NAWG | NATIONAL ASSOCIATION OF WHEAT GROWERS

Frequently Asked Questions
Wheat Life Cycle Assessment

Why did national U.S. wheat organizations decide to conduct an environmental study of U.S. wheat production?

While existing evaluations by Field to Market and grower experience suggested the environmental footprint of U.S. wheat production is constantly improving, the organizations recognized the need to conduct a study that considered the wide range of unique factors in U.S. wheat production to quantify and compare per bushel environmental impact trends more accurately. They sponsored a comprehensive "Life Cycle Assessment" of U.S. wheat production over 40 years.

What do the results mean?

The results confirm a positive and welcome trend that, over 40 years, U.S. wheat growers have adopted technologies and practices that resulted in significant reductions per bushel in greenhouse gas emissions, water use, soil erosion and energy use while producing higher yields.

What is driving reductions in greenhouse gas emissions?

The LCA indicates fewer nitrogen fertilizer emissions from fields, reduced emissions associated with diesel fuel, and more prescriptive use of fertilizer contributed the most to per bushel greenhouse gas emission reductions over the 40 years studied. Results largely confirm other study results, including Field to Market's National Indicators Report.

Can stakeholders be confident in the methodology of the LCA?

In 2021, the wheat organizations selected a respected team of researchers at Texas A&M University AgriLife Research and Colorado State University AgNext Institute to conduct the LCA. Their team chose the proven Agricultural Policy Environmental Extender (APEX) model combined with openLCA software to analyze local "modern" production practices of 107 archetype farms across primary U.S. wheat-growing regions, of which 104 had usable historical data for the retrospective analysis. For additional information about the APEX model and openLCA, visit epicapex.tamu.edu/about/apex and openlca org.

Can this information be used to compare wheat production to another commodity, such as corn, sorghum or barley?

Because other commodities use different production systems, models, approaches, functional units and data, this LCA addresses domestic U.S. wheat production.

Can the LCA results be used to directly compare U.S. wheat production to production in other countries?

While some attributes may be able to be roughly compared, differences in models used make direct comparisons risky and potentially inaccurate. The LCA had to account for the distinct differences in U.S. wheat classes, production seasons, protein levels and end-use functionality that are likely to have impacts on the metrics evaluated.

Does the wheat LCA represent what is happening on an individual farm?

Not specifically. The wheat LCA is a representation of all wheat farms across the U.S. and takes into consideration all production types, rotations, yield potential and classes of wheat. The study used sample farms representing a variety of production levels, geography, rotations, inputs and classes of wheat produced.

How will U.S. wheat organizations use this information?

The expectation is that the results of this first-ever LCA can be shared broadly to address questions and inform any future initiatives looking at the environmental footprint of wheat production. The study and information produced will also allow future work to identify and track ongoing progress in each of the LCA's key indicators.

How should I use this information?

You can use this information to address questions you receive about the environmental attributes of wheat production and the improvements growers have already made.

For more information visit www.wheatworld.org