

Identifying a Milk Fat Depression Problem in your Herd

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Establishing a milk fat depression problem in a herd can be difficult. Milk fat percentage is affected by non nutritional factors (breed, days in milk, season, lactation number and mastitis) and nutritional factors (rumen unsaturated fatty acid load, altered rumen environment, and feeding antibiotics). If you suspect of milk fat depression the first step is to analyze bulk tank and DHIA records. You should investigate the milk fat percentage at herd, and at cow level. This article provides information on milk fat percentage for California dairies that you can use as a reference when exploring your herd records.

A. Milk fat percentage at herd level

Based on field experience, herd level milk fat depression has been defined as milk fat below 4.2% for Jersey herds and 3.2% for Holstein herds. Herd level records (source AgriTech Analytics) from 51 Jersey and 534 Holstein herds from California were studied. A total of 39.2% (n=51) of the Jersey herds and 22.0% (n=534) of the Holstein herds had at least one milk fat test below 4.2% and 3.2%, respectively, from Nov-09 to Oct-10 (**Table 1 and 2**). The proportion of Jersey and Holstein herds that had more than 25% of the tests with milk fat below 4.2% and 3.2% was 14.5% and 7%, respectively.

Table 1. Milk fat percentage in California Jersey herds (n= 51), top 25% herds, bottom 25% herds and median from Nov-09 to Oct-10¹.

	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10
Number of Observations	51	46	50	49	52	45	47	42	45	44	46	50
25% Top Herds	4.92	4.92	4.86	4.85	4.79	4.76	4.76	4.74	4.92	5.00	5.07	5.02
25% Bottom Herds	4.63	4.63	4.43	4.38	4.41	4.45	4.40	4.29	4.46	4.48	4.68	4.67
Median	4.77	4.68	4.65	4.64	4.67	4.64	4.56	4.51	4.64	4.76	4.84	4.88

¹Data provided by AgriTech Analytics (Visalia, CA).

Table 2. Milk fat percentage in California Holstein herds (n= 534), top 25% herds, bottom 25% herds and median from Nov-09 to Oct-10¹.

	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10
Number of Observations	434	466	457	428	443	452	441	428	448	404	426	442
25% Top Herds	3.81	3.85	3.82	3.78	3.75	3.70	3.70	3.64	3.60	3.62	3.69	3.73
25% Bottom Herds	3.51	3.55	3.53	3.51	3.47	3.43	3.42	3.36	3.32	3.35	3.42	3.45
Median	3.67	3.70	3.67	3.63	3.60	3.57	3.55	3.51	3.47	3.48	3.56	3.59

¹Data provided by AgriTech Analytics (Visalia, CA).

B. Milk fat percentage at cow level

It is important to define the proportion of cows within a herd producing low milk fat. Based on field experience from Dr. Gary Oetzel, UW-Madison, the percentage of cows with very low milk fat test (less than 2.5%) should represent less than 10% of the herd. Data from 138 Holstein herds in Tulare were evaluated (source AgriTech Analytics). The percentage of cows within a herd with less than 2.5% of milk fat by month is represented in **Figure 1**. The grey boxes represent 50% of the herds around the median, the bars represent 80% of the herds around the median, and the dots represent the upper and lower 10% of the herds. Of all the DHIA tests conducted during the study period, in 6.3% of the tests more than 10.0% (up to 27.1%) of the cows had milk fat below 2.5%. A total of 26.1% of the herds had at least one monthly test where more than 10% of the cows tested had milk fat below 2.5%. Eleven herds (8.0%) had more than 25% of their tests with at least 10% of the cows with milk fat below 2.5%.

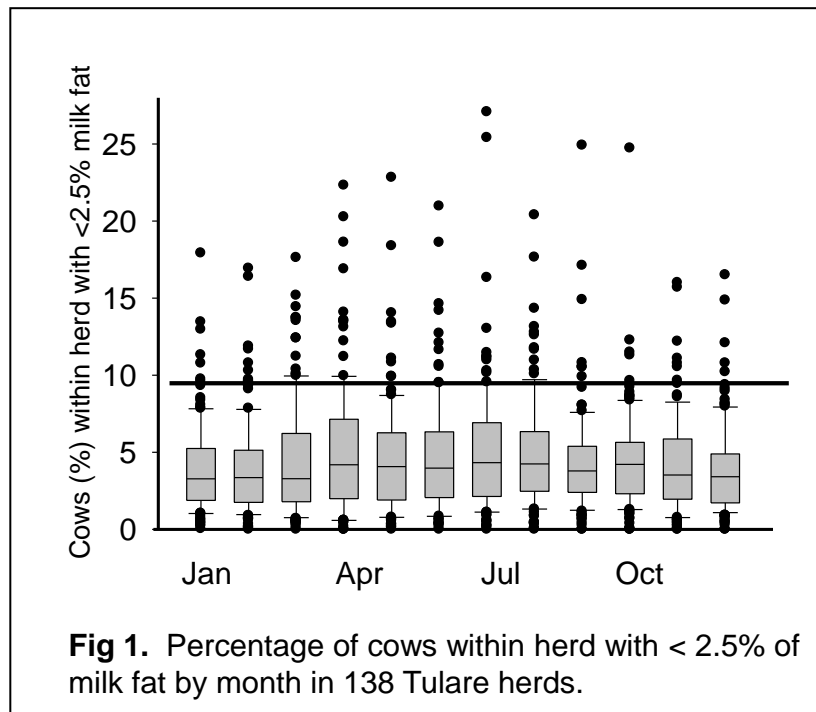


Fig 1. Percentage of cows within herd with < 2.5% of milk fat by month in 138 Tulare herds.

Days in milk affects milk fat, and it is important to identify the days in milk of the cows with very low milk fat. **Figure 2** represents the distribution of cows with milk fat below 2.5% in Tulare County herds by days in milk. The data suggests that you should find most of your low milk fat between 50 to 100 days in milk.

Once you have clearly established that your herd has a problem with milk fat depression you should investigate the roots of the problem. Bauman and Grinari (2001) proposed the biohydrogenation theory to explain milk fat depression, “Under certain conditions rumen biohydrogenation results in unique fatty acids (trans fatty acids) that are potent inhibitors of milk fat synthesis...”. Unsaturated fatty acids are toxic to rumen bacteria, and bacteria will biohydrogenate (or add a hydrogen) to those fats. Some situations

favor the formation of undesirable intermediates during biohydrogenation (low rumen pH, over load of rumen unsaturated fatty acids, and feeding antimicrobials) and, therefore, milk fat depression.

If you suspect milk fat depression you should investigate the problem and involve your veterinarian, nutritionist, technical services personnel and Cooperative Extension.

