Hellenic Association of Agricultural Economists

ETAGRO 2023

17th International Conference of the Hellenic Association of Agricultural Economists

2-3 NOVEMBER 2023 | THESSALONIKI, GREECE

BOOK OF ABSTRACTS

Editor
Eleni Theodoropoulou

Copy-editor
Elias Tsourapas

ETAGRO 2023

17th International Conference of the
Hellenic Association of Agricultural Economists

"The agri-food system facing complex challenges: Responses towards economic, social, environmental sustainability"

https://etagro.gr/2023

Thessaloniki, Greece
2-3 November 2023

Book of Abstracts

ETAGRO 2023

17th International Conference of the Hellenic Association of Agricultural Economists

"The agri-food system facing complex challenges: Responses towards economic, social, environmental sustainability"

Organized by

Hellenic Association of Agricultural Economists

Co-Organized by

University of Western Macedonia
International Hellenic University

Under the auspices of

School of Agriculture of the Aristotle University of Thessaloniki

Edited by

Eleni Theodoropoulou

Cover Design, Copy Editing and Pagination by

Elias Tsourapas

Version 1.06

Thessaloniki, Greece, 2-3 November 2023

Committees

Organizing Committee chair

Thomas **Bournaris**, Aristotle University of Thessaloniki, Greece

Organizing Committee members

Athanasios **Batzios**, University of Western Macedonia, Greece

Giannis **Gousios**, Agricultural University of Athens, Greece

Pavlos **Karanikolas**, Agricultural University of Athens, Greece

George **Kountios**, International Hellenic University, Greece

Stavriani **Koutsou**, International Hellenic University, Greece

Dimitra **Lazaridou**, Agricultural University of Athens, Greece

Katerina **Melfou**, University of Western Macedonia, Greece

Stefanos **Nastis**, Aristotle University of Thessaloniki, Greece

Dimitrios **Natos**, Aristotle University of Thessaloniki, Greece

Dimitrios **Paparas**, Harper Adams University, UK

Eleni **Pastrapa**, Harokopio University of Athens, Greece

Athanasios **Ragkos**, Agricultural Economic Research Institute, Greece

Despina **Sdrali**, Harokopio University of Athens, Greece

Panagiota **Sergaki**, Aristotle University of Thessaloniki, Greece

Maria **Tsiouni**, International Hellenic University, Greece

Elias **Tsourapas**, European Association for Viewers Interest, Belgium

Secretarial support

Maria **Balamoti**, International Hellenic University, Greece

Lykourgos **Chatziioannidis**, Aristotle University of Thessaloniki, Greece

Evgenia **Lialia**, Aristotle University of Thessaloniki, Greece

Alexandra **Niniraki**, International Hellenic University, Greece

Georgios **Omouridis**, International Hellenic University, Greece

Aggelos **Prentzas**, Aristotle University of Thessaloniki, Greece

Scientific Committee chair

Eleni **Theodoropoulou**, Harokopio University of Athens, Greece

Scientific Committee members

Konstadinos **Abeliotis**, Harokopio University of Athens, Greece

Mikael **Akimowicz**, University of Toulouse III, France

Maria **Alebaki**, Agricultural Economics Research Institute, ELGO-DIMITRA, Greece

Garyffalos **Arabatzis**, Democritus University of Thrace, Greece

Athanasios **Batzios**, University of Western Macedonia, Greece

Karl **Behrendt**, Harper Adams University, UK

Julio **Berbel**, University of Cordoba, Spain

Thomas **Bournaris**, Aristotle University of Thessaloniki, Greece

Christopher **Brewster**, Maastricht University, Netherlands

Kostas **Chatzimichail**, Agricultural University of Athens, Greece

Fotios **Chatzitheodoridis**, University of Western Macedonia, Greece

Elias **Giannakis**, Energy Environment and Water Research Center, The Cyprus Institute, Cyprus

Constantine **Iliopoulos**, Agricultural Economics Research Institute, ELGO-DIMITRA, Greece

Eleni **Kaimakoudi**, Agricultural Economics Research Institute, ELGO-DIMITRA, Greece

Irini **Kamenidou**, International Hellenic University, Greece

Efstathios **Klonaris**, Agricultural University of Athens, Greece

Ioannis **Kostakis**, Harokopio University of Athens, Greece

Georgios **Kountios**, International Hellenic University, Greece

Stavriani **Koutsou**, International Hellenic University, Greece

Alexandros **Koutsouris**, Agricultural University of Athens, Greece

Aggelos **Liontakis**, Agricultural University of Athens, Greece

Jaume **Lloveras**, Universitat de Lleida, Spain

George **Malindretos**, Harokopio University of Athens, Greece

Spiridon **Mamalis**, International Hellenic University, Greece

Daniel E. **May**, Harper Adams University, UK

Romain **Melot**, INRAE, SADAPT – Université Paris Saclay, AgroParisTech, France

Dimitrios **Moutopoulos**, University of Patras, Greece

Claude **Napoleon**, INRAE – Avignon, France

Dimitrios **Natos**, Aristotle University of Thessaloniki, Greece

Ourania **Notta**, International Hellenic University, Greece

Jean Christophe **Paoli**, INRAE – Corse, France

George **Papadavid**, Agricultural Research Institute of Cyprus, Cyprus

Georgia **Papoutsi**, Agricultural Economics Research Institute, ELGO-DIMITRA, Greece

Maria **Partalidou**, Aristotle University of Thessaloniki, Greece

Merri **Raggi**, University of Bologna, Italy

Elena **Raptou**, Democritus University of Thrace, Greece

Anthony **Rezitis**, Agricultural University of Athens, Greece

Vagis **Samathrakis**, International Hellenic University, Greece

Panagiota **Sergaki**, Aristotle University of Thessaloniki, Greece

Sofoklis **Skoultsos**, Harokopio University of Athens, Greece

Ledia **Sula**, University College of “LOGOS”, Albania

Alexandros **Theodoridis**, Aristotle University of Thessaloniki, Greece

George **Tsekouropoulos**, International Hellenic University, Greece

Irini **Tzouramani**, Agricultural Economics Research Institute, ELGO-DIMITRA, Greece

Michael **Vassalos**, Clemson University, USA

Davide **Viaggi**, University of Bologna, Italy

Marco **Vieri**, University of Firenze, Italy

Georgios **Vlachos**, Agricultural University of Athens, Greece

Aspasia **Vlachvei**, University of Western Macedonia, Greece

George **Vlontzos**, University of Thessaly, Greece

Sponsors

Platinum

RESEARCH COMMITTEE
ARISTOTLE UNIVERSITY OF THESSALONIKI

ERGO PLANNING
BRAIN TRUST CONSULTING

Golden

INTERNATIONAL
HELLENIC
UNIVERSITY

UNIVERSITY
OF WESTERN
MACEDONIA

Qlab
ΕΡΓΑΣΤΗΡΙΟ ΑΝΑΛΥΣΕΩΝ

ΧΑΡΟΚΟΠΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ
HAROKOPIO UNIVERSITY

Silver

ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
AGRICULTURAL UNIVERSITY OF ATHENS

Preface

The immense political, economic, social, and environmental challenges within which the global agri-food system is operating formulate a complicated context in which the system must discover the innovations and solutions that will ensure its performance and sustainability. Some of these challenges already exist, while others are reshaped or brand-new. The primary challenge for most countries globally, is to achieve food security, as political and economic disturbances cause uncertainty at the production level as well as in the operation of large supply chains. The energy crisis, as a new threat, jeopardizes the viability and competitiveness of farms and agro-industry. This situation is exacerbated by the effects of the climate crisis, which highlights the need for environmentally sustainable production systems and for solutions to reduce the environmental footprint of the agri-food sector – such as circular economy.

In Europe, the policy framework established by the new CAP 2023-27 and the Farm-to-Fork strategy – under the light of the European Green Deal – brings to the forefront, now more than ever, the need to reconcile the often conflicting goals of strengthening the resilience of the agri-food sector, protecting natural resources, and promoting quality of life in rural areas. Under the nexus of these challenges, the depopulation of rural areas is intensifying, leading to further loosening of social ties and loss of cultural heritage. Farmers operate under the influence of new demands and are in dire need of advisory support and an operational Agricultural Knowledge and Innovation System (AKIS) in order to balance within the changing structure of the farming sector. On the other hand, as a result of “eco-anxiety” and societal issues, society is increasingly looking for new dietary patterns and foods that meet criteria such as locality, the sustainable use of natural resources and the interface with a healthy lifestyle. In this complex setting of requirements, challenges and risks, but also of opportunities, the need to connect research and innovation with the agri-food system and social expectations calls for attention more than ever.

Some of the questions raised are:

- How will the rural world be able to develop solutions and innovations to meet these challenges?
- How could science contribute to increasing the resilience of the agri-food system?
- What is the role of new technologies, digitalization and smart farming?
- What are the necessary synergies between farming and other activities in rural areas to improve sustainability?
- What are the patterns of organization and cooperation among actors in the agri-food system to ensure sustainable development and social cohesion in rural areas?
- What is the social and economic sustainability of alternative and environmental-friendly production systems (including – but not restricted to – agroecology and hydroponics)?
- What are the adoption patterns of innovative production methods, practices and systems and which policies and strategies could improve them?
- What are the evolving consumer profiles? Which are the agri-food production patterns and alternative products that will fulfil their expectations and what is the role of certification and labelling?
- What are the non-market values associated with environmental-friendly food production?

The Hellenic Association of Agricultural Economists (ETAGRO) invited contributors across the globe to attend the 17th International Conference of the Hellenic Association of Agricultural Economists (ETAGRO 2023), held in Thessaloniki, 2-3 November 2023. The main topic was *"The agri-food system facing complex challenges: Responses towards economic, social, environmental sustainability"*. It was organized under the auspices of the School of Agriculture of the Aristotle University of Thessaloniki and co-organized by the University of Western Macedonia and the International Hellenic University.

ETAGRO 2023 expected leaders, policymakers, academics, scientists, producers and political bodies to attend and share their work experiences and thoughts in various

subjects related to the bio-economy such as sustainable agri-food systems, sustainable food security, climate change mitigation, and new technologies, and others.

The specific objective of this meeting was to become the bridge in terms of communication and collaboration between science and research as well as the bodies and the stakeholders in agriculture, thereby facilitating the transfer of research data and expertise. All interested scholars or representatives among governmental entities, institutions, industries, NGOs, etc. were invited to contribute with up-to-date approaches on the meeting. Young scholars and highly motivated students were strongly encouraged to participate, presenting their most recent theoretical and empirical research.

In this Books of Abstracts you can find all the abstracts of the presentations (both oral and posters) made at ETAGRO 2023.

Table of Contents

Farm advisory and agricultural higher education

Current trends in consumer habits and value chains

Innovation, digitalization and Cooperatives

Agricultural Industry and Cooperatives

Consumer behaviour

Agricultural economics and trade

Environment, bioeconomy and agroecology

Agricultural counselling and training

Posters

Farm advisory and agricultural higher education

Towards a farmer-centric approach to advise provision

Alex Koutsouris[1] and Vasiliki Kanaki[2]

[1] Dept of Agricultural Economics & Rural Development, Agricultural University of Athens; koutsouris@aua.gr
[2] Dept of Agricultural Economics & Rural Development, Agricultural University of Athens; vskanaki@gmail.com

Abstract

The objective of this piece of work is to further the understanding of the roles played by a wide range of advice providers in farmer decision-making. Results show that from the perspective of a farmer, advice provision and advice providers are much more varied than is assumed in common perspectives in policy and research. This, in turn calls for a 'farmer centered advice paradigm' while acknowledging a) the heterogeneity of farmers' circumstances, and b) that the term advisor may fit any person who provides advice.

Keywords: advice provision; advisors; farmer-centric paradigm

Acknowledgments: The authors acknowledge the support of the project coordinators E. Gil and A. Balafoutis and his teams at UPC and CERTH, respectively, as well as both project partners' contribution in carrying out the farmers surveys.

In search of the agronomist as trusted advisor: A farmer-centric case study

Eleni Pappa[1] and Alex Koutsouris[2]

[1] Dept of Agricultural Economics & Rural Development, Agricultural University of Athens; elenip@aua.gr
[2] Dept of Agricultural Economics & Rural Development, Agricultural University of Athens; koutsouris@aua.gr

Abstract

Given the interest of the new CAP in advisory services and the Agricultural Knowledge and Innovation System (AKIS) and the importance of trust development between farmers and advisors, in this piece of work we explore the issue of farmers' trust towards their sources of advice. The field research addressed professional farmers who are in contact with agronomist(s) in Ioannina. Overall, 51 farmers were interviewed following a snowball technique. The trust model of Mayer et al. (1995) was utilized providing important insights about the antecedents of trust towards advisors on the part of farmers, focusing on three elements: ability, benevolence and integrity.

Keywords: key farmers; advisors; antecedents of trust; ability; benevolence; integrity

Towards agricultural digitalization: Does higher agricultural education supply students with relevant competencies?

Chrysanthi Charatsari[1], Anastasios Michailidis[1], Evagelos D. Lioutas[2], Thomas Bournaris[1], Efstratios Loizou[3], Aikaterini Paltaki[1] and Dimitra Lazaridou[4]

[1]Aristotle University of Thessaloniki, School of Agriculture, Department of Agricultural Economics; chcha- rat@agro.auth.gr (C.C.), tassosm@auth.gr (A.M.); tbournar@agro.auth.gr (T.B.); apaltaki@agro.auth.gr (A.P.)
[2]International Hellenic University, Department of Supply Chain Management; evagelos@agro.auth.gr
[3]University of Western Macedonia, Department of Regional and Cross Border Development; lstratos@agro.auth.gr
[4]Agricultural University of Athens, Department of Forestry and Natural Environment Management; dimitral@for.auth.gr

Abstract

Agricultural digitalization is gaining momentum, urging a transition from process-driven to technology-enhanced and data-driven agriculture. To support such a transition and help farmers derive benefits from digital technologies, also avoiding potential threats associated with digitalization, future advisors need a variety of competencies, ranging from pure technocentric skills to more complex capabilities, such as impact forecasting and transition facilitation. Do Greek students who study to become advisors have these competencies? In the present study, we attempted to answer this question following a quantitative approach. The results indicate that participants possess low levels in all the examined sets of competencies and, as a result, have limited overall competency in dealing with digital agriculture. These findings suggest the need for agricultural universities to reset competence-related targets and design strategies to supply future farm advisors with the competencies needed to act as facilitators of agricultural digitalization.

Keywords: agricultural digitalization; advisors; students; competencies; competence development; smart farming; precision agriculture; skills; advisory services; farming

Building Advisors and researchers' capacity to support agricultural knowledge and innovation systems in Europe: The case of the I2CONNECT summer school

Eleni Zarokosta[1] and Alex Koutsouris[2]

[1] Dept. of Agricultural Economics & Rural Development, Agricultural University of Athens; elenazarokosta@aua.gr
[2] Dept. of Agricultural Economics & Rural Development, Agricultural University of Athens; koutsouris@aua.gr

Abstract

The I2CONNECT Horizon project introduced a summer school training, aiming at strengthening the capacity of future advisors and researchers to support interactive innovations. The training consisted of two online sessions and a 4-day face-to-face course, covering basic concepts and various methodological tools on stimulating active participation and strengthening innovation networks. The findings indicate the effectiveness of interactive training in cultivating skills and attitudes that enable innovations, implying as well the need for the integration of participatory learning and methodological knowledge on interactive processes into university curricula. Modifying traditional university education in this direction could enhance the design and implementation of interactive projects, facilitating actors' navigation through innovative ecosystems.

Keywords: interactive training; networks; AKIS, education; innovation support services

Identifying veterinary students' attitudes on entrepreneurial intentions: A two-step cluster analysis

Athanasios Batzios[1], Vagis Samathrakis[2], Alexandros Theodoridis[3], Georgia Koutouzidou[4] and Alexandros Kakouris[5]

[1] Department of Organization and Business Administration, University of Western Macedonia, 51100 Grevena, Greece; thanos.batzios@gmail.com
[2] Department of Accounting and Information Systems, International Hellenic University, 57400 Thessaloniki, Greece; samavagi@gmail.com
[3] School of Veterinary Medicine, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece; alextheod@vet.auth.gr
[4] Department of Agriculture, University of Western Macedonia, 53100 Florina; koutouzidoug@gmail.com
[5] Department of Management Science and Technology, University of Peloponnese, 22100 Tripolis, Greece; akakouris@uop.gr

Abstract

In this paper the attitudes of veterinary students concerning "factors driving their entrepreneurial intentions" and "effects of family and wider environment on starting a business" are analyzed using Two-Step Cluster Analysis. A survey was conducted on 105 veterinary students, asked to indicate their "agreement" on certain individual issues. The analysis on data collected resulted in two students' profiles with respect to factors driving their entrepreneurial intentions ("The cautious students" and "The reluctant students"), and in three students' profiles with respect to influence of family and wider environment on starting a business ("The conscious students", "The cautious and conservative students" and "The well informed and decisive students"). The study's findings could contribute in reinforcing actions of educational institutions for a targeted training of 26 students on entrepreneurship/market issues.

Keywords: Veterinary students' attitudes; TwoStep Cluster Analysis; entrepreneurial intentions

Current trends in consumer habits and value chains

Investigation of the Digital Presence of Agricultural Stores in Greece

Konstantinos Demestichas, Antonis Vlandis, Maria Ntaliani and Constantina Costopoulou

Agricultural University of Athens, Informatics Laboratory, 75 Iera Odos St., Athens, 11855, Greece; cdemest@aua.gr; antonisvlandis@gmail.com; ntaliani@aua.gr; tina@aua.gr

Abstract

Websites are one of the most important digital marketing tools for businesses, through which they interact with users and establish their online presence. A well-designed website is effective in attracting and retaining customers and increasing sales. Automated website evaluation tools are a quick and easy solution for assessing a website, offering immediate results and suggestions for its improvement. In this study, the characteristics of the digital presence of agricultural stores in Greece during 2021-2022 were investigated, using Website Grader and Google Lighthouse tools for a sample of 239 websites. This work shows potential improvements on websites over time, and can be used to improve evaluation tools, as well as agri-store websites.

Keywords: digital marketing; website performance; website assessment; agricultural stores; Greece

Gastronomic tourism and festivals: views from potential tourists in Greece and South Korea

Aliki Dourountaki[1], Sofia Karampela[1,2], Alex Koutsouris[1]

[1] Dept. of Agricultural Economics & Rural Development, Agricultural University of Athens; koutsouris@aua.gr (A.K.)
[2] Dept. of Tourism, Ionian University; skarampela@ionio.gr (S.K.)

Abstract

Tourism is multifaceted and primarily encompasses cultural activities, aiming mainly to the visitor's relaxation and rejuvenation. Therefore, activities that involve exploring the culinary richness of the destination, which provide elements of the local culture and history, are important. The purpose of this study is to outline the profile of potential gastronomic tourists in order to identify the motivating factors for tasting the local cuisine. Additionally, gastronomic festivals are raising the question of whether they serve as a means to attract potential tourists and what conditions they must meet in order to become an attractive activity. A survey was carried out targeting two nationalities with a deep gastronomic culture: Greeks and Koreans. The findings indicate that despite their common perspectives on food selection motives and that the existence of a gastronomic 19 festival at the travel destination interests both nationalities, they differ in terms of choosing a gastronomic festival as the primary factor in visiting a destination. Overall, it is deemed useful to implement and promote gastronomic festivals with a focus on the particular needs of the respective potential tourists.

Keywords: Gastronomic tourism; festival; primary research; Greece; Korea

Online sales promotion of Geographical Indication Products: The case of Evia PDO dried figs

Argyrios Georgilas[1] and Zacharoula Andreopoulou[2]

[1] Department of Forestry and Natural Environment, Aristotle University of Thessaloniki, Greece; ageorgila@for.auth.gr
[2] Department of Forestry and Natural Environment, Lab. Of Forest Informatics, Aristotle University of Thessaloniki, POBOX 247, Thessaloniki54124, Greece; randreop@for.auth.gr

Abstract

The aim of this paper is, through a literature review and secondary research on the internet, to investigate the dynamics of the internet presence of the producers, packers, traders, and online sellers of PDO dried figs in the Kymi and Taxiarchi regions, of the Evia Regional Unit, Greece. With the use of big data, an attempt was made to identify internet users' preferences concerning the dried figs. Suggestions for improved internet presence that will match demand with supply can be subsidised from EU regional development funds and contribute to the increase of internet sales of 15 PDO Evia dried figs.

Keywords: Geographical Indication Products; Online Sales; PDO; Dried Figs; Evia

Expert views on socio-economic performance of integrated multi-trophic aquaculture (IMTA) systems

George Malindretos, Dimitrios Kalliantas and Panagiotis Kinanlis

Harokopio University of Athens; gmal@hua.gr; dkalliantas@hua.gr; pkinanlis@hua.gr

Abstract

Aquaculture notably affects people and societies far beyond obvious contributions to food security or any positive or negative environmental impacts. Thus, sustainability of aquaculture not only requires that it has a neutral (if not benign) effect on the environment but also that it be economically feasible. IMTA seems to have positive economic benefits for the farmer because diversification generates additional revenues while reducing risk. The results derived from a socio-economic analysis based on based on Activity Based Costing methodology and a P/L (Profit/Loss) model that calculates the Net profit, between mono- and poly- aquaculture. Results from both socio-economic assessment and cost-effectiveness analysis reveal the significant prospects of the IMTA systems through collaborative action for the promotion of sustainable fishing practices.

Keywords: Socio-economic Performance; Integrated Multi-Trophic Aquaculture; IMTA; Activity Based Costing

An empirical investigation of ethical food choice: A qualitative research approach

Georgios Roumeliotis[1], Elena Raptou[1], Konstantinos Polymeros[2] and Konstantinos Galanopoulos[1]

[1] Department of Agricultural Development, Democritus University of Thrace; geroumel@agro.duth.gr (G.R.); elenra@agro.duth.gr (E.R.); kgalanop@agro.duth.gr (K.G.)
[2] Department of Food Science and Nutrition, University of Thessaly; polikos@uth.gr

Abstract

Why do customers incorporate concerns about social and environmental issues into the decision-making process and how ethical is food choice in the modern world? Answers to this question have often revolved around how informed consumers might be and whether they have the appropriate skills to act on concerns they might have. Today food ethical consumption is a growing market where consumers' behavior shifts from the rational manner focusing on the products price and attributes to the food ethics associated with environment, social welfare, public health and morality. Using data selected from a purposive sample of 20 consumers, this study employed a qualitative research procedure to explore the main dimensions that influence the decision-making process and eating preferences in the meta COVID 19 era and within an economically turbulent environment. The main results showed that health protection, sustainability and social welfare constitute the main axes of ethical food consumption. Participants were found to be more individualists than altruists since the "personal health" dimension was the most prevalent. Future research should extend these findings and explore variations in the ethical consumption factors among various consumer segments.

Keywords: ethical food choice; personal in-depth interviews; health protection; environmental protection; social welfare

Innovation, digitalization and Cooperatives

Cooperative Longevity: A European, solution-focused approach

Constantine Iliopoulos

Agricultural Economics Research Institute (AGRERI, ELGO-D), Greece; iliopoulos@elgo.gr

Abstract

The current paper is motivated from and inspired by Michael L. Cook's seminal contribution to the study of cooperative organizations in agriculture. I delve into the cooperative lifecycle framework introduced by Cook in order to address the issue of cooperative longevity. Despite several organizational design inefficiencies identified in the literature, empirical evidence suggests that agricultural cooperatives have a much longer lifespan than investor- oriented firms that are supposed to incur lower ownership costs. This paper argues that this is so because agricultural cooperatives have been effective in ameliorating the negative consequences of high ownership costs, by designing and adopting successful tinkering and reinvention solutions. I describe and analyze such solutions, and provide real- world examples. The paper concludes by deriving key observations and proposing topics for fruitful future research on Cook's cooperative lifecycle framework.

Keywords: Organizational innovation, Life Cycle, Tinkering, Reinvention, Ownership Costs

Questioning family farms' readiness to adopt digital solutions

Martina Francescone[1], Chrysanthi Charatsari[2], Evagelos D. Lioutas[3], Luca Bartoli[1], Marcello De Rosa[1]

[1] University of Cassino and Southern Lazio, Department of Economics and law; martina.francescone@unicas.it (M.F.)
[2] Aristotle University of Thessaloniki, School of Agriculture, Department of Agricultural Economics
[3] International Hellenic University, Department of Supply Chain Management

Abstract

This paper explores the adoption of digital solutions by Italian farmers. The hypothesis is 10 that digital technology adoption relies on an articulated set of socioeconomic variables, which deserves attention. To test this hypothesis, we analyzed data from the last census of Italian agriculture. The analysis showed high differences in the adoption of digital technologies, which can be viewed from territorial, structural, and sociodemographic points of view. That casts some doubt about the fairness of digital transition in rural areas, calling for strengthening rural policies at the beginning of the new programming period 2023-27.

Keywords: Digital agriculture; Italian farms; context-related analysis; smart farming; technology adoption; innovation

The effect of unfair trading practices on the performance of agricultural cooperatives

Theo Benos[1], Panagiota Sergaki[2] and Nikos Kalogeras[1]

[1] Sustainable International Business (SIB) Research Centre, Zuyd University of Applied Sciences, The Netherlands
[2] Department of Agricultural Economics, Aristotle University of Thessaloniki, Greece

Abstract

In the European agri-food sector, operators with substantial bargaining power often engage in unfair trading practices (UTPs). Our paper aims to empirically examine the occurrence of UTPs and their influence on the performance of cooperatives. To fulfill the goal of our paper, we collected responses from 109 cooperatives in Greece after the transposition of a specialized EU Directive (i.e., Directive (EU) 2019/633). We found that, on average, the sampled cooperatives encountered three prohibited ("black") UTPs, while all reported at least one prohibited UTP. Moreover, the two most commonly reported practices (i.e., "unduly late payments" and "buyers' demand that suppliers pay for the deterioration or loss of products that occurred after ownership transfer") exerted a significant negative influence on cooperative performance, even in the presence of a proficient Board of Directors. Consequently, policymakers may need to pay more attention to UTPs and safeguard that the national enforcement authorities are well-equipped to act rapidly and effectively against offenders.

Keywords: unfair trading practices; agricultural cooperatives; performance

Discovering innovation, social capital and farm viability in the framework of United Winemaking Agricultural Cooperative of Samos

Sofia Karampela[1,2,3], Thanasis Kizos[2], Alex Koutsouris[3]

[1] Dept. of Tourism, Ionian University; skarampela@ionio.gr (S.K.)
[2] Dept. of Geography, University of the Aegean; akizos@aegean.gr (T.K.)
[3] Dept. of Agricultural Economics & Rural Development, Agricultural University of Athens; koutsouris@aua.gr (A.K.)

Abstract

In this study we aim at exploring the possible relationships between innovation, social capital and farm viability towards the sustainability by using indicators from the literature and developing complex indexes for all the examined concepts in the framework of an agriculture cooperative located in the Greek island of Samos. Data from the United Winemaking Agricultural Cooperative of Samos (UWC SAMOS) were collected through semi-structured questionnaires and further personal in-depth interviews. Findings reveal a highly complex relationship between these indexes that cannot be analyzed only quantitatively. It is qualitatively data that explain the weak innovation and low level of social trust by identifying the “institutionalization of the members of the cooperative”, underlying the importance of mixed methods approaches.

Keywords: pro-innovative behavior; trust; farm viability; cooperative; Samos Island

Agricultural Industry and Cooperatives

Agricultural value added, farm business cycles and their relation to the non-farm economy

Christos P. Pappas[1] and Christos T. Papadas[1]

[1] Agricultural University of Athens, Department of Agricultural Economics and Rural Development; christ.pappas@gmail.com
[2] Agricultural University of Athens, Department of Agricultural Economics and Rural Development; cpap@aua.gr

Abstract

This paper investigates the relationship between the gross value added (GVA) of Greece's agricultural sector and the GVAs of the other sectors. The research considers both the re- lationship between value levels and the cycles of GVAs. Dynamic analysis using ARDL modeling shows that there is no cointegration between agricultural GVA and the rest of GVAs. However, there is an estimated cointegrating relationship between business cycles of agriculture and those of the rest of the economic sectors, with the cycles of services being the significant variable. Moreover, econometric analysis using NARDL modeling shows that there is a cointegrating relationship be- tween the levels of GVAs too, when asymmetricity, with respect to GVA changes of the services sector, is introduced.

Keywords: Structural transformation; Agriculture; Business cycles; ARDL & NARDL

Implementing industry 4.0 technologies in food manufacturing companies: The Greek case

Miranda Psoma[1] and Achilleas Kontogeorgos[2]

[1] Aristotle University of Thessaloniki, School of Agriculture, Department of Food Science and Technology; psomamiranda@gmail.com
[2] International Hellenic University, School of Geosciences, Department of Agriculture; akontoge@ihu.gr

Abstract

Food manufacturing companies adopting Industry I4.0 (I4.0) can improve their operational performance. The present study aims at determining the level of implementation of I4.0 technologies in the food manufacturing companies. A survey was conducted based on a structured questionnaire. A sample of 102 Greek food manufacturing companies fully completed the questionnaire. Descriptive statistics were applied to determine the implementation level of I4.0 technologies. According to the findings, the level of implementation of I4.0 technologies is low to medium. This is the first study that examines the implementation level of I4.0 technologies in the Greek food manufacturing companies which are operating under challenging conditions.

Keywords: Industry 4.0; food companies; Greece

The effect of regulatory role of the collective organizations in relation to consumption of cooperative fruits and vegetables

Aristotelis Batzios[1] and Maria Tsiouni[2]

[1] Phd, Agricultural Economy, School of Agriculture, Forestry and Natural Environment, Aristotle University of Thessaloniki; a1990batzios@gmail.com
[2] Assistant Professor, School Of Agriculture, International Hellenic University; mtsiouni@agr.teithe.gr

Abstract

European agri-food chains are characterized by their strong interconnections among all the partners, their complexity, their resilience in a period of uncertainty, and their shared commitment to continue striving for food safety and quality. The regulatory role of Greek collective organizations thus empowers their members and enables small farmers to achieve the above agri-food chain goals. A large number of academic articles on collective organizations focus on economic analysis of their performance, but there is little research on the impact of regulation on consumer behavior. The objective of this study is a) to analyze the Greek market of fruits and vegetables cooperatives, b) to identify the consumers' opinions as regards the regulatory role of Greek collective organizations in the fruits and vegetables supply chain, as well as c) whether the consumers and producers benefit simultaneously by the cooperative movement.

Keywords: regulatory role; collective organizations; agri-food chain

Social innovation and women's agricultural cooperatives: Applying social change theory

Ioannis Sotiriadis[1], George Sidiropoulos[2] and Maria Partalidou[3]

[1] PhD researchers, Department of Agricultural Economics, School of Agriculture Forestry and Natural Environment, Aristotle University of Thessaloniki; ioannissg@agro.auth.gr
[2] MSc researchers, Department of Agricultural Economics, School of Agriculture Forestry Associate and Natural Environment, Aristotle University of Thessaloniki; georgesidiro3@gmail.com
[3] Associate Professor, Department of Agricultural Economics, School of Agriculture Forestry and Natural Environment, Aristotle University of Thessaloniki; parmar@agro.auth.gr

Abstract

In most investments, businesses or even organizations, the result and their value it is valued and calculated in profit and economic terms. But what if you have to calculated the value and work of a social enterprise? What is that thin line that separates those business with each other? The way to evaluate the efficiency of a business includes social contribution and the social footprint it offers? Is it possible for a successful farmer cooperative that wants to increase its activity to remain as a social enterprise or will must change legal form? In an agricultural cooperative that presents a remarkable success activity, how much are identified the opinions of the members with the vision of the cooperative and how much the vision changes and its purpose of existence; The above questions were the reason for the study and the realization of a primary research presented in this article. The research is based on qualitative research tools and as case study was the women's agricultural cooperative of Agios Antonios, a village in the prefecture Thessaloniki, in Northern Greece.

Keywords: women's cooperative; social effect; economic benefit

Assessing economic and social security in agricultural cooperatives: Two case studies from cooperatives in Northern and Southern Greece

Stefania Tselempi[1], Michalis Frantzis[2] and Panagiota Sergaki[3]

[1] MSc Researcher, School of Agriculture, Forestry and Natural Environment, Aristotle University of Thessaloniki; stselempi@agro.auth.gr
[2] MSc Researcher, School of Agriculture, Forestry and Natural Environment, Aristotle University of Thessaloniki; frantzism@agro.auth.gr
[3] Professor of Agricultural Cooperation, School of Agriculture, Aristotle University of Thessaloniki; gsergaki@auth.gr

Abstract

Agricultural cooperatives have an important role in supporting agricultural development and improving the well-being of their members. They provide farmers with financial and social security, as well as they foster an environment that is supportive to collective actions. This study aims to assess the economic and social safety of female cooperative members by looking at their experiences and perceived improvements over time. It examines how gender dynamics, social capital, and cooperative engagement affect women's perceptions of economic and social security through field surveys and structured interviews. According to preliminary findings, active engagement in cooperatives improves women's feelings of social security, belonging, and empowerment. They might not be as confident in their ability to make economic judgments due to societal prejudices, resource access restrictions, and cultural norms. The study emphasizes in the potentials of women to break down traditional gender norms and obstacles as well as the economic gains associated with cooperative activity. These findings provide empirical support and inform efforts to promote empowerment and gender equality in agricultural cooperatives.

Keywords: agricultural cooperatives; women; social security; economic security

Consumer behaviour

Consumers' behavior toward plant-based milk alternatives

Dimitris Alexandridis[1], Christina Kleisiari[1] and George Vlontzos[1]

[1] Agricultural Economics and Consumer Behavior Lab, University of Thessaly;
agreconlab@uth.gr

Abstract

In recent years, more people have expressed interest in Plant-Based Milk Alternatives 9 (PBMAs). Our research focused on Greek consumers to examine consumer behavior of PBMAs. Using relevant literature, a questionnaire was designed and distributed both online and through personal interviews. The sample was random and concerned 576 consumers from the Greek mainland of which 53.5% were women and 46.5% were men aged 18 to 80. The Health Belief (HBM) and Stimulus Organism Response (SOR) models were used to design the questionnaire while the Principal Component Analysis (PCA) was applied for the interpretation of the survey results. PCA showed that consumers' perception of PBMAs, and their willingness to consume them or influence others to do so, are the most significant variables. Furthermore, Linear Regression Analysis revealed that PBMAs are primarily purchased by younger and highly educated consumers. The results of the research can contribute to the improvement of PBMA retailing marketing strategies in Greece.

Keywords: PBMAs; consumer behavior; Principal Component Analysis (PCA)

The food fraud landscape: A brief review on food safety and authenticity

Leonidas Sotirios Kyrgiakos[1], Malak Hazimeh[2], Marios Vasileiou[1], Christina Kleisiari[1], Georgios Kleftodimos[2] and George Vlontzos[1]

[1] Department of Agriculture Crop Production and Rural Environment, University of Thessaly, Fytoko, 38446, Volos, Greece; lkyrgiakos@uth.gr; mariosvasileiou@uth.gr; chkleisiari@uth.gr; gvlontzos@uth.gr
[2] Mediterranean Agronomic Institute of Montpellier (CIHEAM-IAMM), University of Montpellier, Montpellier, France; malakhzm24@gmail.com; kleftodimos@iamm.fr

Abstract

Food fraud poses a significant challenge within the global food supply chain, with apprehensions regarding safety, authenticity, and efficiency. This study conducts a brief review of the literature by utilizing the Web of Science database, analyzing 2,331 outcomes pertaining to the subject of food fraud. The analysis results demonstrated a noteworthy surge in scientific publications after 2013, which was propelled by events such as the horsemeat scandal and the formation of the European Food Safety Authority. Utilizing Multiple Correspondence Analysis (MCA), the study identified significant clusters pertaining to food transformation, safety, traceability, and distinct meat sources. In addition, trending topics shifted towards a holistic approach to food safety and the implementation of technologies like Blockchain (BC), Internet of Things (IoT), Artificial Intelligence (AI), and Big Data (BD). These technologies offer enhanced traceability, authentication, automation, and decision-making capabilities. The present research offers valuable perspectives on the evolving landscape of food fraud research and the potential of nascent technologies to tackle these issues.

Keywords: Food fraud; food safety; food authenticity; food supply chain; review; industry 4.0; sustainability; blockchain; food traceability; Multiple Correspondence Analysis (MCA)

Factors influencing consumer receptivity to sustainable packaging: A probit regression analysis

Georgia S. Papoutsi[1], and Elena Kourtesi[2]

[1] Agricultural Economics Research Institute, Hellenic Agricultural Organization-DIMITRA, 11528, Athens, Greece; gpapoutsi@elgo.gr
[2] MBA Food & Agribusiness Programme, Agricultural University of Athens, 11855, Athens, Greece; elenakourtesi@hotmail.com

Abstract

The objective of this study is to investigate whether specific socioeconomic and attitudinal factors impact consumer receptivity to sustainable food packaging, with a particular focus on edible cups. A total of 1028 respondents completed an online questionnaire, and the data were analyzed using descriptive analysis and binary probit regression. The results reveal that demographic factors, such as household size and household economic position, have a positive influence on consumers' intention to consume edible packages. Additionally, attitudinal factors were found to be significant, with food technology neophobia negatively affecting consumers' willingness to try edible cups, while beliefs about the development of the sustainable packaging industry positively influence intention.

Keywords: sustainable packaging; edible cups; consumption intention; food technology neophobia scale

Food neophobia in young adults: A qualitative research approach

Panagiota Thanasoula[1], Elena Raptou[1], Konstantinos Galanopoulos[1], Konstantinos Polymeros[2]

[1] Department of Agricultural Development, Democritus University of Thrace; pthanaso@agro.duth.gr
[2] Department of Food Science and Nutrition, University of Thessaly

Abstract

Food neophobia, that is the aversion to try novel or unfamiliar foods, has been linked to reduced dietary variety and quality, forming an internal gatekeeper in food consumption. This study sought to investigate willingness to try novel foods in young adults 18 to 29 years old, and their level of acceptance toward new foods and innovation in the food industry. It also shed light into the factors affecting the likelihood of food rejection and explored motivational barriers, social norms and conflicting eating goals that influenced young adults' food consumption drivers. Empirical research employed a qualitative research design incorporating five focus-group discussions and ten in-depth interviews. Data were selected through an open-ended questionnaire and content analysis provided the main determinants of neophobic response to food in young adults. Main findings showed that food neophobia stems from maternal/family neophobic attitudes and mimetic behavior. Furthermore, health concerns and product's price had a crucial role in establishing food choice and triggering potential food neophobic reactions. Product recognition and brand loyalty also had a strong influence in young adults' eating patterns and all participants seemed to agree that they felt more confident with more familiar brand purchases. Future research should explore potential differences in food neophobia among various consumer segments and provide a thorough understanding of the factors affecting neophobic reactions across the life course.

Keywords: food neophobia; novel foods; young adults; personality traits; brand loyalty

Development of a special feeding method of beef cattle and implementation of a total quality approach from stable to table

Stella Dokou[1], Anestis Tsitsos[1], Triphon Khatzimanou[1] Ioanna Stylianaki[1], Angelos Paroutoglou[2], Ioanna Dalla[3], Vangelis Economou[1], Ilias Giannenas[1] and Georgios Arsenos[1]

[1] School of Veterinary Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Greece
[2] Ioanna Bella - Aikaterini Lourou O.E., Patrida, 59100, Imathia, Greece
[3] Qlab P.C., K. Karamanli 122, Delta, 57008, Greece

Abstract

The objective of this study was to examine certain nutritional strategies that can potentially have a supportive effect on feedlot cattle performance and meat quality characteristics. Specifically, different rations enriched with the addition of oregano essential oil were evaluated in terms of productivity and production of meat with distinctive organoleptic and physicochemical characteristics. The rations were evaluated on 78 male Limousine cattle and 53 male Holstein cattle. Several animal performance (feed intake, average daily gain and final weight), welfare and husbandry (animal weight, behavior, rumination, rumen fill score, cleanliness score, lameness score, inflammation of pasterns and aplombs score, inflammation of horns score and manure score), carcass (weight, classification and surface bacterial count) and meat quality parameters (pH measurement, texture profile analysis, colorimetry, histological analysis, chemical analysis and sensory evaluation) were assessed. The results of this study support possible standardization of beef cattle farming in order to obtain products of improved quality with a positive ethical, environmental and economic impact.

Keywords: beef cattle; feedlot cattle; oregano essential oil; meat quality; performance

Acknowledgements: This research has been co-financed by the European Regional Development Fund of the European Union and Greek National Funds through the Operational Program Central Macedonia 2014-2020 (project code: KMP6-0280294).

Unraveling the research landscape of happiness through agro, agri, rural tourism for future directions

Sofia Karampela[1], Aigli Koliotasi[1] and Konstantinos Kostalis[1]

[1] Dept. of Tourism, Ionian University, Greece; skarampela@ionio.gr; aspkoliotasi@ionio.gr; k.kostalis@gmail.com

Abstract

"Agro", "agri" and "rural" tourism have gained significant attention as emerging forms 9 of tourism that provide unique experiences rooted in agricultural and rural settings. Beyond their economic and cultural contributions, these forms of tourism have been found to have a profound impact on individual happiness and well-being. This piece of work delves into the mechanisms underlying the relationship between "agro", "agri" or "rural" tourism and happiness, drawing from research in sociology and environmental science. By understanding the science behind this connection, we can further promote the development and implementation of "agro", "agri", "rural" tourism initiatives that foster happiness and well-being. This study aims to examine existing research on "agro", "agri", or "rural" tourism and happiness, assess the implications of relevant scientific articles, and identify potential areas for future research. A systematic process was employed to identify articles related to terms such as "agrotourism", "agro tourism", "agro-tourism", "agritourism", "agri tourism", "agri-tourism", or "rural tourism" and happiness in the Scopus database. The selection criteria focused on articles that explored the above terms at article title, abstract and keywords. The findings equally relies on qualitative and quantitative assessments, predominantly from the demand side, followed by supply side and residents' views.

Keywords: agrotourism; agritourism; rural tourism; happiness; literature

Agricultural economics and trade

Sectoral research and development activities and knowledge production functions: A study using international data

Penelope Gouta[1] and Christos T. Papadas[2]

[1] Department of Agricultural Economics and Rural Development, School of Applied Economics and Social Sciences, Agricultural University of Athens; goutapenelope@gmail.com
[2] Department of Agricultural Economics and Rural Development, School of Applied Economics and Social Sciences, Agricultural University of Athens; cpap@aua.com

Abstract

This study explores the relationship between the stock of knowledge generated by sectoral groups of the economy, calculated using Research and Development (R&D) expenditure, and knowledge output as measured by official patent applications. Using sector-specific R&D expenditure data published by OECD, we calculate total domestic R&D spending across manufacturing, non-manufacturing, government, and educational sectors. Constructing a consistent 15-year panel dataset for the 17 most significant countries in R&D, we employ econometric subsampling, various estimators and consider different rates of knowledge depreciation. Our findings reveal a robust positive effect of the stock of knowledge in private manufacturing, government, and educational sectors on patent generation.

Keywords: knowledge diffusion; R&D; patents; panel data

An empirical investigation of international beef trade

Anthony Rezitis[1], Spyridon Karytsas[1], Efthymios Xylangouras[1] and Leonidas Zangelidis[1]

[1]Department of Agricultural Economics and Rural Development, Agricultural University of Athens; spkary@hotmail.com (S.K.)

Abstract

This paper applied the gravity model to investigate the factors influencing the international beef market trade flows. Apart from the standard determinants in gravity models, we examined the effects of trade networks (through the eigenvector centrality), Non-tariff Measures, and climate change on beef trade. Eigenvector centrality scores revealed the prominent role of the EU and MERCOSUR countries and showed a well-connected beef network. The results of our gravity model showed that beef trade increases more when an importer improves its position in the trade network compared with an exporter. We also demonstrated that Technical Barriers to Trade are more trade-restrictive than tariffs, while Sanitary and Phytosanitary measures positively affect the beef trade. In addition, our results indicated that exporters' natural disasters and temperature and precipitation abnormalities negatively affect trade flows. Finally, our gravity model confirmed that increases in the size of the economy have a positive impact on beef trade flows, and distance between countries has a negative effect.

Keywords: Beef trade; network analysis; gravity model; Non-tariff Measures; climate change

Acknowledgements: This study was implemented in the framework of the European Union's Horizon 2020 MATS Project, "Making Agricultural Trade Sustainable." The project has received funding from the European Union's Horizon 2020 Research and Innovation action under grant agreement No. 101000751 — MATS. This output only reflects the authors' view, and the European Union cannot be held responsible for any use that may be made of the information contained therein.

Estimating farmers creditworthiness under a changing climate

Grigoris Mygdakos[1], Panagiotis Tournavitis[2] and Emanuel Lekakis[1]

[1] AgroApps PC; mygdakos@agroapps.gr; mlekakis@agroapps.gr
[2] Cooperative Bank of Karditsa LLC; ptournavitis@bankofkarditsa.com

Abstract

CreditScore combines the predictive power of crop growth models with future climatic scenarios, satellite images and market data, to form a comprehensive profile for each farmer - borrower, based on the future yields of their crops, with the ultimate goal of assessing long-term risks affecting yields which are related to climate change. The objective of this study is to present the tools and datasets that are employed operationally by CreditScore for future yield and profitability assessments. A modeling approach built on a fusion of satellite-derived vegetation indices, agro-meteorological indicators, and crop phenology is tested and evaluated in terms of data intensiveness for the prediction of wheat and cotton yields. AquaCrop, a process-based model, provided high to moderate accuracies by fully relying on freely available datasets as sources of input data. The findings introduce a promising framework that can support the financial institutions in evaluating potential customers – agribusinesses prior and throughout the lending process.

Keywords: CreditScore; yield estimation; financial institutions; bank lending; loan

Identifying the external environment of Greek fisheries

Stamatis Mantziaris[1], Irene Tzouramani[1] and Angelos Liontakis[2]

[1] Agricultural Economics Research Institute (AGR.E.R.I.)-Hellenic Agricultural Organization ELGO-DIMITRA; sta.athens@hotmail.com (S.M.); tzouramani@agreri.gr; tzouramani@elgo.gr (I.T.)
[2] Department of Agribusiness and Supply Chain Management, Agricultural University of Athens, Thebes, Greece; aliontakis@aua.gr; aliontakis@gmail.com (A.L.)

Abstract

Greek fishing sector faces various challenges which can threaten its long-term sustainability. The PESTLE analysis is used to assess the impact of the external environment on the Greek fishing sector. According to our analysis, appropriate strategic planning should emphasize promoting the integration of innovation and technology transfer from the laboratory to the fisheries sector to address the challenges and capitalize on the opportunities. Future research can be conducted on the prioritization of external factors by sector experts and the coupling with other strategic planning tools.

Keywords: external environment; PESTLE analysis; Greek fishing sector; long-term sustainability; fisheries policy

Comparison of financial results regarding productivity of farms in contract and non contract farming – production of durum wheat

Alexandra Bochori[1], Konstantinos Tsimpoukas[1] and Antonios Rezitis[1]

[1]Agricultural University of Athens, dept of Agricultural Economics and Rural Development; abochori@aua.gr; tsiboukas@aua.gr; arezitis@aua.gr

Abstract

Cereals is one of the main crops not only in Greece, but also in Europe, with significant economic impact. In this research, we aim to capture the current situation in cereal production in Greece, focusing on contract farming. Contract farming is a fast-growing way of entrepreneurship, especially the last years in Greece, with constant further expansion in numerous crops such as tomato, barley, potatoes, beets etc. Durum wheat farmers located in Thessaly and Viotia filled out structured questionnaires providing data regarding the crop years 2019 and 2020. The sample consists of 343 farmers in total, 190 of them were farmers who participated in contact farming and 153 were farmers who did not participate in contract farming. In more details, this paper investigates the financial results of Greek farms producing durum wheat, as well as the comparison between contract and non-contract farming. Some financial results calculated are: Production cost per kilo, Production value per hectare, Average selling price in euro, Average production (kg/h). Initial results show that durum wheat farmers in Greece use mostly own equipment, have quite satisfactory production and selling price but need definitely state subsidy for positive agricultural income, while further research could potentially use a larger sample or a wider period of time. Apart from financial data, there are personal data collected as well composing a whole picture of farmers' profile, who choose to participate in contract farming programs.

Keywords: cereals; durum wheat; contract farming; financial results; production cost

Exploring the financial viability of greenhouse tomato growers under climate change-induced multiple stress

Giorgos N. Diakoulakis[1], Konstantinos Tsiboukas[1] and Dimitrios Savvas[2]

[1] Laboratory of Agribusiness Management, Department of Agricultural Economics and Rural Development, Agricultural University of Athens, Iera Odos 75, 11855 Athens, Greece; di_gi@aua.gr (G.D.); tsiboukas@aua.gr (K.T.)
[2] Laboratory of Vegetable Production, Department of Crop Production, Agricultural University of Athens, Iera Odos 75, 11855 Athens, Greece; dsavvas@aua.gr

Abstract

In this study, we implement a linear programming farm model to explore the impact of climate change-induced multiple stress on the financial viability of greenhouse tomato growers. The main results are: new technologies and innovations can compensate growers for any profit loss associated with climate change. However, if the cost of adaptation is high enough, then its financial benefits are constrained by how efficient these innovations are in terms of productivity; we didn't observe significant differences in input use between 'innovative' and 'conventional' production; the yield under the adoption of new technologies was higher compared to 'conventional' production.

Keywords: linear programming; farm model; greenhouse tomato; climate change

Acknowledgments: We would like to express our sincere to Dr. Dimitrios Kremmydas for his invaluable insights and guidance during the design of the linear programming farm model.

Environment, bioeconomy and agroecology

Farmers' knowledge, training needs and skills in bioeconomy: Evidence from the Region of Western Macedonia

Aikaterini Paltaki[1], Efstratios Loizou[2], Fotios Chatzitheodoridis[2], Maria Partalidou[1], Stefanos Nastis[1] and Anastasios Michailidis[1]

[1] Department of Agricultural Economics, School of Agriculture, Aristotle University of Thessaloniki, Greece; apaltaki@agro.auth.gr (A.P.); parmar@agro.auth.gr (M.P.); snastis@agro.auth.gr (S.N.); tassosm@auth.gr (A.M.)
[2] Department of Regional Development and Cross Border Studies, School of Economic Sciences, University of Western Macedonia, Greece; eloizou@uowm.gr (E.L.); fxtheodoridis@uowm.gr (F.C.)

Abstract

The aim of this paper is to explore farmers' training needs, their lack of knowledge and skills, and their willingness to participate in related training programs in the Western Macedonia Region. Summary statistics and multivariate analysis were performed for the data analysis. Results indicate a low level of knowledge about bioeconomy and its practices. Furthermore, findings revealed the high willingness of farmers for future adoption of bioeconomy, and the need to create bioeconomy training programs.

Keywords: bioeconomy; multivariate statistical analysis; sustainability; training needs assessment; Western Macedonia

Acknowledgments: The study protocol was approved by the Research Ethics and Deontology Committee of the Aristotle University of Thessaloniki (#300543/2022) before its application.

Greenhouse gas emissions (GHG) from aeroponic cucumber cultivation

Sofia Anna Barla[1], Konstadinos Abeliotis[1] and Georgios Salahas[2]

[1] Department of Economics and Sustainable Development, Harokopio University, El. Venizelou 70, 17676, Kallithea, Greece; kabeli@hua.gr
[2] Department of Agriculture, University of Patras, Patras, Greece

Abstract

Agriculture is the key activity for supplying food for humans. However, its environmental impacts are generating a lot of concern, globally. Therefore, alternative agricultural techniques, such as aeroponics, are starting to be examined. Aeroponics is a novel cultivation technique that is gaining increasing attention. Its environmental impacts are starting to be addressed via means of the Life Cycle Assessment methodology. The present study focuses on the environmental impact assessment of aeroponic cucumber cultivation. Our results indicate that electricity is the key process that contributes to the environmental impact of aeroponics cucumber cultivation.

Keywords: aeroponics; cucumber; carbon footprint; CO2 emissions

Exploring the impact of greening of the agro-food sector on economic growth: An empirical approach in BVAR framework for the EU

Eleni Zafeiriou[1], Garyfallos Arabatzis[2], Georgios Tsantopoulos[2] and Stavros Tsiantikoudis[2]

[1] Department of Agricultural Development, Democritus University of Thrace, Greece; ezafeir@agro.duth.gr
[2] Department of Forestry and Management of the Environment and Natural Resources Democritus University of Thrace, Greece; garamp@fmenr.duth.gr (G.A.); tsantopo@fmenr.duth.gr (G.T.); stsianti@fmenr.duth.gr (S.T.)

Abstract

The Greening in agro-food sector has become within the last decade a high priority issue with special focus on measures aiming to reduce non-environmental human pressure on the planet as well as in agro-food sector. The present work examines the greening of agro-food sector as synopsized in emissions per capita by agro-food sector for the EU and its relation to economic growth per capita with the assistance of a BVAR framework. Our findings do not validate success in greening of agro-food sector since the emissions reduction is not accompanied by economic growth a result that rejects the hypothesis of eco efficiency. Future research could involve the construction of an index that should incorporate more variables that will reflect more accurately the greening efforts in agro-food sector.

Keywords: ecoefficiency; farm to fork strategy; BVAR; impulse response; agro-food industry

Rural infrastructure using dry stone building technique: An asset for sustainable development in regional and local context

Evaggelia Stathopoulou[1], Eleni Theodoropoulou[2], Antony Rezitis[3], George Vlachos[4]

[1] PhD candidate, Department of Economics and Sustainable Development, Harokopio University of Athens, Greece; estathopoulou@hua.gr
[2] Professor, Department of Economics and Sustainable Development, Harokopio University of Athens, Greece; etheodo@hua.gr
[3] Professor, Department of Agricultural Economics and Rural Development, Agricultural University of Athens, Greece; arezitis@aua.gr
[4] Assistant professor, Department of Agricultural Economics and Rural Development, Agricultural University of Athens, Greece; gvlahos@aua.gr

Abstract

In this study dry stone walling has been assessed by the general public aiming to map perceptions on recognition, durability, appeal, food production aspects, biodiversity advocacy and other characteristics and functions of dry stone walling. The survey's goal was to define how informed the general public is about the functions performed by drystone walling. The answers were expected to reveal whether the returns of dry stone walling were widely acknowledged by the general public, what could be key factors for the dissemination of these profits and if there was solid ground for the reintroduction of dry stone walling as a cutting edge choice for new projects.

Keywords: sustainability; dry stone; rural; agri-food; landscape; natural resources; environmental protection; local economy

Evaluation of genetic pollution risk from data collected from Evoikos gulf fish farm combined with a literature review

Maria V. Alvanou[1], Konstantinos Gkagkavouzis[2], Nikoleta Karaiskou[2], John A. Theodorou[3], Costas Batargias[3,4], Alexandros Triantafyllidis[2] and Ioannis A. Giantsis[1]

[1] Department of Animal Science, Faculty of Agricultural Sciences, University of Western Macedonia, Greece; igiantsis@uowm.gr
[2] Department of Genetics, Development and Molecular Biology, School of Biology, Aristotle University of Thessaloniki, Thessaloniki, Greece
[3] Department of Fisheries & Aquaculture, University of Patras, GR 26504, Mesolonghi, Greece
[4] Department of Biology, University of Patras, Patras, Greece

Abstract

Despite all the efforts to eradicate the escape events, this phenomenon is still present and will probably continue to occur, due to many mistakes. Mediterranean finfish aquaculture is mainly represented by the production of the gilthead sea bream (*Sparus aurata*) and the sea bass (*Dicentrachus labrax*). Here, data collected from recorded escapes of a Evoikos Gulf fish farm, in Greece. According to these records fish escapes present a generally stable rate. Low levels of genetic differentiation of Mediterranean *S. aurata* and *D. labrax* populations are generally observed, and in combination with the unaffected genetic structure among wild populations, the ecological risk of escape events seems to be generally low. However, suitable management measurements should be established to avoid future escape events.

Keywords: escape events; *Sparus aurata*; *Dicentrarchus labrax*

Optimizing Biomethanation efficiency: The influence of packing materials in trickle bed reactors

Maria Gaspari[1], Katerina Xyrostilidou[1], Themistoklis Sfetsas[2], Anastasios Mitsopoulos[2], Vasileios Tziakas[2] and Panagiotis Kougias[1]

[1] Soil and Water Resources Institute, Hellenic Agricultural Organization – Dimitra, Thermi, 57001, Greece; p.kougias@elgo.gr
[2] Bioenergy Nigrita S.A, Serres, 62200, Greece

Abstract

The urgent need for a transition to sustainable energy is driving the exploration of biogas upgrading strategies. Among these, the utilization of hydrogenotrophic methanogens in converting CO_2 to CH_4 is gaining increasing attention. Trickle bed reactors are considered efficient bioreactor designs for biomethanation, providing effective immobilization of microorganisms in a column filled with high-specific-surface-area packing material. This study investigated the impact of different packing materials on TBR performance and biomethanation efficiency. Results showed that Raschig rings exhibited higher CH_4 purity, and both packing materials demonstrated resilience to intermittent operation without H_2 availability. These findings contribute to optimizing biogas upgrading processes and highlight the potential of TBRs for sustainable energy production.

Keywords: biomethanation; packing materials; CCU technology; bioprocess optimization

Acknowledgements: This research was funded under the 'Innovation Investment Schemes' in the framework of the Operational Program of Central Macedonia 2014-2020 and it is co-funded by the European Social Fund through the National Strategic Reference Framework. Project code KMP6-0192823, MIS 5136569.

Agricultural counselling and training

Agricultural knowledge and innovation system (AKIS) in a changing environment in Greece

Epistimi Amerani[1] and Anastasios Michailidis[1]

[1] Dept. of Agricultural Economics, Aristotle University of Thessaloniki, 541 24, Thessaloniki, Greece; epistimi@agro.auth.gr; tassosm@agro.auth.gr

Abstract

The aim of this paper is to answer the question if the Greek AKIS system can contribute to the different requirements of the new trends in agriculture according to its main functions. SWOT analysis has been applied to examine the internal and external environment. Data were collected from 61 experts/representatives of Organizations (policy, education, research, consulting, agricultural cooperatives, credit, private companies, and farmers). The data were analysed using Excel spreadsheets and the Statical Package for Social Sciences (SPSS V.28). Based on this method dominant strengths and weaknesses as well as opportunities and threats of AKIS were identified as a starting point and useful guidance for decision-makers, local authorities, and the other actors in Greece.

Keywords: agricultural sector; AKIS; SWOT analysis

Farmers vocational education & training: The case of Public Institutes of Vocational Training of ELGO-DIMITRA

Vasiliki Bitsopoulou[1], Eleni Pastrapa[2], Eleni Zenakou[3], Despina Sdrali[4] and Eleni Theodoropoulou[5]

[1] M. Sc. in Sustainable Development, Department of Economics and Sustainable Development, Harokopio University of Athens, Greece; hp12215210@hua.gr
[2] Dr., Laboratory Teaching Staff, Department of Economics and Sustainable Development, Harokopio University of Athens, Greece; epastrapa@hua.gr
[3] Dr., Special Teaching Staff, Harokopio University of Athens, Greece; elzenakou@hua.gr
[4] Associate Professor, Department of Economics and Sustainable Development, Harokopio University of Athens, Greece; dsdrali@hua.gr
[5] Professor, Department of Economics and Sustainable Development, Harokopio University of Athens,Greece; etheodo@hua.gr

Abstract

The aim of this study was to investigate the current organizational climate of Public Vocational Education and Training Initiatives at ELGO-DIMITRA in Greece. It utilized a SWOT analysis to identify the strengths, weaknesses, opportunities, and threats of the Institute's programs. The findings indicate a need to ensure the quality of Vocational Education and Training Initiatives and enhance the educational services provided to young farmers by adopting a regularly updated framework. This study is crucial for future research, to replicate it with different focus groups, including trainers, trainees, and graduates, who can provide valuable insight into the sustainability of the Vocational Education and Training Initiatives.

Keywords: ELGO-DIMITRA; young farmers; Public Vocational Education and Training

Acknowledgments: The authors thank the six (6) directors of the PIVT of ELGO-DIMITRA for their essential contribution and the two anonymous reviewers for useful comments.

Investigating farmers' attitudes towards co-existence of agriculture and renewable energy production

Eirini Papadimitriou[1] and Dimitra Lazaridou[1,2]

[1] School of Forestry and Natural Environment, Aristotle University of Thessaloniki, 54124, Thessaloniki, Greece; dlazaridou@aua.gr (D.L.); eirinipd@for.auth.gr (E.P.)
[2] Department of Forestry and Natural Environment Management, Agricultural University of Athens, 36100 Karpenisi, Greece; dlazaridou@aua.gr

Abstract

Agri-voltaics (AVs) refer to combining agricultural activities and photovoltaic power generation. This dual use of the land has been identified as an important measure to address some of the main current and future social and environmental challenges. AVs constitute an upward trend at a global level. However, a limited number of studies have been carried out to identify the views of the interested parties, farmers, regarding the adoption of AVs on their agricultural lands. This paper reports research findings of the investigation of farmers' views and attitudes towards the adoption of photovoltaics in the agricultural lands. The non-parametric Mann-Whitney U Test was used in order to make comparisons between the group of participants that were willing to adopt AVs and those were not. Chi-square ($\chi 2$) test of independence was performed to identify statistically significant relationships between farmers' willingness to adopt AVs and their socioeconomic characteristics or variables that represent knowledge about agro-energy. Results reveal that educational level and age had a significant role on accepting the installation of PV agriculture. Farmers' knowledge concerning agro-energy and their participation in farmers' association are positively related to their willingness to adopt AV, as well as.

Keywords: renewable energy; agri-voltaics; farmers; attitudes; adoption

The application of innovation and the attitudes of farmers towards advisory services: The case of Western Macedonia, Greece

Georgios Kountios[1], Ourania Notta[1], Nikolaos Kratimenos[1] and Ioannis Chatzis[2]

[1] Dept of Agricultural Economics and Entrepreneurship, School of Agriculture, International Hellenic University, Sindos 57400, Thessaloniki, Greece; gkountios@ihu.gr
[2] Payment and Control Agency for Guidance And Guarantee Community Aid, Domokou 5, 104 45, Athens, Greece; ioannis.chatzis@opekepe.gr

Abstract

This paper investigates the application of innovation and the advisory needs of farmers in agricultural holdings in the Region of Western Macedonia. The research carried out is divided into two parts. Initially, it was investigated how the programs related to innovation in the agricultural sector and specifically the improvement plans that were implemented to the Region. Specifically, parameters such as age, gender, place of residence as well as the type and number of investments were examined. The analysis showed farmers' characteristics and the kind of their investments, plus the degree of adoption of innovation and the attitude of farmers towards innovation. It was also tried to clarify the reason that leads the farmer to innovation and the importance of consulting services in the orientation towards innovative ideas.

Keywords: agricultural Knowledge and innovation systems; productive investments for modernization of agricultural holdings; Region of Western Macedonia; advisory services; sustainability

The use of precision agriculture for improving water economics of farms and the need of agricultural advisory

Georgios Papadavid[1], Georgios Kountios[2], Diofantos Hadjimitsis[3] and Maria Tsiouni[2]

[1] Agricultural Research Institute, Athalassa 1516, Nicosia, Cyprus
[2] Department of Agriculture, International Hellenic University, Sindos 57400, Thessaloniki, Greece; gkountios@ihu.gr
[3] Cyprus University of Technology, Department of Civil Engineering &Geomatics, 31 Archbishop Kyprianos, 3603 Limassol, Cyprus

Abstract

The rational management of water, which is determined by the Framework Directive 2000/60/EC of the EU, is a contractual obligation of the Agricultural Sector of Cyprus, both towards the European Union and the next generations of Cypriot citizens. It is essential to understand how much water is being used by crops in different areas of an irrigation project in order to establish irrigation efficiency, so as to achieve sustainable and improved water use efficiency. Especially in Cyprus, there is a need for an effective method of establishing crop water use in large irrigation projects so that crop demand can be accurately met by supply in order to eliminate problems such as lack of up-to-date information on the cropped area, evaporative demand in the agricultural fields and water supply. For most of the irrigation projects, irrigation is managed and supplied on the basis of historic precedence and the existing conventional data collection for determining the irrigation demand is not adequate and effective for large areas. This paper also concludes apart from the obvious positive effect of remote sensing and new technologies in crop irrigation, to the emerging need of advisory services for diffusion of innovation to Cypriot farmers since the estimation of crop water requirements is a part of estimating Carbon Foot Print under the project CARBONICA (EU Funded) for carbon farming.

Keywords: technoeconomic analysis; irrigation water; earth observation; SEBAL method; advisory services

Acknowledgements: Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them. The authors would like to express their appreciation to the European Union under the CARBONICA project (HORIZON-WIDERA-2022).

Upgrading value chains through farm advisory

Maria Spilioti[1], Pavlos Karanikolas[2], George Papadomichelakis[3], Konstantinos Tsiboukas[4] and Dimitris Voloudakis[5]

[1] Department of Agricultural Economics and Rural Development, Agricultural University of Athens, Greece; spimaria1@gmail.com
[2] Department of Agricultural Economics and Rural Development, Agricultural University of Athens, Greece; pkaranik@aua.gr
[3] Department of Animal Science and Aquaculture, Agricultural University of Athens, Greece; gpapad@aua.gr
[4] Department of Agricultural Economics and Rural Development, Agricultural University of Athens, Greece; tsiboukas@aua.gr
[5] Capacity Building Director, New Agriculture New Generation; dimitris@generationag.org

Abstract

The article discusses the benefits of an integrated Farm Advisory program on sheep farms, focusing on improving their economic performance. The program involves a team of experts providing advice on animal nutrition and farm management, and conducting a thorough techno-economic analysis before and after recommendations. The economic impact is assessed using a partial budget tool. Results show increased yields, decreased production costs, and increased Gross Value Added. The program requires a cohesive group of experts, trusting relationships between farmers and consultants, and funding. Implementing this program at a large scale can upgrade the relevant Value Chain.

Keywords: agricultural; counseling; livestock; farmers; management

Posters

Cultivate crops or produce energy? Factors affecting farmers' decision to install photovoltaics on their farmland

Konstantinos Ioannou[1], Evangelia Karasmanaki[2], Despoina Sfiri[2] and Georgios Tsantopoulos[2]

[1] Hellenic Agricultural Organization Demeter, Forest Research Institute, 57006 Vasilika, Thessaloniki, Greece; ioanko@fri.gr (K. I.)
[2] Department of Forestry and Management of the Environment and Natural Resources, Democritus University of Thrace, 68200 Orestiada, Greece; evkarasm@fmenr.duth.gr (E. K.); ntepisfiri@gmail.com (D. S.); tsantopo@fmenr.duth.gr (G. T.)

Abstract

The aim of this study was to examine the factors affecting farmers' willingness to invest in photovoltaics, as well as the factors affecting the amount of money they would invest. The study was performed on a representative farmer sample in Northern Greece with the use of structured questionnaires. Using categorical regression, two models were developed with the first model indicating that investment willingness was mostly affected by the provision of subsidies and the type of cultivation. The amount of money farmers would invest was mostly affected by the number of farmers' hectares of irrigated and dry land suggesting that the more the farmland they own, the more the money they would invest. Results raise policy implications as they show an increased interest for installing renewable systems on farmland which, in turn, raises concerns about the agricultural development of the country.

Keywords: Farmers' attitudes, agri-food crisis, willingness to invest, photovoltaics on farmland, factors affecting investments.

Co-design and co-evaluation of traditional and highly biodiversity-based cropping systems in Mediterranean area

Paschalis Papakaloudis[1], Andreas Michalitsis[1], Maria Laskari[1], Efstratios Deligiannis[1], Fatima Lambarraa-Lehnhardt[2] and Christos Dordas[1]

[1] Aristotle University of Thessaloniki, School of Agriculture, Laboratory of Agronomy, Thessaloniki 54124, Greece; pasxalis_pap@hotmail.com
[2] Leibniz Centre for Agricultural Landscape Research (ZALF), Eberswalder Str. 84, 15374 Müncheberg, Germany

Abstract

Intensive agriculture created several problems in cropping systems and lead to threatening the sustainability of the agricultural production. In order to design new cropping systems, a new approach is emerging to support the transitions toward sustainable agriculture, which is a co-design and co-evaluation process with the stakeholders involved in the agri-food chain. The present work therefore describes the co-design and co-evaluation process that was followed to design highly diversified cropping systems in Mediterranean environment. The different systems that were co-designed included the reference system with wheat and barley in rotation, as well as three diversified systems proposed and co-evaluated: rotation of wheat, oil seed rape, and barley (DIV1); rotation of wheat, pea, and barley (DIV2); and rotation of wheat, intercrops of barley-common vetch, and barley (DIV3). The best system that was selected from the different stakeholders was the DIV3 as it had the highest evaluation of the stakeholders using agronomic, environmental, and socio-economic criteria.

Keywords: intercropping; crop rotation; reference system; diversification; co-design; co-evaluation

Acknowledgments: We are grateful to Anastasios Lithourgidis and the personnel of the University Farm of the Aristotle University of Thessaloniki for assistance with the field experiments. Also, we are grateful to George Menexes for assistance with the statistical analysis of the data.

Sustainability assessment of highly biodiversified farming systems: Multicriteria assessment of Greek arable crops

Andreas Michalitsis[1], Ferdaous Rezgui[2], Fatima Lambarraa-Lehnhardt[2], Paschalis Papakaloudis[1], Maria Laskari[1], Efstratios Deligiannis[1], and Christos Dordas[1]

[1] Aristotle University of Thessaloniki, School of Agriculture, Laboratory of Agronomy, Thessaloniki 54124, Greece; andreasmichalitsis@gmail.com
[2] Leibniz Centre for Agricultural Landscape Research (ZALF), Eberswalder Str. 84, 15374 Müncheberg, Germany

Abstract

The intensive agriculture that is used in many countries lead to the reduction in biodiversity and the deterioration of the environment. Therefore, it is important to increase the adoption of cropping systems with high biodiversity. The objectives of the present study were to: 1. assess the performance and sustainability of novel highly diversified production systems compared to current traditional system and 2. provide quantitative economic and ecosystem services information for farmers, extension workers and policy makers in order to support the development of sustainable and resilient high species cultivars/landraces diversification (HSD) production systems. The rotation wheat-pea-barley (was a system with low energy inputs and high outputs increasing significantly the energy efficiency. Also, the same system demonstrated better economic and environmental indices making it a suitable cropping system for the Mediterranean areas.

Keywords: crop rotation; intercropping; pea; co-design; wheat

Acknowledgments: We are grateful to Anastasios Lithourgidis and the personnel of the University Farm of the Aristotle University of Thessaloniki for assistance with the field experiments. Also, we are grateful to George Menexes for assistance with the statistical analysis of the data.

Assessing agroecology term for North African countries: A literature review

Malak Hazimeh[1], Leonidas Sotirios Kyrgiakos[2], Georgios Kleftodimos[1], Christina Kleisiari[2], Marios Vasileiou[2] and George Vlontzos[2]

[1] Mediterranean Agronomic Institute of Montpellier (CIHEAM-IAMM), University of Montpellier, Montpellier, France; malakhzm24@gmail.com; kleftodimos@iamm.fr
[2] Department of Agriculture Crop Production and Rural Environment, University of Thessaly, Fytoko, 38446 Volos, Greece; lkyrgiakos@uth.gr; chkleisiari@uth.gr; mariosvasileiou@uth.gr; gvlontzos@uth.gr

Abstract

Conventional agricultural techniques cannot fulfill the requirements of a sustainable food value chain. Agroecology can be a great alternative practice for transforming the current agricultural systems. This approach combines ecology and agriculture, considering different stakeholders' opinions. An assessment of the current literature about "agroecology practices" using Web of Science database was made and 1,235 results were collected and unified into a bibtex file using R studio. The final results were extracted through the bibliometix library. The acquired results show that annual scientific production on the aforementioned term was limited between the 90s and 2010s and 19 has recently increased due to gained interest in the topic. Additionally, terms of agriculture, management biodiversity and conservation are frequently correlated to agroecology, covering all three dimensions of sustainability. Agroecology as a trending topic has great potential to serve North African countries, increasing food security levels while assuring sustainability standards.

Keywords: agroecology; agroecological practices; sustainability; North African; countries; literature review

Food management approach in tourism: A bibliometric literature review using VOSviewer

Zacharias Papanikolaou[1], Apostolos Goulas[2] and Christos Karelakis[3]

[1] Democritus University of Thrace, Department of Agricultural Development, Orestiada, Greece; zpapanik@agro.duth.gr
[2] University of Thessaly, Greece; goulasap@yahoo.com
[3] Democritus University of Thrace, Department of Agricultural Development, Orestiada, Greece; chkarel@agro.duth.gr

Abstract

Culinary tourism can have significant economic, environmental, and social benefits. The benefits include employment, business survival, support for local services, and increased income retention in the local community. It also helps support local small and medium-sized farms and businesses and enhances a sense of place, culture, and history while respecting the environment. This paper aims to investigate the scientific studies from 2002 to 2022 that have as their subject Food Management in Tourism with the help of the Vosviewer software. The analysis highlighted five distinct groups, as well as the United States as the country with the most publications.

Keywords: food tourism; tourism; management

International food marketing: A bibliometric literature review using VOSviewer

Zacharias Papanikolaou[1], Apostolos Goulas[2] and Christos Karelakis[3]

[1] Democritus University of Thrace, Department of Agricultural Development, Orestiada, Greece; zpapanik@agro.duth.gr
[2] University of Thessaly, Greece; goulasap@yahoo.com
[3] Democritus University of Thrace, Department of Agricultural Development, Orestiada, Greece; chkarel@agro.duth.gr

Abstract

Today, international trade and food marketing are at a high level of development and complexity, contributing to the activity of the multinational firms that now dominate the global market. The situation in international food marketing is constantly being reshaped by several factors and developments that create its future structure and characteristics. In this work, 2,298 papers were studied in the thematic section of International Food Marketing using Vosviewer software, and valuable conclusions were drawn. We had eight different clusters; the country with the most publications was the United States.

Keywords: international marketing; food marketing; export; Vosviewer

Agricultural knowledge and innovation systems and sustainable management of natural resources

Georgios Kountios[1], Ioannis Chatzis[2] and Georgios Papadavid[3]

[1] Department of Agriculture, International Hellenic University, Sindos 57400, Thessaloniki, Greece; gkountios@ihu.gr
[2] Payment and Control Agency for Guidance and Guarantee Community Aid, Domokou 5, 104 45, Athens, Greece
[3] Agricultural Research Institute, Agricultural Research Institute, Athalassa, Nicosia 1516, Cyprus; papadavid@ari.moa.gov.cy

Abstract

The question of how Agricultural Knowledge and Innovation Systems (AKIS) can address the issue of Sustainable Management of Natural Resources (SMNR) is presented in this conference paper. This literature review which collected published research from Scopus electronic database aimed to explore the value of AKIS in enhancing the sustainability of natural resources. Therefore, it examined and evaluated the roles of AKIS as either positive or negative overall. Moreover, it analyzed whether the use of AKIS supports the goal of creating a sustainable system that links agriculture with natural resources. Among its findings, the review presents the positive and negative outcomes of each element and the potential future scenaria / suggestions if the current trends persist.

Keywords: agricultural knowledge and innovation systems; sustainable management of natural resources; advisory; agricultural extension; innovation

Green deal as a tool for the creation of a sustainable economy

Apostolos Goulas[1], Zacharias Papanikolaou[2] and Christos Karelakis[3]

[1] University of Thessaly, Greece; goulasap@yahoo.com
[2] Democritus University of Thrace, Department of Agricultural Development, Orestiada, Greece; zpapanik@agro.duth.gr
[3] Democritus University of Thrace, Department of Agricultural Development, Orestiada, Greece; chkarel@agro.duth.gr

Abstract

Various concerns appeared recently regarding creating of a sustainable economy and development. Moreover, the environmental problems created by unsustainable resource management are on every state's agenda. The uncertainty of climate change and the contemporary necessity for environmental protection leads most of the advanced countries to consider and redesign their economies, adding the factor of environmental management into every reference system. Adoptinga production system with criteria for the long-term sustainability of resources is considered a tool to deal with the current economic crisis. as well as the environment. European Union's response to that global concern is the European Green Deal, an essential political document issued by the European Commission in 2019. European Green Deal, intends to 'transform the European Union's economy and society more sustainable' and create a Green Economy (https://commission.europa.eu/). According to Soderholm P., (2020), Green Economy is an alternative vision for growth and development. The main aim of the Green Deal, is to enhance the efficient use of resources, reduce waste and achieve as society zero gas emissions. The present research paper is an initial study to identify the main objectives of the European Green Deal strategy and their aspects on the creation of a sustainable economy. Green Deal is considered as the EU's answer on the ongoing climate crisis and also is helping EU become the first climate neutral continent. Moreover the present research paper studies how the EU Green Deal leads the creation of a sustainable economy for European Countries. Also, the study identifies the need of a new development model, based on Green Deal and sustainable economy, that can recreate and rebuilt the productive base of the agricultural sector.

Keywords: European Green Deal; sustainable economy; green economy

Association of MTNR1A gene alleles with the response to estrus induction treatments in improved and non-improved Greek indigenous sheep breeds

Danai Antonopoulou[1,2], Ioannis A. Giantsis[1], George K. Symeon[3] and Melpomeni Avdi[2]

[1] Division of Animal Science, Faculty of Agricultural Sciences, University of Western Macedonia, Florina, Greece; igiantsis@uowm.gr
[2] Department of Animal Production, Faculty of Agriculture, Aristotle University of Thessaloniki, Thessaloniki, Greece
[3] Research Institute of Animal Science, HAO-Demeter, Giannitsa, Greece

Abstract

Seasonality in sheep reproduction and related limitations make milk production challenging throughout the year. In the present study we investigated the response to estrus induction treatments in three indigenous breeds, Florina, Chios, and Karagouniko, as well as the melatonin receptor 1A gene variants in relation to this response. The three distinct synchronization methods were A: intravaginal sponges, B: GNRH use, and C: male effect. In group A, fertility was 85% and Florina ewes expressed estrus at 90% in July. Ewes from Karagouniko and Chios had fecundity rates of 95% and 99%, respectively, and 100% estrus expression. The Florina ewes in group B ex- pressed estrus at a percentage of 60% with a fecundity rate of 57%, the Karagouniko ewes at a percentage of 65% with a fecundity rate of 54%, and the Chios breed animals at a percentage of 87% with a fecundity rate of 85%. 20–25 days after ram induction, 68% of the Florina breed in group C showed signs of estrus, compared to 84% and 94% of Karagouniko and Chios breeds, re- spectively. In both Florina and Karagouniko breeds, all treatments showed a substantial difference in the frequency of the four identified SNPs in the MTNR1A gene between ewes that expressed estrus and ewes who did not. Genetic improvement based on the alleles analyzed in the current study is expected to decrease seasonality rates in indigenous sheep breeds.

Keywords: reproduction; sheep; MTNR1A gene

Valorizing traditional knowledge: The "Cheese routes of Peloponnese"

Christina-Eleni Giatra[1], Dimitrios Skordos[1], Georgia Koutouzidou[2] and Athanasios Ragkos[1]

[1] Agricultural Economics Research Institute, Hellenic Agriculture Organization (ELGO-DIMITRA), Kourtidou 56-58, 11145 Athens, Greece; chrgiatra@gmail.com (C.-E.G.); dimitrisskor@gmail.com (D.S.); ragkos@elgo.gr (A.R.)
[2] Department of Agriculture, School of Agricultural Sciences, University of Western Macedonia, Terma Kontopoulou, 53100, Florina, Greece; koutouzidoug@gmail.com

Abstract

The presentation of the key characteristics of dairies in Peloponnese which will demonstrate the prerequisites to establish the "Cheese Routes" in the region, is the main research subject of the study. For the needs of the analysis, Local Development Agencies suggested a "critical mass" of dairies, from which information related to their views and willingness to participate in this project was collected through qualitative survey questionnaires. A stakeholder analysis and a SWOT analysis were carried out using the survey data. Specifically, the dairies are small, family-owned and operate from October to mid-June producing mainly feta cheese supplied to the local market. Also, cheesemakers are willing to maintain long-term partnerships with livestock farmers. Further research is required and should examine the extent to which public is willing to follow the "Cheese Routes of Peloponnese", since this project is in its early stage.

Keywords: Peloponnese; dairies; stakeholder analysis; SWOT analysis

Veterinary students perceptions on entrepreneurship education

Georgia Koutouzidou[1], Vagis Smathrakis[2], Athanasios Batzios[3] and Alexandros Theodoridis[4]

[1] Department of Agriculture, School of Agricultural Sciences, University of Western Macedonia, 53100 Florina, Greece; gkoutouzidou@uowm.gr
[2] Department of Accounting and Information Systems, International Hellenic University, 57400 Thessaloniki, Greece; sbagis@ihu.gr
[3] Department of Organization and Business Administration, University of Western Macedonia, 51100 Grevena, Greece; thanos.batzios@gmail.com
[4] School of Veterinary Medicine, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece; alextheod@vet.auth.gr

Abstract

In this study the opinions and the perceptions of the students at a School of Veterinary Medicine regarding the importance of entrepreneurship education in modern higher education are investigated. A likert scale questionnaire design was used to record veterinary students' responses on issues related to entrepreneurship education, its impact on their entrepreneurial mindset, but also on the students' carrier aspirations and on the factors that influence their carrier choices. The survey was conducted in 2022 and in total 105 graduates completed the questionnaire. The responses were analyzed through a descriptive statistical analysis using IBM SPSS Statistics 28. The present study confirms a significant need for entrepreneurship education in order to start, develop, and successfully realize business ideas.

Keywords: entrepreneurship; education; university; start-up business

Financial analysis of a mountain tea business

Dimitrios Skordos[1], Efstratios Michalis[1], Marisol Dar Ali[1], Athanasios Ragkos[1]

[1] Agricultural Economics Research Institute, Hellenic Agricultural Organization – DIMITRA, Kourtidou 56-58, 11145, Athens, Greece; darali.marisol@gmail.com

Abstract

In recent years, more incentives have been provided to young people to increase their participation in the primary sector, with the aim of improving the age composition of the countryside and at the same time increasing the competitiveness of farms. The medicinal and aromatic plants (MAPs) present high growth prospects within the primary sector. The increased demand for MAPs creates employment opportunities for young people in rural areas, in various links of supply chains, from cultivation and processing to marketing of the final products. The purpose of this study is to assess the financial performance of a business engaged in the production of organic mountain tea (OMT – Sideritis) to allow interested parties to make informed decisions. Technical and economic data was collected to perform a financial analysis based on the Net Present Value (NPV) and the Internal Rate of Return (IRR) where two Scenarios were assessed. The results of the analysis indicate that sideritis is a profitable crop under a specific economic and physical environment.

Keywords: Rural entrepreneurship; organic sideritis; Common Agricultural Policy; medicinal and aromatic plants

Opinions and perceptions on sustainable weed management: A comparison between Greek and Tunisian farmers

Efstratios Michalis[1], Ahmed Yangui[2], Athanasios Ragkos[1], Mohamed Kharrat[3] and Dimosthenis Chachalis[4]

[1] Agricultural Economics Research Institute, Hellenic Agricultural Organization (ELGO-DIMITRA), Kourtidou 56-58, 111 45 Athens, Greece; efstratiosmichalis@gmail.com; ragkos@elgo.gr
[2] Agricultural Economic Laboratory (LER), National Institute of Agronomic Research of Tunisia (INRAT), University of Carthage, 1004 Ariana, Tunisia; yangui.ahmed@gmail.com
[3] Field Crop Laboratory (LGC), National Institute of Agronomic Research of Tunisia (INRAT), University of Carthage, 1004 Ariana, Tunisia; kharrat.mohamed@inrat.ucar.tn
[4] Laboratory of Efficacy Control of Pesticides and Laboratory of Weed Science, Benaki Phytopathological Institute, Stefanou Delta 8, Kifisia, 145 61 Athens, Greece; d.chachalis@bpi.gr

Abstract

Societal awareness, demand for innovative food systems and increasing herbicide resistance have induced policy, regulatory and research actions towards the adoption of sustainable weed management, which is based on sustainable, integrated and ecological principles. The study investigates farmers' perceptions with regards to sustainable weed management, considering that the adoption of relevant practices depends on a set of farmer-specific and innovation-specific attrib- utes. To achieve this purpose, an on-site survey was conducted in Greece and Tunisia based on a structured questionnaire, which was addressed to 105 arable farmers in total. The questionnaire was designed to record farmers' opinions and preferences regarding aspects related to sustainable weed management, such as innovation and decision-making process. Using descriptive statistics meth- ods, the study pinpointed significant differences between the responses of Greek and Tunisian farm- ers due to their particular needs and characteristics, suggesting thus the integration of targeted ap- proaches towards the expansion of sustainable weed management.

Keywords: Weeds; questionnaire survey; innovation; decision-making

The role of cooperatives in the interconnection of the agri-food and tourism sectors

Panagiota Pantazi[1]

[1] Financial analyst of Agricultural Cooperative Kampos Andravidas, MSc Social and Solidarity Economy; pl.pantazi@gmail.com

Abstract

The interconnection of cooperatives with the tourist product is the assumption of the quality of their products as an incentive for tourists to visit the country and propose it further through their gastronomic experience. The high quality of this gastronomic experience is the proposal to link tourism (tertiary sector) with agri-food (primary sector). The research questions that arise through the analysis of the agri-food and tourism industry, concern the finding of the reasons that hinder the interconnection of agri-food and tourism through gastronomy as well as the advantages arising from the interconnection between them. A combination of qualitative and quantitative research has been chosen as a research methodology.

Keywords: Social and Solidarity Economy; cooperative enterprises; agri-food; gastronomy; tourism

How do agricultural education, advisory and financial factors affect the adoption of precision farming in Greece

Maria Tsiouni[1], Georgios Kountios[1] and Alexandra Pavloudi[1],

[1] Dept. of Agricultural Economics and Entrepreneurship, School of Agriculture, International Hellenic University, Sindos 57400, Thessaloniki, Greece; mtsiouni@agr.teithe.gr

Abstract

The purpose of this paper is to conduct an empirical investigation of the theoretical and literature-based constructs related to the adoption of precision agriculture (PA) practices by young farmers. For the research, primary and secondary data have been used. The sample includes 220 young farmers. Among the results of research, farmers are aware of the positive effects of technology systems in agriculture. Also, young farmers seem to be familiar with precision agriculture and have already adopted some of its methods, but the high cost of investment prevents farmers from adopting such technology. Innovative technologies and production methods can help young farmers to be competitive in the worldwide market.

Keywords: young farmers; precision agriculture; agricultural education; agricultural advisory; financial factors

Agricultural cooperatives as a vehicle for small-scale farmers' viability and sustainable practices

Evangelia Myrto Paraschou[1] and Panagiota Sergaki[2]

[1] Researcher, Aristotle University of Thessaloniki, School of Agriculture, Department of Agricultural Economics; mirtoparaschou1@gmail.com
[2] Professor, Aristotle University of Thessaloniki, School of Agriculture, Department of Agricultural Economics; gsergaki@auth.gr

Abstract

Nowadays agricultural sector is poised to undergo significant transformations towards sustainability. (Roman Rudniki et Al, 2023) [1] (p. 3-4). The restricted accessibility to resources among small-scale farmers hinders their ability to effectively adapt to such advancements. The present research paper investigates the potential role of agricultural cooperatives as deus ex machina, offering an idea for an answer to the challenges faced by small-scale farmers. Additionally, it examines the potential benefits agricultural cooperatives could provide to large-scale farmers, while simultaneously advocating sustainable agricultural practices. To gather accurate data, individuals who are members of cooperatives in the Larissa region of Greece were interviewed with the usage of questionnaires. The sixty qualitative interviews conducted shed light on the fact that cooperatives serve a significant role in promoting sustainable agriculture and offer numerous benefits to their members, particularly small-scale farmers.

Keywords: agricultural cooperatives; sustainability; small-scale farmers

Using pollen DNA metabarcoding to assess the foraging preferences of honeybees in Kastoria region, Greece

Maria V. Alvanou[1], Maria Tokamani[2], Athanasios Toros[2], Raphael Sandaltzopoulos[2], Konstantinos Zampakas[1], Chrysoula Tananaki[3], Katerina Melfou[1] and Ioannis A. Giantsis[1]

[1] Faculty of Agricultural Sciences, University of Western Macedonia, 53100 Florina, Greece; igiantsis@uowm.gr
[2] Department of Molecular Biology and Genetics, Democritus University of Thrace, 68100 Alexandroupolis, Greece
[3] Laboratory of Apiculture-Sericulture, Aristotle University of Thessaloniki, 57001, Thermi, Greece

Abstract

Identification of the pollen's plant components can be used to establish its geographical provenance, while also providing insights into honeybee (Apis mellifera L.) diet and foraging preferences. The diversity and the amount of the pollen represent a crucial factor for pollinators. Here, we identified the plant species visited by honeybees by analyzing the pollen pellets collected from honeybees from Kastoria, Greece. Results indicated that pollen from different periods was differentiated by means of floral composition. An interesting observation is that all the plants identified belonged to different genera. Among the identified plants, native ones, such as the Macedonian pine Pinus peuce, presenting a distinct foraging profile of local honeybees.

Keywords: honeybee; Apis; pollen; Kastoria; foraging preferences

The Greek perspective on foreign farm workers and agricultural labor

Lykourgos Chatziioannidis[1] and Maria Partalidou[2]

[1] Agronomist, Department of Agriculture, Aristotle University of Thessaloniki Greece; lyk.chatz@gmail.com
[2] Associate Professor, Department of Agriculture, Aristotle University of Thessaloniki Greece; parmar@agro.auth.gr

Abstract

Apart from the immigrants in Greece who have papers, and perhaps can enjoy a greater stability in their lives, there is a very large number of informal immigrants who are daily faced with the fear of deportation from the country. Towards this direction, a qualitative research was carried out with in-depth interviews with farmers (head of the farm) and a quantitative, online research on students studying agronomy and/or people who live in rural areas and was distributed through agricultural / agronomic forums in order to better understand the perceptions on agricultural work and find out the main reasons why the integration of immigrants – farm workers in Greece is considered so difficult.

Keywords: agricultural labor; field research; countryside

Evaluation of the certification procedure of farm advisors in Greece

Ekaterini Alexaki[1], Ioannis Dimitriadis[1], Efstratios Michalis[2], Christina – Eleni Giatra[2] and Athanasios Ragkos[2]

[1] Directorate of Development and Extension, General Directorate of Quality Assurance of Agricultural Products, Hellenic Agricultural Organization – DIMITRA; kalexaki@elgo.gr; idimitriadis@elgo.gr
[2] Agricultural Economics Research Institute, Hellenic Agricultural Organization - DIMITRA; efstratiosmichalis@gmail.com; chrgiatra@gmail.com; ragkos@elgo.gr

Abstract

Farm Advisory constitutes one of the most important tools to support rural development in the European Union and is also an integral part of Agricultural Knowledge and Innovation System (AKIS). The purpose of this paper is to present the results of the evaluation of the two Calls for certification of Farm Advisors in Greece which were addressed to individuals. The evaluation was based on a questionnaire survey of candidates who participated to the online certification procedure. The analysis is based on descriptive statistics methods and shows that overall most respondents were satisfied with most Modules, although they suggest to provide better links between scientific evidence and practical applications. Although there are serious limitations that do not permit to draw generalized conclusions, the evaluation procedure pointed out specific domains that require improvements and – especially – that a more robust evaluation system is required.

Keywords: Agricultural Knowledge and Innovation System (AKIS); questionnaire survey; training material

Pastoral Schools: Diffusing the Italian and Spanish experience for sustainable Mediterranean pastoralism through co-creation

Antonello Franca[1], Marta G. Ferre-Rivera[2], Feliu Lopez-i-Gelats[3], Giovanni M. Altana[4], Dimitrios Skordos[5], Marisol Dar Ali[5] and Athanasios Ragkos[5]

[1] Institute for the Animal Production System in the Mediterranean Environment, National Research Council, Italy; Antonio.franca@cnr.it
[2] INGENIO (CSIC-UPV), Spanish National Research Council, Spain; mgrivfer@ingenio.upv.es
[3] University of Vic, Spain; feliu.lopez@uvic.cat
[4] ReteAPPIA, Italian Network of Pastoralism, Italy; altanagiovannim@gmail.com
[5] Agricultural Economics Research Institute, Hellenic Agricultural Organization – DIMITRA, Greece; dimitrisskor@gmail.com; darali.marisol@gmail.com; ragkos@elgo.gr

Abstract

Pastoralism constitutes an extensive livestock system offering a feasible alternative towards agro-ecological transition. People who are engaged in the sector are expected to have a high level of skills related to knowledge and experience of nature and climate, management of resources and other significant elements which comprise Traditional Ecological Knowledge. The purpose of this paper is to present the emergence and operation of “Pastoral Schools” in various Mediterranean countries, which offer training to people who wish to be professionally involved in pastoralism. In particular, the co-creation approach that takes place within PASTINNOVA project is presented, which involved the establishment of Regional Living Labs bringing together actors from several Mediterranean countries, which are interested to analyse the operation of pastoral schools, exchange relevant experiences and knowledge and deliver solutions that will upscale the performance of these schools and permit to expand their operation in other Mediterranean settings as well.

Keywords: innovations and business models; traditional ecological knowledge; extensive livestock production

Consumers trust and preferences regarding local plant varieties and indigenous farm animal breeds in Western Macedonia, Greece

Dimitrios Kyriazoglou[1], Vasiliki Makri[1], Martha Tampaki[1], Katerina Melfou[1], Athanasios Ragkos[2] and Ioannis A. Giantsis[1]

[1] Faculty of Agricultural Sciences, University of Western Macedonia, 53100 Florina, Greece; igiantsis@uowm.gr
[2] Agricultural Economics Research Institute, Hellenic Agricultural Organization—DIMITRA, 11528 Athens, Greece

Abstract

The value of rearing indigenous animal breeds and cultivating local plant varieties is extremely high in terms of regional economy and heritage preservation. The purpose of present re- search was to investigate the preferences and opinions of the consumers of Western Macedonia regarding local varieties and indigenous breeds. For this purpose, an appropriate questionnaire was designed and distributed to a sample of 80 consumers from Western Macedonia. The questions combined demographic, psychographic and institutional characteristics of consumers. According to our findings, most participants recognize the importance of the conservation of indige- nous animal breeds and local plant varieties as well as the products derived from them. Additionally, a large percentage showed a preference for these products for the purpose of supporting the local economy. Nevertheless, particularly for indigenous animal breeds, despite the recognition of their high value and need for conservation, only a small proportion of the participants could name some of the indigenous breeds correctly. Conversely, this was not observed concerning local plant varieties, of which participants were more aware. Thus, better promotion and overall better marketing could enhance the recognition of these resources, emphasizing their high value.

Keywords: Indigenous animals; local plants; Western Macedonia; consumer preference

The effect of the farm size on the differences in mastitis prevalence and its consequences on milk production in the Holstein cows

Vesna Gantner[1], Ivana Jožef[2], Ranko Gantner[1], Maja Gregić[1], and Zvonimir Steiner[1]

[1] Department of Animal Production and Biotechnology, Faculty of Agrobiotechnical Sciences Osijek, University of J. J. Strossmayer Osijek, V. Preloga 1, 31000 Osijek, Croatia; vgantner@fazos.hr (V.G.); rgantner@fazos.hr (R.G.); mgregic@fazos.hr (M.G); zsteriner@fazos.hr (Z.S.)
[2] University in Novi Sad, Faculty of Agriculture, Serbia; vanjajozef@gmail.com (I.J.)

Abstract

Aiming determination of the mastitis prevalence and its consequences on milk production 3,953,637 test-day records of the Holstein cows (period 01/2005 to 12/2022) were analyzed. The obtained analyses indicate differences in mastitis prevalence and consequences on successive milk production depending on herd size. The lowest mastitis prevalence was observed on the largest farms (> 500) while the most pronounced recovery potential was observed at farms with 200-500 cows. Higher mastitis prevalence and lower recovery potential observed at smaller farms indicate the necessity of education and knowledge transfer to those farms.

Keywords: mastitis prevalence; Holstein breed; somatic cell count; daily milk yield

Acknowledgements: Research and dissemination were supported by the Fund for Bilateral Relations within the Financial Mechanism of the European Economic Area and Norwegian Financial Mechanism for the period 2014-2021 (Grant number: 04-UBS-U-0031/23-14).

Partial substitution of fresh microalgae with baker's yeast *(Saccharomyces cerevisiae)* enhances the growth of juvenile *Ostrea edulis* and *Ruditapes decussatus*

Dimitrios K. Papadopoulos[1], Ioannis Georgoulis[1], Athanasios Lattos[1], Konstantinos Feidantsis[1], Basile Michaelidis[1] and Ioannis A. Giantsis[2]

[1] Laboratory of Animal Physiology, Department of Zoology, Faculty of Science, School of Biology, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece
[2] Department of Animal Science, Faculty of Agricultural Sciences, University of Western Macedonia, 53100 Florina, Greece; igiantsis@uowm.gr

Abstract

The hatchery culture of bivalve Mollusks depends on feeding with fresh microalgae which represent up to 50% of the production costs. We investigated the growth performance of juvenile *Ostrea edulis* and *Ruditapes decussatus* under 15% and 30% replacement of microalgae with *Saccharomyces cerevisiae*. Metabolic indices were measured along with weight specific growth rate and condition index for 28 days. 15% substitution led to great results, whereas 30% yeast-fed treatments displayed poor growth and depressed metabolism.

Keywords: aquaculture; bivalves; yeast; microalgae substitution

The use of digital media in equestrian clubs in Croatia

Maja Gregić[1], Tina Bobić[1], Ranko Gantner[1] and Vesna Gantner[1]

[1] Department of Animal Production and Biotechnology, Faculty of Agrobiotechnical Sciences Osijek, University of J. J. Strossmayer Osijek, V. Preloga 1, 31000 Osijek, Croatia; mgregic@fazos.hr (M.G); tbobic@fazos.hr (T.B.); rgantner@fazos.hr (R.G.); vgantner@fazos.hr (V.G.)

Abstract

This paper aimed to analyze the use of digital media and the research was conducted via a web survey sent by e-mail to equestrian clubs in Croatia. Social media have significantly altered the way of communication and the availability of information in all segments of life and work, including horse breeding. Within digital media, an extremely large amount of information is available that is not necessarily relevant and true. To prevent the use of inadequate information in 60% of equestrian clubs in Croatia, certain persons are responsible for the content. Following influencer posts is represented by less than 50%. Furthermore, 90% of the respondents believe that digital media is an excellent tool to help in the work of equestrian clubs, while 80% of the respondents believe that it is currently underutilized.

Keywords: equestrian clubs; digital media; information exchange

Acknowledgements: This research and dissemination were supported by the Fund for Bilateral Relations within the Financial Mechanism of the European Economic Area and Norwegian Financial Mechanism for the period 2014-2021 (Grant number: 04-UBS-U-0031/23-14).

Annual maintenance costs of draft horses as a part of fixed costs in horse-powered agriculture: A case study from Požega (Croatia)

Ranko Gantner[1], Igor DelVechio[2], Zvonimir Steiner[1], Maja Gregić[1] and Vesna Gantner[1]

[1] J. J. Strossmayer University of Osijek, Faculty of Agrobiotechnical Sciences Osijek, V. Preloga 1, 31000 Osijek, Croatia; rgantner@fazos.hr (R.G.); zsteiner@fazos.hr (Z.S.); mgregic@fazos.hr (M.G.); vgantner@fazos.hr (V.G.)
[2] Croatian Federation of Heavy Draft Horse Breeders Association, Croatia; zujo.macak@gmail.com (I.D.)

Abstract

Aim of this research is to estimate the fixed costs of maintenance of draft horses in a low-input farm. Research has revealed that in the investigated case fixed costs of maintenance of three draft mares were 5,115.39 EUR annually, with human working hours having the greatest share of 73.6 %. Income from sales of foals partially offsets the total fixed costs, thus virtually lowering the costs to the level of 1,215.39 EUR annually. At the investigated farm (operated 1.3 ha of arable field crops), the fixed costs per worked arable area were very high, amounting 934.92 EUR/ha, mainly because of little total arable area worked. Theoretical capacity of horse-powered farming with three mares historically was 15 ha, and at such the area fixed costs per hectare would fall to the acceptable level of 81 EUR/ha. However, the acceptance of horse-powered farming could face much hesitance, mainly because it is a labor-intensive way of farming, far from the attitudes of modern people. Personal inner transformation might help make this option more attractive.

Keywords: low-input farming; animal work; fixed costs; personal inner transformation

Acknowledgements: This research and dissemination were funded by Research and dissemination were supported by the Fund for Bilateral Relations within the Financial Mechanism of the European Economic Area and Norwegian Financial Mechanism for the period 2014-2021 (Grant number: 04-UBS-U-0031/23-14).

The role of cooperative enterprises in the promotion of cultural heritage: The case study of the petrified forest of Lesvos

Eleutheria Plousiou[1], Panagiota Sergaki[2] and Ifigeneia Mylona[3]

[1]MSc Researcher, Hellenic Open University; eplousiou.culture@gmail.com
[2] Professor, Department of Agricultural Economics, Aristotle University of Thessaloniki, Greece; gsergaki@auth.gr
[3] Ass. Professor, Dep. of Management Science and Technology, International Hellenic University, Greece; imylona@mst.ihu.gr

Abstract

The purpose of the study is to analyze the relationship between the SSE bodies, culture and sustainable development, studying the case of the Petrified Forest of Sigri on the island of Lesvos and the interaction with the cooperative of the neighboring settlement of Eresos. Qualitative research was conducted by reviewing the relevant literature and implemented semi-structured interviews. A SWOT analysis was also conducted. The results showed that the Eresos Agricultural and Livestock Cooperative in Sigri in collaboration with other agencies can contribute to the sustainability of the area. The cooperative lacks organized promotion, beyond that attempted by the Natural History Museum based in Sigri.

Keywords: Social and Solidarity Economy (SSE); Agricultural Cooperative of Eressos; culture; social enterprises; communication

Decision support model by integrating the new cross-compliance rules and rational water management

Asimina Kouriati[1], Christina Moulogianni[2], Evgenia Lialia[1], Angelos Prentzas[1], Anna Tafidou[2], Eleni Dimitriadou[1] and Thomas Bournaris[1]

[1] Department of Agricultural Economics, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece; kristin@agro.auth.ge (C.M); evlialia@agro.auth.gr (E.L.); aprentzas@agro.auth.gr (A.P.); edimitri@agro.auth.gr (E.D.); tbournar@agro.auth.gr (T.B.)
[2] Department of Mathematics, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece; annatafidou@gmail.com (A.T.)

Abstract

The aim of this study is to change land use by applying a Decision Support Model that will contribute to the assimilation of the new cross-compliance rules, to optimal water management and to the enhancement of the effectiveness and profitability of the farms. The research objective will be achieved by establishing 50 acres pilot fields on five farmer groups through the optimal allocation of limited economic and land resources. The result extracted will lead to the gradual incorporation of the new directives with a view to reducing production costs and recognizing the new cross-compliance rules.

Keywords: Common Agricultural Policy; cross-compliance; water management; decision support model

Decision support model for input minimization and optimal economic efficiency of agricultural holdings

Evgenia Lialia[1], Anna Tafidou[2], Asimina Kouriati[1], Angelos Prentzas[1], Eleni Dimitriadou[1], Christina Moulogianni[1] and Thomas Bournaris[1]

[1] Department of Agricultural Economics, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece; evlialia@agro.auth.gr (E.L.); aprentzas@agro.auth.gr (A.P.); edimitri@agro.auth.gr (E.D.); kristin@agro.auth.ge (C.M); tbournar@agro.auth.gr
[2] Department of Mathematics, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece; annatafidou@gmail.com (A.T.)

Abstract

This study aims to change land use by implementing a Decision Support Model (DMS) with the goal of reducing water and fertilizer use. The problem is solved by deriving the necessary results of a set of selected pilot fields that belong to a farmer group which is located in the region of Central Macedonia. In order to define the pilot farms, the necessary data was collected and then processed using multicriteria weight goal programming in order for the development of a Decision Support Model which is related to the water and fertilizer use reduction.

Keywords: Common Agricultural Policy; input minimization; decision support model

An electronic platform for the integrated monitoring of technical and economic data of farms

Anna Tafidou[1], Asimina Kouriati[2], Evgenia Lialia[2], Angelos Prentzas[2], Eleni Dimitriadou[2], Kyriaki Tafidou[3] and Thomas Bournaris[2]

[1] Department of Mathematics, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece; annatafidou@gmail.com
[2] Department of Agricultural Economics, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece; evlialia@agro.auth.gr (E.L.); aprentzas@agro.auth.gr (A.P.); edimitri@agro.auth.gr (E.D.); tbournar@agro.auth.gr (T.B.)
[3] Department of Architectural Engineering, Democritus University of Thrace, 67100 Xanthi, Greece; ktafidou@yahoo.gr

Abstract

The digitalization of farming is considered the fourth revolution in agriculture. The ne- 15 cessity of providing decision support tools and electronic platforms to help Greek farmers in their work is becoming increasingly evident. For this reason, this article presents the electronic platform called "FarmEconomicMonitoring" to monitor the operations of farms to control production costs and improve efficiency. With the use of the electronic platform by farmer-entrepreneurs, their easy adaptation to the new technologies concerning decision-making and farm management systems becomes achieved.

Keywords: digitalization; technical and economic analysis; management

Proud farm: Planning and development of a dairy sheep and goat incubator

Sotiria Vouraki[1], Vasiliki Papanikolopoulou[1], Vasileia Fotiadou[1], Nikolaos Koltsidas[2], Stergios Priskas[3], Jose Ignacio Perez de Albeniz Gonzales[4], Evdokia Krystallidou[5], Georgios Arsenos[1]

[1] Laboratory of Animal Husbandry, School of Veterinary Medicine, Aristotle University of Thessaloniki, Greece; svouraki@vet.auth.gr (S.V.)
[2] Proud Farm Group of Farmers P.C., Agios Dimitrios, Kozani, Greece
[3] BOVIS P.C., Serres, Greece
[4] ARDIBERRI S.L., Pamplona, Spain
[5] American Farm School, Thessaloniki, Greece

Abstract

Small ruminant farming is an essential part of the agricultural industry. However, ageing of farmers combined with lack of new entrants threaten its future sustainability. Here, we present Proud Farm, an innovative business model for the entry of young people in the dairy sheep and goat industry at a low cost and with a low business risk. Specifically, Proud Farm focuses on the development of hosting facilities for training of prospective small ruminant farmers and the introduction of precision livestock farming technologies for monitoring animal productivity and health as well as farm economic performance. Three pilot sheep and goat farms, equipped with all necessary infrastructure, will be constructed in the region of Kozani in Greece to host young farmers for a three-year period. An online application with audiovisual training material and integrated standard operating procedures for the management of small ruminant farms will be developed and used for education of farmers. Moreover, a decision support system will be designed for evaluating farm's economic performance by illustrating in real time the net income against feeding costs. All the above training material and technologies will be effectively disseminated to trainees through a specialized communication platform. The latter will be further used for training purposes. Finally, to ensure a smooth transition to the farmers' own facilities, respective business plans will be created. Based on all the above, Proud Farm is expected to educate young people on small ruminant farm management practices and help them to successfully enter the dairy sheep and goat industry. In this regard, it could help towards increasing the sector's efficiency and overall sustainability.

Keywords: sheep and goats; young farmers; business model; "incubator"; training

Acknowledgements: This project was funded under the "Measure 16 'Cooperation" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project code M16SYN2-00016.

Development of innovative breeding methods to control the quantity, quality and distribution of intramuscular fat in intensively fed cattle

Vasiliki Papanikolopoulou[1], Stella Dokou[2], Vasileia Fotiadou[1], Anestis Tsitsos[3], Sofia Zioupou[4], Aikaterini Pyrogianni[4], Themistoklis Sfetsas[5], Ioanna Dalla[5], Georgios Arsenos[1]

[1] Laboratory of Animal Husbandry, School of Veterinary Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Greece; vipapani@vet.auth.gr (V.P.)
[2] Laboratory of Animal Nutrition, School of Veterinary Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Greece
[3] Laboratory of Animal Food Products Hygiene – Veterinary Public Health, School of Veterinary Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Greece
[4] Ergoplanning Ltd., Karatasou 7, 54626, Thessaloniki, Greece
[5] Qlab P.C., K. Karamanli 122, Delta, 57008, Greece

Abstract

Livestock farming plays an important role in Greece's agricultural economy. However, the beef cattle sector copes with several challenges that impact its profitability and sustainability. These factors include market competition from imported beef, fluctuations in market prices, and rising feeding costs. Therefore, the objective here was to develop innovative feeding practices aimed at enhancing meat quantity, quality, and accumulation of intramuscular fat of intensively reared beef cattle. The project is in a preliminary stage; however, the methodology approach includes the random selection of 64 intensively reared beef cattle of the Black Angus breed from a farm located in the region of Veria. Studied animals will be equally allocated into two Groups (Control C, n=32 and Treatment T, n=32) and further separated into four subgroups, consisting of eight beef cattle each. Group T will receive a ration containing nutritional factors for achieving better intramuscular fat (IMF) deposition and marbling levels, while Group C will be fed according to existing farm's management practices. The above feeding approach will be implemented during the late fattening stage which lasts three months prior to slaughter. Individual meat samples from the studied animals, as well as feed samples, will be collected and subjected to quality assessment and physicochemical analyses. A comparative analysis will be conducted to detect potential differences in marbling levels between the produced meat of studied groups. Moreover, technical, economic, and micro-climatic data will be collected to evaluate the farm's economic performance and the health and welfare of studied animals. Expected results include the production of value-added meat products, ensuring the farm's profitability and competitiveness within the meat industry. This enhanced product is expected to meet consumer demands for quality, thereby strengthening the farm's position in the market.

Keywords: beef cattle; intensive; marbling; feeding practices; Greece

Acknowledgements: This project was funded under the "Measure 16 'Cooperation" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project code M16SYN2-00015.

Production and fattening of black and while calves in dairy cows

Vasiliki Papanikolopoulou[1], Sotiria Vouraki[1], Stergios Priskas[1], Vasileia Fotiadou[1], Paraskevi Chantzi[2], Markella Papantoniou[3], Michalis Genitsargiotis[3], Themistoklis Sfetsas[4], Ioanna Dalla[4], Georgios Arsenos[1]

[1] Laboratory of Animal Husbandry, School of Veterinary Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Greece; vipapani@vet.auth.gr (V.P.)
[2] Laboratory of Animal Nutrition, School of Veterinary Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Greece
[3] Ergoplanning Ltd., Karatasou 7, 54626, Thessaloniki, Greece
[4] Qlab P.C., K. Karamanli 122, Delta, 57008, Greece

Abstract

Beef cattle farming in Greece is currently underdeveloped compared to other sectors of livestock production. On the other hand, dairy cattle farming is developing steadily over the years. Therefore, the aim of the project BlackWhite was to apply effective fattening management practices in Holstein calves to strengthen national meat production, while reducing the dependence on beef imports and improving farms' economic performance. Although the project is in the preliminary stage, methodology includes the random selection of 80 Holstein calves from two farms located in Northern Greece. In each farm, studied animals will be equally allocated into two groups (Control C, Treatment T) and different feeding practices will be applied to enhance carcass yield and meat quality traits. Such feeding practices will be applied during the latest fattening stage prior to slaughter. Moreover, individual meat and feed samples will be collected and subjected to quality assessment and physicochemical analyses. Obtained data will be statistically analyzed to detect potential differences on carcass yield and quality parameters of produced meat of studied groups. Moreover, technical, economic, and micro-climatic data will be collected to evaluate the farm's economic performance and the health and welfare of studied animals. Expected results include the standardization of effective feeding practices to produce carcasses with high quality characteristics in Holstein calves. The project is expected to enhance the economic viability of these farms and create a unique value chain for meat produced by the Holstein breed.

Keywords: dairy cattle; feeding practices; Holstein; sustainability; Greece

Acknowledgements: This project was funded under the "Measure 16 'Cooperation" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project code M16SYN2-00024.

Creation of a branded meat product through the implementation of a protocol for the rearing of large-scale cattle breeding in the area of Axios Delta

Vasiliki Papanikolopoulou[1], Sotiria Vouraki[1], Vasileia Fotiadou[1], Anestis Tsitsos[2], Anastasios Mitsopoulos[3], Charalampos Petkoglou[3], Themistoklis Sfetsas[4], Ioanna Dalla[4], Georgios Arsenos[1]

[1] Laboratory of Animal Husbandry, School of Veterinary Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Greece; vipapani@vet.auth.gr (V.P.)
[2] Laboratory of Animal Food Products Hygiene – Veterinary Public Health, School of Veterinary Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Greece
[3] Ergoplanning Ltd., Karatasou 7, 54626, Thessaloniki, Greece
[4] Qlab P.C., K. Karamanli 122, Delta, 57008, Greece

Abstract

Extensive beef cattle play a significant role in the agricultural economy of Greece by offering job opportunities and income for families, especially in remote regions. However, the sector faces several economic challenges that threaten its viability. Therefore, the objective of the project Axios Meat was to assess the quality of produced meat from extensively reared beef cattle in the protected area of the Axios Delta and establish a distinct branded meat product with higher value in the meat industry. The project is in a preliminary stage and the methodology includes holistic approach on farm and animal level. Initially, technical, and economic data will be collected to assess the farm's economic performance. Moreover, individual meat samples from beef cattle of the study area (n=64) will be collected and subjected to quality assessment and physicochemical analyses. Similarly, samples of plants from grazing pastures and feeding supplements will be collected and analyzed chemically. A regression analysis will be conducted to investigate the potential impact of the pasture quality on produced meat quality traits. Expected results include the development of a branded meat product with high quality traits associated with nutritional values of natural pastures in the area of Axios Delta. This will help to increase the commercialization of the final product while keeping farms profitable and competitive in the meat industry.

Keywords: beef cattle; extensive systems; meat industry; sustainability; Greece

Acknowledgements: This project was funded under the "Measure 16 'Cooperation" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project code M16SYN2-00025.

Socioeconomic analysis of traditional systems: Greek water buffalo in lake Kerkini

Athanasios Ragkos[1], Dimitrios Skordos[1], Dimitrios Roustemis[2], Dimitrios Patousis[3], Ioannis Eleftheriadis[3] and Aristotelis Lymperopoulos[4]

[1] Agricultural Economics Research Institute, Hellenic Agricultural Organization – DIMITRA, Athens, Greece
[2] Center for Animal Genetic Resources, Nea Mesimvria, Greece
[3] Livestock Cooperative of Greek Buffalo Breeders, Vyroneia, Greece
[4] Department of Agriculture, International Hellenic University, Thessaloniki, Greece

Abstract

Greek water buffalo (GWB) is a Greek indigenous breed which has followed contrasting patterns in the last decades. GWB farms operate under extensive or semi-intensive patterns and their development requires a two-dimension approach, focusing on the production system equally as on markets. The project “Quality Bubalis - An integrated meat and raw milk production system with superior quality characteristics from the Greek buffalo (bubalus bubalis)” introduces an integrated strategy for GWB systems in Greece. The socioeconomic analysis in the project concerns an analysis of the economic performance of farms combined with a deeper understanding of the external environment and advisory support to improve the skills of producers. The solutions that the project will yield will support and strengthen the Greek market of buffalo products.

Keywords: socioeconomic performance; indigenous livestock breeds; milk products; meat products

Acknowledgements: This paper is funded by the Rural Development Programme of Greece 2014-2022 through the Sub-Measure 16.1-16.2 of Measure 16 “Cooperation” (project acronym “Quality Bubalis”; Project number M16ΣΥΝ2-00193).

Automated services for the management of rice irrigation using in-field sensors

Dimitrios Katsantonis[1], Ioannis Mylonas[1], Argyrios Kalaitzidis[1], Ioannis Panoras[1], Sophie Ghoghoberidze[1], Sofia Zioupou[2] and Charalampos Petkoglou[2]

[1] Hellenic Agricultural Organization – "DEMETER", Institute of Plant Breeding & Genetic Resources, Thermi, 57001, Greece; dikatsa@cerealinstitute.gr (D.K.)
[2] Ergoplanning Ltd., Karatasou 7, 54626, Thessaloniki, Greece

Abstract

This extended abstract presents a business plan for the implementation of an Automated Rice Field Irrigation Management Service using Sensors. The objective is to address the problem of salinity in rice cultivation, particularly in coastal areas, by providing real-time monitoring of salinity levels and water heights in paddy fields. The proposed system utilizes autonomous electrical conductivity sensors and a GSM communication protocol to enable efficient and accurate data collection. The business plan aims to improve water management, reduce water consumption, and mitigate the negative environmental and economic impacts associated with salinity in rice production. This abstract provides an overview of the problem statement, the proposed methodology, expected results, and the innovative aspects of the business plan.

Keywords: automated irrigation management; rice cultivation; salinity; sensors; water management

Acknowledgements: This project was funded under the "Measure 16 'Cooperation'" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project code: M16SYN2-00044.

Use of variable rate technology (VRT) to produce healthier rice of local varieties

Dimitrios Katsantonis[1], Ioannis Mylonas[1], Argyrios Kalaitzidis[1], Ioannis Panoras[1], Sophie Ghoghoberidze[1], Sofia Zioupou[3], Charalampos Petkoglou[3], Anastastios Mitsopoulos[4] and Themistoklis Sfetsas[4]

[1] Hellenic Agricultural Organization – "DEMETER", Institute of Plant Breeding & Genetic Resources, Thermi, 57001, Greece; dikatsa@cerealinstitute.gr (D.K.)
[2] Laboratory of Forest Management & Remote Sensing, School of Forestry & Natural Environment, Aristotle University of Thessaloniki
[3] Ergoplanning Ltd., Karatasou 7, 54626, Thessaloniki, Greece
[4] Qlab P.C., K. Karamanli 122, Delta, 57008, Greece

Abstract

Variable application technologies have the potential to revolutionize rice cultivation by reducing costs, improving product quality, and minimizing the environmental footprint. This extended abstract presents a comprehensive analysis of a Business Plan that aims to implement a rational and sustainable fertilization management service in rice cultivation using modern technologies such as remote sensing data, drones, and variable rate fertilizer spreaders. The plan addresses the problem of excessive fertilizer use and nitrate pollution while emphasizing the importance of reducing production costs and producing healthier and safer local rice varieties. The methodology includes the installation of pilot fields, the estimation of nitrogen requirements per spatial management zone, and the comparison of results with conventional practices. The Business Plan introduces innovative practices to differentiate fertilization within each field and offers a detailed roadmap for implementation, evaluation, and dissemination. The expected results encompass reduced nitrate pollution, the production of low-input high-quality products, cost reduction, increased competitiveness, and preparation for changes in the EU's Common Agricultural Policy. The analysis demonstrates the originality and degree of innovation introduced by the Business Plan and highlights the role of each member of the Operations Team. The capacity of the agricultural holding and the proposed dissemination activities are also discussed. Overall, this extended abstract provides a comprehensive overview of the Business Plan, showcasing its objectives, methodologies, expected outcomes, and implications for sustainable rice cultivation.

Keywords: reduced input rice; variable application technologies; fertilization management; precision agriculture; environmental footprint

Acknowledgements: This project was funded under the "Measure 16 'Cooperation" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project codes: M16SYN2-00039.

Pre-treatment of rice crop residues to enhance biogas production process

Panagiotis Kougias[1], Argyrios Kalaitzidis[2], Nicholas E. Korres[3], Georgia-Christina Mitraka[1], Anastasios Mitsopoulos[4], Sofia Zioupou[4], Charalampos Petkoglou[4] and Dimitrios Katsantonis[2]

[1] Soil and Water Resources Institute, Hellenic Agricultural Organization – Dimitra, Thermi, 57001, Greece; p.kougias@elgo.gr (P.K.)
[2] Institute of Plant Breeding and Genetic Resources, Hellenic Agricultural Organization – Dimitra, Thermi, 57001, Greece
[3] University of Ioannina, Department of Agriculture, University Campus of Arta, 47100, Greece
[4] Ergoplanning, Karatasou 7, Thessaloniki, 54626, Greece

Abstract

In this study, fourteen different methods for pre-treating rice biomass were evaluated, and the most promising method was chosen to determine the optimal ratio of pre-treated rice residues and swine slurry in co-digestion experiments. The goal was to investigate whether co-digestion of pre-treated rice biomass and swine slurry could enhance methane production compared to the mono-digestion of rice residues alone. The findings indicate that pre-treating the recalcitrant rice biomass with NaOH improves its biodegradability. Furthermore, it was observed that co-digestion with swine slurry increases methane production compared to the mono-digestion of swine slurry, without negatively affecting the methanogenesis process. These results highlight the potential benefits of pre-treatment and co-digestion strategies in improving methane production and biodegradation efficiency.

Keywords: rice residues; pre-treatment; anaerobic digestion; biogas

Acknowledgements: This research was funded under the 'Innovation Investment Schemes' in the framework of the Operational Program of Central Macedonia 2014-2020 and it is co-funded by the European Social Fund through the National Strategic Reference Framework. Project code KMP6-0234326, MIS: 5136522. This research is part of Mr. Kalaitzidis PhD thesis.

Application of a rice crop residue management method in the context of the adoption of good and innovative agricultural practices

Dimitrios Katsantonis[1], Ioannis Mylonas[1], Argyrios Kalaitzidis[1], Ioannis Panoras[1], Sophie Ghoghoberidze[1], Themistoklis Sfetsas[2] and Anastasios Mitsopoulos[2]

[1] Hellenic Agricultural Organization – "DEMETER", Institute of Plant Breeding & Genetic Resources, Thermi, 57001, Greece; dikatsa@cerealinstitute.gr (D.K.)
[2] Qlab P.C., K. Karamanli 122, Delta, 57008, Greece

Abstract

The objective of the business plan is to address the problem of burning rice plant residues in rice paddies after harvesting, which reduces the organic matter and causes atmospheric pollution, while contributes to climate change. The business plan proposes an alternative approach of incorporating the residues into the soil to improve soil structure, nutrient retention, disease control, and reduce the use of synthetic fertilizers. The plan also highlights the added value of this approach, including improved crop quality, reduced disease incidence, reduced environmental impact, and alignment with circular economy principles. The methodology involves the application of a soil-improving biofertilizer derived from rice and gas production by-products. Rice farmers will be trained in biofertilizer production and application, and pilot fields will be established to compare different residue management systems. The expected results include the adoption of the alternative protocol, reduced disease incidence, minimized burning of rice straw, and promotion of sustainable practices.

Keywords: rice crop residue management; alternative approach; soil-improving biofertilizer; disease control; circular economy

Acknowledgements: This project was funded under the "Measure 16 'Cooperation'" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project code: M16SYN2-00072.

Yogurt product from freeze-dried colostrum

Thomas Moschakis[1], Marios Andreadis[1], Niki Leliopoulou[1], Charalampos Giannios[1], Anastasios Mitsopoulos[2] and Michalis Genitsargiotis[2]

[1] Department of Food Science and Technology, School of Agriculture, Aristotle University of Thessaloniki, GR-541 24, Thessaloniki, Greece; tmoschak@agro.auth.gr (T.M.)
[2] Qlab P.C., K. Karamanli 122, Delta, 57008, Greece

Abstract

The objective of this study was to develop a fermented yogurt-like product that incorporates the beneficial properties of colostrum. Colostrum is a rich source of immunoglobulins, growth factors, amino acids, and various nutrients, which contribute to its high biological value. Furthermore, the antimicrobial effects of colostrum, primarily attributed to its immunoglobulins, can enhance the quality of the final product, making it particularly suitable for individuals with immune requirements and high athletic performance demands. However, it is important to note that immunoglobulins in colostrum are sensitive to heat and can denature at pasteurization temperatures, potentially leading to the formation of large protein aggregates.

Keywords: colostrum; freeze-drying; yogurt; immunoglobulins

Acknowledgements: This project was funded under the "Measure 16 'Cooperation'" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project code: M16SYN2-00077.

Lameness identification system in cattle breeding units

Dimitrios Kateris[1], Anastasios Mitsopoulos[2], Charalampos Petkoglou[2] and Dionysis Bochtis[1]

[1] Institute for Bio-Economy and Agri-Technology (iBO), Centre of Research and Technology-Hellas (CERTH), 6th km Charilaou-Thermi Rd., 57001 Thessaloniki, Greece; d.bochtis@certh.gr
[2] Ergoplanning Ltd., Karatasou 7, 54626, Thessaloniki; tmitsop@ergoplanning.gr; x.petkoglou@ergoplanning.gr

Abstract

Lameness is one of the most significant problems in cattle breeding. It is a major factor that causes discomfort and significantly reduces the welfare of affected animals. Lameness can result in a decrease in milk production or, if not detected early enough, may require the animal to be culled, leading to severe direct and indirect economic consequences for the business. The delayed recognition of lameness is often due to the methods used for detection, which mainly rely on the observation of animal mobility by the breeder. These methods almost exclude the early detection of the problem. The aim of this work is to establish a new detection system which that will be able to identify on time, reliable and at an early stage the lameness symptoms based on the movement parameters of the animals.

Keywords: lameness; animal health; accelerator sensors; machine learning; cattle

Acknowledgements: This research was funded by the Action «Rural Development Programme of Greece 2014-2020» under the call Measure “Co-operation”, Sub-Measure 16.1 – 16.2» that is co-funded by the European Regional Development Fund and Region of Central Macedonia., project «CLARITY - Lameness identification system at milk- producing companies» (Project code: M16ΣΥΝ2-00034).

Aromatic plant by-products utilization for the crop protection of vegetables

Kalliopi Kadoglidou[1], Dimitrios Katsantonis[1], Paschalina Chatzopoulou[1], Ifigeneia Mellidou[1], Maria Irakli[1], Apostolos Kalyvas[1], Aliki Xanthopoulou[1], Aikaterini Pyrogianni[2] and Michalis Genitsargiotis[2]

[1] Institute of Plant Breeding and Genetic Resources, Hellenic Agricultural Organization–Dimitra (ELGO-DIMITRA), Thermi, GR-57001, Thessaloniki, Greece
[2] Ergoplanning Ltd., Karatasou 7, 54626, Thessaloniki, Greece

Abstract

Two of the major biotic stresses of vegetables are the fungi belong to genera Fusarium and Verticillium causing adromycosis. In this work, we study in real field and greenhouse conditions the effect of soil incorporated oregano dried residuals on physiological, yield and quality parameters of vegetables, along with their efficacy against the abovementioned soilborne fungal diseases identified after soil mapping, At the same time, volatiles are derived by hydrostillation and their GC-MS analysis reveal the constituents remained in the soil environment after incorporation of oregano. Since this research project is a continuation of previous successive study, the main objective is the optimization of protocol application for the oregano incorporation into the soil in order to improve vegetables tolerance against soilborne fungi, soil fertility and consequently increase yield and product quality.

Keywords: disease management; Fusarium and Verticillum wilts; oregano by-products (residues); vegetables

Acknowledgements: This project was funded under the "Measure 16 'Cooperation'" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project code: M16SYN2-00047.

Implementation of an innovative organic rice production protocol

Dimitrios Katsantonis[1], Ioannis Mylonas[1], Argyrios Kalaitzidis[1], Ioannis Panoras[1], Sophie Ghoghoberidze[1], Anastasios Mitsopoulos[2] and Michalis Genitsargiotis[2]

[1] Hellenic Agricultural Organization – "DEMETER", Institute of Plant Breeding & Genetic Resources, Thermi, 57001, Greece; dikatsa@cerealinstitute.gr (D.K.)
[2] Ergoplanning Ltd., Karatasou 7, 54626, Thessaloniki, Greece

Abstract

This study provides a comprehensive analysis of an innovative protocol to produce organic rice, specifically addressing the challenge of low market prices in rice cultivation. The business plan explores the production process, the significance of the proposed innovation for rice cultivation in Greece, and the dissemination activities incorporated in the business plan. The study underscores the importance of rigorous data collection and analysis to ensure reliable results and sound conclusions. Although specific results are not presented, the study emphasizes the need for effective dissemination strategies to ensure the successful implementation of the project. Overall, the document offers valuable insights into the innovative approach to organic rice production and its potential impact on the rice industry.

Keywords: organic rice; sustainable agriculture; circular economy; innovation; low-input cultivation

Acknowledgements: This project was funded under the "Measure 16 'Cooperation'" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project code: M16SYN2-00041.

Model implementation for early prediction of biomass and grain production in maize

Dimitrios Katsantonis[1], Ioannis Mylonas[1], Argyrios Kalaitzidis[1], Ioannis Panoras[1], Sophie Ghoghoberidze[1], Aikaterini Pyrogianni[2] and Michalis Genitsargiotis[2]

[1] Hellenic Agricultural Organization – "DEMETER", Institute of Plant Breeding & Genetic Resources, Thermi, 57001, Greece; dikatsa@cerealinstitute.gr (D.K.)
[2] Ergoplanning Ltd., Karatasou 7, 54626, Thessaloniki, Greece

Abstract

This abstract presents the implementation of a model for early prediction of biomass and grain production in Greece. The objective of the Business Plan is to address the challenges faced by grain cultivation, including decreasing selling prices, and increasing production costs. The proposed model aims to provide accurate predictions of biomass and grain production, allowing producers to make informed decisions regarding harvesting and utilization. By utilizing innovative technology, such as unmanned aerial vehicles (UAVs) and satellite imagery, combined with meteorological measurements, the biomass estimation models can be developed. The results of this implementation can lead to increased profitability for producers and a reduction in the environmental footprint of grain cultivation.

Keywords: biomass prediction; grain production; early prediction; unmanned aerial vehicles (UAVs); satellite imagery

Acknowledgements: This project was funded under the "Measure 16 'Cooperation'" in the framework of National Rural Development Programme and it is co-financed by the European fund for rural development (EAFRD) and national budgets. Project code: M16SYN2-00042.

Automated sorting system for skeletal deformities of cultured fishes

George Bellis[1], Paris Papaggelos[1], Evangeli Vlachogianni[1], Ilias Laleas[1], Stefanos Moustos[1], Thanos Patas[2], Sokratis Poulios[2], Nikos Tzioumakis[2], Giannis Giakas[3], Dimitris Bokas[4], Christos Kokkotis[5] and Dimitris Tsaopoulos[6]

[1] Biomechanical Solutions (BME); info@bme.gr
[2] Polytech S.A.; info@polytech.com.gr
[3] University of Thessaly (UTH); ggiakas@uth.gr
[4] PLAGTON S.A.; plagton@otenet.gr
[5] Democritus University of Thrace (DUTH); ckokkoti@affil.duth.gr
[6] Institute of Bioeconomy and Agriculture (IBO-CERTH); d.tsaopoulos@certh.gr

Abstract

Anomalies occurrence is a constant world-wide problem in aquaculture and it entails economic and animal welfare issues. The early-stage removal of abnormal fish from the stocks is necessary and the sorting process remains manual, worldwide, demanding a significant increase of the personnel cost and delays of the production cycle. The purpose of this project is the development of an integrated automated system for valid sorting of farmed fishes, by removing these with shape or colour anomalies, or skeletal deformities. Sorting will be based on vision analysis and shape pattern recognition techniques.

Keywords: fry; fish; anomalies; deformities; sorting

Acknowledgements: This project was funded from Hellenic General Secretariat of Research and Innovation. Project code T2EDK-00981.

Development of a non-invasive system for the automatic detection of cattle lameness

George Bellis[1], Paris Papaggelos[1], Evangeli Vlachogianni[1], Ilias Laleas[1], Stefanos Moustos[1], Thanos Patas[2], Sokratis Poulios[2], Nikos Tzioumakis[2], Giannis Giakas 3, Giorgos Tsiogkas[4], Christos Kokkotis[5] and Dimitris Tsaopoulos[6]

[1] Biomechanical Solutions (BME); info@bme.gr
[2] Polytech S.A.; info@polytech.com.gr
[3] University of Thessaly (UTH); ggiakas@uth.gr
[4] TSIOGKAS FARM
[5] Democritus University of Thrace (DUTH); ckokkoti@affil.duth.gr
[6] Institute of Bioeconomy and Agriculture (IBO-CERTH); d.tsaopoulos@certh.gr

Abstract

Lameness is a crucial welfare issue in the modern dairy cattle industry, that if not identified and treated early, causes losses in milk production and leads to early culling of animals. At present, the most common methods used for lameness detection and assessment are various visual locomotion scoring systems, that are labour intensive and the results may be subjective. The purpose of this project is to develop an integrated system for early detection of lameness in cattle, using force plate gait analysis and pattern recognition techniques to identify changes in gait which indicate the onset of lameness. The system will be tested on natural onset of lameness in an organised farm environment.

Keywords: lameness; prevention; biomechanics; cattle; animal

Acknowledgements: This project was funded from Hellenic General Secretariat of Research and Innovation. Project code T2EDK-00758.

Factors connected with the registration of "Sikali Vevis" as geographical indication protection (PGI) product

Ioannis Mylonas[2], Fokion Papathanasiou[1], Elissavet Ninou[3], Anthoula Tsipi[4], Dimitrios Kostitsis[5], Iosif Sistanis[1], Crysanthi Pankou[6] and Kostantinos Koutis[7]

[1] University of Western Macedonia-Department of Agriculture, Koila Kozanis 50100, Greece; fpapathanasiou@uowm.gr
[2] Institute of Plant Breeding and Genetic Resources-ELGO DIMITRA, Kourtidou 56-58 & Nirvana, 11145, Athens; ioanmylonas@yahoo.com
[3] Department of Agriculture, International Hellenic University, 57400, Sindos; lisaninou@gmail.com; lisaninou@agr.teithe.gr
[4] Advisor, Pavlou Mela 37, 57019, Agia Triada Thermaikou; anthitsipi@gmail.com
[5] Agriculture Cooperative of Florina, 26 7th NOEMVRIOU 26, FLORINA, FLORINA 531 00; dkostitsis@gmail.com
[6] Institute of Industrial & Forage Crops-ELGO DIMITRA, Kourtidou 56-58 & Nirvana, 11145, Athens; cpankou@gmail.com
[7] AEGILOPS - Network for Biodiversity and Ecology in Greece Ano Lechonia, 373 00 Agria Volos; info@aegilops.gr

Abstract

Rye consumption is increasing due to its benefits for human health. "Sikali Vevis" is a cultivated traditional rye population of the Vevi area, Florina of Western Macedonia, Greece, which supports the local Agricultural community. However, the identity of this traditional population is not yet protected. This work, funded under the Agricultural Development Program 2014 – 2020 (Measure 16), Sub-Measure 16.1 – 16.2 (project M16SYN2-00321), will present the parameters connected with the description of the unique identity of this product, its origin, its traceability, local agricultural practices and specific characteristics of the product that will contribute to the protection of this traditional population.

Keywords: rye; local landrace; PGI product; quality; agricultural development

Acknowledgements: his work is funded in the context of the Agricultural Development Program 2014 – 2020 (Measure 16), and in particular Sub-Measure 16.1 – 16.2, the number of the approved project is M16SYN2-00321.

The impact of the improved genetic material to the economic value of Plake Fasoli Prespon PGI product

Fokion Papathanasiou[1], Elissavet Ninou[2], Ioannis Mylonas[3], Iosif Sistanis[1], Anastasia Kargiotidou[4], Sonia Michailidou[5], Kostantinos Koutis[6] and Anthoula Tsipi[7]

[1]University of Western Macedonia-Department of Agriculture, Koila Kozanis 50100, Greece; fpapathanasiou@uowm.gr
[2] Department of Agriculture, International Hellenic University, 57400, Sindos; lisaninou@gmail.com; lisaninou@agr.teithe.gr
[3] Institute of Plant Breeding and Genetic Resources-ELGO DIMITRA, Kourtidou 56-58 & Nirvana, 11145, Athens; ioanmylonas@yahoo.com
[4] Institute of Industrial & Forage Crops-ELGO DIMITRA, Kourtidou 56-58 & Nirvana, 11145, Athens; cpankou@gmail.com
[5] Agricultural Cooperative of Bean Producers of the Prespa National Forest "PELEKANOS"
[6] AEGILOPS - Network for Biodiversity and Ecology in Greece Ano Lechonia, 373 00 Agria Volos; fo@aegilops.gr
[7] Advisor, Pavlou Mela 37, 57019, Agia Triada Thermaikou; anthitsipi@gmail.com

Abstract

The project's primary objective is to safeguard this local variety by comprehensively studying its genetic variability. Furthermore, it aims to follow official protocols for the description and subsequent registration of the variety in the National List of Varieties, which will increase the value of the product and secure its identity. Experimentation targets evaluation of the landrace in order to select plants with improved productivity and quality. The profit from the implementation of the program is going to come from a combination of higher productivity due to the use of improved genetic material, improved consulting services related to the agricultural techniques, and increased values due to higher prices due to authenticating the product. This initiative aspires to provide benefits for the Agricultural Cooperative of Bean producers of Prespes area and at the same time the farmers will be trained for the good seed reproduction and production of the landrace.

Keywords: Plake Fasoli Prespon; PGI; local landrace; added value

Acknowledgements: This work is funded in the context of the Agricultural Development Program 2014 – 2020 (Measure 16), and in particular Sub-Measure 16.1 – 16.2, the number of the approved project is M16SYN2-00181.

Important parameters connected to farmers networking and training that gives added value to Fasoli and Fava Feneou products

Ioannis Mylonas[1], Fokion Papathanasiou[2], Elissavet Ninou[3], Anthoula Tsipi[4], Anastasia Kargiotidou[5], Georgia Vasiligianni[6] and Konstantinos Koutis[7]

[1] Institute of Plant Breeding and Genetic Resources-ELGO DIMITRA, Kourtidou 56-58 & Nirvana, 11145, Athens; ioanmylonas@yahoo.com
[2] University of Western Macedonia-Department of Agriculture, Koila Kozanis 50100, Greece; fpapathanasiou@uowm.gr
[3] Department of Agriculture, International Hellenic University, 57400, Sindos; lisaninou@gmail.com; lisaninou@agr.teithe.gr
[4] Advisor, Pavlou Mela 37, 57019, Agia Triada Thermaikou; anthitsipi@gmail.com
[5] Institute of Industrial & Forage Crops-ELGO DIMITRA, Kourtidou 56-58 & Nirvana, 11145, Athens; cpankou@gmail.com
[6] KIATO UNION IKE, Kleisthenous 4, 20200, Kiato Korinthias; gewrgia_vasil@hotmail.com
[7] AEGILOPS - Network for Biodiversity and Ecology in Greece Ano Lechonia, 373 00 Agria Volos; info@aegilops.gr

Abstract

The official designation of bean-vanilla and fava bean as a Protected Geographical Indication (PGI) product does not extend protection to their cultivated genetic material due to their non-inclusion in the National Catalog of Varieties [EC 2008/62/EK (official Greek Gazette) FEK 165/30-01-2014] as recognized traditional cultivars. This omission poses a significant risk to the genetic diversity of these varieties, potentially leading to the loss of their distinct characteristics, decreased yields, and compromised quality. The primary objective of this project is to ensure the preservation of these local varieties through a comprehensive study of their genetic variability. Additionally, it aims to adhere to official protocols for describing and subsequently registering these varieties in the National List of Varieties. This registration will not only enhance the product's value but also secure its unique identity. The experimentation phase of the project focuses on the evaluation of the landrace, with the goal of selecting plants that demonstrate improved productivity and quality. This work will present the parameters connected with the description of the unique identity of this product, its origin, its traceability, local agricultural practices and specific characteristics of the product that will contribute to this. The product will be utilized by Kiato Union IKE and at the same time the farmers will be trained for the good seed reproduction and production of the product. This initiative promises several benefits for the Agricultural cooperative and producers of Feneos.

Keywords: *Phaseolus vulgare L.*; *Lathyrus sp.*; landraces; added value; biodiversity protection

Acknowledgements: This work is funded in the context of the Agricultural Development Program 2014 – 2020 (Measure 16), and in particular Sub-Measure 16.1 – 16.2, the number of the approved project is M16SYN2-00320.

Fava Santorinis: Brining added value to a Protected Designation of Origin (PDO) product through the secure of the traditional cultivar and farmers networking

Elissavet Ninou[1], Ioannis Mylonas[2], Christos Alexandris[3], Elissavet Chatzivasileiou[4], Garyfallia Economou[5], Fokion Papathanasiou[6], Dimitrios Vlachostergios[7], Kostantinos Koutis[8] and Anthoula Tsipi[9]

[1] Department of Agriculture, International Hellenic University, 57400, Sindos; lisaninou@gmail.com; lisaninou@agr.teithe.gr
[2] Institute of Plant Breeding and Genetic Resources-ELGO- DIMITRA, Kourtidou 56-58 & Nirvana, 11145, Athens; ioanmylonas@yahoo.com
[3] Cooperative Union of Thiraic products, Pyrgos Kalistis, Santorini, PC 847 00; epidotiseis@santowines.gr
[4] Plant Pathology Laboratory, Faculty of Crop Science, Agricultural University of Athens, Iera Odos 75, Athens 11855 Greece. Votanikos; echatz@aua.gr
[5] Laboratory of Agronomy, Faculty of Crop Science, Agricultural University of Athens, Iera Odos 75, Athens 11855 Greece. Votanikos; economou@aua.gr
[6] University of Western Macedonia-Department of Agriculture, Koila Kozanis 50100, Greece; fpapathanasiou@uowm.gr
[7] Institute of Industrial & Forage Crops-ELGO DIMITRA, Kourtidou 56-58 & Nirvana, 11145, Athens; vlachostergios@elgo.gr
[8] AEGILOPS - Network for Biodiversity and Ecology in Greece Ano Lechonia, 373 00 Agria Volos; info@aegilops.gr
[9] Advisor, Pavlou Mela 37, 57019, Agia Triada Thermaikou; anthitsipi@gmail.com

Abstract

The characterization of “Fava Santorinis” as a PDO product does not protect the cultivated genetic material that produces this product since this is not registered as a traditional cultivar in the National Common Catalogue. The failure to include this information presents a significant hazard to the genetic diversity of these cultivars, potentially resulting in the loss of their distinct traits, reduced crop yields, and quality. Furthermore, it seeks to comply with established procedures for characterizing and subsequently register this traditional cultivar in the National List of Varieties. The "Santorini Fava" (Lathyrus sp.) is a renowned agricultural product unique to Santorini and, it has played a pivotal role in upholding the island's traditional agriculture. Today, the local agricultural cooperation continues the cultivation of this crop, preserving it as an indispensable facet of the island's cultural heritage. The objective of the project M16SYN2-00135 is to guarantee and secure this indigenous variety from which the PDO product in question originates by applying official description protocols and making use of the existing know-how for the description of the genetic material, the definition of the landrace and its description for registration in the National Catalog of Varieties. At the same time, the sustainable management of viral diseases and the rational management of its seed production will lead to an increase in productivity, its stabilization and ultimately its shielding. The product will be utilized by the cooperative contributing to the sustainability of the holdings and the prevention of commercial exploitation of the traditional variety beyond the area of origin based on the best practices for the preservation of the varieties.

Keywords: Fava Santorinis; *Lathyrus clymenum L.*; biodiversity protection; local varieties; added value

Acknowledgements: This work is funded in the context of the Agricultural Development Program 2014 – 2020 (Measure 16), and in particular Sub-Measure 16.1 – 16.2, the number of the approved project is M16SYN2-00135.

Digital Applications and Precision Agriculture in maze fertilization

Ioannis Mylonas[1], Dimitrios Katsantonis[1], Michalis Genitsargiotis[2], Elissavet Ninou[3], Dimitris Stavrakoudis[4] and Charalampos Petkoglou[2]

[1] Institute of Plant Breeding and Genetic Resources-ELGO DIMITRA, Kourtidou 56-58 & Nirvana, 11145, Athens, Greece
[2] Ergoplanning, Business planning, development and organization consulting, company, Thessaloniki, Karatasou 7, 54626, Greece
[3] Department of Agriculture, International Hellenic University, 57400, Sindos; lisaninou@gmail.com; lisaninou@agr.teithe.gr
[4] Laboratory of Remote Sensing, School of Forest and Natural Environment, Aristotle University of Thessaloniki, Greece

Abstract

In recent years, the foremost challenge in corn cultivation has been the escalating production costs, primarily driven by the high expenses associated with nitrogen fertilization. This issue has posed a substantial obstacle to the successful cultivation of corn. Consequently, there is an urgent need to introduce innovative technologies as a means to enhance producer income and improve overall efficiency. ELGO DIMITRA/IGBFP has developed an innovative approach to comprehensive fertilization management through the utilization of precision agriculture technologies. This approach involves the aerial mapping of fields using UAVs and subsequently integrating these maps into variable rate fertilizer spreaders (VRA). This service facilitates the optimal redistribution of nitrogen fertilization, resulting in increased yields while concurrently reducing costs. The program's pilot fields, totaling a minimum of 80 hectares, will incorporate both innovative management techniques and conventional fertilization methods. Within each field, the requisite quantity of nitrogen per spatial management zone will be determined, and the corresponding fertilization maps will be uploaded onto the VRA fertilizer applicators. Moreover, the initiative is anticipated to yield a substantial increase in profits for the K. Macedonia region in which ~ 60.000 hectares of maize field are grown. This increase is projected to amount to at least €6.5 million through augmented yields and reduced production expenses, thereby making a noteworthy contribution to the regional economy and the sustainability of crop cultivation. Additionally, the program offers the invaluable benefits of training farmers in innovative production systems with reduced resource inputs and judicious nitrogen fertilization practices, as well as preparing the agricultural sector for forthcoming alterations in the European Union's Common Agricultural Policy. ELGO-Dimitra/IPBGR, Ergoplanning and two farmers community of Central Macedonia, are cooperating under the PAA M16.1-16.2 project (M16SYN2-00974) to achieve this goal.

Keywords: precision agriculture; maize; fertilizer

Acknowledgements: This work is funded in the context of the Agricultural Development Program 2014 – 2020 (Measure 16), and in particular Sub-Measure 16.1 – 16.2 “Establishment and operation of Operational Groups of the European Innovation Partnership for the productivity and sustainability of agriculture.

Hydroponic cultivation in a greenhouse heated by by-products of a biogas plant

Georgios K. Ntinas[1], Dimitris Kouvas[2], Ioanna Chatzigeorgiou[1], Maria Ravani[1], Stavros Martinakos[1] and Panagiotis G Kougias[3]

[1] Institute of Plant Breeding and Genetic Resources, Hellenic Agricultural Organization-Dimitra, Thermi, 57001, Greece; gntinas@elgo.gr (G.N.)
[2] Scientact S.A. Thessaloniki, 54644, Greece
[3] Soil and Water Resources Institute, Hellenic Agricultural Organization-Dimitra, Thermi, 57001, Greece

Abstract

In the present work initial findings from a pilot-scale demonstration that explores the energy recuperation capabilities of a biogas plant for the purpose of greenhouse heating are presented. A modified gothic type greenhouse was constructed nearby the biogas plant premises so that the exhaust heat recovery exchanger between the biogas plant and the greenhouse will feed the second with thermal energy, taking advantage of the excess heat of the exhaust that would otherwise be discharged into the environment. The study examines the energy requirements of a greenhouse, cultivating hydroponic tomato plants, along with the technical characteristics of the combined heat and power (CHP) system employed. Based on the available construction and meteorological data for the specific region, after considering technical specifications of the utilized CHP, it is concluded that the efficiency of the heat exchanger used surpasses the heating requirements of the greenhouse facility.

Keywords: Sustainable greenhouse, circular economy, CHP system, renewable energy, remote control

Acknowledgements: This research has been co-financed by the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship, and Innovation, under the call RESEARCH—CREATE— INNOVATE (project code: T2EDK-04794, Green_BioHeat).