
DISTINCTIVE FEATURES OF PRODUCTS SAFETY MANAGEMENT IN A DAIRY FARM

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Abstract

The aim of this paper is to review the characteristics of product safety in a dairy farm and to establish its relationship with the specifics of the implementation of the HACCP system. The study was conducted on six rural dairy farms in two Municipalities, Tetritskaro and Gardabani. In the dairy farms selected by us, the process of milking and collection was found to be the highest risk among the risk points of the HACCP system. The staff employed in the milk production process on the farm is a potential source of its contamination and therefore it is essential that the employees who draw milk strictly adhere to the requirements of the cattle milking process. In order to ensure the safety of dairy raw materials on farms, air purity, temperature and humidity should be monitored periodically.

Keywords: *Dairy farm, Dairy safety, HACCP system, Hazard analysis, Milking hygiene*

PECULIARITIES OF FOOD SAFETY MANAGEMENT IN A DAIRY FARM

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Introduction

Food safety means that the potential dangers present in it are within a scientifically justified limit, which does not have a negative impact on human health and life (ISO 22000). And food quality is a set of additional characteristics of harmless food, which is related to the economic interests of the final consumer (Food/Feed Safety, Veterinary and Plant Protection Code). Quality characteristics of food include such characteristics as product taste, smell, consistency, weight, packaging, design and others.

In the presented work, the emphasis is mainly on milk safety issues in the dairy farm, because in practice, checking the intake of milk and its quality indicators, and managing the safety and quality of lactic acid products produced from it is complex.

Work to ensure food safety began in the 60s of the 20th century and the so-called concept of HACCP (System of threat analysis and critical control points), which today represents a way of managing safe food production.

Each participant in the dairy food chain, the farmer, collection point, processing plant, distributor and retailer, must have complete information about the production processes of the dairy product used, in order to determine exactly at what stage a food safety problem may arise and in what form it may manifest itself (international standard of food products).

The HACCP system plan includes 7 principles, namely:

The first principle is based on the implementation of hazard analysis when determining potential biological, chemical and physical hazards that pose a risk to human health. Hazard analysis includes two stages: hazard identification and hazard assessment.

The second principle involves the determination of critical control points, the avoidance, elimination or reduction of which in the production process will ensure the prevention of food safety problems.

The third principle is based on the establishment of critical boundaries. Here, scientifically based biological, chemical and physical parameters are taken into account, the control of which should be carried out at the stage of critical control points in order to avoid danger. For example, the best example of a critical limit in milking is the pasteurization of milk, considering the combination of temperature and duration.

The fourth principle is to establish a monitoring procedure. On-farm monitoring activities include visual observation or measurement activities in a planned sequence to determine whether specific control points are under control. Continuous and intermittent forms of control are possible on a dairy farm. Monitoring is constant when it is carried out in automatic mode. For example, on a farm, milk pasteurization is used with a plate pasteurizer, which controls the process in automatic mode. When a farm worker monitors the pasteurization temperature with a thermometer, an intermittent form of monitoring occurs.

The fifth principle is to impose corrective actions. It is directly related to the actions taken at the moment of deviation from the norm in order to correct the problem in a short period of time. For each control point on the farm, possible corrective actions and appropriate rights and responsibilities should be defined in advance.

The sixth principle is to establish verification action. On-farm verification includes actions that confirm the effectiveness of the HACCP system according to the plan developed.

The seventh principle is to establish record-keeping procedures. On-farm record-keeping is an integral part of safety management.

In the framework of the implementation of the HACCP system on the farm, the documentation should include the following documentary records:

- Composition of the HACCP group and their rights and duties;
- Conditions of milk distribution, its intended use and consumer categories;
- Verified block diagrams depicting the technological process;
- A hazard analysis document that outlines the identification of hazards and the establishment of appropriate control measures.

Research Methodology

Getting to know the principles and methodological base of food safety standards. The research consisted of the following activities: in-depth interviews with 6 respondents (in Gardabani and Tetritskaro municipalities), and observation of the technological process of milk production in 6 selected dairy farms.

Results

The production of harmless milk and lactic acid products starts from the dairy farm. In order to study and carry out the research, three dairy farms from three villages (Teleti, Kumisi, Gamarjveba) included in the territorial unit of Gardabani municipality were selected, as well as three dairy farms from three villages included in the territorial unit of Tetritskaro municipality (Jorjiashvili, Marabda, Koda). Six dairy farms in six villages of selected municipalities. In each dairy farm, such components of primary milk production were observed, such as:

- Cattle stall and environment on the farm;
- Livestock health condition;
- Milk hygiene;
- Livestock food and water;
- Animal welfare.

During the study of livestock stalls and the environment in dairy farms, attention was focused on such factors as the location of the farm and the influence of the condition of the infrastructure necessary for the operation of the farm, on the microclimate conditions created in the livestock stall. Regarding the state of health of the cattle, we got acquainted in detail with the veterinary measures carried out on the farm, which are directly related to the safety of milk.

Accurate protection of cattle milk hygiene significantly determines the availability of milk with safety parameters on the farm. One of the conditions for the production of safe milk is the feed and water of the livestock used on the farm. For this purpose, it is important not to suffocate or intoxicate animals and thereby harm human health. It should be noted here that it is not allowed for staff with an infectious disease to work on the farm, including milking, in order to avoid secondary contamination of livestock.

To ensure traceability on a dairy farm, it is necessary to use such records as cattle passports, veterinary reports, animal movement information, milking log, washing-disinfection log, service personnel health log, general violation log and pest control log.

Among the risk points of the HACCP system in the selected dairy farms, the process of milking cattle and primary milk collection is the most risky. Milking machines are mainly used in the milking process from the

studied farms in Gardabani municipality, but the process of washing and disinfecting the milking machines is a problem, which increases the risk of damage to the milk by harmful microflora. The problem is also related to the water used for washing the milking machines because the water used on the farm does not meet the proper sanitary requirements. In dairy farms in Tetrtskaro municipality, manual milking is mainly used, in the process of which the risk points of milk safety increase even more, in particular, the risk of contamination of milk during the milking process is high, because during the milking process there is a place to feed the cattle in the cattle stall, which contributes to the generation of dust and microbial contamination of the received milk. It should be noted here that in the majority of dairy farms, milkers are not equipped with proper equipment, which further increases the risk of receiving harmless raw milk.

In order to keep the infrastructure of the selected dairy farms in proper condition, it is necessary to periodically inspect the livestock stalls. The personnel employed in the process of receiving milk on the farm are a potential source of its contamination, and therefore it is necessary for the milkers to strictly follow the requirements of the milking process. In order to ensure the safety of raw milk on the farm, air cleanliness, temperature and humidity control in the livestock stall should be periodically carried out.

During the observation conducted in the dairy farms, the rules of storage of livestock feed are neglected, and because of this, there is cross-contamination of raw milk. One of the prerequisites for managing milk safety risk points on farms is the introduction of continuous training of farm staff, on the basis of which each employee will be better able to comply with the requirements of certain safety instructions.

Conclusion

After studying the issue of the safety of milk produced in dairy farms, it becomes clear that the documentation must be checked within the framework of the HACCP system implementation for each facility, the subsequent consistent implementation of which ensures the detection of the level of threats and the implementation of appropriate control measures for its elimination.

During the research carried out in the selected municipalities, the shortcomings that cause significant threats in the process of production of harmless milk raw materials were identified. Of these threats, the arrangement of livestock stalls, taking into account modern technologies of milk production, during which the technology of livestock care - storage and feeding, exact observance of milk intake rules by farm service personnel and their systematic retraining (increasing knowledge) in terms of knowledge in accordance with the requirements of food safety regulations, deserves special mention.

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