Composition and value of belly primal

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Introduction

Bacon is truly one of the more unique meat products. The raw material for bacon, the fresh pork belly is a major component of every pig. Depending on how the carcass is fabricated, today about 8-10% today compared to 15-18% of 20-30 years ago. Following World War II when pigs had a very high percentage of fat for the war effort, there has been a constant reduction in fat and thus a significant increase in lean in the pig. Forty years ago the amount of separable fat in a belly was commonly listed as 68-75%. Today the amount of fat in sliced bacon is 45-55%, dramatically leaner. This dramatic shift in the lean and fat composition brings about several other contradictions that are magnified in the bacon of today compared to earlier bacon.

Bacon has gone from a center-of-the-plate breakfast meat item along with two eggs, potatoes and toast to an integral ingredient of many foods and a condiment for sandwiches, particularly at the take-out/fast food market. Retail bacon to be cooked at home is still a significant market. Pre-cooked bacon is the fastest growing new category, targeted at convenience. By far the fastest growing and largest segment is precooked bacon for the food service market.

Bacon has changed dramatically. We experienced the 1980's and the era of health consciousness and the reduction of animal fat in the diet. Consumers were encouraged to reduce their intake of cholesterol laden fatty foods, salt, sugar and preservatives. At the same time they were told to increase their intake of fiber and “natural foods”. While this trend continues today with some consumers, consumers have switched to “full flavor foods”, even with somewhat higher fat contents which can be consumed in moderation. Consumers enjoy bacon for its flavor. The food service industry, particularly the “fast food” chains have stimulated bacon sales to a phenomenal growth and reversed the once poor profitability of bacon.

In 1995, consumers purchased 730 million pounds of retail bacon both at the deli and in the prepackaged form. The average yearly purchase of bacon was more than 7.4 pounds for a household at a cost of $12, totaling more than $1.23 billion in sales. Studies reveal that the largest market for bacon is in the south, that purchasers are in the age bracket 45 to 54 with yearly incomes of $40-50,000. African-Americans are more likely to purchase bacon that other ethnic groups. The largest group of bacon purchasers include larger and lower income families.
Starting in the mid 90's fast-food and restaurants have boosted the popularity of bacon by creating new entrees with bacon as a premium valued addition for flavor and texture.

As early as 1992, reports indicated that more than 25 major microwave bacon processing systems existed. Since then the volume of microwave processed bacon and number of commercial plants has grown. At the consumer level, it is estimated that more than 90% of the homes are equipped with microwave ovens and that there are many more in the public and institutional feeding areas. Microwave cooking of bacon has clearly added to the increased popularity of the precooked bacon. Combining convenience with the outstanding flavor and texture of bacon has helped bacon to become one of the fastest growing ingredients in the food field.

Understanding the unique opportunities and challenges associated with bacon production and processing; particularly how the raw material, the pork belly, affects the consumer bacon slice, both as retail bacon and food service bacon is generating a lot of interest. Learning more about cooked bacon performance is critical as more and more bacon is destined for the sandwich, salad, casserole or the entree as a flavor, texture and color garnish. This research has been focused on how bacon will perform during cooking and how that is related back to the pig, belly, bacon slice, processing and cooking procedures.

The bellies

One area of research interest in the Quality Lean Growth Modeling Project (QLGMP), a research project of the National Pork Board was to relate the parameters of the pigs to bacon and to study protocols on the production of bacon. Bacon quality, very important to continued use and increased growth potential for bacon had not been studied extensively, particularly in light of the new opportunities for sliced, precooked bacon. Working with representatives from the commercial bacon processing industry not only brought focus to procedures for testing the bacon to be processed from the QLGMP but also surfaced several new quality attributes that needed further research and evaluation. These new issues included the shrinkage of the bacon slice during cooking, color of the lean and fat, quantity of lean and fat in the slice, slice distortion during cooking and the prevalence of a defect condition referred to as “shattering” that has been observed during cooking. These new quality issues were in addition to the animal production concerns related to the design parameters of the QLGMP which included genetic lines, sex, diet and live weight at slaughter.
**Bacon processing procedures**

In the early studies of this project, two bacon formulations/procedures (Retail and Food Service) were used to expand and provide additional quality information. The retail bacon contained a typical 12% pumping solution and was commercially sliced at 9 slices/inch. The food service bacon contained a 12% solution with additional sugar and liquid smoke and was commercially sliced 13 slices/inch. Bellies were injected, smoked and cooked, then chilled at the University of Nebraska-Lincoln. They were transferred to a commercial plant for tempering, pressing and slicing. The sliced bacon was returned to the University for testing and evaluation.

Bacon slabs were sampled following slicing (Figure 1) into five zones (A,B,C,D,E) each representing 20% of the slices after incomplete slices on both ends were removed. The first two slices from each zone was used for most evaluations.

**Anterior End**

<table>
<thead>
<tr>
<th>Incomplete Slices</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<td>Quad 3</td>
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<tr>
<td>Quad 4</td>
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</table>

Figure 1. Belly Zones and Quadrants for Sampling.

**Evaluating the sliced bacon**

The first two slices from each zone were removed, evaluated for shattering, camera visioned for lean and fat quantity and color and saved for compositional analyses (moisture, fat, protein and ash).

**Shattering**

Shatter marks were defined as breaks/shatters of the fat portion of the slice that occurred perpendicular to the slice. Shatter marks did not include the natural separation of fat tissue or separation between fat and lean tissue. Shatter marks were classified into five categories depending on their length: 1-10 mm, 11-20 mm, 21-30 mm, 31-40 mm, and 41+ mm. Shattering was measured by checking the slice for the number and extent of the shatter marks.
Quantity of lean and fat

Following evaluation for shattering, the same slices were transferred to black Formica™ and the camera visioning system captured the image of the four half slices. Visioning data was used to determine quantity of lean and fat in the slice and to color classify the lean and fat.

Lean and fat color and composition

From the colorized image, the number of pixels of each color were determined by the computer. The same two slices were bagged, labeled, frozen for compositional analyses of moisture, fat, protein and ash.

Cooking yields

At the same time that slices 1 & 2 were being taken from each zone for the above evaluation; the next 10 slices were being removed from each zone, labeled, packaged and frozen for later cooking analyses, five slices were for microwave cooking and five slices for double belt cooking and subsequent cooked bacon analyses.

Shrink in length and width

For the five slices cooked by either the microwave method or the double-belt cooking systems, three slices were measured for length and width of the slice before and after cooking to calculate slice shrinkage. Cooked yields were also calculated on the five slices.

Distortion score

Distortion refers to the amount of “wrinkling” in the bacon slice following final cooking. A distortion scale of 1-5 (Figure 2) was determined for the three slices used for cooked shrinkage.

Additional issues studied in Phase II

Fresh vs frozen raw bellies

The use of frozen pork bellies is a common practice in the bacon manufacturing industry. Frozen bellies permit the leveling of supply with sliced bacon needs, seasonal variations and the increasing value recovery from the belly. Freezing provides an excellent means of storing bellies for more efficient use at later times. Concerns that quality does not improve with freezing and storage and greater understanding of bellies for bacon during freezing is very important.
Fatty acid composition of fresh pork bellies

Understanding the role of fat in bacon begins with an understanding of the variables that impact the amount and quality of the fat found in the bacon. The fatty acid composition of the fat found in the belly will potentially impact the processing characteristics of the belly, such as the slicing, cooking and eating quality of the bacon. Many factors can influence fatty acid composition including the breed and sex of the pigs as well as other management strategies.

What was learned about bacon quality – Phase I

Sliced bacon

Genetic lines had the most dramatic effects on bacon processing parameters. Diet 4 (lowest lysine level) produced fatter bacon. Fatter genetic lines, higher lysine diets and barrows had the highest smokehouse yields and slice yields during cooking. Sliced bacon from leanest pigs produced higher cooked slice yields.

Shattering

Lines 2 & 5 were lower in percent slices affected by shattering. Line 1 had the greatest number of affected slices. As weight increased, number of affected slices increased. Diet 1 (high lysine level) had less shattered slices than Diet 4 (low lysine level). Barrows had greater shattering than gilts. Zone B had the highest and Zone E the lowest shattering.

Quantity of lean and fat

Line 2 & 5 had bacon had the lowest fat content. Barrows had more fat in bacon slices than gilts. Zone C had bacon slices with the most fat.

Lean and fat color

Lines with increased fat content also had lighter fat color. Line 6 had lightest lean at all locations. Barrows had whiter fat and paler lean than gilts. Leanest lines (Line 2 & 5) and lightweight carcasses had darker colored fat. Zones A & C had lightest colored lean, E darkest. Heaviest weight (150 kg) pigs had darkest lean color, except when diet was deficient in lysine.

Cooked bacon composition

Bacon from Line 1 was the leanest, line 2 bacon was the fattest. Diet 1 (highest lysine level) had the leanest bacon. Gilts had leaner bacon than barrows. Zone E was the leanest. Zone B, C & D were fatter than A & E. 150 kg pigs fatter than 114 or 132 kg pigs.


Cooking yields

Fatter lines of pigs yielded lower percentage of cooked bacon. Diets producing fatter pigs resulted in lower percent cooked yield. Barrows (fatter pigs) had lower cooked bacon yields than gilts (leaner). Locations B, C & D (fatter) had lower percent cooked bacon. Retail bacon (thicker) had higher cooked yields than Food Service bacon. Belt cooked bacon had higher yields than the Microwave method.

Shrink in slice length

Thin Bacon - No sex differences. In microwave bacon - Heavy Weight Group (150 kg) lowest shrink in length 114 and 132 kg group greatest shrink in length. Zone C & D lowest shrink in length. Zone A & B highest shrink in length. Zone E slightly lower shrink than A & B. Food Service bacon (thinner slices) had higher shrink than the Retail bacon with either cooking method.

Shrink in slice width vs. slice length

Gilt bacon slices shrink less in width than bacon from the barrows. Zone C & D had the highest shrink in width, lowest in length. Zone A & B highest shrink in length, lowest in width. Shrink in width increased for either cooking methods as slaughter weight increased.

Distortion score

Minimal distortion occurred during cooking, 90% of bacon scored either a 2 or 3. Thick bacon from gilts less distortion than barrows. Thick bacon from gilts had less distortion than bacon from barrows. Zone A (anterior) had the greatest distortion. Zone B & E next highest distortion. Zone D had the lowest distortion scores. Heaviest weight group had slightly higher distortion scores than the lighter weight pigs.

Fatty acid profile and iodine value

Line 1 higher myristic acid than 2,3,5, and 6 but not different than line 4. Line 6 had higher oleic acid than the others. Gilts had higher Oleic and lower palmitoleic acid than borrows. As weight increased oleic acid increased, linoleic decreased. Line 2 had higher linoleic acid than the others, Line 1 lowest. Diet 1 (high lysine) had higher percent palmitoleic and linoleic than diet 4 (low lysine).
**Iodine value and stearic:linoleic ratio**

Line 1 had the lowest iodine value. Line 2 had the highest iodine value. Lines 3, 4, 5 & 6 were not different. Barrows had lower Iodine values than gilts. Barrows had higher stearic:linoleic ratios than gilts.

**Fresh vs. short term frozen storage**

Short time frozen storage of fresh pork bellies does not pose any significant quality problems for sliced bacon. This phase of the work addressed the short time frozen storage on quality of lean and fat in sliced bacon. The genetics and sex of the pig may have an important role on bacon quality. Fat accounts for about 60% of the composition of a slice of bacon. Thus, the fatty acid differences of fresh bellies may have a significant impact on bacon fatty acid composition.

**Procedure**

The animals in this study included barrows and gilts (n=578) from six genetic lines: Chester White, Berkshire, Duroc, Landrace, Poland China and Yorkshire, slaughtered at markets weights starting at 245 pounds. After slaughter, the bellies were fabricated according to industry standards. Bellies were randomly assigned a treatment of fresh (stored only under refrigeration) or frozen (stored frozen for a minimum of at least 15 days). Prior to processing, frozen bellies were defrosted, removed from the storage packaging, a fat sample removed from the anterior end of the belly for fatty acid analysis. The samples were frozen for subsequent methylation and fractionation by gas chromatography. The fatty acid composition was determined for saturated fatty acids including myristic (C14:0), palmitic (C16:0), stearic and unsaturated fatty acids including palmitoleic(C:16:1), oleic (C18:1) linoleic (C18:2), linolenic (C18:3), and 11-eicosenoatic (C20:1). These were selected as they account for over 95% of the total fatty acids typically found in pork bellies. Each fatty acid was reported as a percentage of total.

**Results and Discussion**

**Barrows and Gilts Comparisons**

The only difference (P < 0.05) observed between sexes (Table 1) showed a minor difference for palmitic (C16:0) acid, although this may not be of biological significance. Barrows had greater levels (P < 0.05) of unsaturated fatty acids (Table 2) with 61.43% for barrows and 62.51% for gilts and saturated fatty acids 37.71% for barrows compared to 36.59% for gilts. Gilts had 1.08% more unsaturated fatty acids than barrows (P < 0.05). This difference
becomes part of the variability often seen during packaging of the sliced bacon. This is well
within the range that impacts slicing efficiency found in commercial slicing operations.

**Breed Comparisons**

Fatty acid profiles for the six different breeds were compared. The Yorkshire pigs had
the most unsaturated fat (64.35%), Landrace and Duroc were intermediate (62.40% and 62.89%)
and the Poland China, Chester White and Berkshire were lower in unsaturated fatty acids
(61.46%, 60.51% and 60.20%, respectively). The range within the 6 breeds reported was 4.15%
for unsaturated fatty acids (Table 2). The breed influence illustrated in the five largest percent
fatty acids reflects the breed differences for specific fatty acids. In the C 16:0 palmitic acid there
was 3.14% variation between the highest percent breed, the Berkshires with 25.09% and the
lowest, the Duroc and Yorkshire pigs with 22.27 and 21.95%, respectively. The other saturated
fatty acid, C 18:0, stearic had low variability between the breeds represented in this study with a
difference of only 1.40% from the highest in the Duroc with 11.99% and the lowest the
Yorkshire breed with 10.69%. The most variable fatty acids were found for fatty acids C 18:1
and 18:2, Oleic and Linoleic, both unsaturated fatty acids. The variation was 5.45% for the Oleic
and 6.48% for the Linoleic fatty acids within the breed effects. Breed effect clearly shows
differences between the breeds. The magnitude, while statistically significant, would be hard to
use for sorting and/or altered processing conditions in the commercial setting due to management
problems associated with sorting or knowing genetic background of the pigs. Understanding and
recognizing this source of variation can aid management in refining processes and adjusting the
machinery used to slice bacon.

**Results of the Fresh vs. Frozen Phase of the Bacon Study**

The characterization of fresh and frozen storage involved a minimal freezing time of at
least 15 days before processing. There was no significant (P>0.05) difference found between the
fresh and frozen bellies. As would be expected, much longer freezing times would likely be
needed to measure loss in quality, particularly of fat as a result of freezer storage. This was not
possible in this study. It can be concluded that short time frozen storage had no effect of the
bacon quality in this study. While longer storage times are often encountered, they would
certainly be more likely undesirable. This study did demonstrate that the act of freezing the
bellies posed little quality damage to the bacon nor changes in the fatty acid profiles, often a
concern to processors.
Table 1. Least Square Means ± S.E. of the Fatty Acid Profile for Sex, Line and Treatment Effects.

<table>
<thead>
<tr>
<th>Effect</th>
<th>14:0 ± S.E.</th>
<th>16:0 ± S.E.</th>
<th>16:1 ± S.E.</th>
<th>18:0 ± S.E.</th>
<th>18:1 ± S.E.</th>
<th>18:2 ± S.E.</th>
<th>18:3 ± S.E.</th>
<th>20:1 ± S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrows</td>
<td>1.35 ± 0.01</td>
<td>24.04 ± 0.15&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.64 ± 0.03</td>
<td>11.59 ± 0.13</td>
<td>44.98 ± 0.27</td>
<td>11.27 ± 0.31</td>
<td>0.69 ± 0.03</td>
<td>0.80 ± 0.01</td>
</tr>
<tr>
<td>Gilts</td>
<td>0.32 ± 0.01</td>
<td>23.17 ± 0.13&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2.58 ± 0.03</td>
<td>11.36 ± 0.11</td>
<td>45.27 ± 0.23</td>
<td>12.06 ± 0.26</td>
<td>0.69 ± 0.02</td>
<td>0.77 ± 0.00</td>
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<tr>
<td>Berkshire</td>
<td>1.36 ± 0.01&lt;sup&gt;b&lt;/sup&gt;</td>
<td>25.09 ± 0.14&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.88 ± 0.03&lt;sup&gt;b&lt;/sup&gt;</td>
<td>11.89 ± 0.12&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>45.78 ± 0.27&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>9.45 ± 0.27&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.42 ± 0.03&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.76 ± 0.00&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>Chester White</td>
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<td>0.80 ± 0.01&lt;sup&gt;bc&lt;/sup&gt;</td>
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<td>Duroc</td>
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<td>2.13 ± 0.02&lt;sup&gt;e&lt;/sup&gt;</td>
<td>11.99 ± 0.11&lt;sup&gt;a&lt;/sup&gt;</td>
<td>41.90 ± 0.22&lt;sup&gt;e&lt;/sup&gt;</td>
<td>15.66 ± 0.25&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.15 ± 0.02&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.78 ± 0.00&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>Landrace</td>
<td>1.28 ± 0.02&lt;sup&gt;cd&lt;/sup&gt;</td>
<td>23.20 ± 0.33&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2.61 ± 0.07&lt;sup&gt;c&lt;/sup&gt;</td>
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<td>Poland China</td>
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<td>Yorkshire</td>
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<td>Frozen</td>
<td>1.34 ± 0.01</td>
<td>23.42 ± 0.14&lt;sup&gt;b&lt;/sup&gt;</td>
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<sup>a,b,c,d,e</sup> Means within a column with different superscripts are significant P<0.05.
Table 2. Least Square Means ± S.E. for Saturated and Unsaturated Fatty Acid Content by Sex, Line and Treatment Effect.

<table>
<thead>
<tr>
<th>Line/Condition</th>
<th>Unsaturated Fatty Acids (%)</th>
<th>Saturated Fatty Acids (%)</th>
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<tr>
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<td>37.71±0.27&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>Gilts</td>
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<td>36.59±0.23&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>38.57±0.47&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>Duroc</td>
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<td>Landrace</td>
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<sup>a,b,c</sup> Means with a column for an effect with different superscripts are significant P<0.05.

**Summary**

Bacon has become a major contributor to the recovery of value-added benefits from the pork carcass. Phase I of the work involved approximately 1800 bellies from the Quality Lean Growth Modeling Project; followed in Phase II with about 1200 bellies provide the research material for this work. Many of the pre-slaughter variables associated with the design of the project providing data on the widely varying aspects of the influence of genetics, sex, diet, slaughter and weight. The variability in these parameters is large and reflects the wide diversity of raw material, the belly, in the commercial conversion to sliced bacon. Sliced bacon has become a major contributor to the total value of the pork carcass through the well established traditional uses of bacon combined with the rapidly growing use of bacon as a flavor contributor to fast food, sandwich entrees, main dish, salad and appetizer markets.

A second major thrust on specific researchable issues facing commercial bacon processing was added to expand the understanding of the role of production and processing variables on manufacturing and quality issues of bacon. The special projects to study fresh vs. frozen bellies as a raw material for bacon, the cooking qualities of bacon pre-cooked by microwave and convection heating, impact of cooking on bacon slice shrinkage, distortion and color were evaluated. New evaluation methods were developed to capture color and quantity data on the lean and fat of a bacon slice through camera visioning was developed. Data on the fatty acid profiles of the raw belly were obtained to be related to production parameters including...
genetic, sex, diet and slaughter weight differences. This large amount of bacon data provided opportunities to further analyze and understand many factors affecting bacon quality and quantity. Additional questions will be asked about bacon and perhaps some of the answers will lie with the data sets from this project.

Table 3. Least Square Means and S.E. of Percent Pump, Smokehouse Yield, Slicing Yield and Total Yield as affected by Line, Sex and Treatment.

<table>
<thead>
<tr>
<th>Effect</th>
<th>Percent pump</th>
<th>Smokehouse yield (%)</th>
<th>Slicing yield (%)</th>
<th>Total yield (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Line</td>
<td></td>
<td></td>
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<td></td>
<td>Berkshire</td>
<td>10.74 ± 0.15&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>98.20 ± 0.17&lt;sup&gt;b&lt;/sup&gt;</td>
<td>87.25 ± 0.51</td>
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<td></td>
<td>Chester White</td>
<td>10.87 ± 0.30&lt;sup&gt;abc&lt;/sup&gt;</td>
<td>97.34 ± 0.33&lt;sup&gt;a&lt;/sup&gt;</td>
<td>88.29 ± 0.98</td>
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<td></td>
<td>Duroc</td>
<td>10.33 ± 0.14&lt;sup&gt;b&lt;/sup&gt;</td>
<td>97.48 ± 0.15&lt;sup&gt;a&lt;/sup&gt;</td>
<td>85.24 ± 0.46</td>
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<td></td>
<td>Landrace</td>
<td>10.66 ± 0.38&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>95.91 ± 0.42&lt;sup&gt;c&lt;/sup&gt;</td>
<td>85.65 ± 1.25</td>
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<td>Poland China</td>
<td>11.78 ± 0.40&lt;sup&gt;c&lt;/sup&gt;</td>
<td>97.30 ± 0.44&lt;sup&gt;a&lt;/sup&gt;</td>
<td>86.49 ± 1.31</td>
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<td>Yorkshire</td>
<td>10.78 ± 0.16&lt;sup&gt;a&lt;/sup&gt;</td>
<td>97.31 ± 0.17&lt;sup&gt;a&lt;/sup&gt;</td>
<td>85.73 ± 0.53</td>
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<td>Sex</td>
<td>10.80 ± 0.17&lt;sup&gt;a&lt;/sup&gt;</td>
<td>97.32 ± 0.19&lt;sup&gt;a&lt;/sup&gt;</td>
<td>86.86 ± 0.57&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>Gilts</td>
<td>10.92 ± 0.14&lt;sup&gt;a&lt;/sup&gt;</td>
<td>97.19 ± 0.16&lt;sup&gt;a&lt;/sup&gt;</td>
<td>85.36 ± 0.47&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>Treatment</td>
<td>10.49 ± 0.15&lt;sup&gt;a&lt;/sup&gt;</td>
<td>97.07 ± 0.17&lt;sup&gt;a&lt;/sup&gt;</td>
<td>86.98 ± 0.51&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>Frozen**</td>
<td>11.22 ± 0.16&lt;sup&gt;b&lt;/sup&gt;</td>
<td>97.44 ± 0.18&lt;sup&gt;b&lt;/sup&gt;</td>
<td>85.24 ± 0.53&lt;sup&gt;b&lt;/sup&gt;</td>
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abcd Means within the same column and within a main effect with similar superscripts are not significantly different (P > 0.05).

* P values from Analysis of Variance for each main effect within a variable.

** Frozen stands for bellies that were frozen at -5°F prior to processing.

c Percent pump = (weight of the pumped belly / initial belly weight) x 100.

f Smokehouse yield = (weight of the cooked belly / initial belly weight) x 100.

g Slicing yield = (weight of the center of the sliced bacon slab / weight bacon slab) x 100.

h Total yield = (weight of the complete sliced bacon slab, less incomplete end pieces / belly weight) x 100.

As would be expected, the large variability in the composition of the belly as influenced by genetics, sex effect, diets, slaughter weight were found. Adding value to the raw material, the belly, remains the basic process of curing the belly and converting the bacon slab to consumer
products including sliced bacon, pre-cooked sliced bacon, bacon bits and perhaps in the future new products building on the consumers’ wide acceptance of bacon as an ingredient that contributes taste, texture and flavor to a wide variety of foods. Greater understanding of the widely variable belly, will lead to processing opportunities that will give the commercial processors additional value-added approached for this significant portion of the pork carcass.

Pork producers and pork processors will need to keep their focus on the inevitable reality that under current thinking, often what seems best for the pork industry may not be the best for the bacon industry. Likewise, while it is the focus of the swine industry to improve pork quality by making leaner hogs, the wide variability in composition of the pork carcass will continue to some bellies that are too fat and some that are too lean for the wide expectations on many on the quality of bacon. Commercial bacon processing must continue to stress technology to make better bacon, explore new markets for bacon and expand the consumer interest in bacon products for their flavor, texture and eating satisfaction.