Strategies to Reduce Methane Emissions on Pasture-based Dairies

Randi Black
University of California Cooperative Extension
Can we find a balance?
Reduce Manure Storage

Easy answer = put cows out more
Pasture Lanes
Animals fed legumes usually (McCaughey et al. 1999; Waghorn et al. 2002), but not always (Van Dorland et al. 2007), have lower CH4 emissions than animals fed predominantly grasses.

Maturity at the time of harvest may be confounded with the impact of forage type on CH4 emissions (Chaves et al., 2006).

Pasture rotation can help manage when grasses are consumed for optimal performance.
Reduce Enteric Emissions

Supplementation

↑ concentrate reduces dietary energy converted to CH4 (Blaxter and Clapperton, 1965)

★ change from fiber to starch substrate and ↓ ruminal pH★

Concentrate feeding ↑ performance (Beauchemin et al., 2008)

Total farm GHG emissions ↑ as forage proportion ↑ (Johnson et al. 2002)
Reduce Enteric Emissions

Breeds and Genetics

Lower residual feed intake reduced methane production in beef steers (Hegarty et al., 2007)

Certain breeds, or crossbreds, may be more efficient on pasture (Prendiville et al., 2009)
Conclusions

• Adding lanes can increase time cows can be put on pasture
• While moving cattle to pasture reduces methane production from stored manure, enteric production increases
• Management should consider ways to improve cow efficiency to reduce methane per unit milk
• Pasture composition and management, supplementation, and breed selection may help reduce enteric methane production
References


Questions?