

implementation of integrated agricultural production is a necessity to register of all works and operations made on the crop. Production within a framework of the IP system is a subject of the certification. The IP certificate is an attestation that agricultural crops, which are indicated in it, were produced on the basis of specific IP methodologies confirmed by the Chief Inspector of Plant and Seed Production Protection, and their production process was supervised. It guarantees that produced agricultural products are safe for consumer, and especially they do not contain plant protection residues, heavy metals, nitrates and other chemical elements or harmful substances in quantities exceeding valid standards [Wierzbicka 2007].

Conclusion

Safe and good quality food is an appreciated commodity in the European Union, both by consumers and food industry. The knowledge of international qualitative requirements and frequent quality control give reasons to success in the competitive market of agricultural products, and the official supervision of food, which is realized in an appropriate way, serves to realize political goals in the field of a raw material's quality and the food security.

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QUALITY MANAGEMENT SYSTEMS IN MEAT PROCESSING PLANTS (СИСТЕМЫ МЕНЕДЖМЕНТА КАЧЕСТВА НА МЯСОКОМБИНАТАХ)

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Аннотация

Развитие и внедрение систем менеджмента качества на мясоперерабатывающих предприятиях является длительным процессом за который ответственны все работники предприятия, начиная с технического персонала линии и заканчивая лицами, которые занимают руководящие должности. Дополнительным преимуществом систем менеджмента качества является повышение осведомленности персонала на заводе и повышение квалификации работников, в частности на стадиях производства. Следует подчеркнуть, что реализация этих требований включает в себя большие финансовые затраты, в частности на подготовку процедуры, обучение сотрудников, приобретение новых технологических линий, которые соответствуют качественным требованиям, приобретение оборудования рабочих станций.

Внедрение системы HACCP подтверждает высокое качество производимой продукции, а также гарантирует безопасность ее потребления. Комплексный подход менеджеров, которые работают на мясокомбинате к проблеме управления качеством, подтверждает, что для всей команды наиболее важным является качество. Особенно сильный акцент делается на контроль санитарно-гигиенических требований в производственных процессах и качество готовой продукции, поступающей в продажу. Несомненно, что эти действия оказывают влияние на укрепление рыночных позиций предприятия и позитивное восприятие производителя в глазах потребителей.

Introduction

Food quality in a modern thinking is understood as whole features and characteristics, which decide about it capability to meet various consumer's needs. This quality includes a health security and functional features of products, which often decide about their choice by the consumer. Safe food should be characterized by both a suitable nutritive value and the lowest possible content of substances, which presence can be a risk for health. Provision of appropriate parameters of health safety and quality during the food production is possible only with maintaining a proper level of hygiene in production, the assurance of a suitable sanitary standard of plant and its surroundings, and also satisfy this standard in all stages of production process and the application of appropriate quality assurance systems [Kryński, Ruda 2007].

The main aim of this study is a characterization of obligatory and voluntary quality management systems, and also showing a procedure of HACCP system introduction in meat processing plants.

Секция 1: Переработка и хранение сельскохозяйственной продукции

Adjustment of Polish meat industry to sanitary and veterinary EU standards required an evaluation of establishments and determining their development prospects. The security of public health, which is a superior criterion in the meat industry operation, caused an obligatory introduction of quality management systems for plants, which introduce their own products to the European Union area [Rycombel 2005].

A character and size of the processing plant production determine the selection of implemented system. However, in each case, basic principles of quality assurance should be formulated.

Figure 1 presents the most commonly used quality systems, which are implemented in Polish meat processing plants. Not all these systems are obligatory for meat plants. Part of them, like: ISO, or TQM standards have a voluntary character.

1. *Obligatory systems*

a) *Good Manufacture Practice – GMP*

Actions, which must be undertaken and conditions, which must be fulfilled to guarantee that the food production is realized in a manner that ensures its suitable health quality, in accordance with specifications. Matters, which are present in the area of Good Manufacture Practice, include: acceptance of raw materials and materials, storage and treatment of raw materials, processes of pretreatment, processes of fundamental treatment, internal transport, storage of finished products, external transport and distribution of products.

b) *Good Hygienic Practice – GHP*

There are actions, which must be undertaken and hygienic conditions, which must be fulfilled on all stages of production or turnover in order to ensure the food safety. All techniques, methods and recommendation concerning hygienic issues, which are used in plants should be described by suitable procedures or instructions taking into account specific requirements. Requirements of the Good Hygienic Practice are often called programs, which constitute preliminary conditions.

In the consciousness of an average person, including an employee, who is employed in production and food trade, the concept of hygiene or Good Hygienic Practice is frequently and merely joined with washing and disinfection processes and personal hygiene of employees. In reality, this notion is far wider, including at least several areas. These spaces are precisely connected with each other and aimed at achieving one target – the food safety.

The efficient system of documentation and records concerning all procedures and behaviors, which encloses rules of the Good Manufacture Practice and Good Hygienic Practice, allows to prove that all the most important actions from the point of view of food security are properly realized. In addition to the documentation, which is kept by employees, every meat processing plant ought to have a sanitary control book with current records of actions, which were carried out by official food control organs and a sanitary documentation folder, which includes inter alia: results of water examination, sanitary control protocols, decisions and other documents issued by official food control organs, certificates of employees about completed trainings and list of employees, which is arranged with a specific sanitary supervision organ. This list concerns employees, who require initial and periodical medical examinations.

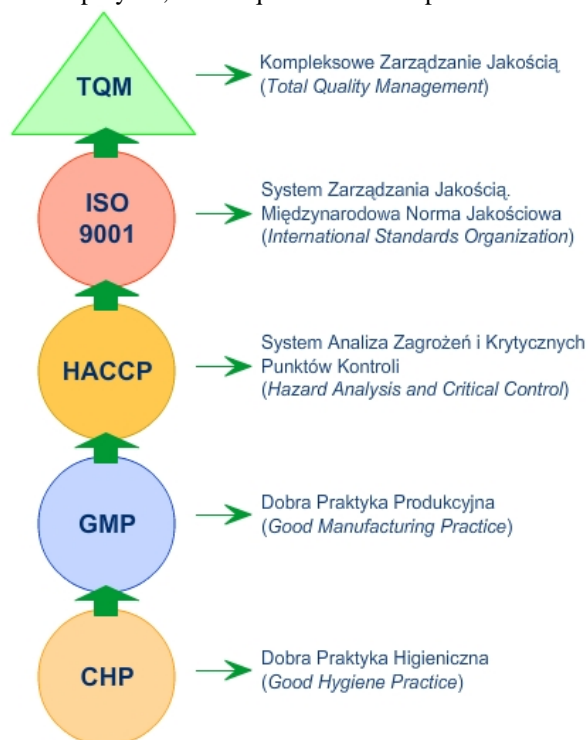


Fig. 1 Quality pyramid

Source: A. Olszewski. Zarządzanie przez jakość, "Gospodarka Mięsna" 2006,3,20.

c) *HACCP system – Hazard Analysis and Critical Control Points*

Introduction of principles within a framework of the Good Hygienic Practice and Good Manufacture Practice is an initial condition to the implementation of the HACCP system. The introduction of GHP and GMP is the beginning of operations for the implementation of the HACCP system, whereas a containing the HACCP system in no case releases from the introduction of GMP and GHP rules. HACCP is a preventive method, commonly recognized and used in the meat processing branch. It is used in order to eliminate a risk, which is connected with food contamination: biological (primarily microbiological), chemical and physical to guarantee its security [Świderski 2003].

The HACCP system is based on the realization of analysis of all hazards that may be the reason of the health quality reduction of made food. This system also indicates points, which are “critical” for the health security of final product on a certain stage of food production. These points are determined as critical control points. A new feature in the HACCP system is an obligation that everything what is important for the health safety of food must be accurately supervised, monitored and documented [Turlejska, Pilzner 2003]. In Poland, in accordance with the Regulation (EC) No. 852/2004, since 1 January 2006 the implementation of the HACCP system is obligatory in all plants of food sector, which take part in any stage of production, processing and distribution of food after the primary production.

2. Voluntary systems

a) ISO 9000 standards

ISO 9000 standards issued by the International Organization for Standardization (ISO) refer to all operations in a plant, which have an effect on the quality of product. In this system, the quality control is perpetual and it is carried out at each stage from the designing through the production to the ecological utilization of wastes. The quality system, which is compatible with ISO 9000 standard, is a preventive system and it puts the accent on a creation of quality and an avoidance and prevention of mistakes. It is not oriented to remove effects of these mistakes. In Poland, these standards were issued for the first time in 1991.

According to rules of ISO standardization works, standards are subjected to periodical reviews resulting in the decision to leave them without changes, amend or withdraw them. 15 December 2000, three amended standards with ISO 9000:2000 series were published.

b) *ISO 9000:2000 standard* is an introduction to new forms concerning the quality management. It describes fundamentals of quality management systems and defines basic terms for systems, which are used in these standards. It plays a great role in the understanding and usage of other ISO 9000 standards,

c) *ISO 9001:2000 standard* includes requirements for the quality management system, which has an application for every organization and they need to demonstrate the ability to continuous supply of products independently of its size or type. These products must be compatible with customer’s requirements and regulation. Products need to aim at increase of customer’s satisfaction. This standard can be used to the estimation – by internal and external sides including certification organs – of the organization ability to meet customers’ requirements, requirements resulting from rules and own organization requirements. It is the only standard containing requirements for the system, intended for the purpose of certification.

d) *ISO 9004:2000 standard* provides instructions concerning an improvement both the quality management system and a whole organization. The aim of this standard is not only a satisfaction of organization’s customers, but also other interested sides, for example employees, owners, contractors, society. ISO 9004 is recommended for these organizations, which want to go beyond ISO 9001 requirements in the direction of the constant improvement in organization’s functioning, including its effectiveness [Świderski 2003].

3. Total Quality Management (TQM)

In view of the increase in a scale of commercial transaction in the world, and in consequence an increase of hazards, the pursuit of optimal in this situation food quality security by TQM methods may be propagated. The TQM system involves an achievement of all management targets, including control over the general quality of products by permanent improvement of organization according to the following rules:

- Strong leadership of the organization and commitment of all its members in an idea of the system
- Training of personnel
- Collective decision making
- Benchmarking for the sake of competitive organizations
- Partnership relations with suppliers, who work in the TQM system [Owczarek, Bieganowski 2003].

Implementation procedure of the HACCP system in meat processing plants

The concept of creating the HACCP system is based on prescriptions of the Codex Alimentarius and it boils to a twelve-step operation sequence.

1. Creation of the HACCP team – establishment of people, who are responsible for the implementation of this system in the plant’s area.
2. Description of product – the team develop a precise description of particular manufactured products, including specific qualities like: raw material composition, types of used technologies, physical and chemical features, microbiological characteristics, packaging and marking method, distribution methods, transport methods, conditions of storage.
3. Determination of a predicted way of using product by a consumer. Isolation of products, which can be stored in frozen form, in temperature below 18⁰C for 1 year, and also fresh products, which should be stored in temperature from 0⁰C to +4⁰C and they ought to be eaten up to 14 days since a production date.

Секция 1: Переработка и хранение сельскохозяйственной продукции

4. Creation of a production process scheme – preparation of the scheme in the form of a diagram – this diagram encloses all phases of the production process starting from an adaption of slaughter animals in a store and ending in the distribution and customer service. Moreover, Critical Control Points (CCP) are taken into account and determined.
5. Production process is practically verified on a technological line.
6. Preparation of the list with all possible hazards connected with each stage of production and the list with all preventive means to the control of a certain risk.
7. Determination of Critical Control Points (CCP) should be realized on the basis of so-called a decision tree, which helps the team to create a logical sequence of answers and questions in relation to each raw material and stage of production. It allows to define the most important places and stages in the production process from the point of view of food safety.
8. Determination of goals and limits of tolerance for each critical point – the team establishes so-called target values with acceptable tolerances and limiting values of determined parameters – so-called critical values. These values guarantee an efficient elimination of hazards and include among other things: time, temperature, humidity, and also sensory features – colour.
9. Preparation of a monitoring system for each critical point – the team elaborates monitoring instructions – observations and measurements on each determined critical point. This process includes both a continuous monitoring (cameras among other things in a lairage, temperature sensors in cold stores with alarm system), and also a frequency of recording and observation. Assigned employees are also obligated to make an everyday report about critical points, which they supervise.
10. Determination of corrective operations – the team elaborates corrective operations for each critical point. Their purpose is to allow immediate removal of possible variations in values of adopted parameters. Corrective actions are so constructed to be simple and easy to realize by the personnel - for example, a reheat treatment or a withdrawal of all batch of raw material to the utilization.
11. Determination of verification procedures – the team elaborates rule for the verification of the implemented HCCP system in order to detect any shortcomings. Cyclically – several times per year – verification operations include a detailed study of a finished product and an analysis of results.
12. Keeping of documentation and records – the team elaborates documentation formulas and obligates employees to make appropriate records. These records concern first of all stages of production process, potential hazards, indicated critical control points, responsibility of the personnel, and also accepted criteria of tolerance for them. Plant manager is responsible for the introduction and functioning of the HACCP system.

Summary

The development, and especially the implementation of quality assurance systems in meat processing plants is a prolonged process, which engages all employees in the plant, beginning from the technological line personnel and ending on persons, who occupy managerial positions. An additional advantage of the system of implemented systems is to increase the awareness amongst personnel in the plant and improve qualifications of employees in particular production stages. It needs to be emphasized that the implementation of these systems most often involves big financial expenditures among other things on a preparation of procedures, a training of employees or a purchase of new technological lines, which meet qualitative requirements or an equipment of workstations.

The implementation of HACCP system by the processing plant confirms the high quality of produced meat, and also guarantees the safety of its consumption. A complex approach of managers, who work in the processing plant, to the quality management problem, confirms that for the whole team the most important is the quality. Particularly strong pressure is emphasized on the control of sanitary and hygienic conditions in production processes and the quality of finished products leaving the store. Undoubtedly, these actions had an effect on a strengthening of the market position of the plant and beneficial perception in the eyes of consumers.

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