Year 2

NUTRITIONAL ANALYSIS OF PASTURE RAISED versus GRAIN FED HOGS

Sue Menzel
Lac Courte Oreilles Ojibwe Community College
Sustainable Agriculture Research Station
Motivation for this Project

Nutrition Facts

Serving Size 100 g
Amount Per Serving
Calories 196

% Daily Value
Total Fat 13g 20 %
Saturated Fat 4.2g 21 %
Cholesterol 75mg 25 %
Sodium 213mg 9 %
Total Carbohydrate 0.6g 0 %
Dietary Fiber 0g 0 %
Sugar 0g
Protein 19g 38 %
Vitamin A 0 %
Vitamin C 0 %
Calcium 0 %
Iron 6 %

Daily values are based on 2000 calorie diet.
Can pasture-fed*hogs produce better nutritional & finer quality meat than grain-fed and/or food waste*hogs?

*grain-supplemented prn
Preparing for Project

Setting up infrastructure:
- paddocks: fencing, electric fencing, gates, shelter, feeding trough, water trough, instruction and guidance
Project Layout

Redesigned paddocks

Original paddocks design
Additions & Improvements for 2017

Forage Improvements: In addition to the grasses already present, oats, rye, fescue, white and red clovers were planted in the paddocks.

Non-meat Food Waste Supply: Twice weekly supply of food waste from community grocery store made up bulk of supply.
### Feeding Regimen

**GRAIN MIXTURE FOR HOG FEED**  
Crenshaw_Formulator  

Exp 16103 Initial diet  
Diet 1  
20-50

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>%</th>
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<tbody>
<tr>
<td>Corn grain</td>
<td>75.363</td>
</tr>
<tr>
<td>Soybean meal w/o hulls</td>
<td>21.409</td>
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<tr>
<td>L-lysine mHCl</td>
<td>0.125</td>
</tr>
<tr>
<td>Calcium phosphate (monocalcium)</td>
<td>0.066</td>
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<tr>
<td>Limestone, ground</td>
<td>1.094</td>
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<tr>
<td>Sodium chloride</td>
<td>0.350</td>
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<tr>
<td>UW VTMM04 G</td>
<td>1.000</td>
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<tr>
<td><strong>Total</strong></td>
<td>100.000%</td>
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#### Calculated Analysis:

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<tr>
<th>Analysis</th>
<th>Value</th>
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<tr>
<td>DE, kcal/kg</td>
<td>3445</td>
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<tr>
<td>Lys, %</td>
<td>0.94</td>
</tr>
<tr>
<td>Ca,%</td>
<td>0.60</td>
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<tr>
<td>P, %</td>
<td>0.50</td>
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<tr>
<td>Avail P=</td>
<td>0.20</td>
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<tr>
<td>C.Protein</td>
<td>16.54</td>
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#### Feeding Schedule:

- **Group 1**: 50% & pasture  
- **Group 2**: 100%  
- **Group 3**: 50% & food waste

Morning and late Afternoon
### Daily & monthly charting & feed guides

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Group 1. 50% grain Pasture</th>
<th>Group 2. grain only</th>
<th>Group 3. 50% grain, food waste</th>
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<tr>
<td>1-Aug</td>
<td>PM</td>
<td>50%</td>
<td>100%</td>
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<td>2-Aug</td>
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**Sample**
The Hogs

½ Duroc, 1/4 Large White, ¼ Landrace

Mini Wisconsin Swine

Two Groups comprised of 4 Duroc mixed and 2 Mini Wisconsin, raised outside at LCOOCC Sustainable Agriculture Research Station

18 hogs
Year Two of the three-year Project begins

Arrived June 1, 2017
With ear tag id’s in place

Separated into 3 feeding groups
4 and 2 of each type of hog (6) each

Conference & Instructions, in person, on phone, through email with
Dr. Crenshaw, UW Madison Meat Dept. & Dr. Haugen, LSARS Veterinarian
Review of results

Package of 10 pork chops from 2017 herd of pigs.

Total Fat 13g  20 %
Saturated Fat 4.2g  21 %
Weight gains @ 2.5-3 times birth weight

GROUP 1
GRAIN ONLY
• B0109                      66.5  149.8
• R0478                      44.5  188.1
• R0491                      46.5  188.6
• R0497                      36.5  149.9
• R5929                      36.0  118.8
• Y3006                      38.5  no weight taken*

GROUP 2
FORAGE AND HALF GRAIN
• B0102                       71.0  149.8
• W0538                       45.0  108.2
• W0619                      43.5  119.
• W0643                      41.0  119.6
• Y3007                      38.5  89.6
• W0593                      34.5  149.0

GROUP 3
NONMEAT FOOD WASTE AND HALF GRAIN
• B0104                         61.5  136.8
• G0488                         44.0  138.9
• G0634                         36.0  114.8
• G0646                         38.0  128.9
• G0644                         46.5  148.8
• Y3004                         50.0  109.8

60-90 # average weight gain by all pigs in three month.

There was very little variation in results between all three feeding groups. No differences in pig breeds. Grain Fed Group did the best as their diet was pre-measured scientifically at UW Madison. LSARS hog meat averaged 70% less saturated fat per 100g than the Commodity canned pork generally across the three groups. Forage group only had slightly better unsaturated fatty acid content than food waste group.

Total Fat      13g       20 %
Saturated Fat  4.2g     21 %
## Challenges & Solutions

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<th>CHALLENGES</th>
<th>SOLUTIONS</th>
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<tr>
<td>Regular, adequate supply of non-meat food waste</td>
<td>Partnership with community grocery store for supply from their non-meat food waste;</td>
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<td>Fence integrity</td>
<td>Regular inspection &amp; repair</td>
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<tr>
<td>Pasture quality</td>
<td>Regular rotations with reseeding; increasing varieties of grain &amp; grasses. (late season addition of alfalfa hay and grass clippings)</td>
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<tr>
<td>Novice pig herders</td>
<td>Ongoing learning, advising, close relationship with UW-Madison &amp; local DVM. Hands-On experiences always!</td>
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Built on experiences from year 1.
Challenge #Y3006

Small female in Dourcet mix, grain only diet group observed. Poor growth and weight gain. Looked fevered (but temp in normal range), and had shortness of breath. Easily knocked over by others, falling often, and had poor gait.

Isolated her in separate paddock. DVM came, observed her, gave broad spectrum antibiotic. Feeding her separately, she grew and added weight. Gait became more faulty, and she fell often, with difficulty getting up on her feet. Euthanasia was agreed upon, with DVM performing necropsy, sending specimens to state animal pathologist. Body properly disposed of.

Pathologist diagnoses: Myopathy, with gastric ulceration, and chronic enteric inflammation; genetic anomalies, both physical & neurological resulting in poor development and coordination (like walking). Vet described genetic abnormality as identical to “Fainting Goat Syndrome” Ulcers caused by extreme stress and physical anomaly noted in upper intestines.
Where this project stands currently

- 17 hogs collected, butchered, & processed Sept 7, 2017

- Livers from 6 of hogs rejected by state inspector for cysts (currently being analyzed by DVM)

- Center pork chop from each hog frozen & sent again to UW Madison for nutritional analysis & quality assessment. (2017 results pending)

- Data being collated

- Community Taste Panel and Cooking Competition with community chefs will be convened on hams in near future to assess meat flavor & characteristics

- Evaluation of project, & applications for future livestock opportunities.

- Evaluation of how to convey relevancy to community members who wish to incorporate similar practices.

- Create a research paper in the third year, to be published and made available to other institutions who wish to borrow or use information for further enhancing nutritional values of pork.
October 2017

@2000 pounds of pork being used by LCOOCC Extension; for community education meals, gifts to community members, & cooking classes.

6 of 8 paddocks are being cleaned, lightly rototilled, & reseeded with cover crops and will be used in 2018 for growing a variety of vegetables at LSARS, taking advantage of rich enhanced soils.

Questions???
References and resources


Weaver, S. Home grown pork; humane, healthful techniques for raising a pig for food. North Adams, MA., Story Publishing. 2013

All photography by Sue Menzel, except as noted on two pictures available from USDA.

Thank you