



# Hog-Handling Update

By Dr. Matt Ritter *TIPS FOR BETTER PIG HANDLING*

The *Hog-Handling Update* is a monthly informational email from Elanco Animal Health focused on pig handling and transportation. The author, Dr. Matt Ritter, is a swine technical consultant with Elanco. With hands-on experience loading more than 50,000 pigs and a Ph.D. in pre-slaughter stress, Dr. Ritter combines academic and practical approaches to advancing the industry's knowledge.

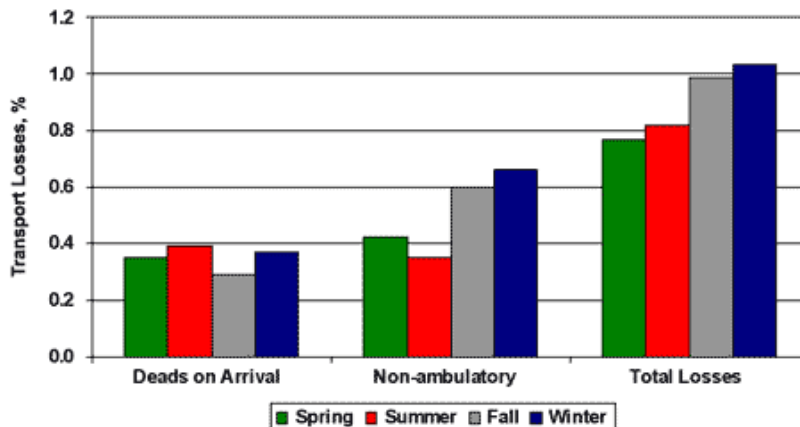
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## Early winter brings highest rate of non-ambulatory pigs

It is well documented that the percentage of dead pigs at packing plants is highest during the summer months.<sup>1</sup> A lesser known fact is that the rate of non-ambulatory pigs is actually highest during the early winter months.<sup>1,2</sup> In a recent controlled study,<sup>3</sup> 17,256 market weight pigs were loaded over four seasons from one farm by one loading crew and were transported four hours to one packing plant. The results of this controlled study confirmed that the rate of non-ambulatory pigs numerically increases during the winter (Figure 1).

**Figure 1. Effects of season on transport losses.**



## Why do the rates of non-ambulatory pigs peak in the winter?

Currently we do not know why, but some potential explanations include:<sup>1</sup>

1. Temperature stress
2. Heavier pigs
3. Increased number of pigs transported
4. Health status
5. Summer's over

### 1. Temperature stress

Finishing pigs are raised in environmentally controlled buildings that are usually maintained at 60-65°F. However, pigs can be loaded on days when it is -10°F with the wind chill. Under these conditions, pigs are subjected to temperature stress as the difference between the barn and outside temperatures may be as large as 70-75°F. Furthermore, this change in temperature at the doorway may result in pigs being difficult to handle as they commonly turn around and try to re-enter the building. Another concern with variable temperature stress is that pigs may be shivering on the trailer during the journey to the plant. When pigs shiver, they break down their muscle energy stores (glycogen) to generate body heat, and thus, pigs that shiver during transport may be more susceptible to fatigue and exhaustion during unloading.

### 2. Heavier pigs

During the summer, pigs typically have lower feed intakes and slower growth rates due to the heat. However, the growth rates of pigs increase due to cooler weather and/or the addition of "new crop corn" to the ration. Over the last three years, the national average for slaughter weights has increased by approximately 10 lbs. from August to November.<sup>4</sup> Currently, the effects of increasing growth rate on transport losses are unknown, but increasing live weight has important implications for:

- The frequency of pigs wedging and jamming in the aisle during loading
- Transport floor space -- as trailers are typically loaded on a number-of-pigs-per-load basis

### 3. Increased number of pigs transported

In 2006, the two highest months for the number of pigs slaughtered were October and November.<sup>5</sup> This year is following suit, with a record number of pigs being slaughtered in October. Increasing the number of pigs transported and slaughtered creates many logistical challenges for the entire marketing process:

- It is difficult to schedule and reschedule loads at the last minute
- Loading crews have to load more loads
- Truck drivers have to haul more loads and spend more time on the road
- Packing plant employees are required to work more hours (i.e. overtime and Saturdays)
- Employee turnover is high and it is extremely difficult to find additional labor

### 4. Health status

During the early winter, there are large day-to-day changes in temperature that may cause respiratory health challenges. Industry accounts have suggested that transport losses are higher from barns that have higher mortality rates during the grow-finish period. Currently, we do not have any data that shows a cause-and-effect relationship between respiratory health challenges and transport losses. However, we plan to continue working in this area to determine if pigs that have experienced a respiratory challenge are more susceptible to dying during transport or becoming non-ambulatory at the plant.

### 5. Summer is over!

During the summer months, loading crews and truck drivers implement many proactive handling and transportation practices in order to minimize the impact of the summer heat. However, most of these proactive handling and transportation practices are discontinued once the cool weather arrives, and thus, “old habits” may start to rear their ugly heads once again.

## Twelve tips to prepare for the winter

1. Walk pens daily to correctly identify and treat sick pigs.
2. Correctly identify and market pigs when they are in the targeted weight window. Industry accounts have suggested that non-ambulatory pigs are often the largest pigs within a trailer load of pigs.
3. Loading crews should not load more than 4-6 loads per day (if possible).
4. Use covered loading chutes that form a tight seal with the building and the trailer to minimize the amount of cold air that is blowing on the pigs.
5. Loading crews should have a shovel and salt with them in case there is snow and/or ice in the load-out area.
6. Spread an absorbent material (wood shavings, barn lime, rice hulls, etc.) in the load-out area to prevent pigs from slipping and injuring themselves.
7. Move pigs in groups of 4-6 to minimize stress during loading. If pigs are difficult to move in groups of 4-6, take smaller groups to the trailer.
8. Minimize the use of electric prods (goal:  $\leq 2$  shocks/pig from barn pen to trailer compartment).
9. Drivers should carry a rubber mallet to loosen frozen pins on the gates of trailer compartments.
10. Trailers should be bedded and boarded according to the following recommendations (Table 1).<sup>6</sup> If you are hauling multiple loads within a day, be aware that the bedding and boarding requirements will most likely differ for each load. On a typical winter day in the Midwest, the high and low daily temperatures may differ by as much as 20-30°F. Therefore, drivers should adjust the setup of their trailers throughout the day.

**Table 1. Bedding and boarding recommendations.**

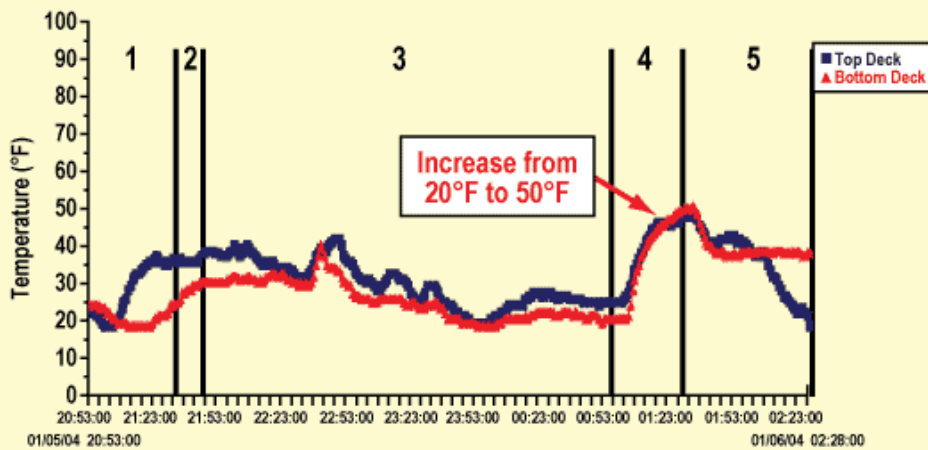
Truck Setup Procedures During Temperature Extremes			
Air Temp (°F)	Bedding	Side-Slats	
<10°	Heavy	90% Closed	10% Open*
10-20°	Medium	75% Closed	25% Open*
20-40°	Medium	50% Closed	50% Open
40-50°	Light	25% Closed	75% Open
>50°	Light†	0% Closed	100% Open

\* Minimum openings are needed for ventilation even in the coldest weather.

† Consider using sand or wetting bedding if it is not too humid and trucks are moving.

11. Use the following to calculate transport floor space required to minimize transport losses:<sup>7</sup>  
58 lbs./ft.<sup>2</sup>
12. Once on the road, keep the truck moving and avoid unnecessary stops. Temperature inside the trailer increases when the truck is not moving, especially when the trailer is full of pigs and 90% of the vents are closed (Figure 2). In this example, the temperature inside the trailer increased from 20-50°F during a 34-minute waiting period at the plant prior to unloading.<sup>1</sup> Also, be aware that steam and relative humidity build up quickly inside a trailer that is full of pigs and has 90% of the vents closed.

Figure 2. Temperature inside a trailer with 90% of the vents closed.



1. Loading (41 min)                      2. Wait at the farm (13 min)                      3. Transport (189 min)  
4. Wait at the plant (34 min)                      5. Unloading (58 min)

## Handling Help?

Elanco Animal Health offers a variety of animal-handling resources including:

- Load-site assessments
- Loading crew and driver training
- Facility design evaluations
- Standard Operating Procedure (SOP) development
- Developing databases to track transport losses

To learn more about Elanco's animal handling resources, contact your Elanco representative or send your questions or comments to [dr.ritter@hoghandlingupdate.com](mailto:dr.ritter@hoghandlingupdate.com).

Special thanks to co-authors Glee Goodner and Mark Klassen.

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## References

- <sup>1</sup> Ellis, M. and Ritter, M. 2006. "Impact of season on production: transport losses." Proc. 2006 Allen D. Leman Swine Conference: 205-207.
- <sup>2</sup> Rademacher, C. and Davies, P. 2005. "Factors associated with the incidence of mortality during transport of market hogs." Proc. 2005 Allen D. Leman Swine Conference: 186-191.
- <sup>3</sup> Ritter, M. 2007. "Effects of animal handling and transportation factors on the welfare, stress responses, and incidences of transport losses in market weight pigs at the packing plant." PhD Diss. University of Illinois, Urbana-Champaign: 122.
- <sup>4</sup> USDA National Agricultural Statistics Service. 2007. Hogs: average live weight by month and year, U.S. Accessed Oct. 29, 2007. <[http://www.nass.usda.gov/Charts\\_and\\_Maps/Livestock\\_Slaughter/hglwvgx6.asp](http://www.nass.usda.gov/Charts_and_Maps/Livestock_Slaughter/hglwvgx6.asp)>.
- <sup>5</sup> USDA National Agricultural Statistics Service. 2007. Hogs: number of head by month and year, U.S. Accessed Oct. 29, 2007. <[http://www.nass.usda.gov/Charts\\_and\\_Maps/Livestock\\_Slaughter/hgheadx3.asp](http://www.nass.usda.gov/Charts_and_Maps/Livestock_Slaughter/hgheadx3.asp)>.
- <sup>6</sup> C. Stahl, ed. 2004. Trucker Quality Assurance Handbook. National Pork Board, Des Moines, IA.
- <sup>7</sup> Ritter, M.J., Ellis, M., Bertelsen, C., Bowman, R., Brinkmann, J., DeDecker, J., Keffaber, K., Murphy, C., Peterson, B., Schlipf, J. and Wolter, B. 2007. "Effects of distance moved during loading and floor space on the trailer during transport on losses of market weight pigs on arrival at the packing plant." Journal of Animal Science. doi:10.2527/jas.2007-0232.

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