



Coordination of the Agricultural Research
In the Mediterranean Area

Call text

ARIMNet 2 Call 2014-15

SUBMISSION

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on

<http://arimnet-call.eu/>

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Scientific Scope of the Call ARIMNet 2

Context

The countries of the Mediterranean basin face a number of similar problems in relation to agriculture, mainly as regards the use and management of natural resources, such as soil and water, crop protection and threats to the security and sustainability of agricultural production resulting from climate change.

To this respect, Mediterranean basin concentrates almost all the key global challenges agriculture is facing in the world, and thus should concentrate intense research efforts. But for the moment, that is not the case. Issues are too often looked separately each side of the Mediterranean Sea. There is a great need to enhance research effort through multilateral cooperation both to strengthen the economies of the Mediterranean countries and to help to find solutions to global challenges. This has been underlined in several global forum and reports during last years like IAASTD Report on CWANA region (2008), AARINENA e-consultation for the GCARD (2010), CIHEAM Report on the Future of agriculture and food in Mediterranean countries (2008) and the PARME analysis of foresights concerning the Mediterranean area (2010, presented in Palma October 2010). All these documents are a sound and strong basis for designing the call.

The first characteristic of the Mediterranean area is that its natural environment is characterized by a high level of vulnerability. And today, its sensitive ecosystems are threatened by pressures of various kinds. The Mediterranean region is considered one of the regions of the world most threatened by climate change which could worsen stresses that are already high: drought, extreme climatic events frequency, crop and animal endemic and emerging diseases.

Secondly, the Mediterranean region is one of the hotspots of the global biodiversity, with a remarkable richness in cultivated and wild species characterising this area. This diversity is clearly an asset for the region that could be valued through specific agricultural and food products and that could be used to face new challenges such as climate change adaptation. It also has to be preserved as a common heritage.

Thirdly, water is a scarce resource in most of the Mediterranean countries and its availability decreases. In several countries water use is reaching the level of available resources. Besides, overexploitation of ground water raises several other environmental problems such as soil salinity. In the future, agriculture will be more and more seriously in competition with other users, which implies to find solutions for limiting losses and ensuring more efficient use of the water resource.

A better management of natural resources is thus a condition to maintain the sustainability of agriculture. Agriculture has a significant role to play in producing environmental services for the entire society. However, simultaneously, developing agricultural production is a priority for most countries in the Mediterranean region.

Agriculture is already contributing significantly to the economy in particular in the south and eastern Mediterranean countries, where agriculture accounts for 10 to 15% of the GDP (against 2 to 3% in the Mediterranean EU member states) and where people working in agriculture is around 20 % of total employment. In the south and eastern Mediterranean countries rural population is showing no decline in absolute term, and is highly dependent on agriculture, due to the lack of employment in other sectors. Consequently, the development of agriculture in Mediterranean countries cannot follow the same historical path of European agriculture modernization based on a strong decrease of rural population.

Productivity growth in agriculture has been high during the past (often higher in south Mediterranean countries than in EU member countries) but remains globally insufficient to respond to the increase in food demand associated with the high population growth rate. Several Mediterranean countries are large importers of agricultural and food products, with a declining food trade balance. South Mediterranean countries are importing on international markets basic commodities (cereals, meat, vegetable oils), however they are also exporters of products for which they have a comparative advantage: fruits, vegetables and olive oil.

In this context, Mediterranean agriculture should find specific paths to develop simultaneously a sustainable agriculture for producing basic food commodities and to take advantage of its specific assets for more specific products that can generate income all over the supply chains. This development should necessarily be implemented with a high level of attention towards resources management and environmental impacts of land uses.

The present call is part of the ERANET- ARIMNet project that involves 12 partner countries from north, east and south of the Mediterranean, and whose purpose is to strengthen multilateral cooperation in Agricultural Research.

Under this call, we will support projects that will add to the existing programs by addressing the Mediterranean agriculture issues in a collaborative way between Mediterranean countries research teams and through innovative approaches. Different topics and issues can be addressed in the research proposals, compatible with the fields identified by stake holders, through mobilizing a large set of disciplines going from genetic to social sciences and combining/integrating them.

Therefore, the call is mainly defined by impacts and targets as challenge facing Mediterranean basin. Projects should contribute to build sustainable research cooperation dynamics and if possible initiate or strengthen joint structures. Proposals should necessarily include teams from at least three countries of ARIMNet (including at least one from the EU and one from the Southern and Eastern Mediterranean Countries)

Scope of the call

Research proposal should address scientific issues that could help to meet the challenges faced by Mediterranean agriculture and fisheries. Those challenges, for this first joint action, are defined in the three following topics and 11 subtopics. Answers could be more focused on some specific points or address transversal issues. Integrated and multidisciplinary approaches would be appreciated, as they are generally needed to address complex issues.

A. Developing sustainable production in the context of increasing ecological and climatic stresses

Facing climatic change and pressure in water availability, protecting the natural resources and the environment need an evolution of the current production practices. Simultaneously, the challenge for agriculture and fisheries is to face an increasing food demand and to contribute to economic and social development. This implies innovations in the production systems and requires researches on several issues that concern different aspects of agricultural production, aquaculture and fisheries.

1. Increase in resilience, rusticity and productivity of Mediterranean agricultural production systems

In the Mediterranean area, climatic conditions, in particular climate variability, lead to the need for developing production systems able to cope with risk and uncertainty. Rusticity and flexibility of the different components and the whole is a major factor of resilience of the systems and this is required to improve their competitiveness and sustainability. Therefore, research is needed to improve simultaneously the productivity of agricultural system and their sustainability and resilience. Several issues have to be addressed in this perspective: genetic breeding of varieties tolerant to abiotic (drought, high air temperature, soil salinity, soil pollution, soil water depletion, and ground water level rising etc., and to other climate hazards), and/or biotic (major pests and diseases) stresses, genetic breeding of species, use of local biodiversity, development of new farming systems combining different activities and species, diversification of cropping systems using local crop species, development of rich protein crops...

2. Improving inputs management, on the level of the production systems, for economic and environmental impacts

Irrigation induced in many areas of the Mediterranean region a significant increase in agricultural production. However, problems associated with overuse of water have emerged that threaten the water resources in terms of quantity. Other problems emerged from non-sustainable ways of farming. Erosion and loss of soil fertility is becoming a major problem in several places in the Mediterranean. Intensive use of chemicals (fertilizers and pesticides) has also generated water quality and other environmental problems. Moreover Agriculture generates co products, by products and waste waters that are currently not properly taken care of both in environmental and economic terms. Several research issues should be considered in order to improve the sustainability of those production systems: water saving techniques, on-farm improved efficiency of input uses integrated water and nutrient management, integrated crop and pest management, recycling and reuse of agricultural wastes and waste waters and design of innovative farming systems. These issues should be addressed through different approaches and by collaborative research between different disciplines. The projects dealing with issues raised at a larger level than the farm level should be submitted in the subtopic 10.

3. Common Mediterranean challenges in animal and plant health

The development of endemic or emerging animal and plant diseases is a major problem for both the productivity and human health all around the Mediterranean. The Mediterranean is a hotspot not just for biodiversity but also for the emergence of animal and plant diseases. The effects of climate change favor the persistence of pandemic animal diseases, the resurgence of epidemics and the emergence of new pathogens. This issue of animal and plant health must be addressed taking into account different levels of integration: from the ecology and biology of pathogens and vectors, to the issues of sanitary monitoring, health control and socioeconomics both at the farm and regional level.

4. Sustainable Mediterranean Aquaculture and Fisheries.

Coastal zones are of strategic importance to the Mediterranean Countries. They are a source of work and a living area for a large part of the population and they are a major source of food and raw

materials. Research to increase the sustainability of aquaculture and fisheries should be done taking into consideration the need to increase the economic performance of the activities while preserving natural resources.

B. Food chain from production to consumption: enhancing the advantages of Mediterranean Agriculture and Food

Several products benefiting from specific Mediterranean natural advantages and know-how are already competitive and provide high value-added to farmers and other actors in the supply chains (fruit, vegetables, olive oil...) They already benefit from a domestic and international demand for products entering in the Mediterranean diet. However, researches are needed to enhance their development in a way that they can really contribute to the economic development of rural areas. Research topics can concern different stages of the food chain: production, food processing, transport, marketing, policies.

5. Innovation in the agroindustry

The technological aspects of production and transformation are important issues and are closely related to market and food chain organisation and to industrial strategies. In particular, it is necessary to develop new processing technologies and valorisation of agricultural products and by-products for better valorising the local typical products, to boost rural economy, to contribute to a transition towards a bio-based society and to create new jobs. The utilisation of the Mediterranean biodiversity, the traditional knowledge and culinary heritage could help to develop territories and regions as typical products can benefit from “niche” markets. Researches on these issues are expected on different fields, and different disciplines from genetics to technological sciences, social and management sciences.

6. Logistics, supply chain organization, transportation

Logistics is the core of efficient food chain governance. Improving supply chain management is of major importance to better link agricultural producers to urban markets. Increasing the efficiency all along the food chain includes also reducing post-harvest losses. These remain very high in many Mediterranean countries. In some cases, they may represent up to 30-40%. Reducing these losses can contribute significantly to improve food security. Research is needed to better understand the mechanisms and to find solutions to reduce losses all along the chain, from production to storage, transportation and commercialisation.

7. Food safety, food sanitary issues

A better control of the quality all along the food chain is an important issue for food safety. In urban areas, where food supply is ensured through important amounts of products generally coming from agro-industrial systems, problems are often related to technologies that have to be suitable for treating large quantities (i.e. cold chain). Improving the articulation between the domestic production of small or medium enterprises and the food demand of urban population raises specific questions of how to ensure food security. Food safety in rural areas may be less important due to the proximity between producers and consumers, and to the smaller scale of the firms, however several improvements need to be made. Researchers from food technologies sciences and from social

sciences are invited to address those issues in the production, processing, storage, transportation and marketing fields.

8. Food consumption patterns: consumers' behaviour, quality of products, diet and nutrition

Food quality is a major component of food security. The Mediterranean Area faces major change in terms of diet regimes. There are still certain micronutrient deficiencies for categories of population. Furthermore diet- and lifestyle-related chronic diseases (diabetes and other diet related diseases...) are dramatically increasing. While the traditional Mediterranean diet is considered particularly healthy, the Mediterranean is paradoxically one of the areas of the world where overweight and obesity are most prevalent—a clear sign of dietary shifts in progress: excess consumption of carbohydrates, sugars, saturated fat and salt, lower consumption of fruits, vegetables and fibers. The challenges of research in this area are considerable. The complex relationship between diet and health in the Mediterranean context needs to be understood, as well as we must better understand eating habits, their heterogeneity and their determinants. There are also needs for technological innovation in the industrial development of traditional products, nutritional and health quality of processed foods,

9. Agricultural and food policies

Public policies have a major role to play to regulate the food system, the impact of agriculture on the environment and to help to the development of rural areas. Good functioning of food chains relies highly on physical infrastructure but also to a good management of the whole chain by a better organization of information systems and administration. These improvements need public investments and will help to appeal for private investments and arrival of foreign capital. Implementing new production systems, ensuring spatial organization of land and field patterns that could improve the resources management, developing environmental services produced by agriculture will also require specific policy instruments. Fields of research on public policies are open that will have to address the following issues: land tenure regimes and policies, spatial organisation of land uses, sharing of resources between users, long term management of resources compatible with the development of rural areas, quality of food and nutrition... Regarding export markets, complying with public and private quality standards is an important issue. These standards are required by the consumers in the domestic markets as well. On this aspect research is needed on various issues that could highlight issues such as quality certification, geographical indications and labelling.

C. Sustainable management of landscape and resources used by agriculture

10. Sustainable management of water and other resources used by agriculture

Conservation of water resources and soil fertility, protection of biodiversity, sustainable management of agricultural solid wastes and waste waters, are major challenges in the Mediterranean area. Risks of degradation are high, in relation with unsustainable agricultural techniques, increase of inputs use, climate change. They have to be addressed at the farm level (topic 1), but also at larger scale. Some issues need to be tackled at the river basin level, some others on larger areas, even in some cases (e.g. water management) on international level. They need integrated approaches combining different disciplines.

The increase of the population living in coastal areas is a major change in the Mediterranean area. Seasonal and permanent inhabitants living in coastal cities increased as a consequence of population growth and/or tourism development. It implies a concentration of population in the cities and an urban sprawl along the coasts. Urbanisation competes with agriculture for land that is often the most fertile or easier to irrigate. It can also result in an increase in flood risk. Consequences of these population dynamic changes should be better analysed in order to find ways to manage this development and the relationship between coastal areas and hinterlands.

11. Landscape and spatial management, competition with other land uses, peri-urban and urban agriculture

The diversity of production systems valorises the diversity of soils, slopes, wet areas but can also play a non-negligible role in water circulation, fauna and flora dissemination or soil distribution. This leads to understand the role of the spatial organization of land and field patterns, the eventual role played by network of hedges, woods... on the natural resources and the environment and to define the means to improve ecological regulations through spatial organization of farming systems. At a higher level, the spatial organization of agriculture, forest and pastoral areas, have a strong influence in terms of soil quality, water resources and biodiversity. The current dynamics in land uses produce new spatial patterns and new relationships between urbanized areas, agricultural areas, hybrid spaces between city and countryside, intensive and extensive agricultural zones, pastoral areas and uncultivated zone (forest, wetland). This has to be analyzed in a perspective of landscape and land uses regulation. Development of peri-urban and urban agriculture raises specific issues of environmental and resources management and of marketing channels organisation. These types of agricultural systems represent in some countries significant sources of income for poor households, but can generate health problems and pollution as well as positive contributions to the urban environment or resource management (use of waste water, environmental amenities). It is necessary to better understand these dynamics and their impact on resources and the environment.
