

Modeling the impact of green eggs and hens

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The whole food movement may be right; consumption of vegan and organic food can be the best choice for reducing environmental impacts, at least if you're a chicken.

New research findings from UBC's Okanagan campus show that poultry given vegan organic chicken feed can help to produce [eggs](#) with a smaller environmental footprint than those fed non-organic feeds that contain animal by-products.

Ecological economist Nathan Pelletier applied a cradle-to-customer environmental [life cycle assessment](#) of Canadian egg and egg product supply chains, with the aim to identify opportunities for system efficiency and environmental improvements. His study showed that relatively few variables—most notably, feed composition—contributed to differences in carbon emission production and resource demand.

"With over 1, 000 registered farms, producing more than 70 million tonnes of eggs annually, Canada's egg industry is an excellent example of the opportunities and challenges in managing food production systems for sustainability objectives," says Pelletier who holds both an Endowed Chair in Bio-economy Sustainability Management and the NSERC/Egg Farmers of Canada Industrial Research Chair in Sustainability at UBC Okanagan.

Pelletier's life cycle assessment of Canadian egg farms considered all of the [supply chain](#) activities—from type of feed and housing, to manure management—associated with egg production. His is a very systematic

approach, which quantifies the flows of materials, energy, and emissions associated with activities all along the supply chain.

Pelletier's findings showed that the type of feed and manure management system had the greatest influence on environmental impacts of all the variables examined. Organic feed derived from non-livestock sources, required fewer resources and had lower emissions than conventional [feed](#).

"Canadian egg farming is highly diverse. Farms range in size from several hundred hens to more than 400,000, and farm-level efficiencies vary," says Pelletier. "There is a large gap between the laggards and leaders in terms of environmental performance. This is where the opportunity to improve lies."

This is the first national benchmark study of Canadian egg supply chains and Pelletier believes that it offers important insights for improving the sustainability profile of the industry. "This data will allow supply chain participants to gauge their individual performance relative to national and housing system-specific benchmarks, and to understand how and to what extent they can improve their performance."

"Our next step is to build a web-based tool that will enable farmers to measure their farm-specific impacts, set goals, and to report and communicate their sustainability performance," he says. "Ultimately, a reduction in resource use and emissions intensity by over 50 percent nation-wide may be possible."

Consumption of eggs and egg products in Canada has consistently increased every year since 2010, and poultry and egg products produced here generate more than \$1 billion in industry profit.

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