

Implementation of HACCP Principles

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HACCP is used to develop a framework to manage the points in the process to prevent "hazards". Hazards on a dairy must be defined differently than in a food production plant. Dairy production "hazards" could include poor growth rate in heifers, reproductive failure, poor forage quality, or an infectious disease outbreak. The seven steps for implementing a modified HACCP program are outlined below.

Define the goal for the operation

This step is not in typical HACCP programs. For food manufacturers, the goal of zero biological, physical or chemical contamination is a given. On a dairy farm it is necessary to define the goals for each aspect of the operation. I will illustrate the 7 steps to a modified HACCP program with an example from newborn calf management. The goal is a healthy calf, with excellent immunity, and minimal exposure to infectious disease delivered to the calf barn or hutches.

Describe the activity or operation

In food manufacturing, they draw a diagram of the manufacturing process and identify the points in the process at which a hazard might occur. At a dairy we can diagram many of the important activities which we carry out on a regular basis. Some of these might be done daily, such as milking; weekly such as pen cleaning; or even annually such as corn planting or harvest. In the diagram identify all of the steps necessary to successfully complete the activity. If we consider the management of a newborn calf, the calving process and postnatal procedures through to movement of the calf to a hutch are included.

A very useful tool for describing a system is a concept map or flow chart. By working through all the steps which make up a process, it is easier to pick out the points where control needs to be applied. The real strength of this approach is that a single map or flowchart can combine physical, managerial or biological steps and their interactions, to gain a clearer picture of the entire operation. The other benefit of this approach is that it allows us to focus management attention on critical issues and away from details which often have no bearing on performance or are completely historical and of little value in managing future operations or activities.

Identify the potential hazards

While looking at your diagram, consider all the things that could happen which might lead to sub-optimal performance of that activity or pose a threat to the outcome of the process. When analyzing newborn calf management, you would want to consider such hazards as dystocia, postnatal infection with Johne's or salmonella, navel infection, failure of passive transfer of antibodies from colostrum, and others. In this step, you really want to exhaustively explore all the potential hazards and their risk factors or causes. In the next step, you may find that there are common control points among several hazards.

Describe preventive measures

Figure out what has to happen in order to keep the problem from occurring. Critical control points are defined as: a point, step or procedure at which control can be applied and a hazard prevented, eliminated or reduced to an acceptable limit. Applying this to the newborn calf, you'll immediately see that dry cow vaccination is an appropriate control measure for a host of calf diseases. Likewise, late-lactation testing of cows for Johne's Disease would allow you to avoid transfer of the disease through colostrum. A very clean, single use calving pen will also reduce the risk that the calf will pick up salmonella, Johne's, BVD, E.coli, etc. from a snoot-full of manure. Another very effective measure is to ensure that each calf gets 4 quarts of colostrum within 2 hours of birth. Employing measures such as these, early in the life of a calf can mean a better opportunity for her to express her genetic potential. You will need to ask yourself if the measure truly reduces the risk of the hazard occurring. If it doesn't, then it probably won't pay to implement that measure. Seek another point in the process where control can be more effectively applied.

Establish critical limits

Critical limits are simply the benchmarks for performance of the preventive measures or control points. For management practices, the critical limit would be whether the preventive measure was complied with or not. You should shoot for 100% compliance. For others, there may be some quantitative measure such as the calf getting four quarts of colostrum within 2 hours of birth.

Establish monitoring procedures

This is probably the toughest part for people to grasp conceptually. In a HACCP system, we need to re-orient our view away from output measures such as calving interval, age at first calving or rolling herd average. Instead we should focus on monitoring the inputs necessary for achieving our goals. For the calf, this means monitoring the vaccination program to make sure it happens. Create checklists for employees to sign when a practice is completed to ensure that essential management practices occur. You can also configure records software to prompt you for verification that a procedure, like vaccination or navel dipping, has occurred.

Determine corrective actions

Occasionally any system will break down, even a HACCP system. Recent ground beef recalls are evidence of this. However, in setting up the HACCP system, determine what you will do ahead of time should some part of the process fail. If there is an outbreak of calf scours, have a treatment plan in place to deal with it rather than wasting valuable time figuring out what should be done. Work with your advisors, vets, nutritionists to establish these plans.

Use your traditional records

Production and performance records are a valuable resource to help you know that your HACCP system is working. If you are not meeting your goals for a specific enterprise or operation, and the monitoring system doesn't pick it up, your records will tell you that the output from that operation is not meeting expectations. It will also alert you that you may

have picked an inappropriate control point or an insensitive monitoring procedure. For example, an increase in calf mortality, decreased growth rates, or Johne's Disease showing up in heifers would all provide a red flag that somewhere, the HACCP system is broken.

Setting up a HACCP system for your dairy is a daunting task, but a great benefit is a clearer understanding of the multiple processes that compose work of a dairy and how they inter-relate. For instance, understanding that better management of the calf operation will result in improved heifer growth, earlier calvings, and eventually production from that heifer investment should be incentive enough to begin HACCP modifications. Instituting a HACCP system is the difference between plowing a fire break and fighting the fire. Which would you rather do?