



# Transporting Pigs

John J. McGlone, PhD  
Professor, Texas Tech U  
FACTA, LLC



# Outline

- Usual times pigs are transported
- Transportation effects on pig behavior, body weight and physiology
- Trucks & weather
- Handling effects at loading and unloading
- Food safety and animal welfare issues



# Usual times pigs are transported

- Weaning (farrowing to nursery or W-F unit)
- Feeder pigs (nursery to G-F)
- Market hogs
- Young breeding stock
- Cull breeding stock
- Cull growing pigs

# Transporting Pigs – What are they thinking?

- As they come off the truck, they are in a mob
- Movement and direction are based on the flow
- Pigs flow like water
- Keeping the flow directional keeps the pigs moving correctly
- Turns or stops may reverse the flow



Welcome Home!



# How does transport impact the pig?

- They are without feed and water
- They lose more weight than they would if they were without feed and water the same time as the trip
- They have an elevated stress hormone concentrations and altered metabolism
- They have suppressed immunity and increased bacterial shedding

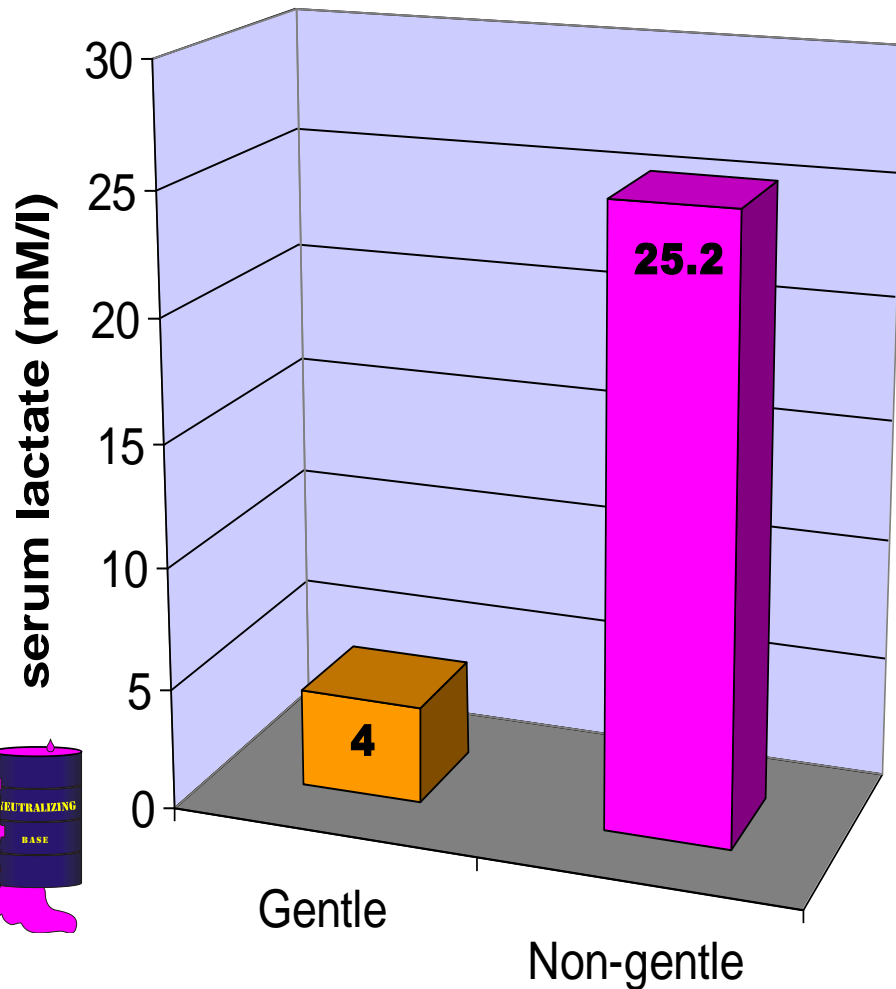
# Transportation and weight loss

- Weight loss can range from 1 to 6% in a short trip; for example in a 4-hour trip:
  - McGlone et al., 1993, loss = 5.1%
  - Hicks et al., 1998, loss = 3.3%
- Carcass shrink begins about 18 h into the trip (or after 18 h of fasting).

# Transportation and pig physiology

- Stress hormones rise within 15 minutes of handling
- Blood cortisol is elevated ~50%, with resulting:
  - Glycogenolysis (break-down of glycogen into glucose)
  - Gluconeogenesis (break-down of protein to form glucose)
  - Glucose at first elevated, then depressed
  - Lactic acid generation
  - Increased risk of dead and downers

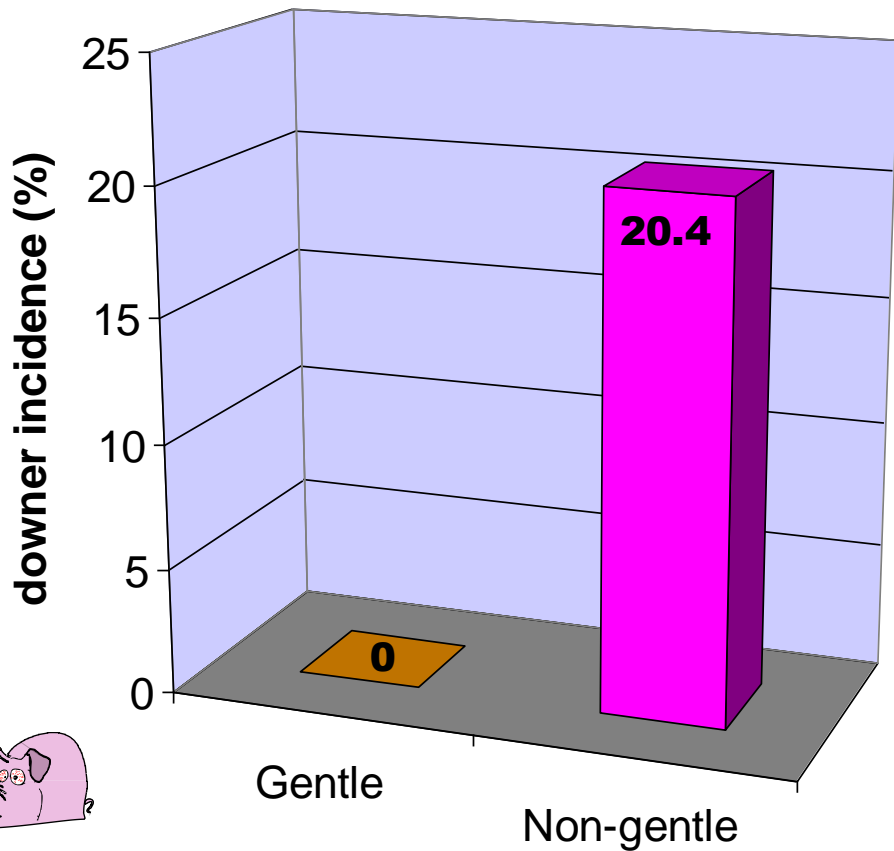
# Serum Lactate Levels In Gently vs. Non-Gently Treated Pigs



- Findings:
  - Serum lactate concentration was much lower in pigs handled gently compared to pigs that received the non-gentle handling ( $p < 0.01^*$ ).

\*the probability of this occurring by chance is less than 1%.

# Downer Incidence In Gently vs. Non-Gently Treated Pigs



- Findings:

- None of the pigs that were treated gently became downer pigs.
- Over 20% (1 out of every 5) of the pigs that received the non-gentle handling became downer pigs in the research trial ( $p < 0.01^*$ ).

\*the probability of this occurring by chance is less than 1%.



# Transportation and pig physiology

- Suppressed immunity
  - Depressed NK activity (Hicks et al., 1998)
- Increased bacterial shedding
  - 7-fold increase in *Salmonella* detection after transport than when on the farm (Hurd et al., 2002)



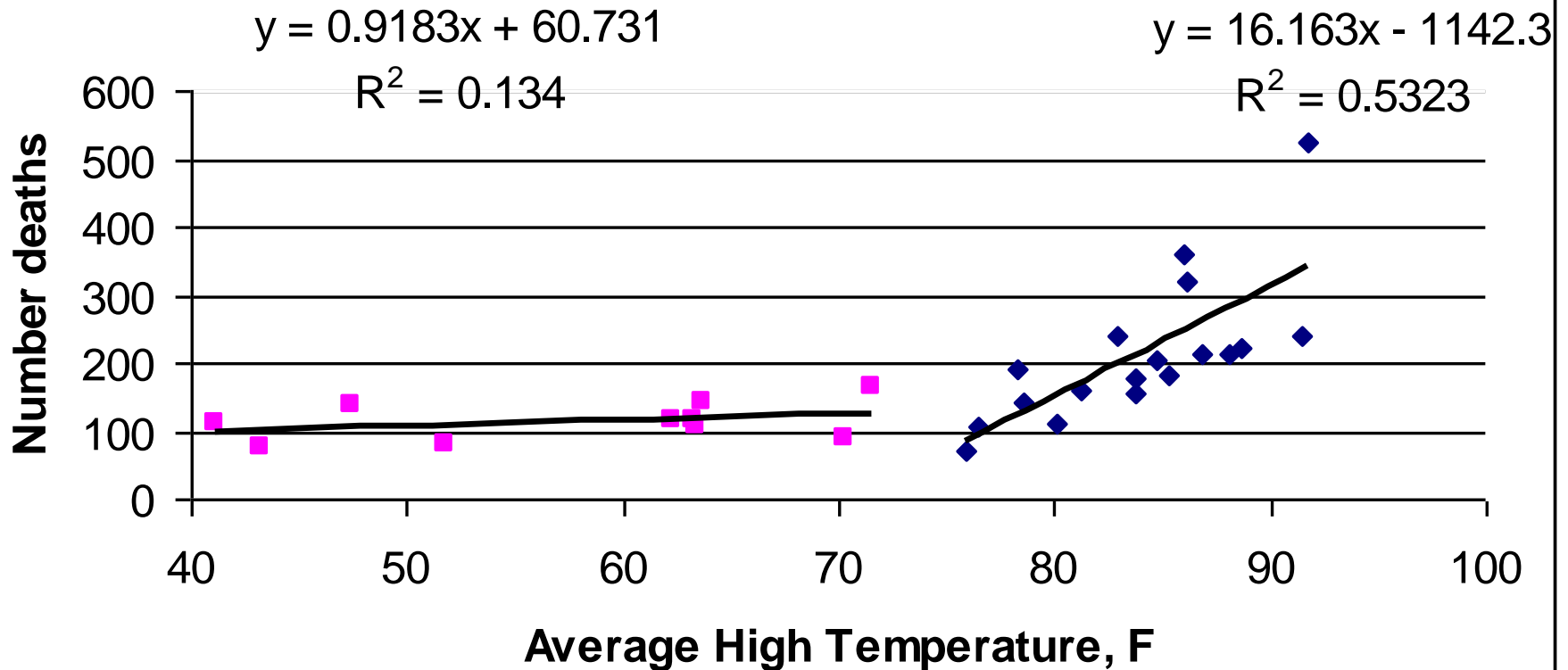
# Trucks and Weather

- See NPB fact sheet by Temple Grandin on transporting pigs
- Main Truck Issues
  - Side slats
  - Bedding
  - Type of truck & compartments within
  - Trucker attitude
  - Handling

# Weather effects on DOA per Week

N = ~2,000,000 pigs; Jun-Dec 2003

## Total Deaths/Week



# Bedding types

## Cool Weather

- Wood shavings
- Wheat straw or corn stubble

## Warm weather

- Wood shavings
- Sand
- Wet shavings
- Wet sand



# Preferred Truck Types

- Pot-belly trucks (least preferred)
- Straight-deck trucks
- Side open, straight-deck trucks

# Truck Set-Up

EET	Air Temp, F	Bedding	Side-Slats
Very Cold	<40	Heavy	10% open*
Cold	40-50	Medium	25% open
Mild	50-75	Light	50% open
Warm	75-90	Light	All Open
Very Warm	>90	Light**	All 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

# Minimum Truck Bedding

Temperature, F	Bales of wood shavings
< 40 F	6
40-49 F	4
> 50 F	2

One bale is 10 cubic ft



# Trucker Attitude

- Positive, humane attitude
- TQA certified
- Attention to details

# Unloading Pigs – Bad Example

- Too noisy
- Door open on left side
- Kicking pigs



# Unloading Pigs – Good Example

- These pigs have to turn left
- Only the mass of pigs and pressure from the back causes them to move forward and then left
- Good use of rattle cans





# Summary

- Transportation is a stressful event in the life of pigs of all ages
- Transportation, under the best conditions, causes real changes in pig physiology and behavior



# Summary

Real opportunities for improvement in pig welfare, including deaths and downers are in two areas:

- Pig Handling
- Truck Operation (bedding, slats & TQA)