October 2007 **AG/Swine/2007-01pr**

Swine Artificial Insemination for Beginners:
Selecting the Right Boar

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Artificial Insemination (A.I.) can complement or replace traditional breeding programs for youth swine projects and other small swine operations. A.I. provides instant access to the nation's top boars and allows rapid improvement of breeding stock and show pigs. It can eliminate inbreeding problems and minimize health risks associated with buying a new boar. Best of all, even inexperienced producers can easily learn swine A.I. techniques.

Semen Sources

Semen can be purchased from commercial boar studs and many purebred breeders. Seedstock Edge, the publication of the National Swine Registry (http://www.nationalswine.com/), has an extensive listing of semen suppliers. Many other swine-related Internet sites also list semen sources.

Sire Selection

Consider your goals when selecting an A.I. sire. Do you want to produce show pigs or breeding stock? Do you need to improve muscling, mothering ability or some other trait? How much are you able to spend on semen? After answering these questions, look for a boar that meets your needs. Here are some points to keep in mind:

Breed: Yorkshire, Large White, Landrace, and Chester White are "maternal breeds" known for their fertility and milking ability. Hampshire, Duroc, Spot, Berkshire, and Pietrain are "meat breeds" known for muscling and leanness. However, maternal breed boars may excel in carcass characteristics and some meat breed boars sire outstanding maternal ability.

Minor breed boars such as Berkshire and Spots, and crossbred boars are also available. Crossbreds that have some Pietrain blood are sometimes called "exotics."

Figure 1. This champion barrow was produced by a 4-H club using artificial insemination.

Carcass traits: Pigs tend to look like their parents when it comes to muscling, backfat, length,

and frame size. To improve these traits, select a boar that has superior carcass characteristics himself, regardless of breed.

Growth and performance traits: Crossbreeding (mating pigs of two different breeds) is the quickest way to improve survival rate, growth and other performance traits. On average, crossbred pigs are more vigorous and grow faster than purebred pigs.

Maternal traits: When breeding for replacement gilts, use a boar from a large litter with a high weaning weight. Remember that feed, housing and health care affect a sow's maternal performance more than genetics does.

The Swine Testing and Genetic Evaluation System (STAGES) at Purdue University ranks Yorkshire, Hampshire, Duroc and Landrace boars for terminal and maternal traits. To find trait leaders in these breeds or to look up Expected Progeny Differences (EPD's) for any registered boar or sow, go to the STAGES Web site: http://www.ansc.purdue.edu/stages/.

Don't overlook the folks at the boar stud. They know their boars and want you to succeed. Describe your sow or gilt and tell them your goals. They can recommend boars that will work for you

Understanding Catalog Terms

Boar stud catalogs and Web sites provide photos, descriptions and performance data to help you select the right boar. Here are definitions for terms you might encounter:

Loin Eye Area (LEA) tells how many square inches or centimeters are in the pork chop at the tenth rib, and is an indicator of the boar's muscling. Unless otherwise stated, LEA is measured using ultrasound when the boar weighs 230 lbs.

Backfat (BF) is measured at the tenth rib using ultrasound when the boar weighs 230 to 250 lbs. This is an indicator of how lean the boar is, and how lean his offspring may be.

Days to 230 or 250 pounds is a measure of the boar's growth rate.

Stress Free, Stress Carrier, Stress Positive: These refer to a recessive gene called the Halothane gene. The Halothane gene was present to some extent in all breeds, but several breed associations are working to eliminate it and will no longer register animals that carry the gene. The Halothane gene is still fairly common among crossbreds, particularly in animals with some Pietrain ancestry.

Like all genes, the Halothane gene works in pairs with one gene coming from each parent. Normal, stress-free pigs have two dominant genes. Stress positive pigs have two recessive genes, and stress carriers have one dominant and one recessive gene.

Breeders unknowingly selected for the Halothane gene while trying to reduce backfat and improve muscling, since stress positive and stress carrier pigs tend to be leaner and heavier-muscled than stress negative pigs. However, the gene also has undesirable effects. About 15% of stress positive pigs have a metabolic disorder that causes them to overheat and die suddenly during routine activities such as breeding or showing. In addition, pork from stress positive hogs is often pale, soft and watery when raw, and is tougher and drier than normal pork when cooked. Stress carriers are much less prone to sudden death than stress positive hogs, but are more likely than normal hogs to produce pale, soft, watery meat.

Many genetic and environmental factors affect pig mortality and pork quality. However, the Halothane gene is one factor that swine breeders have complete control over. By using only stress negative boars and sows, you will do much to improve pork quality and minimize stress-related deaths in pigs.

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This publication is issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Noelle Cockett, Vice President for Extension and Agriculture, Utah State University.