Poultry Stunning

Yvonne Vizzier Thaxton, PhD
Professor & Director
Center for Food Animal Wellbeing

Karen D. Christensen, PhD
Associate Professor, Extension Specialist
Center for Excellence for Poultry Science
The Goal of Stunning

To render the bird insensible before killing.
Poultry Stunning

EVOLUTIONARY TECHNOLOGY
Humane Slaughter Act
1957 Hearings

Bills H. E. 176 and H. K. 2880 provide for stunning of livestock prior to its slaughtering by—mechanical, electrical, chemical, or other means determined by the Secretary (of Agriculture) to be rapid, effective, and humane. In the case of poultry, the bills require that the fowl be first—rendered insensible by the severing of the head from the body or by an electrical or other means determined by the Secretary (of Agriculture) to be rapid, effective, and humane.

Bill H. E. 3029 has a different text. It mentions three “approved” methods of slaughtering. The first is after stunning—by mechanical, electrical, chemical, or other means determined by the Secretary to be rapid, effective, and humane. The second, referring to poultry, is that of—instantaneous severing of the head from the body or, if poultry is otherwise cut or stuck, by first rendering such poultry insensible by mechanical, electrical, or other means determined by the Secretary to be rapid, effective, and humane. The third—slaughtering in accordance with the requirements of any religious faith.
Killing Chickens

“For commercial killing the bird should hang by both feet so that its wings are level with the elbows of the killer. ..... In commercial packing plants, the birds are generally hung for killing in wire shackles. Properly constructed shackles are generally designed so that the thighs of the bird are held apart, making feather removal somewhat easier.”

*Marketing Poultry Products, 4*th* edition, 1949. Benjamin, Pierce & Termohlen*

No mention of stunning!
The Early Industry

The Charged blade paralyzes the bird, relaxes the muscles, prevents bruising and allows good bleeding.

Figure 194. Killing poultry with an electric knife.

Stunning

Stunning was not common prior to 1960.

In 1963 and electrical stunning device was developed in Europe for poultry.
Early Issues

1. Bird age
2. Feather color
3. Availability of electricity
   Understanding electricity
4. Equipment availability
Major Changes in Processing

Electricity provided many changes:

1. Overhead moving shackle lines
2. Automated pickers
3. Inline electric stunners
4. Automated knives
   Decapitation – cutting spinal cord
Purpose of Stunning

To render the bird unconscious prior to death from exsanguination.
A proper stun ......

- Sets proper posture for automatic knife
- Preserves meat quality
- Consistent for the flock, shift, day
Proper Stunning

Everything done prior to stunning helps to guarantee a good stun.
For Successful Stunning...

- Bird Comfort
- Handling
- Movement
Bird Comfort

Temperature during holding
Movement in and out
Bird Handling & Movement

- Dumping is necessary stress
  - Cages should be in good condition
  - Let birds slide out and do not shake!
Bird Movement

- Do not dump birds on top of birds
- Birds should be single layer on belts
Bird Handling

Proper handling in shackling area

- Subdued lighting is essential
- Bird activity is indicator of problem
- Monitor by line to solve problems
- Temperatures should not be drastically different.
- Shackler position should be adjustable.
Shackling

Correct shackling is critical.

- No one-legs
- Two legs in one side
- Across shackles
- Remove paws remaining shackles
- Shackles right size for bodyweight
- Shackles at right height for the stunner
Keep Birds Calm...

Breast rubs from end of shackling to stunner.

- Belting or rubber
- Not stainless steel which is cold & hard.
  - Can result in bruises if birds are excited and hit or flap against hard surface
Keep Birds Calm...

Breast rubs from end of shackling to stunner

- Especially important at change of elevation or around corners
- Shortest distance possible between shackling and stunning
- After 20 seconds, blood can start to pool in wings and breast muscle.
Stunning

Observe stunner entrance for signs of pre-stun shocks.

- Activity
- Vocalization
- Turkeys more difficult than chickens due to wing size.
Stunning

Salt is important to maintain good conductivity and consistent stun.

- ½ of 1% salt solution in stunner water bath
- Canisters checked frequently to maintain salt solution
- Saturated solution is metered into stunner to maintain proper level
Evaluating Proper Stunning

Adjust water height to accommodate smaller birds

- No danger of inhaling water in stunner as stun results in exhalation NOT inhalation
- Do not allow top of breast to contact water
Evaluating Proper Stunning

Evaluating properly stunned birds

- Observe for signs of breathing (tail and vent area)
- Wings will be held rigid and close to body
- Watch for signs of nictitating membrane (blink)
Evaluating Proper Stunning

- Pupils will be constricted
- Neck will be limp
- May be signs of seizure – not in the neck!
Evaluating Proper Stunning

Welfare audits require 500 bird sample size-

- Goal is 100% effective
- Current Standards are 99% effective
- Check equipment before starting
- Internal audit program
Stunning

Monitor activity at the knife

- Un-stunned birds react violently when cut or decapitated
- Under-stunned birds exhibit activity at knife
- Over-stunned birds will exhibit broken pulley bones, blood spots or blown wings with blood (leading wing)
Troubleshooting Stunning

Over stunned birds with broken pulley bones, blood spots or blown shoulders, poor bleed out

- Stunner Settings
- Empty Shackles
- Poorly shackled birds with heads up
- Poor Uniformity
Troubleshooting Stunning

Under stunned birds with broken bones, excess activity or poor bleed out.

- Stunner Settings
- Wings dragging adding to resistance
- Low or no Salt
- Poor contact with ground bar
- Poor contact with shackles
- Females will be harder to stun due to higher resistance
Troubleshooting Stunning

Stun to Kill vs Stun for Insensibility

- Better for Welfare
- Not good for meat quality
- Not good for tenderness
Gas Stunning or CAK

- No unloading or shackling of live birds
- Consistent stunning system – changes in weather and other changes
- Confirm that method is 100% effective – NO Survivors
- Welfare Audit ends at unloading!
- May have to evaluate wings before stunning
- Wings are not held close to body and be damaged in automatic knife
Decapitation

- No difference in tenderness
- No difference in pH
- No difference in meat color
- No difference in picking
- May not be appropriate for religious slaughter
- No live birds in scalder
Summary

Method must be carefully monitored & controlled.
Employees must be trained.
Goal must be 100% effectiveness.
Thank you!