Pig Handling Techniques and Options to Maximize Productivity

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Sources of Information on Handling

- Trucker Quality Assurance (TQA) program
  http://www.pork.org/Producers/TQA/TQA.aspx
- Pork Information Handbook (PIH) and Pork Information Gateway (PIG)
  http://www.porkgateway.org
- Temple Grandin webpage
  http://www.grandin.com

Importance of Good Animal Handling Techniques

- Ensure animal welfare
- Better utilization of time and resources
- Maximize animal productivity
  - Reproduction
  - Growth
- Improve worker well-being
- Avoid problems in meat quality

Handling Pigs

- Handling is conducted for specific reasons
  - Movement between barns for different phases
  - Redistribution into larger or different pens
  - Weighing
  - Medicating animals
  - Transport to market

Use Animal Behavior and Instincts to Move Hogs

- Understanding a hog’s natural instincts will help you use proper handling and management techniques
  - Facilitate handling
  - Reduce stress
  - Enhance handler safety
  - Improve animal welfare

Hogs Have a Strong Natural Urge to Escape

- Pigs have wide-angle vision
- Small visual gaps may cause a hog to try to escape
  - Pens, alleys, ramps, side gates, chutes
- Hogs often injure themselves when trying to escape!
Hogs Have a Natural Tendency to Follow Each Other

- Wish to maintain visual and/or body contact with other pigs
- In double runway chutes, hogs move up ramps side by side
  - Double chutes: 34” to 36” wide
  - Single chutes: 16” - 18” wide
- Move pigs in small groups (3 - 5 at a time)
  - Direct the first hog in the right direction
  - Hogs will naturally follow one another

Hogs Are Easily Frightened or Distracted

- Watch for and remove:
  - Dangling chains
  - Loose ramps and boards
  - Slippery floors
  - Extreme bright lights and darkness
  - Loud noises
  - Spilled feed
  - Air drafts

Conditions that Frighten Hogs

- Shadows
- Water puddles
- Drain gates
- Shiny objects
- Flapping/moving objects
- Clothing hanging on fences
- Dogs or other animals
- Sunlight shining through a crack or hole
- Sudden changes in the color of equipment

Excited Hogs are More Difficult to Move than Calm Hogs

- Improper use of electric prods can cause severe stress, heart attacks and death
  - Should be avoided or absolutely minimized
  - Never prod in sensitive areas
- If regular use of an electric prod is needed, you should reevaluate your handling procedures and facilities

The Flight Zone and Point of Balance

- Will help you move animals more easily
- Flight zone is the animal’s personal space
  - Size is determined by the wildness or tameness of the animal
  - Completely tame animals have no flight zone
  - When you enter the flight zone, the animal will move away
  - Stand at the outside of this zone
The Flight Zone and Point of Balance

- Point of balance is at the animal's shoulder
  - Animal will move forward if handler stands behind point of balance
  - Animal will back up if handler stands in front of point of balance
    - Common mistake: attempting to move animals forward while standing in front of point of balance

Aggressive Handling

- Can lead to injured, stressed, or fatigued hogs
- Speculation is that aggressive handling costs the U.S. Pork Industry millions of dollars annually (Ellis et al.)

- Overuse of electric prods
- Loud noise and yelling
- Moving hogs too fast
- Moving hogs in large groups
- Overcrowding on the truck

Stress During Loading and Unloading

- Aggressive handling during this stressful event can further exacerbate stress-related problems
- May lead to "metabolic acidosis"
  - Strenuous exercise or stress can increase glycogen utilization in muscle tissue, increasing subsequent production of lactic acid
  - Lactic acid accumulation can lower muscle tissue pH, resulting in PSE pork.

Stress During Loading and Unloading

- Graph showing pH levels: Normal (7.4), Aggressive (6.7)
Stress During Loading and Unloading

- Signs of excessive stress and/or muscle exertion:
  - Open mouth breathing
  - Vocalization
  - Blotchy skin
  - Stiffness
  - Muscle tremors
  - Increased heart rate
  - Increased rectal temperature

Handling Tips

- Patience, patience, patience
  - Use a gentle demeanor
  - Calm, deliberate movements
  - Low noise
  - Positive physical interactions
    - At least weekly, prefer daily
  - Think like a pig

Effect of Handling on Pig Growth Performance

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Time to interact, s</td>
<td>119</td>
<td>73</td>
</tr>
<tr>
<td>Growth rate, lb/d</td>
<td>1.56</td>
<td>1.97</td>
</tr>
<tr>
<td>Growth rate, lb/d</td>
<td>1.47</td>
<td>1.84</td>
</tr>
</tbody>
</table>

Use Lighting to Your Advantage

- Pigs are very sensitive to sharp contrasts of light and dark
  - Lighting should be bright, but evenly diffused
  - Pigs reared in enclosed buildings may balk at full daylight
  - Use lamps to illuminate areas into which you want the pigs to move
    - Lamps must not shine directly into eyes of approaching animals
Be Aware of Changes in Flooring or Walls

- Changes in flooring type or texture or wall color can cause pigs to refuse to move
  - When transferring from metal/plastic floors to concrete, allow 30 minutes to become accustomed to new flooring
  - Ensure non-slip floor surface

Reduce Excitability in Pigs

- Reduce excitability in pigs by:
  - Providing toys
  - Providing extra contact with people
    - Prefer daily contact
  - Playing a radio in the building
  - Effectiveness dependent on type of housing, genetics, husbandry, procedures, and other factors

Use Appropriate Sorting and Handling Equipment

- Lightweight sorting boards or panels
- Nylon flags
- Witch’s/Matador’s Cape
- Shaker paddles

Alleyway Design and Maintenance

- Pigs will load onto trucks better if alley extends outside the building for at least 15 ft
- Alleys that are 34” to 36” wide are more conducive to easy hog movement than 24” alleys
- Pigs will move more easily if last 16 ft of alley by door is covered or solid
Chute Design and Maintenance

Ramp Design and Maintenance
- Slopes on ramps
  - 25 degrees or less on adjustable ramps
  - 20 degrees or less on nonadjustable ramps

Ramp Design and Maintenance
- Concrete ramps should have steps & non-slip surfaces
- Adjustable ramps for market hogs should have cleats spaced eight inches apart.
  - Closer together for smaller pigs
- Keep ramps in good repair
  - Maintain moving parts such as pulleys and cables
  - Replace broken or missing cleats

Premium Standard Farms Example
- Loading angle = 6/17°
- Dual Pig Movement Alley
  - Separate human return walkway
- Extendable pivoting end sections
- Seals tightly with barn entryway
- Steps use epoxy with grit
- Industrial rope lighting
- Concrete epoxy sidewalls
  - Rhino linings to deflect light

Poor Chute Design

Transportation Guidelines
- Alert
- Danger
- Emergency
### Recommended Transport Space Requirement

<table>
<thead>
<tr>
<th>Average Weight (lbs.)</th>
<th>Running Foot of Truck Floor (Normal Weather)</th>
<th>Square Foot Per Head</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Truck or Trailer Width (inches)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>96</td>
<td>5.33</td>
</tr>
<tr>
<td></td>
<td>102</td>
<td>5.56</td>
</tr>
<tr>
<td></td>
<td>150</td>
<td>5.23</td>
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<tr>
<td></td>
<td>200</td>
<td>5.56</td>
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<tr>
<td></td>
<td>250</td>
<td>5.23</td>
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<tr>
<td></td>
<td>300</td>
<td>5.56</td>
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<tr>
<td></td>
<td>350</td>
<td>5.23</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>5.56</td>
</tr>
</tbody>
</table>

### Transportation Guidelines

- For longer trips (> 3 hrs), increase space requirements by 15% to 20%
  - Market wt pigs will remain standing when trip is under 3 hours
- During hot weather, when the Livestock Weather Safety Index is in the Danger or Emergency Zone, load 15 to 20% fewer pigs

### Transportation Guidelines

- In summer
  - Use wet shavings or sand for bedding, never straw
  - Above 80°F, sprinkle pigs with water immediately after loading
    - Do not let truck stand stationary for extended periods of time
      - Wet pigs again if necessary
  - Consider delivering or transporting pigs in the early morning or overnight when temperature and humidity levels reach danger levels

- In winter
  - Prevent frostbite by using deep bedding of straw or shavings
    - Straw recommended when temp < 10°F
  - On aluminum sided trailers, block at least half of the ventilation holes or install solid panels
  - Close nose vents

### Feed Withdrawal

- Pigs with full stomachs are more likely to die during transport
  - Fasting may reduce incidence of PSE pork
  - Reduces potential contamination problems at the packing plant
- Pigs should be fasted 6 – 10 hours before loading when slaughtered on the same day
  - A total fast of less than 12 hours prior to stunning will usually not cause carcass shrink
  - Fasting more than 18 hours can result in a significant reduction in carcass weight

### Mixing and Fighting in Pigs

- When pigs are mixed, they go through a period where social hierarchy is established
  - One or more pigs dominate
  - Others become subordinate
  - Requires that some, but not all, pigs fight
- When pigs fight, they don’t eat
  - Non-fighting pigs also negatively affected
  - Results in reduced growth
Mixing and Fighting in Pigs

- Negative effects of fighting are greater in older and heavier pigs

<table>
<thead>
<tr>
<th>Weight at mixing</th>
<th>Weight gain depression</th>
<th>Added days to market</th>
<th>Other problems?</th>
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</thead>
<tbody>
<tr>
<td>0-40</td>
<td>None measurable</td>
<td>9</td>
<td>Wounds</td>
</tr>
<tr>
<td>40-95</td>
<td>7 days</td>
<td>9</td>
<td>Wounds</td>
</tr>
<tr>
<td>95-150</td>
<td>28 days</td>
<td>9</td>
<td>Wounds and injury</td>
</tr>
<tr>
<td>Over 150</td>
<td>28 days</td>
<td>7 or more</td>
<td>Wounds and injury</td>
</tr>
</tbody>
</table>

Table 1. Relative pig performance setback because of mixing pigs and fighting. Source: McGlone, 1987

Procedures to Reduce Fighting in Mixed Pigs

- Minimize other stressors
- Avoid overcrowding
- Ensure adequate ventilation
- Do not mix when disease is obvious
- Mix all pigs at same time in a strange new pen
- Avoid mixing pigs when temperature > 90°F
- Provide areas for pigs to escape during fighting

Avoid mixing pigs when temperature > 90°F

Provide areas for pigs to escape during fighting