AgriDiverCluster: An Innovative Cluster for the Utilization of Greek Biodiversity and Plant Genetic Resources

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Abstract

The last fifteen years, policy-makers deal with the importance of developing policy frameworks for innovative collaboration systems. The Institute of Plant Breeding and Genetic Resources of Hellenic Agricultural Organization-DIMITRA took the initiative, as a facilitator, to create a vertical cluster for the sustainable exploitation of Greek flora and the production of natural products, consisting of fourteen companies and nine cooperatives (representing more than 10,000 farmers) and other research institutes and universities.

The aim of this study is to indicate a rational way of creating a vertical cluster and the SWOT analysis in which could be based, focused on five important elements for the - management of genetic resources: a) protection of biodiversity and genetic resources, b) sustainable utilization of the biodiversity and genetic resources of the country, with emphasis on the species that can play a special functional role in human and animal nutrition, c) support and development of enterprises, active in various ways on value chains of agri-food sector, through the transfer of knowledge and training, -by carrying out joint research programs, product promotion actions and utilization of common infrastructure, d) collaboration with similar clusters in Greece and abroad and e) gradual transformation of the current conventional production process into a process of intensive knowledge, innovation and high technology. The final result is the extroversion of the sector's enterprises, with the ultimate goal of developing new products of high value, with international competitive advantages and export potential in European and world markets.

Keywords

SWOT analysis, industrial modernization, innovative products, Greek native flora

1. Introduction

In the modern globalized and borderless food market, the competition has changed. This competition is expressed in terms of cost, quality, speed, flexibility and innovation of products and services provided, thus reinforcing the need to develop modern innovation collaboration systems. As the innovation activity increases, the need in increasing the marketing activity in order to ensure the market readiness to consuming new products grows as well [1]. Collaborative innovation systems are key to entrepreneurship and R&D activities, as they combine resources and knowledge to enable their members to cooperate on common strategies and activities towards their mutual benefit – especially of small and medium enterprises. To increase the innovation activity, but also to overcome obstacles, such

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as climate changes, reduction of pesticides and sustainable use of resources, clusters can facilitate the link between research and knowledge for members and associator's.
Clusters defined as groups of firms, related economic actors and institutions that are located near each other and have reached a sufficient scale to develop specialized expertise, services, resources, suppliers and skills [2,3] They bring together businesses and potentially other relevant entities in order to pursue common goals relating to better research opportunities, increased marketability of products, resolution of structural issues and any other objective which can be hard to achieve by one firm due to small size and limited resources. This short paper provides an outline of the process of establishing AgriDiverCluster in Greece, which is a collaborative innovation system, working as a cluster, bringing together companies and research institutes specializing in the sustainable exploitation Greek biodiversity and the production of natural products.

2. Creating Process of AgriDiverCluster

The Greek plant biodiversity (national phytogenetic resources) is particularly rich (6,764 native species and subspecies) and of unique identity (22% of indigenous endemic plants, found nowhere else). These species are useful and valuable in various ways (aromatic-pharmaceutical-cosmetic-dye properties, agro-food interest, floricultural-ornamental value, felled species, etc.) [4]. According to the priorities of the European Union, which place research and innovation at the core of the future European strategy, the Institute of Plant Breeding and Genetic Resources (IPBGR) of Hellenic Agricultural Organization-DIMITRA took the initiative, as a facilitator, to create a vertical cluster for the sustainable exploitation of Greek flora and the production of natural products, consisting of fourteen companies and nine cooperatives (representing more than 10,000 farmers) and other research institutes and universities named AgriDiverCluster. The AgriDiverCluster aims to create new roadmaps directed towards the valorization of biodiversity and the development of natural products, as well as improving the interconnection between research and entrepreneurship at European level. AgriDiverCluster, as a vertical cluster, consists of all or part of the successive stages of production from upstream to downstream and is composed of technical relationships [5,6], consisting of enterprises, which are active in different links of the value chain of natural products, The common characteristic of all participating entities is their significant activity in sectors relating to the sustainable exploitation of Greek flora Partnerships through this cluster focus on creating joint actions, investment plans and on a sustainable relationship for participating in common priority areas of smart specialization linked to industrial modernization.

In order to ensure the smooth process of creating a collaborative innovation cluster with the main mission and priority of the development prospects for the production of Greek products with a distinct identity and certification, training, communication and co-development processes between the members were initially followed and alongside a SWOT Analysis was realized. A bottom-up approach was proposed [7], picked by a common forum for communication and exchange of views between actors and included 1. identification of the willingness of entrepreneur to participate, e.g. by performing SWOT, 2. cost-benefit analyses, through a future business plan and 3. identification of priorities and directions.

3. Results and Discussion

The research and development activities on which AgriDiverCluster focuses are in accordance to the Nagoya protocol [8]:

1. Protection of the national biodiversity and phytogenetic resources.
2. Sustainable utilization of the national biodiversity and phytogenetic resources, focusing on species that can play a distinctive functional role in human and animal nutrition (native aromatic / medicinal plants, traditional fruit varieties, small fruits, etc.)
3. Support and development of enterprises active on value chain of the agri-food sector, through knowledge transfer and targeted training, but also through the creation of networks for dissemination of information and interaction between cluster participants, by carrying out joint

research projects, undertaking common actions of product promotion and utilization of common infrastructure.

4. Collaboration with similar clusters in Greece and abroad. Collaborative innovation clusters are key players in entrepreneurship and research and development, providing a significant boost to competitiveness and innovation by playing a role in identifying, designing and implementing policies that often support job creation, development and investments.
5. Extroversion and gradual transformation of the current conventional production process into a process of intensive knowledge, innovation and high technology while promoting/enhancing the extroversion of the sector's enterprises, with the ultimate goal of developing new products of high value, with international competitive advantages and export potential in European and world markets.

The need to outline the problems and weaknesses faced by the business sector in relation to Greek biodiversity is demonstrated. On this basis, using simple established tools research, such as SWOT analysis, were presented briefly the main characteristics of AgriDiverCluster indicating a framework within can be examined which the impact of exogenous factors on the creation and improvement of the functioning of this specific innovation collaboration system [9]. A classic SWOT analysis (Strengths, Weaknesses, Opportunities & Threats Analysis) is usually considered as a good start for further Strategic Planning efforts and analysis.

The carving of any strategy presupposes the understanding of the relations between the members of the AgriDiverCluster, but also of the relations with its external factors. At this point the shot analysis played a decisive role. The application of SWOT analysis assists the strategic planning process [10], describes the existing situation and examines the advantages and weaknesses concerning the cluster as well as the opportunities and threats that exist and reflect factors of its external environment. [11,12].

Therefore, the SWOT analysis (table 1) approach is intended to:

- determine the comparative advantages/Strengths that distinguish AgriDiverCluster and highlight the strategies that must be taken to secure it.
- identify any Weaknesses recorded in existing cluster and address their causes
- investigate the Opportunities that are expected to arise for the members and
- highlight the Threats that are expected to occur and to take appropriate measures for future consequences.

Table 1
Strengths, Weaknesses, Opportunities and Threats of AgriDiverCluster

Strengths	Weaknesses
1. Strong cooperation between the wider public sector, research organizations and enterprises 2. Special interest and resources from IPBGR for the establishment of the cluster 3. IPGRB plays the role of facilitator and it is an important link for its members 4. Intense and sustained interest from someone members to establish the cluster 5. Participation of a relatively large number of businesses in the sector, originating from different size and places in the value chain 6. Geographical dispersion of members 7. Acts as an intermediary agent for collaborations with other clusters in Greece and the EU 8. Importance of Greek biodiversity, as a link of potential members 9. Biodiversity and research on it 10. Growing trends in local cultivation varieties 11. Rise in the production of innovators natural products 12. Need for modernization and alignment with European and international practices of partnerships for benefit entrepreneurship	1. Lack of time of the involved people and members for the cluster 2. Differences in member sizes – enterprises 3. Decreased interest from some enterprises 4. Lack of human resources by some initial members for active participation in cluster 5. Business culture of non-cooperation and consequently absence of experiences from respective collaborations 6. Limited financial possibilities of very small enterprises - members
Opportunities	**Threats**
1. Cooperation between enterprises and institutes 2. Possibilities and context of cooperation with others Greek, European or international clusters 3. Access to European funding programs 4. Increase funding for initiatives cluster in the new period 2021-2027 5. Modern trends in nutrition 6. Business networking with other value chains (e.g. tourism) 7. The objectives of the new CAP and the European Green Agreement, which are aligned with AgriDiverCluster 8. The EU Biodiversity Strategy 9. Possibility of institutional intervention in national and also European level 10. Increasing research initiatives in European and world level	1. Gradual withdrawal of members due to reduced interest, or opportunistic treatment 2. Inability to find common ground and vision, or potential membership conflicts 3. Failure to build relationships and trust issues between members 4. Failure to achieve partnership 5. Little availability of opportunities funding in the initial phase 6. Financial distress of members, particular in very small enterprises 7. Ensuring the equal participation of members 8. Possible changes in the political agenda 9. Incomplete National Policies for biodiversity 10. Bureaucratic cluster establishment procedures 11. Extension of the covid19 pandemic 12. Uncertain economic environment

4. Conclusion

Significant development prospects for the production of Greek natural products with identity and possibilities of authentication still remain unused, while at research level is achievable. This gap comes to be covered, in part, by the creation of the innovation collaboration system AgriDiverCluster. The cluster brings together, for the first time, enterprises and their representatives from Greece to exchange experiences and collaborate on issues related to biodiversity and plant genetic resources. The specific - study made to record the initial process for the creation of an innovation collaboration system, using as a first step the SWOT analysis. The SWOT analysis - provided the material for the members to drew and to better understand the level of cooperation and mutual assistance, both among themselves and with other carriers and clusters.

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