, the fruit sector in these countries is currently plagued by health problems resulting from viral, infectious and genetic diseases as well as from the ageing of variety collections. The certification of propagating material is the most effective tool to solve these problems in a rapid and radical manner. In many South Mediterranean countries, the certification of nursery stock has begun only recently and has therefore to confront with a number of technical and legislative constraints. Certification schemes of single species are well in progress in Morocco, Egypt, Cyprus, Malta, Turkey, etc., whereas Albania and Lebanon are just in the beginning phase.

It is important to bear in mind that the implementation of a Certification service in the Mediterranean countries calls for the parallel upgrading of technical and legislative infrastructures and the reskilling of farmers and professionals.

A number of limiting factors hold back agriculture in the Mediterranean region:

- the lack of marketing facilities for agricultural produce;
- the marked genetic erosion of native varieties resulting from the deterioration of tree crops;

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- the weakness of the local processing industry;
- the absence or unsuitability of specialised phytosanitary (extension) services;
- the presence of quarantine diseases (stone fruit Sharka, pome tree fire blight and citrus Tristeza) which hinder the fruit quality;
- a legal framework which is unsuitable for the opening up of regional markets in 2010.

### c. The Apulian experience

In Apulia, a number of scientific Institutions and centres pursue interdisciplinary strategies in the agri-food sector. They combine experimentation and training at various levels: professional, technical, university and post-graduate. Over the past few years, Apulian scientific institutions have further strengthened and broadened cooperation links with relevant institutions of the regional government in the field of agriculture, thus fostering the implementation of retraining, Master of Science and PhD courses, which complement routine institutional activities.

Various research and experimental activities carried out in Apulia, thanks to *ad hoc* European, national and regional funds have gained momentum in both the national and international arenas. The nursery stock certification scheme and the programme for the development of organic agriculture have enabled the Apulian Administration to fully meet the Community and national regulations and take the lead in these sectors.

The local experience has been greeted with international acclaim owing to the high scientific standards of research and the presence of an International Organisation (CIHEAM-MAI-Bari) which has promoted co-operation projects in developing countries. These projects, which championed the thoroughly tested "*Apulian model*" of development, were aimed at: institutional building and strengthening, the setting up of back-up structures and the updating of public officials' skills in the farming sector, both centrally and peripherally.

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## General Objective

In keeping with the goals set out in the introduction and with a view to establishing a Mediterranean free trade area, the project is aimed at implementing a series of measures to contribute to the qualitative and quantitative improvement of agricultural production and raise farmers' income. The project is also intended to foster the training of public officials, urge the Institutions to legislate and promote actions to enhance the countries' genetic resources and to raise the community's awareness for environmental protection and food health and safety.

## Specific Objective

The project will be implemented with the support of Italian and European Institutions in Albania, Algeria, Cyprus, Egypt, Jordan, Lebanon, Malta, Morocco, Palestine, Syria, Tunisia and Turkey and will be centred on the following programmes:

- implementation of sanitary improvement and certification schemes for local fruit and vegetables species to develop nursery activities of internationally acknowledged high health and genetic standards;
- promotion of environmentally-friendly and health-oriented production processes.

## Expected Results

The expected results are:

- a) Achievement of an harmonised phytosanitary legislation;
- b) Improved facilities and laboratories to apply the updated legislation;
- c) Institution capacity building;

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- d) Consciousness within the farmer sector of environmentally oriented production of plants and agricultural products.

## Activities

### *Sanitary improvement and implementation of certification schemes*

This action is intended to promote in each country a series of initiatives aimed at: identifying local ecotypes and/or varieties of fruit crops (citrus, stone fruits, olive groves, pome trees and vines), assessing the sanitary status thereof and sanitating them (if necessary), setting up on-site collection blocks, storing the primary sources in isolation and developing specific nursery activities in tune with internationally accepted certification schemes for propagating material.

The following is a short description of the envisioned activities and sites of implementation:

- a. Identification of local ecotypes and/or varieties

Data and information will be collected in the involved countries on the presence, localisation and market potential of local ecotypes and/or fruit varieties;

- b. Sanitary selection

The collected data will be used to implement in each country a sanitary selection programme. The programme will identify, according to phenotypes, the individuals of one or more populations endowed with superior characteristics. Moreover, samples of the varieties threatened with extinction will be collected.

- c. Sanitary assessments

The selected plants will undergo biological, serological and molecular testing for diagnostic purposes at the laboratories of the Italian In-

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stitutions in order to assess their sanitary status.

d. Sanitation

The varieties for which healthy ecotypes have not been identified will be sanitised via heat treatment and/or *in vitro* shoot-tip culture. Given the complexity of the facilities and laboratories and the level of skills required, this phase will be carried out at Italian Institutions.

e. Establishment of collection blocks

Collection blocks will be established in the areas of origin of the selected or sanitised ecotypes.

f. Conservation under healthy conditions

The primary sources obtained from the healthy and/or sanitised ecotypes will be protected and kept in isolation at the Italian Institutions and will be used for the implementation of certification schemes in each country.

g. Implementation of nursery activities

The primary sources will provide the material for the establishment, in isolation, of mother blocks to supply nurserymen with buds to be grafted onto virus-free rootstocks. The latter will be provided to nurserymen so that they may expedite quality nursery production of selected material.

h. Implementation of a Certification Service

The Certification Service will make operational the programme for nursery production of health-controlled and true-to-type propagating material. The Institutions in each country will be assisted during the implementation of the certification programme in keeping with internationally accepted schemes. Support will be provided to:



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- bridge the legislative gaps;
- select Monitoring Institutions;
- upgrade the diagnostic laboratories entrusted with sanitary assessments;
- establish screen-houses and conservation blocks and maintain plants of pre-basic and basic category;
- establish multiplication centres for the varieties relevant to the country and free of any constraints (trademarks, patents, etc.) at the level of public institutions and/or associations of nurserymen or individual nurseries;
- implement the Certification service within a Ministerial Institution;
- assist the nurserymen who have joined the programme to improve the quality of production.

### Environmentally-friendly and health-oriented production processes

This action is designed to develop integrated production via the rational use of pesticides or organic methods in areas with favourable soil, climate, cropping and market conditions.

The project will include fruit (citrus, stone fruits, olive groves, pome trees and vines) and horticultural crops, according to their relevance to each country and the current or future strategic plans envisaged by each Ministry.

The project seeks to promote, in each country, the establishment of producers' associations willing to carry out an action to the project guidelines. The associations may be locally-based, grouping farmers who grow similar crops, or nationally-based, gathering specialised groups or pooling members of pre-existing associations.

Special attention will be paid to pre-existing associations which have been established in the wake of local activities or within the framework of some

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other national or international programmes. They will be vital to the drafting and the application of specific production regulations to facilitate the sale of these products.

In addition, the project fore sees:

- *in the Countries:*
  - i. the on-site production of healthy seedlings in horticultural areas so as to avoid useless pest control treatments on virus-affected plants, whose sole effect is to add to environmental pollution and produce contamination;
  - j. a surveillance service to monitor the use of pesticides. To achieve this purpose, the presence of pesticide residues will be assessed in the major fruit and vegetables so as to ensure environmentally-friendly and safe controlled productions with a higher competitive edge on foreign markets. The farmers participating in the programme will quantify the pesticide residues in their produce and record all actions taken (unfavourable conditions faced, number of treatments performed, doses applied, intervals of deficiency adopted) in order to rationalise treatments and give added value to their produce;
  - k. the monitoring of the reliability and environmental impact of marketed pesticides in order to provide guidelines for the fruit and vegetables sector;
  - l. the strengthening of laboratories entrusted with the analysis of pesticide residues.
- *in Italy:*
  - i. the increasing participation of officials and technicians in international specialised courses organised at MAI-Bari on "Integrated Production of Mediterranean Fruit Crops" and "Organic Agriculture";
  - ii. the drafting and validation of regulations for integrated and organic fruit and horticultural production;

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- iii. the analysis of pesticide residues, throughout the duration of the project, leading to fully-operating centres and on-site cross-checks.

## Institutions involved

The technical assistance to the project activities will be ensured by Italian Institutions, capitalising on a decade-long experience in the field of sanitary improvement and enhancement of agricultural production, through actions to be carried out in Italy and in third countries.

The actions will be undertaken by Apulian public and private Research Institutes (CIHEAM-MAI-Bari, Department of Plant Protection and Applied Microbiology at the University of Bari, National Research Council, "Basile Caramia" Agricultural Research and Experimental Centre) in close co-operation with Italian and foreign institutions and/or producers' associations.

The project might also encompass structural adjustment or strengthening actions within the Italian institutions involved in the project.

## Beneficiaries

The project is addressed to various South Mediterranean countries (Morocco, Algeria, Tunisia, Egypt, Lebanon, Palestine, Jordan, Syria, Turkey, Albania, Malta and Cyprus) and in particular to:

- the national institutions entrusted with the organisation, the management, the legislative modifications and the strengthening of the structures required to implement qualitative and quantitative improvement programmes for fruit and vegetables, including nursery stock;
- the national scientific institutions entrusted with research and the transfer to professionals of techniques and protocols for the protection and enhancement of genetic resources and the application of phytosanitary interventions respectful of the environment and the healthiness of fruit and vegetables productions;

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- extension service public and private technicians and officials;
- nurserymen with a vested interest in bringing their production up to the international standards;
- farmers willing to rationalise and develop indigenous productions through the application of integrated or organic production protocols;
- organisations committed to applying environmentally-friendly and health-conscious technologies and programmes;
- consumers interested in promoting healthy food-products.

## External factors

For the project to be implemented some minimum pre-requisites have to be met. These pre-requisites have been and will be attached topical importance within the framework of this project and in the vocational training and institution-building side activities carried out at MAI-Bari.

The whole propagating material certification process will have to be backed up by adequate legislation which envisions the establishment of a dedicated certification service, the itemised description of the various steps and the categories of material to be produced, the facilities and staff entrusted with the processes, as well as the technical protocols to be adopted. A marketing regulation for the propagating material and the presence of a qualified certification service will protect each Country against the introduction of imported quarantine pests.

The experience gained in previous actions undertaken in the Mediterranean countries has highlighted lamentable foot-dragging in the implementation of certification schemes with a resulting fading interest by direct users (nurserymen and farmers). Hence, the project will seek to rapidly implement, alongside the sanitary improvement of indigenous varieties, the establishment of mother blocks for in-

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ternationally widely available varieties so as to raise awareness among nurserymen and kick-start the necessary national structural and legislative modifications.

Given the high professional profile required, the local scientific institutions need to be properly equipped and trained. This stepped-up cultural and technological level will benefit other research sectors in agriculture and farmers in general.

However, the whole certification process is bound to have a limited impact if it is not paralleled by an effective awareness-building process among farmers. In particular, on top of their training, nurserymen must become fully aware of the importance of phytosanitary issues that regard the propagating material. Awareness also needs to be raised among farmers who are going to ensure the sustainability of the process via a bountiful demand for certified plant material.

Any out-of control spreading of severe quarantine diseases (Stone fruit Sharka, pome tree Fire Blight, citrus Tristeza, etc.) is likely to thwart the sanitary improvement programmes of the concerned species. To this end, a monitoring activity will gather preliminary information on the plant health status in the areas covered by the action.

The phytosanitary degradation of indigenous fruit and horticultural varieties, which are far outstripped by foreign varieties that benefit from a huge marketing action, has lead to the increasing erosion of indigenous genetic resources. If pushed to the limits, this state of affairs might make the indigenous genetic material that needs to be improved hard to find.

The weakness of the local processing industry and of the marketing process for agricultural products are some additional limiting factors which may jeopardise the success of the actions. The project will seek to partially avert this risk by fuelling the establishment of producers' unions with a view to rationalising production and marketing activities. Some side actions will be taken outside the

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project's scope to further rectify these weaknesses.

It goes without saying that the implementation of the project will be hindered by any internal or external factors resulting in social unrest or political riots.

## Schedule

Table 1 lists the project activities to be carried out according to a five-year plan.

Table 1. Time frame of the activities

Activities	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year	5 <sup>th</sup> year
Objective a)					
Identification of local eco-types and/or varieties					
Sanitary selection					
Sanitary assessments					
Sanitation					
Establishment of collection blocks					
Conservation under healthy conditions					
Nursery implementation					
Implementation of a Certification Service					
Legislative modifications					
Assistance to Institutions					
Upgrading of laboratories					
Screen-houses and conservation blocks					
Multiplication centres					

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Assistance to nurserymen					
Objective b)					
Establishment of associations					
Production of virus-free plants					
Pesticide monitoring service					
Analysis of pesticide residues					
Strengthening of the remaining laboratories					
Drafting of production regulations					
Validation of production regulations					
Commercial promotion					
Specialised courses					

## Cost

The project envisions actions encompassing field activities, extension services and facilities (screen-houses, diagnostic and analysis laboratories) in each country, based on the pre-existing endowment, or that implemented through international programmes.

The cost for the above-described activities and considering the participating of all the countries in the study, amounts to about 15 MEURO. Should a limited number of countries be interested in the project, the cost shall be lower.

## Sustainability

Institutional and co-operative links have been forged between MAI-Bari and OECD, UNESCO, World Water Council (WWC), FAO, ICARDA, ICID, IFAD, IFOAM and the Council of Europe.

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Through CIHEAM/MAI-Bari institutional activities in the training of experts from the Mediterranean countries and the Near East, about 2,500 technicians have been trained. The value of training at CIHEAM-MAI-Bari is confirmed by the technical and administrative roles in the public and private sector, as well as the university teaching posts and management of production activities which have been assigned to former course participants in their countries. It is thanks to the co-operation with former students that collaborative activities find the most effective channels to reach the set objectives and to transfer innovation at various levels in the relevant countries.

Projects have been designed and implemented within the framework of the EU's programmes, such as MEDA, Italy-Albania Interreg II, MAP (Multi-fund Action Plans) and MAP (Multi-regional Action Plans) together with Italian scientific institutions and, especially, via the synergy with the University of Bari.

The initiatives have been promoted in co-operation with International Organisations and local authorities, in keeping with MAI's time-honoured approach to develop greater collaboration among governmental, scientific and entrepreneurial circles.

The scientific institutions of the concerned countries have taken an active part in the designing stage, drawing heavily on MAI-Bari's wealth of knowledge and expertise, specific skills, facilities, equipment and human resources.

Local institutions, organisations and professionals, backed by MAI's technical and scientific support, have been the major players in the implementation stage.

The scholarship holders who have completed the Master of Science course and PhD at Apulian institutions currently hold top positions at ministries and institutions in their countries of origin. They are the human asset MAI-Bari has tapped in order to study and design actions to be implemented locally. A number of projects are being launched or are in



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progress with the participation of various Mediterranean countries, some of which at regional level.

These experts will ensure institutional sustainability to the activities launched by the projects in the area.

As to the production of healthy material, the enhancement of typical, integrated and organic, environmentally-friendly and health-conscious productions, the project will pursue the strategic approach set out in international agreements, including that for the establishment of a free trade area.

The various countries are striving hard to protect and enhance their indigenous germplasm, which is particularly bountiful in the Mediterranean region, where a vast array of plant species have originated and diversified. In tune with the provisions laid down at the Rio Summit, the project will not deprive the countries of these resources, but will seek to increase and restore them, through their selection and sanitation, while boosting their access to commercial circuits via their multiplication in local nurseries. These niche productions are thus set to become a key growth factor.

### Complementarity with other initiatives

All Mediterranean countries are designing initiatives to favour the adjustment of the legislative and institutional framework so as to implement actions to produce sanitary improved and true-to-type propagating material and to develop controlled crops in order to protect the healthiness of local agricultural produce.

These countries also regard these programmes as an opportunity to find new markets for their products, markets they have so far not yet been able to access since their standards of quality fall well below those in force on the European markets.

The project will take into account the initiatives which focus on phytosanitary issues that are already in place in each country as a result of international co-operation actions. Such cooperation ac-

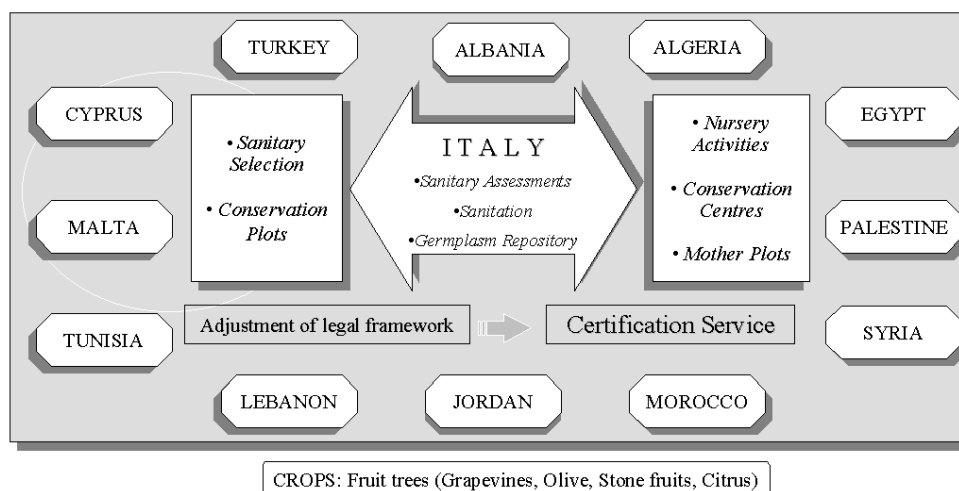
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tivities are already started recently with GTZ Agency (German Cooperation) and were established with PNUD-FAO Regional Project RAB/88/025 on "Control of virus diseases of fruit trees" in the past.

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Objective (a) - Sanitary Improvement, Production and Use of Healthy Plants



Objective (b) - Environment-friendly and health-safe Productions

