Pork Prose

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genetics play an important role in the incidence of PSS. Selecting lean, heavily muscled breeding replacements can lead to a predominance of the alpha-white muscle fiber.

If that happens, PSS and PSE may follow. There is also evidence that environment is a factor — especially in the incidence of PSE. The time of feeding relative to the time of slaughter is important, since feeding time will determine the amount of glycogen in the muscles.

Loading, unloading, and handling of pigs just prior to slaughter also affect PSE. Temperature and humidity during the transit and holding process is critical — with most PSE problems occurring during the summer.

Detection Of PSS In The Live Pig

Halothane Test

Halothane is a gas used to anesthetize pigs during surgery. Besides putting the pig to sleep, it also has the property of making the PSS pig show signs of muscle rigidity within 3 to 5 minutes of receiving the gas.

Disadvantages of the test include the need for special equipment and expertise, danger of killing the stress susceptible pig, the narrow window of time in which the test can be used (between 7 and 11 weeks of age), and the fact that carriers of the halothane response gene will test negative.

Blood Test

A new test is now available, often referred to as the DNA blood test. (DNA is the molecule in the chromosome which carries the genetic code that makes each animal unique). Two years ago researchers discovered a mutation in the DNA of PSS pigs which leads to the calcium abnormalities discussed above. This led to the development of the molecular genetic test, which detects both positive pigs and carriers.

Detecting PSE In The Carcass

After a hog carcass has had a chance to cool in a typical packing plant, it is moved to a cutting room. At that point, it's easy to identify the PSE condition — you can see the pale color, and the juices exuding from the muscle. The challenge is to identify the problem 45 minutes after slaughter, or just before the carcass enters the cooler. This would allow the packer to sort the carcasses, and perhaps correct problems in preslaughter handling.

The information would also be useful to the producer in his breeding programs. One concept that shows promise in detecting PSE at slaughter is pH. All muscle drops in pH after slaughter. However, muscle from a PSE hog drops much faster than normal, according to research at Iowa State University and the University of Guelph. At 45 minutes post slaughter the pH will be lower in a PSE hog compared to a normal one (about 5.7 vs 6.4, respectively). Unfortunately, we don't yet have all the bugs worked out to measure pH at normal line speeds in large packing plants.

Reducing The Problem

For pigs with PSS, there is no practical treatment, other than eliminating the stress. Unfortunately, minor things like mating or moving a pig down an alley are enough to trigger a PSS "attack."

For carcasses with PSE, there are few processes than can effectively utilize the watery pork.

Blood Test Breeding Stock

As the industry intensifies its selection for meat type hogs to take advantage of new grading systems, we are fortunate to have a test which can help us avoid the PSS problems encountered in the 1970s.

Serious seedstock producers, especially those that have experienced PSS or PSE problems in their breeding stock, are well advised to test at least the boars in the herd. This will provide important information in the overall breeding program and limit the possibility of marketing carrier animals to commercial herds.

The commercial test is currently available at the University of Minnesota through the laboratory of Dr. Charles Louis (612) 624-4202. Cost per sample is about $50.

Take Pigs Off The Feeder

Fasting hogs eight to 12 hours prior to slaughter will reduce the amount of glycogen in the muscles and help to eliminate the rapid drop in pH.

Keep Pigs Cool During Hot Weather

Bedding the truck with wet sand or shavings when temperatures exceed 60 degrees will help, said Temple Grandin. If the temperature is more than 80 degrees, spray hogs with a light mist prior to loading.

Practices At The Packing Plant

A 3 to 6 hour rest period between unloading and stunning reduced PSE by 20 to 40 percent in studies at the University of Guelph. Cooling the hogs rapidly after slaughter will help to reduce the problems associated with a rapid drop in muscle pH.

Economic Penalty

I have historically not recommended a penalty, because the problem is both environmental and genetic. But we now have important new technology for accurately identifying both positive and carrier pigs. Theoretically that could be the tool for eliminating the gene. Since many individuals and breeding companies are choosing to keep the gene, the PSE problems are probably here to stay.

PSE is bad news for both the packer and consumer, so perhaps the time is ripe for an economic penalty. All that is needed is an objective means for identifying PSE carcasses 45 minutes after slaughter.

Producers that choose to sell carriers of the stress gene, or purchase breeding stock from companies using the stress gene, will pay the consequences. And rightfully so.

Summary

1. Despite marked reductions,

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