NEWFEED

Turn Food Industry By-products into Secondary Feedstuffs via Circular-Economy Schemes

Grant Agreement number: 2013, Call 2020 Section 1 Farming IA

D1.4 Advisory Board Meetings Minutes

Deliverable number D1.4

Work Package WP1	Alternative feed value chains appraisal through a multi-actor approach
Task 1.2	Advisory Board
Task Leader	UAGA
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Foreword

The work described in this report was developed under the project NEWFEED: Turn Food Industry By-products into Secondary Feedstuffs via Circular-Economy Schemes (Grant Agreement number: 2013/ Call 2020 Section 1 Farming IA). If you wish any other information related to this report or the NEWFEED project please visit the project web-site (www.newfeed-prima.eu) or contact:

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Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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Introduction

An Advisory Board acting as a knowledge sharing round table has been set to analyse and validate the project objectives and results and the hurdles and bottlenecks of the whole value chain (raw material availability; valorisation strategy; feed requirements; consumer awareness). It consists of 2-3 representative members of the main sectors or stakeholders involved in the recovery and exploitation of food by-products or potentially affected by the project's results: 1) Food companies 2) Logistic & valorisation companies 3) Feed producers 4) Livestock 5) Public authorities and Policymakers 6) Research Organizations and Universities 7) General public.

- **Food companies:** they expose the actual problem to be solved and how they can implement or not the solutions proposed inside the project or improve them by adapting to their specifically needs. They could also give their opinion in case of some pre-treatments are needed in their facilities.
- **Logistic & valorisation companies:** This sector is one the main beneficiaries of the project results because they will be able to lead the commercial exploitation of the new meals produced in other replicable regions. Expertise in logistic and/or food waste treatments, food by-product valorisation, meal producer will ensure that the solutions adopted in this project are feasible and can be carried out in other treatment handling, processing or how the new product can be commercialized. Also, the conditions to ensure the economic feasibility of the process can be discussed (volume of product, range of performance, etc).
- **Feed producers:** They are the final users of the produced and validated meals. They will help the consortium on the requirements needed to include new ingredients in their formulations, food security specific regulations, economic issues, as well as the conditions that the new processed by-product must to satisfy to ensure a correct use.
- **Livestock:** They give the point of view of the end consumers of animal feeds and they could help in the future success of the project by demanding the implementation of their results.
- **Public authorities and Policymakers:** Both National and European public authorities and policymakers will give the institutional opinion about the suitability of the Valorisation scheme from the legal point of view and how they can promote its implementation each in its field of application: available economical instruments, etc.
- **Research Organizations:** The solution obtained in this project, based on the reuse of spent coffee ground by-product, serve as an example to investigate other organic wastes that can be reused for animal feed. In addition, they can compare similar studies with project´s results with the aim of joining forces to achieve project goal.
- **General public:** They participate by giving their opinion. Consumer associations at national and European level will be contacted.

This Advisory Board will meet several times during the project lifetime:

- **1st Advisory Board meeting (M6, December 15th, 2021)** was used to analyse and validate the objectives and expected results of the project. The project scope and aims were described in detail to Advisory Board Members.
- **2nd Advisory Board meeting (M20, February 15th, 2023)** whose purpose is to validate the proposed solution before the scaling up of the Valorisation strategies and Validation of alternative feeds
- **3rd Advisory Board meeting (M36, June 12nd, 2024)** will focus on getting the stakeholders feedback about Exploitation Strategy and encouraged them to participate in the new business activity.

Agenda and Attendance

Meeting agenda:

Wednesday 12nd June 2024

Time	Activity	Speakers
10:00 – 10:15	Welcome to the meeting	AZTI
10:15 – 11:15	Presentation of the project: objectives and expected results: 1) Use of grape stem from wineries for dairy sheep and cattle 2) Use of orange peel from orange juice industries for dairy sheep 3) Use of olive cake form olive oil industry by-products for poultry	 NEIKER UOWM HUSD
11:15 - 11:50	Discussion	All assistant
11:50 - 12:00	Main conclusions and closing of the meeting	AZTI

List of Stakeholders who attended the meeting:

Participant	Sector	Region
1	Feed	Europe
2	Feed	Europe
3	Feed	Greece
4	Public authorities	Turkey
5	Agri-Food	Spain
6	Agri-Food	Spain
7	Public authorities	Spain
8	Feed / Livestock	Spain
9	Academia	UK
10	Livestock	Greece
11	Researcher Livestock	Greece

List of members of the consortium who attended the meeting:

Company	Region
UAGA	Spain
UAGA	Spain
AZTI	Spain
AZTI	Spain
AZTI	Spain
AZTI	Spain
Neiker	Spain
CESFAC	Spain
NTUA	Greece
NTUA	Greece
UOWM	Greece
SVET	Greece
HUSD	Egypt
HUSD	Egypt
METU	Turkey
METU	Turkey

Meeting Minutes

The meeting begins at 10:00 with the **welcome AZTI** to the 3rd Advisory board meeting of the PRIMA NEWFEED project and thanks the attendees for their participation.

At 10:05, **AZTI** starts a round of presentations where each consortium participants gives some details: name, company, sector represented and their participation in the project. Then, he asks Advisory board members to make a brief presentation indicating: Name; Company; Sector they represent and their Interest in the project.

Then he starts making a brief presentation of the projects' objectives and the three value chains. Subsequently he defines the specific objectives of the project:

- *Optimize and scale up*
- *Test and validate*
- *Validate intermediate ingredients*
- *Assess sustainability*
- *Market replicability*
- *Communicate and disseminate*

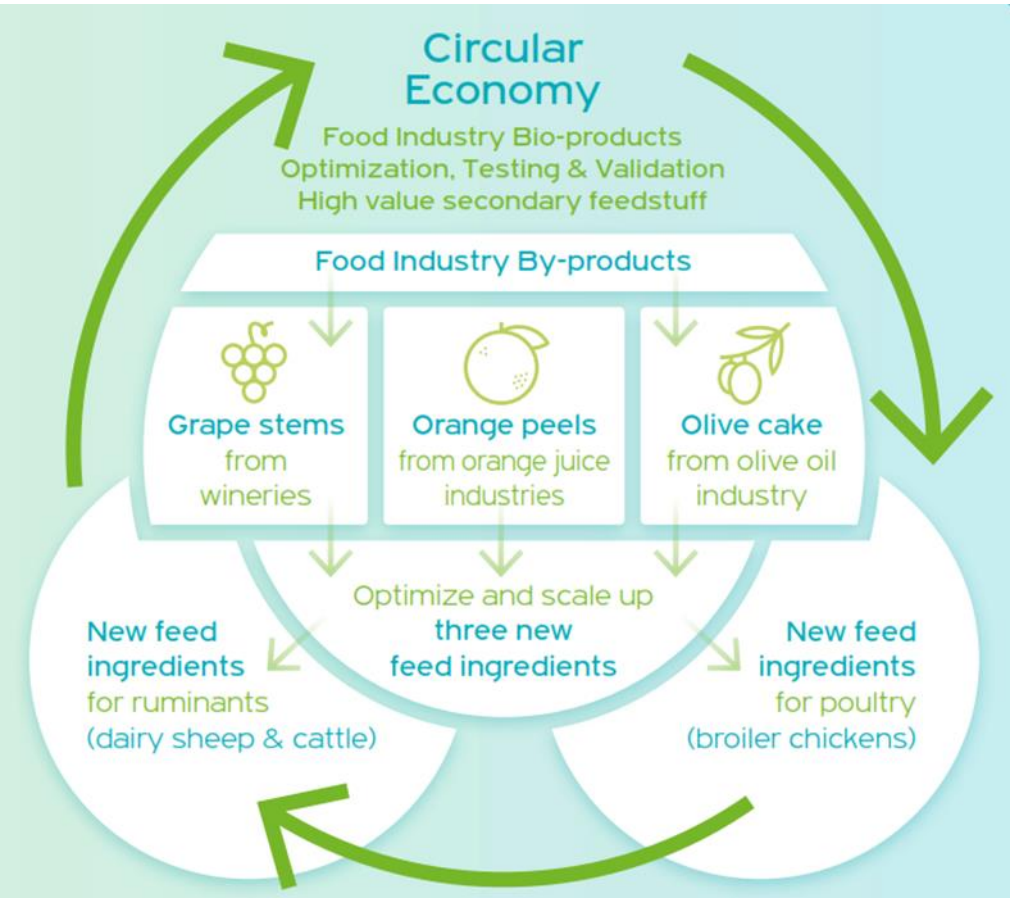

FIGURE 1: GENERAL SCHEME OF PRIMA NEWFEED PROJECT

AZTI gives a brief explanation about the Work package structures and the chronogram.

At 10:20 **AZTI** plays three videos developed by the case study leaders about the valorisation process proposed in each case.

- **Case study 1:** Assessment of the use of grape stem from wineries as a second-generation feedstuff to produce a new feed ingredient for ruminants (dairy sheep and cattle). https://www.youtube.com/watch?v=YMJZnvwuN_E&t=2s
- **Case study 2:** Assessment of the use of orange peel from orange juice industry to produce an improved feed ingredient for ruminants (dairy sheep). https://www.youtube.com/watch?v=O5NmpaZR340
- **Case study 3:** Assessment of the use of olive cake from olive oil industry to produce an improved feed ingredient for poultry (broiler chicken). https://www.youtube.com/watch?v=tcGNNNW6hpE

At 10:30 **NEIKER** presents the feed efficiency trials developed by NEIKER. The presentation includes the results and the main conclusions obtained from the trials on the inclusion of hydrolysed and non-hydrolysed grape stem in sheep and cow diets compared to a control one. The main conclusions are:

In dairy sheep animal trials:

- Hydrolysing grape stems does not provide any productive advantage that can justify the process.
- Grape stems can be formulated up to 10% in the concentrate without impairing dry matter intake, milk production or composition, methane emissions or production efficiency.
- Consumers cannot distinguish curdles produced with milk obtained from ewes consuming 10% grape stems.

In dairy cows:

- Including 10% grape stem in the concentrate improves concentrate intake and milk fatty acid profile towards a human healthier one.
- But does not Improve productive performance or change milk composition or reduce enteric methane emissions.
- It does not affect milk consumer acceptance.

At 10:45 the **University of Western Macedonia (UOWM)** presents the feed efficiency trials developed by HAO-Demeter. The presentation includes the results and the main conclusions obtained from the trials on the inclusion of fermented and non-fermented orange peels in dairy sheep diets compared to a control one. It also includes the main results and conclusions of the yoghurt elaboration using the milk obtained from the sheep fed with experimental diets. The main conclusions are:

- Regarding milk yield production: Appears that Processed treatment ewes exhibited higher feed digestibility.
- Regarding milk fat content: Unprocessed orange peel feed could increase acetic acid production in the rumen, thus increasing fat composition in milk and finally milk fat content.
- Regarding milk colony forming units: Both Unprocessed and Processed orange peel feeds probably contain antimicrobial factors that suppress colony forming in milk.
- Regarding yoghurt production:
    - Supplementation of ewes' diet with either processed or unprocessed orange peels did not affect the quality characteristics of the produced yoghurts in comparison to yoghurts produced from milk from ewes fed on a conventional diet.
    - Including either unprocessed or processed orange peels in the sheep's diet did not affect the proximate composition in terms of macronutrient contents (i.e., protein and fat) or the fatty acid composition.
    - Regarding colour there were no differences in the Whiteness Index - the major parameter affecting consumer perception towards product quality.

- Analysis of textural properties revealed that the yogurts produced from the milk of ewes receiving the non-hydrolysed orange peels were firmer, more cohesive, and stickier during the first two weeks of storage.
- Taste panel analysis showed that there were no differences between treatments. Overall acceptability of yoghurt samples from all treatments exceeded the score 4.

At 11:05 **Heliopolis university (HUSD)** presents the feed efficiency trials. The presentation includes the results and the main conclusions obtained from the trials on the inclusion of fermented olive cake with and without the addition of herbal mixtures in poultry compared to a control diet.

The main conclusions are:

- when added to an herbal mixture and fed to broilers for up to 10, 20 and 30 % of their diet during the first 38 days of life, is a valuable and safe element.
- Additionally, FOC, with herbal mixture led to better growth performance in terms of vitality. The broiler chicks in this study exhibited similar development and feed consumption across all groups

At 11: 20 **AZTI** launches **a round of questions** and moderate **a round table** in which all participants discuss about the main important challenges of the project.

The main important questions-suggestion-doubts of the meeting are:

- **Feed industry association** comments that he would have liked to obtain more information about the ingredients produced, their composition and the effect on the environmental impact rather than the effect on the quality of the products obtained, such as milk and meat. He also comments that in case study 1, grape stem has been included, but in order to do so, less valuable ingredients have been reduced and corn and soybean have been increased. The latter ingredients have a high environmental impact.
  - **METU,** in charge of the environmental impact analysis, answers that the environmental impact analysed to produce both the grape stem ingredient and the sheep and cows feeding diets is very small, lower than the production of the control feed. The environmental impact associated with these new feeds is negligible. Applying hydrolysis or fermentation processes increase the impact.
  - **METU** adds that the cost associated to the valorisation of these by-products is lower than current processes: landfilling, composting.
  - **NEIKER** also answers that the main objective when they did the animal trials is to obtain an experimental diet with the same protein, fat and energetic composition to be comparable to the control diet. He also adds that grape stems are poor in protein, fat and energy so that he had to include those ingredients to compensate its inclusion.
  - **AZTI** adds that in the case study 1 we are talking about a 7% of improvement and the reduction of the footprint for a 10% of inclusion in the feeds, that it is quite a good result.
  - **AZTI** adds that we must consider that we have formulated diets not to reduce the environmental impact, but to validate the use of alternative ingredients in animal feeding. He sees the point **HUSD** has mentioned before, depending on the objective, reduce the cost or reduce environmental impact or both, we can try to formulate the diets in a different way. But the first objective was to validate the use of these ingredients in animal feeding and to check the animal performance and sensory parameters of the obtained products.

- **A feed legal expert** requests further clarifications in relation to the impact on animal health. If we have analysed antinutritional compounds or other contaminants in the alternative ingredients and if we have analysed their possible effect in animal health, rumen microbiota.
    - **NEIKER** answers that they have the approval of an ethical committee to conduct the trials. He also explains that he did not observe any effect in somatic cellular counts.
    - **HUSD** answers that they have analysed the toxicity of the ingredients and that they found that there was not presence of toxic compounds.
    - **UOWM** answers that the animal trials were approved by an ethical committee as well. She also adds that they analysed the presence of aflatoxins in the formulated diets and that as they didn't slaughter the animals, they couldn't do this kind of anatomical analysis.

- **Feed industry association** comments that if the animal efficiency tests have been positive, there should not have been any problems in the health of the animals as this would affect efficiency. He also comments that he is surprised that the ingredient in case study 2, orange peel, could be included as a substitute for protein ingredients. He thought it was an ingredient with little nutritional value and would like to have had more information on the ingredients produced in terms of nutrition. He also asks **HUSD** why he has added herbal mixtures to the experimental trials and whether this might not lead to confusion in interpreting the results.
    - **HUSD** replied that he added the herbs because their use may be of interest in organic farming and may help to improve animal health and reduce the use of medications.
    - **NTUA** comments that the use of orange peels as a substitute for protein ingredients was possible because the fermentation process converted sugars into protein, and this also improved the rumen digestibility of the mixture.

- **Feed industry association** asks to **NTUA** which is the nitrogen source in the orange peel ingredient.
    - **NTUA** answers that they took advantage of the already existing nitrogen content of the orange peels and that they also add extra nutrients to the fermentation process.

- **An expert from climate innovation agency** asks if the improvement of the environmental impact has been better or worse than expected and if they have considered the effect of not having treated it in the usual way (incineration, landfill...).
    - **METU** answers that they considered alternative disposal options for calculating the environmental impact.
    - **AZTI** repeats that in the case study 1 we are talking about a 7% of improvement and the reduction of the footprint for a 10% of inclusion in the feeds, that it is quite a good result.
    - **AZTI** repeats that we must consider that we have formulated diets not to reduce the environmental impact, but to validate the use of alternative ingredients in animal feeding. He sees the point **HUSD** has mentioned before, depending on the objective, reduce the cost or reduce environmental impact or both, we can try to formulate the diets in a different way. But the first objective was to validate the use of these ingredients in animal feeding and to check the animal performance and sensory parameters of the obtained products.

- **A participant from a non-profit organization that fights against food losses and food waste** asks if the project partners have identified the main challenges or barriers to scale up the presented case studies.
    - **AZTI** answers that as mentioned in the presentation, we are currently addressing market-related issues from a business perspective to implement this solution at a larger scale. One of the main challenges we face is that some of the raw materials we use do not have high

market value, impacting the overall profitability of our business activities. However, we aim to contribute positively to society by reducing food waste. We achieve this by sourcing local raw materials from nearby farmers and exploring alternatives to imported materials, which can be unreliable due to supply fluctuations. While attracting investment interest in this area remains challenging, I believe the current landscape favours exploring innovative ingredients. Recent supply issues with cereals and soy underscore the need for alternative solutions in the feed sector and livestock farming. In summary, now is an opportune time to introduce these ingredients to the market.

Once finished this discussion, **AZTI** thanks all the people for attending and participating as advisory board members and appreciates all the comments and feedback, they can provide to make real these new business models that are being developed in the project.