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TITULO : Genetic Improvement Programs in the United States
Purebred Swine Industry.

AUTOR (ES) : John W. Mabry.

INSTITUCION (ES) : The, University of Georgia, Athens 30602

Resumen

The purebred swine industry exists in the United States for but one purpose: to supply our commercial swine producers with healthy genetically superior replacement breeding stock. The purebred industry is responsible for genetic improvement in the economically important traits for these commercial producers. It is a slow process; however, it is both permanent and profitable for the commercial producer.

In the United States the vast majority of our swine producers are commercial producers who mate different breeds of swine to produce animals for slaughter. Their desired product is pounds of lean, high quality pork. These commercial producers purchase their replacement breeding animals from seedstock producers. The product of our purebred producers is then genetically superior breeding animals. Since the commercial producers depend on the seedstock producers for genetic improvement, the seedstock industry must:

1. Measure their animals for the economically important traits.
2. Identify the best animals.
3. Reproduce their superior genes for use by the commercial producers.

How do our purebred breeders do this? STAGES!!

S.T.A.G.E.S. = (Swine Testing and Genetic Evaluation System)

It is a natural program designed to identify the genetically superior animals in the United States. It is concerned with all our economically important traits: reproduction, growth, composition and efficiency.

First, let's consider reproduction. Reproduction is measured through Sow Productivity Indexes (SPI). Reproduction is evaluated in two areas:

1. Number of pigs born alive (as a measure of fertility).
2. Litter weight at 21 days (as a measure of milking ability).

For each litter farrowed the number born alive is recorded and the litter is weighed prior to weaning at 21 days of age. Non-genetic sources of variation such as age of sow, number nursed, etc. are adjusted for. After weaning the inferior sows are culled. These records are kept across all participating herds (more than 80,000 litters currently) and genetically superior lines are identified. This enables us to genetically improve reproduction.

Growth, Backfat and feed efficiency are also measured on the pigs from these litters. Pigs are placed on performance test at about 70 pounds (30 kg) and weighed off test at market weight (230 pounds or 150 kg). Their growth rate is calculated (ADG), backfat is measured; and, sometimes feed efficiency is measured. The best gilts from those tested are kept in herd as replacements. The best boars are sold to other producers (both commercial and seedstock) and the poorer pigs are slaughtered. These performance test records are also kept across time to identify the genetically superior lines for growth, backfat and feed efficiency.

We also have central testing across herds at our Central Test Stations. There are 33 of these in operation all across the United States. At each station the local purebred breeders bring pens of 2-4 boars from their best performance lines. These boars from the different farms are then performance tested and growth, backfat and feed efficiency are measured. These pigs from diffi-

ency are measured. These pigs from different lines and farms are evaluated in the same environment by trained, impartial people. Boars are ranked by an index of the traits and the best boars are sold at auction.

These programs are designed to identify the genetically superior animals and lines in the United States. What is the role of the NASR in this? The NARS role is to establish and coordinate these genetic evaluation systems. Each breed uses the system that best fits their product. Each breed then will assist their breeders in data collection, evaluation of results; and, marketing the genetically superior lines.