



Measuring Pork's WATER FOOTPRINT

Water is a valuable, life-sustaining resource and, as some areas of the country are experiencing first-hand, one that's often all too scarce. There are many questions about how much water agriculture uses. Today, pork producers have the answer regarding pork's impact.

It takes 8.2 gallons to get a 4-ounce boneless pork serving from the field through the pork chain and onto the consumer's dinner table.

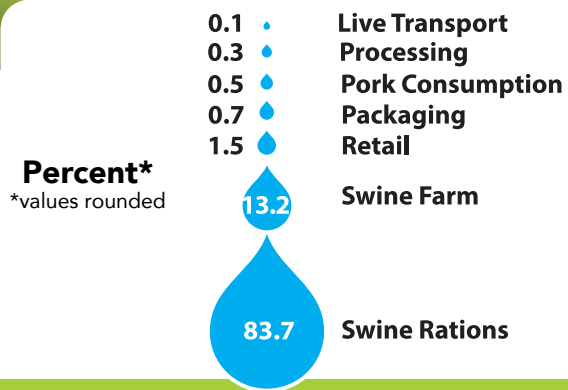
That's the assessment derived from a study – *A Life Cycle Analysis of Water Use in U.S. Pork Production* – commissioned by the Pork Checkoff and conducted by University of Arkansas researchers. While accurate comparisons between agricultural sectors don't yet exist, Marty Matlock, executive director of the University of Arkansas' Office for Sustainability, offered some perspective.

"The Water Footprint Network estimated that chicken requires 145 gallons of water per 5-ounce serving, and beef requires 500 gallons per 4.5-ounce serving," Matlock said. "However, the methodology used is not very accurate."

What sets the pork footprint apart is that University of Arkansas researchers applied the detailed and thorough Life Cycle Assessment (LCA) methodology. Also, researchers looked at two water-use LCAs.

The first LCA included actions throughout the pork chain from field to fork, including feed-grain production, transportation, processing, retail and even the consumer. The second LCA focused on water use on the farm from the field to the farm gate (see page 2).

The study looked at USDA's 10 designated production regions to evaluate differences in water use, its impacts and risks associated with management decisions. The researchers found: **Feed accounts for 83 to 93 percent of the pork chain water footprint, depending on the grain source.** Since water used in feed grain production is mostly tied to irrigation, the related water footprint can vary more than 100 times in magnitude from one region to another.



Field-to-Fork Water Footprint

"So, anything that grain producers can do to increase yield per acre will improve pork's water footprint," said Jamie Burr, who is with Tyson Foods and chairman of the Pork Checkoff's Environmental Committee. "The same holds true for our efforts to improve feed efficiency."

On-farm activities come in second at 5 percent to 13 percent of the pork chain's water footprint. On-farm use is primarily for livestock drinking water, cooling water and water used for barn clean-up.

"It's important to remember that most water used on the farm is not lost. It's recycled and used again," Burr said.

Post-farm-gate activities contribute 2 percent to 4 percent of the total water footprint. This includes pork processing, packaging, distribution and consumer use, which is responsible for the most post-farm-gate water use. Consumers no doubt would be surprised to learn they claim about 1 percent of the field-to-fork water footprint.

"Questions consumers ask increasingly drive our industry, and it's important to let them know what it takes to produce food," said Burr, who commends the Pork Checkoff for embarking on such an important project. "We need to share information to increase transparency and build trust. And with a better understanding of pork's water footprint today, we can set goals for future reductions."

The full water footprint study can be viewed online at pork.org/sustainability. ✓

Take Stock of On-Farm Water Use

Pork producers can be proud of their efforts to reduce water use. A Checkoff-funded study showed that it takes 41 percent less water to produce a pound of pork today than 50 years ago. And producers continue to look at ways to reduce their water footprint.

On the farm, feed accounts for nearly 80 percent of water use associated with pork production. A Checkoff-funded study by University of Arkansas researchers shows that sourcing feed grain from rain-fed versus irrigated crops provides the largest reduction in the pork industry's water footprint.

"Clearly, that is not an easy task, but producers can create change by just asking questions and subsequently making the upstream supply chain more transparent in the process," said Marty Matlock, executive director of the University of Arkansas' Office for Sustainability.

Improving feed efficiency and reducing feed waste also can improve pork's on-farm water footprint, with the added benefit of increasing production efficiency and profitability. Strategies include:

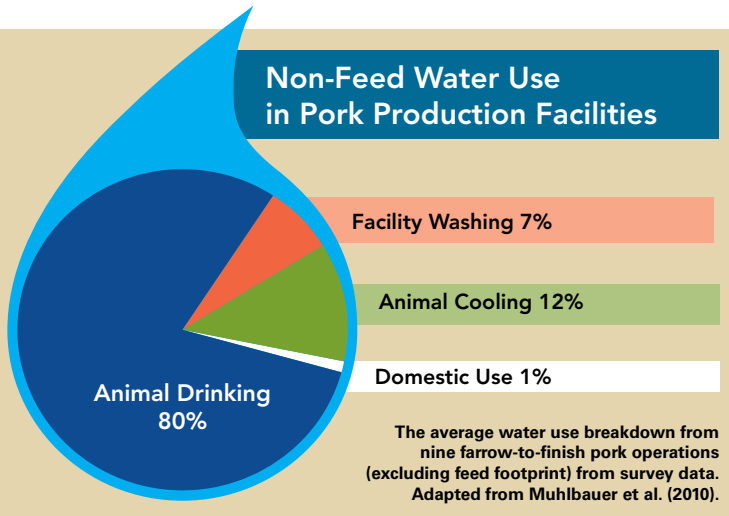
- Ensure feeders are properly adjusted.
- Ensure that feeders are sized correctly for the intended pigs that will use them.
- Apply split-sex or phase-feeding strategies.
- Select swine genetics with an eye toward average daily gain and feed efficiency rates.
- Attentively manage animal health and stocking densities to keep pigs growing efficiently.

"Pig drinking water accounts for about 80 percent of on-farm water use. Consequently, that's another area where conservation practices will have an impact," Matlock said.

"Replacing nipple drinkers with cup-style drinkers, placed at the correct height for the intended pigs minimizes waste," Matlock said. "This could cut drinking water use up to 30 percent, translating to a 1.8 percent to 2.7 percent reduction in the water footprint for the total pork supply chain."

Other areas that offer potential water savings include:

- **Water used for barn cleanup** – Adopt techniques and use equipment that requires less water. Train barn washers to thoroughly, but efficiently, clean rooms in order to minimize the time and amount of water needed.
- **Water to cool animals** – Calibrate cooling equipment, check water lines and nozzles and monitor the related water use.
- **Regularly monitor the water system throughout the production unit for leaks** – As an added bonus, keeping close tabs on drinking water trends can provide an early signal to animal health challenges. 🍀



Put this Calculator in Your Toolbox



Producers can take the footprint analysis a step further and determine their operation's carbon and water impact. The Pig Production Environmental Footprint Calculator Version 2.0, which was previously designed to calculate the carbon footprint, has been updated to include water use.

Developed by the University of Arkansas, with funding from the Pork Checkoff and USDA, the Pig Production Environmental Footprint Calculator Version 2.0 can help producers understand their current use of energy and water resources, including feed, and identify areas for potential improvements in efficiency and cost savings.

"The calculator links environmental and economic performance and lets producers evaluate potential management changes in a simulated environment, which is a much lower risk than full-scale testing in their facilities," said Greg Thoma, one of the University of Arkansas researchers.

It also helps producers anticipate and manage changing water resource conditions.

"Continued profitability of the swine production sector depends on producers having an understanding of how water scarcity will impact their production decisions," said the University of Arkansas' Marty Matlock.

For a free copy of the calculator CD, go to the Pork Store at pork.org. Also, check out the Resource section that offers numerous fact sheets that provide environmental ideas and solutions to apply on the farm.

Main Features/Benefits:

- Easy-to-use software, PC-based tool
- Applicable for use with both sow farms and wean-to-finish production
- Data saved and recalled by users only
- Helps identify on-farm areas for alternative inputs and improved efficiency

Assessing the Four Environmental Pillars

The water footprint assessment is Pillar No. 2 of the Pork Checkoff's Four Pillars of Environmental Sustainability Program, which began in 2009. With University of Arkansas researchers at the helm, the program goal is to provide scientific documentation of pork's environmental impact throughout the pork chain from field to fork. These efforts also provide producers tools to understand their use of critical on-farm inputs and the associated costs to help improve their on-farm production efficiency, reduce inputs and realize cost savings.

"Consumers and retailers are becoming more concerned about the upstream impacts of their purchasing decisions," said the University of Arkansas' Greg Thoma. "Therefore, it's imperative that agricultural producers understand the effects of their activities so that clear and defensible communication with customers is possible."

"The project also has provided a better understanding of the environmental progress that pork producers have made over the years," said Allan Stokes, environmental programs director for the Pork Checkoff. "It has helped benchmark where we stand today and will allow us to measure future progress."

Pillar No. 1 addresses pork's carbon footprint, with the results released in 2012. A detailed report can be found on pork.org.

Pillar No. 3 involves pork's air footprint and will evaluate non-greenhouse gas emissions. Pillar No. 4 will look at pork's land-use footprint. Research is underway, with a final report expected in 2015.

"By taking a proactive rather than reactive approach, we can show that we have been doing the right things for a long time. Sustainability isn't something new to the pork industry," Stokes said.

"Measuring all four pillars is critical for improving efficiency and decreasing impacts within pork production," he said. 🌱



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Inside: The Checkoff offers tips on how you can reduce your farm's water footprint.



🌐 pork.org or 📞 the **Pork Checkoff Service Center @ (800) 456-7675**

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**"Improving efficiencies
in order to produce
more with less leads
our list of everyday
priorities."**

National Pork Board President
Dale Norton, Bronson, Mich.

We Have a Great Story to Tell

Pork producers have long been committed stewards of the environment, according to National Pork Board President Dale Norton, a Bronson, Mich., producer.

"We understand firsthand the impact of limited resources, such as when drought sets in and feed-grain supplies dry up," Norton said. "Improving efficiencies in order to produce more with less leads our list of everyday priorities."

He added, "Producers recognize the air, land and water around our production systems as vital resources and work to protect them. But with less than 2 percent of the U.S. population living on farms today, there's a tremendous amount of misunderstanding regarding agriculture and food production. However, we have a great story to tell when it comes to production efficiency and environmental responsibility."

A Checkoff review of 1959 to 2009, found that pork producers:

- Reduced water use 41 percent per pound of carcass weight produced.
- Reduced total land use 59 percent or 78 percent per 1,000 pounds of carcass weight.
- Reduced the carbon footprint by 35 percent per pound of carcass weight produced.
- Increased feed efficiency by 33 percent per pound of carcass weight.
- Today, produce 29 percent more market hogs annually with a 39 percent smaller breeding herd.

"Overall, farmers now produce 262 percent more food with 2 percent fewer inputs compared to 1950," Norton said. "One farmer feeds 155 people versus 26 people in 1960. And that's a great story that I hope you will all join me in telling consumers."



This special-topic newsletter is sent periodically to you by the Pork Checkoff.

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