

PROJECT FINAL REPORT

Grant Agreement number: 618127

Project acronym: ARIMNet2

Project title: Coordination of the Agricultural Research in the Mediterranean

Funding Scheme: Coordination and Support Action; KBBE.2013.1.4-0.3: Mediterranean agriculture - ERANET

Period covered: from 01/01/2014 to 31/12/2017

Name of the scientific representative of the project's co-ordinator, Title and

Organisation: Dr Florence Jacquet, Institut National de la Recherche Agronomique (INRA), France

Tel: +33 4 99 61 23 25

Fax: -

E-mail: florence.jacquet@inra.fr

Project website address: www.arimnet2.net

TABLE OF CONTENTS

TABLE OF CONTENTS.....	2
LIST OF TABLES	3
LIST OF FIGURES	3
1. Executive summary	4
2. Project context and objectives	5
3. Main S&T results/foregrounds	8
3.1 WP1 – Integrated Strategic Research Agenda (ISRA)	8
3.2 WP2 – Joint Calls for transnational research projects	14
3.3 WP3 – Monitoring, evaluation of joint calls, joint activities and research projects	21
3.4 WP4 – Joint activities.....	25
3.5 WP5 – From research to innovation (Mediterranean AKIS study & AKIS International Stakeholder Conference)	30
3.6 Conclusions and perspectives	37
4. Potential impact (including the socio-economic impact and the wider societal implications of the project so far) and main dissemination activities and exploitation of results.....	38
4.1 Socio-economic impact and societal implications.....	38
4.2 Main dissemination activities	39
5. Address of the project public website	44

LIST OF TABLES

Table 1. Matrix with the topics prioritised by ARIMNet2 Partners for the 2014-15 Joint Call.....	15
Table 2. Characteristics of the 3 Joint Calls launched during ARIMNet2, between 2014 and 2017	19
Table 3. Communication & dissemination activities/materials implemented during ARIMNet2	39

LIST OF FIGURES

Figure 1. ARIMNet2 Partners (24 research and funding organisations from 15 Mediterranean Countries)	5
Figure 2. ARIMNet2's seven Work Packages and their interrelationships	7
Figure 3. Framework of the Mediterranean Agriculture Challenges.....	9
ARIMNet2 Integrated Strategic Research Agenda (ISRA)	9
Figure 4. ARIMNet2 Integrated Strategic Research Agenda (ISRA): a participative document	10
Figure 5. Some of the key challenges addressed by ARIMNet2.....	11
Figure 6. Joint Calls implementation: A collaborative & constructive process.....	14
Figure 7. Covers of the guidelines for applicants prepared for the 3 ARIMNet2 Joint Calls	16
Figure 8. Project proposals evaluation & selection process during ARIMNet2 Joint Calls	17
Figure 9. Photos of the Young Researchers Seminar (June 2016, Montpellier)	26
Figure 10. R&I multi-actor model	31
Figure 11. Main AKIS actors and their roles	32
Figure 12. Tools and methods to improve farmer's participation in AKIS (score 1-10).....	33
Figure 13. Participants to the AKIS international Conference (Antalya, 12-13 October 2016)	34

1. Executive summary

Despite their diversity and specificities, Mediterranean countries face common challenges when it comes to ensuring food security and socioeconomic development while conserving natural resources and adapting to climate change, and those can only be addressed through sustained cooperation based on the principles of co-ownership, mutual interest and shared benefits. Agricultural research and innovation (R&I) systems play a central role in promoting more sustainable, productive and resilient agri-food systems, but in the Mediterranean area, they are fragmented and lack coordination. The challenge for Mediterranean countries, beyond boosting their own agricultural research capacity, is thus to join their national capacities through mechanisms helping to align their programmes and fostering multilateral cooperation, so as to achieve the necessary critical mass and thus reach a stronger socioeconomic and environmental impact. This is where ARIMNet2 (Coordination of Agricultural Research in the Mediterranean; ERA-NET 2014-2017; www.arimnet2.net) comes into play. Funded through the EU FP7 (GA no. 618127), ARIMNet2 continues ARIMNet (ERA-NET, 2008-2013) and involves 24 national funding agencies and research institutions from 15 Mediterranean countries which joined their efforts and capacities under a common strategy to achieve a stronger impact on the sustainable development of the region.

Over the years, ARIMNet2 partners have achieved major outcomes, including:

- 1) **An Integrated Strategic Research Agenda (ISRA)** identifying Mediterranean agricultural R&I challenges and priorities and proposing a strategical framework and instruments for joint action fostering synergies between national programmes, underpinned by the food security, natural resource preservation and poverty alleviation nexus leading to three linked research thematic: enhancing value chains; promoting a balanced territorial development; increasing the efficiency and sustainability of production systems.
- 2) **Three Joint Calls** (in 2015, 2016, and 2017, this latter being dedicated to young researchers) with around 18 M€ committed, funding 36 multidisciplinary, multi-actor research projects dealing with the enhancement of agricultural systems and food value chains and contributing to the development of new methods, technologies, decision-making tools, plant varieties, agro-food products and social changes.
- 3) **Joint activities** of strategic interest for researchers and stakeholders that boosted networking, mobility, capacity-building and exchange of knowledge and good practices, such as a Young Researchers Seminar on the involvement of end-users in research (June 2016, Montpellier), a Stakeholder Conference on Mediterranean Agricultural Knowledge and Innovation Systems (October 2016, Antalya) and a Final International conference back-to-back with a PRIMA Dissemination Event (October 2017, Montpellier).

ARIMNet2 impacted positively: a) Regional agricultural R&I systems by sharing knowledge and good practices; b) The competitiveness of Mediterranean agriculture by fostering transnational research projects applied to the main challenges Mediterranean agriculture is facing; c) National R&I programmes by developing a common insight into their content and management as well as common approaches/standards; d) Public awareness by developing a common understanding of strategic issues and a shared vision of Mediterranean agricultural R&I objectives, priorities, and instruments; e) The Euro-Mediterranean R&I Partnership, through the synergies and collaborations it nourished.

After ten years of a fruitful cooperation, ARIMNet/ARIMNet2 partners have learnt to work effectively together, developing common approaches, standards and good governance practices, and have developed mutual trust and a strong commitment to continue their joint activities in a long-term perspective. They have paved the way for PRIMA (Partnership for Research and Innovation in the Mediterranean Area), an initiative co-funded by the EU and 19 Euro-Mediterranean countries which will foster the enhancement of farming systems, water management, and agro-food value chains for the period 2018-2028.



2. Project context and objectives

Mediterranean countries face common challenges when it comes to ensuring food security and rural development while conserving natural resources and adapting to climate change, and those can only be addressed through sustained cooperation based on the principles of co-ownership, mutual interest and shared benefits.

Agricultural research and innovation (R&I) systems play a key role in promoting more sustainable, productive and resilient agri-food systems, but in the Mediterranean area, Research capacities and programmes are fragmented and lack coordination. Thus, the challenge for Mediterranean countries, beyond boosting their own agricultural research capacity, is to join their national capacities through mechanisms helping to align their programmes and fostering multilateral cooperation, so as to achieve the necessary critical mass and thus produce a stronger socioeconomic and environmental impact.

This is where ARIMNet2 (Coordination of Agricultural Research in the Mediterranean; ERA-NET 2014-2017; www.arimnet2.net) comes into play. Funded through the EU 7th Framework Programme, it involves 24 partners (funding agencies and research organisations) from 15 Mediterranean countries (Algeria, Croatia, Cyprus, Egypt, France, Greece, Italy, Israel, Malta, Morocco, Portugal, Slovenia, Tunisia, Turkey, Spain) which joined forces and capacities under a common strategy (Figure 1).

1. Institut National de la Recherche Agronomique (INRA), France
2. Academy of Scientific Research & Technology (ASRT), Egypt
3. Agence Nationale de la Recherche (ANR), France
4. Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), France
5. Centre International de Hautes Études Agronomiques Méditerranéennes – Institut Agronomique Méditerranéen de Montpellier (CIHEAM-IAMM)
6. Fundação para a Ciência e a Tecnologia (FCT), Portugal
7. Hellenic Agricultural Organization - DEMETER (HAO-DEMETER), Greece
8. Institut Agronomique et Vétérinaire Hassan II (IAV) / Ministère de l'Éducation Nationale, de la Formation professionnelle, de l'Enseignement Supérieur et de la Recherche Scientifique, Morocco
9. Institut National de la Recherche Agronomique d'Algérie (INRAA), Algeria
10. Institut za Jadranske Kulture i Melioraciju Krša (KRS), Croatia
11. Institution de la Recherche et de l'Enseignement Supérieur Agricoles (IRESA), Tunisia
12. Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA), Spain
13. International Center for Agricultural Research in the Dry Areas (ICARDA)
14. Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria (CREA), Italy
15. Ministère de l'Enseignement Supérieur et de la Recherche Scientifique (MESRS), Algeria



16. Ministero delle Politiche Agricole Alimentari e Forestali (MIPAAF), Italy
17. Ministrstvo za Izobraževanje, Znanost in Šport (MIZS), Slovenia
18. Ministrstvo za Kmetijstvo, Gozdarstvo in Prehrano (MKGP), Slovenia
19. Ministry of Agriculture and Rural Development (MOARD), Israel
20. Ministry of Agriculture, Rural Development and Environment – Agricultural Research Institute (ARI), Cyprus
21. Ministry of Food, Agriculture and Livestock – General Directorate of Agricultural Research & Policies (GDAR), Turkey
22. Ministère de l'Enseignement Supérieur et de la Recherche Scientifique (MESRS), Tunisia
23. Malta Council for Science and Technology (MCST), Malta
24. The Agricultural Research Center (ARC), Egypt

Figure 1. ARIMNet2 Partners (24 research and funding organisations from 15 Mediterranean Countries)

ARIMNet2 builds upon ARIMNet (2008-2013), the first Euro-Mediterranean ERA-NET (13 partners, 12 countries) to foster agricultural R&I cooperation. The partners gained a better knowledge of the diversity, strengths and weaknesses of Mediterranean R&I programmes and launched a first Joint Transnational Call in 2011, funding ten research projects. They strengthened their relationships and trust and initiated a fruitful cooperation momentum that has remained alive.

In this perspective, ARIMNet2 supports the identification of shared agriculture R&I priorities, the development of impact-driven R&I programmes, the launch of co-funded transnational calls and the implementation of joint capacity building and networking activities, to reduce fragmentation and exploit synergies.

ARIMNet2 had the following objectives, addressed through 7 Work Packages (WP):

- To develop an Integrated Strategic Research Agenda (ISRA) (WP1) identifying the key challenges, needs and priorities of Mediterranean agricultural R&I and providing a strategical framework for joint action in the short, medium and long term. The ISRA builds upon the existing European initiatives, in particular the FACCE-JPI, paving the way for a more inclusive and effective Euro-Mediterranean cooperation on agricultural R&I;
- To launch Joint Calls and fund innovative multi-actor Mediterranean research projects contributing to the improved sustainability of agriculture practices, the enhancement of agro-food value chains and the conservation of natural resources (WP2);
- To monitor the research projects funded and help disseminate their results among the agricultural R&I community, and to assess the joint calls to improve calls' procedures and impacts (WP3);
- To organise joint activities of scientific and strategic interest for Mediterranean researchers, so as to boost networking, mobility and capacity building, and foster scientific exchange and the sharing of infrastructures and data (WP4);
- To support the development of Mediterranean Agricultural Knowledge and Innovation Systems (AKIS) by strengthening the link between R&I and involving stakeholders in research activities, to ensure a significant positive impact of agricultural research on the inhabitants and ecosystems of the Mediterranean Region (WP5);
- To communicate extensively on ARIMNet2 objectives and achievements and on the overall potential and positive impacts of collaborative/multilateral Euro-Mediterranean R&I efforts, and to develop synergies with existing or future initiatives (WP6).

WP6: Outreach & Communication

Dissemination/valorisation of research results, awareness-raising, optimising synergies...

WP1: Integrated Strategic Research Agenda (ISRA)

Key agricultural R&I priorities for the EU and Mediterranean countries

WP2: Joint calls to fund transnational research

Funding transnational multidisciplinary / transdisciplinary projects

WP4: Joint activities for collaborative research and capacity-building

Researchers training, mobility, networking; sharing of knowledge/infrastructure

WP3: Monitoring, follow-up and impact assessment of calls, joint activities and funded research projects

Monitoring and evaluation of ARIMNet2 activities/outcomes

WP5: From Research to Innovation

Reflection on Agricultural Knowledge and Innovation Systems (AKIS): enhancing the links between research and innovation to foster agricultural development in Mediterranean countries

WP7: Coordination & Management

Figure 2. ARIMNet2's seven Work Packages and their interrelationships



3. Main S&T results/foregrounds

Between 2014 and 2017, ARIMNet2 achieved several key outcomes:

- **An Integrated Strategic Research Agenda (ISRA)** identifying Mediterranean agricultural R&I challenges and priorities and proposing a strategical framework and instruments for joint action fostering synergies between national programmes, underpinned by the food security, natural resource preservation and poverty alleviation nexus leading to three linked research thematics: enhancing value chains; promoting a balanced territorial development; increasing the efficiency and sustainability of production systems.
- **Three Transnational Joint Calls in 2015, 2016, and 2017** (the last being dedicated to young researchers) with around 18 M€ committed in total, funding 36 multidisciplinary, multi-actor research projects dealing with the enhancement of agricultural systems and food value chains and contributing to the development of new methods, technologies, decision-making tools, plant varieties, agro-food products and social changes.
- **Joint activities** of strategic interest for researchers and stakeholders that boosted networking, mobility, capacity-building and exchange of knowledge and good practices, such as a **Young Researchers Seminar** on the involvement of end-users in research (31 May – 4 June 2016, Montpellier), a **Stakeholder Conference on Mediterranean Agricultural Knowledge and Innovation Systems** (12-13 October 2016, Antalya) and a **Final International Dissemination Conference** back-to-back with a PRIMA Event (13 October 2017, Montpellier).
- **Recommendations to improve the links between Research and Innovation actors, the flows of knowledge and the impact of research**, based on a literature review, surveys and collective brainstorming, and presented in our **Report on Mediterranean AKIS** and **AKIS policy brief**.

These key outcomes are described hereafter in more detail and illustrated.

3.1 WP1 – Integrated Strategic Research Agenda (ISRA)

What is the ISRA?

Fruit of a continuous dialogue between ARIMNet2 partners (i.e. 24 funding agencies and research institutions), renowned international scientists and European institutions, and based on a shared vision of Mediterranean challenges and priorities, the **ARIMNet2 Integrated Strategic Research Agenda (ISRA)** is a 48-page document identifying Mediterranean agricultural R&I challenges and priorities, and proposing a strategical framework and instruments for joint action fostering complementarities and synergies between national programmes, underpinned by the food security, natural resource preservation and poverty alleviation nexus leading to three interconnected research thematics: enhancing value chains; promoting a balanced territorial development; increasing the efficiency and sustainability of production systems (Figure 3).



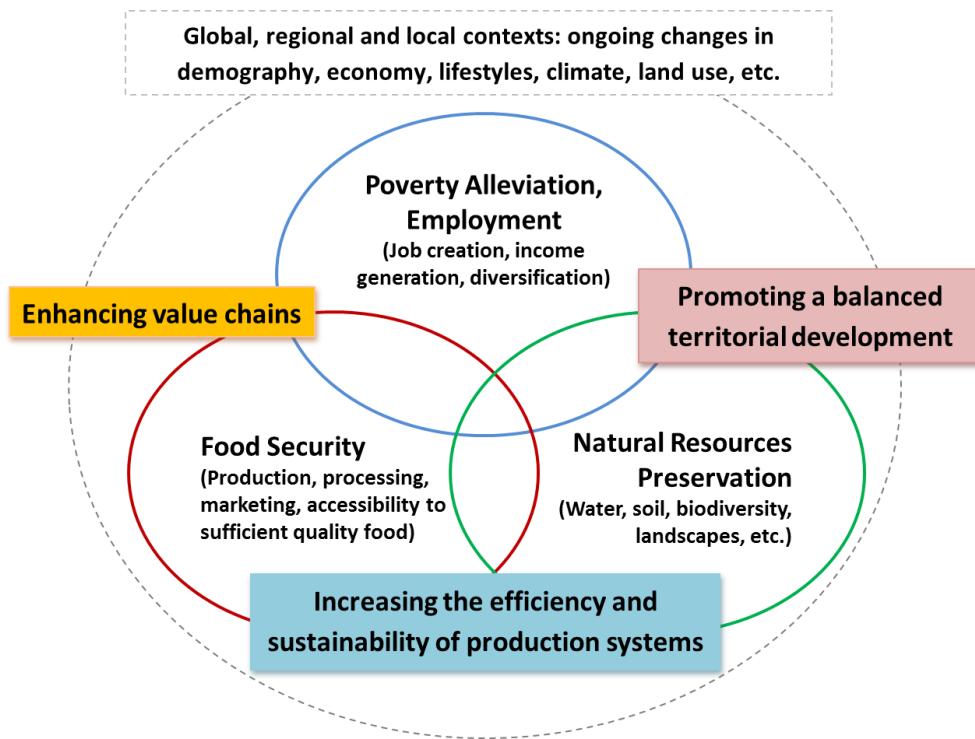


Figure 3. Framework of the Mediterranean Agriculture Challenges

ARIMNet2 Integrated Strategic Research Agenda (ISRA)

The ISRA is the actual roadmap for joint action in the framework of ARIMNet2 and might also guide future similar initiatives and policy-making. It frames the multiple activities implemented or proposed by the ARIMNet2 Consortium to actively support Mediterranean research and innovation efforts, notably by funding collaborative research projects (e.g. transnational calls), sharing research infrastructures and equipment (e.g. joint experiments, shared platforms), and fostering knowledge exchange and capacity-building (e.g. young researchers seminars, international conferences, networking events). It also presents ARIMNet2's perspectives for the future, its connection with other initiatives and its contribution to European and Euro-Mediterranean RDI policies.

The preparation of the ISRA was a highly participative and consensual process (Figure 4) led by a working group of renowned scientists from around the Mediterranean, with contributions from all ARIMNet2 partners and the support from the ARIMNet2 Scientific and Strategic Advisory Board (SSAB; a group composed of elected members from EU and non-EU ARIMNet2 partner countries representing major Mediterranean initiatives on agriculture). This work included an analysis of previous and on-going projects, initiatives and studies related to the field addressed by ARIMNet2, in order to capitalise existing knowledge and experience (ARIMNet, FORESTERRA, MEDSPRING, ERANETMED, FACCE-JPI, SCAR, MEDITERRA, PARME, MEDPRO, SUSTINMED...). The process relied on intense brainstorming and dialogue, calling for efforts in prioritising shared issues and in reaching consensus.

This ISRA was formally validated in March 2016 and published the same year; it was distributed in paper format to all ARIMNet2 partners and to over 400 stakeholders (scientists, funders, policy-makers, etc.) from around the Mediterranean, and is available in PDF format online at www.arimnet2.net (www.arimnet2.net/files/events07122016/ISRA_ARIMNet2_LowRes_FINAL.pdf).

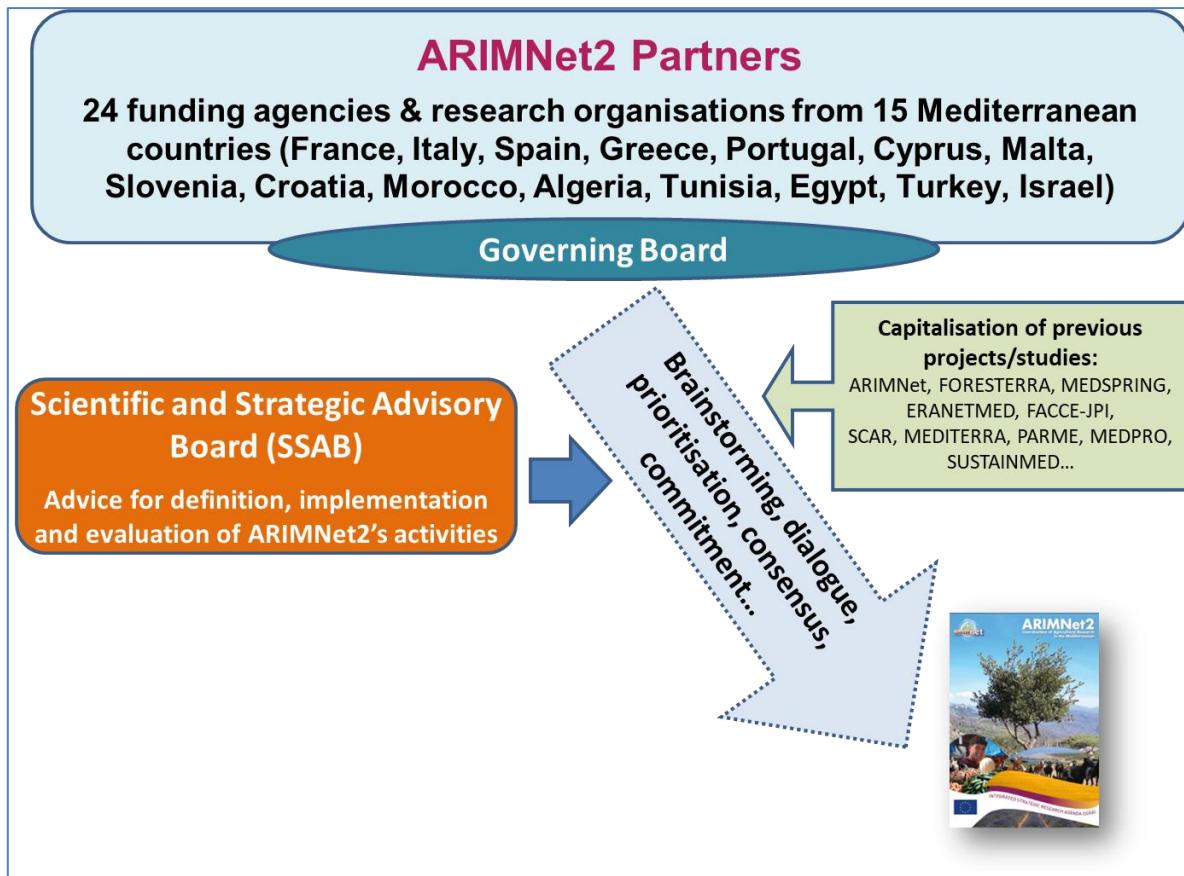


Figure 4. ARIMNet2 Integrated Strategic Research Agenda (ISRA): a participative document

Objectives of the ISRA

The ISRA is a strategic document aimed at:

- Evaluating cooperative research programmes in the agri-food and related fields and the proposals submitted to ARIMNet/ARIMNet2;
- Identifying common challenges in these fields;
- Defining scientific strategic priorities for the Mediterranean area;
- Proposing effective instruments for joint action within ARIMNet2.

The ISRA provides the basis for joint action to enhance sustainably food security, natural resource preservation and socio-economic development:

- Developing a research community for the whole region by identifying common priorities and opportunities (in the short, medium and long-term), and ensuring a better coordination at thematic and regional levels;
- Funding transnational research projects through joint calls;
- Reinforcing and sharing Mediterranean infrastructures, equipment and platforms;
- Supporting training, mobility, capacity-building and knowledge exchange;
- Better delivering what is expected by decision makers, stakeholders and Mediterranean societies from agricultural R&I;
- Setting up an evaluation & monitoring framework to ensure the dissemination.

Structure of ISRA

The information compiled during the project (and previously during ARIMNet) and the discussions led to a document composed of three sections, as presented below:

A. ARIMNet2 challenges

This section identifies the key challenges faced by the Mediterranean region and addressed by ARIMNet2, explains the main features of collaborative research and innovation in the region, presents the ARIMNet2 initiative (scope, objectives and actions towards agricultural research cooperation), and finally specifies the scope and purpose of the ISRA.

Some of the key challenges tackled are as follows (Figure 5):

- **Population and societies:** Population growth, urbanisation, employment, aging, trade & quality standards, etc.
- **Natural resources:** Environmental degradation and climate change; Water, soil, biodiversity, etc.
- **Animal Production Systems:** Livestock (cattle, small ruminants, etc.): a diversity of meat products; the role of rangeland and the importance of pastoral systems; Aquaculture; fisheries (small scale vs industrial vs tourism).
- **Crop production systems:** Great diversity of production systems but also of pests & diseases; some “global” specificities: e.g. olive trees; Strong focus on cereals; issue of post-harvest losses; challenge of irrigation and need for designing new rainfed cropping systems.
- **Food Chains - Population, food, lifestyles and health:** Developing food industries suited to local conditions; integrating smallholdings into formal supply chains.

<h3>Population & Societies</h3> <ul style="list-style-type: none"> ▪ Population growth, urbanisation, employment, aging, trade & quality standards... 	<h3>Crop Production Systems</h3> <ul style="list-style-type: none"> ▪ Great diversity of production systems but also of pests & diseases! ▪ Some “global” specificities: olive trees! ▪ Strong focus on cereals ▪ Issue of post-harvest losses ▪ Challenge of irrigation and need for designing new rainfed cropping systems
<h3>Natural Resources</h3> <ul style="list-style-type: none"> ▪ Environmental degradation and climate change ▪ Water, soil, biodiversity... 	
<h3>Animal Production Systems</h3> <ul style="list-style-type: none"> ▪ Livestock (cattle, small ruminants...): a diversity of meat products! The role of rangeland and the importance of pastoral systems... ▪ Aquaculture ▪ Fisheries (small scale vs industrial vs tourism!) 	<h3>Food Chains</h3> <p>Population, food, lifestyles and health:</p> <ul style="list-style-type: none"> ▪ Developing food industries suited to local conditions ▪ Integrating smallholdings into formal supply chains

Figure 5. Some of the key challenges addressed by ARIMNet2



B. ARIMNet2 strategy

This section highlights and discusses the ARIMNet2 strategy with respect to the key selected challenges related to population and societies, natural resources, crops and livestock production systems (including poultry, aquaculture and fisheries) and value chains. The main outcome of this framework is that these challenges are a tremendous nexus between food security, poverty alleviation and sustainable natural resources conservation, requiring a holistic vision and integrated approaches. Based on that analysis, the core of the document then displays the strategy proposing priority thematic areas to address those challenges. The strategies discussed are limited to the scope of ARIMNet2 and thus do not include issues related to forestry and off-shore fisheries.

1. Increasing the efficiency and sustainability of production systems

- Agricultural practices aware of soil, water, biodiversity, landscape management
- Environmental, social and economic sustainability at the farm, regional, national, global or ecosystem levels
- Potential benefit of agriculture on employment and poverty alleviation

2. Enhancing food value chains

- Enhancing value chains to contribute to improve food security & safety, to create new jobs and to boost overall rural economy
- Increase the availability of nutritional and safe food for all
- Supply chain organisation, logistics and new technologies

3. Promoting a balanced territorial development

- Potential synergies among activities of the various economic sectors in rural areas and rural/urban synergies
- Development of food industries suited to local conditions, valorisation of local products
- Diversity of production systems adapted to the diversity of soils, slopes, etc., to play a role in water circulation; land and field patterns...

In this section instruments to implement the ISRA are described. In fact many joint activities have supported the implementation of this ISRA, including the promotion of researchers' mobility and exchange, the organisation of training, the development of the networks and partnerships and the opening of transnational calls for research and collaborative projects, in particular aimed to:

Strengthening capacities:

- Summer schools for researchers;
- Mobility programmes;
- Specific seminars & training for young researchers;
- Field visits & interactions with stakeholders;

Sharing equipment:

- Specialised platforms / infrastructures;
- Network of greenhouses;
- Virtual network of common & interoperable databases;

Funding transnational projects:

- Thematic transnational calls;
- Support for researchers to design & implement competitive projects;
- PhD grant programmes.



C. ARIMNet2 perspectives

This section presents ARIMNet2 perspectives and focuses on its contribution to European and Euro-Mediterranean R&I policies. The ISRA has the ambition to support priority setting in the Mediterranean area and to guide policy making at national, regional and international levels in the fields of research and innovation, without limiting its scope and function to the funding bodies involved in the ARIMNet2 joint initiative.

ARIMNET2 ISRA offers a contribution to the implementation of the FACCE-JPI Strategic Agenda addressing research needs (food security under climate change; sustainable intensification of agriculture; assessing trade-offs between food supply, biodiversity and ecosystem services; adaptation to climate change; mitigation of climate change) within the more specific context of the Mediterranean region.

In addition, it represents a step in the long process for a renewed partnership in Research and Innovation, promoting cooperation among EU Member States and Mediterranean Countries. The initiative PRIMA - Partnership for Research and Innovation in the Mediterranean Area is focused on the development and application of innovative solutions for food systems and water resources in the Mediterranean basin, supported by 19 countries, to implement joint actions and to move towards a strong and long-lasting cooperation for Research and Innovation in the Mediterranean. PRIMA priorities are structured into three pillars: 1) Sustainable management of water in arid and semi-arid areas, 2) Sustainable farming under Mediterranean environmental constraints and 3) Mediterranean food chains for regional and local development.

The ARIMNet2 ISRA and ARIMNet2 actions intend to contribute to the implementation of PRIMA in the identification of thematic priorities and actions to be implemented, considering the clear connection between the three priorities of the ARIMNet2 ISRA (Natural resources, poverty alleviation and food security Nexus) and PRIMA pillars. Moreover ARIMNet and ARIMNet2 have launched three transnational calls for proposals that are co-funded and co-decided among all participating countries (EU and other Mediterranean Countries) paving the way for a broader initiative by implementing trust and collaboration among funding agencies. These initiatives have also promoted networking in research and innovation programmes within the Mediterranean Region among different stakeholders. Therefore, they prepare the ground and practices in line with the principles that PRIMA has retained.

3.2 WP2 – Joint Calls for transnational research projects

One of the key objectives of the ARIMNet2 consortium was to develop and implement two joint transnational calls for research projects addressing agricultural challenges in the Mediterranean area, and create a leverage effect using the EU funding allocated to ARIMNet2. As the first two calls were successful, the consortium implemented a third joint call, dedicated to young researchers.

Before ARIMNet2, most funding agencies had already taken part in a joint call (for example the 2011 Call launched during ARIMNet), but joint learning and alignment (science/methods/criteria) were still necessary and required a strong commitment and willingness from all partners.

The Consortium worked in a participatory manner to define the topics, funding mechanisms, rules of participation, and to elaborate the relevant documents (calls texts, guidelines for applicants, national regulations, etc.). Over the years, ARIMNet2 partners have learnt to work effectively together, developing common approaches, standards and good governance practices, and have developed mutual trust and a strong commitment to support transnational research activities.

The key steps of the process followed by the ARIMNet2 Consortium are as followed (Figure 6):

- Identification of shared research priorities and identification and prioritisation of the topics.
- Exploring funding possibilities depending on the topics and securing funding commitments.
- Call preparation and implementation (Call text, online platform, scientific evaluators, evaluation & ranking procedure, validation of the ranking by the Call Board, contracting issues...), following shared knowledge, procedures and rules (e.g. for the evaluation and ranking of the projects).
- Calls and research projects standardised monitoring & evaluation.

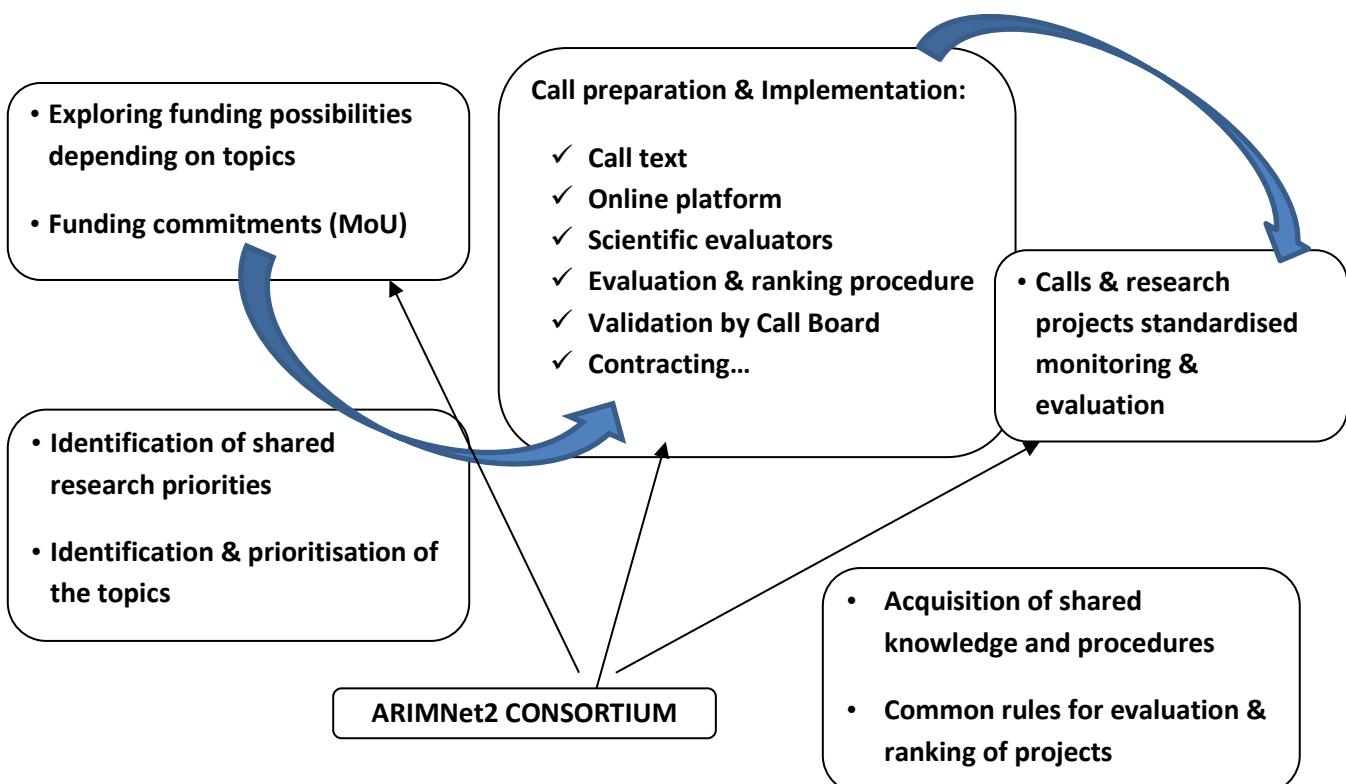


Figure 6. Joint Calls implementation: A collaborative & constructive process

Concerning the choice of the calls' topics, most of the work was done at the occasion of the 2014-15 Call (first ARIMNet2 Joint Call); then, for the following calls, some topics were prioritised and/or reformulated. In 2014, a survey was conducted using questionnaires sent to ARIMNet2 partners, aiming at gathering their thematic priorities. A matrix illustrating the topics prioritized by each country was then prepared (Table 1), including the 11 following topics: 1. Increase in resilience, rusticity and productivity of Mediterranean agricultural production systems; 2. Improving inputs management at the level of the production systems), 3. Common Mediterranean challenges in animal and plant health; 4. Sustainable Mediterranean aquaculture and fisheries; 5. Innovation in agroindustry; 6. logistics, supply chain organization, and transportation; 7. Food safety, food sanitary issues; 8. Food consumption patterns: consumers behaviour, quality of products, diet and nutrition; 9. Agricultural and food policies; 10. Sustainable management of water and other resources used by agriculture; 11. Landscape and spatial management, competition with other land uses, peri-urban and urban agriculture.

Table 1. Matrix with the topics prioritised by ARIMNet2 Partners for the 2014-15 Joint Call

TOPICS 2014 Call	ANR																		
	France	Slovenia	MIZS ¹	MIPIAF	Spain	Portugal	Greece	DEMETER	Croatia	KRS	Turkey	GDAR	MOARD	MESRSC	MESR	IRESA	MESRS	ASRT	ARC
1. Increase in resilience, rusticity and productivity of Mediterranean agricultural production systems	X	X		X	X	X	X	X			X	X	X	X	X	X		X	
2. Improving inputs management , at the level of the production systems	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3. Common Mediterranean challenges in animal and plant health	X	X	X	X	X	X			X	X	X			X	X	X			X
4. Sustainable Mediterranean Aquaculture and Fisheries	X										X	X			X	X			X
5. Innovation in the agroindustry	X	X			X				X		X		X	X	X	X	X		X
6. Logistics, supply chain organization, transportation	X			X	X				X						X		X	X	
7. Food safety, food sanitary issues	X	X			X	X			X	X	X	X	X	X	X	X			X
8. Food consumption patterns: consumers' behavior, quality of products, diet and nutrition	X				X										X			X	
9. Agricultural and food policies	X	X			X				X		X	X		X	X		X	X	
10. Sustainable management of water and other resources used by agriculture	X	X	X	X	X	X	X	X			X	X	X	X	X			X	
11. Landscape and spatial management, competition with other land uses, peri-urban and urban agriculture	X				X	X							X	X				X	

Then, several meetings and lobbying took place in each country to ensure the commitment of the institutions in funding the call, and the mobilisation of the researchers for this call. For each call, after approval of the thematics of common interest, funding agencies were asked to sign a Memorandum of Understanding (MoU) attesting of their financial commitments to the call.

For all the calls, standard documents were produced by the Call Secretariat with the support of the funding agencies involved, and validated by the Call Board before publication. Among those documents:

- Call pre-announcement
- Call full text
- Guidelines for applicants (accompanied by clarifications when needed) (Figure 7)
- National regulations (specific to each country and funding agency)
- Memorandum of Understanding
- Guidelines for evaluation of project proposals provided to the evaluators and members of the Scientific Evaluation Committee (SEC)



Figure 7. Covers of the guidelines for applicants prepared for the 3 ARIMNet2 Joint Calls

After the Call publication, researchers were invited to submit their proposals using an electronic submission system adapted to suit the specificities of ARIMNet2 Calls.

One of the critical aspects of these joint calls, beyond the financial commitment, was the evaluation of the project proposals, which was carried out following agreed standards, involving renowned scientists who acted as external evaluators and/or Scientific Evaluation Committee Experts.

The process followed to evaluate and rank the project proposals submitted to the three joint calls was defined and agreed between the partners (Figure 8), and involved the following step and actors:

- **Call Secretariat:** Call text preparation & publication; submission & evaluation process coordination
- **Call Board:** Call text and budget validation
- **Call publication**
- **Online submission of pre/full proposals**
- **Call SEC :** ARIMNet2 eligibility check
- **Call Board:** National eligibility check
- **External reviewers:** scientific evaluation; **SEC members:** scientific evaluation & ranking of the proposals; evaluation report communicated to the Call Board (funding agencies)
- **Call Board:** Approval of the final ranking list and selection of the projects to be funded
- **Results publication**
- **Contracting & start of the research projects**

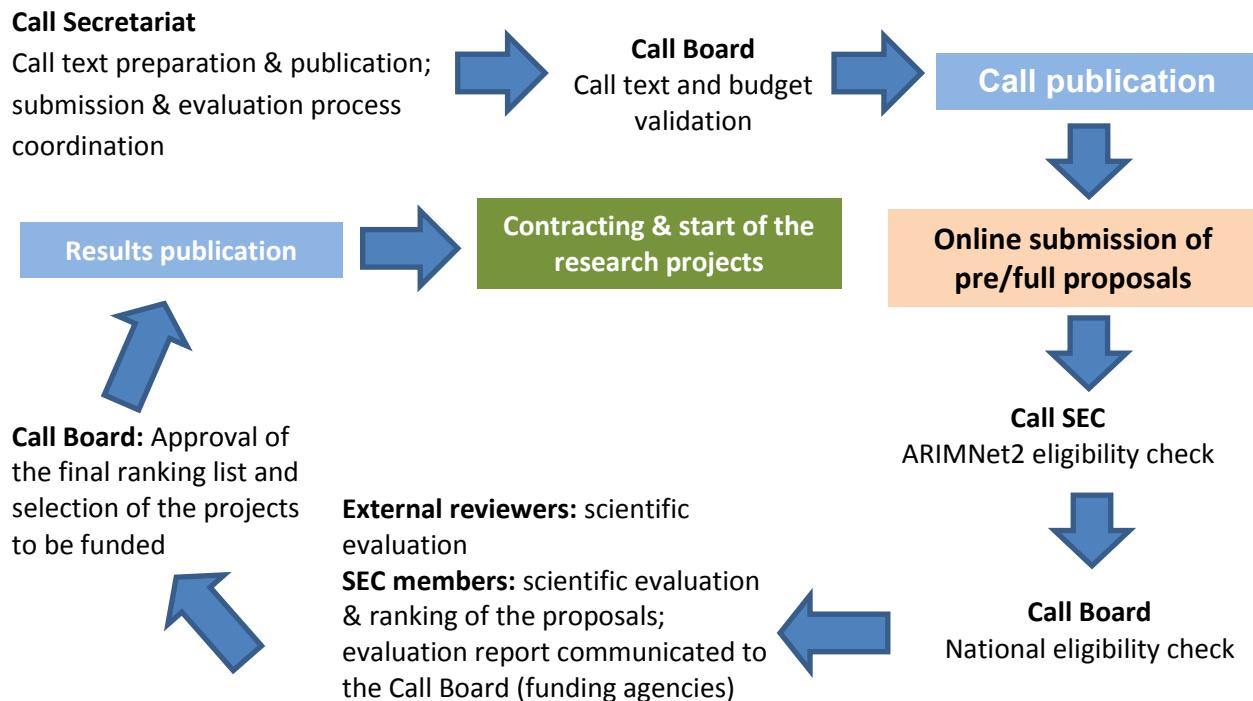


Figure 8. Project proposals evaluation & selection process during ARIMNet2 Joint Calls

During ARIMNet2, 3 Joint Transnational Calls have been implemented (Table 2), which allowed to fund 36 research projects.

CALL 2014-2015:

- 2 steps
- Call Secretariat ANR and IAV Hassan II
- Consortium composed of at least 3 countries (at least 1 EU country + 1 non-EU country)
- Topics: 1. Developing sustainable production in the context of increasing ecological and climatic stresses; 2. Food chain from production to consumption: enhancing the advantages of Mediterranean Agriculture and Food; 3. Sustainable management of landscape and resources used by agriculture.
- Preannouncement: 30/06/2014; Step 1 Launch: 15/09/2014 and closed: 1/12/2014; Step 2 closed: 11/05/2015; Results publication: February 2015 (Step 1) and November 2015 (Step 2)
- 14 countries / 16 organisations: ANR-France, KRS-Croatia, MIPAAF-Italy, MESRS-Algeria, MCST-Malta, MIZS-Slovenia, INIA-Spain, GDAR-Turkey, ARC-Egypt, ASRT-Egypt, FCT-Portugal, MESRSFC-Morocco, HAO-DEMETER-Greece, MESRS-Tunisia, IRESA-Tunisia, MOARD-Israel
- Pre-call funding: 7.2 M€
- Number of pre-proposals: 191 (146 eligible)
- Number of full proposals: 55
- Number of full proposals eligible & evaluated: 53
- No. of reviewers: 115
- Number of research projects funded: 10 (AVIAMED, BACPLANT, BEST, BRUCMEDNET, EMERAMB, MASCC, MEDOOMICS, ORPRAMED, SALTFREE, STOMP)
- 5 female coordinators (50%)
- ARIMNet2 funding: 5,558,300 €

CALL 2016:

- 1 step
- Call Secretariat ANR and IAV Hassan II
- Consortium composed of at least 3 countries (at least 1 EU country + 1 non-EU country);
- Topics: 1. Promoting sustainable agriculture for socio-economic development; 2. Valorising local products through food value chains improvement.
- Preannouncement: 26/02/2016; Launched: 1/04/2016; Closed: 1/06/2016; Results publication: December 2016
- 14 countries / 15 organisations: ANR-France, KRS-Croatia, MIPAAF-Italy, MESRS-Algeria, MCST-Malta, MIZS-Slovenia, INIA-Spain, GDAR-Turkey, ASRT-Egypt, FCT-Portugal, MESRSFC-Morocco, HAO-DEMETER-Greece, MESRS-Tunisia, IRESA-Tunisia, MOARD-Israel
- Pre-call funding: 5.9 M€
- Number of full proposals: 102
- Number of full proposals eligible & evaluated: 78
- Number of reviewers: 162
- Number of research projects funded: 11 (BEEHEAL, CARAVAN, DIVERCROP, ENVIROS, IBARMED, NANOBIOTAGRI, PERFORM, PROMEDFOODS, REALMED, SEMIARID, VIPACFOOD)
- 4 female coordinators (40%)
- ARIMNet2 funding: 4,778,100 €

CALL 2017:

- 1 step
- Call Secretariat ANR
- Consortium composed of at least 3 countries ((1 YR from Algeria, Egypt, Morocco, Tunisia + 1 YR from France, Greece, Turkey, Croatia, Slovenia, Spain + 1 YR from any participating country)
- Topics: 1. Promoting sustainable agriculture for socio-economic development; 2. Valorising local products through food value chains improvement.
- Preannouncement: 1/04/2017; Launched: 1/06/2017; Closed: 14/09/2017; Results publication: December 2017
- 10 countries / 11 organisations: ANR-France, KRS-Croatia, MESRS-Algeria, MKGP-Slovenia, AEI-MINECO-Spain, GDAR-Turkey, ASRT-Egypt, MESRSFC-Morocco, HAO-DEMETER-Greece, MESRS-Tunisia, IRESA-Tunisia
- Pre-call funding: 5.4 M€
- Number of full proposals: 35
- Number of full proposals eligible & evaluated: 30
- Number of reviewers: 16
- Number of research projects funded: 15 (AROMATIC, BOVISOL, CDCMCT, COLIVE, CROSYMED, D-4DECLIC, FERTICCHAR, MEDVITIS, MULTI-VAL-END, NUT4DROUGHT, OLIVEN, PYRODIGEST, TOMORROWS, VALUETEAM, VIANA)
- 8 female coordinators (53%)
- ARIMNet2 funding: 3,427,310 €



Table 2. Characteristics of the 3 Joint Calls launched during ARIMNet2, between 2014 and 2017

	CALL 2014/15	CALL 2016	CALL 2017
1stage/2 Steps	Step	1 Step	1 Step - YOUNG RESEARCHERS (YR)
Consortium	≥ 3 countries (at least 1 EU country + 1 non-EU country)	≥ 3 countries (at least 1 EU country + 1 non-EU country)	≥ 3 countries (1 YR from Algeria, Egypt, Morocco, Tunisia + 1 YR from France, Greece, Turkey, Croatia, Slovenia, Spain + 1 YR from any participating country)
Topics	1. Developing sustainable production in the context of increasing ecological and climatic stresses 2. Food chain from production to consumption: enhancing the advantages of Mediterranean Agriculture and Food 3. Sustainable management of landscape and resources used by agriculture	1. Promoting sustainable agriculture for socio-economic development 2. Valorising local products through food value chains improvement	1. Promoting sustainable agriculture for socio-economic development 2. Valorising local products through food value chains improvement
Preannouncement	30/06/2014	26/02/2016	1/04/2017
Launched	15/09/2014 (Step 1)	1/04/2016	1/06/2017
Closed	1/12/2014 (Step 1); 11/05/2015 (Step 2)	1/06/2016	14/09/2017
Results publication	February 2015 (Step 1); November 2015 (Step 2)	December 2016	December 2017
Committed countries / institutions	14 countries / 16 organisations (ANR-France, KRS-Croatia, MIPAAF-Italy, MESRS-Algeria, MCST-Malta, MIZS-Slovenia, INIA-Spain, GDAR-Turkey, ARC-Egypt, ASRT-Egypt, FCT-Portugal, MESRSFC-Morocco, HAO-DEMIETER-Greece, MESRS-Tunisia, IRESA-Tunisia, MOARD-Israel)	14 countries / 15 organisations (ANR-France, KRS-Croatia, MIPAAF-Italy, MESRS-Algeria, MCST-Malta, MIZS-Slovenia, INIA-Spain, GDAR-Turkey, ASRT-Egypt, FCT-Portugal, MESRSFC-Morocco, HAO-DEMIETER-Greece, MESRS-Tunisia, IRESA-Tunisia, MOARD-Israel)	10 countries / 11 organisations (ANR-France, KRS-Croatia, MESRS-Algeria, MKGP-Slovenia, AEI-MINECO-Spain, GDAR-Turkey, ASRT-Egypt, MESRSFC-Morocco, HAO-DEMIETER-Greece, MESRS-Tunisia, IRESA-Tunisia)
Pre-call funding	7.2 M€	5.9 M€	5.4 M€
Nb pre-proposals	191 (146 eligible)	-	-
Nb full proposals	55	102	35
Nb full proposals eligible & evaluated	53	78	30
No. of reviewers	115	162	16
Number of research projects funded	10 projects AVIAMED, BACPLANT, BEST, BRUCMEDNET, EMERAMB, MASCC, MEDOOMICS, ORPRAMED, SALTFREE, STOMP	11 projects BEEHEAL, CARAVAN, DIVERCROP, ENVIROS, IBARMED, NANOBIOAGRI, PERFORM, PROMEDFOODS, REALMED, SEMIARID, VIPACFOOD	15 projects AROMATIC, BOVISOL, CDCMCT, COLIVE, CROSYMED, D-4DECLIC, FERTICCHAR, MEDVITIS, MULTI-VAL-END, NUT4DROUGHT, OLIVEN, PYRODIGEST, TOMORROWS, VALUETEAM, VIANA
ARIMNet2 funding	5,558,300 €	4,778,100 €	3,427,310 €



Projects funded under the different topics for the 3 ARIMNet2 Joint Calls (a: 2015; b: 2016, c: 2017):**Crop systems**

- a) BacPlant - Towards a sustainable agriculture by increasing plant tolerance to biotic stress under climatic change (FR, TN, MA)
- a)BEST - Exploring genotypic diversity to optimize barley grain and straw quality under marginal/stressful growth conditions (TN, FR, EG, SI, MA)
- b) IBARMED - Innovative barley breeding approaches to tackle the impact of climatic change in the Mediterranean region (IT, LB, MA, TN, TR, ES)
- b) DIVERCROP - Land system dynamics in the Mediterranean basin across scales as relevant indicator for species diversity and local food systems (FR, PT, TN, DZ, MT, ES, IT)
- c) CROSYMED - Enhancing nutrient use efficiency through legumes in agro-ecosystems of the Mediterranean basin (DZ, FR, GR, MO, TN)
- c) D-4Declic - Dual cropping system, Genetic Diversity, Decision support and Digital tool for Designing Eco-efficient Cereal Legume Integrated food value Chain in the Mediterranean Basin (FR, GR, TN)
- c) MedVitis - Protecting the Diversity of Mediterranean *Vitis* in a Changing Environment (GR, MO, SI)
- c) TomorrowsS - Designing cotton (*Gossypium hirsutum* L) and durum wheat (*Triticum durum*) crop management ideotypes (cultivars, fertilization, salinity and irrigation) by simulation under current and projected future climate with comparative studies in Greece and Tunisia (GR, FR, TN)

Livestock systems

- a) PERFORM - Breeding and management practices towards resilient and productive sheep and goat systems based on locally adapted breeds (FR, GR, MA, EG)
- c) BOVISOL - Breeding and management practices of indigenous bovine breeds: Solutions towards a sustainable future (GR, DZ, TN)

By-products valorisation

- c) COLIVE - Collective marketing strategies and new circular business models for valorising local food, agro-waste and by-products: example of the olive oil chain (FR, ES, MO)
- c) FERTICCHAR - Recovery of olive oil by-products through bio/hydrochars production for agricultural soil fertilization and environment preservation (FR, ES, GR, TN)
- c) PYRODIGEST - Conversion of olive oil wastes through combined pyrolysis and anaerobic digestion: energy, value added products and eco-fertilizers production (FR, DZ, MO, TR, TN)
- c) OLIVEN - Opportunities for olive oil value chain enhancement through the by-products valorization (ES, TR, TN)

Food quality, safety, origin & agrofood value chain

- a) MedOOmics - Mediterranean Extra Virgin Olive Oil Omics: profiling and fingerprinting (PT, FR, TN, TR)
- a) PROMEDFOODS - Promotion of local Mediterranean fermented foods through a better knowledge and management of microbial resources (FR, TN, DZ, IT, ES, GR)
- a) VIPACFOOD - Valorization of Industrial fruits by-products and algae biomass waste: Development of Active Coatings to extend Food shelf life and reduce food losses (TN, IT, PT, ES)
- b) CARAVAN - Toward a Camel transnational value chain (ES, IT, TN, DZ, MA, FR)
- b) REALMED - Pursuing authenticity and valorization of Mediterranean traditional products (PT, SI, MA, ES, IT, TN)
- c) AROMATIC - NatuRal bioactivE moleCules foR safE And subsTainablE dairy products (FR, EG, TN)
- c) CDCMCT - Characterization of dairy chain in Mediterranean countries and adoption of optimum technologies to improve dairy value chain (DZ, EG, FR, GR)
- c) MULTI-VAL-END - Multifaceted valorisation of single-country endemic plants of Crete, Tunisia and Rif, Morocco for sustainable exploitation in the agro-alimentary, horticultural-ornamental and medicinal-cosmetic sectors (GR, MO, TN)
- c) Nut4Drought - Selection and characterization of drought resistant almond cultivars from the Mediterranean basin with high nutraceutical values (ES, MO, TN)
- c) VALUETEAM - Local and international valorization of Mediterranean agri-food products through quality certifications. The case of Dates sector (MO, DZ, FR, TN)

Plant health, pest and disease

- a) EMERAMB - Emergent viruses and virus vectors in Mediterranean Basin crops (ES, GR, SI, TR, EG, MA, IL, FR, IT)
- a) ORPRAMED - Risk assessment of introduction of *Xanthomonas citri* subsp. *citri* through commercial trade of ornamental rutaceous plants in the Mediterranean basin (IT, ES, FR, TR)
- a) STomP - Sustainable Tomato Production: plant defense enhancement, development of new biopesticides and optimization of environmental, water and chemical inputs (IT, TN, FR, MA, GR)
- b) NANOBIOAGRI - Plant disease biocontrol by means of non-infectious biodegradable proteinaceous nanoparticles (IT, ES, IL)

Animal health, pest and disease

- a) AVIAMED - AVian viral disease prevention and control with plant vaccines for the MEDiterranean area (IT, EG, MA)
- a) BrucMednet - Improvement of epidemiological and serological tools for diagnosis and control of Brucellosis in the Mediterranean region (IT, GR, EG, PT, TN)
- b) BEEHEAL - Promoting bee health for sustainable agriculture (ES, FR, PT, IL)

Water management

- a) SALTFREE - Salinization in irrigated areas: risk evaluation and prevention (PT, EG, TN, IT)
- b) ENVIROS - Opportunities for an Environmental-friendly Viticulture: optimization of water management and introduction of new Rootstock and Scion genotypes (IT, FR, SI, ES, IL)
- b) SEMIARID - Sustainable and Efficient Mediterranean farming systems: Improving Agriculture Resilience through Irrigation and Diversification (FR, MA, DZ)
- c) VIANA - Vulnerabilities and adaptive capacities of Irrigated Agriculture in North Africa (FR, DZ, MO)

Soil management

- a) MASCC - Mediterranean Agricultural Soils Conservation under global Change (FR, IT, MA, PT, ES, TN)

3.3 WP3 – Monitoring, evaluation of joint calls, joint activities and research projects

Assessment of the joint calls

The procedures followed to implement the first 2 joint calls were assessed, to capitalise on our experience and improve the tools and processes. To perform this assessment, surveys were conducted using questionnaires targeting the Call Office, Call Board, Applicants and Evaluation committee, through an online tool created for the purpose. The results highlighted the positive aspects of the procedure set up by the ARIMNet2 consortium, but also pinpointed some critical issues to be addressed in following calls. Several suggestions arose from these surveys.

Some observations/suggestions can be highlighted:

- The two-step process (preproposal/full proposal) was considered positive by the different groups consulted, although it requires more resources and more efforts from the Call Secretariat overall.
- Applicants emphasised the fact that call documents should be clear and concise enough, including the national regulations, which are very heterogeneous and specific; efforts were thus made to simplify the call documents and improve their readability, from one call to another.
- One of the critical steps identified was the evaluation/ranking of the project proposals and the availability of renowned experts with the skills suited for the different thematic topics. A database



of evaluators/ Scientific Evaluation Committee members was set up with the contribution of all participating countries, and is updated based on the quality of the evaluations carried out.

- The relevance of involving private partners (economic sector) in project consortia was raised, and it is actually recommended in all calls, although their formal involvement depends ultimately on national funding regulations.
- A difficulty was identified concerning the duration for the signature of the contract after project approval.
- Funding availability in some countries was considered small and not in coherence with the expectations from the Call (scientific excellence, mobility, training, etc.), and the support of mobility of researchers between labs is sometimes not suitable to implement fully transnational approaches.
- Researchers suggested a better harmonization of reporting procedures between the national and ARIMNet2 level (coordinators often experience difficulties to gather the information from all the teams involved, since the ARIMNet2 Report is often not financially binding for the funding agencies).

Monitoring and evaluation of the research projects funded through joint calls

In order to monitor the projects funded through the joint calls, and to assess their results/impacts, ARIMNet2 partners set up a monitoring system including specific reporting tools and regular meetings. A standard report is to be filled by project coordinators at mid-term (covering the period M1-M18) and at the end of their projects (covering the period M1-M36), which contains productivity/impact indicators including among others scientific publications and/or patents, capacity-building activities, mobility (staff exchange), dissemination actions, etc.

Regular meeting were organised in presence of the project coordinators to celebrate the start of the projects (“Kick-off meeting”) and to present mid-term results/progress, and discuss possible issues affecting projects implementation (“mid-term meetings”).

12-13 June 2014: Mid-term meeting of the projects funded through the 2011 Call, Montpellier, France

14-15 March 2016: Final dissemination meeting of the research projects funded by the ARIMNet 2011 Call & Kick-off meeting of the projects funded by the ARIMNet2 2015 Call, Lisbon, Portugal

30 March 2017: Kick-off meeting of the projects funded by the ARIMNet2 2016 Call Tangier, Morocco

12 October 2017: Mid-term meeting of the projects funded by the ARIMNet2 2015 Call (back-to-back with ARIMNet2 Final Conference and PRIMA Dissemination Event), Montpellier, France

In preparation of these meetings, projects coordinators were asked to prepare oral presentations presenting their research, which are available on www.arimnet2.net and serve as dissemination materials. For the mid-term meetings, in addition to the presentations, the coordinators had to prepare mid-term reports covering technical and financial aspects, and these reports were read and assessed by external evaluators, who then provided feedback following a common “progress evaluation sheet” designed by the consortium. Administrative/financial issues were discussed in small committee and addressed by funding agencies.

Innovation potential of funded projects



IRESA and IAV led a work to characterise the innovation potential of research projects and propose ways to valorise their results, as a way to help funding orient their funding and support programmes for research results valorisation.

A survey on the degree of maturity and innovation potential of research projects funded via ARIMNet/ARIMNet2 was conducted, through:

- Analysis of the final reports of the 10 ARIMNet-funded projects (2011 Call), and mid-term reports of ARIMNet2-funded projects (2015 Call); the indicator tables, e.g. scientific and technical publications, patents, etc., were scrutinised.
- Analysis of questionnaires (ANNEX 5) addressed to Project Coordinators, to assess the degree of maturity of projects' results, based on the Technology Readiness Level (TRL) approach; the aim was to characterise the types of outputs/innovations (incremental/radical) generated by the projects, the implication (level and degree) of end-users/stakeholders (e.g. in project design and problem identification), and the transfer (process, tools, intensity) of these outputs to end-users, for their wider use.

Some key results of this survey are presented below:

Examples of innovation identified:

- **Agronomic and technical package** (incremental innovations): e.g. Guidelines for cultivation and use in animal feeding of lucerne-based forage crops, and pea-based forage and grain crops (REFORMA); guidelines to use organic amendment in arid and semi-arid regions (ARIDWASTE);
- **Agricultural or agro-food products** (radical innovations): e.g. Five novel lucerne varieties and three novel pea varieties tolerant to water stress (REFORMA); new cultivars for the sustainable development of potato production around the Mediterranean Basin (POH-MED);
- **Technological process:** e.g. Novel serological diagnostic tools to improve brucellosis control and eradication programs (BRUCMEDNET); innovative veterinary diagnostic assays and vaccines (AVIAMED); New tool for apple/peach phenotyping studies (APMED); identification of sources of resistance to Verticillium and new strains of nematophagous fungi (PESTOLIVE); identification of sources of resistance to orobanche and foliar diseases in some grain legumes (MEDILEG);
- **Decision-support tools:** e.g. Predictive model for the assessment of the *Xanthomonas citri* subsp. *citri* (Xcc) introduction risk (ORPRAMED); update of the import/export EU regulation and Directive on plant protection and novel inspection approach (SAFEMED); predictive model of insect-pest (whitefly) population dynamics under climate change (SWIPE); sustainability indicators for different Mediterranean crop-livestock systems (CLIMED);
- **Social/organisational innovation:** e.g. Understanding and enhanced exploitation of the interactions between livestock production, the environment, and social and economic aspects (DOMESTIC);

Involvement of end-users:

In most of the research projects analysed, end-users were involved from the beginning of the project in the definition of the research question, to answer specific needs; research teams then relied on formerly established cooperations/networks with farmers and other stakeholder from the sector of interest (advisory services, cooperative, seeds multipliers, etc.). In a few cases, owed to the strongly innovative nature of the project and of the products to be developed, the researchers preferred to have most robust data before engaging end-users.

Recommendations to foster innovation in research projects:**While preparing the project**

- Foster the consultation of stakeholders to identify the needs, challenges, opportunities, linkages, interests, etc.;
- Pay attention to the definition of project's objectives, research activities, partners' roles, together with the partners and stakeholders;
- Seek the involvement of the private sector (it will support the transfer and maturation of the invention into an "innovation").

During the project implementation

- Ensure the participation of interested parties in the project implementation;
- Do not overlook the prototyping phase;
- Validate the results with interested parties;
- Conduct an evaluation of the maturity of the results.

After the end of the project

- Assess innovation's performance: new policies & institutions, capacity building, technologies developed, market linkages, and information & knowledge flows, etc.
- Foster the integration of new projects to continue the scaling up.

Assessment of joint activities

The joint activity implemented, i.e. a young researchers seminar (30 May – 4 June 2016), was assessed a posteriori using satisfaction surveys distributed to the trainees, and questionnaires to the people involved in the preparation process (organiser, evaluators, etc.) and the results are integrated in the YRS report (Deliverable D4.3) and presented in the section WP4 – Joint activities of this report. This joint activity was clearly a success due among other things to the thorough preparation, quality of the programme, level of the trainees and their strong involvement, and animation skills of the organisers and trainers. The need for more networking and capacity building activities of this kind, to better answer transnational calls, was highlighted.



3.4 WP4 – Joint activities

Young Researchers Seminar (YRS)

As part of WP4 (Implementing pilot actions of joint activities to support cooperation in Mediterranean agricultural research), following a continuous process of dialogue marked with compromises and strong commitments, the partners agreed on the need for reinforcing the participation of stakeholders inside research projects and for training young researchers on this aspect. They decided to implement and jointly defined the scope of a Young Researchers Seminar (YRS) entitled “How to better involve end-users throughout the research process to foster innovation-driven research for a sustainable Mediterranean agriculture at the farm and local scales.”

A call for applicants was publicly launched by the consortium in 2016 and a total of 78 applications from 12 Mediterranean countries were received. The applications were evaluated and the participants selected by an evaluation committee composed of South/North Mediterranean experts (women and men), based on criteria jointly established between the organisers, and constrained by the numbers of available places (around 30). Finally, 28 young researchers were selected and invited to participate, from Algeria, Croatia, Egypt, France, Greece, Italy, Malta, Morocco, Portugal, Slovenia, Spain, Tunisia and Turkey. To assess their needs and expectations with respect to the content and format of the seminar and also to the travel and accommodation arrangements, a pre-seminar survey was designed and sent to all the participants, and analysed prior to the event, to adapt the programme and logistics accordingly. After the seminar, a survey was carried out to assess the satisfaction level of the participants and to collect their feedback and suggestions for future activities: the YRS appeared to be a very useful event and a real success for most.

The YRS took place from Sunday 29 May to Saturday 4 June 2016 at the CIHEAM-IAMM, Montpellier and gathered the 28 young researchers, the coordinators of 4 ARIMNet-funded projects (APMed, DoMEsTlc, PoH-MED and REFORMA) and several keynote speakers and experts (Figure 9).

The main objectives of this seminar were:

- To develop the research capacity of Mediterranean researchers to build international research & innovation projects;
- To initiate the creation of a network among young researchers from the Mediterranean region;
- To share experiences and knowledge on how to build an innovation-driven research project related to Mediterranean agricultural issues;
- To prepare collaborative materials on the involvement of stakeholders in research processes to be presented at the AKIS conference in Turkey (12-13 October 2016).

This seminar involved several types of activities including:

- Icebreaking activities (e.g. social buffet dinner, field visit);
- Keynote speeches setting the background of the week;
- The presentation of four ARIMNet-funded Projects by their coordinators (APMed, DoMEsTlc, PoH-MED and REFORMA), who shared their approaches and lessons learnt regarding stakeholders' engagement and innovation;
- A training session on how to design and write up a competitive project proposal and on participatory approaches;

- A field trip to the Cevennes Nature Park to discuss the Community Resilience Pact established to collectively managed private land, presentations by the young researchers of their own project ideas;
- Several group sessions to discuss and reflect on the way to promote stakeholder engagement and innovation in their research projects, and more generally, on the needs and expectations of young researchers concerning their career and personal development and the design of new transnational projects.

Discussing with and learning from the participants was crucial, not only to prepare future activities, but also to influence Mediterranean and European programmes and initiatives under development. As young researchers are expected to drive research and progress, they were our main target as they must be encouraged in their personal and career development and in the design of competitive, cutting edge and impacting transnational research projects. Despite the relatively short duration of this workshop (5 days), the absence of previous links between the participants and their cultural and scientific heterogeneity, the young researchers were extremely proactive and interacted intensively, raising very interesting questions and bringing up very relevant recommendations for improving research and innovation frameworks in the Mediterranean region.



Figure 9. Photos of the Young Researchers Seminar (June 2016, Montpellier)

Several recommendations were drawn from the discussions:

- Proposing different types of calls and simplifying the procedures: Calls specific for young researchers with sufficient merit to help them overcome the fact they are not yet experienced and that their curriculum is often not yet competitive enough; Standard “research” calls to encourage well-though and cutting-edge research activities; More specific “maturity calls” dedicated to bridge the 'innovation valley of death' and which could be directed primarily towards R&D and extension teams (in connection with research teams), to bring inventions with innovation potential one or two steps further up the TRL ladder; Calls supporting longer projects (e.g. 5 years), especially

for non-EU countries, since the first phase of the project takes usually more time (e.g. time for importing equipment from the EU); Calls for follow-up and capitalisation of finished projects: valorisation / capitalisation of the outcomes of one or several projects (integration); Calls encouraging value chain and life-cycle approaches, and inviting multi-disciplinary teams of experts, to address the problems following the nexus approach.

- Creating a database of possible Mediterranean partners (topics covered, skills, etc.) and in the Call platforms, proposing systematically a tool to seek and meet partners.
- Simplifying / harmonising project management procedures (especially financial aspects, but also technical, e.g. exchange of materials) between Mediterranean countries:
- Promoting long-term / continuous networking between researchers from different disciplines (multi-generational encounters) and different types of potential partners to build up a critical mass and a cooperation momentum.
- Fostering the interaction / cooperation between public and private research and development partners (e.g. spin-off).
- Creating hubs of networks that link businesses with the research base and with the wider innovation infrastructure / environment.
- Encouraging the organisation of project preparation events together with potential stakeholders.
- Supporting inter-disciplinary and multi-scale capacity-building (project design and management; planning for stakeholder engagement; dissemination; innovation/IP, etc.)
- Ensuring sufficient long-term funding to prepare projects, organise networking events, engage stakeholders in research, use specific equipment and infrastructures, support mobility, etc.
- Enhancing the link and interaction between research, governmental institutions (national / regional) and private actors that are responsible for the design and implementation of rural development plans.
- Proposing indicators to assess the real impact of researchers on societal issues, and not only their productivity (number of projects and papers).
- Rewarding / incentivising the most active and innovative researchers.
- Opening up access to data, information and research that is held within the public sector so its economic and social value can be maximised.
- Encouraging researchers in their efforts to gain knowledge on epistemology, philosophy, and history of science.
- Strengthening communication efforts among stakeholders (open days, living labs, media...).

Overall, this seminar fulfilled our expectations and most of those of the young researchers involved:

- It encouraged the sharing of experiences and knowledge between experienced and less experienced researchers, on how to design and implement an innovation-driven research project involving multiple stakeholders addressing Mediterranean agricultural issues;
- It allowed to strengthen the networking dynamics among young agricultural researchers from the Mediterranean region;
- It contributed to developing the research capacity and personal skills of the researchers involved, giving them useful tools and ideas to design and implement more competitive and impacting international research & innovation projects;
- By asking young researchers about their needs and expectations towards funding and research agencies, it allowed us to identify important bottlenecks and possible ways / instruments to improve their participation and leadership in transnational research projects.

During and after the seminar, communication played an important role in disseminating the results of this experience: key information was communicated on the ARIMNet2 website and Facebook and through partner's own media. The slideshows of all the oral presentations delivered during the seminar by the

keynotes, trainers and young researchers were made available online on the ARIMNet2 website (www.arimnet2.net), together with a compilation of photos covering the whole week.

Following the seminar, two roll-ups (2 m x 80 cm) were designed summarising and illustrating the main results of the discussions on the topics of stakeholders' involvement in research and innovation, and on the ways of supporting the participation and leadership of young researchers in transnational research projects. These roll-ups will be presented at the ARIMNet2 AKIS Conference on agricultural knowledge and innovation systems (AKIS) in the Mediterranean (12-13 October, Antalya, Turkey) by several young researchers invited to this event, who were particularly active during the seminar and showed interest in collaborating further. Roll-ups will also be published on the ARIMNet2 website in October.

From this experience, several important lessons have been learnt and will help organise new transnational activities in the frame of ARIMNet2 and other projects:

- The efforts and discussions devoted to the planning of the seminar have been key to the success of this event. Indeed, the main steps of this joint activity reflect the strong engagement of all the Mediterranean partners and a result from a consensus giving legitimacy to the seminar.
- The fact that the selection criteria applied to the candidates were carefully thought and discussed, that the selection process was implemented by a mixed international committee, and that it was based on a transparent harmonised evaluation grid all supported the evaluation and ranking of the potential candidates and helped assess their profiles more precisely. This selection process appeared more complex than initially thought, and required strong efforts and time. Nonetheless, it allowed us to select brilliant and active young researchers who appeared to be key elements in the success of the seminar, through their active involvement in the discussion, restitutions, etc. The role of the National Contact Points in disseminating the information of the Seminar's call, in supporting the applications, in contributing to assessing the candidates, and in supporting the travel arrangements of the selected participants, was essential to the success of the seminar.
- The methodological preparation and the animation tools and techniques used to foster the interactions between the participants (ex. Icebreaking activities, workshops, flipcharts, field visit, etc.) appeared to yield excellent results and contributed greatly to the pleasant and dynamic atmosphere.
- The trainers chose not to direct excessively the discussions so as to give more space to the interaction among young researchers and to facilitate the expression of their own ideas and project proposals. On the one hand, this allowed very intense discussions and the emergence of original ideas, but on the other, in some cases, a stronger support from the trainers would have been useful to help the trainees synthesise and organise more logically and clearly their ideas.

Development of the concept of a Euro-Mediterranean Agricultural Research & Innovation Platform

The consortium started a reflection on the development of a Euro-Mediterranean Agricultural Research & Innovation Platform, to be deployed within PRIMA. It was envisaged as an ICT instrument supporting cooperation/co-innovation between European-Mediterranean researchers and if required, other stakeholders (public & private sectors, e.g. SMEs, farmers, agribusinesses, NGOs) involved in the development and implementation of agricultural R&D projects. This Platform should be a living/dynamic tool ("a space for learning and change"), flexible enough to be improved and modified according to identified needs and institutional/contextual changes. It should also be self-animated as much as possible, although some people are required to feed, animate and maintain the Platform alive.

Platform's objectives:

- To boost cooperation/networking between scientists involved in agricultural research: sharing of ideas, knowledge, know-how, data, infrastructures, etc., and identification of problems, opportunities and ways to address challenges/issues.
- To foster the development and implementation of joint research strategies, projects and innovative products/services (methodological tools, models, apps, crop varieties, instruments, equipment, agricultural practices, etc.)
- To support researchers capacity-building (on research methods, participatory approaches, IP issues, TRL, project set-up, project management, communication/dissemination, etc.);
- To foster researchers' inter-sector and international mobility (staff exchange, stays abroad in University, SMEs, local development structures, etc.);
- To connect researchers with R&D funding opportunities;
- To communicate about PRIMA through publications, events, etc.

Platform's target users:

- Scientists (early stage or experienced; not only young ones) involved in agricultural research (crops, livestock, agroforestry, food systems, value chains, water and nutrient management, climate change adaptation/mitigation, pests & diseases management, landscapes, soil conservation, biodiversity conservation, social organization, rural development, etc.)

R&I Platform's expected outcomes:

- Enhanced skills and careers of European/Mediterranean researchers involved;
- Enhanced emulation, inspiration and creativity;
- Improved quality of the transnational projects proposed to PRIMA's Joint Calls and improved integration/coordination of R&I activities across the Euro-Mediterranean area;
- Improved socioeconomic and environmental impacts and optimised use of public/private funding;

Platform's structure, features and functionalities:

A modular structure was proposed, with the following modules:

- **Euro-Mediterranean Researchers/Partners database** (institutions and persons): researchers/institutions involved in agricultural research in the Mediterranean region can register and indicate their profile, expertise, interests, research lines, infrastructures, data, etc.; The Database offers the possibility to make a partner search and to establish contact to prepare joint calls (search by name, profile, research lines, expertise...).
- **Access to distance training/capacity-building** (webinars/video-conferences): this requires the development of a suitable training programme (public, topics, format, didactical materials, etc.), possibly included in formalised programmes (Masters, PhD...)
- **Shared database or meta-database** (agricultural data) under pre-defined rules for access/IP protection; allowing researchers to share data/metadata, analyse them collaboratively and publish joint papers [Possibly very complex and challenging].
- **Products depository:** centralised access to the key products generated and by the funded research projects (dissemination materials, scientific papers, etc.)

- **Products' co-construction:** such a module would allow researchers to develop collaboratively a specific training module, a conceptual model or another support-decision tool...
- **Forum for discussion:** this forum would host discussions launched on different topics linked to agriculture and natural resource management, and fed by the researchers registered, to foster the emergence of ideas, constructive critics, etc.
- Virtual brokerage events before Joint Calls to help researchers share ideas, find partners and establish consortium: researchers/SMEs can share concepts and try to convince partners to join their consortium.
- Connection with existing European/Mediterranean networks / hubs/ Platforms

Platform proposed governance:

- **Management Team.** Group of people (ICT experts, scientists, communication/dissemination experts; gender and geographical balance) devoted to feed and animate the platform (facilitators), in connection with Research Groups and Advisory Panel: calls, events, projects funded, products, etc.
- **Thematic Research Groups:** Researchers from the EU-Mediterranean area joining work groups to discuss topics (forum) and prepare joint proposals in response to PRIMA and H2020 calls, following priorities set by the EU and international programmes.
- **Advisory Panel:** Panel of experts (scientists, funding agencies, practitioners, NGOs, Entrepreneurs, farmers, etc.; gender and geographical balance) providing periodic technical and strategic advice to the Platform.

3.5 WP5 – From research to innovation (Mediterranean AKIS study & AKIS International Stakeholder Conference)

Insight into Agriculture Knowledge and Innovation Systems (AKIS)

Owing to their objective to improve the Research- Innovation link, it was considered strategic for ARIMNet2 partners to promote a reflexion among stakeholders on AKIS in the Mediterranean Area with the aim to improve the actions implemented inside ARIMNet2 and to prepare other initiatives of transnational research programmes.

The AKIS concept (Figure 10) stresses that innovation in agriculture is not a linear process but results from multiple and interacting sources of knowledge, and that it has implications for research and extension policies aimed at fostering innovation. It implies the development of interaction and learning among scientific and entrepreneurial actors in the public and private sector to produce technical changes and innovations. In the EU, it constitutes the background for the current European agricultural innovation policy: EIP-Agri (European Innovation Partnership for Agricultural Productivity and Sustainability). AKIS can be considered as “a set of agricultural organizations and/or persons, and the links and interactions between them, engaged in the generation, transformation, transmission, storage, retrieval, integration, diffusion and utilization of knowledge and information, with the purpose of working synergistically to support decision making, problem solving and innovation in agriculture” (Röling and Engel, 1991¹).

¹ Röling N.G. & Engel P.G.H. (1991). *The development of the concept of Agricultural Knowledge and Information Systems (AKIS): Implications for extension. In: W.M. Rivera & D.J. Gustafson (Eds.), Agricultural extension: Worldwide institutional evolution and forces for change, pp. 125-139. Elsevier, Amsterdam.*

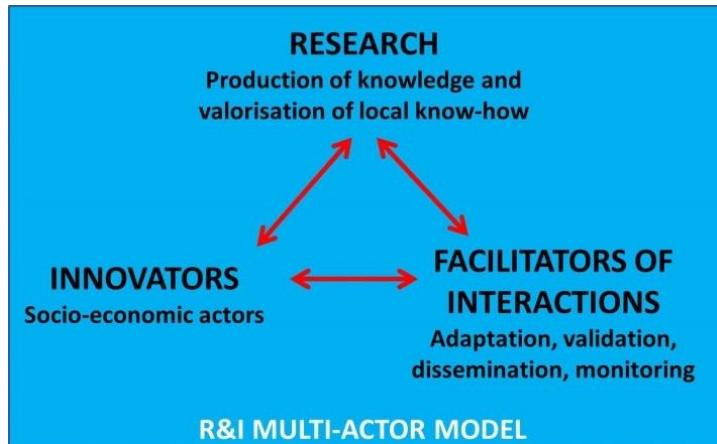


Figure 10. R&I multi-actor model

Mediterranean AKIS study

A study on Mediterranean AKIS was conducted by CREA, based on the results of a survey (questionnaires) addressed to ARIMNet2 Partners, and led to the publication of a report (Deliverable D5.1).

The objectives of the survey were as follows:

- To characterise the general structures of AKIS in Mediterranean countries,
- To analyse the formal and informal interactions (*knowledge flows*) between research/ extension/ farmers in each Mediterranean country,
- To examine how research and farming practices are linked in the selected countries.

Some key results are presented below.

The most common AKIS activities carried out by Mediterranean countries are:

- Research and experimentation: Applied research, Experimental development;
- Dissemination and information: Technical journals, Conferences/Seminars, Internet and ITC services;
- Farm advisory services: Specialised farm advice especially Advice for specific process/product, Experimental demonstrations;
- High value system/support services: Monitoring and early warning for major plant pest and diseases, Soil quality analysis.

Other AKIS activities appear marginal and would require more attention:

- Analysis of the socio-economic and cultural facts, marketing and commercial advice, advice for managerial aspects, financial services (banks, insurances), rural animation and environmental monitoring.

Concerning the role of institutional actors, the Ministry of Agriculture/Food/Forestry is usually responsible for the definition of policies and strategies and plays also a major role in public funding. The role of the Regional/local authority is also important especially in terms of subsidies and funding. The competences of the institutional actors are very much differentiated between the different partners; more generally, the Ministry of Agriculture/Food/Forestry is involved in “high value system/support services” and in “research and experimentation”, but this last one involves also the Ministry of education/research. The regional/local authorities are mainly involved in “dissemination and information” and “education, extension and training”.

The other actors of AKIS (Figure 11) are involved in specific activities depending on their particular mission. Those who are involved with more tasks than the others are the public universities/research centres that work especially in the field of “research and experimentation” “dissemination and information” and “education, extension and training”. The second typology of stakeholders involved is represented by those “bodies representing farmers” that work especially in the “farm advisory services” and “education, extension and training”. Also the private firms producing inputs and the private firms specialized in marketing are involved rather strongly in the “farm advisory services”.

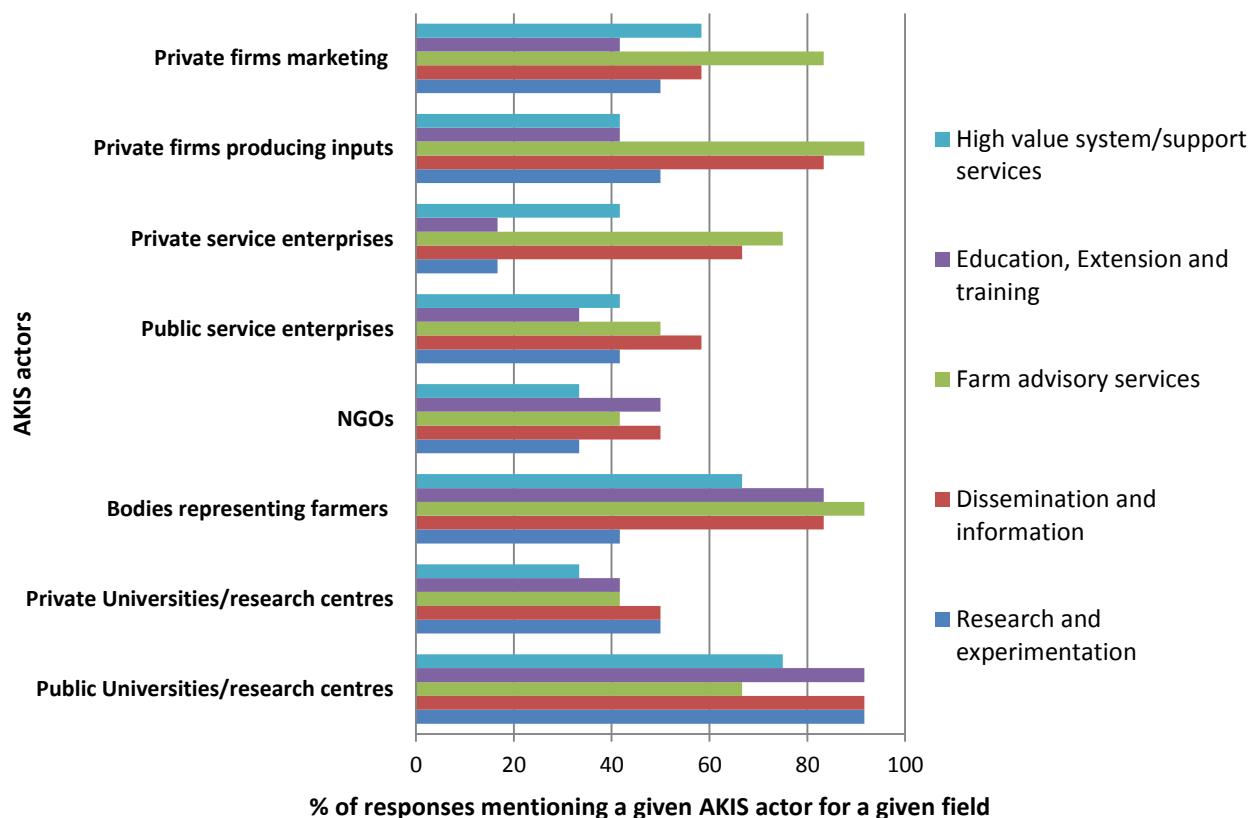


Figure 11. Main AKIS actors and their roles

It appears that AKIS networks are on average regular or weak. Among the eleven types of actors, those with the highest number of connections are: 1) Ministry of Food, Agriculture and Forestry; 2) Farmers’ Unions, Producers’ associations, Collective bodies; 3) Private Universities/research centres; 4) Regional/local government.

The connections between AKIS actors are:

- both formal and informal;
- promoted by laws, regulations and dedicated programmes/action plans;
- favoured by “Specific needs of work/action” or “Ability/attitude of single actors” and less by “Specific needs coming from final users of innovation”;
- improved by “Dedicated funding opportunities”, “Market needs (final users ask for more than one service)” and “Compulsory rules”.

Some tools and methods appear to be more suitable to improve the participation of farmers (Figure 12):

- 1) Dedicated funding opportunities
- 2) Innovation projects explicitly asking for partnerships with farmers
- 3) Dedicated permanent training
- 4) Dedicated training, information and animation on innovation
- 5) Dedicated and effective rules/legislation

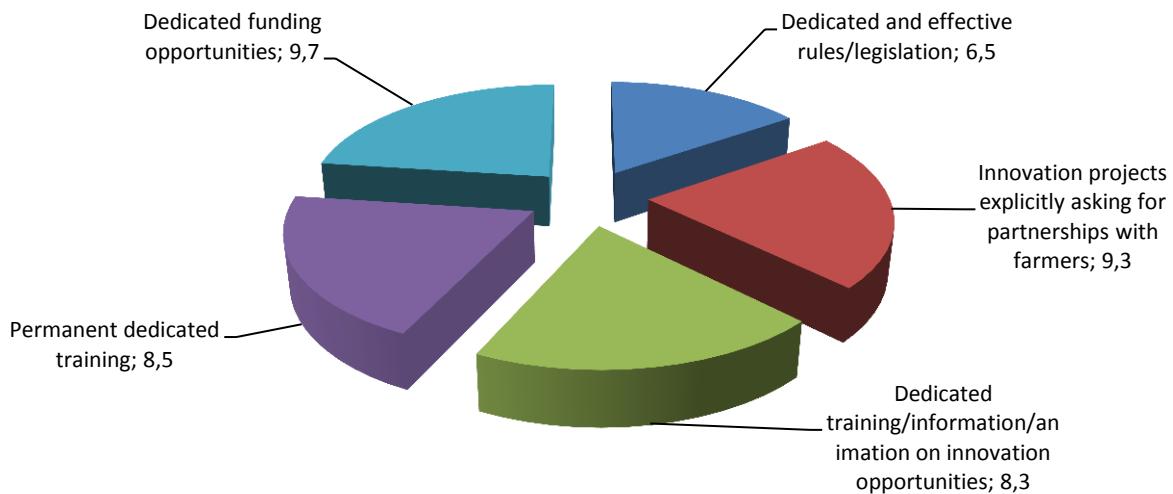


Figure 12. Tools and methods to improve farmer's participation in AKIS (score 1-10)

Some recommendations to improve Joint Calls and research projects and strengthen the research-innovation link are:

- Identifying and mapping farmers' / users' needs, priorities and innovation capacity;
- Involving stakeholders and end-users (even beyond their representatives) all along the project cycle (design, implementation, monitoring & evaluation);
- Designing problem-solving, result-oriented projects (potential impact in relation with social, environmental and economic challenges);
- Establish clear rules for partnership creation and encourage public-private partnerships;
- Designing the calls with farmers' representatives and involve them in project proposals evaluation/selection;
- Using farms for field experiments and demonstration purpose.

AKIS International Stakeholder Conference

The AKIS Conference was held in Antalya (Turkey) on 12-13 October 2016 to share ideas and experience, in line with the objective to analyse and enhance AKIS in order to improve the effects of research policies on innovation. It gathered 75 participants from 16 countries (Figure 13), with diverse and complementary profiles, including farmers, agribusiness entrepreneurs, funders, policy-makers, researchers, NGOs, etc. During two days, the participants brainstormed and discussed ways to improve transnational agricultural Research and Innovation. They came up with concrete recommendations to impact future collaborative Research and Innovation programmes and initiatives on Mediterranean agriculture.



Figure 13. Participants to the AKIS international Conference (Antalya, 12-13 October 2016)

The objectives of the conference were to: a) share opinions and encourage mutual learning on the diversity of AKIS in the Mediterranean; b) Foster exchanges and networking among Euro-Mediterranean actors on innovation processes and policies; and c) Draw on conference exchanges and build recommendations for future actions on Research and Innovation coordination in the Mediterranean.

The conference included: a) **Keynote speeches** that introduced the AKIS concept and its relevance for the Mediterranean area; Several stakeholders shared their experience and ideas on the link between research, innovation and practice, and offered recommendations to fill the gaps and improve Mediterranean AKIS; b) **Group discussions** that addressed three main themes: 1) Platform/Cluster between firms and academia: Interest in developing platforms for innovation; 2) Extension services and interactive innovation models: How to improve the interactions among research and extension institutions, farmers, entrepreneurs and other centres of knowledge; 3) Innovation potential of the research projects: How to increase the innovation potential of research projects and of the funding instruments aimed at supporting them. c) **Two round tables:** the first gathered farmers, agribusinesses and NGO representatives, and the second ministries, research organisations' and funding agencies' representatives.

Some recommendations to improve Mediterranean AKIS emerged from the discussions:

1. *Facilitating multi-stakeholder interaction and cooperation*

- Better understanding the roles played by the various stakeholders in R&I systems, the way they interact through formal or informal relationships and/or institutional arrangements, the rules they

follow, how decisions are taken and how changes in the overall R&I systems take place, taking into account the specificity of the contexts (Key notions: openness, participation, accountability, effectiveness and coherence).

- Developing multi-stakeholder collaborative settings and instruments (formal and informal, at all scales) connecting value chain actors (i.e. farmers, researchers, students, educators, farm extension services, agribusinesses, consumers, NGOs, administration, government/policy-makers, civil society, etc.) and building trust between them: multi-stakeholder platforms, clusters, incubators, thematic networks, hubs of networks, Joint Research Units, Joint Technological Units, Technology Transfer Centres, Innovation Centres, Competency Centres, etc.
- Training the stakeholders on multi-stakeholder collaboration/co-innovation and encouraging new actors/profiles such as innovation facilitators and brokers: Training on inter-personal communication, inter-relational skills and participatory approaches to better understand stakeholders' needs/perceptions, convince them of the utility of a given project, engage them in projects' design and implementation, to transfer effectively research outputs to users and ensure their adoption/use.

2. Fostering a balanced cooperation between public research and private business

- Encouraging a more meaningful role of the private sector in R&I, e.g. through its involvement in the scientific committee of R&D institutions, the definition of practice-oriented research strategies/programmes, the mobility of researchers and entrepreneurs from the academia/research framework to the business fabric and vice-versa.
- Supporting the participation of private actors in the implementation of the research activities through specific funding mechanisms (e.g. "multi-stakeholder calls"), ensuring clear selection, monitoring and evaluation processes and clear rules for the management of Intellectual property.
- Balancing the short-term interest for private goods/services of the private sector versus long-term public governmental R&D strategy and medium to long-term impacts of research projects (production of public goods and services): sharing the benefits of knowledge and ensuring their fair allocation along the value chain.

3. Strengthening the governance & capacity of Mediterranean agricultural research

a) Programme level

- Developing long-term transnational research strategies and programmes, involving farmers' representatives and other private actors (e.g. SMEs) from different sectors, in addition to research/academia representatives.
- Strengthening the role of the EU and joint co-funded programmes to support innovative research and public-private partnerships/cooperation.
- Fostering the involvement of ministries/policy-makers (education, research, industry, etc.), universities, technical centres, etc., as key drivers of change, addressing the issues of competence sharing/overlapping between central and regional authorities.
- Promoting the development of a Mediterranean R&I Network (data/knowledge exchange, co-innovation, etc.), e.g. supporting structures of interface: Technology transfer centres, innovation centres, innovation authority, etc., and networks of these entities.
- Encouraging long-term institutional co-operation among research and higher education organisations to promote institutional changes conducive to a better interaction with the various actors of innovation.



b) Project level

- Defining better the meaning of innovative research and capturing the innovation potential of research projects using relevant standards/criteria (e.g. readiness, market potential, identifying client's needs and translating them into the right research questions, designing a prototype, evaluating client's satisfaction, etc.) and identifying R&I outputs that can be valorised by researchers and other beneficiaries (patents, papers, models, protocols, etc.).
- Conditioning project funding by the formal involvement of public and/or private stakeholders (e.g. farmers, NGOs, industry, technology transfer centres/offices) and fitting funding rules and eligibility to encourage public-private innovative calls/projects.
- Adapting the management of intellectual property/data confidentiality to public-private collaborative research (open use vs confidentiality of data/publications).
- Supporting the communication and dissemination of R&I outputs to all the stakeholders (including the society at large) to ensure the adoption of innovation.

c) Researcher level

- Encouraging scientists to take part in multi-stakeholder innovative research through suitable incentives and reward systems: Career evolution (e.g. change of position, improved salary, recognition); Financial incentives (e.g. rewards/recognition linked to productivity and innovative results); Possibility for some activities/outputs other than publications and patents to be valorised/recognised (e.g. science communication, contribution to social organisation improvement, contribution to natural resource conservation and agriculture sustainability).
- Developing suitable research methodologies geared towards multi-stakeholder R&I.



3.6 Conclusions and perspectives

After ten years of a fruitful cooperation, ARIMNet/ARIMNet2 partners have learnt to work effectively together, developing common approaches, standards and good governance practices, and have developed mutual trust and a strong commitment to continue their joint activities in a long-term perspective.

By strengthening the scientific cooperation between Euro-Mediterranean countries, reducing fragmentation and exploiting synergies, ARIMNet2 supported the identification of shared priorities and the development of a shared vision on agricultural R&I, the alignment of R&I programmes, the launch of transnational calls funding innovative multi-actor research projects tackling major socioenvironmental challenges, and the implementation of joint activities which boosted capacity-building and networking among Mediterranean stakeholders.

ARIMNet2 paved the way for a stable and long-lasting cooperation between EU member states, associated countries and South Mediterranean Countries, and laid the foundations for PRIMA (Partnership for Research and Innovation in the Mediterranean Area), an initiative cofounded by the EU and 19 Euro-Mediterranean countries which will foster the enhancement of farming systems, water management, and agro-food value chains for the period 2018-2028. PRIMA will thus feed the cooperation momentum through new joint calls funding innovative multi-stakeholder research projects and joint activities boosting networking and capacity building. Through the monitoring & evaluation of the research projects' funded, it will ensure the capitalisation, maturation, valorisation and dissemination of their outputs/outcomes, thus enhancing their impacts.

4. Potential impact (including the socio-economic impact and the wider societal implications of the project so far) and main dissemination activities and exploitation of results

4.1 Socio-economic impact and societal implications

Characterising the impact of ARIMNet2 at this stage is a delicate exercise considering that it has just ended, however, we can underline some key outcomes and medium to longer-term impacts of the project, generated directly through its activities, or indirectly through the research projects funded by the 3 joint calls implemented.

ARIMNet2 yielded several outputs and positive impacts:

1) It improves the mapping of research activities in the Mediterranean region, identifying R&I gaps, redundancies and needs, establishing shared priorities and boosting synergies, for a more efficient use of public funding and greater societal impacts.

This mapping exercise started during ARIMNet and was expanded during ARIMNet2 to Malta, Croatia and Slovenia; it fed the Integrated Strategic Research Agenda (ISRA), developed with inputs from the partners and stakeholders, and oriented the topics of our joint transnational calls and activities. The ISRA identifies agricultural R&I challenges and priorities and proposes a transnational strategical framework and instruments for joint action, to increase the efficiency and sustainability of agri-food systems while ensuring a balanced and sustained territorial development.

2) It enhances the coordination, alignment, and capacities of the funding agencies, and their coordination with the EU, generating a strong leverage effect.

After ten years of a fruitful cooperation, ARIMNet/ARIMNet2 partners have gained experience and skills and have learnt to work effectively together, sharing good governance practices and tuning their approaches/standards for planning, implementing and monitoring more efficiently and transparently research programmes, transnational calls and projects. ARIMNet2 partners launched 3 Joint Transnational Calls, mobilising over 15 M€ and funding 36 research projects; they have developed mutual trust and a strong commitment to cooperate in the long-term.

3) It reinforces the Euro-Mediterranean agricultural R&I community promoting a shared vision of the challenges faced by the Mediterranean region and exploring possible ways to address them.

ARIMNet2 revitalised the Euro-Mediterranean agricultural R&I community, acting as a platform gathering different type of actors, and fostering new networks; multi-actor and public-private partnerships were also encouraged to boost innovation. ARIMNet2 also contributed to young researchers capacity building through a Young Researcher Seminar focusing on the involvement of end-users in research and the preparation of innovative/appealing research proposals, and then through a dedicated call for research projects coordinated by Young Researchers. We communicated about our activities/products and those of the research projects through a range of communication tools and channels (website, Facebook, brochures, newsletters, Cube of Knowledge...), reaching thousands of people.

4) It contributes to enhancing Mediterranean AKIS and the competitiveness and sustainability of Mediterranean agriculture

ARIMNet2 provided recommendations to enhance Mediterranean AKIS at the programme, project and researcher levels. It also indirectly contributed to the competitiveness of Mediterranean agriculture by fostering complementarities between national research programmes and by funding transnational research projects which strive to improve agriculture productivity and agri-food value chains, sustainability being an overarching goal. These projects generate a range of innovations, including new methods, decision-making tools, plant varieties, food products, and social and institutional change.

5) It paves the way for new Euro-Mediterranean agriculture programmes and partnerships

ARIMNet2 paved the way for PRIMA (Partnership for Research and Innovation in the Mediterranean Area; 2018-2028), an initiative cofunded by the EU and 19 Euro-Mediterranean countries which supports the enhancement of farming systems, water management, and agro-food value chains. PRIMA will benefit from the existing trust and cooperation momentum, and from the experience gained, which will galvanise Euro-Mediterranean R&I Cooperation, and will allow to find suitable solutions to current and future challenges facing Mediterranean territories.

4.2 Main dissemination activities

The Consortium deployed a strong energy to communicate about ARIMNet2 and to disseminate our achievements and recommendations at the national, regional and international levels, targeting a broad audience, including researchers, funding agencies and research organisations beyond the ARIMNet2 Consortium, the private sector, NGOs, as well as policy makers and EC representatives. We followed as closely as possible our Communication Plan (Deliverable D6.1),

The most important dissemination and outreach activities carried out and the diverse occasions were ARIMNet2 achievements were shared, are presented in Table 3.

Table 3. Communication & dissemination activities/materials implemented during ARIMNet2

Dissemination activity, tool, channel	Characteristics & Contents	Audience
ARIMNet2 Website www.arimnet2.net	<p><i>Online access (Operational since February 2014)</i></p> <p>The website is the main communication channel: it is used to present ARIMNet2, announce the calls, events, present the research projects funded, to share public reports and publications (newsletters, proceedings of conferences, policy briefs, recommendations, etc.)</p> <p>Contents: About ARIMNet2; News & Events; Mediterranean joint calls & activities; Research projects; Deliverables; Calendar; photos; Links to videos on YouTube, online Newsletters, Facebook page; EU-funding acknowledgement</p>	<p>All publics: researchers, funding organisations, policy makers, other projects/programmes, NGOs, private companies, etc.</p>

Dissemination activity, tool, channel	Characteristics & Contents	Audience
ARIMNet2 Facebook page https://www.facebook.com/ARIMNet2-1631259563757039/	<p><i>Online access</i> <i>Operational since 2014</i> The Facebook page is mainly used to animate and connect the young researcher community, communicating about joint calls, public events (seminars, conferences...).</p> <p>Contents: About ARIMNet2; News & Events; Selected research projects' news; Photos; EU-funding acknowledgement</p>	Mainly R&I community
ARIMNet2 Partners' websites	Each partner communicate about ARIMNet2 on its website, to publish the calls, the main events (seminars, conferences, etc.) and to share public outputs from the project	All publics
Online Newsletters -Newsletter 1, May 2015: https://us10.campaign-archive.com/?u=c7813409228a4cc005b44849c&id=5a301d5173&e=72a1ba183b -Newsletter 2, February 2016: https://us10.campaign-archive.com/?u=c7813409228a4cc005b44849c&id=f07c0190fc&e= -Newsletter 3, September 2016: https://us10.campaign-archive.com/?u=c7813409228a4cc005b44849c&id=612b631363&e= -Newsletter 4, May 2017: http://mailchi.mp/f7689a712b1a/arimnet2-newsletter-4?e=728fd0c19d Newsletter 5; to be published in March 2018	<p><i>Online access and sent by email to over 2000 contacts</i> Our Newsletters are published regularly to share the main achievements and inform about upcoming activities, and sent to over 2000 contacts (people who have an interest in ARIMNet2 and agricultural R&I in general; the list has been completed adding the participants to the different ARIMNet2 events)</p> <p>Contents: Foreword from coordinator; ARIMNet2 Events & publications (ISRA, conferences, seminars, calls, etc.); Research projects' news and findings; Testimonies from researchers and other stakeholders; Upcoming events; General presentation of ARIMNet2 and WPs; SSAB presentation; EU-funding acknowledgement</p>	All publics
Brochure ARIMNet – A Network for Agricultural Research in the Mediterranean Area http://www.arimnet2.net/brochure_arimnet/	<p><i>Online access (interactive) & paper format</i> <i>Publication: 2014</i> <i>28 pages</i></p> <p>Contents: Foreword from coordinator; Results of ARIMNet; Analysis of 2011 Call; Presentation of ARIMNet2 (objectives, work plan); ARIMNet2 Partners; Perspectives towards joint programming; EU-funding acknowledgement</p>	All publics
Leaflet ARIMNet – A Network for Agricultural Research in the Mediterranean Area http://www.arimnet2.net/files/useful_documents/com/Flyer_ARIMNet2_ENG_A5.pdf	<p><i>Online access and paper format</i> <i>Publication: 2014</i> <i>2 pages, A4 format</i></p> <p>Contents: Background; Presentation of ARIMNet2 Objectives; EU-funding acknowledgement</p>	All publics

Dissemination activity, tool, channel	Characteristics & Contents	Audience
Flyer 2017 ARIMNet2 – Coordination of Agricultural Research in the Mediterranean http://www.arimnet2.net/files/presentations_mid-term_montpellier2017/ARIMNET2_Leaflet_2017_Online.pdf	<i>Online access and paper format</i> <i>Publication: 2017</i> <i>6 pages, Tryptic format</i> Contents: Presentation of ARIMNet2; Approach; Work Packages; Key achievements; ARIMNet2 Partners; EU-funding acknowledgement	All publics
Cube of Knowledge	<i>Paper format only (Specific 3D design from CIRAD)</i> <i>Publication: 2016</i> <i>2500 copies (French & English)</i> The Cube of Knowledge was conceived by CIRAD and INRA, with scientific inputs from the coordinators of the different projects funded through the 2011 and 2015 joint Calls. It has an innovative 3D design aimed at enhancing the appeal of the contents, and creating more interaction between the persons manipulating it. It was produced both in English and French to read a broader audience, and was distributed to the partners and during meetings/conferences. Contents: Presentation of ARIMNet and ARIMNet2; Presentation of the research projects funded by the 2011 and 2015 Joint Calls; Perspectives	Researchers, funding agencies and other research cooperation projects/programmes
4-page brochures of the 10 research projects funded through ARIMNet 2011 Call http://www.arimnet2.net/files/deliverables_intra/D3.2b_ARIMNet-Funded-Research-Projects_Final_Brochures_FINAL.pdf	<i>Online access & paper format</i> <i>Publication: 2016</i> Contents: 4 pages per research project funded through ARIMNet 2011 Call Background; Methods; Main results; Impacts; Transnational added value; Mobility...	All publics
Abstract Book of the 46 research projects funded through ARIMNet and ARIMNet2 http://www.arimnet2.net/files/presentations_mid-term_montpellier2017/ARIMNet2_ABSTRACT_BOOK_Updated-2018-01_HR.pdf	<i>Online access & paper format</i> <i>Publication: 2016</i> <i>117 pages</i> Contents: The Abstract Book presents the 46 projects funded through ARIMNet/ARIMNet2 (4 joint calls): background, methods, expected or achieved results / impacts, mobility, capacity building, etc.	All publics

Dissemination activity, tool, channel	Characteristics & Contents	Audience
Press notes	<p><i>Online access</i></p> <ul style="list-style-type: none"> - Several information messages sent through INRA / MOISA / LAMETA mailing lists, Agropolis International and ANR, to announce joint calls, activities, conferences... - News of the publication of the ISRA (2016) disseminated through INRA, Agropolis International and in the online Newsletter - Article from HAO-DEMETER (Greece) on the young researcher seminar: Entypo Eksofyllo 2016 - La lettre d'information de l'Institut Agronomique et Vétérinaire Hassan II - N° 53, April 2017: information about the calls - PLATFORM Newsletter June 2017 (announcement of the 2017 Call; http://era-platform.eu/news/arimnet2-joint-call-2017-young-researchers/) - Announcement of the ARIMNet2 final conference and PRIMA Dissemination Event, through INRA, and Agropolis International (http://www.agropolis.fr/actualites/2017-recherche-agronomique-en-mediterranee-octobre2017.php) - Press note from Agropolis International : La Semaine de la Méditerranée (02/10/ 2017) 	All publics
Young Researchers Seminar (29 May – 4 June 2016, Montpellier) (proceedings and roll-ups) Proceedings: http://www.arimnet2.net/files/deliverables_intra/D4.3_ARIMNet2_Young-Researchers-Seminar_Report_FINAL.pdf Roll-ups: http://www.arimnet2.net/files/meeting_Young_Researchers_Seminar_montpellier2016/rollup/YRS_Rollup_Innovative%20Research-Stakeholders_FINAL.pdf http://www.arimnet2.net/files/meeting_Young_Researchers_Seminar_montpellier2016/rollup/YRS_Rollup_Young-Researchers-Leadership_FINAL.pdf	<ul style="list-style-type: none"> - Presentation of ARIMNet2 to the young researchers during the seminar in Montpellier - Presentation of ARIMNet2 in the YRS's proceedings made public in December 2016, on the ARIMNet2 website - Co-production of 2 roll-ups (involvement of end-users in research; young researchers leadership in transnational projects) exposed during the AKIS conference, Final ARIMNet2 conference, and permanently at INRA/MOISA (available online at www.arimnet2.net) 	All publics, especially young researchers

Dissemination activity, tool, channel	Characteristics & Contents	Audience
AKIS Stakeholder Conference (with proceedings and policy brief) http://www.arimnet2.net/files/deliverables_intra/D5.3_ARIMNet2_Outcomes_AKIS_Conference_FINAL.pdf http://www.arimnet2.net/files/presentations_mid-term_montpellier2017/ARIMNet2_AKIS_Policy-Brief_LR.pdf	- Presentation of ARIMNet2 to the audience (over 70 participants) - Proceedings made public in December 2016 on the ARIMNet2 website - Policy brief published in September 2017 and printed in paper format, distributed at the Final ARIMNet2 Conference to over 130 participants (available online)	All publics
Final Dissemination Conference (with proceedings)	- Presentation of ARIMNet2 to the audience (over 130 participants) - Proceedings made public in December 2017 - All communication materials disseminated at this occasion: ISRA, 2017 leaflet, Cube of Knowledge, Abstract Book...	All publics
Slideshows	Online permanent access and presented orally during conferences and meetings (e.g. kick-off, mid-term and final meetings) - Slideshow presenting the ISRA - Slideshows presented at the AKIS Conference - Slideshows presented at the Young Researchers Seminar - Slideshows presenting the different projects funded (presented by the coordinators during the kick-off, mid-term and final meetings)	All publics
ARIMNet2 Book – Sharing the experience and outputs of 10 years of Mediterranean cooperation	<i>In preparation. To be published in 2018 with ISBN/DOI and freely available online</i> - Background on EU-Mediterranean agriculture R&I cooperation; ISRA; Joint Calls and funded projects; Young Researchers Seminar; AKIS; Conclusions and perspectives	All publics
PLATFORM Events (Annual Event, October 2016, Lubljana; MasterClass and Workshop, June 2017, Copenhagen; Annual Event, October 2017, Rome)	- Presentation of ARIMNet2 to the audience and dissemination of communication materials (Flyers and Cube of Knowledge); Interaction with other ERA-NET Coordinators; Contribution to PLATFORM Database...	ERA-NET managers mainly
PRIMA Meetings	ARIMNet2 Coordinator attended PRIMA meetings and contributed to the preparation of the PRIMA Strategic R&I Agenda	PRIMA Consortium / General Assembly

5. Address of the project public website

ARIMNet2 Website: www.arimnet2.net

Contact:

Dr Florence JACQUET

ARIMNet2 Coordinator

Director of Research

Institut National de la Recherche Agronomique (INRA) – UMR MOISA

2 Place Pierre Viala, 34060 Montpellier Cedex 2, France

Tel. +33 4 99 61 23 25 - Email: florence.jacquet@inra.fr

