Hungarian residents' habits and willingness to separate food waste at the source

Atilla Kunszabó[1], Miklós Süth[1], Dávid Szakos[1], Gyula Kasza[1]

[1]Department of Applied Food Science, Institute of Food Chain Science, University of Veterinary Medicine Budapest, Budapest, HU-1078, Hungary
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Presenting author email: kunszabo.atilla@univet.hu

According to our previous research based on physical measurements, Hungarian households generate a total of 594 thousand tons of food waste annually (Kasza et al., 2020). A significant portion of this (more than 40%) could be avoided with greater consumer awareness (Szakos et al., 2021; Vittuari et al., 2023). The unavoidable food waste category includes biowaste that was never intended for human consumption (i.e., not suitable for eating), such as bones, coffee grounds, and banana peels (Kasza et al., 2020). Due to traditional food preparation and consumption habits in European countries, the potential for preventing this fraction is limited (Kunszabó et al., 2023). Therefore, in such cases, the focus should be on the application of sustainable and hygienic recovery or recycling methods (e.g., composting or anaerobic digestion), either at the source or after separate collection. According to the EU's Waste Framework Directive (2008/98/EC), Member States are required to ensure the separate collection of biowaste generated by households or its recycling at the place of generation by 31 December 2023. In Hungary, the construction of a centrally organized national biowaste collection system began in 2024, with a voluntary participation scheme (Government Decree 559/2023 (XII. 14.)). Scaling up the system to nationwide collection is currently in progress. At present, the collection system is available in large cities and certain districts of the capital, Budapest.

The aim of this research was to determine the amount of food waste being composted in Hungarian households and to assess the population's willingness to use the central biowaste collection system.

The research was based on physical food waste measurement supported by a waste diary (FUSIONS, 2016; European Commission, 2019). The survey took place between November and December 2023, involving 501 households and covering 1,388 residents. Participants were required to measure and record the amount of food waste in a diary for one week, noting disposal methods (mixed waste collection, sewage, animal feeding, composting, or other disposal).

Within the sample, a separate food waste collection experiment was conducted with 120 households. Participants placed food waste that would otherwise end up in the mixed waste bin separately in a small (6-liter) kitchen caddy. At the end of the one-week experiment, household residents' impressions were assessed through a questionnaire.

The results indicate that composting is a popular food waste management method among Hungarian residents, which is also supported by previous findings (Kunszabó et al., 2022). More than 25% of the food waste generated during the one-week measurement period was composted, a rate that has remained stable since 2021. However, there is room for further improvement, as 41% of the measured food waste was suitable for composting.

The largest amount of compostable biowaste fell within the unavoidable category, including inedible vegetable and fruit parts (68.03%), coffee grounds (9.74%), tea bags (4.01%), and eggshells (4.00%). Additionally, 18.33% of avoidable food waste was compostable. Another key finding was that 15.40% of total food waste was used to feed household animals.

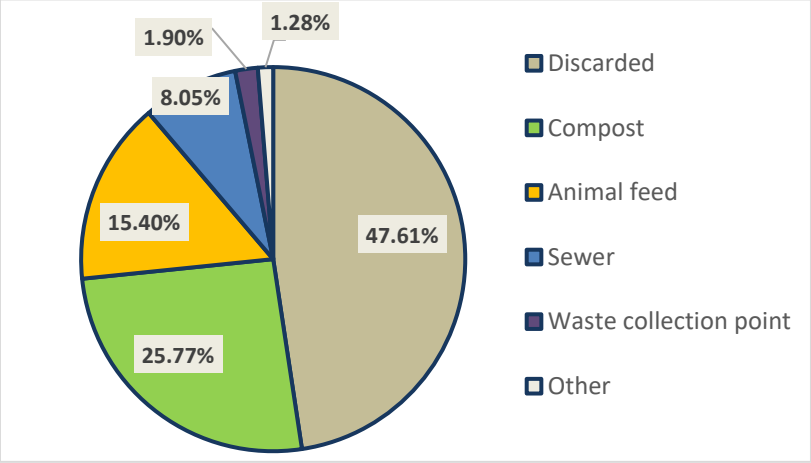

Figure 1. Share of different food waste management methods

According to the results of the separate collection experiment, the vast majority of participants (82.73%) did not encounter any issues with separate collection. Regarding the placement of the kitchen caddy, 36.36% of households placed it on the kitchen floor, 14.55% in the pantry, and 10.00% in a kitchen cabinet, while 12.73% kept it in other locations such as the balcony, garage, or other outdoor areas. More than one-quarter of respondents (26.36%) placed the caddy on the countertop. While this may be a convenient solution for discarding biowaste in the kitchen due to its easy accessibility, it should be carefully considered from a sanitary perspective, as it may increase the risk of cross-contamination and microbiological contamination.

Regarding collection frequency, more than half of the participants (50.46%) preferred weekly food waste collection, while 27.52% preferred a frequency of less than once a week, and 16.51% found collection every 3–4 days to be optimal. More than three-quarters of respondents expressed willingness to participate in a voluntary separation scheme, with 20.91% even willing to pay for it, while 23.64% stated they would not take part in the system. When examining factors influencing participation, we found that pro-environmental attitudes were the primary motivator (with a mean value of 4.45 on a 1–5 Likert scale), followed by the availability of free kitchen caddies (3.87), and reduction (3.86)

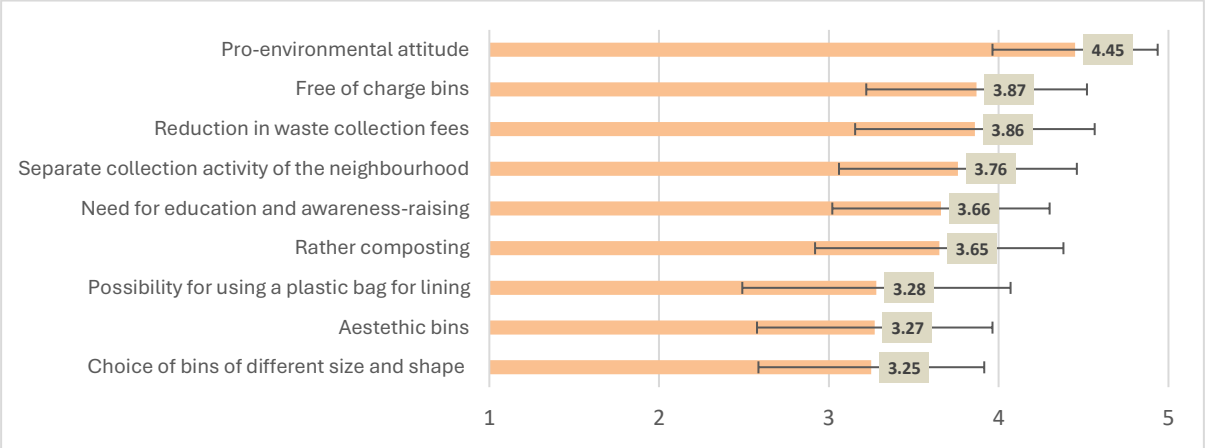

Figure 2. Drivers for participating in the separate collection scheme

The separate biowaste collection system expands the possibilities for sustainable food waste management. For the system to be truly motivating for the population and successfully scaled nationwide, further area-specific research is necessary, along with proper maintenance and effective communication. Additionally, raising awareness about the environmental and economic benefits of biowaste separation could enhance participation. Collaboration between policymakers, waste management companies, research institutions, and local communities will also play a crucial role in ensuring the system's long-term success.

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