Characterisation of the content of cellulose items inside food-waste from separate collection

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Who we are

CIC's was founded in 1992 and its mission is to enhance recycling and prevention of waste, share knowledge and know-how between CIC's associates, enhance compost quality and the market, perform technical training for the composting sector, assist government entities in improving biowaste recovery.

CIC is an association of public and private companies, local authorities and others involved in the production of compost, as well as organizations which do not make compost but have an interest in the composting process like producers of machinery and equipment, producers of fertilizers, research bodies etc.

Key words

Biowaste, paper, compost, quality; CIC; Italy

Abstract

The Italian Composting and Biogas Association presents the results of a four years investigation about the presence of paper scarps inside food-waste collected separately. This four years investigation is part of CIC's long-term strategy to survey and ameliorate the quality of compost produced in Italy. Currently more than 6.1 million [metric] tonnes of food and garden waste were collected separately in Italian cities.

Survey and results

Separate collection of food-waste and effective recycling of organics represent the backbone of modern MSW management schemes in Italy. In 2015 the largest packaging fraction collected separately as MSW in Italy is paper and cardboard; cellulosic Items account for 22.5% and food-waste 28.5% of all MSW separately collected and send to recycling.

Italian food-waste is mainly collected with compostable bioplastic liners in Italy and the amounts of paper bags used by households are generally below 5%. In addition limited amounts of paper and other cellulose items (i.e. paper waste) may be managed together with the sorted organic waste considering the possibility to be degraded in industrial composting processes.

In order to better understand what is really collected commingled with food-waste, CIC stared in 2013 a four years technical cooperation with COMIECO, the Italian National EPR Consortium for Recovery and Recycling of Cellulose Packaging, so to investigate in detail the different types of paper and cellulosic items that can be found inside food-waste from separate collection.

Between 2013 and 2016 CIC performed about 1300 waste composition analyses, so to investigate the relative amounts and the different types of cellulose items inside the food-waste collected to be recycled at composting or biogas plants. The investigation allowed to classify cellulosic items into six different categories: four types of packaging including multi-layer packaging for beverages, graphic paper and mixed paper (which mainly consist of napkins, tissues, etc.).

According to CIC's data, cellulosic items account between 2% and 3%in weight f.m. of food-waste; hence CIC estimated that annually about 75'000tons of cellulose items are collected together with food-waste, increasing by about 2.4% the amounts collected by COMIECO's EPR schemes.

From the total amount of cellulosic scarps found inside food-waste, about 20% are packaging items, 7% graphic paper and the remaining amounts are the so-called mixed paper, while multi-layer items are accounted as impurities and represent less than 1.5% of the cellulosic waste investigated during the surveys. CIC's survey and the large number of data available allowed to detail the result for different Italian Regions, from higher-income to lower-income areas.

The correlation between the contamination of food-waste due to the presence of non-compostable items (i.e. plastics, glass, metal and other inert materials) and the content of cellulosic items was also investigated; the correlation shows that the amount of cellulosic items tend to increase together with the amounts of impurities, but in all cases the concentration of cellulosic items are fully compatible with existing, industrial composting process; hence compostable cellulosic waste delivered into the biowaste stream can be effectively recycled into new materials or products (i.e. compost).

The large set of data and analysis allow to establish correctly the expected amounts of paper, cardboard and other cellulosic items collected together with food-waste from source separation. As a result of the cooperation CIC and COMIECO are preparing a joint vademecum for the correct management of cellulosic items that can be collected together with food-waste, thus to be recycled at industrial biogas and composting plants.