

HACCP IMPLEMENTATION IN A SLAUGHTER UNIT

MARIA MIHAELA BALINT², SIMONA CRISTINA MARTIN¹, OANA MURG¹

¹*Aurel Vlaicu University, Arad, Romania, balintmariamihela@gmail.com*

²*Banat's University of Agricultural Sciences and Veterinary Medicine, Faculty of Agricultural Management, Timișoara, Romania*

Abstract: HACCP quality system is intended for both companies and authorized registered that produce food and their suppliers throughout the food chain and is aimed at keeping safe products that comply with the parameters set out by the current legislation. It is a system that control the relevant food safety hazards through Critical Control Points (CCP), representing a procedure, operation or stage in the process, for which control can be applied and which is essential to prevent, eliminate or reduce to an acceptable level of a food threatening. The meat industry and meat preparations can obtain more benefits through the application of the HACCP method, the main being that this method is the most effective management, even from the point of view of costs, for the production of certain foods as safer for consumption with existing technology.

Key words: quality system; management tool; rules and directives.

INTRODUCTION

System Risk Analysis by Critical Control (HACCP) is a scientific approach to process control in general and the process of self control in particular. It is designed to prevent problems that may occur by ensuring that controls are applied at any point in the production system where hazardous or critical situations can occur. Risks include biological contamination, chemical or physical of foodstuffs.

HACCP is a scientifically self control of manufacture process which had long been used in food production, in order to prevent problems that may occur using the critical control points (PCC) of manufacture process, where the risk can be controlled, reduced or eliminated. A company must have an effective system to meet the requirements and prevent spoilage of products.

Currently, HACCP quality system is intended for both companies registered and authorized those producing food and their suppliers throughout the food chain and is intended to keeping safe products that fit within the parameters of law.

It is a system that keeps under control the relevant food safety hazards through Critical Control Points (CCP), representing a procedure, operation or stage in the process, for which control can be applied and which is essential to prevent, eliminate or reduce to an acceptable level a food danger.

MATERIALS AND METHODS

It has been defined the issue and formulation of the main hypotheses in order to constitute an explanatory and convincing model, inducing the importance and activity of the researched subject. Then, it has been drawn up and completed by the collected information. The drafting of this paper was made in laboratory, based on the notes from the ground, the existing material and consulted bibliography.

RESULTS AND DISCUSSIONS

Application of HACCP in the meat industry must start at farm level, because some finished product safety issues may be due to feeding, hygiene status of stables and livestock or poultry to be slaughtered.

Since current technologies do not allow the slaughter to obtain pathogen-free products, it should be developed and implemented a HACCP plan, in order to minimize contamination.

Developing and implementing a HACCP plan can not be made without the consent and support of the management. Top-management must be involved in defining the business objectives and in the team selection and implementation of the plan. Only thus can achieve the desired efficiency.

a) *Selecting the HACCP team.* The initial phase in the development and implementation of a HACCP plan for every slaughterhouse is the composition of a multidisciplinary team. The team is composed of specialists in production, refrigeration, quality assurance, microbiology, management. After selecting the team, its members are trained on the risks of microbiological, chemical, to be monitored and controlled.

b) *Product description.* Determine the exact process - slaughter and product - pigs, after the following:

- Common name - pig carcasses, heads (snout, tongue, brain, lip, cheeks, ears, crown / forehead), giblets (heart, liver, kidney), viscera (stomach, small and large intestines, rectum, uterus)

- How will it be used - all carcase will be processed

- Type of packaging

- Shelf life, temperature: 14 to 21 days depending on the storage temperature, entrails and offal frozen at - 20 ° C

- Point of sale, who are the consumers and manner of using - will be sold entirely through distributors by processing

- Instruction labels - different types of chilled or frozen meat, chilled carcasses

- Delivery Mode - different types of meats delivered chilled or frozen under control, delivered chilled carcasses

c) Identification of intended use. It identifies segments of the population more exposed to risk if they consume the product: children, elderly, immunosuppressive etc.

d) Construction and verification of flow charts. Flow chart should provide a full description of all stages, from live animals to finished products. The team will be on site to inspect operations, checking if the chart is correct and accurate.

e) Listing risks. It will make an analysis to identify steps that risks may occur (microbiological, physical and chemical) and their severity, according to NACMCF.

f) *Establishment of critical control points and critical limits.* Based on the analysis and identification of risks, critical control points are established. Critical limits to the operations of slaughtering, where heat treatments do not apply, are established for all - temperature, visible defects, the concentration of washing and disinfecting solutions, the concentration of disinfectant in water rinse.

After receiving the quality and quantity of animals and after their preparation for cutting, stunning will follow, which is the surgery to remove the function of the central nervous system which directs the sensation of pain and keeping up the autonomic nervous system for proper bleeding.

Stunning methods are classified as: physical methods (mechanical stunning, electrical stunning and stunning by lowering the atmospheric pressure) and chemical methods (gas stun and stun with narcotic substances).

Bleeding operation aims to remove a large quantity of blood; a good bleeding is necessary for two reasons: the meat has a more pleasant commercial look and preservation is better. Bleeding is made on the animal on the horizon or suspended. The suspended mode provides better bleeding and proper hygienic conditions. After stunning and bleeding operation the animal airline crossing is carried out to perform the following phases of the slaughter.

Initial animal processing operations include: skinning, scalding, depilation, scorching, scraping the ash and finishing. Each operation is different as technology, the method of application depending on the species.

The operation can be done by immersion in pools where the water is heated by direct steam sparging or steam circulating through coils or spray scalding tunnel. Depilation operation can be done manually or mechanically. Hand plucking is done using knives or metal cones, and the mechanical depilated with the help of machines. Mechanical depilation is accompanied by a manual depilation.

To remove the ashes, manual scraping or using machinery scratch is made. Complete finishing takes place in the brushed or polished machine fitted with nylon brushes. After polishing, the carcasses are sprayed with cold water. Processing bodies runs in so-called "clean area" and includes: evisceration, carcasses splitting, trimming carcasses, veterinary exam, marking and weighing of meat.

Evisceration is designed to remove the viscera of the abdominal cavity and chest. Must be run with full safety and quickly, within 30 minutes of cutting to prevent degradation of the intestines or the meat. Performed incorrectly, may lead to perforation of the stomach or intestines, which causes microbiological contamination of of meat.

Splitting carcasses aims to facilitate ease of handling and subsequent cooling and is done using mobile, leaf or circular saws. It is made into two halves, along the spine, slightly lateral to prevent degradation of the bone marrow.

Grooming carcasses is dry and damp: the dry one is carried for the kidneys and fat removal, removal of bone marrow, blood clots carcass cleaning and trimming carcasses for commercially good look, and the damp is performed in 37-43 ° C water between panels of steel, which are fitted to the water pipe with nozzles.

Marking and weighing of meat is performed to certify the quality of the carcass consumption, manufacturer's name or to give certain information. Weighing is mandatory and necessary to determine the yield and to determine further losses due to cold treatment.

CONCLUSIONS

The entire manufacturing flow, from the supply and delivery to final disposal, is subject to strict control. It aims to implement sanitation standard operating procedures (SSOP), the plan for risk analysis and critical control points (HACCP), the program of self control and the rules of good practice (GMP).

To perform quality control, the unit has established the following schedule of self control: the periodic bacteriological analyses in DSVSA Timiș laboratory, based on the contract for services.

The developed HACCP program aims to: comply with the rules of hygiene in production, organoleptic examination of products in various stages of the production

process, from raw material reception, storage, processing and delivery of finished products; systematic control and monitoring specific indicators predetermined in critical control points; periodic analysis through laboratory tests of the characteristics of the finished product; regular analysis of the state of hygiene of production areas, machinery and staff, sanitation tests.

REFERENCES

1. **BAKER, D.A.**, 1995, *Apphlication of modeling în HACCP plan development*, International Journal of Food Microbiology, 25, pg.251 – 261;
2. **CONSTANTINESCU SIMONA, CSÖSZ I.**, 2004, *Ways of oncreasing economic efficiency indices in wheat processing*, Simpozion al Facultății de Management Agricol “Dezvoltare rurală” USAMVB Timișoara, 20-21 mai 2004, vol.VI, ISSN: 1453-1410, pg.89-94;
3. **LILE, RAMONA**, 2010, *Calitatea și managementul calității*, Ed. Mirton, Timișoara, ISBN 978-973-52-0940-7;
4. **ORBOI, MANUELA-DORA**, 2006, *Ecological agriculture in Romania — a real chance for rural economies*, Al XXXXIX-lea Simpozion Științific, „Agricultura între tradiție și diversitate”, Facultatea de Agricultură, USAMV Iași, 19-20 oct. 2006, ISSN 1454-7414, Vol. 49, pg. 263-268;
5. **POPESCU, GABRIELA**, 2004, *Ecological considerations on packaging*, 3-lea Simpozion Internațional al USAMV Cluj-Napoca, Seria Agricultură, 20-23 oct. '04, ISSN 1454–2382, Vol. 60, pg. 252-254;
6. **STANCIU, S.**, „*Study regarding the legislative conditions in the European Union import for fresh meat and meat products*”, *Lucrări Științifice Zootehnie și Biotehnologii*, U.S.A.M.V.B.T., vol. 40 (2), 2007, ISSN: 1221-5287, pag. 299 - 303