

The Reasons for Food Losses and Waste and the Trends of Their Management in Basic Vegetal Production in Poland

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Abstract : Production of fruit and vegetables, food cereals or oilseeds affects the natural environment via intake of nutrients being contained in the soil, use of the resources of water, fertilizers and food protection products, and energy. The limitation of the mentioned effects requires the introduction of techniques and methods for cultivation being friendly to the environment and counteracting losses and waste of agricultural raw materials as well as the appropriate management of food waste in every stage of the agri-food supply chain. The link to basic production includes obtaining a vegetal raw material and its storage in agricultural farm and transport to a collecting point. When the plants are ready to be harvested is the initial point; the stage before harvesting is not considered in the system of measuring and monitoring the food losses. The moment at which the raw material enters the stage of processing, i.e., its receipt at the gate of the processing plant, is considered as a final point of basic production. According to the Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002, Art. 2, "food" means any substance or product, intended to be, or reasonably expected to be consumed by humans. For the needs of the studies and their analysis, it was determined when raw material is considered as food – the plants (fruit, vegetables, cereals, oilseeds), after being harvested, arrive at storehouses. The aim of the studies was to determine the reasons for loss generation and to analyze the directions of their management in basic vegetal production in Poland in the years 2017 and 2018. The studies on food losses and waste in basic vegetal production were carried out in three sectors – fruit and vegetables, cereals and oilseeds. The studies of the basic production were conducted during the period of March-May 2019 at the territory of the whole country on a representative trail of 250 farms in each sector. The surveys were carried out using the questionnaires by the PAP method; the pollsters conducted the direct questionnaire interviews. From the conducted studies, it is followed that in 19% of the examined farms, any losses were not recorded during preparation, loading, and transport of the raw material to the manufacturing plant. In the farms, where the losses were indicated, the main reason in production of fruit and vegetables was rotting and it constituted more than 20% of the reported reasons, while in the case of cereals and oilseeds' production, the respondents identified damages, moisture and pests as the most frequent reason. The losses and waste, generated in vegetal production as well as in processing and trade of fruit and vegetables, or cereal products should be appropriately managed or recovered. The respondents indicated composting (more than 60%) as the main direction of waste management in all categories. Animal feed and landfill sites were the other indicated directions of management. Prevention and minimization of loss generation are important in every stage of production as well as in basic production. When possessing the knowledge on the reasons for loss generation, we may introduce the preventive measures, mainly connected with the appropriate conditions and methods of the storage. Production of fruit and vegetables, food cereals or oilseeds affects the natural environment via intake of nutrients being contained in the soil, use of the resources of water, fertilizers and food protection products, and energy. The limitation of the mentioned effects requires the introduction of techniques and methods for cultivation being friendly to the environment and counteracting losses and waste of agricultural raw materials as well as the appropriate management of food waste in every stage of the agri-food supply chain. The link to basic production includes obtaining a vegetal raw material and its storage in agricultural farm and transport to a collecting point. The starting point is when the plants are ready to be harvested; the stage before harvesting is not considered in the system of measuring and monitoring the food losses. The successive stage is the transport of the collected crops to the collecting point or its storage and transport. The moment, at which the raw material enters the stage of processing, i.e. its receipt at the gate of the processing plant, is considered as a final point of basic production. Processing is understood as the change of the raw material into food products. According to the Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002, Art. 2, "food" means any substance or product, intended to be, or reasonably expected to be consumed by humans. It was determined (for the needs of the present studies) when raw material is considered as a food; it is the moment when the plants (fruit, vegetables, cereals, oilseeds), after being harvested, arrive at storehouses. The aim of the studies was to determine the reasons for loss generation and to analyze the directions of their management in basic vegetal production in Poland in the years 2017 and 2018. The studies on food losses and waste in basic vegetal production were carried out in three sectors – fruit and vegetables, cereals and oilseeds. The studies of the basic production were conducted during the period of March-May 2019 at the territory of the whole country on a representative trail of 250 farms in each sector. The surveys were carried out using the questionnaires by the PAPI (Paper & Pen Personal Interview) method; the pollsters conducted the direct questionnaire interviews. From the conducted studies, it is followed that in 19% of the examined farms, any losses were not recorded during preparation, loading, and transport of the raw material to the manufacturing plant. In the farms, where the losses were indicated, the main reason in production of fruit and vegetables was rotting and it constituted more than 20% of the reported reasons, while in the case of cereals and oilseeds' production, the respondents identified damages, moisture, and pests as the most frequent reason. The losses and waste, generated in vegetal production as well as in processing and trade of fruit and vegetables, or cereal products should be appropriately managed or recovered. The respondents indicated composting (more than 60%) as the main direction of waste management in all categories. Animal feed and landfill sites were the other indicated directions of management. Prevention and minimization of loss generation are important in every stage of production as well as

in basic production. When possessing the knowledge on the reasons for loss generation, we may introduce the preventive measures, mainly connected with the appropriate conditions and methods of the storage. **ACKNOWLEDGEMENT** The article was prepared within the project: "Development of a waste food monitoring system and an effective program to rationalize losses and reduce food waste", acronym PROM implemented under the STRATEGIC SCIENTIFIC AND LEARNING PROGRAM - GOSPOSTRATEG financed by the National Center for Research and Development in accordance with the provisions of Gospostrateg1 / 385753/1/2018

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