NATIONAL SURVEY OF CLINICAL AND SUBCLINICAL
MASTITIS IN JAMAICAN DAIRY HERDS, 1985–1986

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SUMMARY

Between April 1985 and August 1986, 89 Jamaican dairy herds with 10 or
more cows were visited, 1,645 lactating cows were examined using the CMT
test and 254 composite milk samples collected for bacteriological examination.
Widespread management faults were noted, especially of milking machine
usage and maintenance and the abuse of antibiotics. Fifty-six per cent of all
quarters were found to have CMT scores of one or higher, 0.8% showed
clinical mastitis and 3.2% were blind. The most common bacterial pathogen
Staphylococcus aureus, was recovered from 31% of sampled cows. The
resultant milk loss from clinical and subclinical mastitis was estimated to be
20% of the potential national production.

INTRODUCTION

The modern Jamaican dairy industry dates from the construction and opening
of the condensory at Bog Walk in 1940 (Arnold, 1955). In 1982 there were 5,596
daity herds with 26,954 cattle on the Ministry of Agriculture Farm Register. The
annual milk production in 1984 to 1985 was held to be 47.7 million litres (L.
Boyne, pers. comm.) at a farm gate price of J$ 2.14 per litre, an average lactation
of 2,600 litres per 305 day lactation and a calving interval of 15 months.

It had been realised for some years that subclinical mastitis was probably a
major national problem but its dimensions were unknown. In 1955, Guilbride,
Young and Norsen published the results of a limited study of 125 cows on five
farms indicating a high level of bacterial contamination of milk by various
bacterial pathogens and faecal contaminants. Clinical mastitis has been a
significant, regular component of the monthly reports from the Parish Veterinary
Offices for many years. When this survey was planned in December 1984 there
was no national mastitis programme, no training in control procedures, no
equipment or appropriate facilities other than a basic bacteriological isolation and
identification service at the Veterinary Diagnostic Laboratory in Kingston. This
survey was designed to estimate the extent of subclinical and clinical mastitis in
the dairy industry and identify the major causes.

MATERIALS AND METHODS

National sample

A stratified random sample of 111 dairy herds based on the 1982 Ministry of
Agriculture Farm Register was drawn up; this register has a 90% correlation with
the 1978 national agricultural census (L. Boyne, pers. comm.). The sample was to
contain all herds with 50 cows or more, and a third of those with 10 to 49 cows in

2 Reprint requests to Dr Hugh-Jones.
13 selected parishes of St Andrew, St Thomas, Portland, St Mary, St Ann, Trelawny, St James, Hanover, Westmorland, St Elizabeth, Manchester, Clarendon and St Catherine. Herds with less than 10 cows which included 97% of dual purpose herds were not included because of cost and logistical constraints. During the survey there was a major contraction in the dairy industry. Herds only survived where there was a continued milk collection or where herds had their own transport to the remaining condensory or to the north coast tourist hotels. After 17 months the survey was terminated in August 1986 when 89 herds had been sampled. By then there were no more herds available for sampling.

Milk CMT testing and sample collection
A minimum of 10 random, identified animals were quarter tested from each herd with less than 100 cows and 10% thereafter. These numbers were always exceeded. The California Mastitis Test (CMT) was carried out following the manufacturer’s (NASCO, Fort Atkinson, Wisconsin, USA) instructions after the udders had been cleaned, dried, sampled and stripped. All CMT readings were made by the senior author during a regular morning or evening milking. Composite cow milk samples were collected following procedures laid down by the National Mastitis Council (1969) from 15% of cows selected for subsequent CMT testing; although all ages of cows were sampled there was a selection bias towards older cows. Teats were washed, dried, minimally stripped and the teats and teat orifices were cleaned with 70% ethyl alcohol. Samples were collected into sterile plastic bags which were then sealed and chilled. All samples reached the laboratory within 72 hours of collection, the majority within 48 hours.

A management questionnaire was completed for each herd with the help of the head dairyman or owner. This covered the composition of the herd, contemporary mastitis management and milking equipment maintenance.

Bacteriological examination
The milk samples were examined using the procedures recommended by the National Mastitis Council (1969) and Carter (1973). After thorough mixing each sample was plated out onto blood agar, MacConkey, saboraud dextrose and Edward's medium, and a loopful into brain heart infusion broth (BHI). Plates were incubated aerobically at 37°C for at least two days. If the history indicated udder abscesses or purulent secretions the plates were initially incubated in a candlejar. Mueller Hinton plates were inoculated for antibiotic sensitivity testing using commercially impregnated discs. (DIFCO, Detroit, Michigan, USA) Coagulase tests were done on all Staphylococcus isolates. Further microbial identification utilised biochemical inoculation of isolates and streptococci were identified using the CAMP test and Edward's medium.

Statistical analysis
The data were entered into a special database on the Louisiana State University IBM 3033 computer. It was analysed using the Statistical Analysis System (SAS Institute Inc., 1985). Herd size was taken to be the number of cows being milked on the day of the visit. All calculations regarding herd size were corrected for variation in sampling numbers. To compare cows an average CMT for each cow was calculated by using the integer value of the mean quarter score with -1 for normal, 0 for trace, and so on up to +3, and +4 for clinical mastitis.