FORK-TO-FARM AGENT-BASED SIMULATION TOOL AUGMENTING BIODIVERSITY IN THE AGRI-FOOD VALUE CHAIN

BioValue

NEWSLETTER
Magazine

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Contents

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AXIA INNOVATION

1. Join our Stakeholder Forum

In BioValue we count on our stakeholders!

We need your opinions and expert views on all the aspects of our research. That's why we created the Live Value-Chain Stakeholders' Forum. The idea is to provide a safe space for interaction, and communication between the BioValue Consortium and the agri-food value chain players: from farmers and processors to wholesalers, retailers, policymakers, and of course consumers. The main target via this Forum is to facilitate networking, knowledge exchange, and interaction amongst the core stakeholders of BioValue.

The Live Value-Chain Stakeholders' Forum follows the concept of famous social media platforms such as LinkedIn and Facebook, where users can find each other, view the popural page, add each other to the friends list, and start sending personal messages among them.

The forum also enables its registered members to assess, and give feedback on the applicability of the findings produced with the help of the BioValue tool. For this purpose, the forum has a discussions function, the possibility of conducting polls, as well as public, and private dialogues.

1. Join our Stakeholder Forum

When navigating through the platform, users can find 4 main sections:

- "About the project". Here users will have the opportunity to open topics, create questionnaires, and engage in ongoing discussions relevant to our general project research topics.
- "BioValue Tool". Here users are invited to join the discussion regarding the technical/ administrative development of the BioValue tool as well as on the results obtained using the tool.
- "Value Chain". Here users can be informed, and provide feedback about the BioValue crops, the certification and labelling practices, and the results of the value chain analysis implemented within our project.
- "Pilot Cases". Here users are encouraged to provide their assessment on the pilot cases planned within.

If you are part of the agri-food value chain, come and join us!

Let's start to DISCUSS, to ENGAGE, to SHARE knowledge across all the different agri-food value chain expertise!

It doesn't matter if you are a researcher, a farmer, a retailer, a wholesaler, a policymaker, a consumer or even a developer,

All opinions are valuable for us!

Let's work together towards a sustainable and resilient agri-food system based on biodiversity!

Register here

2. BioValue Data Warehouse

What is a Data Warehouse?

A Data Warehouse (DWH) is a large collection of organized and clean data ready to help an organization to make decisions (also called data-driven decision making). It is a central repository that stores both historical and current data deriving from various sources. The data in the warehouse is transformed from raw data into high quality data using various "ETL or Extract, Transform, and Load" tools. ETL is the process of integrating data from multiple sources into a single data store, the DWH.

Once the data of interest is extracted, transformed, and loaded into the DWH they can be used to start doing analytics via the build-in analytics tools in the DWH or via a variety of different business intelligence (BI) platforms.

Using the DWH and BI tools, users are able to query data, and take out key learnings – many of which would not have been obvious without this DWH/BI combination. Using a BI tool on top of your DWH allows to visualize the data, and see patterns, trends, and correlations.

The BioValue Data Warehouse

For the BioValue project the reasons for creating a DWH can be summarized as follows:

- The data will be deriving from various sources
- The data need to be accessed, queried in complex ways, and analyzed with great efficiency
- The end users and tools will need to find structured, specific information from the data
- The data will be both current and historical
- The data will be aggregated, cleaned, and processed before rendered useful
- There is no need for live/on-line data to be used
- The tools implemented should be able to handle Big data

In BioValue, the DWH serves as the main repository for the data created and collected by the Project. It will also be used to ingest, transport, process, and store data generated by the BioValue tool, generating a cyclical process of data storage and supply. An example of this would be the simulations launched by the tool itself. The simulation processes need synthetic populations, among other components, to be executed. These synthetic populations need, in turn, to be fed with accurate data that would come from the DWH to store potentially useful datasets. Once the synthetic population is generated, it will be also stored in the DWH, as well as other elements that compose the simulation process, and the results obtained from it.

For the development of the BioValue DWH, the architecture requirements (functional and non-functional), and the architecture approach (scheme, DWH architecture) have been defined.

3. Our Pilot cases- Buckwheat

What is going to be cultivated within BioValue?

Several pilot cases have been designed aiming at spreading the underutilized and genetically diverse crops from small regions or islands to all over Europe and therefore enhancing the biodiversity of cultivations. The 7 pilot cases that have been selected as the respective underutilized species meet some of the following criteria: Water-energy efficient, environmentally resilient, high nutrition value, antioxidant-rich, protein-rich, gluten-free, high potential to enter in the food value chain, high potential to incorporate in the consumers shopping basket.

The first BioValue pilot case refers to Fagopyron esculentum L. commonly known as buckwheat. Some key facts of buckwheat:

- Buckwheat is a highly nutritious whole grain that is considered to be a superfood.
- Among its health benefits, buckwheat can improve heart health, promote weight loss, and help manage diabetes.
- Buckwheat is a good source of protein, fiber, and energy.

[Pilot Case #1] Fagopyron esculentum L. (Buckwheat)

Description: Buckwheat (Fagopyrum Esculentum) is a plant cultivated for its grain-like seeds and as a cover crop. Buckwheat is raised for grain where a short season is available, or because it is used as a second crop in the season. Buckwheat has a growing period of only 10-12 weeks.

Status: It can be grown in high latitude or nothern areas (Russia, China, Ukraine, France, Kazakhstan, Germany).

Main properties: High in crude protein with high biological value; Rich in iron, zinc and selenium; Rich in polyphenols; Rich in fagopyrin and Aromatic compounds.

Nutrition/Health: Gluten-free, rich source protein, dietary fiber, four B vitamins and several dietary minerals, with content especially high in niacin, magnesium, manganese, phoshorus. It is high in carbohydrates, including high dietary fibers and protein and low fat.

Advantages: High nutritional value, water-energy efficient, environmental resilient (does well on low-fertility or acidic soils, can be grown in high latitude or nothern areas), very short growing season, several culinary uses, gluten-free, high potential to enter in the food value chain, high potential to incorporate in the consumers shopping basket.

Utilizing the many benefits of this superfood, CAPNUTRA is working on the development of recipes and food dishes that are based on buckwheat.

4. Our novel food dishes and recipes

Within BioValue we are targeting to design novel food recipes, dishes, and innovative processed food products that incorporate augmented biodiversity in a way that is desirable for consumers.

New food product development is nowadays directed towards creating food dishes and products, based on consumer likes and dislikes. The most important quality trait of a novel product is satisfaction, sensory acceptability, perception, and acceptance of sensory qualities of new food dishes and products by consumers. As such, sensory evaluation becomes an essential and indispensable element in the process of developing new food dishes and novel food products. Recipes for novel dishes or new food products should meet the expectations of a certain number of consumers in terms of consumers' preferences, demands, sensory characteristics of a product, seasonality of ingredients, nutritional potential, the value of novel foods, and environmental issues.

The Capnutra team developed novel food dishes based on locally grown marginalized food crops that are climate-adjusted and more environmentally friendly. Recipes of novel dishes containing selected underutilized crops were created. The main goal was to create nutritionally correct, well-balanced, attractive novel dishes that comply with a healthy diet but are also well accepted by consumers, and likely to be integrated into their dietary routine. Recipe design was guided by physicochemical characteristics of the ingredients, their organoleptic and nutritional properties, palatability, existing and already well-accepted recipes based on similar food items, preparation complexity, geographical and cultural particularities with regards to food availability, culinary tradition, and dietary habits. The introduction of certain varieties of underutilized genetically diverse crops via novel food recipes and dishes contributes to the improvement of biodiversity both at the farm and on the plate.

Prototypes of novel dishes were prepared in the experimental kitchen at MAICh, Chania, Greece. Each recipe was blind tasted, evaluated, and scored on its intrinsic organoleptic quality. The taste evaluations were performed by 50 participants attending BioValue and sister project (Radiant, Cropdiva, and Divinfood) meetings. By the end of the year, several other sensory evaluation activities will be conducted in other countries including Hungary, Turkey, and France. According to the feedback, recipe design optimization will be performed to optimize sensory perception of the novel dishes to achieve satisfying flavor and aroma with appropriate texture and mouthfeel and to meet consumers' preferences and needs as much as possible.




5. Interview with CAPNUTRA

Tell us about your role in BioValue.

CAPNUTRA's role within the BioValue project is to assist in developing a food dish-driven approach to genetically diverse food products. What does it mean?

Simply put, CAPNUTRA aims to:

- Provide scientific evidence and promote the nutritional benefits of underutilized crop varieties, cultivars, and species.
- Develop recipes for novel food dishes and processed food products that meet the needs and preferences of consumers in terms of nutritional value and demands for nutritious, healthy, environmentally friendly, and diverse products keeping in mind the local/regional identity.
- Bring back the tradition of preparing and the pleasure of eating forgotten plants.
- Use underutilized crops and design recipes for new dishes and innovative food products that improve diet and support health and biodiversity in different local contexts.

What are the key messages that you would like to transmit to the BioValue target audience?

Underutilized crops possess exceptional nutritional quality, bioactive potential, and remarkable health benefits, so increased promotion, domestication, and commercialization of these crops should be highly supported.

1. Learn, investigate, increase awareness and knowledge about underutilized crops!

Underutilized crops have the potential to improve human well-being and improve people's lives in many other ways - providing additional food sources, protecting the environment, maintaining knowledge, promoting appreciation of locally available plants, ensuring sustainable land and water use, preserving biodiversity, improving quality of life and develop the local economy. As such, selected marginalized crops should be considered and implemented in the broader context of balanced and healthy diets.

2. Experiment, try different plants, various food combinations, eat more plants, create your own recipes!

Finally, marginalized and forgotten plant species are nutrient-rich and could help transform food systems, improve sustainability, reduce malnutrition, and contribute to global food security.

3. Help save the environment and ensure there is enough food for everyone! We can only do it together!

5. Interview with CAPNUTRA

What are the results of BioValue which you are anticipating the most?

The ultimate vision of CAPNUTRA is to:

- To increase consumer awareness and motivate consumers to change their eating habits and include more underutilized foods in their daily diets.
- To create nutritionally correct, well-balanced, attractive new dishes consistent with a healthy diet but are also well accepted by consumers, and likely to be integrated into their diet.
- To propose nutritional guidelines and recommendations for the food industry to increase biodiversity including key steps for successful market launch of new food products.
- To spread the following message nationally and internationally: the true power is in the hands of consumers, introducing underutilized crops and diversifying our meals could improve our health and save the environment!

6. News

INOTEK 2022 - EGE University
30th May, Turkey

On the 30th of May 2022, Prof. Dr. Murat Yercan, the team leader of EGE University met with the young scholars in an Agro-Innovative training camp titled INOTEK 2022 to present the BioValue project, in Izmir, Turkey. More than 30 young MSc and PhD students discussed how the BioValue tool will allow to augment biodiversity within the agri-food value chain, and asked Prof. Yercan the expected impacts of BioValue project.

BioValue at the Agri-food policy and CAP course
3rd - 9th June 2022, MAICH premises, Greece

During the week of the 3rd - 9th of June 2022, our coordinator, prof. Kostadinos Mattas, organized a weekly policy seminar about "Agri-food policy and the EU's common agricultural policy" at the premises of our partner MAICH- Chania. The seminar offered an excellent opportunity for CIHEAM students to understand their future mission in society, particularly in designing effective agro-policies. Around 70 postgraduates' students attended either in person or online.
One particular lecture was devoted to the BioValue project policy impacts entitled: "Agri-food policy and the CAP: Applications in EU-funded projects- The case of BioValue".

1st General Assembly in Limassol 12/5/22 - 13/5/22

INOTEK 2022 30/05/22

The Agri-food Policy and CAP course 03/06/22- 09/06/22

Annual General Assembly in Chania 12/09/22- 13/09/22

182nd EAAE Seminar 14/09/22- 15/09/22

6. News

1 Year of BioValue – Annual Meeting 2022
12th - 13th September, Chania, Greece

The BioValue consortium had its annual meeting on the 12th - 13th of September 2022 at the premises of our partner MAICh. The progress and work performed during the first 12 months of BioValue were presented and the next steps defined.
Using this opportunity and following the activities of WP7 CUT, EGE, AUTH, EMU and CONFAGRICULTURA, who are involved in the execution of our pilot cases, distributed the BioValue crops between them.

Launch of our Cluster

On the 13th of September we had the opportunity to meet our sister projects RADIANT, CROPDIVA and DIVINFOOD in person during our annual project meeting and share valuable information and knowledge while also to explore potential common activities and complementarities.

Our projects follow a very similar target: To showcase the benefits of agro-biodiversity at various levels and develop solutions to embed these benefits more effectively into farming practices and policy measures.

3rd World Conference on the Revitalization of the Mediterranean Diet
28/09/22- 30/09/22

9th Agrotica Conference
22/10/22

7th Executive Management Board Meeting
3/11/22

Innovation Hub Industrial Free Workshop
7/11/22- 11/11/22

8th Executive Management Board
December 22

6. News

182nd EAAE Seminar
14th - 15th September 2022, Greece

On the 14th-15th of September 2022 BioValue attended the 182nd EAAE Seminar - Sustainability via biodiverse agri-food value chains in Chania, Crete. We presented our first results to a broad audience of experts, stakeholders and other researchers eager to receive feedback and start conversations on our approach and methodologies.

The objective of the 182nd EAAE Seminar was to bring together scholars and researchers that will exchange ideas, practices and research initiatives that cover the current developments in biodiversity, sustainability, and the agri-food supply chain. The ultimate goal of these objectives is to assist in policy-making decisions in agriculture and the agri-food industry of the global economy.

6. News

3rd World Conference On The Revitalization Of The Mediterranean Diet, 28th - 30th September 2022, Bari

BioValue was present at the "3rd WORLD CONFERENCE ON THE REVITALIZATION OF THE MEDITERRANEAN DIET" in Bari during the 28th -30th September 2022 https://3mdconference.org/

Our coordinator, Prof. Mattas presented how our project contributes to a healthy diet and healthy environment and participated in a panel on the revitalization of the Mediterranean diet, where he explained how the BioValue project can offer new insights towards this direction.

More than 200 participants from all over Europe and Mediterranean countries participated.

FIND MORE NEWS AND INFORMATION AT OUR WEBSITE
https://www.biovalue-project.eu/

6. News

9th Agrotica Conference
22nd October 2022, Thessaloniki, Greece

Our coordinator, prof. Mattas, delivered a speech on biodiversity, as the main keynote speaker in the 9th Agrotica conference organised by the international fair organisation and the School of Agriculture of the Aristotle University of Thessaloniki. AGROTICA is the largest agricultural fair in the Balkan area and this year it was attended by 350 people including farmers, experts, CEOs of agricultural enterprises and policy makers.

BioValue at the SURFBIO Industrial Workshop
8th November 2022, online participation

BioValue participated in the Industrial workshop of the SURFBIO project. Our coordinator was invited as a key speaker in order to introduce our project under the food application block of the event.

We had the opportunity discuss about the loss of agrobiodiversity and the impact it has on human health, the soil, and the environment.

EGE University tested BioValue dishes
24th November 2022, İzmir, Turkey

The Ege University team has performed a sensory evaluation on our proposed novel food dishes including:

- Dandelion & tomato salad,
- Buckwheat and grass pea stew with eggplant,
- Baked eggplant and potato a lapapa,
- Lentils as an appetizer,
- Buckwheat pockets filled with walnuts and dried fruits.

Evaluation was done with more than 20 respondents in EGE University campus area. Respondents were university students, administrative and academic staffs. The results will be announced soon.

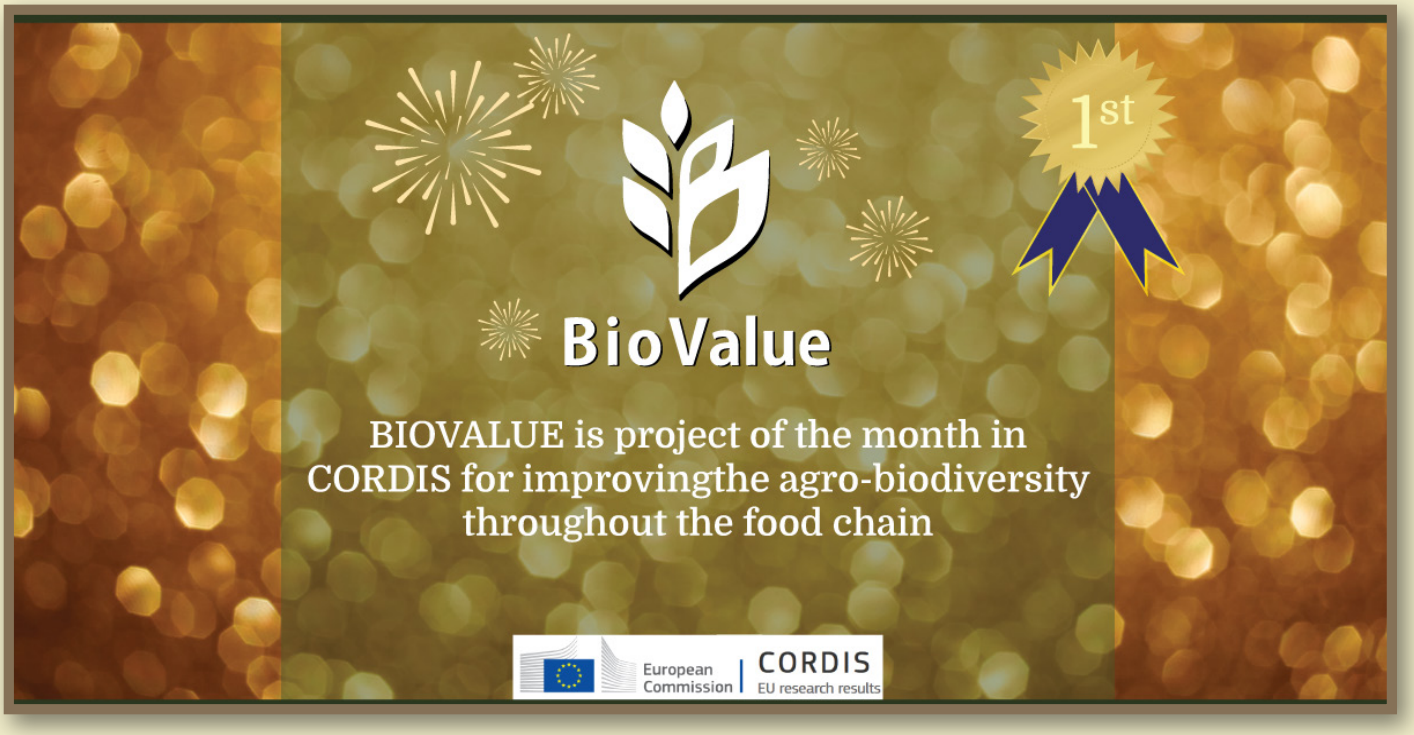
6. News

BioValue at the Agricultural student associations conference, 26th November, Thessaloniki, Greece

On the 26th of November 2022, the coordinator of BioValue project prof. Konstadinos Mattas, was invited as the main key-note speaker for the opening of the Agricultural student associations conference of two Universities: Aristotle University of Thessaloniki and University of Thessaly.

This was another great opportunity to share the BioValue approach with the scientific community of Greece and spread the word about our ongoing research for improving agro-biodiversity across the whole agri-food value chain!

CORDIS: Project of the Month 30th November 2022



BioValue is featured as the "Project of the Month" in the Community Research and Development Information Service (CORDIS)! CORDIS is the primary source of results by the European Commission and covers projects funded by the EU's framework programmes for research and innovation.
The article presents our fork-to-farm approach for introducing underutilised, genetically diverse crops into the food chain. Furthermore, the launch of our cluster in announced and our latest participation in events and conferences is highlighted.

Find it here.

7. Progress Update

Deliverables Submitted by:

ARISTOTLE UNIVERSITY OF THESSALONIKI

ECOZEPT

D1.1

Requirement No.1
AUTH
M10

D3.1

Conceptual framework for the analysis of the value chain and its effect on biodiversity
ECOZEPT
M12

D4.1

BioValue Datawarehouse
AUTH
M12

D11.2

Risk control mechanism plan
AUTH
M07

D11.5

Report on project meetings M12
AUTH
M12

7. Progress Update

Milestones Achieved by:

Cyprus University of Technology

EGE UNIVERSITESI 1955

NIBIO NORWEGIAN INSTITUTE OF BIOECONOMY RESEARCH

MS4

Selected & tested modelling tool
EGE, M12

MS6

Short-list of value chains to be analysed
NIBIO, M03

MS25

Acquisition, multiplication & distribution of selected germplasm
CUT, M12

The Consortium

BioValue

FORK-TO-FARM AGENT-BASED SIMULATION TOOL AUGMENTING BIODIVERSITY IN THE AGRI-FOOD VALUE CHAIN

From the beginning of our project and in order to ensure an efficient and articulate coordination and implementation, the BioValue consortium formed the following internal collaborative teams:

- **General Assembly:** All Partner Leaders form the project's General Assembly
- **Executive Management Board:** All Work package Leaders form the Executive Management Board (EMB)
- **Exploitation and Dissemination Team (EDT):** AXIA [Leader], AUTH, CIHEAM/MAICH form the EDT
- **Scientific Internal Committee (SIC):** AUTH [Leader], MAICH, JLU, CAPNUTRA form the SIC
- **Data protection officer:** Project's Data protection officer is IDENER

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