Pork producers pride themselves on productivity, and over the years, their efforts to improve it have paid dividends. Pig farmers send more hogs to market faster and at heavier weights than ever before resulting in more pounds of pork per sow per year.

From 2003 to 2013, pigs per litter increased an average of 1.4 percent each quarter on an annualized basis. Then, in 2013, the porcine epidemic diarrhea virus (PEDV) hit, causing more than a 5 percent drop by the winter and spring of 2014. Today, with PEDV under control, litter sizes are again setting new productivity records.

But another trend line has surfaced that demands attention – a concerning rise in whole-herd mortality rates.

“Mortality discussions often start with the sow, but it doesn’t end there,” said Ken Stalder, swine geneticist at Iowa State University. “Mortality at all production levels is creeping higher, and we need to address it proactively.”

Stalder authored the Pork Checkoff-funded U.S. Pork Industry Productivity Analysis, 2011-2016. The data represent 40 percent of the U.S. swine industry. The analysis showed a wide range in pig survivability between producers in the top 25 percent of productivity and those in the bottom 25 percent (see page 2). That piqued the interest of the Pork Checkoff’s Animal Science Committee.

“The loss of pigs and sows prior to market is a major impingement on pig well-being, productivity, sustainability and profitability,” said Chris Hostetler, animal science director for the Pork Checkoff. “With multiple factors involved, a system-wide assessment was needed.”

To kick-start the effort, a Pig Survivability Working Group of producers, veterinarians, geneticists and other specialists organized to identify priorities and guide research. This led the National Pork Board to invest $1 million in research to improve pig survival in 2018, with projects in three areas:

• Pre-weaning mortality – “While this is the shortest portion of a pig’s life, the mortality risk is greatest,” Hostetler said.
• Post-weaning (nursery to market) mortality – “We need to learn more about how today’s heavier market weights impact survivability,” Hostetler said.
• Sow mortality – “This is a complex and multifactorial challenge,” Hostetler said. “What impacts mortality on one farm may be very different on another.

He added, “Making changes will not happen overnight; it is a long-term commitment.”
Look Beyond Averages to Find Answers

While pork production records help flag trends, the numbers don’t tell you why the trend occurred or identify a solution. A case in point is the Pork Checkoff’s U.S. Pork Industry Productivity Analysis, 2011-2016. The findings show that mortality rates across all production stages increased during that time.

Yes, the 2013 PEDV flare-up contributed to the increases, but once it was under control, mortality rates remained above 2011 levels. Here’s a snapshot:

<table>
<thead>
<tr>
<th>Mortality</th>
<th>2011</th>
<th>2014*</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preweaning**</td>
<td>15.50%</td>
<td>20.50%</td>
<td>17.30%</td>
</tr>
<tr>
<td>Nursery</td>
<td>4.32%</td>
<td>5.47%</td>
<td>4.58%</td>
</tr>
<tr>
<td>Finisher</td>
<td>4.48%</td>
<td>5.78%</td>
<td>5.34%</td>
</tr>
</tbody>
</table>

** Preweaning mortality includes stillbirths.

Wean-to-finish records show a similar pattern with a mortality of 6.33 percent in 2011 and 7.52 percent in 2016. The U.S. Pork Industry Productivity Analysis didn’t assess sow mortality, but PigChamp data show that sow mortality averaged 7.98 percent in 2009 and 10 percent in 2016.

“We used to say if sow mortality reached 5 percent, it was an actionable item,” said Ken Stalder, swine geneticist at Iowa State University.

Focus on the Variations  
Averages provide a handy summation, but they can hide a lot, according to John Deen, DVM, professor at the University of Minnesota. He suggests focusing on the variation between herds in the top productivity ranks versus those in the bottom percentile.

For example, sow mortality for the top 25 percent in the PigChamp database is 5.9 percent, with the bottom 25 percent at 14.5 percent.

“That tells us there’s capability to do better,” Deen said. “We need to identify what factors contribute to the differences in order to make improvements.”

To review pig survivability differences between the top and bottom 25 percent go to pork.org for the full U.S. Pork Industry Productivity Analysis, 2011-2016.

“What isn’t measured or measured accurately is hard to change,” said Valerie Duttlinger, an Indiana producer, analyst for Swine Management Services (SMS) and member of the Pig Survivability Working Group. “Until farms are committed to identifying why a pig was removed, it will be hard to make improvements.”

Improved data accuracy for pig removals doesn’t mean adding more numbers or details. In fact, in this case it means more concise, clear and focused reasons, she said, citing a farm that listed 128 reasons for sow removals.

“That makes it too complicated to assign the loss to the right reason, so workers just pick any reason,” she said.

With assistance from Iowa State’s Ken Stalder and the Pork Checkoff’s Chris Hostetler, SMS reduced the list to six categories: disease/health, performance, locomotion, reproduction, intestinal, other.

“They tell you can use the additional 23 subcategories if you want more detail,” Stalder noted. “That’s about as detailed as you can get and still have data that is useful to analyze.”

The list also requires citing how the animal was removed (culled, death or euthanized). A similar list could be developed for and applied to growing pigs.

Additional Steps to Ensure Accuracy:

Record the removal reason now versus later – Designate a reason when you decide to cull an animal.

“It’s too easy to forget later,” said Duttlinger, adding that this also applies to deaths. “And don’t try to record a reason when you’re loading the truck.”

Record euthanized animals and deaths separately – This detail is increasingly important for the farm and the industry to know. If your software provider doesn’t accommodate this, ask for a change or consider changing providers.

Enhance loss records for growing pigs – Too often there is no reason or date or weight recorded for deaths of growing pigs, Duttlinger said.

“Those things are all important when you’re trying to find trends,” she said. “It may require a necropsy to determine why a growing pig died. That’s time consuming, but the answers may prove valuable.”

Duttlinger would like to see producers adopt more standardized reasons for pig removals and deaths for a more accurate depiction of what’s happening industry-wide.
Factors to Consider, Actions to Take

A familiar pattern is materializing, which is another reason why pig survivability is a renewed priority. From the late 1990s to early 2000s, the industry was expanding and sow mortality started moving higher. Replacement-gilt demand was high and supplies were tight – similar to today. This was followed by a period of rising mortality and poorer feed efficiency and growth rate of pigs from older sows.

“Light-weight pigs never really catch up,” said the University of Minnesota’s John Deen. “Whether due to competition from penmates or pathogens, these pigs face greater risks.”

Other Factors to Address:
• **The continuous drive to farrow larger litters** has contributed to the growing-pig mortality rates.
  “Birth weights have dropped quite a bit, and weight variations within a large litter are a problem,” Deen said. “This leads to less robust pigs. We need to look at individual pigs to understand mortality in more detail.”
  That means emphasizing individual pig care at the sow level, as well as throughout the growth phase.
  “Individual pig care is really about stockmanship,” he said. “It starts by ensuring newborn pigs get colostrum as well as continued access to the udder.”
• **Establishing farrowing protocols and day-one pig care** go a long way in making a difference, said Indiana producer Valerie Duttlinger. She suggests selecting a person or two with exceptional pig observation skills and making their only daily assignment to walk the barns and check pigs.
  “It’s critical to get at-risk sows and pigs treated quickly and back to health,” Duttlinger said. “But it’s all about people – having enough staff, low turnover, well-trained and committed people.”
• **Disease issues** can cause mortality spikes, but a new development with sows in the last couple of years is a **rise in prolapses**. They seem to come in waves, but other patterns or answers have not surfaced. It’s also not clear how much prolapses are contributing to mortality rates.
  “We need more information sharing and comparisons to figure out these kinds of infrequent events,” Deen noted. “The Pig Survivability Working Group has made prolapses its first research priority.”
• **Lameness remains a major reason** for sow culling and death, but it doesn’t stop there.
  “Any feet and leg issues with sows will be magnified later, especially with heavier market weights,” Stalder said. “Producers need to pay more attention to soundness and structure when selecting replacement gilts. They need to learn and apply soundness scoring, as well as work to prevent lameness.”
• **More timely euthanasia** for enhanced pig well-being and herd health may be contributing to increased mortality rates.
  “Producers are trying to be more active in euthanasia decisions in the interest of animal welfare,” Deen said. “Overall this is positive for pig well-being and herd health.”

“Light-weight pigs never really catch up. Whether it’s due to competition from penmates or pathogens, these pigs face greater risks.”

– John Deen, DVM, University of Minnesota
The Right Thing to Do

By Valerie Duttlinger, a Gentryville, Indiana, pork producer and member of the National Pork Board’s Pig Survivability Working Group

As a pork producer I can relate to the challenges that occur on farms every day, as well as the satisfaction of raising healthy hogs that supply nutritious pork for a growing world population. I also am an analyst for Swine Management Services (SMS) in Fremont, Nebraska. There I review swine production records with the objective of identifying trends and providing analysis to advance pig health, productivity and well-being.

The Pork Checkoff’s newly organized Pig Survivability Working Group is committed to finding answers to improve mortality rates from the breeding herd to the market hog. It’s easy to see that addressing pig mortality has real economic benefits for the nation’s pork producers – a 4 percent change in sow mortality is equal to one additional pig weaned per mated female per year. Individual herd numbers will vary, but in the SMS wean-to-finish database, a 1 percent change in death loss is worth $1.44 per pig.

But there also are real animal well-being benefits. As producers we care about our animals and enjoy raising robust, productive pigs. We need to step back, look at what’s challenging pig survivability and work to turn it around. It’s simply the right thing to do.

In the months and years ahead, the Pig Survivability Working Group will select and fund research to find solutions that we can implement on our farms. I encourage each producer to join me in evaluating his or her farm records, management practices and herd health, and then compare results and share ideas. We’ve worked together many times in the past for the good of the industry, and this is one more time where it will take cooperation to make progress.

“We need to step back, look at what’s challenging pig survivability and work to turn it around. It’s simply the right thing to do.”

Valerie Duttlinger, Indiana