

Using Peak and Summit Milk to Evaluate Your Dairy's Management Programs



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Using records and the summary of data collected from your dairy herd is critical in helping you improve the overall management and profitability of your herd. This article continues the series on explaining how to use information found on your DHI sheets. This article will review how to use peak milk and summit milk found on the second page of your Herd Summary sheet (DHI-202).

STAGE OF LACTATION PROFILE									
NUMBER	1ST LACT		2ND LACT		3+ LACTS		ALL LACTS		TOTAL
	AVG	STDEV	AVG	STDEV	AVG	STDEV	AVG	STDEV	AVG
1ST LACT	57	68	84	42	35	55			
2ND LACT	84	70	71	40	43	85			
3+ LACTS	83	102	83	15	33	84			
ALL LACTS	89	78	86	40	36	80			

IDENTIFICATION AND GENETIC SUMMARY									
AGE GROUP	NUMBER ANIMALS	AVG AGE YR-MO	NUM. IDENTIFIED BY	NUMBER OWNERS	NO. ANIMALS WITH MERIT #	AVERAGE MERIT #	HERD MERIT # OPTION	GENETIC PROFILE OF SERVICE SIDES	
0-12	80	0-07	80	58	38	+176	+374	FM	ALL OTHER (ALL BULL)
13+	85	1-09	66	70	41	+105	+261		47
REPLACE	165	1-02	146	128	79	+139	+318		14
1ST LACT	68	2-01	24	43	1	11	-209	+230	85
2ND LACT	49	3-05	4	11	5	-159	+234		
3+ LACTS	43	4-09	15	23	1	13	+56	+30	
ALL LACTS	160	3-02	43	77	2	29	-81	+172	
IDENTIFIED PRODUCE FEMALE	27	48							

PRODUCTION BY LACTATION SUMMARY									
NUMBER OF COWS	AVG MILK	PEAK MILK	SUMMIT MILK	PROJ ME 305 DAY MILK	FAT	PROTEIN	MILK	FAT	PROTEIN
1ST LACT	68	25	64	60	20535	727	629	+2433	+29
2ND LACT	49	41	81	78	20390	768	638	+1616	+47
3+ LACTS	43	57	79	76	19235	753	613	+359	+30
ALL LACTATIONS	160	38	73	70	20151	747	628	+1623	+37

YEARLY SUMMARY OF COWS ENTERED AND LEFT THE HERD											
NUMBER OF COWS ENTERED	NUMBER OF COWS LEFT	DAIRY	LOW PRD.	REPR.	MAST.	LEADER	FEET A LEGS	RUARY OR OTHER	DIS-EASE	DIED	NOT REPRD
1ST LACT	70	43	32	20	16	10	1				5
2ND LACT	44	15	9	6	6	6					3
3+ LACTS	42	1	21	13	6	7	2				4
ALL LACTATIONS	88	58	14	54	28	23	3				12

YEARLY PRODUCTION AND MASTITIS SUMMARY									
DATE OF TEST	MONTHS	NUMBER OF COWS IN TEST	TEST DAY AVERAGES	STANDARD-DEVIATION	TEST PERIOD INDEX	TEST DAY AVERAGES	TEST PERIOD INDEX	ROLLING YEARLY	TEST PERIOD ALL
1-27-11	29	159	149	57.2	82.1	101	98	18582	46.2
2-23-11	27	151	150	58.0	81.1	98	95	18591	45.6
3-29-11	34	159	156	61.0	81.7	105	98	18602	52.8
4-29-11	31	183	178	60.2	82.7	103	98	18648	58.6
5-31-11	32	168	169	53.9	88.3	94	93	17137	50.4
6-28-11	28	168	196	49.3	85.6	95	87		42.8
7-27-11	29	173	195	44.1	82.0	91	84		37.2
8-24-11	28	166	180	49.8	87.1	113	87		43.0
9-29-11	36	159	178	49.0	86.8	89	89		43.7
10-25-11	26	157							43.8
11-23-11	29	156							41.2
12-27-11	34	160							44.9
AVERAGES	30	162							47.4

Peak Milk by lactation

Summit milk by lactation



What is Peak Milk?

Peak milk is the highest daily milk production for a test day prior to 150 days in milk. Peak milk is determined once a cow is 100 days in milk from available test day milk production data for the current lactation and, if necessary, is updated until she is 150 days in milk. Peak milk can occur before 100 days in milk but will not be calculated until this time point. For each lactation group of cows (i.e. 1st, 2nd, 3rd+, and all ages), the peak milk is averaged within each group of cows and reported on the DHI-202 summary.

Importance of Peak Milk

From records of 7 Western Canadian herds (14,000 records in the data set), mature cows peaked around 8 weeks into milk and first-calf heifers peaked within 14 weeks. For every pound of milk higher a cow peaks, she produces 200 to 250 lbs more milk over the entire lactation. For example, if we can improve peak milk production by 4 lbs, these cows could produce 800 to 1000 lbs more milk over this lactation. Lactation curves for heifers are more persistent, in other words they hold their peak production longer than mature cows. Values for Peak Milk by lactation number are shown in the table for Holstein and Jersey herds enrolled in DHI through DRMS.

	Holstein Herds	Jersey Herds
Number of herds	5982	337
Rolling Herd Average	24386	15809
Peak milk		
First Lactation	80	55
Second Lactation	100	66
Mature Cows	108	71
Summit Milk		
First Lactation	76.2	51.8
Second Lactation	95.5	63.3
Mature Cows	102.8	68.4
Data represent all herds on DHI test 5-2024 through DRMS		

Calculate Peak Ratios

Using your own records, one can calculate a peak ratio. Peak ratio is calculated by:

$$\frac{\text{Peak milk for first lactation cows}}{\text{Peak milk for mature cows}} \times 100 = \text{Peak ratio}$$

Generally, first-calf heifers peak 75 to 80% of mature cows peak production.

If your herd has a lower peak ratio than 75%, your heifers may not be peaking as well as expected. Areas that should be reviewed include

1. Are heifers calving at the expected size and weight,
2. Are freshening heifers having problems transitioning into the herd,
3. Are there numerous heifers that are just “poor doers” and are candidates for culling (may reflect genetics, high somatic cell counts, or heifer feeding and management programs).

If the peak ratio is higher than expected, mature cows are not peaking in milk production. Possible areas to investigated include

1. Are cows calving with the appropriate amount of body condition (not too fat or thin- Body condition score of 3.0-3.25),
2. Are transition programs around calving working properly so that cows are eating well at and after calving to prevent large losses in body condition (i.e. preventing milk fever, ketosis, metritis, and displaced abomasum in pre-fresh and fresh cows) (less than 0.5 points of body condition score in first 60 days in milk)
3. Are high quality forages provided after calving, and
4. Do diets fed pre-fresh and after calving contain the appropriate amount of energy.

If the peak milk for second lactation cows is lower than expected but mature cows are peaking appropriately, these younger cows may be experiencing sophomore slump. During their first lactation, first-calf heifers need adequate amounts of energy and protein for milk production, growth, and during mid to later lactation to replace used body condition. If they are not provided adequate amounts of energy during mid to later lactation, they will use available nutrients for milk production and growth and will not regain adequate amounts of body condition. Body condition is necessary during early lactation since cows cannot eat enough to support their energy needs and rely on these stores to provide energy for milk production. Thus, these cows do not peak as high and hold that peak as well as if they had the appropriate amount of body condition at calving which they can use during early lactation. Another possibility is that these cows have clinical or subclinical metabolic related disorders (i.e. ketosis, metritis, and displaced abomasum) which limit intake and increase use of body condition for purposes other than milk production.

What is Summit Milk?

Summit milk is calculated by averaging the two highest milk weights for a cow for the first three test days in a cow's lactation. For each age group, the values are averaged for all cows that meet these criteria. As summit milk increases, overall lactation milk production increases.

Any decreases seen in summit milk could reflect (1) changes needed in feeding and management programs to increase energy, protein, or water intakes, (2) effects of heat stress, (3) poor cow comfort, (4) disease issues such as clinical and subclinical mastitis, or (5) in first-calf heifers, problems associated with heifer-raising programs.