69 Animal Sourced Foods Role in Sustainable Nutrition. Greg Thoma[1], Daesoo Kim[1], [1]*University of Arkansas*

Abstract: Amid growing concern regarding the food system are calls to reduce or eliminate animal sourced foods (ASF) from human diets. Despite the green revolution and consequent increase in crop yields, nutrient deficiencies are still problematic, particularly in developing regions. In the US, ASF provide 24% of energy, 48% of protein, approximately 50% of the essential amino acids and essential fatty acids as well as the micronutrients (White and Hall, 2017). This presentation introduces a framework for evaluation and discusses remaining knowledge gaps regarding the role of ASF in sustainable food systems that provide nutritious diets. Lifecycle assessment (LCA) was used to provide an accounting of environmental and sustainability characteristics of food production systems. LCA has an explicit goal the identification of tradeoffs between stages in the supply chain and tradeoffs across environmental dimensions. In a published study (Kim et al., 2020) using a hybrid lifecycle assessment technique, it was shown that while vegetarian diets resulted in lower environmental impacts across several environmental categories, that the US non-vegetarian recommended dietary guidelines led to increases for many categories. This is driven by the increased consumption of less calorically dense foods and changes in the patterns of food loss and waste. Ongoing studies of US beef production systems are providing insight into factors behind the variability in sustainability driven by practice and location. One management practice receiving attention is Adaptively Managed Paddocks (AMP). Sequestration estimates were combined with process model simulations of cow calf finishing operations. One system used conventional grain finishing and the other used grass finishing. The potential mitigation of GHG emissions from the potential sequestration is significant. Complete assessment of the role of ASF in healthy diets from sustainable food systems requires a full understanding of the benefits and costs of alternatives and informed decisions based on understanding of tradeoffs.

Keywords: animal sourced foods, life cycle assessment, sustainable food systems

65 The Role of Livestock as up-Cyclers of Food by-Products and Waste. Kim Ominski[1], Tim A. McAllister[2], Kim Stanford[3], Genet Mengistu[1], Kebebe E. Gunte[1], Marcos Marcos[1], Karin Wittenberg[1], Faith Omonijo[4], Jaime White[5], Getahun Legesse[6], [1]*University of Manitoba,* [2]*Agriculture and Agri-Food Canada,* [3]*University of Lethbridge,* [4]*McGill University,* [5]*Loop Resources,* [6]*Manitoba Agriculture*

Abstract: Food waste is a global dilemma with environmental, social and economic consequences. Environmental impacts of wasted food are substantial as it comprises the single largest category of organic matter in municipal landfills. Therefore, redirection of food waste from landfills is necessary to improve global food security and environmental sustainability issues. Livestock, with their capacity to "up-cycle" relatively low-quality feedstuffs into high quality protein, are an essential element of this solution. However, challenges regarding utilization of food waste for livestock production include regulatory restrictions, safety concerns and logistics associated with collection, transport and handling. Moreover, identifying industries with significant loss and waste resources along the supply chain, quantifying availability, and effective communication and coordination are necessary steps for large-scale diversion of food loss and waste to livestock feed. In Canada, Loop Resources is a one-of-a-kind organization that enables food wholesalers, retailers, and producers to divert unsaleable food away from landfill to local food banks and livestock farmers. They are working with retailers to divert 2.5 – 3.5 million kg of food waste/month to over 2500 farms across Canada. However, today's diversity of by-products and urban setting for much of our food waste requires a diversity of solutions. Producer and processor incentives to recover more food will require investment to improve infrastructure and create market opportunities. Research to facilitate safe incorporation of food waste in animal feed is also a critical step toward changes in policy and regulation. In addition, comprehensive LCA-type assessments will shed light on the environmental benefits of replacing feed grains or forages with by-products or food waste. Finally, a coordinated approach requiring input from producers, food processors, feed suppliers, researchers, policy makers and retailers, is critical for the development of successful strategies for inclusion of food loss and waste in livestock diets.

Keywords: food waste, by-products, livestock