Rotating Pigs onto Pasture, into the Woods and onto Next Year’s Garden Plot

C. W. Talbott, N. Heckett, N. Perry, J. Denham
Black Oak Holler Farm & Woodlands Pork
Our Farms, Our Future Conference
Presentation Overview

- What parameters equate w/ meat quality
- Swine characteristics for outdoor production
- Developing a seasonal foraging strategy
- Producing a “Pork of the Season”
From “The Other White Meat” to Charcuterie……the NC and WV journey

• NC 2\textsuperscript{nd} in pigs (1970-2017).
• “Get big or get out”
• How do small producers compete w/Murphy’s/Smithfield/Tyson’s?

Black Oak Holler and Woodlands Pork
They don’t…… they produce the “other red meat” again… with emphasis on meat quality
Review of Palatability and Meat Cookery

Factors affecting palatability:

1. What influences Tenderness ........
   - Age, muscle fibers (white vs. red), H₂O holding capacity, IMF, sex, and breed
   - Quantify by sensory panel (softness to tongue, resistance to tooth pressure, ease of fragmentation, etc.) and shear pressure
Factors affecting palatability with cooked meat

2. **Juiciness** (amt of water remaining after cooking)

- Juices contain flavor components, lipids and water (broth) which are released upon chewing
- **Lipids** and proteins take up flavors of the diets i.e. acorns, garlic, etc.
- Marbling prevents escape of water vapors
The Catalyst:
Peter Kaminsky, writer for The NY Times
A Model of Healthy Pork: Producing the Four-Legged Olive tree!

The Iberian Ham $40/lb
Pigs Are What They Eat!
Producing Healthy Pork:

Iberian Ham UFAs: 55% oleic, 20% linoleic acid
The Dehesa is an ecosystem created by human action from the Mediterranean forest with original oaks. It is a direct consequence of the agricultural and ranching activity.
Value Added USDA Grant to Produce Appalachian Charcuterie
**EL JAMÓN**

**Salazón**
- Sal: 1 día/kg
- Temperatura: 1-5 °C
- Humedad: 80-90%

**Asentamiento**

**Lavado con agua caliente**

**Secado y Maduración**
- 6 y 9 meses
- 15° y 30°C.

**Envejecimiento en bodega**
- 18-24 meses
- 15° y 20° C
Importation of Farmer’s Hybrid from IA and utilization of “heirloom” lines

1. Improvement of IMF scores by 80%

2. Alternative diets influence pork flavor
A Model of Healthy Pork: Producing the Four-Legged Olive tree in The Carolinas!
Producing Healthy Pork: Start with Peanuts and Acorns

44% oleic, 32% linoleic acid

62% oleic, 16% linoleic acid
Emile’s farm: Ossabaws in wooded lots vs. pastured lots

- Eight gilts fed peanuts, alfalfa pellets and mast or corn-soy
Table 3. Percent Fatty Acids (%FA) in loin or adipose tissue of Ossabaws Fed Corn-Soy (CS) or Peanut/Alfalfa/Mast (PAM) diets fed in Trial 1.

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>% FA from loin</th>
<th>% inc/dec PAA vs. CS</th>
<th>% FA from adipose</th>
<th>% inc/dec PAA vs. CS</th>
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<tbody>
<tr>
<td></td>
<td>CS</td>
<td>PAM (SE)</td>
<td>CS</td>
<td>PAM (SE)</td>
</tr>
<tr>
<td>C14,16,18,20:0</td>
<td>36.0%</td>
<td>33.9% (.78)</td>
<td>-6%</td>
<td>39.3%c</td>
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<tr>
<td>Total SFA</td>
<td></td>
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<tr>
<td>C16,18,22:1</td>
<td>47.1%</td>
<td>49.3% (1.70)</td>
<td>5%</td>
<td>44.6%c</td>
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<tr>
<td>Total MUFA</td>
<td></td>
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<td></td>
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<tr>
<td>C18:2,3; C20:2,3</td>
<td>13.1%</td>
<td>16.9% (1.48)</td>
<td>29%</td>
<td>16.0%a</td>
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<tr>
<td>Total PUFA</td>
<td></td>
<td></td>
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<tr>
<td>Unsaturated : Saturated Ratio</td>
<td>1.7</td>
<td>2.0 (.07)</td>
<td>18%</td>
<td>1.6 c</td>
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ab Estimates with different superscripts are significantly different (P<0.05)
dcd Estimates with different superscripts are significantly different (P<0.01)
Producing a “Pork of the Season” with Mast Fed Hogs

Sustainable Options for Small-Scale Farmers

Black Oak Holl’r Farm, Frazier’s Bottom WV
USDA SARE Farmer/Grower Grant
Initial thoughts on producing a “Pork of the Season”: Farrowing

- Time your farrowings so that hogs are 350 lbs when feed is available (Aug-Sept) hogs
- Farrow in Nov-Dec for 10-12 mo. mkt hogs
- Flavor of diet is incorporated into the fat (backfat and marbling)
- Flavor influence requires six weeks on diet
Pork of the Season (cont.)  **Farrowing**

- provide plenty of straw….don’t skimp
- cull aggressive sows
- select sows for good maternal ability/# pigs weaned
Farrowing in a Waste Management Shed (NRCS)

- Manage tight farrowing season for cross fostering
- Separate into groups (w/ gates) to prohibit milk robbing
- Deep bedded system provides warmth
Pork of the Season (cont.)  Farrowing

• plant barley/ rape in fall for lactating sows and weaned pigs to graze in spring
Building organic soils with swine
Pork of the Season (cont.)  Weaned pigs

- de-worm at 60-90 lbs
- feed 16% barley/soy ad-lib
Integrated Systems at Black Oak Holler

Observation…rotation…observation…
Problems to Avoid

- Don’t purchase cheap hay for bedding if you plan to grow annuals
- Use straw and wood chips in nursery and boar pens
- Consider using sorghum sudan-grass to outcompete weed infestation
Root Crop Considerations: forage radishes, beets? turnips?
Integrated Systems at Black Oak Holler

Plant aggressive annuals: Sorghum-sudan
<table>
<thead>
<tr>
<th>SAMPLE ID Year</th>
<th>pH</th>
<th>CEC (MEQ/100)</th>
<th>%BS (lbs/A)</th>
<th>P2O5 (lbs/A)</th>
<th>K2O (lbs/A)</th>
<th>Ca (lbs/A)</th>
<th>Mg (lbs/A)</th>
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**Key for sampling year**

- **Soil sampled 2011**
- **Soil sampled 2015**

| Orchard 2012 | 5.1 | 13 | 53 | 28 | 192 | 2220 | 241        |
| Barn - S 2011 | 5.8 | 10 | 74 | 23 | 200 | 2584 | 259        |
Meat Characteristics Required for Aged, Dry-cured Pork

- 1.5 inches back-fat, seem fat, marbling
- Fat picks up flavors and fat characteristics of the diet, SFA vs. USFA
- Feral genes promote “feast or famine” fat deposition
- Issues with feral pigs
Issues with feral/outdoor pigs
Measuring woodland impact

• Dave McGill and Jim Roush of WVU Forestry set up 11 test plots on 9/6 to assess animal impact 11/10

• Scott Eggerud and Valerie Howard use GPS to determine acreage and stocking rate
October observations
November observations
Harvest 11/8/16
Initial thoughts on producing a mast-fed “Pork of the Season”

- Adjust stocking density to mast availability and duration 1 per 1A or 2A
- Observe condition of animals and feeding behavior: “cruching” “ignore vs. clingy”
- Feed according to behavior, but twice/day
- Start with older, heavier animals (300+ lbs) to incorporate mast flavor into fat
Thoughts on producing a mast-fed “Pork of the Season”

- 4000 volts from solar charger kept hogs generally in plots
- 1 or 2-strand electric fence at 12” and 20” with orange tape
Initial thoughts on maintaining forest stewardship

- Plant shade-tolerant cool season grasses prior to defoliation
- Keep system dynamic
- Work with a processor who is flexible with harvest date
- Predators .......... (hunters?)
- Ring noses (?)
Future considerations:
“farm the trees”.... a permanent agriculture

- Plant mast producing trees to supplement/replace costly grains
- Produce mast seasonally, i.e. mulberries in spring, persimmons, acorns in fall
- Manage “crop trees” to enhance mast production
Managing Crop Trees to Promote Mast Production

- Surveyed 70 A oak-hickory forest
- Identified >500 Crop Trees to release
# USDA SARE Farmer/Grower Grant

<table>
<thead>
<tr>
<th>Crop Trees (CT) Released</th>
<th>#CT</th>
<th>% Total</th>
<th>Avg. DBH/CT</th>
<th>Total Culled</th>
<th># Culled/CT</th>
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<td>White oak</td>
<td>232</td>
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<td>14</td>
<td>522</td>
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<td>327</td>
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<td>13</td>
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<td>Walnut</td>
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<td>1</td>
<td>12</td>
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2009 Observations of Animal Impact on the Woodlands

• Japanese stiltgrass taking over WV woodlands
• Two weeks after pigs released in woods, pigs graze down stiltgrass
Chef’s Sworie 10/13
James Beard Dinner, NYC 8/14

- 106 attend 12 course dinner with Woodlands Pork
- 10 chefs prepare their specialty pork dishes
- Woodlands Pork also featured in “Southern Living”, “Whiskey Magazine”; “Gardens and Guns” 2 books.
Pritchard’s Book Signing 12/10/15

• “Growing Tomorrow” book signing at Taylor Books
• Two weeks before USDA recall.
WHERE DO WE GO FROM HERE?

- Educate consumers, chefs, farmers to consume locally
- Inspire our youth to embrace agriculture for our own food-security
- Encourage local production with legislation that supports small farm policies (farm to school; cross state inspection)
WV is #1 in the US for Number of Small Farms

NO FARM

NO FOOD

West Virginia Dept. of Agriculture