



Managing the Workaholic's Time

The dairy cow is a workaholic. Operating much of her productive lifetime at three times the energy cost of maintenance, meeting her every need is essential for production of high volumes of quality milk, timely breeding and easy calvings. Cow comfort is the foundation to the success of the lactating cow.

With only 24 hours in every day, how a dairy operation structures the cow's daily routine is critical to their success. Many components of the cow's day are fixed; effectively addressing the remaining hours can make or break long-term performance and reproductive efficiency.

Building a Time Budget

In essence, time budgets allocate a certain amount of time toward different, important daily events. Allocating the right amount of time to each of these tasks is a true balancing act. The table below outlines one study's findings of the time budgets of the average cow, compared to those in the top 10 percent of the herd for milk production. The last column outlines recommendations from leading researchers.

Table 1. Time budgets of top 10 percent compared to herd average (hours)

Activity	Top 10 percent	Herd Average	Recommendations
Eating at the bunk	5.5	5.5	3-5
Resting	14.1 ^a	11.8 ^b	12-14
Standing in alleys	1.1 ^b	2.2 ^a	2-3
Perching in stalls	0.5 ^b	1.4 ^a	7-10
Drinking	0.3	0.4	30 minutes
Outside the pen			2.5-3.5

^{a,b}Means within a row are statistically significant

Six events in particular are important for lactating animals housed in freestall barns, including:

- 1. Eating.** The cow has to spend a large portion of her day eating to receive the nutrients needed for production and maintenance requirements. Cows housed in a freestall barn and fed a TMR eat an average of 4.4 hours per day (ranging from 1.4 – 8.1 hours)
- 2. Lying/resting.** As Table 1 demonstrates, cows require a significant portion of time for lying each day. According to Dr. Rick Grant of Miner Institute, producers may want to consider designing facilities and management routines to allow cows access to stalls for up to 14 hours each day. For cows requiring less than this amount of time, other behaviors will be used during the extra time.
- 3. Social interactions.** Socializing is a very important and often unaccounted for action in the dairy cow's daily time budget. This time includes grooming and interactions with other animals in the pen. While the social interaction time may represent a small amount of time, it is a critical event in the cow's daily routine.
- 4. Ruminating.** Ruminating can take place both while standing or lying down, but most often takes place during lying time.
- 5. Drinking.** Access to fresh, clean water is a must around the clock.
- 6. Outside the pen (milking and travel time).** The main time spent outside the pen is for milking. While it is an essential task each day, cows cannot be outside the pen for too long. This creates a shift in their time budget allocation.



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Challenges in the Time Budget Balance

It is clear that cows need to accomplish certain behavioral activities each day, and we cannot allow management routines to interfere. The five most common reasons time budgets become unbalanced include:

- 1. Prolonged time in the milking parlor.** If cows are to require 12 hours for lying time, no more than 2.8 hours can be spent outside the pen for milking². From a facility perspective, this means cows must be managed in the holding pens and in the milking parlor in a time-efficient manner. In many cases travel and milking time can exceed five hours per day, which can be a big stressor, especially for lame cows. Lame cows take longer to get to and from the milking parlor and longer trips to the parlor can increase the incidence of lameness. Providing quality rubber flooring in walkways and holding pens may be helpful; however, they cannot make up for wasted time away from the freestall barn.
- 2. Overstocking in pens, leading to competition for stalls.** Heavy overstocking can decrease lying time, but research shows stocking density must rise above 1.2 stalls per cow for lying time to decline. It's also important to ensure the stalls are useable for the animals, meaning they are sized appropriately for the animals using the facilities.
- 3. Poor stall design.** Stall design often fails to support lying and rising movements or provide a cushioned surface to encourage more than 10 hours of lying per day. Sand remains the gold standard for stall base since it supplies traction and supports the weight-bearing limb rising during the rising and lying movements.
- 4. Inadequate heat abatement.** In hot temperatures cows spend less time lying down and more time in the alley under fans and soakers. Provide cows with natural ventilation where possible, lower stocking density in the breeding pen, have sufficient fans and soakers in the holding area and keep animals in the holding pen for a shorter period of time.
- 5. Excessive time spent in lock-ups.** Keeping cows in lock-ups at the feedbunk for extended periods of time can be detrimental to the daily time budgets. It is recommended that cows are not locked up for more than two hours per day, assuming one of the hours coincides with fresh feed delivery.

Linking Budgets and Breeding

Many different factors influence reproduction, and cow comfort is one of them. If, for example, the cow does not receive enough feed because her time budgets are unbalanced, she may not have the energy to divert toward reproductive performance. Lameness can also impact reproductive performance and lame cows can have greater issues if they are away from the barn for long bouts of time. Therefore, managing time budgets effectively translates to reproductive performance.

The following tips can help improve cow comfort, and, ultimately, reproduction through effective time budgeting:

- **The cow comes first.** While a multitude of management tasks must be completed each day, understanding and following the cow's time budgets is important. Use these guidelines as you implement protocols and herd health checks to ensure the right amount of time is available for important events such as eating, resting and social interaction.
- **Timely daily activities.** Rather than guessing how much time it takes you to complete tasks such as milking or how long cows are locked up for herd health checks, record start and stop times of these activities to measure the actual length of activities interfering with natural time budgets.
- **Watch the budget in action.** Track one pen of animals for a day and record how their day is spent. Use this information to help improve your cow comfort program and ultimately lead to improved on-farm reproduction.

The dairy cow works so very hard to produce high levels of milk. Managing her time and giving her the right balance she needs can lead to greater performance, improved reproduction and maximized on-farm profits.



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1 Grant R. Stocking density and time budgets. *Proceedings*, Western Dairy Management Conference; pages 7 – 17.

2 Cook NB. Time Budgets for Dairy Cowss: How Does Cow Comfort Influence Health, Reproduction, and Productivity? *Proceedings*, 2008 Dairy Cattle Reproduction Council Convention; pages 1 - 6.