



# Cation-anion balance in organic silage in relation to prevention of milk fever

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## PURPOSE OF THE STUDY

The purpose was to investigate if low frequency of milk fever in Norwegian organic dairy cows is connected to the cation-anion balance (CAB) in dry cows' diet.

## MATERIAL AND METHODS

The mineral content in fodder from eight organic farms and eight conventional control farms was examined. Seven cows were selected from each farm. Fodder given to the cows in the dry period was analysed for Na, K and Cl, and the botanical composition of the roughage was determined. The cows' urinary pH and the cows' body condition scores were measured during the dry period. The fodder was also analysed for other minerals (Ca, Mg, P, Mn, Fe, Cu, Zn and Mo) to get a broader picture of the ration. The data collection started autumn 1999 and continued until spring 2001.

## RESULTS

The mean CAB in both the organic and conventional fodder was 366 mEq kg<sup>-1</sup> DM, and the cows' urinary pH was around 8.5. Based on results from this project we cannot see any connection between the lower frequency of milk fever in organic milk production in Norway and CAB in organic fodder. Not unexpectedly, the organic fodder contained more Ca and Mg. There were no differences in the content of Fe, Cl, Na, K, P, Mn, Zn and Cu.

*Mineral contents (g kg<sup>-1</sup> DM) in organic and conventional silage.*

| g kg <sup>-1</sup> DM, mean | P       | Mg      | Ca      | K     | Na      | Cl     |
|-----------------------------|---------|---------|---------|-------|---------|--------|
| <b>Organic</b>              | 2,2     | 1,7     | 6,2     | 16,2  | 1,5     | 4,8    |
| *                           | 1,5–3,4 | 1,0–3,4 | 2,7–11  | 7–28  | 0,3–4,0 | 1,0–18 |
| <b>Conventional</b>         | 2,2     | 1,2     | 3,6     | 18,3  | 1,2     | 6,2    |
| *                           | 1,5–3,1 | 0,8–1,7 | 2,2–5,7 | 13–24 | 0,3–2,6 | 2,7–11 |
| <b>Total</b>                | 2,2     | 1,4     | 5,0     | 17,2  | 1,3     | 5,5    |

\* min and max values

The results from the mineral analysis of the fodder samples indicate an unfavourable mineral composition regarding milk fever in both conventionally and organically produced fodder.

$$\text{CAB} = [\text{Na}]/23 + [\text{K}]/39 - [\text{Cl}]/35.5$$

CAB means cation anion balance.

A negative or very low CAB value has been shown to have preventive effects on milk fever.

Cation-anion balance in organic and conventional produced silage.

