CALIFORNIA MASTITIS TESTING

. . . *Fresno County data summary*

BOB H. BOKMA · RICHARD N. EIDE

MONTHLY MASTITIS TESTING in Fresno County has been mandatory for Dairy Herd Improvement Association members since the beginning of 1971. Voluntary participation before 1971 was such that approximately 90% of the DHIA-tested cows were also mastitis tested with the California Mastitis Test (CMT). In 1961 an average of 11,206 cows were CMT-tested per month. Ten years later in 1971, an average of 22,687 cows were tested per month including approximately 10 per cent which previously had not been on the CMT but had been DHIA testing. This two-fold increase follows a similar increase in total DHIA cows (table 1).

Cows reacting strongly to the CMT are scored as CMT 2 or CMT 3. The pooled CMT 2 + 3 scores expressed as a percentage of the total scores is used as an index of mastitis. This index, used over a period of time, acts as a valuable guide to mastitis problems as they occur in dairy herds. In 1970 and 1971, an average of 6.93% of CMT-tested cows reacted with scores of 2 and 3. This, compared with the 1961, 1962 and 1963 average of 15.03% CMT scores of 2 and 3, indicates the success of Fresno County's mastitis programs. Table 1 shows no substantial change in actual number of cows reacting as CMT 2 or 3 although the number of CMT-tested cows has doubled over this eleven-year period.

An individual dairyman's herd often shows marked fluctuations in this CMT 2 and 3 score. These fluctuations are due to multiple factors not easily diagnosed, such as cold weather or a rainy season. Such factors alone may not be enough to trigger serious mastitis problems; but when combined with additional stress factors such as muddy corrals, bacterial contamination, a malfunctioning or improperly used milking system, serious flareups often occur.

An earlier Fresno County study reported in 1968 demonstrated the interrelationships between CMT reactions and factors such as climate, milk production and culling rate. A correlation was noted between the average daily temperature on a per-month basis and the CMT 2 and 3 score. Cumulative Fresno County data for the six-year period, 1962 through 1967, tended to cancel out other nonseasonal effects and to demonstrate quite markedly this relationship between temperature and CMT 2 and 3 scores. A nearly perfect correlation of – .972 was found between the CMT 2 and 3 score and the average temperature for the month preceding the month of the CMT score. The climatic data came from the Fresno Weather Bureau. The lag period of approximately one month suggests that temperature may have a prolonged—not immediately evident—effect and that

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THE FOOD STAMP PROGRAM: DEL NORTE AND HUMBOLDT COUNTIES, CALIFORNIA. Bul. 860. An analysis of the Federal Food Stamp Program's impact on the economies of two northern California counties. The study focuses on the impact of food stamps on consumer purchasing patterns with respect to product mix; the effects of stamps on food store operations; the impact of rising numbers of food stamp recipients on the costs of administering the program; and the effects of the program on individual purchasing power and the overall economies of the two counties. The research is based on survey data and a close analysis of welfare data.

TABLE 1. 11-YEAR SUMMARY FRESNO COUNTY CMT TESTING

Year	Average no. cows tested per month	Average no. cows CMT 2 and 3	Percent cows CMT 2 and 3
1961	11,206	1786	15.93
1962	12,844	1682	13.10
1963	13,999	2249	16.06
1964	15,327	1975	12.89
1965	16,866	1894	11.23
1966	17,043	2067	12.13
1967	16,709	1565	9.37
1968	18,067	1268	7.02
1969	18,365	1661	9.04
1970	19,059	1381	7.25
1971	22,687	1510	6.66
Month			
January	15,782	1889	11.97
February	15,829	2015	12.73
March	16,008	1952	12.19
April	16,079	1849	11.50
May	16,469	1788	10.86
June	16,621	1665	10.02
July	16,897	1601	9.47
August	16,975	1609	9.48
September	17,143	1589	9.27
October	17,083	1522	8.91
November	16,998	1560	9.18
December	16,845	1727	10.25

TABLE 2. FOUR-YEAR STUDY (1968–1971) AVERAGES OF FRESNO COUNTY CMT TESTING

Month	Average monthly temperature	Average monthly precipitation	Ave. 5 rep. dairies CMT 2 & 3 score	Ave. co. dairy CMT 2 & 3 score
	°F	inches	no. cows	no. cows
January	46.10	3.46	9.54	7.93
February	50.90	2.06	10.33	8.86
March	54.65	1.22	10.83	8.65
April	59.33	.90	9.72	8.39
May	68.38	.42	9.17	7.71
June	75.45	.03	10.01	7.63
July	82.13	.01	9.30	7.26
August	79.48	0	8.73	7.27
September	73.95	.02	8.56	6.66
October	61.83	.41	7.91	6.08
November	52.78	1.42	7.93	6.09
December	44.68	2.16	9.86	6.77

additional stresses must act well before the mastitic leukocyte reaction takes place. These stresses could be low temperature, the precipitation that often follows these temperature drops and the corral conditions that result—all acting as stresses that combine to promote a mastitis flare-up.

More recently, in the four years (1968–1971) following the first study, similar but less striking correlations were noted. When Fresno county data were used, with no lag period between the temperature drop and CMT score, a correlation of −.166 was noted (table 2 data used). When there was a one month lag between average monthly temperature and average CMT 2 and 3 score, the correlation was −.598, again showing the effect of seasonal temperature. For five representative dairies in which no CMT tester changes occurred during these four years, the correlations were very similar, −.263 with no lag period and −.622 with one month lag between temperature and the CMT score. The reasons for this lesser relationship than in the earlier study may well be the reduction of other contributing factors such as milking machine irritation, better corral drainage, etc.

Average monthly rainfall also shows a correlation to CMT 2 and 3 score. For the same four-year period, county data showed correlations between average monthly precipitation and average months the CMT score was +.267 for the immediate month and +.745 for a one month lag (table 2 data used). The five representative dairies had correlations of +.322 and +.70 respectively as above. Rainfall in conjunction with prolonged muddy corrals might well be a stress to be especially concerned about. Cows just finished milking may not have a completely closed teat sphincter and immediate exposure of the udder to deep mud and manure might encourage pronounced mastitis problems.

Rain-temperature

An important consideration is that rain and temperature are also closely related. In this four-year period the correlation between average monthly precipitation and average monthly temperature was −.894. This correlation was stronger than any other observed and suggests that these stresses actually affect mastitis scores.

Other factors influencing CMT reactions are numerous. Many of these are already known by each dairyman, more remain to be discovered. One factor, already mentioned, is faulty milking systems. Research has shown that a faulty milking system and/or improper use of a milking system can predispose cattle to mastitis.

The program of teat dipping is based upon the theory that after dipping there will be fewer organisms present to penetrate the teat sphincter that is still partially relaxed following milking. This program appears to be successful in reducing the incidence of mastitis.

While there already seems to be a trend of decreasing seasonal effects of mastitis, Fresno County herds, by using proper veterinary care combined with best use of present knowledge such as reducing the number of controllable forms of udder trauma, will further reduce mastitis problems.

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Contribution FROM

THE INCREASED AWARENESS of environmental qualities has made it desirable to obtain quantitative data on the contributions of agricultural and urban sources to water pollution. For this reason an investigation was initiated in the Coachella Valley on (1) the chemical composition of drainage water from cropped fields under various agricultural managements and (2) the effluents from the Indio sewage treatment plant.

The Coachella Valley is particularly well suited for such studies because it is possible to collect drainage samples from entire fields under single crops and because the water in the White Water River (the main drainage of the valley) is supplied virtually completely by agricultural and sewage effluents.

Emphasis

The research emphasis was on those nutrients suspected of playing a major role in eutrophication; but a large number of other chemical elements and various other properties were also included in the study.

Sampling stations were carefully selected to represent a single crop and a single management. Of the ten study fields, three were in citrus, two in grapes, one in dates, one in carrots, one in asparagus and two in corn. Their size ranged from a few ten acre plots to some of several hundred acres. Surface runoff and subsurface drainage of a large feedyard (about 100,000 head per year) were also sampled. A test farm which was irrigated frequently, but neither cropped nor fertilized, furnished two controls. Sewage of the Indio treatment plant, which handles up to 10 million liters per day, was col-