



THE RISK OF MYCOTOXINS

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Extraordinary science brought to life

THE MODERN DAIRY COW

- Farm animals have been undergoing human-managed selection ever since their domestication.
- Today the dairy cow is producing considerably more milk than its ancestors.
 - High demand for energy and a need to mobilise body reserves to support this demand.
- High yielding cows are fed a high-energy concentrate-based diet with relatively little fibrous feed to meet levels of production.
 - Their digestive system is adapted for a high-fibre low-energy diet.



THE RUMEN - A SYNERGISTIC MICROBIAL ECOSYSTEM

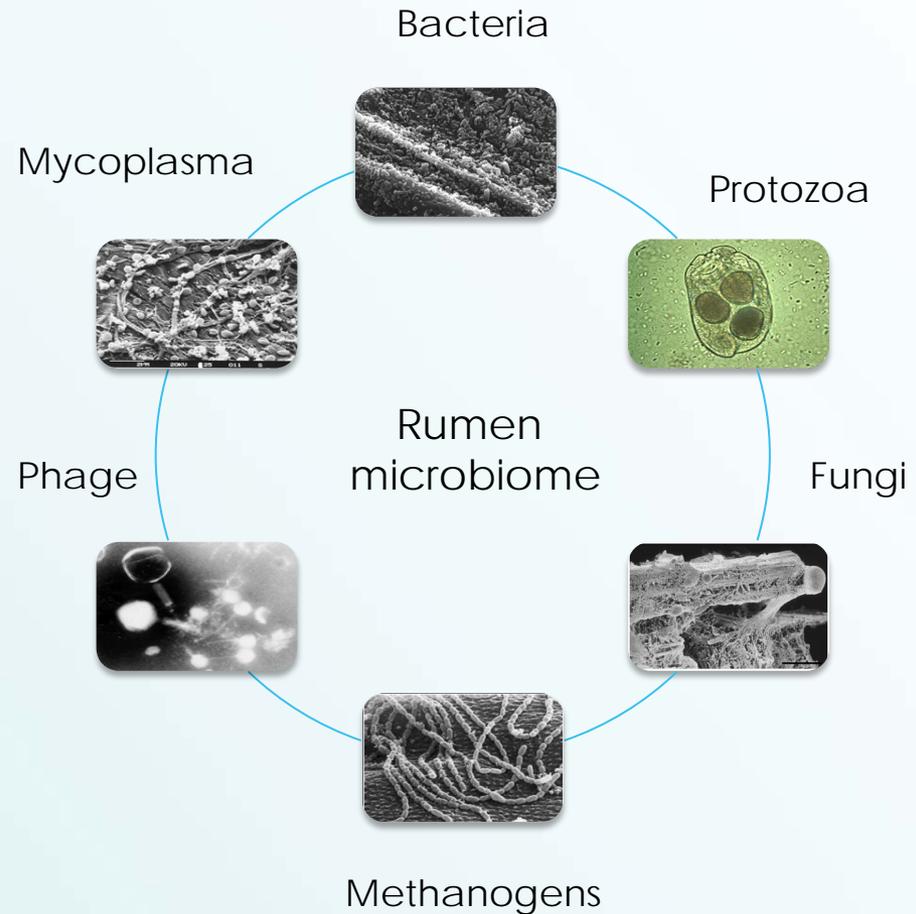
Microbial activity is key to generate energy sources required for milk & meat production.

They are important for degrading a wide variety of feed components

- Transform plant material to both undesirable and desirable ruminant products.

Defend against mycotoxins

- Rumen microbiota have the ability to biotransform mycotoxins to less toxic or non toxic metabolites.

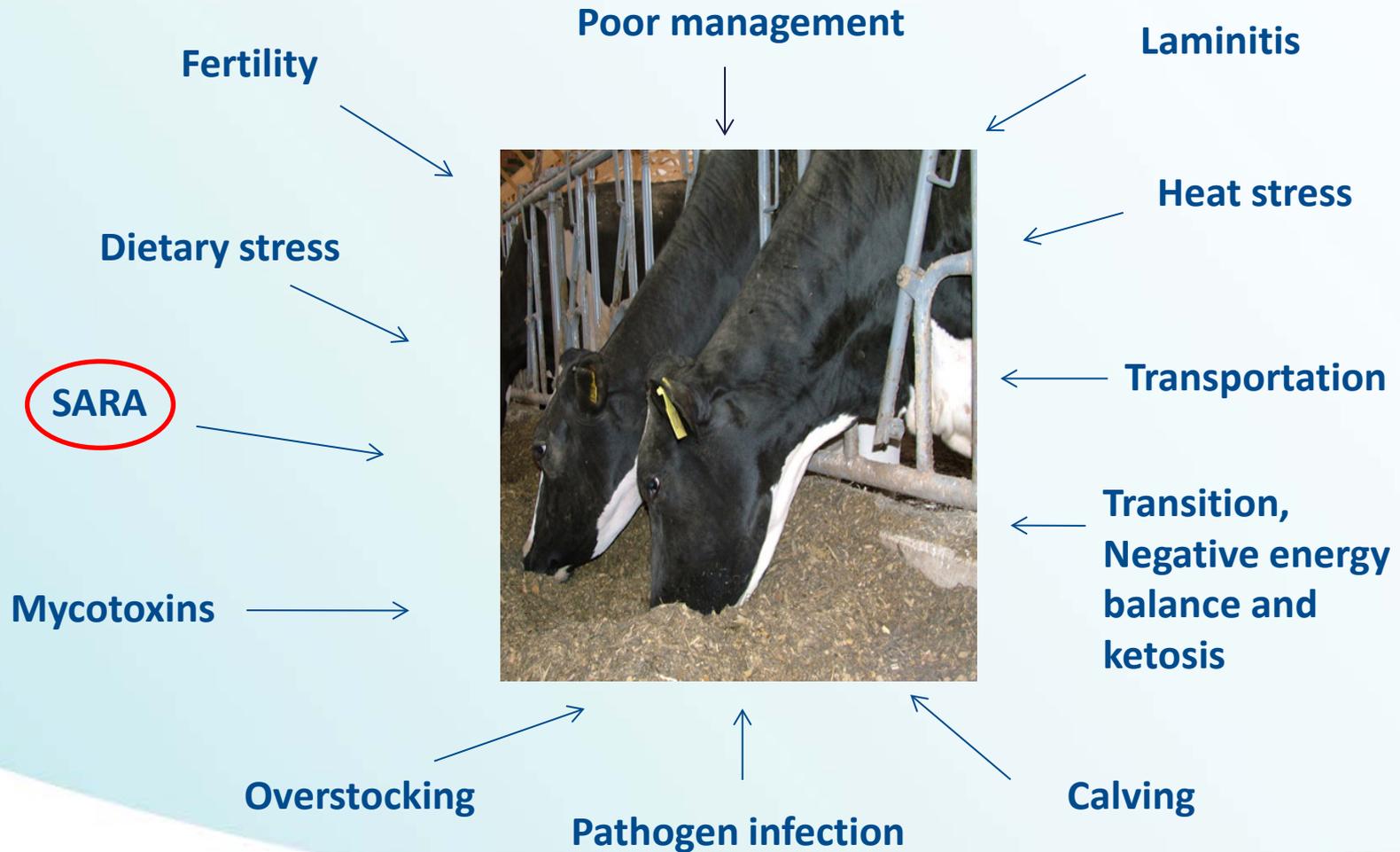


THE RUMEN: DEFENDS AGAINST MYCOTOXINS

- A healthy rumen has the ability to protect cattle against low levels of in-feed mycotoxins, but not all.
 - A number of mycotoxins resist rumen breakdown.
 - The Rumen can only deal with low levels of mycotoxins
- A dairy cow has been genetically bred to be high producing.
 - Are under more pressure and stresses
 - Have a more tailored high energy diet
 - Often have to deal with several different challenges



CURRENT STRESS CHALLENGES FACING THE HIGH PRODUCING DAIRY COW



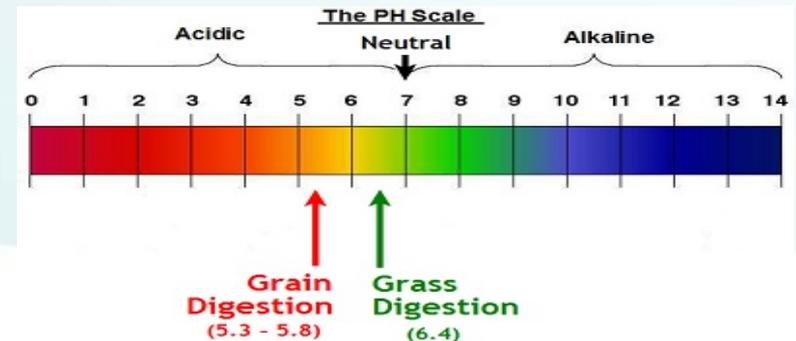
Stresses and challenges impact on the rumen microbial ecosystem and its ability to function



SUBACUTE RUMINAL ACIDOSIS (SARA)

SARA = When the rumen pH is below 5.8 for 3 – 4 hrs before recovery

- Cows need to maintain high production.
- They are fed a high-energy concentrate-based diet with relatively little fibre.
- This type of diet often leads to acidity in the rumen.
- A lower rumen pH which subsequently affects the balance of rumen microflora, reducing the cow's own natural defense against mycotoxins.



SUBACUTE RUMINAL ACIDOSIS (SARA)

- Protozoa and some bacteria are negatively effected by an acidic rumen environment.
- Prolonged or repeated exposure to SARA will also damage the rumen wall, allowing easier passage of these chemicals into the bloodstream.
- In addition to SARA, other potential stressors such as calving, lameness, disease, over stocking etc all have a cumulative negative effect on the cow's ability to cope with mycotoxin ingestion.

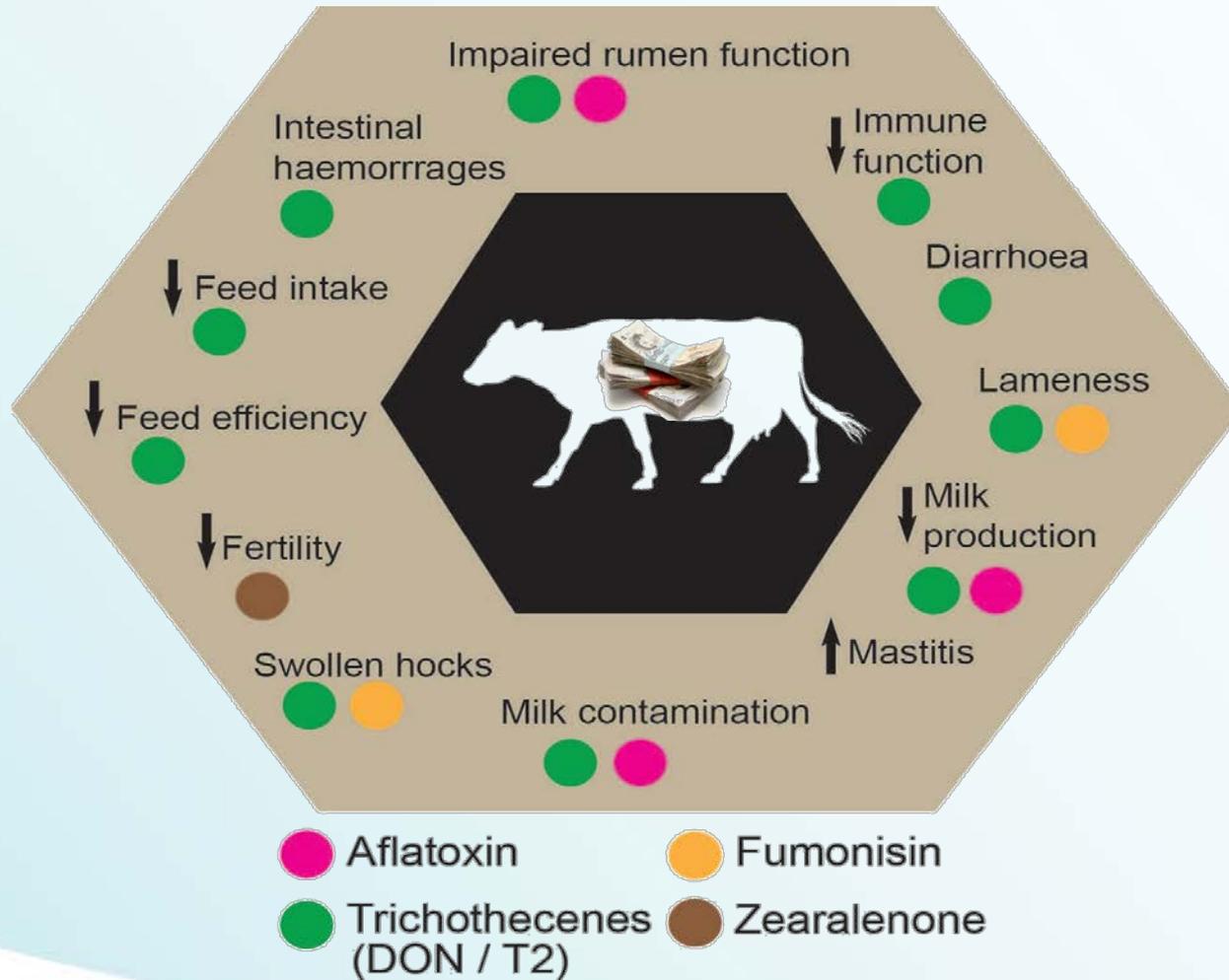


MYCOTOXINS

- Often low individual levels
 - These are hidden thieves and are likely responsible for numerous undiagnosed health issues.
- Additive effect of individual mycotoxins
 - Leads to synergistic larger effect and increased toxicity.
 - Result: Can be more dangerous than high levels of individual mycotoxins.
- Virtually all mycotoxins compromise the immune system decreasing the resistance to challenge from other diseases.



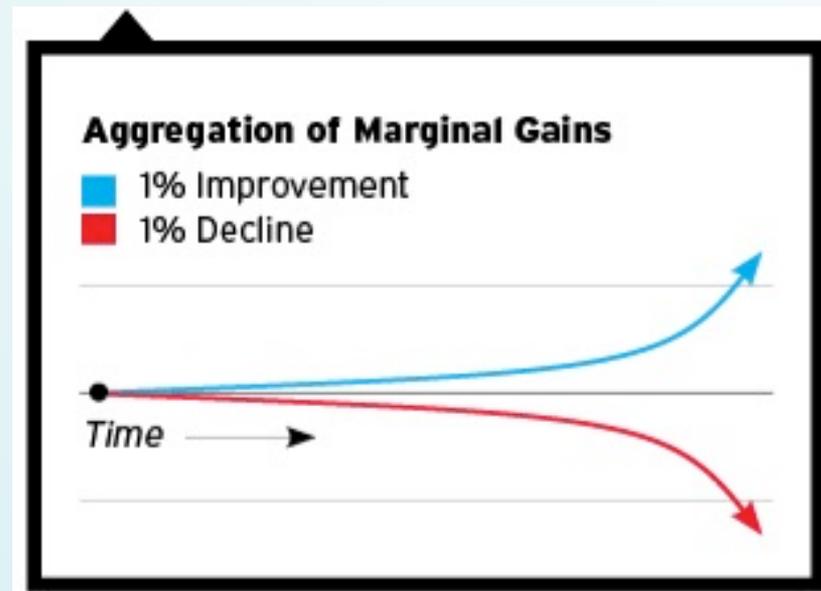
MYCOTOXINS: KILL PROFIT NOT ANIMALS



MO FARAH OF THE COW WORLD

Marginal gains

- If every area related to the stress challenges of a dairy cow was improved by just 1 percent, then those small gains would add up to a remarkable improvement in production, health and ultimately PROFIT.



CONCLUSION

- The ruminant has its own natural defense but this is often impaired.
- SARA has a severe impact on the Rumen and its natural defense
- Marginal Gains: The economic impact of lowered productivity, reduced weight gain, reduced feed efficiency and interference in reproduction is greater than that of immediate mortality and morbidity.
- Effective measures for detoxification of mycotoxins are essential for the improved production and productivity of livestock.

