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Assessing the Importance of Awareness-raising Campaigns in Increasing the Effectiveness of Urban Food Waste Composting Actions

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Abstract

In-vessel composting, which allows a more efficient and hustle-free process than conventional home and community composting, is becoming an essential component of every bio-waste management strategy (Panagiotakis et al., 2021), especially in the urban environment. Because the concepts of circular economy are relatively new to the wider public, and manual tasks of source-separation and composting require additional effort and a level of commitment, raising awareness and training the public are also integral to achieve bio-waste management strategy targets (Ioannou et al., 2022). Nevertheless, the effectiveness of the various relevant awareness-raising campaigns is difficult to quantify and often neglected or taken for granted. Here we propose that the effectiveness of such a campaign and the resulting change in the level of user commitment to source-separation can be measured in the quality of the produced compost and specifically in its concretion in impurities. To investigate this hypothesis, we compare two user groups (hereafter denoted as Blue and Red team) that participate in the urban composting actions of the A2UFood Project taking place in Heraklion, Greece. Through the Project, each user group has been granted exclusive access to a dedicated in-vessel composter (hereafter Autonomous Composting Unit or ACU) installed by the Municipality of Heraklion in urban parks Blue and Red, respectively. The ACUs have an effective volume of approximately 3 m^3 and their operation was comparable throughout the course of the assessment. After an initial on-site training session that included distribution of free compostable bags, plastic kitchen bins, as well as access to printed and digital training material, both user groups were instructed to use the ACUs unattended. Approximately 6 months after the initial training, ACU operation was closely monitored, and semi-composted material was sampled 6 times between February and April 2022. Each sampling involved 3 replicates (5 L per sample), designed to represent samples from 1 m^3 of semi-composted material. Concentration (dry w/w) of impurities (hard plastic, soft

plastic, glass, metal, and bones) was identified after sieving with 19.5, 10.0, 6.3, 4.0, 2.0, and 1.0 mm sieves. Samples were also tested for pH, EC, TOC, TKN, TOC/TN, Pb, Cu, and Zn. Between the 3rd and 4th sampling, a second intensive information campaign took place targeting only the Red team which had underperformed in terms of sample impurities. Results showed that before the second campaign, ACUs were visited by users at a rate of 7.8 and 6.5 visits per month, respectively for locations Blue and Red. After the end of the second campaign that targeted only Red team, respective users doubled their visits to the ACU to a total of 12.9 month^{-1}, surpassing those of the Blue team who also increased their visits to 10.7 month^{-1}. Regarding, compost quality, before the second campaign, the Red ACU had a significantly higher fraction of impurities than the Blue ACU in all 3 samplings. Nevertheless, after the second campaign, impurities in the Red ACU showed a sharp decrease, with the Red team performing better than Blue team in terms of source-separation effectiveness. Based on the evidence presented, impurities in compost can be used as an indicator for awareness-raising campaign effectiveness.

Keywords: Awareness-raising, Urban Composting

References

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