

Life Cycle Assessment of Canadian Prairie Pea and Lentil Production

Peas and lentils grown on the Canadian prairies have low environmental footprints compared to other crops. Fuel and fertilizer were identified as hotspots for emissions and resource use.

ALTHOUGH CONSUMER DEMAND for sustainable, wholesome ingredients continues to rise, the food industry is facing scrutiny over the validity and transparency of sustainability claims. This offers the Canadian pulse industry an opportunity to showcase the low environmental footprint of Canadian pulses and to develop strong datasets aligned with the needs of companies looking to make these claims. Over the last two years, Pulse Canada worked with the University of British Columbia on a life cycle assessment of Canadian peas and lentils to gain a deeper insight to the carbon footprint of the crops and offer extensive data for the food companies to leverage.



Life cycle assessment (LCA) is a widely recognized methodology for quantifying resource inputs (i.e., energy, fuel, water) and emission outputs (i.e., greenhouse gases, air pollutants) throughout a crop's life cycle to assess their overall environmental impact.

The project had two outcomes:

1. Develop thorough and regionalized life cycle inventories (LCIs) for peas and lentils.
2. Develop a comprehensive report to support the Canadian pulse industry's initiatives around the sustainability of Canadian pulses.

The cradle-to-farm gate life cycle environmental impacts of pea and lentil production were assessed using aggregated field-level data supplied by Canadian pulse farmers at the ecozone, provincial and prairie scales. Survey data was collected from 287 lentil farmers and 269 pea farmers across the prairies. These surveys captured information on the crop's full production, including seed, fertilizer and pesticide inputs, fuel use, grain drying, yields and field operations. Practices like no-till were accounted for to measure soil carbon sequestration, and a credit was applied to the pulse crop due to the nitrogen benefit provided to crops in rotation.

The results of the LCA confirm that Canadian peas and lentils have very low environmental footprints compared to other crops and sources of plant-

based ingredients. Fuel and fertilizer were identified as hotspots for potential reductions in emissions and resource use, therefore adopting best management practices may enable farmers to further reduce impacts. A focus on fuel use efficiency is particularly relevant given the global and national conversation on carbon and climate change.

Furthermore, this study provides additional evidence that peas and lentils lower the negative environmental impacts of Canadian cropping systems and growing pulses contributes to reducing the climate impacts of Canadian agriculture.

While more work can be done to reduce the impact of fuel use on production, conducting this life cycle assessment improves the marketability of peas and lentils by identifying the low-environmental impacts of production. Lastly, due to their impact on cropping systems, this study provides additional evidence that growing pulses contributes to reducing the climate impacts of Canadian agriculture as a whole. ▶

To view the full LCA report, visit pulsecanada.com/sustainability.

