

## Bedding Study: **LESS CAN BE BETTER**

It's not every day that research proves you can do less of something and get as good or even better results. However, that's exactly what a new Pork Checkoff-funded study suggests. The findings show that it is possible for producers to reduce the amount of bedding used during transport. And with that comes the added bonus of significant cost savings to the entire industry – an estimated \$10.1 million annually.

According to Sherrie Niekamp, Checkoff's director of swine welfare, the pork industry overall is doing a good job of transporting its roughly 2 million pigs per week in a safe and pig-friendly way. Statistics back up this assessment, with fewer than 0.66 percent of pigs sent to market having a negative welfare experience. This could include anything from temporary fatigue to mortality.

However, as small as this percentage is, according to previous research done by the University of Illinois, it represents a total annual industry economic hit of \$46 million. This includes losses from fatigued pigs (non-ambulatory), mortalities and other losses at plants.

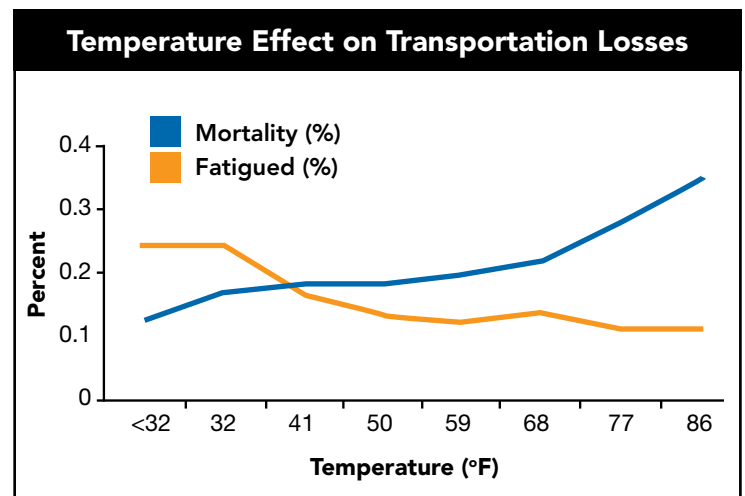
"We're excited about what this research can mean to the industry on many fronts," Niekamp said. "It's always a good day when we can find innovative ways to continually improve how we care for pigs during all phases of production, including transportation."

John McGlone, a swine researcher at Texas Tech University and principal researcher for the study, along with Anna Butters-Johnson an Iowa State University researcher, looked at various rates of bedding in semi-trailers at different times of year and in different locations throughout the Midwest. This approach provided data representing cold, mild and hot weather.

McGlone reiterated what producers and transporters already know, but may tend to forget from time to time – pigs are very sensitive to temperature extremes. He explained that this leads to stress and can quickly elevate to a negative welfare experience if steps to alleviate the condition aren't taken immediately (below).

"During the study we found that the surface temperature of the pigs changed with the air temperature and that increased surface temperature actually caused a negative effect on the pigs' welfare," McGlone said.

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Environmental temperature clearly affects the percentages of pigs that die prior to arriving at market and those that are fatigued before being weighed at the processing plant. (Sutherland, et al., 2009)

**Bedding Depth – Bales of bedding needed based on a straight-deck 8.5' x 53' trailer.**



= 3/8" Bedding Depth



= 5/8" Bedding Depth



= 1" Bedding Depth

**Study Design**

	Bedding Levels, Bales/Trailer	Air Temperature (°F)
Jan. - Feb.	6,12	8 to 68
March - May	3, 6,12	28 to 78
June - July	3, 5, 7, 9	61 to 113

**Study Conclusions/Recommendations**

Season	Temperature Range (°F)	Conclusions	Recommended Bales/Trailer
Cold weather	< 32	No advantage > 6 bales	6 (no data on < 6)
Mild weather	32 - 70	No advantage > 3 bales	3
Warm weather	> 70	Welfare disadvantage in using > 3 bales	3 (no data on < 3)

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Over the course of a year, McGlone and his research team found optimum bedding levels for each weather scenario.

“In cold weather, there’s no added effect to using more than six bales of bedding per trailer. The freezing temperatures cause used, wet bedding to freeze, which means pigs are more likely to slip on the ice, thereby creating more down pigs. While in warm or mild weather, we found that there’s no added effect to using more than three bales of bedding per trailer,” he said.

According to McGlone, the standard in the industry is to use four bales of bedding per semi-trailer. However, this research challenges that set amount.

“We concluded if the industry changed to using only three bales per trailer, it would create a big savings with no change in welfare,” McGlone said. “So it’s something the industry will need to consider carefully.”

According to Niekamp, the Transport Quality Assurance® task force will take this new research into consideration as it seeks to update the program’s transport recommendations.

In the meantime, McGlone says producers should evaluate their current bedding practices and determine if they can implement this study’s protocols. He said, “We’ve clearly shown there is no advantage to using more bedding than is necessary.” 🍏

**For More Information...**

The most comprehensive information about transporting pigs is found in the *TQA™ Handbook*. It can be accessed at [www.pork.org/certifications](http://www.pork.org/certifications).



**To take the next step in improving pig well-being during transport, the Pork Checkoff will focus research efforts on boarding rates on trailers, together with misting.**



# Researcher Shares Bedding Insights

Pork Checkoff visited with Dr. John McGlone, animal scientist and researcher of this Checkoff-funded research on bedding. Here are his first-hand observations about the findings of this breakthrough study that may yield multiple benefits to pigs, producers and packers.

**Q:** What did you find most surprising about the study overall? Why?

**A:** Most surprising was the fact that more bedding would have no effect or be harmful to the pigs in cold and cool weather due to freezing of bedding materials. Also, it was surprising to find so much bedding used in warm weather, which led to increased mortalities.

**Q:** How exactly do sub-freezing temperatures lead to increased problems?

**A:** The freezing temperatures cause used, wet bedding to freeze, which means pigs are more likely to slip on the ice, thereby creating more down pigs. Cold weather and ice do not increase mortality, just an increase in down pigs. Obviously, the ice can lead to more injuries, but the real problem with the ice is that it makes the pigs cold, which increases their risk of then going down.

**Q:** Did the study change your understanding about bedding in trailers and its effect on pig well-being and mortalities?

**A:** Yes, because you would think more bedding is always better; warmer, more comfortable. But this is not the case in any season. Less is better.

**Q:** In hot weather, your research showed that bedding and temperature effects are additive. Didn't we know that already?

**A:** It is intuitive. But as we demonstrated, not all results are intuitive. It is nice when the statistics support our intuition, but we always need to confirm this. Also, it is nice when economics and well-being go hand-in-hand – use less bedding and pigs are better off.

**Q:** In your conclusions, you show that bedding only has a significant effect in warm weather. What do you mean by that?

**A:** Statistically, the only significant bedding effect was in warm weather, which showed that using less bedding in warm weather reduces mortality. However, this doesn't mean that non-significant findings aren't economically significant – we have clearly showed that there is no advantage to using more bedding, which is costing the industry unnecessary losses and extra expense.

**Q:** You mention that overuse of bedding is a well-being issue in warm weather, but what about mild or cold weather?

**A:** There is no well-being issue with overuse of bedding in cool and cold weather. However, there is a well-being issue when it is very cold with using a lot of bedding and it getting wet and then becoming frozen.

**Q:** What is the overall take-away of this Checkoff-funded research for producers?

**A:** Managing bedding closely will save money. The standard in the industry is to use four bales per semi-trailer. We concluded if the industry changed to using only three bales per trailer it would create a big savings with no change in well-being during mild and warm weather. Use no more than six bales in cold weather and welfare will be improved while reducing costs.

**Q:** What else should producers, truckers and plant workers know about this research?

**A:** We will be looking at boarding rates on trailers next along with misting. As we've proven, we can't predict how the results will come out. Sometimes the findings are consistent with our preconceived notions and sometimes not. In any case, this line of research can pay big dividends to the industry and improve pig well-being when implemented.



For more information about Checkoff-funded research, go to [pork.org](http://pork.org).



*"Because of the size and scope of this research study, the results should benefit all producers..."*

Karen Richter, pork producer from Montgomery, Minn., and a National Pork Board member

## Bedding Research Is a Win-Win

As a producer and member of the National Pork Board, I'm pleased that research on bedding during transportation was funded by the Pork Checkoff. The pork industry would not be where it is today, if we, as farmers and producers of a valuable food product, did not continually strive to improve our production practices and product. The bedding research, outlined in this issue, offers us as an industry win-win situation because the results show that we can continue to improve animal well-being practices and actually save money at the same time.

At the National Pork Board, one of the criteria that we strive to meet is making Checkoff-funded research applicable to all producers. Because of the size and scope of this research study, the results should benefit all producers. To help ensure that this knowledge turns into positive results, transporters and producers will need to make decisions based on the study's findings and then be sure to implement any new practices as appropriate.

I'm proud that as producers we continue to fund the types of projects that can collectively help us demonstrate our guiding ethical principles set forth in the We Care initiative. Whether it's protecting and promoting animal well-being, protecting our food supply or the environment, it's clear we're making progress in earning the trust of generations of consumers by delivering on our promise to produce pork responsibly.

*Karen Richter*




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

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**Inside:** New Checkoff research looks at bedding recommendations.

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