

Title: “Energy Intensity and Environmental Impact of Integrated Dairy/Bio-Energy Systems in Wisconsin, USA”

Project Team: Douglas J. Reinemann¹, Thais Passos Fonseca¹, Paul Thompson¹, KG Karthikeyan¹, Louis Armentano², Victor Cabrera², and John Norman³

University of Wisconsin – Madison, WI, USA

¹ Department of Biological Systems Engineering, ² Department of Dairy Sciences, ³ Department of Soil Sciences

Project Short Description:

We will present the structure and preliminary results of our analysis of the energy, greenhouse gas (GHG) and nutrient balances of combined dairy and bio-fuels production systems in Wisconsin, USA. Our model calculates the flows of C, N, P, K, GHG and energy to produce and process a given amount of milk from a range of dairy rations (from maximizing high energy feed to maximizing pasture, and including bio-fuel residues). Elements of the model include: 1. on-farm processes of crop production, cow nutrition, cow housing, milk handling, manure handling, energy generation on-farm 2. milk transport, dairy product processing and energy generation from dairy plant waste 3. bio-fuel production. The model will be used by dairy farmers, dairy processors and policy makers to evaluate the energy, GHG and nutrient balances of dairy and bio-fuel production systems and energy generation and conservation technologies, and to investigate synergies and opportunities to reduce energy intensity and environment impact of dairy and bio-fuel production.

Key words:

dairy, milk, nutrient, diet, energy, greenhouse gas, bio-fuel residue, biogas, modeling,