

ENVIRONMENTAL FOOTPRINT OF EGG

Agri-food production in Alberta

Alberta's over 150 registered egg producers care for nearly 2 million hens that produce nearly 49 million dozen eggs each year. Alberta layers produce well over 25,000 eggs per hundred hens in a year and over 48 million dozen eggs that are sold for retail, restaurant and processing use.

Recognizing the importance of the egg industry and the increasing need for sustainability reporting, Alberta Agriculture and Rural Development (ARD) initiated the egg environmental footprint project (2012-2014).

Objectives

This project aimed to set out a scientifically robust and transparent environmental assessment of current egg production in Alberta through life cycle assessment (LCA) following the ISO 14040/14044 standards. Specifically, the objectives were to:

- Establish a **credible and transparent industry benchmark**
- Establish **mechanisms for data gathering and storage**
- Provide quantitative results to **support industry needs**

Scope of the project

The cradle-to-gate life cycle assessment starts at the hatchery and ends at the washing and grading facility, including extraction and processing of inputs as well as the energy used at the various life cycle stages.

Indicators

Life cycle assessment is a holistic and systematic tool to measure a variety of impact category indicators that are used to measure environmental sustainability of products.



Feed production

Field inputs, field operations and other activities needed to produce layer feed.



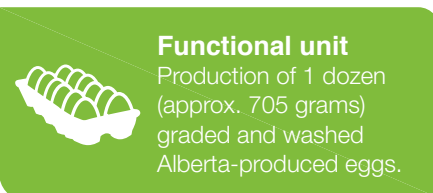
Farm operations

Egg farm infrastructure, manure management and energy consumption.



Hatchery

Inputs, energy and operations at the hatchery.



Functional unit

Production of 1 dozen (approx. 705 grams) graded and washed Alberta-produced eggs.



Transportation

Includes feed, chick and egg transport.



Washing and grading

Inputs, energy and operations at the washing and grading facility.



Carbon footprint



Water footprint



Ecosystems quality



Resources

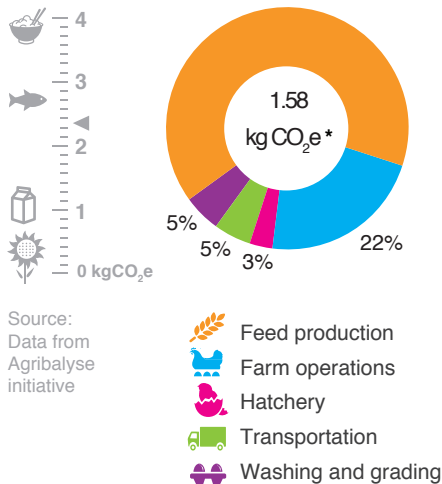


Human health

Cradle-to-farm gate carbon footprint

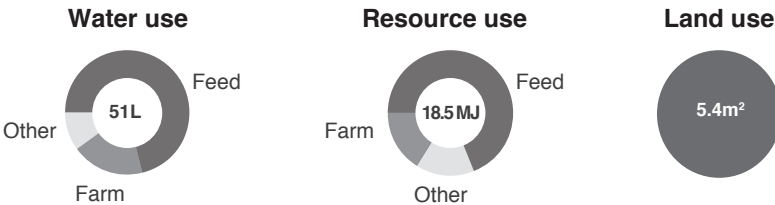
(1 dozen graded and washed Alberta-produced eggs)

Carbon footprint of food products (per kg)



* Greenhouse gas emissions expressed in CO₂ equivalents

Other key results



Key findings

The project identified and modelled different practice changes in feed production, feed conversion ratio, energy consumption on farm and manure handling.

- Energy efficiency measures studied would result in a 5.5% decrease in carbon footprint.
- The other practice change measures offered a potential decrease in carbon footprint ranging from 0.5% to 13%.

For additional information

ALBERTA AGRICULTURE AND RURAL DEVELOPMENT

Kerriane Koehler-Munro
kerriane.koehler-munro@gov.ab.ca
(780) 427-3628

Roger Bryan
roger.bryan@gov.ab.ca
(780) 427-3616

Feed is the main contributor to the carbon footprint which mostly comes from fertilizer production, subsequent nitrous oxide emissions after field application and field-related activities.

Farm operations is second in importance. Its contribution comes from energy consumed at the farm and methane emissions from manure management.

Hatchery, transportation and washing and grading account for a small proportion of overall impacts.

Looking ahead

This project establishes the foundation towards ongoing sustainable egg production in Alberta. The LCA framework can be used to support a variety of initiatives:

- Benchmark and monitor environmental performance overtime
- Engage egg farmers toward footprint measurement and continued Beneficial Management Practices (BMP) adoption
- Assess and compare different improvement scenarios
- Document the impact of management practice changes on the sector's environmental performance

Acknowledgments:



We thank the Egg Farmers of Alberta and their producer members for their cooperation and participation in this project.