

A Life Cycle Analysis of Water Use in U.S. Pork Production

Executive Summary



**Center for Agricultural
and Rural Sustainability**
University of Arkansas • Division of Agriculture

Marty Matlock, Ph.D., P.E.,
B.C.E.E.

Greg Thoma, Ph.D., P.E.

Eric Boles

Mansoor Leh, Ph.D.

Heather Sandefur

Rusty Bautista, Ph.D., P.E.

Rick Ulrich, Ph.D.

Executive Summary

The goal of this study was to analyze water use in the U.S. pork industry using Life Cycle Assessment (LCA) methodology. LCAs are quantitative analyses of complex systems for the evaluation of impacts and risks associated with management decisions. LCA can be an effective tool for determining comparative advantages of management strategies across specific environmental impacts of concern.

The environmental impact category that was used in this assessment to evaluate processes throughout the pork supply chain was cumulative water use (gallons). This assessment was performed at two scales: a cradle-to-grave scan-level analysis and a cradle-to-farm gate detail-level analysis. The Pig Production Environmental Footprint Calculator (PPEFC) was enhanced with water consumption algorithms based on data from peer reviewed scientific literature. The PPEFC was then utilized to estimate the lifecycle inventory of water use. The work on this project was divided into the following tasks:

- Task A. Literature Review for Water Footprints
- Task B. Pork Supply Chain Scan Level LCA of Water Use
- Task C. Live Swine Production Detailed LCA of Water Use
- Task D. Pig Production Environmental Footprint Calculator