Profit from hygiene on the dairy farm

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Milk and milk products are well recognised as highly nutritious and quality foods. Milk is used daily in most homes, offices and eating establishments worldwide. At one time in the UK all young children were supplied with one third of a pint of fresh milk every morning and this had to be drunk!

Today, in a very different part of the world, the Chinese population is being encouraged to drink liquid milk. Substantial investment has been made in dairy farms and the milk processing infrastructure. Various flavours are added to liquid milk to further encourage consumption and to make it an attractive 'in' drink.

The objective of this article is to examine the pressures that are demanding ever higher standards of hygiene on dairy farms in order to achieve greater milk quality. Hygiene and mastitis control procedures that will enable today's dairy farmers to meet these challenges need to be explored.

Food chain

Dairy farmers are now firmly part of the milk and milk products food chain. This chain no longer exists solely within a country or continent – it is becoming increasingly

global. A recent Dairy Report (2006) from the International Farm Comparison Network (IFCN) states that Asian farmers have the potential to compete internationally once the quality of milk and dairy products can be improved cost effectively. Singapore Rabobank International has recently voiced the possibility of India dislodging Europe as the key exporter of dairy products in the next few years.

The global competition and increasing pressure from food legislation, dairies and supermarkets is making extra demands on hygienic milk production in order to ensure consistently high standards of milk and milk products. A major challenge to dairy farm hygiene is the building up of larger and larger herds. The unrestricted introduction of new animals into a herd puts more animals at risk from any single disease outbreak.

Legislation

A number of European Union Directives are pertinent. For example, in Directive 92/46/EEC (2 and 3), Number 2 lays down the health rules for the production and placing on the market of raw milk and milk based products (these directives have similar conditions to the US Grade A Pasteurised Milk Ordinance).

Table 1. Contagious sources of bacteria.

Contagious	Sources
Staphylococcus aureus	Mammary gland
Streptococcus agalactiae	Udder, teat canal
Streptococcus dysgalactiae	Chaps, cuts on teat skin, tonsils, carrier fly Hydrotea irritants

New EU food hygiene legislation came into effect on January 1st 2006 embodied into EC Regulations 852/853/854-2004. Annex 111, Chapter 1 of 852/2004 covers Raw Milk Primary Production. In addition to these directives, a local country may have its own additional specific requirements. Milk and milk products imported into the EU from countries outside the EU must meet the criteria laid down in Decision 2004/438/EC, and can originate only from countries authorised for the export of milk and milk products.

Teat dips, which are an essential element in any dairy hygiene programme, are required to be classified as veterinary medicines in accordance with European Regulations EEC 2001/82. All disinfectants used on farm should, therefore, comply with any necessary national or international approval schemes.

The future

Total dairy farm hygiene is by definition essential; carefully thought out procedures developed to achieve this are of paramount importance. An appropriate programme, diligently followed, will lead to the highest quality of milk possible from healthy animals and enable the best price ex farm for a satisfactory economic gain.

Dairy hygiene principles

It is encouraging to note that dairy farmers determined to stay in business are rising to the challenges and employing total farm hygiene programmes. Environmental hygiene, using for example Evans Vanodine's FAM 30, the UK's leading iodophor disinfectant, ensures that walkways and collecting yards are kept free from micro-organisms and, ideally, such areas should be kept as dry as possible. Pools and areas of standing water should be drained.

Farm vehicles, equipment and boots must be cleaned and disinfected regularly. Foot and wheel baths containing a suitable disinfectant concentration should be installed at all access points.

The use of automatic scrapers is beneficial

for helping to keep floor areas clean. The farm buildings in which the animals are housed should be maintained in good condition. Cubicle bedding, ideally, should be mucked out and changed daily. All cubicle floorings must have soiling removed before disinfectant treatment.

Biosecurity programmes

More dairy farmers are now exploring the application and benefits of a clear, totally comprehensive, formal programme pertinent to their particular farm and circumstances.

The need is to identify each critical control point (CCP) on the farm, develop a plan to control the risk at each point, implement the plan, record all actions, audit the records and, most importantly, train all staff to follow the plan with a full understanding of the needs and benefits to cow and milk hygiene. Evans Vanodine's biosecurity programme provides the platform for this important management method.

Mastitis prevention

Without the implementation of general dairy farm hygiene a mastitis prevention programme can come under severe pressure from environmental sources of bacteria.

A recent study on whether or not to dock tails carried out at the University of Wisconsin showed that tails can cause a significant increase in environmental mastitis pathogens, which contribute greatly to poor udder hygiene – a strong case for clean tails and clean udders! The Animal Science Group at Wageningen, Netherlands, has developed a system to score teat conditions and udder health (International Dairy Topics, Vol. 5 No. 5, 2006).

Changes in teat thickness are influenced by milking vacuum, the liner condition, pulsation rate, milk yield, and overmilking. Teat dipping, with, for example, Evans Vanodine's pre-Dip and using Masofilm after milking assists not only the killing of mastitis bacteria but also has a very valuable function of continuously maximising the teat skin condition.

This is the benefit of the emollient in better formulated products.

Environmental	Sources
Staphylococcus species S. xylosus, S. epidermis	Environment, human skin
Streptococcus dysgalactiae	Chaps, cuts on teat skin, tonsils, carrier fly Hydrotea irritants
Streptococcus uberis	Straw yards, legs, hind teats, lips of cows
Escherichia coli	Faeces
Bacillus species	Brewers grain, silage
Pseudomonas aeruginosa	Dirty water

Table 1. Environmental sources of bacteria.

The effect of mastitis on milk quality has been well documented and includes a reduction of casein, lactose, butterfat and shelf life. It also causes adverse milk flavours. In addition, where mastitis occurs, there will be an increase in somatic cell counts and bacteria (higher bactosan) in the milk.

The current regulatory limit for Grade A milk is 750,000cells/ml milk in the US. A recent large study by USDA in DHI herds found that 30.4% of bulk tanks tested were above 400,000 and 11.2% were above 600,000 cells/ml. In Europe the regulatory limit is 400,000cells/ml milk, however, most Western European countries average around 350,000 and the top producers regularly achieve 100,000-150,000cells/ml.

Most milk processors offer layers of premiums and penalties depending on the bulk somatic cell count.

An average level of 200,000 cells/ml milk is frequently the quality target in Europe.

Mastitis is, without doubt, the most expensive disease on a dairy farm and has been well researched over the years. It is generally agreed that the cost per cow per year of losses due to mastitis can frequently be €200.

Around 70% of these losses are for rejected milk and 20% for herd replacements. A general guideline is that for every doubling of the bulk tank somatic cell count (BTSCC) from a base of 100,000 cells/ml there is a loss of 2-3% potential milk production – a good reason to increase portable on-farm testing for BTSCC.

Break the mastitis cycle

We recommend a five point plan involving pre and post milking teat dipping with fully authorised and well proven products that have global usage experience; daily milking machine cleaning, and regular servicing; early diagnosis and treatment of clinical cases of mastitis; dry cow therapy; and early culling of cows with repeating or persistent infections. Evans Vanodine have been involved in this concept for the last 40 years and now have a range of dairy farm hygiene products benefiting 60 countries worldwide.

Conclusion

The maintenance of a very high standard of farm hygiene has to be today's most important milk production objective. We know that hygiene levels influence economical results and that legislators, dairies and supermarkets are continuously demanding and enforcing higher standards for liquid milk and further processed milk products. Consumers are becoming more aware of and concerned about issues of safety concerning the foods they buy and consume.

The goal is, therefore, to produce the highest quality milk possible on each farm, from healthy cows under top management. Each farm must rise to the challenge of providing superb hygiene conditions in order to maximise customer satisfaction and economic return. A complete dairy farm hygiene programme is essential in the achieving of this goal. ■