Research Summary Sheet

Summary of Deliverable 1.7

An updated inventory of the valuable agro wastes, their current and potential utilization and market opportunities

Context and Challenges

The objective is to summarize the experiences of the project and to prepare an inventory of valuable agro wastes and their current and potential utilization opportunities. Besides, we intend to evaluate and summarize the microbiological safety of the developed NoAW products.

We aim to give a more in-depth view about the perception of the new NoAW solutions, explore potential application possibilities and factors that can enhance and promote the uptake of these new processes, technologies.

To reach these objectives different methods were applied.

- ✓ *A template for inventory was prepared, and based on previous deliverables and research summaries, the product sheets were compiled in a concise and easy to read format. The product sheets were sent to the project partners involved in the development of the product, who reviewed and finalized the descriptions.*
- ✓ *Based on the process flowcharts of the NoAW products, systematic microbiological risk assessment was carried out.*
- ✓ *Stakeholder surveys were designed and carried out in Europe and the Chinese region to get feedback about the approaches and products developed in the project.*
- ✓ *Interviews were organized with a special focus given for application possibility in the agricultural environment.*

Results and applications

Inventory of NoAW solutions for the valorisation of valuable agro-wastes was prepared, which introduce briefly current and potential utilization. These descriptions can be used for communication and promotion purposes in a later phase or after the end of the project.

Based on these descriptions, a stakeholder survey was organized to identify measures, which can promote these products. The results confirmed that according to the stakeholders' opinion there are differences in the perception of the efficiency of these factors that can help the successful implementation of innovative solutions based on agricultural wastes.

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*The answers revealed that improvement of regulations on **biobased polymers** is needed to promote these new solutions. Clear environmental claims and the development of legislation on food contact materials, considering biodegradable materials, would be beneficial. Public incentives are also considered important to allow the acceptance of these products. On the other hand, while some of the stakeholders highlighted that a well-defined schedule for ban/taxes on fossil-based products would drive producers towards bio-based production, others noted that bans/taxes would be less effective measures than incentives.*

Considering business aspects, the need for sufficient information and the possibility of testing the materials is an essential point in the promotion of biomaterials based on agricultural wastes. Stable supply was identified as an important aspect as well. Stakeholders noted that economic viability and cost competitiveness is a paramount issue for implementing these new solutions.

*In the case of **biofuels (biomethane, biohythane)** the stakeholders agreed that promoting raw material that is not competitive with food or a clear environmental claim can contribute to the uptake of this solution. Remunerations and incentives on feed-in tariff also were foreseen as a potential tool for promoting this technical solution. The question of taxes on fossil-based fuels raised some disagreement, some of the stakeholders do not believe that that could be a good solution. Most of the stakeholders agreed that the continuous supply and adequate information about the advantages for the producers (e.g: technical needs and com-plexity) are essential for promoting these methods. Besides, they noted, that motivating the vehicle industry and the development of engines that can use biobased gas is essential.*

*The safety, quality and labelling of **biofertilizers** and information for producers about the advantage are the most effective measures for promoting acceptance of biochar. Some doubts were raised by the stakeholders about the complexity, marketability of this technique, and it was suggested to explain better the competitive factors of this solution and providing evidence about the feasibility.*

The risk assessment of the microbiological safety of the products and related technologies shows that by the implementation of appropriate practices, for all of them – antibacterial coating for active packaging made of green tea, potato protein from potato juice, pectin from potato residue, succinic acid from fruit and vegetable by-products, biocomposites/polyphenols from vine shoots and from grape stalks and vine shoots, and PHA production from bio-waste and sludge - the microbiological safety can be ensured. In addition to the proper process control of these technologies, several additional food safety measures are necessary.

The conclusions of the pre-survey of agricultural applications are heterogeneous among the applications.

For the mulch film and horticultural pot, there is an interest for this product and the possibility to produce the application with the NoAW PHBV. Different strengths, weaknesses, limitations, opportunities and challenges for the NoAW PHBV have been described by the experts and will be validated and deepened by the next steps of the study.

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For the coated fertilizer, the conclusions are different. The opinions of the experts were varied and we encountered difficulties to organize interviews and find information. It can be justified by different factors: it is a narrow and specific market with few actors and experts, low diffusion of information, especially on environmental and innovative aspects, and important stakes. Moreover, the information collected did not allow us to identify a real interest for our product. Linked to these conclusions, the study of this application will not be pursued in the next steps.

Breakthroughs, benefits and added value

Stakeholder surveys provided valuable feedback about factors, strategies that can contribute to the successful implementation of agricultural waste valorisation.
A feasible, productive process and cooperation between peers are essential for the success of eco-initiatives. Economical reliability, technology maturity, legal aspects, or market of the product developed can be critical factors in the successful implementation of eco-initiatives. Stakeholders expressed that technical descriptions, practical guides, and a review of relevant legislation would help the uptake of the new solutions.

Further information on NoAW project: http://noaw2020.eu

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