Technological Advances in Livestock Transportation

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North American Livestock Transportation

• Minimal Technological Advancements for Hauling Livestock throughout North America in the Past 50 Years
• PB Trailers remain the Most Common Livestock Trailer
  – Are the most Difficult to Clean
  – Have the Poorest Animal Handling Characteristics
    • Creutzinger et al., Swine Innovation Pork
• Extensive R&D in the Last Few Years
• Many Advanced Livestock Trailers and Technologies Coming to Market Recently
  – Led by Poultry and Pork
Goal of Technology Adoption

- Maximize the Welfare of the Animal
  - Minimize Stressors of Loading, Transport, Unloading
  - Optimize Comfort of Each and Every Animal
- Improved Management
- Increased Transport Efficiencies
- Enhanced Animal Health
  - Reduced Disease Exposure and Transmission
- Better Operator Experience
  - Safety
- Provision of Emergency Capabilities
Decisions, Decisions, Decisions

• Manufacturers are Utilizing Advanced Technologies to Meet the Needs of the North American Livestock Industry
• Every Operation has Unique and Specialized Requirements
  – What are Your Future Needs
    • Long-term Commitment
• Must Make the Decision Based on the Needs of Livestock Production, Transport and Processing System
Manufacturer Priorities and Trailer Attributes

- Animal Welfare
- Transport Efficiencies
  - Flexibility
- Real Time Information
- Transportation System Management
- Reduced Disease Exposure and Transmission
  - Cleaning and Biosecurity
  - Air Filtration Capabilities
- Mechanical Support Service
- Operator Capabilities
- Regulatory Requirements
Options

- Steve’s Livestock Transport-Wilson Trailer Company
  - Lift Deck
- Steve’s Livestock Transport-Cuppers
- Luckhart Transport Ltd.-Pezzaioli
- Luckhart Transport Ltd.-Barrett Hydraulic
- Red Rock Holdings Inc.-Newnion
  - Walinga Built
- Berdex Carrosserrie
  - Titan Trailer Built
Wilson Lift Deck – Market Hog
Wilson Lift Deck-Animal Welfare Impact

- Brockoff et al.
  - 30 Comparative Paired Market Hog Loads
- Lift Deck Significantly Improved Animal Handling
  - Lift Deck Resulted in Significant Reduction:
    - Vocalizations (Loading)
    - Slips (Loading and Unloading)
    - Falls (Loading and Unloading)
    - Overlaps (Loading and Unloading)
    - Electric Prod Use (Loading)
Wilson Lift Deck-Operator

• Trucker Survey
  • Brockoff et al.
  • Market Hog Transport
• TRUCKERS NEVER AGREE!!!
  – 100% of Truckers Indicated that LD was Easier than a Traditional Trailer to Work In
  – 100% of Truckers indicated that the LD was Easier to Load and Unload Pigs From
  – 100% of Truckers Agreed that the LD was a Better Trailer Design for Both Pigs and People
Wilson Lift Deck - Performance

- 2018 Commercial Comparison
  - 400 Lift Deck Loads
  - Less than 8hr Transport Duration
- DOA’s
  - Isowean Piglets: WLD 0.00%, Traditional 0.075%
  - Feeder Pigs: WLD 0.0009%, Traditional 0.01%
  - Market Hogs: WLD 0.00%, Traditional 0.10%
- Cleaning and Biosecurity
  - 30% Reduction in Wash Time per Load
Berdex-Performance Market Hog Transport

• 33% Reduction in Loading Time
• 30% Reduction in DOA’s
• Integrates Specialized Plant Unloading System
  – 60% Reduction in Required Unloading Time at the Plant
• Cleaning and Biosecurity
  – 50% Reduction in Wash Time Per Load
Cuppers/SLT-Description

- Most Advanced Livestock Trailer Commercially Available in North America
- Trailer Details
  - Multiple Configurations (2,3,4 Deck)
  - Full Width Hydraulic Lift Decks
    - Integrated Entrance
  - Animal Comfort System
    - Insulated Panel Construction
    - Fully Automatic Mechanical Ventilation
    - In-floor Heating
    - Mister Capability
  - On Board Waterers
  - Real Time Reporting
Cuppers-4 Deck Isowean Transport
Cuppers-Performance

• Isowean Piglet Configuration
• 2/3 Reduction in Bedding Usage
• Initial Phase Evaluation
  – Representing Over 100,000 Piglets
    • Long Distance Transport 24+ hr
    • 70% Reduction of DOAs Compared to Traditional Trailer
      – While Still Learning
• Customer Comments:
  – “Having marketed around 14,000,000 pigs over the last 30 years, using the Cuppers trailer to transport EW pigs is truly a huge improvement.”
    – Steve Mohr, pig broker from Glidden Iowa
• Committed to Additional Trailer Purchases
Cuppers Cleaning and Biosecurity

• Reduced Bedding Usage Results in Much Easier Cleanout/Scraping
  • Less than 10 Minutes/Trailer

• Washing
  – Smooth, Slick Surface Materials
  – Standing Position-No Bending, Crouching, Kneeling
    • Designed for the Integration of Robotic Wash

• Thermal Treatment
  – Airflow Designed to Optimize Baking Efficiency
  – All Materials Rated to 100C
    • Extensive Material Testing Program
Cuppers Operator

• Operator Comments:
  – “Loading and Unloading is Easy with No Stress for the Pigs or the Drivers”.
    • “I never have to Crawl Around”
    • “Even in the Heat of the Summer I don’t Even Break a Sweat”
• Improved Ability to Handle Compromised/Mortality Pigs
• Ongoing 18 Month Evaluation
  – Long (1000 mile), Short (500 mile)
  – In-Depth Operator Evaluation Program
    • Currently 6 Operators
Cuppers-Air Filtration Capabilities

• Fully Mechanical Ventilation Systems Provide the Opportunity to Utilize Air Filtration Technology
  – Goal:
    • Improve Animal Health
    • Reduces Transportation Requirements to Avoid Disease Outbreak
  – Range of Capabilities
    • Reduction in Aerial Contamination (Dust)
    • Minimization of Disease Transmission
      – Utilizing Merv 16 Filters
  – Research Has Demonstrated upto a 99% Effectiveness
    » Predicala et al.
Next Steps with Advanced Transport Systems

• Developing a Universal Animal Comfort Index
• Remote Video Monitoring and Auditing Capabilities
  – Animal Handling
  – Animal Comfort
    • “Over the past few months with video cameras I have learned more about what really happens in our trailers than from over 30 years of hauling livestock”
      » Doug Luckhart, Luckhart Transport
  – Utilization for Cross-Border Inspection
• Meat Quality Impacts with Market Hog Transport
• Performance Impacts of Isowean/Feeder Pig Transport
  – Reports of 5-10 day Reduction in Finishing Period
• Commercial Evaluation of Filter Technology
• Economic Impact