Electrical Stimulation in the Poultry Industry

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• The Mechanics
  • Electric Current is passed through the carcass
    • AC Current
    • DC Current
    • Continuous current application
    • Cyclic current application
  • The Electrical Stimulation (ES) initiates the chemical reaction of muscle contraction
    • Current flow starts at the breast and terminates at the hock
• Accelerated Rigor
  • The series of muscle contractions and relaxations reduce the available amount of chemical energy in the muscle
  • The delay phase of rigor is reduced or eliminated
    • Does this depend on when the bird last ate?
      • 4 hr. eating cycles
      • Feed withdrawal
• Where are you now?
  • What are the descriptive statistics of your incoming birds?
  • How much variation is there between farms and flocks?
• Where do you want to go?
  • Who are your customers?
    • What are their expectations?

Developing a Management Strategy
• Have a Change Management Plan in place before a crisis
  • Overacting can be just as bad as not reacting
  • Remember: You have a chiller full of product that’s heading your way. It’s too late to make a change in your ES system!

Change Management
• Determine who has the authority to make a change
  • Quality
  • Operations
  • Engineering

• Understand why and when you need to make a change
- Develop a reasonable and statistically valid sampling plan
- Never make Drastic changes in the system
- Clearly understand the risk of an incorrect change
- Consider Farm / Flock variation when making the choice to make a change
  - All farms / flocks are not created equal
• Process Change Management
  • Define the **WHY** (*Data Driven Decision*) that initiates the need for change
    • Feathering
    • Too Tough
    • Too Tender
  • Define the **WHAT** that will be changed
    • Voltage
    • Cycle Times

ES Change Management Strategy
• Process Change Management
  • Define the **HOW** that system changes will be made
    • How long will the settings be changed?
    • What’s the Sample plan?
• Determine the success criteria
  • Average = ?
  • Variation = ?
  • Max = ?
  • Min = ?
  • Yield = ?
• Use data to manage the system.
  • Develop a consistent sampling process
  • Develop a consistent sample preparation procedure
  • Develop the statistical metrics for your products
    • Is it the Average?
    • Standard Deviation
    • Both?
ES Management Strategy

• Sample Management
  • Sample Volume & Frequency
    • What sample size can you process?
    • What sample frequency is needed?
    • When do you need to sample data?
• Operational Management
  • Understand how the process can fail
    • Is the system turned on?
    • Has someone changed the established set points?
    • Did Sanitation do their part?
    • Did Quality do their part?
    • Did Maintenance do their part?
    • Did Production do their part?
• There are some things out of your control
  • Temperature difference between the house and environment during transport clearly has an impact on tenderness.
  • ES system adjustments during cold weather may be required.

Environment
Shear vs. Temperature

Environment
• Management Education is Key
  • Who’s in charge?
• Understand your products
  • What are you making?
• Know your customers needs
  • What do they need?
• Understand how the system can fail
• Have a clearly defined action plan before a crisis occurs

Summary
Thanks

- Its been a stimulating experience!