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UNDERSTANDING & IMPROVING THE SUSTAINABILITY OF AGRO-ECOLOGICAL FARMING SYSTEMS IN THE EU

Collective implementation of alternative plant protection practices in peach trees Imathia, Greece

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CONTEXT: system and dilemma

Farming system

- An intensive, market oriented farming system comprised of small size fruit tree holdings.
- The dominant farm production type is fruit orchards, mainly peach trees both for fresh fruit production and canning.

Dilemma

- The key dilemma for farms is to increase the competitiveness of their produce and secure access to markets whilst protecting water quality and biodiversity. How to sustain the long-term economic viability of farms whilst protecting the natural resources?

Main sustainability issues

- Environmental sustainability issues include the high pressure on natural resources due to irrigation water and agrochemicals' use resulting in biodiversity loss and deterioration of water quality.
- On the other hand, economic sustainability is directly dependent on the achievement of fruit with low to zero pesticide residues, in order to maintain the position of the producers in a highly competitive market for both fresh and canned produce.

CONTEXT: key actors and AE practices

Stage of transition examined

- Advancing an on-going transition

Key actors involved in the MAP

- Farmers, representatives of local agricultural co-operatives/Producer Groups, the fruit processing industry, local authorities, input suppliers and agronomists-consultants.

Agro-ecological practices identified

- Fertiliser management, Weed, pest and disease control, Soil covering and management, Water management (including crop irrigation), Crop choices, Biodiversity

1. Transition to narrower canopy systems
2. Growing of cover crop between the tree rows
3. The selection of varieties resistant to pest and diseases with good quality characteristics

Sustainability trade-offs

- The simulation of the agro-ecological practices with the Decision Support Tools, showed a positive impact on biodiversity, encouraging genetic, species, and habitat diversity.
- Water quality seems to be improved, since the agro-ecological practices further reduce chemical inputs and prevent pollutants from leaching due to the use of cover crops and green manure.
- Lower application doses of agrochemicals and irrigation water may lead to reduced energy consumption, however this is likely to be counterbalanced by increased fuel consumption due to higher tree densities and increase in cover crop planting.
- Concerning the economic indicators, it was found that investments in machinery and use of advanced techniques and equipment may improve the labour productivity of farms, decreasing the labour hours of workers, which in turn affects farm income generation.

Barriers of implementation

- Lack of social capital that prevents collaboration, mutual support and joint efforts, which in turn entails lack of confidence and trust in agricultural co-operatives.
- Insufficient knowledge and lack of empirical data on innovations related to modern pomology and agro-ecological practices in local conditions, creating thus a feeling of uncertainty and hesitancy in adopting novel agricultural practices.
- Lack of targeted incentives and insufficient economic support measures as well as inadequate information on market conditions hinder farmers from adopting sustainable agricultural practices.

Key actions and instruments to address barriers

- RDP support for restructuring and modernisation could cover initial investment costs (establishing a two-dimensional narrow fruiting wall e.g. support structure and tree training, planting new tree varieties, high density orchard, mechanical or robotic pruning and harvesting machine, etc.) Collective investments are better organised and co-ordinated, minimising risks and uncertainties.
- Farmers need advice to manage the new canopy system and viable solutions to the cultivation challenges. In order to achieve the desired benefits, the role of advisors is crucial, since they can link practice and research and help farmers improve fruit quality and gain access to the market.
- Establishment of cooperation among representatives of farmers, fruit processing sector, advisory services, and research institutes to run pilot projects, implement and test innovative practices, disseminate practical solutions.

Key lessons learnt

- Initiatives relevant to agro-ecological farming are much easier to be adopted by collective schemes and strong agricultural cooperatives/PGs among which, one can find pioneer members who are open to innovation and can motivate / influence others.
- Innovative agricultural practices should be responsive to farmers' needs and adapted to local conditions, specific crops and methods with detailed evidence on its economic and environmental benefits.
- The role of advisors is determinant, as they have the ability to link research and practice, raise awareness among farmers and properly advise them offering adequate technical support.

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