

Bimodal milking: What is it and does it matter?

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How does a farm achieve efficient milking in the parlor? One aspect includes regular inspection and maintenance of milking equipment. Another important piece of efficient milking includes a proper, consistent milking routine that avoids overmilking. Milking prep and milking routines differ between farms but have the same goal: to remove available milk from the cow's udder quickly and completely, without slipping and with minimum discomfort and damage to the teats.

So what is bimodal milking and how does it affect the cow and parlor? Bimodal milking is another word for delayed milk letdown and is greatly affected by the milking routine. In bimodal milking, the milk already in the gland cistern of the udder will empty into the claw after unit attachment. However, there is milk that has not been released by the alveoli of the udder; this creates a period of low milk flow until the effects of udder stimulation by liners causes an oxytocin release and then release of alveolar milk. When this happens, milk flow rapidly increases and proceeds as normal.

Experts have known about bimodal milking for many years, however, it was difficult to measure. Thanks to a newer tool called the VaDia digital recorder, measuring milk flow is much easier. This has allowed researchers, producers, and veterinarians to study the effects of bimodal milking and how to manage it.

Several recent studies from Michigan State University exploring bimodal milk letdown are summarized below.

- Researchers have found that bimodal milking does not affect milking time duration but does affect total milk production.
- If the milk letdown was delayed by 60 seconds, daily milk production for the cow was reduced by 7 pounds. This is important because it means delayed milk ejection significantly decreases milk production and revenue on a farm (Erskine, 2019).
- In addition, decreased stimulation time and increasing herd size had significant effects on bimodal milking (Moore-Foster et. al. 2019).
- Based on previous studies, most experts suggest somewhere between 60-120 seconds as appropriate prep-lag times, and total stimulation time of greater than 10-12 seconds. Increasing stimulation time would not increase unit on time, though it could decrease parlor throughput if adding stimulation time significantly extended the time from opening the parlor gate until all units are off.
- Larger herds may have more emphasis on parlor throughput than smaller farms; this was the explanation for the observation of greater proportions of cows with bimodal milking in large herds.

So, why is bimodal milk let down important? Because it happens when milk letdown is delayed, and delayed milk letdown results in significantly less milk. For herds with a significant percentage of cows exhibiting bimodal milk, a simple way to increase milk production and total revenue is to increase pre-milking stimulation time. Teat end health may also improve by reducing bimodal milking. Testing for bimodal letdown is simple and can be done by monitoring one milking with a couple of VaDia recorders in most cases. Ask your veterinarian for details!