Venue: MCAST, Conference Hall, Engineering and Transport Institute, Block N

Agenda **5 December 2024: Coping with droughts in agriculture in the Mediterranean Region**	
08:30 - 09:00	Registration
09:00 - 09:15	Welcome address *In honour of the late Emeritus Prof. Dr. Nilgun B. Harmancioglu, Honored Faculty Member of Dokuz Eylul University, Former Founder and Director of Water Resources Research Center SUMER, Honored Member of European Water Resources Association (EWRA)*
09:15 - 10:00	30 years of environmental research driven by the aspirations and expectations of local communities *Anna Spiteri, Managing Director, IRMCo, Malta*
10:00 - 10:30	Achievements of the PRIMA funded Mara-Mediterra project, Safeguarding the livelihood of rural communities and the environment in the Mediterranean through NbSs *Eleanna Pana, Mara-Mediterra Project Manager, SWRI, Greece*
10:30 - 10:45	Coffee break
10:45 - 11:15	Research outcomes of the Xjenza Malta-TUBITAK funded UNIMED Project, UNIfied framework to cope with droughts under MEDiterranean climate change conditions *Dr. Filiz Barbaros, DEU DESUM, Türkiye*
11:15 - 12:15	Panel discussion: How to sustain EU funded research project legacies Panelists*: Dr. Vasileios Takavakoglou, Mara-Mediterra Project Coordinator, SWRI, Greece, Dr. Cem P. Cetinkaya UNIMED Scientific Coordinator, Deputy Coordinator of Technology Transfer Office of DEU, Türkiye, Dr. Ali Gul, Deputy Director DEU DESUM, Türkiye* Moderator: *Eng. Dirk De Ketelaere, Senior Researcher, IRMCo*
12:15 - 12:30	Wrap up and a look ahead at the agenda on second day (6 December 2024)

Agenda **6 December 2024: Coping with droughts and the uptake of Nature-based Solutions in the Maltese agricultural sector**	
08:30 - 09:00	Registration
09:00 - 09:10	Introduction
09:10 - 09:30	Challenges and opportunities in the uptake of Nature-based Solutions: The Mara-Mediterra experience *Dr. Vasileios Takavakoglou, Mara-Mediterra Project Coordinator, SWRI, Greece*
09:30 - 09:50	Resolving stakeholder conflict: the story of Lake Marmara *Dr. Cem Polat Cetinkaya, Teamleader DEU DESUM, Türkiye*
09:50 - 10:10	Historical evidence-based analysis of droughts in the Maltese Islands *Eng. Dirk De Ketelaere, Senior Researcher, IRMCo, Malta*
10:10 - 10:30	Development of a Survivability to Droughts Index *Dr. Mert Can Günaçtı, DEU DESUM, Türkiye*
10:30 - 10:50	Coffee break
10:50 - 11:20	Research insights on the impact of nature-based solutions on biodiversity and agroecosystem services *Dr. Mario V Balzan, Senior Lecturer, Institute of Applied Sciences, MCAST*
11:20 - 11:40	Viability of implementing sustainable agricultural practices in the Maltese context towards a healthier lifestyle *Dr. Byron Baron, Research Academic Centre for Molecular Medicine and Biobanking, University of Malta*
11:40 - 12:30	Panel discussion: Driving the uptake of policy recommendations Panelists: *Dr. Annalisa Cartabia, Senior Executive, Multilaterals - Internationalisation, Xjenza Malta, Christopher Ciantar, Project Coordinator – SYNECO, Dr. Justin Zahra, Senior Director EU Agriculture Program, Environmental Defense Fund Europe* Moderator: *Anna Spiteri, Managing Director, IRMCo, Malta*

Extended Abstracts

PRIMA
PARTNERSHIP FOR RESEARCH AND INNOVATION IN THE MEDITERRANEAN AREA

Funded by the European Union

Safeguarding the livelihood of rural communities and the environment in the Mediterranean through Nature-based Solutions

30 years of environmental research driven by the aspirations and expectations of local communities

Anna Spiteri, Managing Director, Integrated Resources Management Company Ltd. (IRMCo), Senglea, Malta, anna@environmentalmalta.com

Extended Abstract

Ever since setting up IRMCo in May 1994, my company had the privilege of taking part in an uninterrupted series of 20 EU funded international research projects, involving over 200 partners in 43 countries across the world. Evidently, our initial involvement in these projects mirrored our university education and skills in remote sensing, physical geography, hydrology and water resources management. Once a project is successfully retained for funding, it comes with tight deadlines for the submission of progress reports and deliverables. Although we never missed a deadline, we started wondering if these documents were just gathering dust somewhere or if there were indeed people benefiting from our research. The answer came soon enough, as we were studying a lagoon in Tunisia, the mayor of a nearby town called on us to find an explanation why its residents were afflicted with sickness way above the national statistics. Our research traced the source to an industrial estate some 40 kilometers away, whereby the waste of a tannery was washed all the way into the lagoon during heavy rainfall episodes. Our findings were greatly appreciated by the General Directorate for Wastewater Management (ONAS) who then installed a treatment plant to deal with the problem at source. From this experience we learned about the importance of early stakeholder involvement, collecting the expectations and aspirations of local communities to sustain their livelihoods. A training course in Participatory GIS with Colorado State University started off a series of projects in which we tackled conflicts over access to water and conflicts in coastal zone management, not just in Europe and the Mediterranean, but also in South America. This approach, when used with other participatory techniques, such as role-playing and brainstorming, inspires people to find common ground which is then drawn into a concrete action plan. We also fondly remember the Mineral Market places we organized in Poland, Finland, and in Tokyo, with the former filmed into a documentary by Euronews. Our 25-minute documentary on the Open Spaces in Malta's Grand Harbour set another milestone. Recent travel restrictions emboldened us to start publishing, yet with a difference. We started translating otherwise high-level scientific research outcomes into layman's language. Getting society behind a novel practice can be a huge leverage point, and that is what brings us renewed hope to effectively drive the wider adoption of Nature-based Solutions in agriculture in the Mediterranean Region, and hopefully in Malta as well.

"My mother told me that when young I would pick up rocks and put soil in my pockets and take them home and put them under my bed to add to the heap. By the age of 12 years, I knew what I wanted to study and what I wanted to work in. I loved everything about the natural environment and the study of geography naturally chose me. I had wonderful teachers in Malta and in London, in the Netherlands and in Belgium who shared with me their knowledge of the physical environment. Setting up IRMCo was a big milestone in my life… our forte was building consortia with great people we met in conferences or in my work in Brussels… 30 years later I look back with satisfaction at all the work we conducted in so many countries that welcomed us. I wish to leave a legacy behind here in Malta, even though I know that one cannot be a prophet in one's country. But I keep trying. My beautiful Malta."

Anna Spiteri has been the Managing Director of Integrated Resources Management Company Ltd. (IRMCo) since 1994.

Achievements of the PRIMA funded Mara-Mediterra project, Safeguarding the livelihood of rural communities and the environment in the Mediterranean through NbSs

Eleanna Pana, Soil and Water Resources Institute of Hellenic Agricultural Organization "DIMITRA", Thermi-Thessaloniki, Greece, eleannapana@gmail.com

Extended Abstract

Rural communities around the Mediterranean are increasingly voicing their concern about climate change impacts and the gradual degradation of soil and water resources that affect rural economies and the natural environment. Nature-based Solutions (NbSs) have been gaining importance as solutions which integrate societal challenges and nature conservation across different scales and landscapes. NbSs have the potential to offer long-term transformative pathways towards sustainability of rural Mediterranean landscapes as cost-effective solutions that can address environmental challenges while offering multiple socioeconomic benefits. In this effort, the launching of Living Labs around the Mediterranean within the framework of Mara-Mediterra project is aiming to open-up the NbSs innovation process to all active actors so that new ideas can circulate more freely and eventually be transformed into tools, services and practices that effectively address key environmental challenges of rural Mediterranean areas while ensuring the livelihood of local societies. The PRIMA-funded **Mara-Mediterra project** exemplifies the transformative potential of NbSs in safeguarding rural livelihoods and fostering environmental sustainability across the Mediterranean region. Addressing the dual challenges of environmental degradation and socio-economic vulnerabilities, the project has implemented integrated, community-driven approaches that leverage local ecosystems for resilience building. Key achievements include the restoration of degraded landscapes through agroforestry, the enhancement of water management systems via ancestral and innovative NbS techniques, and the promotion of agro-ecological practices. These interventions enable to strengthen ecosystem services, mitigate climate impacts, and improve food security for rural populations. The project has also facilitated knowledge transfer and capacity building through partnerships with local stakeholders, enabling scalable solutions tailored to the Mediterranean's diverse socio-ecological contexts. By prioritizing co-benefits for people and nature, the Mara-Mediterra project serves as a replicable model for achieving sustainability and resilience in vulnerable regions, aligned with global development and environmental goals.

"As a child growing up in a small rural town, I would spend hours helping my grandparents in their citrus and olive orchards. The trees, weathered yet resilient, felt like the heartbeat of our community—providing not just food but a way of life. I remember the hushed worry in conversations among adults during years of drought or sudden storms. 'What will happen if the land fails us?' they would ask, their voices heavy with concern. Those early memories planted a seed in me—a deep curiosity about how communities like ours could continue to thrive despite environmental challenges. Years later, while studying geology and environmental science, I discovered the concept of Nature-Based Solutions (NbSs). It was like finding a missing piece: a way to not just protect our environment but to empower communities through sustainable practices."

Eleanna Pana is the Project Manager of Mara-Mediterra project and research associate in the Soil and Water Resources Institute of Hellenic Agricultural Organization "DIMITRA" in Greece.

Research outcomes of the Xjenza Malta-TUBITAK funded UNIMED Project, UNIfied framework to cope with droughts under MEDiterranean climate change conditions

Dr. Filiz BARBAROS, Dokuz Eylül University, filiz.barbaros@deu.edu.tr

Extended Abstract

The Mediterranean, recognized as a climate change hotspot, is grappling with intensifying droughts and water scarcity. This study examines historical rainfall data (1960–2020) and applies drought indices (SPI and RDI) to evaluate patterns in precipitation and drought severity. Results indicate a 6.6% decline in annual rainfall over 60 years, with projections of an additional 11.9% decrease by 2050. While the frequency of droughts remains stable, their duration and magnitude have grown significantly, especially at longer time scales (12 and 24 months), threatening water availability and ecosystems. Regional variations reveal uneven impacts. Menemen, Türkiye, faces drastic rainfall reductions (up to 32% annually) and is at risk of becoming arid by 2050. In Barcelona, Spain, the combination of reduced rainfall and rising temperatures signals a transition toward semi-arid conditions. These disparities stem from factors like local climate patterns and topography, highlighting the need for localized responses. Long-term datasets further confirm the intensifying severity of droughts, revealing substantial intra-regional variations within the same river basins, which global models often fail to capture. Rising temperatures across the region amplify drought impacts by increasing evapotranspiration rates, compounding water scarcity, especially in arid and semi-arid zones. Even minor rainfall reductions in these areas severely affect agriculture and ecosystems. Short-term droughts (3 and 6 months) typically coincide with dry summer seasons and have less direct impact on crop yields, but the persistence of long-term droughts poses critical risks to water sustainability and food security. This research underscores the importance of combining historical evidence with climate model projections to better understand future risks. While historical data highlight worsening trends, integrating localized data can improve predictions and guide more targeted mitigation strategies. Localized approaches are particularly critical to addressing the vulnerabilities of agriculture, urban water supplies, and ecosystems. In conclusion, the Mediterranean is becoming drier, with longer and more severe droughts driven by declining rainfall and rising temperatures. These trends demand urgent implementation of drought mitigation and adaptation measures to safeguard the region's water resources, agriculture, and ecosystems against the mounting threats posed by climate change.

"As a child raised by her grandparents, I grew up with the mindset that one must always be frugal. Being brought up by a generation that has experienced scarcity, I inherited a strong sense of conserving resources in every aspect of life. For that little child, even though I had never personally experienced a water shortage, water was a resource to be deeply valued. Years later, finding myself working within the field of water engineering was therefore no coincidence. Whether the topic was social, cultural, or even sportive, I was always drawn to analytical solutions within the contexts. Today, at this stage in my life, being able to contribute to making water—*a source of life*—sustainable and ensuring its availability for future generations is the most meaningful achievement for me. By analyzing long-term historical data with analytical methods, transforming it into knowledge, and contributing to the development of policies, I aim to help future generations access at least as much water as we do today. This, to me, is the most rewarding point I have reached so far."

Filiz Barbaros lectures on water resources protection at the Dokuz Eylül University in Türkiye.

Challenges and opportunities in the uptake of Nature-based Solutions: The Mara-Mediterra experience

Dr. Vasileios TAKAVAKOGLOU, Soil and Water Resources Institute of Hellenic Agricultural Organization "DIMITRA", Thermi-Thessaloniki, Greece, v.takavakoglou@swri.gr

Extended Abstract

Nature-based Solutions (NbSs) have been acknowledged and promoted in several important international development agendas. However, the uptake of NbSs presents both significant challenges and promising opportunities in the Mediterranean area. One of the primary goals of the PRIMA funded Mara-Mediterra project has been to explore the challenges for the adoption and mainstreaming of NbSs in the Mediterranean with emphasis on 5 study areas, i.e. in Algeria, Egypt, Greece, Lebanon and Turkey. The key challenges and opportunities have been revealed through a critical analysis of interviews with an aggregate of 25 decision/policy makers along with an aggregate of 467 replies to a value-attitude-perception survey addressed to farmers. The analysis brings the spotlight on key issues that affect the adoption of agri-environmental practices and eco-engineering solutions that are able to address key societal challenges in rural areas. Through this analysis, a sound understanding has been obtained of key priorities for recommendations and improvements of policy and governance schemes as well as the planning of targeted future activities. Mediterranean countries share several common governance issues that affect the adoption of NbSs including the fact that the concept of NbSs is not adequately integrated in existing strategies, and in national policies and planning. Other obstacles include the limited financing, the fragmentation of responsibilities, as well as the lack of effective participation of citizens in the decision-making process. Overall, this points to the need for strengthening a cooperation culture. The wide variations in the development models adopted by Mediterranean countries do not allow a "one size fit all" approach for the improvement of national governance schemes and relevant policies. Through the drawing up local action plans and targeted policy recommendations for the respective study areas, the Mara-Mediterra project aspires to serve as a model of how to effectively navigate these obstacles and leverage the opportunities presented by NbSs to create more resilient and sustainable ecosystems.

"As an agronomist, I have always been passionate about sustainable natural resources management and environmentally friendly agriculture for the benefit of rural societies. Through the Mara-Mediterra project, I have witnessed firsthand how collaboration among stakeholders and technical expertise can reveal the effectiveness of agro-ecological and eco-engineering NbSs towards the sustainable development of rural Mediterranean areas. However, the wider uptake of Nature-based Solutions (NbS) is not without its challenges—limited awareness, funding constraints, and regulatory barriers often stand in the way. The identification of existing barriers and challenges to be addressed, is a critical step towards the embracement of NbSs in the Mediterranean and the green transformation of rural Mediterranean areas".

Dr. Vasileios Takavakoglou is the Coordinator of Mara-Mediterra project and senior researcher in the Soil and Water Resources Institute of Hellenic Agricultural Organization "DIMITRA" in Greece.

Resolving stakeholder conflict: the story of Lake Marmara

Dr. Cem Polat Çetinkaya, Dokuz Eylul University, cem.cetinkaya@deu.edu.tr

Extended Abstract

Lake Marmara, located in the Gediz River Basin, has historically played a crucial role as a wetland and a key source of irrigation for agricultural production. However, poor water management decisions, increasing water demand, and the impacts of climate change have led to a series of adverse events, culminating in the lake's complete desiccation. Initially expanded to support irrigation projects, the lake significantly boosted agricultural productivity and contributed to the local economy. By the 1960s, Demirköprü Dam and Lake Marmara became the primary irrigation sources for the basin.

The construction of Gördes Dam, coupled with leakage issues in its reservoir and conveyance systems, drastically reduced water inflow to Lake Marmara, causing it to dry out completely by 2020. This ecological collapse triggered severe irrigation water shortages, increased soil salinity, and reduced crop yields in the Menemen Plain. These cascading effects not only diminished agricultural productivity but also adversely impacted the welfare of local farmers. The loss of Lake Marmara further resulted in the degradation of ecosystem services and significant biodiversity decline. The lake's drying also exacerbated conflicts among stakeholders dependent on its resources, particularly between agricultural users, fishermen, and environmental conservation efforts.

In the PRIMA funded Mara-Mediterra project, the DEU research team focused on a more sustainable dynamic water allocation strategy from the Gördes Dam. The sectoral demands (domestic, agricultural irrigation and minimum ecological flow) are evaluated in an integrated manner by sophisticated and combined hydrological and water balance models, different allocation scenarios are tested under climate change conditions (RCP 4.5 and 8.5). Allocation strategies enabling the restoration of the Lake and preservation policies for the wetland have been discussed with various decision-policy makers and local stakeholders. This confirmed that our proposed solution is a plausible and acceptable solution according to all parties involved.

The story of Lake Marmara underscores the necessity of integrated and participatory approaches in water management to resolve conflicts, balance competing demands, and ensure sustainability while preserving ecological integrity.

"I grew up very close to Marmara Lake. During my childhood, the sight of the lake, the birds within it, the boats on its surface, and the fishermen made me think of a magical fairyland. I had many relatives in the villages around the lake, and played a lot in their vineyards. In fact, I learned to swim for the first time in a pool formed by the spring waters originating from Akpınar, where there was also a restaurant by the water's edge. Over the years, I began working on water resources management in academia. Marmara Lake and the Gediz River Basin it lies in have always been central to my research. In 2021, while preparing the Mara-Mediterra project proposal, I decided to select Marmara Lake, which was already facing problems, as a Living Lab in Türkiye. When the lake completely dried up in 2022, I realized how right that decision was. One of my current life goals is to help to restore the lake to its former state, ensuring the preservation of this wetland and witnessing the return of migratory birds to the area"

Cem Polat Çetinkaya lectures on water resources management at the Dokuz Eylul University in Izmir Türkiye.

Historical evidence-based analysis of droughts in the Maltese Islands

Eng. Dirk De Ketelaere, Senior Researcher, Integrated Resources Management Company Ltd. (IRMCo), Malta, dirk@environmentalmalta.com

Extended Abstract

Manuscripts on Malta's water supply resources such as those produced by Osbert Chadwick (1894), and T.O. Morris (1952) attest to a series of severe drought events on the Islands during the 1840s and 1860s. The present analysis attempts to reconstruct these events through the use of the Standard Precipitation Index. This approach employs monthly rainfall data to determine the frequency, duration and magnitude of drought events, and can be applied at different time scales. Droughts brought into evidence at the 12- and 24-month time scales are considered as having impacted on spring discharges and groundwater levels, whereby the magnitude of such impact is governed by the duration and the severity of the drought. The analysis employs the homogenized rainfall data series over the Rabat-Dingli plateau covering the period 1841-1990 produced by Michelle Normand (1991) in conjunction with the homogenized rainfall data series, based on the records collected by the Malta Meteorological Office, over the period 1929 until present. A comparison of the findings is made for each span of 30 years of observations, starting from 1843-1873, and ending with the period 1993-2023. Being hydrological years, the analysis covers the period from October 1843 to September 2024. Earlier this year, in the context of the Xjenza Malta Tubitak funded UNIMED project, the same analysis was conducted for the period 1960-2020. The latter led to the conclusion that although the frequency of droughts remained the same, the duration and magnitude of droughts increased significantly when comparing the last 30 years to the 1960-1990 span as the reference period. The present analysis demonstrates that the 1993-2023 period mirrors the severe droughts during the 1843-1873 period. It also demonstrates that, overall, there is a remarkable evenness in the frequency, duration and magnitude of droughts in Malta for the past 180 years.

"I joined the Malta Water Works Department as a consultant in April 1988. Being invited to take part in a 5-year study of the Islands' freshwater resources would be enticing to any budding hydrologist, but I remain immensely indebted to the mission experts from the Bureau de Recherches Géologique et Minières (BRGM), the French Geological Survey. Their hydrogeologist, Serge Puyoo, guided on the Islands' many spectacular karst features, both above and below ground! Surely, a most rewarding privilege is to have walked some 30 kilometers underground reading the salinity levels at short intervals while verifying the depth and location of the galleries collecting water from the mean sea level aquifer. The BRGM database expert, Yves Barthelemy, guided me on working out a meticulous set of meta data for the hydrological database which I had started compiling already prior to the study. My guesstimate that it would take someone 10 years to digitize all water-related records meant that I was assigned 5 highly qualified women data entry operators to complete the job, yet another privilege. Still, the BRGM hydrologist, Michelle Normand had another surprise expertise for me in store. He convinced me that were many more raw data archives to be discovered and took me on weekend expeditions to bring these to light. The data records we unearthed expanded my initial inventory two- to three-fold, ensuring the data entry operators remained employed for the entire duration of the study!"

Dirk De Ketelaere is a Senior Researcher with Integrated Resources Management Company Ltd., IRMCo, Malta

Development of a Survivability to Droughts Index

Dr. Mert Can Günaçtı, Dokuz Eylul University, mert.gunacti@deu.edu.tr

Extended Abstract

The study introduces the Survivability from Droughts Index (SDI), a comprehensive framework designed to enhance drought management strategies in river basins. The SDI integrates the dimensions of water, energy, food, and ecosystem (WEFE Nexus) with economic, social, and environmental sustainability pillars. It incorporates four sub-indices: Perception, Vulnerability, Adaptability, and Recoverability, which represent stages of drought engagement and resilience.

The outcomes of the presented research, which is a PhD Thesis supported by the UNIMED project, focus on the Gediz River Basin in Türkiye. The UNIMED project is funded by the 2022 Joint Call for R&I projects of Xjenza Malta and the Scientific Technological Research Council of Türkiye (TÜBITAK). The study includes hydrologic modeling, land use change projections, and drought risk assessment methodologies. Advanced tools such as HEC-HMS and Kaplan-Meier estimators are utilized to simulate water resources, predict future scenarios under RCP 8.5 climate conditions, and assess the likelihood of drought events. In the scope of the UNIMED project, the SDI is being calculated for Malta as well.

Key findings emphasize that improving SDI sub-indices enhances agricultural sector survivability, particularly in regions where resource degradation is critical. Stakeholder engagement, including farmers and local experts, played a pivotal role in indicator selection, data validation, and result interpretation.

This novel index not only validates historical drought occurrences but also supports policymakers in identifying and prioritizing drought mitigation measures. By offering a structured approach to assess and manage drought risks, the SDI provides a valuable tool for promoting sustainable water resource management and safeguarding agricultural livelihoods.

The findings of the PhD Thesis, which feed into the UNIMED project, enable a comprehensive assessment of the combined outcomes. The present and future scientific bilateral cooperation research projects involving Malta and Türkiye will support the mitigation of local and national water resources management issues.

"As a child of the Mediterranean region, I have always been fascinated with the Mediterranean culture, tradition, people, and especially the Sea. Growing up in a middle-class family, I have been taught to appreciate every resource I use, including water. When I was a student, the topics of climate change and the degradation of soil and water were already very current topics as they are today. That was why I wanted to study water resources management and hydrology, to be able to engage with this global challenge and participate in any way I can."

Mert Can Günaçtı lectures on hydrology and water resources management at the Dokuz Eylül University in Türkiye.

Research insights into the impact of Nature-based Solutions on biodiversity and agroecosystem services

Mario V Balzan, Institute of Applied Science, Malta College of Arts, Science and Technology. Email: mario.balzan@mcast.edu.mt

Extended Abstract

Nature-based Solutions (NbSs), as defined by the European Commission, are actions inspired by, supported by, or copied from nature to address societal challenges in ways that benefit both biodiversity and human well-being. NbSs hold particular importance for the agroecosystems of the Mediterranean region, where challenges such as climate change, land degradation, and biodiversity loss threaten agricultural sustainability.

This presentation explores the concept of NbSs and provides an overview of recent research on their application to enhance biodiversity and agroecosystem services in Malta and other Mediterranean countries. At the local scale, we examine the impact of NbSs on biodiversity, focusing on plant and insect diversity, and including pollinators and natural enemies, alongside an assessment of their effects on crop pollination and natural pest control. Furthermore, the influence of landscape composition and configuration on biodiversity and ecosystem services is analysed, emphasizing the importance of landscape-scale planning and design when implementing NbSs in agroecosystems.

Finally, by integrating research findings, we highlight the synergies and potential trade-offs associated with NbSs in achieving the dual goals of ecological restoration and agricultural productivity. This work provides valuable insights for policymakers and stakeholders, emphasizing the need for informed strategies to maximize the benefits of NbSs.

"As an applied ecologist with a multidisciplinary background in environmental sciences, my passion lies in understanding how human activities impact biodiversity and how biodiversity, in turn, supports human well-being. With a PhD in agroecology and having carried out research on the topic in several countries, this journey has deepened my interest in nature-based solutions, particularly in Mediterranean agroecosystems, where biodiversity holds the key to resilience and sustainable agriculture. My work aims to bridge science and practice, offering insights that benefit both ecosystems and the communities that depend on them "

Mario Balzan is a Senior Lecturer in ecology, biodiversity and sustainable development at the Institute of Applied Science, Malta College of Arts, Science and Technology.

Viability of implementing sustainable agricultural practices in the Maltese context, towards a healthier lifestyle

Prof. Byron Baron, Centre for Molecular Medicine and Biobanking, University of Malta, byron.baron@um.edu.mt

Extended Abstract

Over the past decade, the European Union (EU) has developed extensive measures aimed at enhancing agricultural sustainability and resilience across its member states. However, incorporating these EU directives into Maltese legislation presents significant challenges due to the lack of local field data and adapting policies and strategies from larger member states is ineffective due to the unique Maltese context. The distinct environmental, economic, and social factors in Malta necessitate tailored approaches that reflect local realities. To support the transition of Maltese agriculture towards becoming a more sustainable and resilient sector, ongoing research efforts are being made to collect essential data on soil health, water resources, crops, wild plant species, and pollinators, as well as to assess the effectiveness of innovative technologies and sustainable practices. This comprehensive data collection is crucial for guiding policy adaptations and practical implementations that align with Malta's specific agricultural needs. Given that agricultural land constitutes a substantial portion of the Maltese natural landscape, enhancing the sustainability of farming practices will yield significant ecological and social benefits. Healthier fields contribute not only to biodiversity and ecosystem stability but also to the production of higher-quality local food. This, in turn, promotes human health and well-being by providing nutritious, locally-sourced produce and fostering a cleaner, more biodiverse environment. Ultimately, the shift towards sustainable agriculture in Malta is not solely the responsibility of farmers and policymakers; it requires the active participation and support of the entire community. Agricultural sustainability impacts everyone, as it underpins both our livelihoods and cultural heritage. Achieving the necessary transformation demands a collective effort, fostering a shift in culture and mentality that values and integrates sustainable practices into daily choices.

"I have been involved in cancer research for over a decade, studying various tumour types and drug resistance mechanisms. The research focus is always on finding cures, whilst efforts to strengthen prevention have been very limited. Many gastrointestinal cancers have a significant environmental component, largely linked to dietary choices. To take a comprehensive approach to health, it is essential to prioritise prevention as much as or even more than treatment. However, there is a notable lack of local agricultural research that connects to health. Thus, driven by my longstanding research interest in bats and their decline due to human activities, particularly the use of pesticides in intensive farming, I have chosen to devote more time to collecting local field data and testing sustainable agricultural practices."

Byron Baron undertakes research on protein changes in human cells and their implications in colorectal cancer at the University of Malta.