

Upcycled Food from brewery spent grain in Halandri

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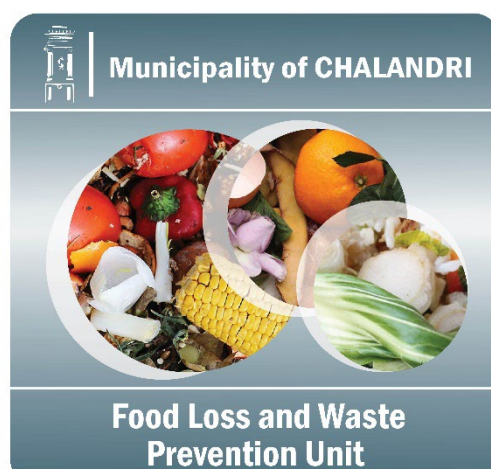
Surplus food, which is avoidably or unavoidably generated in the food supply chain, should be used for human consumption according to the food resources management hierarchy.

Surpluses of eatable and edible material may be used in two possible ways, food redistribution and food upcycling. Some of the by-product materials of the food and beverages manufacturing processes have significant nutritional and functional value and are edible, but not eatable. Brewers' spent grain (BSG) or brewery's spent grain, a major by-product of the brewing industry, constitutes such a by-product. Spent grain is quite rich in protein (20%) and fiber (70%) on dry basis, and is produced abundantly; on the average 20% of BSG is produced per 100L beer, amounting to approximately 31% of the original malt mass.

The Food Loss and Waste Prevention Unit of the Municipality of Halandri has identified the importance to assist a local brewery in the fight against wasting useful resources during its research on food waste hotspots.

The "Anastasiou" brewery is the first microbrewery of Greece located at the heart of the centre of Halandri.

The Food Loss and Waste Prevention Unit of the Municipality of Halandri concluded that BSG could be upcycled to new food for human consumption. In collaboration with the local brewery, two local HORECA businesses and the Department of Chemical Engineering of the National Technical University of Athens the feasibility of the use of the grains as a raw material for bakery products production has been explored.



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On April 2024 the spent grain was used to replace flour for the production of cookies and bread that were tested by the public on two occasions (living labs), demonstrating an upcycling practice which is the result of B2B collaboration.

For the production of each kg net weight of cookies, 360 grams of spent grains were used, which corresponds to 1312 kcals, 890 kg of CO₂ eq. of greenhouse gases and 2.6 m³ of water saved according to the Food Loop App calculations (<https://www.foodrus.eu/empowering-consumers-to-tackle-food-waste-introducing-the-food-loop-app/>)

Questionnaire surveys were conducted on both occasions and the results are encouraging towards achieving public acceptance for the specific type of upcycled food. 65% of respondents were not aware of the notion of food upcycling before the event and were first informed about food upcycling via participating in the open learning lab. 100% of the respondents expressed their satisfaction from the food upcycled product that they tasted and 71% replied that they were likely to choose to buy cookies and bread containing BSG. The brewery is now discussing with the two HORECA (Bread BS and Preppy Experience) their future collaboration that can bring the upcycled products (bread and cookies) to the market.



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