

Technical Note 21/07/08

Do not neglect farm minerals - or more 'f' words will be heard this winter

- With rising commodity prices, due to worldwide demand, and energy costs forcing up the cost of all farm inputs, there may be a temptation on livestock farms to cut back on, or even withdraw, farm minerals. The consequences of this could be severe.
- Minerals and vitamins are essential dietary nutrients, as are energy and protein. Balancing supply and demand on a year round basis is critical for both short and long term performance.
- Minerals and vitamins have a central role, as part of a total feeding and management programme, in preventing the most common problems seen on farm – the 'f' words which can so severely impact on profitability.

- **'f' words**

Fertility

Falling Milk Returns

(Mastitis/Somatic Cell Counts)

Feet (lameness)

Few other key problems

(Milk fever and Displaced Abomasum)

Key related mineral/vitamin

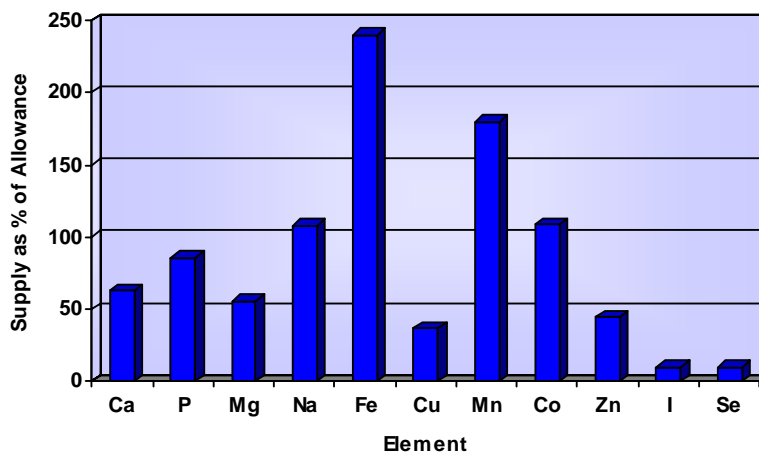
Phosphorus, Selenium/Vitamin E, Copper, Iodine

Zinc, Selenium/Vitamin E

Zinc, Biotin

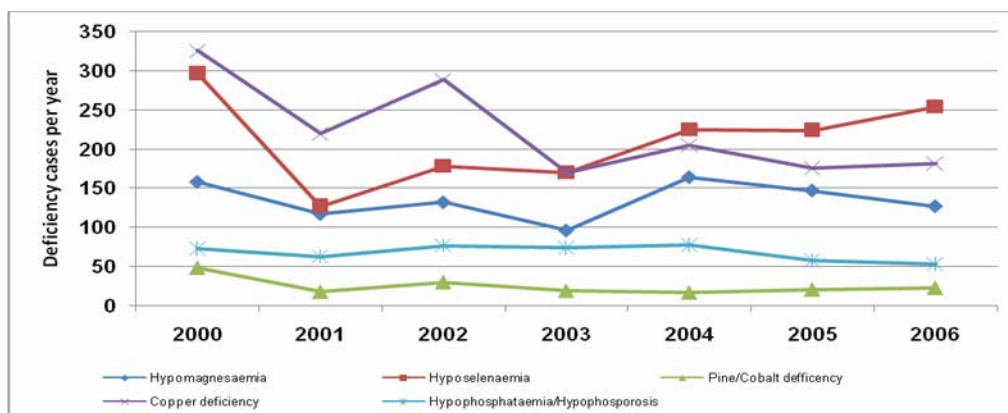
Calcium

- UK forage analyses show deficiencies of these key mineral elements which are so important in helping prevent 'f' words. For example, analyses undertaken at the FWTNI laboratory shows that average grass silage alone, fed at 11kg DMI per day for 30 litres of milk will supply insufficient calcium, phosphorus, magnesium, copper, zinc, iodine and selenium compared to the daily requirement (100% line):



- Maize and whole crop silages supply significantly less mineral than grass silage.

- In practice, mineral deficiencies do occur. The latest report from the Veterinary Laboratories Agency veterinary investigation centres shows ongoing mineral deficiency incidences (from VIDA report 2000 to 2006):



- The costs of 'f' words on farms are severe. The latest published costs from DAISY (2002) show the following impact on profitability:

FERTILITY: Days Open	Total cost (£) per cow for increased days open
101-115	£34.56
116-145	£120.35
146-175	£226.93

LAMENESS	Average cost/cow
Lameness	£178.00*
Digital Dermatitis	£30.00

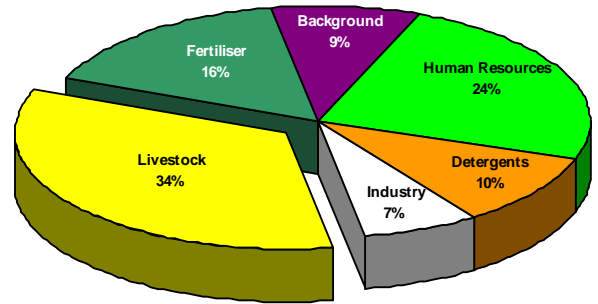
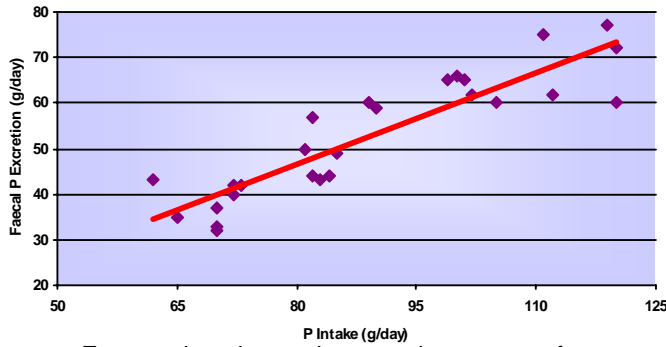
* Including effects on fertility, replacement costs and culling rates

MASITIS	Average cost/cow
Mild	£149.47
Severe	£400.31
Fatal	£1,709.35
Average cost per 1.6 cases/ affected cow is £201.20	

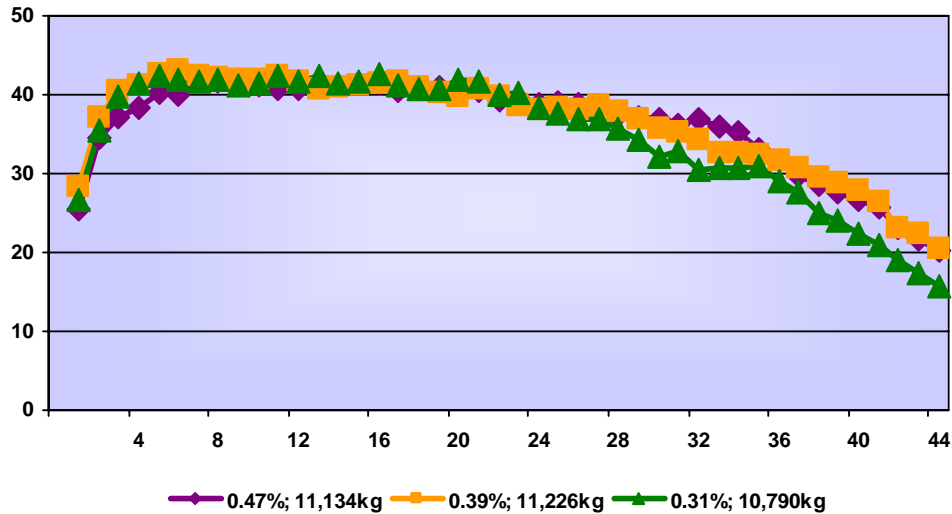
MILKFEVER	Average cost/cow
Mild Case	£40.42
Downer Cow	£117.13
Cost due to fatality	£1,655.67

- Of course, excessive supplementation should also be avoided as in the extreme it can lead to toxicity issues. For example, in 2006 VIDA reported 29 cases of copper toxicity in cattle, although to put this into context compared to a non-feeding induced mineral toxicity, these are less incidences than the reported 50 cases of lead poisoning.
- Balanced mineral and vitamin supplementation over a 365 day period is the answer to profitable livestock production.
- What is 'balanced supplementation'? The 'perfect' solution is a tailor-made mineral and vitamin specification against the farm forage analyses, using careful diet formulation based on available minerals, for each stage of production (for example early, mid and late lactation).
- Alternatively the unique FWTNI Minlink dairy programme, available through Wynnstay can be used to select the most appropriate farm mineral to balance the diet on a 365 day basis.
- With phosphorus and vitamin E being a significant cost in a farm mineral, it is particularly important to carefully match the requirement and supply. Of course, the closer the balance the higher the risk of deficiency and as such the tighter the mineral management must be on a 365 day basis
- Broadly speaking, for **phosphorus** 8% P is the highest requirement in a mineral used in 'typical' dairy rations when the mineral is fed at 150g per head per day year-round.

- Phosphorus in excess to requirements is not stored, but rather is excreted and contributes to pollution in surface water. Livestock account for 34% of this loading.

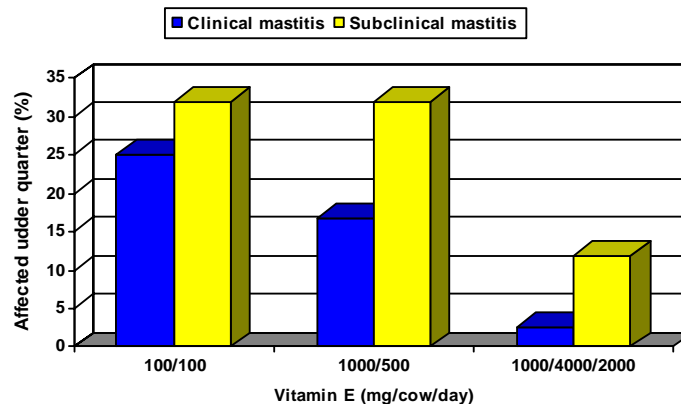


- Excess phosphorus does not increase performance, as shown for example in the long term milk production trial of Wu et al (2001)



- Conversely phosphorus deficiency signs may occur quickly when supply is insufficient and the immediately available phosphorus pool is depleted. Symptoms include lost appetite, reduced milk yield, depressed fertility, unthriftiness and poor growth. The longer term impacts are poor performance and infertility.

- For **vitamin E**, latest requirements (NRC Dairy, 2001) of typically 1690 mg/day can demand a farm mineral with at least 5000 mg/kg. It is certainly only at these high levels of daily intake that any realistic impact can be made on reducing somatic cell count. Lower supplementary levels have impacted on the incidence of clinical mastitis. This has been clearly shown by Weiss (1997) where vitamin E supplementation was varied in the dry (100, 1000 or 1000 then 4000 mg/day) and milking periods (100, 500 and 2000 mg/day) to investigate the effect on clinical and subclinical mastitis. Only high level vitamin E supplementation reduced subclinical mastitis.



- Vitamin E supplementation of farm minerals should at least cover basic nutritional demands for performance, typically requiring at least 2000mg vitamin E/kg in a dairy mineral to meet absolute minimum requirements. Specific additional supplementation should then be used to meet the demands of high performance stock, particularly in dairy cows where health status is critical. Tools such as the FWTNI vitamin E calculator or ready reckoner used in conjunction with the predicted vitamin E content of grass silage supplied by the laboratory can accurately determine vitamin E supplementation.
- It is notable that to supplement with 1000 mg vitamin E per day over a 365 day period costs less than £20 per cow per year. A small investment for high potential return.
- **In summary**
 - Forage is a poor source of minerals.
 - Mineral deficiencies do occur on farms, with significant financial impact.
 - Mineral supplementation is required on farms to avoid deficiencies associated with 'f' words.
 - Excess mineral supply is not beneficial but closely matching supply and demand has greater risk of deficiencies on farm.
 - A 365 day mineral programme is essential for performance, health and profitability.
- Further information can be obtained from any of Wynnstay's Ruminant Technical Team or Technical Manager, Steve Brown on 07774 855026 or steve@wynnstay.co.uk

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**OUR RECENTLY REFORMULATED PREMIER
RANGE OF RUMINANT MINERALS**

OR

**HAVE YOUR MINERAL BALANCED WITH
THE MINLINK PROGRAM**