

A View Inside the Relationship Between Stressors and Sustainability

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Sustainability and animal production: Stressors—More than just heat stress!

Sustainability is usually associated to the environment, but it's so much more than that (according to Dr. Frank Mitlhoener; **Figure 1**). Sustainability is now a part of everyday news. The livestock sector has an important role to play in stewardship of natural resources – water, land, nutrients and the related outcomes for air, water and soil health.

Therefore, sustainability means meeting our own needs without compromising the ability of future generations to also meet their needs.



Figure 1. Five main pillars of sustainability

Remember, cow stress is an enemy to your bottom line! When thinking of stress, heat stress often comes to mind, but many other stressors (**Figure 2**) also need to be considered to ensure good herd management.

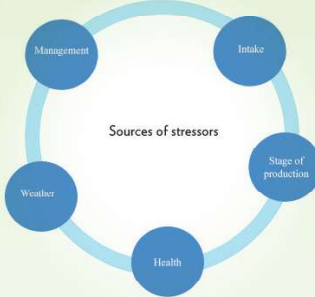


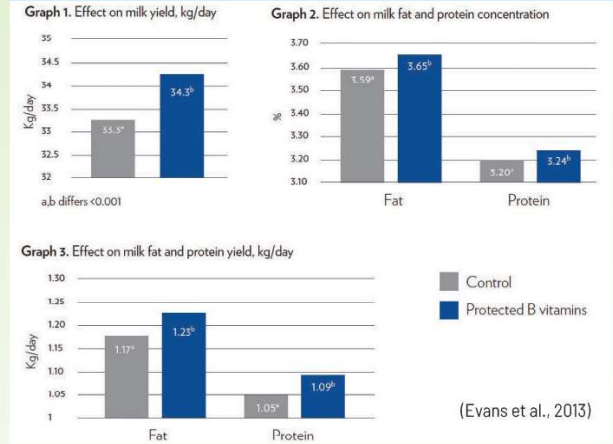
Figure 2. Main sources of stressors

Relationship between sustainability and stressors:

Reducing, limiting, or controlling stressors and their impact on the herd leads to increased efficiency and contributes to all pillars of sustainability.

For example, in the summer, heat decreases dry matter intake (DMI). To adapt to these

Figure 3. Effect of protected B vitamins on production



(Evans et al., 2013)

changes, cows use their body reserves, which result in metabolic and health problems. These stressors have a direct impact on sustainability as they negatively impact the health and comfort of animals (metritis, ketosis, mastitis, etc.), add to the farm's workforce duties and responsibilities (treatment of sick cows, etc.), and increase the costs of production (energy required for proper ventilation, decreased milk production, treatment costs, etc.).

While there are lots of stressors we can't control, having a sustainability approach can make your life easier, using solutions that will have ripple effects on all aspects of your business, including your herd, your employees, your environment and your bottom line.

A solution: Protected B vitamins

B vitamins are essential for all ruminants. They are enzyme cofactors that support an active metabolism. As a key part of many metabolic processes, they promote optimal health and reproductive performance (Evans et al., 2006), milk yield (Morisson et al., 2018), and sustainability of the dairy industry (Evans et al., 2021). New research results demonstrate that bacterial production alone doesn't meet the cows' needs in B vitamins, as it was previously assumed,

and requires supplementation that varies according to their production cycle (Evans et al., 2021).

1. Lactation

Dietary supplementation of Protected B vitamins blends for lactation (folic acid, B₁₂, pyridoxine, pantothenic acid, and biotin) fed to multiparous cows and first-calf heifers provided essential nutrients biologically required to produce milk fatty acids and protein (**Figure 3**).

Better milk performance

2. Transition

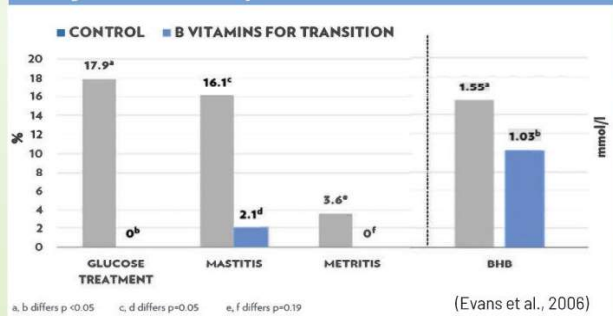
A study was conducted to evaluate the effects of supplementing transition diets with a rumen-protected B vitamin (folic acid, riboflavin and vitamins A, D and E) and choline blend on health in Holstein dairy cattle (**Figure 4**). The trial was managed by researchers from the University of Guelph.

Results showed:

- BHB levels were reduced by 33%
- No more glucose treatment
- Mastitis was reduced by 87%
- No more metritis

End result: Healthier Cows

Figure 4. Effect of protected B vitamins on health



a, b differs p<0.05 c, d differs p<0.05 e, f differs p<0.19

(Evans et al., 2006)

Take-Home Messages

- Stressors are complex, and inter-related challenges that require proven solutions adapted to the realities of your farm.
- Reducing the impact of stressors improves animal welfare, reduces labour, improves herd performance, contributing to a more sustainable dairy farm and industry.

References available upon request.

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