



MONITORING URINE pH

PROTOCOLS FOR CONSISTENT MEASUREMENT

WHY TEST URINE pH?

To reduce the risk of clinical and subclinical milk fever, you should lower dietary cation-anion difference (DCAD) levels in the ration. Testing urine pH gives you a strong indication of the effectiveness of DCAD balancing in the ration. A close-up diet should be balanced for -8 to -12 meq/100g of dry matter.

THE MOST IMPORTANT ASPECT OF DETERMINING URINE pH IN CLOSE-UP COWS IS CONSISTENCY OF MEASUREMENT. ACROSS THE BOARD, YOU MUST BE CONSISTENT WITH MAJOR FACTORS INCLUDING:

- 1 NUMBER OF DAYS PREPARTUM
- 2 TIME OF DAY
- 3 NUMBER OF ANIMALS SAMPLED

-THE FOLLOWING IS A SUGGESTED PROTOCOL-

NUMBER OF ANIMALS

The more animals the better to get a truer sense of variation.

Herds **WITH FEWER THAN** 30 animals in the prepartum transition group

Herds **WITH MORE THAN** 30 animals in the prepartum transition group



Select all the animals in the group that have been consuming the transition diet for at least three (3) days and are more than three (3) days away from expected calving (when dry matter intake (DMI) is starting to decline).

Select 10% of the group—a minimum of 10 animals—that have been consuming the transition diet for at least three (3) days and are more than three (3) days away from expected calving (when DMI is starting to decline).

TIMING



Urine pH monitoring should occur once per week. Once a consistent pH is achieved and dietary or ingredient sources are stable, frequency can shift to once per month. Collect samples **between two (2) and four (4) hours after feeding** the anionic diet. This is when you should have the lowest urine pH and the least variation.

In herds with fewer than 30 animals in the pen, test all target animals.

In herds with more than 30 animals in the pen, sampling should be done on a minimum of 10 animals.

OBTAINING A SAMPLE

- 1 Gently massage the area about 6 inches below the vulva.
- 2 When the animal starts urinating allow for about a pint to exit before sampling as alkaline (basic) compounds in the vagina can cause erroneous pH values.
- 3 Experience will be your best teacher.



TIP A:

Use pH-sensitive paper (dip sticks) with a measurement range appropriate for your interest.



TIP B:

If using a pH meter, be sure it is cleaned, calibrated correctly and rinsed between measurements.

EXPECTING VARIABILITY

Despite the same diet, there will be variation between cows.

VARIATION CAN BE CAUSED BY MANY BEHAVIORAL AND MANAGEMENT FACTORS:

Drinking patterns

Eating behavior and sorting

Feed preferences by animals (even if forages are offered separately)

Recent urination before sampling

Proper mixing of the ration

Adequate amounts of feed (if insufficient feed is offered, some will consume normal amounts and others will be shorted)

Overcrowding (prevents animals from eating within the preferred time frame)

Forage variability in K and Cl (changes in forages without adjusting the DCAD minerals can cause large shifts in urine pH)

INTERPRETING RESULTS

80% of the samples should fall within the desired range according to the DCAD level of the diet.

The outlying 20% is likely caused by improper sampling or one or more of the factors listed.

FOR EXAMPLE:

If you are adjusting DCAD to meet the targeted levels (Fig. 1), increase or decrease DCAD until 80% of the cows fall in this range. Usually a DCAD of -8 to -12 meq/100g DM should accomplish this.

BREED	TARGETED URINE pH LEVELS
HOLSTEIN	6.0 - 6.8
JERSEY	5.8 - 6.5

Figure 1



#ScienceHearted

MONITORING URINE pH IS KEY TO METABOLIC DISORDER PREVENTION. IF YOUR PREPARTUM URINE pHs ARE NOT WHERE THEY NEED TO BE, BIO-CHLOR™ DELIVERS THE NEGATIVE DCAD LEVELS REQUIRED TO CONSISTENTLY ACIDIFY COWS.