

Introduction

Wisconsin is the largest cheese producer, the second largest milk producer, and has the largest dairy farm community in the U.S. Dairy farming in Wisconsin is the number one agricultural activity and a major economic engine that has a total economic impact of milk production of \$6.4 billion in industry sales, more than 80,400 jobs, and \$1.8 billion in total income (Deller, 2007). The dairy industry in Wisconsin greatly sustains rural communities. However, this traditional and strong industry is struggling to remain economically viable because skyrocketing corn grain and other concentrated supplement feed prices together with uncertain milk price fluctuations. Dairy farmers and Extension personnel have indicated the urgent need to improve dairy cattle feed cost-efficiency for the dairy industry to remain economically and environmentally sustainable.

Hypothesis

Effective feeding strategies that include corn grain substitution by forage and grazing will improve economic net return in many farm and market situations in Wisconsin. These substitutions will additionally decrease dairy farm environmental impacts and promote more ecologically sustainable production systems.

Materials and Methods

Integration of four major components into a bio-economic decision support system, the *corn-replacer*:

- 1) Development of a Markov-chain, stochastic, dynamic herd simulation model to portray real-life dairy cattle conditions, (Cabrera et al., 2006; 2008b);
- 2) Compilation and analyses of data from extensive field research of corn/forage substitution, Tessmann et al. (1991);
- 3) Development of corn/forage substitution production models, Earleywine (2001); and
- 4) Integration of grazing concentrate supplementation, Soder and Rotz (2001); Bargo et al., (2003).

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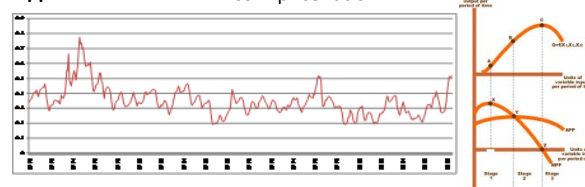
Approach



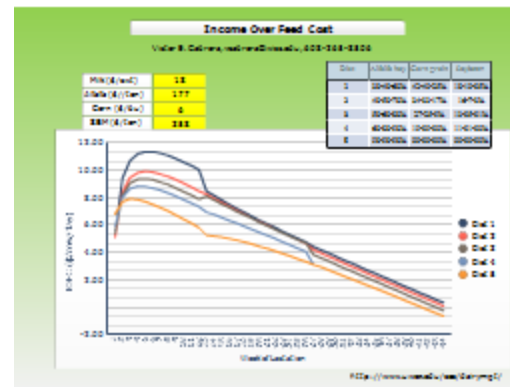
Participatory modeling framework. Source: Cabrera et al. (2008a)

Approach

Milk:corn price ratio

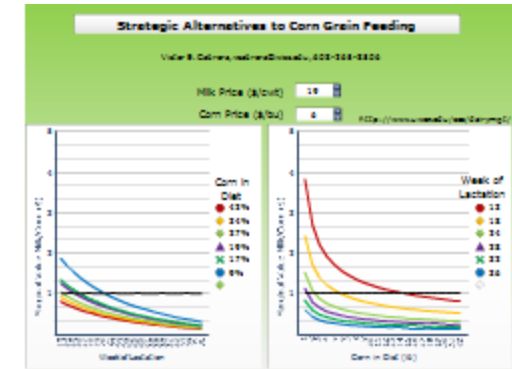


Preliminary Results



<http://www.uwex.edu/ces/dairymgt/feeding.cfm>

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Limitations and Continued Work

- 1) Incorporate milk fat and protein,
- 2) Study and integrate grazing field observations,
- 3) Incorporate other forages, especially corn silage,
- 4) Incorporate herd and group feed analyses,
- 5) Distinction of cow's parity,
- 6) Incorporate high producing herds, and
- 7) Account for unintended impacts

References

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