

## Animal Science Research: The Checkoff Investment that Keeps on Giving

**F**inding solutions with practical application to the farm is the mission of the Pork Checkoff's Animal Science Committee as it identifies and funds research projects. This committee also prides itself in linking its research to other disciplines and Checkoff committees.

"Animal science reflects an interest in everything that affects productivity, including animal health and welfare, genetics, pork quality, the environment and long-term sustainability," said Chris Hostetler, director of animal science for Pork Checkoff. "The committee focuses on research projects that are critical to producers and how they manage their hogs every day, as well as on the efficient production of safe, healthy pork for the consumer."

Most of the 21 members of the Animal Science Committee are pork producers who represent operations of all sizes. Academics also serve as advisors or subject matter experts.

"Research priorities are set by producers for producers," said Maynard Hogberg, a committee member and a professor emeritus at Iowa State University. "Care is taken to not duplicate research that is already underway. The point is to be strategic and to conduct research in specific areas in which producers are facing challenges."

Three overarching criteria direct the Pork Checkoff's animal science research efforts and ensure a wise investment of funds. To get a green light, projects must:

- 1) Benefit all producers.
- 2) Impact or create change within the industry.
- 3) Produce results that are applicable to the farm.

### Leveraging Checkoff Dollars Is a Priority

Another priority is to leverage producers' dollars, which involves cross-cooperation between the Animal Science Committee and other Checkoff committees, state producer

associations, commodity groups and institutions, such as the USDA Agricultural Research Service (ARS).

"Committee funding acts as seed money to move a project forward with our endorsement," said Everett Forkner, a committee member and a Missouri pork producer. "In the end, dollars may be leveraged several times over, giving us an exponential return on our Checkoff investment."

Annual funding varies, but the Animal Science Committee typically selects eight studies a year. Some projects are more complex and longer term than others. For example, the feed efficiency project is in its fifth of seven years. But the committee's approach also includes flexibility to respond to immediate needs, such as feed availability issues that happened with the 2012 drought.

"Projects were initiated to study alternative feedstuffs and provide information on ways to maximize feed utilization, which could reduce on-farm production costs," Hogberg said. "Through Checkoff funding, we could shift research more quickly than if the pork industry relied on public funds to address this issue."

This action also produced answers that will be in hand and ready the next time there is a drought. While getting the most bang for producers' Checkoff dollars is important, there's another equally valuable but less visible result.

"Checkoff-funded research helps recruit and train young professionals to work in the pork industry," Hogberg added. "These projects help build technical specialists not only at universities, but within the industry as well."

That's truly an investment that keeps on giving.

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*This newsletter provides a snapshot of some Pork Checkoff research projects and their impact on U.S. pork production. For more Pork Checkoff research results, go to [pork.org/research](http://pork.org/research).*

## Mapping the Swine Genome

Whether producers want to improve their herd's efficiency, enhance animal health, increase product quality or all of the above, having a map of the swine genome is paramount to remaining competitive today.

"Knowing the swine genome will allow for more precise genetic selection, as well as help discover new areas to improve efficiencies and identify other high-value traits," said Clint Schwab, Animal Science Committee chair and director of genetics for The Maschoffs. "This project will have a far-reaching, long-lasting impact."

Swine genetic providers already use this information every day in their selection indexes, allowing them to make more precise and faster genetic advancements.

"We don't yet know all of the areas the genome might unlock," said the Checkoff's Chris Hostetler.

### Leveraged Dollars Yield Results

The project began in 2009 with the Pork Checkoff's initial \$600,000 investment, followed by Iowa, Illinois and Minnesota pork producer groups adding \$300,000. This spurred USDA to prioritize the effort and contribute \$10 million. Genome Canada then put in another \$30 million.

The broad-reaching cooperative effort culminated in 2011 with the release of the swine genome map.

"This project is an excellent example of Checkoff seed money at work," Hostetler said. "An original investment of \$900,000 was leveraged into more than \$40 million in additional research by other funding agencies."

## Shedding Light on Swine Rations

Feed accounts for 65 percent to 70 percent of the cost of getting a hog to market weight. So regardless of feed prices, there's still plenty of motivation to improve feed utilization.

The 2008 Renewable Fuels Standard (RFS) and its potential to dramatically increase feed-grain prices raised the stakes. Anticipating this, the Pork Checkoff established the Feed Efficiency Research Consortium in 2007. Along with producers, this unique effort involved allied industry, commodity boards and state pork organizations.

### Results Offers New Feed Strategies

Producers wanted answers on using feed more efficiently. The coalition identified areas for research and consolidated projects to expedite results. Findings from the consortium-directed research have provided new tools and have refined ways to manage swine diets. Examples of results include:

- A better understanding of energy

utilization and nutritional management for health-compromised pigs.

- Better insight on managing and developing rations and strategies to improve feed efficiency performance.
- New options to utilize alternative feed ingredients in swine diets.

"The Feed Efficiency Research Consortium created a foundation of collaborative investment to improve feed efficiency," said Joel DeRouche, Kansas State University swine nutritionist. "The Checkoff continues to invest in innovative feed cost and efficiency research to help U.S. pork producers remain globally competitive."

The consortium's work has evolved into the high feed-cost mitigation effort now underway, concentrating almost entirely on feed efficiency. It also prompted USDA's National Institute for Food and Agriculture to fund a four-year, \$5 million project in swine feed efficiency directed by Iowa State University and Kansas State University.

The Pork Checkoff's feed-related research is outlined in the booklet, *Pork Industry Nutritional Efficiency Consortium Research 2007 to 2011*. It can be downloaded at [pork.org/production-topics/animal-science](http://pork.org/production-topics/animal-science). For more findings from the Feed Efficiency Research Consortium, visit [pork.org/production-topics/animal-science/feed-nutrition](http://pork.org/production-topics/animal-science/feed-nutrition).

## In Search of PRRS Answers

For more than two decades, porcine reproductive and respiratory syndrome (PRRS) has weighed heavily on pork producers, costing the U.S. industry \$640 million annually. The PRRS Host Genetics Consortium was created in 2004 to answer a range of questions about the virus and the disease.

"Research conducted by the consortium identified exactly how a pig contracts the PRRS virus," said the Pork Checkoff's Chris Hostetler. "This led to improvements in biosecurity and other prevention techniques on the farm and when transporting pigs."

For example, the Checkoff invested \$95,760 to study trailer disinfection options to mitigate PRRS exposure. The findings now save the U.S. industry \$11.23 million annually.

The consortium's decade of research also created a clearer vision for the role that genomics play in PRRS and other diseases by identifying the specific genetic systems involved in PRRS infection.

"Recently, University of Missouri researchers used gene editing to develop the first PRRS-resistant pigs," Hostetler noted. "Hopefully this will eventually result in the elimination of PRRS in the swine industry."

In the end, the 10-year project received more than \$18 million in federal, university and industry support. It's also recognized as the largest research collaboration with industry in the history of the USDA-ARS.

The Checkoff publication, *PRRS Initiative Research 2004-2011*, outlines key findings and herd-health management strategies from the consortium's early research. It's available online at [pork.org/production](http://pork.org/production).

# Checkoff Research Addresses Sow Longevity

Replacement gilts are a high-value investment, so it's in every producers' best interest to keep them healthy and productive as long as possible. However, premature culling is a challenge that every farm faces at some point, especially when it comes to early-parity sows. In response to this, the Pork Checkoff organized the Sow Longevity Project to help improve sow longevity and productivity.

The research, which began in 2004, centered on defining the problems and developing mitigation tools and strategies. Leading the effort was a Checkoff-funded project with Ken Stalder at Iowa State University to evaluate the soundness and structure of replacement gilts and how that translated into staying in the herd longer.

## Get Posters and other Resources for Your Farm

Among the outcomes were nationally and internationally acclaimed posters, flip charts and pocket guides for producers to evaluate breeding soundness, feet and legs and management systems. Producers can order these from the Checkoff's Pork Store at [pork.org](http://pork.org), free of charge.

Other research evaluated the impact that square footage in the nursery had on replacement gilts and their breeding herd longevity. Another study looked at mammary gland development in gilts and how it affected milk production and quality. Overall, the numerous sow longevity studies have produced a better understanding of housing and flooring issues, seasonal infertility and the management and nutritional needs of breeding animals.

"Pork Checkoff-funded research has identified factors that contribute to a sow leaving the breeding herd



before it's sufficiently productive so that the initial investment becomes profitable," Stalder said. "Factors such as replacement gilt preparation, body condition scoring, heat detection and structural soundness can guide on-farm management to reduce the risk of premature culling."

The Sow Longevity Project gave birth to the Sow Lifetime Productivity directive. The large-scale, coordinated research effort began in 2010 and will run through 2017. The objective is to increase the number of quality pigs a sow weans.

"We want to move from about 34 weaned pigs per sow to 43 pigs," the Checkoff's Hostetler said. "Sow Lifetime Productivity also encompasses research in other areas, such as animal health, welfare and producer safety, so there are other science and technology committees involved. It's a systems approach, just like on the farm."



**The Animal Science Committee launched the PRRS Consortium in 2004. The Checkoff's Swine Health Committee quickly joined forces and contributed major support through the 2014 completion date.**

## Research Webinars Slated for August



The Pork Checkoff's annual Research Webinar Series, which kicks off Aug. 2, will focus on "Seeking Alternatives to Antibiotics." The webinars will offer insights into antibiotic options ahead of the U.S. Food and Drug Administration's policy changes, which will eliminate subtherapeutic antibiotic use in food-animals for growth promotion beginning Jan. 1, 2017.

The webinars will begin at noon (Central). To register for the free webinars, go to [pork.org/animalscience](http://pork.org/animalscience).

**AUG.**

**2**

**Alternatives to antibiotics:  
Best management practices**

**AUG.**

**9**

**Efficacy of thymol as a practical, cost-effective, easy-to-administer prebiotic**

**AUG.**

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**Effect of lysozyme or antibiotics to address an indirect disease challenge**

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**Understanding the biology of seasonal infertility to develop mitigation strategies**

**Inside:** The Checkoff's **animal science research** improves efficiency on the farm.



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## Prioritizing Research to Find Solutions



*"Research is paramount to the success and sustainability of the U.S. pork industry."*

Clint Schwab, chair of the Animal Science Committee

Raising hogs and producing high-quality pork has evolved into a multi-disciplinary approach that addresses issues from farm to fork. Pork producers are driven to make continuous improvement, and they turn to science for answers. The interaction between genetics, nutrition, animal health and welfare, facilities, staff and other factors influence the challenges and success on the farm.

"Research that is multi-disciplinary in nature and yields slat-level change is our priority," said Clint Schwab, chair of the Pork Checkoff's Animal Science Committee. "With Pork Checkoff funds, we leverage ideas and expertise across various disciplines to execute research that impacts producers on a daily basis."

Schwab, who is director of genetics for The Maschhoffs of Carlyle, Illinois, points to the Checkoff's Sow Lifetime Productivity directive as an example of research that cannot be addressed effectively through a "silo effort that looks singularly at nutrition, management or genetics. Other committee-directed efforts that reach across disciplines include feed efficiency and seasonal productivity impacts.

"Research is paramount to the success and sustainability of the U.S. pork industry," Schwab said. "It allows us to expand our knowledge base and deliver tools that producers can use to drive profitability. The U.S. pork's future in the global marketplace hinges on these production efficiencies."



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

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