Country-style Ham Technology

-66th Annual Reciprocal Meats Conference-

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What is a Country Ham?

• USDA
  – Uncooked, dry-cured, smoked or unsmoked hind leg of a pig
• Dr. Dana Hanson, Ph.D.; NC-State
  – Redneck cousin to Prosciutto
• Dr. Benjy Mikel, Ph.D.; MS-State
  – Ummmmm good!!!
• A regional delicacy that is part of our heritage in the Southeast
Kentucky Farm Bureau
Country Ham Breakfast

2009 Champion Country Ham sold for a record $1.3 million for charity
National Numbers

• Over 35 Country Ham Curers nationally
• Cure 5 – 10% of the ham supply
• Top Ham Producers
  1.) Smithfield Hams, North Carolina
  2.) Burgers’ Ozark Country Cured Hams, INC, Missouri
  3.) Clifty Farms, Tennessee and Kentucky
Country Ham History

- Roots in European hams
- The basics have not changed for hundreds of years
- Traditionally, pig slaughtered in the cold months, hams, bellies, shoulders were cured 24h later
Country Ham

- 9 CFR 319.106
- Basic Cure (for 100# of ham)
  - 8lbs Salt, 2lbs Sugar (brown or white), Spices, Nitrate (optional)
- Two methods of curing:
  - Box (1”/week)
  - Bag (2d/lb)
Clifty Farms, Scottsville, KY
University of Kentucky Meats Laboratory
Salt Equalization

- Usually 10 - 20° F warmer than curing temperature
- Spring time temperatures
- 2 to 3 weeks
- Allow the salt to migrate throughout the ham

Clifty Farms, Paris, TN
Smoking Hams

• After salt equalization
• Cold Smoke
  – 12 hours to 7 days
• Temperatures around 90° - 106° F
  – Below 100°F for flavor and color
  – Above 100°F for Trichina protocol
    • 9 CFR 318.1

Scott’s Hams, Greenville, KY
Aging

- aka “Summer Sweat”
- Develop flavor and aroma
- Proteolysis and lipolysis of the protein and fat contribute to the flavor and aroma
- ≈60% Relative Humidity
S. Wallace Edwards and Sons, INC, Surry, VA
The Law

- To be labeled a Country Ham
  - Must have lost at least 18% of its green weight
  - Contain at least 4% salt
Industry Averages

- Average
  - $Aw = 0.88$
    - Range 0.74 – 0.93
  - Salt content = 6.5%
    - Range 4 – 9.7%
  - $ph = 6.1$
Controlling Pests

- Ham Mites #1 concern
- ≥ 5 months
- Methyl bromide & Sulfuryl floride (ProFume)
- Freezing & Sanitation
- Unapproved/country remedies
  - Borax
  - Phostoxin
## Alternatives for Methyl bromide

<table>
<thead>
<tr>
<th>Fumigants</th>
<th>Ham mites</th>
<th>Red-legged ham beetles</th>
<th>Conclusions</th>
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</thead>
<tbody>
<tr>
<td>Sulfuryl fluoride</td>
<td>Ineffective at egg stage even when applied at 3 times label rate</td>
<td>Effective at all life stages below the label rate (32.1g/m³)</td>
<td>Has potential to control red legged beetles</td>
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<tr>
<td>Phosphine</td>
<td><strong>100% mortality at 1000 ppm for 48hrs at 77 F</strong> Below legal residue limit (0.01ppm)</td>
<td><strong>100% mortality at 400 ppm for 48hrs at 77 F</strong></td>
<td><strong>Potential alternative to methyl bromide</strong></td>
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<td></td>
<td><strong>Need further evaluation under real world conditions</strong></td>
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<tr>
<td>Carbon Dioxide</td>
<td><strong>100% mortality at 60% concentration for 144hrs at 77 F</strong></td>
<td><strong>100% mortality at &gt;80% concentration for 144hrs at 77 F</strong></td>
<td><strong>Not practical to fumigate for 144hrs at high concentrations</strong></td>
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<tr>
<td>Ozone</td>
<td><strong>100% mortality at 175ppm for 48hrs at 77 F</strong></td>
<td><strong>100% mortality at 175ppm for 48hrs at 77 F</strong></td>
<td><strong>Not able to penetrate surfaces well, and therefore may not work well in real world applications</strong></td>
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W. Schilling, MS-State University
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