VIENNA, AUSTRIA SEPTEMBER 18-21, 2023

Balanced Diversity in Aquaculture Development

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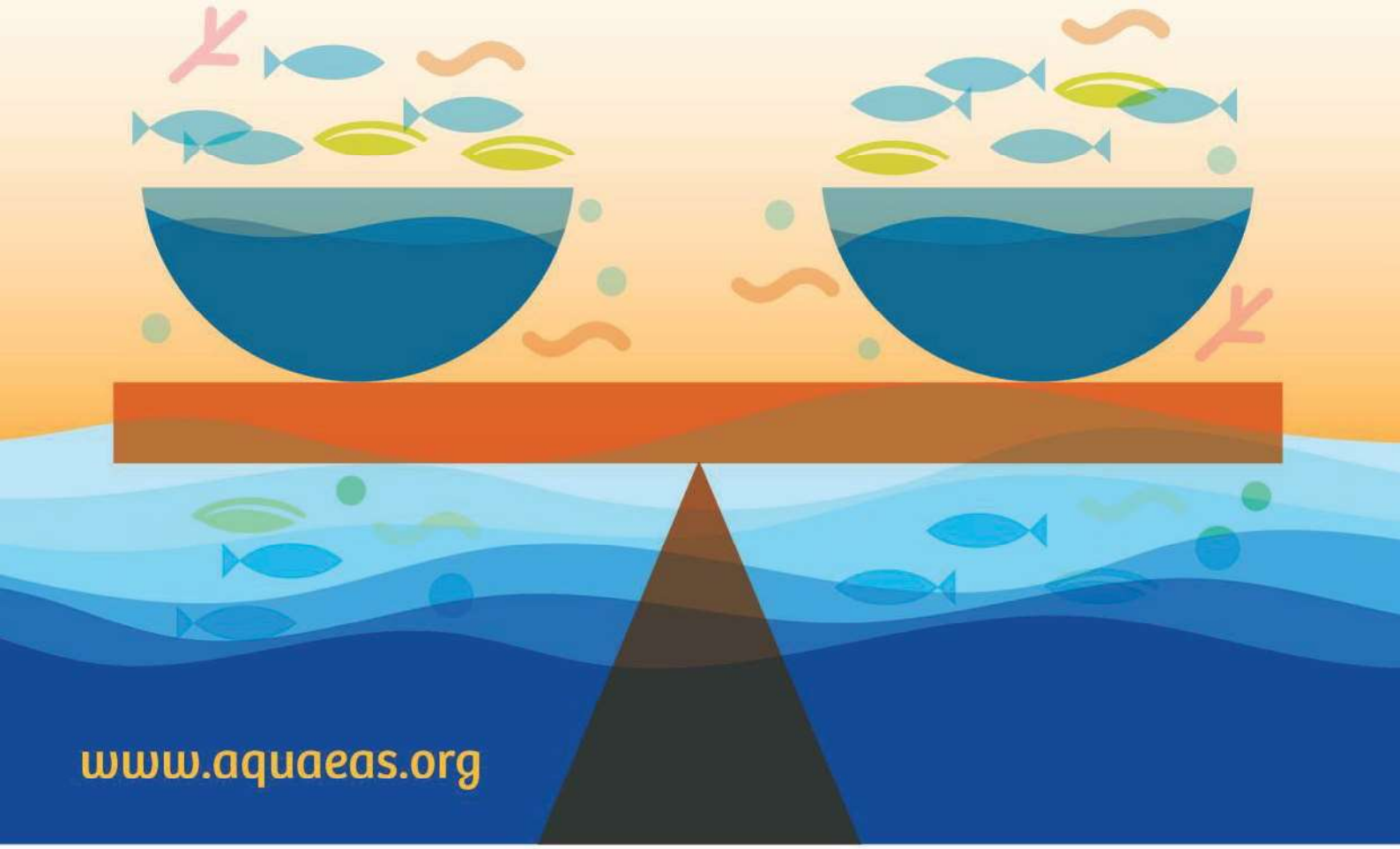

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Welcome to Aquaculture Europe 2023 in Austria's iconic capital Vienna

"Balanced Diversity in Aquaculture Development" is the theme of Aquaculture Europe 2023 (AE23). This theme surely highlights the potential for aquaculture, already representing the world's most diverse farming practice, to further grow sustainably utilising the opportunities that lie in diversity.

Food from aquaculture contributes to Sustainable food systems at a local and global level. Since global aquaculture production is dominated by a few dozen species, major efforts are being made to promote species diversity. To succeed, we need responsible use of resources, circular food systems, improved efficiency, and increased resilience against future challenges such as diseases and climate change. All issues that require further diversification in aquaculture also beyond species level. AE2023 will provide a great opportunity for discussing new and innovative ideas to address challenges and opportunities as well as up scaling already proven concepts and solutions of diversification in aquaculture industry.

What makes EAS annual events unique is bringing together scientists, industry leaders and entrepreneurs, governmental bodies, and regulators from all over Europe and sharing the same passion for aquaculture. This year theme of diversification will be reflected in the 32 scientific sessions over 3 days ranging from genomics to socioeconomics, covering the full scope of European aquaculture scientific disciplines and species. AE2023 will also feature an international trade exhibition with close to 170 booths, student sessions and activities, satellite workshops and updates on EU research.

In addition, two special events will take place: The AE2023 Industry Forum entitled "TRANSITION: Towards new technologies and new markets" focus on freshwater aquaculture especially targeted towards farmers from Austria, Germany, Switzerland, Hungary and Czech Republic. A unique opportunity to learn more from and about freshwater aquaculture for all AE23 delegates.

This year's program AE23 Innovation Forum is dedicated to new innovations on the theme of balancing diversity within aquaculture and the wider blue economy. The Innovation Forum includes a series of specific pitching sessions, showcasing research driven innovations as well company-driven initiatives that lead to innovation for the benefit of the entire sector. The program is exciting for all of us with a passion for knowledge that is used by and make an impact for industry and society.

This year we are expecting close to 2000 attendees with more than 540 oral presentations. Results presented as Eposters will also receive special attention at this year's conference - and the last slot in each session before the breaks is dedicated to a "Poster Focus." More than 600 scientific abstracts were received and these have been reviewed by the session chairs and integrated into an impressive programme by Bela Urbanyi (MATE, Hungary) and Nikos Papandroulakis (HCMR, Greece) as AE2023 Program co-chairs. Thank you for your hard work! I'd like also to thank our Steering and Local Organising Committees who gave their time and efforts to make AE2023 possible as for my colleagues on the Board of the EAS with several newly appointed directors. A big thanks also to our Gold Sponsors Biomar, Session Sponsors DSM and support from Meeting Destination Vienna. We are also grateful for the communication channels offered to us by our Media Partners. I hope you will enjoy the event, the people, and the science. I'm excited about the diverse aquaculture program we have for you, and I look forward to seeing you all in Vienna!

Bente E. Torstensen – EAS President 2022-2024

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ABSTRACTS

THE NEWRIFF PROJECT: NEW LIFE FOR RICE BY-PRODUCTS AND AGRICULTURAL WASTES: INSECTS BIOCONVERSION FOR FISH FEED PRODUCTION

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Introduction

The current meat and fish production systems are not sustainable, and the protein content of animal feed plays a key role in this regard. This holds true also for trout, a fish reared specie characterized by a high feed conversion rate, where the consumption of fishmeal is responsible for serious environmental issues (e.g., overfishing, loss of biodiversity) and economic concerns due to the constantly increasing price of these commodities. Meanwhile, the agriculture and agro-food industry generate a considerable amount of organic waste and by-products whose management is often problematic and expensive.

Through the insects rearing, these substrates can be locally re-utilized and valorized to produce alternative protein for the rearing of monogastric animals, reducing the impact on the environment related to animal feeding, organic waste, and by-products management. More in details, the use of insect meal as an alternative aquafeed protein source is an opportunity to exploit the efficient bioconversion by insects of agricultural by-products and other organic waste into an animal feed resource. In a circular perspective, this allows to reduce the use of traditional high-impacting protein sources and, at the same time, the impact of conventional management these matrices. In Lombardy, a region with high population densities, and intense agricultural activities and agri-food industries, a large amount of organic waste is available. Valuing this biomass by reusing it as a resource for an alternative feed appears to be an important opportunity for several actors involved in the supply chain. Rice (Oryza sativa) is a major crop in the region in terms of area, value of production and, above all, quantity of by-products resulting from processing.

The newRIFF project

newRIFF project aims at testing the suitability for recovery and enhancement of paddy rice processing by-products, and to use them, together with other organic waste, as a substrate for the cultivation of insects to be used in turn for aquafeed formulations. The tests of the use of the feed thus produced will be carried out with the rainbow trout (*Oncorhynchus mykiss*) as a pilot species, due to the importance that this fish has in the Italian aquaculture sector, particularly in Northern Italy.

The project aims to fill the following knowledge gaps: (i) to test the productivity of insects, in particular black soldier fly (*Hermetia illucens*) and yellow mealworm (*Tenebrio molitor*), raised on a mix of different matrices consisting of by-products of paddy rice processing and other organic by-products and wastes; (ii) to evaluate, by in vivo trials, different diets having increasing levels of insect meals (mix of meals produced from the two species)in substitution of conventional protein sources in rainbow trout farming. Fish performance and diets digestibility will be used to evaluate the effectiveness of the insect meal mix inclusion; (iii) to evaluate consumer acceptance and economic, environmental and social performance of trout farming by replacing traditional proteins (e.g. soybean meal and fish meal) with insect meal produced using rice by-products and other organic waste as insect rearing substrate; (iv) to identify best practices regarding the use of insect meal as a source of protein water feed and summarize all the information gathered during the project in order to develop guidelines and policy recommendations.

newRIFF involves different activities: (i) identification of the best substrate mix and optimal growing conditions for insects, (ii) insect meal production by rearing the two selected insect species, (iii) feeding trials on trout considering 3+1 diets: a control diet (the one usually utilized in commercial livestock farms) and alternative ones with different level of insect meal (i.e. 25, 50 100% of fish meal replacement), (iv) the evaluation of the nutritional, sensorial and food safety features of the produced trout in order to assess if the quality trout filet is affected (and if yes, how) using insect meal, (v) the sustainability assessment with a Life Cycle Thinking approach. The main benefits arising from the implementation of the newRIFF are schematized in fig.2.

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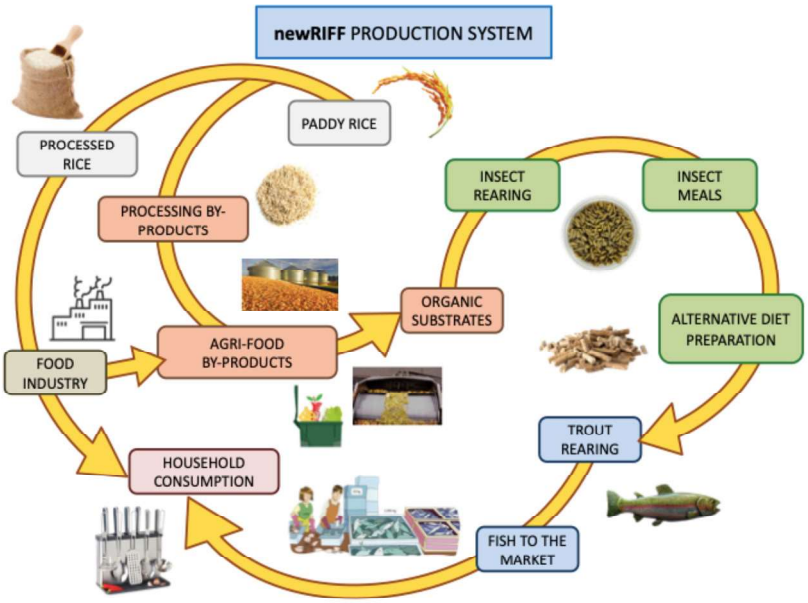

Fig 1. Production system that will be tested during the project

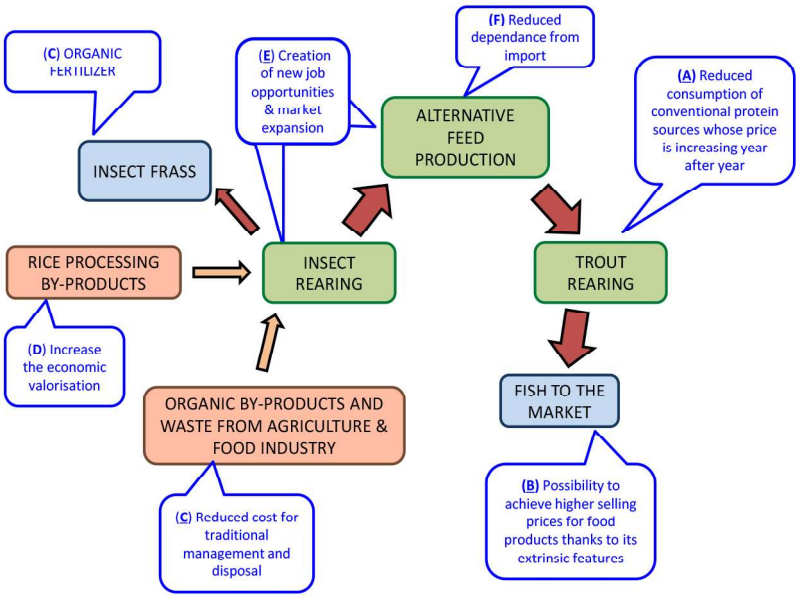

Fig 2 – Impacts on economic environment related to the newRIFF solution.

Acknowledgements
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