Title:

LIVINGAGRO project - Cross border living laboratories for agroforestry.

Summary:

Take home Message Using the participatory approach in Living Labs to improve sustainability of Mediterranean agroforestry systems.

Introduction The combination of agriculture and forestry in the Mediterranean regions is deeply rooted in a culture of traditional practices and niche production, but fails nowadays to structure its knowledge for achieving an integrated system of good practices for the sustainability of production, the protection of the biodiversity, the transfer of innovation and the increase in profitability for the territories/actors involved. LIVINGAGRO project addresses the challenge of knowledge and technological transfer in Mediterranean agroforestry systems for achieving and sharing innovations aimed at improving sustainable production and increasing profitability for less favoured territories, involving the main stakeholders. LIVINGAGRO project is funded by the EU under the ENI CBC Mediterranean Sea Basin Programme 2014-2020 and involves four countries: Italy, Greece, Jordan and Lebanon.

Material and methods The approach used is an open innovation ecosystem, oriented to co-creating economic and social values in the involved territories for the development of interactions between supply and demand in the agroforestry market, eliminating geographical and cultural barriers. The methodology is based on the creation of two cross border Living Labs (LL) to sustain education, R&D and technology transfer in agroforestry reinforcing the co-operation between research institutions, SMEs, farmers and other relevant stakeholders. The LLs deal with user-centered open innovation ecosystem, integrating research and innovation processes within a citizen-public-private partnership, in two specific fields: multifunctional olive system (LL 1) and grazed woodlands (LL 2). Olive cultivation is representative of many Mediterranean rural areas, and traditionally olive orchards were and are often still managed as agroforestry systems, in combination with cereals, fodder legumes and/or pasture. Grazed woodlands are major agroforestry systems in the Mediterranean that highly contribute to sustaining Mediterranean local economies supplying both plant and animal products. An ICT platform, where the main activities and outcomes of the project are made available, supports the promotion of participatory activities, communication and dissemination of results. Field trials, on the other hand, were developed in all participating countries to respond to the need expressed by farmers, which emerged during the stakeholder analyses of the economic operators of the two LLs, to reduce costs and increase environmental and production performance.

Results and discussion
This co-creation approach led to the creation of a catalogue of innovations. After identifying potentially useful innovations, the LLs of LIVINGAGRO assessed the stage of feasibility of each potential innovation, as well as the type of challenges it addresses. Taking into consideration the needs expressed by the stakeholders, the research teams and technical actors within the LLs reviewed the information provided by the stakeholders on each innovation. Following this review, LIVINGAGRO selected a shared list of innovations. Among these, in response to the needs expressed by economic actors in the sector, there is the selection and use of specific pasture seed mixtures for multifunctional olive and silvopastoral systems under Mediterranean rainfall conditions. This innovation responds to the need to improve the forage quality and availability for LL2 and soil quality and protection for LL1. In order to achieve this results, experimental field trials were recently established in both agroforestry systems in Sardinia and Lebanon. In the grazed woodland trials, three treatments are compared: improved pasture with commercial seed mixture, improved pasture with innovative seed mixture and natural pasture. In the olive grove system, traditional management (soil tillage) is also included as a fourth treatment. The innovative mixture consists in presence mix of seeds selected in Sardinia, mainly based on annual self-reseeding species, which can guarantee a better adaptation to different marginal conditions, as well as to prolonged drought periods. The innovativeness of the mixtures also lies in the careful combination of perennials and self-reseeding annual species, in order to maximise the adaptive synergies of the mixture through the balancing of different functional groups such as legumes-grasses-forbs and fast-slow establishing species. The current situation in the seed market forces the use of allochthonous seeds, selected abroad and often with limited adaptability. This represents a major problem, especially when operating in protected natural environments, such as Natura 2000 areas.

Conclusion LIVINGAGRO project can provide appropriate solution to improve the profitability and sustainability of Mediterranean agroforestry systems by adopting a participatory approach involving the main stakeholders. The identification of specific seed mixtures to improve the production and environmental performance of these systems can be an interesting innovation for the whole Mediterranean agroforestry sector.

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