

# BIOLOGICAL SCIENCES

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## UTILIZATION OF FOOD WASTE IN EUROPEAN UNION

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**Summary:** The development of separate food waste collection and recycling is an integral part of improving natural resource efficiency and the transition to a sustainable economy. Food waste can be used as sources of raw materials and energy. The paper defines the necessity of creating an ecologically safe food waste management system.

**Key words:** food products, food waste, waste management, complex processing of raw materials, secondary resources.

**Introduction.** In the sphere of production and sale of food products, public catering companies and households are invariably associated with the accumulation of food waste, non-liquid products, and products with an expired sales period. It is forbidden to throw such waste into the garbage. They are accountable for disposal by specialized companies. The rotting of organic residues in landfills uncontrollably pollutes the soil and water, destroys the flora and fauna of the area. In addition, product packaging is often made of long-degradable elements that cannot neutralize the harmful effect without recycling. That is why the disposal of food products is

carried out using special technology, in accordance with standards, rules, and requirements for environmental protection.

**Material and methods.** To determine the different ways of food waste processing an in-depth literature analysis was conducted.

**Results.** Food waste is a global issue, with approximately one-third of all food produced for human consumption lost or squandered. In the EU, about 57 million tons of food garbage are induced annually with a market value of 130 billion euros. At the same time, approximately 36.2 million people cannot afford a quality meal every second day. Food waste contributes to climate change and represents a waste of limited resources such as land, energy, and water. Scientists estimate that nearly 8 % of all global greenhouse gas emissions caused by humans are related to food waste [1].

As a global problem, food waste has ascended the public and political talks in recent years. The European Commission adopted the new circular economy action plan (CEAP) in March 2020. It set out the EU's actions along the entire circulation of products. It targets product design, encourages circular economy processes and sustainable consumption, aspires to ensure that waste is prevented and the resources used are kept in the EU economy for the most durable period of time. In line with the Sustainable Development Goals (SDG) 12.3, Member States have desirable goal to reduce food waste by 50% by 2030. Bio-waste is one of the leading sources of pollution in Europe and holds great potential for the circular economy. According to the European Environment Agency, reducing and re-using bio-waste will cut emissions, improve soil conditions and provide energy. Recycling bio-waste is also an answer for the European Union's intentions to recycle 65 % of municipal waste by 2035 [2]. Integrated use of food industry litter as a socio-economic process of attracting secondary resources for reuse in the production process aimed at optimizing the resource potential. Depending on due to the nature of the technology and the combination of individual stages in the production process in the system of the agrarian sector, the integrated use of waste is performed in three main forms:

- 1) consecutive processing of raw materials to obtain finished products;

- 2) use of output waste for the production of other types of products;
- 3) complex processing of raw materials (production of different types of raw materials from one type of raw materials types of products).

The vast majority of scientists agree with opinions about the need to dispose of plant and animal waste. It is not enough to recycle waste for the production of energy carriers, but also to use low-energy technologies and man-made loads on the natural environment. Biogas technologies are the most efficient for the disposal of organic waste suitable for fermentation [3]. The most urgent task today is the search for new effective ways of processing secondary resources food industry, which includes products obtained during the processing of fish, poultry, livestock, and other animals. A great potential for re-use of food waste is in the secondary production of fodder for livestock and other domestic animals on farms in EU. Given the low level of waste processing in the food industry, it is necessary to propose new ways of improving the efficiency of the use of food waste in the context development of food processing industries. For interaction between parties, who produce food waste and entities that dispose of it, in all European countries, in addition to containers for collecting metal, plastic, paper, and glass, there're containers for collecting animal and vegetable waste, that are installed at waste collection sites. Using secondary resources of the food industry and agriculture as the main raw material gives not only a significant ecological effect but also an economic one. Despite the fact that the processing and use of secondary resources are carried out at a slow pace in some European countries with slower economic development, the food industry, under the influence of the energy and raw material problem, is gradually moving to the consumption of almost all types of highly liquid and profitable secondary resources, which positively affects the development of the economy.

**Conclusions.** Processed food production can significantly increase the efficiency of production and economic activities with a reduction of the negative impact on the environment and the life of the population with the provided level of effectiveness of the disposal of waste of animal and vegetable origin, as well as mixed food litter. The formation of a modern industrial base for waste disposal

requires significant investments. In addition to the already mentioned issues technological and social aspects need to be considered before new solutions can be applied. Food waste reduction is possible, regulations are required to overcome voluntary actions and ensure that laggard countries pull their weight so everyone moves at the same pace.

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