**PROJECT OVERVIEW**

11 Utah Livestock Shows

**1106 HOGS**

we randomly selected

150

and tested them for

PSS & RN

**PSS & RN**

**Porcine Stress Syndrome**

• PSS is an inherited neuro muscular disorder in swine—linked to the Halothane (Hal) gene.
• PSS is triggered by stressful situations (e.g., fighting, transportation, showing, etc.).
• Symptoms of PSS include muscle/tail tremors, labored/irregular breathing, blanching/ reddening of skin, high body temperatures, collapse, muscle rigidity, and eventual death (Stradler & Conaster).
• The HAL gene is not completely recessive meaning that heterozygous stress carriers pigs can also exhibit traits of PSS.
• Traits of swipe with PSS include sudden death and pale soft exudative (PSE) meat.
• Research has found that stress carriers are much less likely to suffer sudden death, but are more likely to exhibit poor meat quality (Worwood).

**Rendement Napole**

• Found to lead to PSE meat in swine.
• Poor pork quality caused by low pH and low water holding capacity in pork with the RN gene.
• Two alleles for the RN gene, RN- and RN+. The RN- gene is completely dominant meaning that just one copy of the RN- gene inherited from one parent can cause poor meat quality (Heaton, Howard, & Dallin, 2016).

**A Bad Combination**

• Some recessive genes can be additive, such is the case with PSS and RN.
• The detrimental effects of the HAL and RN gene on pork quality are amplified in pigs carrying both.
• 3.3% of pigs tested carried both the HAL and RN gene.

**FINDINGS**

Table 1. The percentages of hogs affected by Porcine Stress Syndrome (PSS) and Rendement Napole (RN) in 11 Utah counties’ junior livestock shows.

<table>
<thead>
<tr>
<th>PSS (%)</th>
<th>RN (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>93.3</td>
</tr>
<tr>
<td>Heterozygous</td>
<td>58</td>
</tr>
<tr>
<td>RN-RN+</td>
<td>6.7</td>
</tr>
<tr>
<td>RN-RN+</td>
<td>42%</td>
</tr>
<tr>
<td>RN-RN+</td>
<td>51%</td>
</tr>
<tr>
<td>RN-RN+</td>
<td>49%</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
</tr>
</tbody>
</table>

• Approximately 49% of pigs tested had a genetic defect that could lead to poor meat quality (PSE meat) and/or other issues such as sudden death.
• The negative effects on meat quality caused by these genes causes economic losses in the pork industry and can have a negative impact on the public support of junior livestock shows (Du, 2004).

**CONCLUSION**

• These findings are alarming because the negative effects caused by the HAL and RN gene are completely avoidable.
• The majority of swine are artificially inseminated. Boar stud services perform genetic testing on their sires before collecting and selling their semen. These results are available from the producer:
  - 18% of sires on a boar semen website were carriers of the HAL gene (acutabovesires.com).
• It is not economically viable for producers to test all of their sows for the HAL and RN gene.
• By utilizing genetic testing that is performed on boars before artificially inseminating or breeding sows, producers can greatly reduce the threat of PSE meat or other issues.
• 4-H junior livestock projects are a great vehicle for conducting educational workshops that will help cut back on the economic issues caused by the HAL and RN gene and that will help prepare 4-H youth to be better producers.

**WORKS CITED**


