

# Loading Gantry Versus Traditional Chute for the Finisher Pig: Effect on Welfare Parameters at Time of Marketing

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### Summary and Implications

Pig mortalities from the farm to the harvest facility have been estimated to cost the U.S. swine industry over 55 million dollars annually. Improved understanding of the major factors impacting the behavioral and physiological responses of the finisher pig during transportation is needed.

### Introduction

Handling and movement is stressful for any size and type of pig, and even under the “best” conditions can cause significant changes in the pigs’ physiology, their behavior and consequently negatively impact pig performance and final meat quality. The direct financial impacts endured during handling and transportation represents only a small fraction of the true cost of marketing and pig transportation stress. There are a multitude of efficiencies that are lost, costs that are increased and risks endured. Therefore, the objective of this study was to determine if loading system affects the welfare of finisher pigs at the time of marketing.

### Materials and Methods

**Animals:** A total of 74 semi loads of crossbred finisher pigs from a single site were collected on a commercial finishing unit in the Midwest from November 2006 to August 2007.

**Treatments:** Two loading systems (prototype loading gantry [P] vs. traditional chute [T]) were compared in two different experiments. Experiment one (n=44 semi loads, avg. wt. = 118.9kg) included the comparison of two loading tools on the first pigs marketed from a finishing facility or first pull [FP] pigs. Experiment two (n=30 semi loads, avg. wt. = 117.6kg) included the comparison of two loading systems on the last pigs marketed from a finishing facility or closeout [CO] pigs.

**Measures:** Pigs were loaded using an internally-approved Swine Welfare Assurance Program™ (SWAP+) market load assessment, which combines the National Pork

Board’s SWAP program and the American Meat Institute’s Animal Handling Audit. Welfare parameters were collected on pigs while in the loading system after exiting the barn and prior to entering the trailer. Welfare parameters evaluated were electric prod use, slips, falls, vocalizations and piling. Arbitrary definitions for welfare parameters were developed. Electric prod use was anytime the prod touched the pig. Slips were instances where normal mechanics of gait were interrupted. Falls were imbalances resulting in contact between a non-limb portion of the body and the ground. Vocalizations were characterized as short, loud sounds attributable to individual pigs that could be distinguished from the baseline noises of the group. Piling occurred when one or more pigs had either front or rear feet off the ground and on another pig.

### Results and Discussion

**Experiment One:** Loading system influenced all welfare parameters ( $P < 0.01$ ) at the time of marketing. Pigs loaded on the P chute experienced fewer electric prods, slips, falls, vocalizations and pile ups.

**Table 1. First pull welfare parameters.**

Item <sup>b</sup>	Chute Type <sup>a</sup>		P-value
	T	P	
Electric prods	161.59 ± 14.1	96.25 ± 12.9	0.01
Slips	247.91 ± 20.5	96.02 ± 18.9	0.01
Falls	100.42 ± 9.1	20.18 ± 8.3	0.01
Vocalizations	138.06 ± 12.1	69.08 ± 11.1	0.01
Pile ups	3.59 ± 0.5	0.01 ± 0.5	0.01

<sup>a</sup>T = Traditional chute; P = Prototype loading gantry

<sup>b</sup>Electric prods = any time the prod touched the pig; Slips = instances where normal mechanics of gait were interrupted; Falls = imbalances resulting in contact between a non-limb portion of the body and the ground; Vocalizations = characterizations of short, loud sounds attributable to individual pigs that could be distinguished from the baseline noises of the group; Pile ups = one or more pigs had either front or rear feet off the ground and on another animal.

**Experiment Two:** Loading system influenced all welfare parameters ( $P < 0.01$ ) at the time of marketing. Pigs loaded on the P chute experienced fewer electric prods, slips, falls, vocalizations and pile ups.

**Table 2. Closeout pull welfare parameters.**

Item <sup>b</sup>	Chute Type <sup>a</sup>		P-value
	T	P	
Electric prods	188.2 ± 10.5	108.1 ± 12.9	0.01
Slips	302.5 ± 23.2	106.0 ± 25.7	0.01
Falls	115.4 ± 13.9	24.8 ± 15.7	0.01
Vocalizations	140.4 ± 7.6	79.2 ± 9.4	0.01
Pile ups	4.6 ± 0.4	0.1 ± 0.5	0.01

<sup>a</sup>T = Traditional chute; P = Prototype loading gantry

<sup>b</sup>Electric prods = any time the prod touched the pig; Slips = instances where normal mechanics of gait were interrupted; Falls = imbalances resulting in contact between a non-limb portion of the body and the ground; Vocalizations = characterizations of short, loud sounds attributable to individual pigs that could be distinguished from the baseline noises of the group; Pile ups = one or more pigs had either front or rear feet off the ground and on another animal.

In conclusion, the T loading system in our study is associated with a more intensive handling at the time of marketing as defined by an increased incidence in prods, slips, falls, vocalizations and pile ups when loaded. Ultimately, this demonstrates that the implementation of the P chute in this system made it possible to minimize the stress placed on market pigs at load out. Understanding key factors influencing losses during this time frame enables targeted interventions to improve both welfare and profitability.