IMPORTANCE OF THE TOPIC
Generally, sows and gilts will ovulate (release eggs from their ovaries) about 40 hours after they first come into standing heat. It is also known that adequate numbers of live sperm must already be in the female tract for a few hours (10-24 hrs.) before ovulation occurs in order to achieve maximum conception rate and litter size. Therefore, frequent heat checks and proper identification of standing heat are essential if females are to be bred at the optimal time.

WHAT YOUR 4-H’ers WILL ACCOMPLISH
1. Recognize the behavioral signs of sows and gilts in order to properly detect standing heat.
2. Understand the boar’s role in stimulating standing heat.
3. Identify reasons and solutions for poor heat detection.
4. Further develop the life skills of analyzing, making decisions, speaking before a group, and working with others.

PREPARE FOR THE MEETING
Before this meeting, you and your junior leader(s) should prepare three different sets of notecards to be used for various activities. The sets of notecards will help make these activities “learn-by-doing” experiences for your members. If you have a large group, prepare one set for every three or four members. You may want to color code the three sets. The information to be put on both sides of the cards is included for each set (S-1 = Side 1, and S-2 = Side 2) and is shown immediately following the Suggested Activities section of this guide.

SUGGESTED ACTIVITIES
Determining the Boar’s Role—Use this activity as a “warm up.” Ask your group, “What actions or behavior do boars display to stimulate standing heat in sows or gilts?” Have them make a list and compare it to the following answers:
1. Produces a pheromone (an odor that stimulates the female) in his saliva.
2. Chomps and salivates.
3. Noses females’ sides, flanks and rump.
4. Chants (makes a short series of grunts).

Matching Behavioral Signs With Phase of Heat Cycle—The heat cycle can be broken down into four phases: 1) coming into heat (1-2 days before); 2) standing heat; 3) beginning to go out of heat; and 4) out of heat. Ask your 4-H’ers to tell what they think some of the female behavioral signs or actions are during each phase. Then, take set 1 cards and ask them to match the Signs (side 2) with the appropriate Phases shown on the additional card set. Check their answers by turning over set 1 cards.

Who’s to Blame Game—There are many reasons for failing to detect heat in sows or gilts. They can be divided into three categories: those blamed on 1) the boar, 2) the female, or 3) management. Use cards from set 2 and ask your 4-H’ers to match the Problems associated with poor heat detection (side 2) with the categories to Blame for the problem (shown on additional card set). Turn over set 2 cards to check their answers.
Match Problems With Solutions—Start by having some of your 4-H'ers tell how they would solve some of the problems. Then ask them to match the Problems shown on side 2 of set 2 with the appropriate solutions on side 1 of set 3. Turn over set 3 cards to check their answers.

Optimum Time to Breed Game—In this activity, your 4-H'ers will be working with several important events that occur when females come into heat and are bred. Make and cut out your own labeled set of four arrows and time-of-event ruler (shown below). The time-of-event ruler shows the hour increments and an event that occurs before and after the first standing heat (0-hour). Each arrow is also labeled with a specific event. Start by placing the point of arrow A at the 0-hour increment on the time-of-event ruler. Arrow A should set vertical to the ruler. Then ask your members to similarly place the remaining three arrows on the correct hour that the event should occur. (Correct answers: Arrow B-on hour 12; Arrow C-on hour 24; and Arrow D-on hour 40)

Figure 1: Optimum Time to Breed Game

Set 1
Side 1 lists the name of a given Phase of the heat cycle. Side 2 lists a behavioral Sign that occurs during that phase. Make up a separate card for each of the 12 behavioral Signs plus one additional card for each phase (4).

S-1—Coming into heat
S-2—Vulva is swollen and reddened
S-3—Restless action
S-4—Walks the fenceline
S-5—Attracted to fenceline adjacent to the boar pen
S-6—Shows characteristics of “male” courting
S-7—Tries to mount other pigs
S-8—Instanding heat
S-9—Will stand for back pressure applied by a person
S-10—Will stand to be mounted by the boar
S-11—Upon applied back pressure, will lock her legs and arch her back
S-12—Responds by flipping up her ears (erect ears will sometimes quiver)
S-1—Beginning to go out of heat
S-2—Will only stand for the boar and not for back pressure applied by a person
S-1—Out of heat
S-2—No longer stands to be mounted by the boar

Set 2
Side 1 carries the category to Blame for a problem resulting in poor heat detection. Side 2 lists the Problem. Make up one additional card for each category to blame (Boar, Female, Management) in addition to the 11 cards.

S-1—Boar
S-2—Sick or lame
S-3—Overworked
S-4—Frustrated because never allowed to mate
S-5—Low sex drive—not due to lameness, sickness, or overuse
S-6—Female
S-7—Sick or lame
S-8—Afraid of mate
S-9—Unexpected heat (cycles when not expected to)
S-10—Management
S-11—Too many animals in pen (crowded)
S-12—Herdsmen too busy
S-13—Too hot (animals lying and panting)
S-14—Slippery floor surface (animals sitting on rear end)

Set 3
Side 1 carries the Solution to a particular problem that causes poor heat detection. Side 2 lists the Problem.

S-1—Rest (don’t use for breeding) and treat appropriately
S-2—Boar—sick or lame
S-3—Rest
S-4—Boar—overworked
S-5—Allow an occasional service
S-6—Boar—frustrated (not allowed to mate)
S-7—Cull
S-8—Boar—low sex drive
S-9—Pen separately and treat appropriately (probably won’t conceive if you don’t)
S-10—Female—sick or lame
S-11—Try another boar
S-12—Female—afraid of mate
S-13—Improve records and animal identification
S-14—Female—unexpected heat
S-1—Limit number of females to 10-15
S-2—Too many animals per pen
S-3—Provide more time—it is worth it
S-4—Herdsmen too busy
S-5—Check for heat in the early morning or late afternoon
S-6—Too hot
S-7—Keep dry
S-8—Slippery floor surface
QUESTIONS TO ASK

These questions can be asked either during the activities, for a quiz bowl, or as a summary.
Q. Do open (non-bred) sows and gilts normally come into heat at 30-day intervals?
A. No—at 18- to 24-day intervals.
Q. What is meant by "standing heat"?
A. The period during which the femail will stand to be mounted.
Q. Is the onset of standing heat the best criterion to use to determine when to breed?
A. Yes.
Q. Can the length of time from first standing heat until no longer standing for the boar vary from 12 hours to 4 days?
A. Yes.
Q. At the time sows or gilts first come into standing heat to be mounted by the boar, will they also stand for back pressure applied by a person?
A. No. It may be 1-24 hours later before they stand for applied back pressure.
Q. Will the period for standing heat usually last longer for sows or for gilts?
A. Sows.
Q. What female behavior is exhibited beginning about 40 hours before ovulation (release of eggs from the ovaries)?
A. Standing heat.
Q. Could gilts that are cycling for the first time (puberty) have redened, swollen vulvas for as long as two weeks?
A. Yes.
Q. Is the optimal time for breeding (when breeding should occur) based on the number of times per day a producer checks females for signs of standing heat?
A. Yes.
Q. When should females be bred if once-a-day detection for standing heat is used?
A. As soon as detected and again the next day.
Q. When should females be bred if twice-a-day detection for standing heat is used?
A. At approximately 12 and 24 hours after you first detect them in standing heat.
Q. Why is it so important to frequently check sows and gilts for standing heat?
A. To properly time breeding to assure presence of sperm prior to ovulation.
Q. Should heat detection always be done in the presence of a boar (fenceline) to increase your chances of detecting all possible females in heat?
A. Yes.
Q. Up to 50% of all sows and gilts in heat will not show "standing heat" unless what is present?
A. A boar.
Q. Why does a boar chomp and salivate when he is checking for heat?
A. To stimulate the female with the pheromone (odor) present in his saliva.

SUPPORTING MATERIALS

Additional project meeting guides are available which support this topic: Setting Goals for Profitable Pork Production; Organizing Swine Management Practices; and Conducting a 4-H Skillathon.
Several Extension Folders (FO) and Fact Sheets (FS) are also available from the county extension office: AG-FO-0594, Herd Boar Management; AG-FO-0888, Management of Developing Gilts and Boars for Efficient Reproduction; and AG-FS-0963, Breeding Management of Sows and Gilts.

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