

Heat Detection

Meranda Small, Extension Educator

Goal (learning objective)

Youth will learn terminology and understand physical signs and tools that help with heat detection in livestock.

Supplies

- Copies of Handout 1 “Signs of Estrus in Livestock” (make enough copies for group)
- Copies of Handout 2 “Estrus Detection & Tools” (make enough copies for group)
- Copy of Handout 3 “Estrus Detection & Tools” (make one copy - answer key)

Pre-lesson preparation

- Make photo copies of Handout 1 and 2 – enough for group
- Make 1 photo copy of Handout 3 – leader use only (answer key)
- Read/Review lesson
- Read/review terminology and concepts for each species

Lesson directions and outline

Assign a youth to discuss each of the species with the rest of the club using the information provided below. The club leader (volunteer) needs to share the first paragraph.

For all species males have a constant supply of testosterone making them able to breed at any time. Males too observe the physical display of heat as well as have the ability to detect pheromones and display the Flehmen response. The Flehmen response is observed when the male animal detects the pheromones from the female, he will roll his nose back and bottom lip up (See picture B in Handout 7).

Beef: Cows will show heat for 14-20 hours and 10-16 hours after the last sign of heat she’ll ovulate, however sperm should already be present in the female tract. During that 14-20-hour window is when the female should be bred by a bull or Artificial Insemination (AI). If using AI implement the AM/PM rule: if showing heat in the morning breed at night and vice versa. For re-breeding of cows, give her 65 days after calving before trying to re-breed. Heat detection in cows can be accomplished through observation, use of gomer bulls, detector pads, and Free Martin heifers. A Free Martin heifer is typically born as a twin to a bull. These heifers are generally not fertile but are aggressive in detecting heat of other heifers. For estrus synchronization of a herd, the hormone prostaglandin is used and available commercially.

Sheep: Estrus lasts 20-42 hours, ovulation occurring in the late period. Sheep are seasonal breeders so may only come into heat at certain times of year (influenced by daylight length). Breed in the fall (September through December) or spring (January through March), placing rams with the ewes 148 days before you want lambing to happen. Manipulation is not as regular of a practice with sheep. Signs of heat are harder to detect in sheep.

Swine: Heat detection can be accomplished by applying back pressure and she pushes back or by exposing the female to a boar with a fenced barrier to excite her. Females will show heat 50-60 hours, slightly less for gilts. Ovulation will occur 35-45 hours after the last sign of heat and will take 1-7 hours. Sperm will survive in the female tract for 24-72 hours in all species, so as with cows, sperm for the sow needs to be present prior to ovulation, 12-24 hours after physical heat begins to show. A second breeding of the sow 12-24 hours after the first breeding is standard practice. Commercial forms of swine specific prostaglandin are available for estrus synchronization.

Goats: Heat detection requires the herd manager to spend time watching to determine the best time to breed the females. The estrus duration is 12-36 hours. AI in goats is not as common as other species but is done. Goats should be inseminated 12 to 18 hours after the onset of heat. Ovulation occurs from 12 to 36 hours after the first signs of heat. Effective estrous synchronization products are not approved for use in the United States.

Conducting the activity (DO)

1. Have the group form into smaller groups - try to mix different species if possible.
2. Ask for a volunteer to distribute Handouts 1 and 2.
3. Have members complete Handout 2
4. Check for completion, once group has finished, discuss Handouts 1 and 2 with the group.
5. Ask the following:
 - a. Are there similarities in estrus signs in livestock?
 - b. What are some other ways that you can detect heat in livestock?
6. Share answers in Handout 3 with the group.

What did we learn? (REFLECT)

- Ask: Can a female become pregnant at any time?
- Ask: What are some signs of heat?
- Ask: Can the onset of estrus be manipulated?

Why is that important? (APPLY)

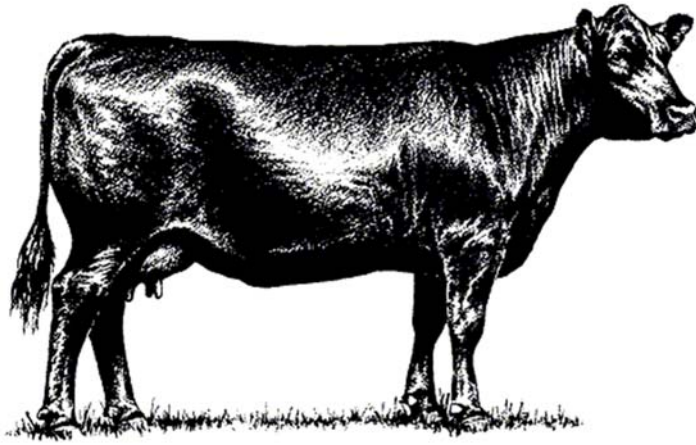
- Ask: How does heat or estrus affect herd production overall?
- Ask: How do management practices come into play with heat detection?
- Ask: What are the benefits of synchronizing estrus in a herd?

Resources

- Ohio State University Extension. (2011). Reproduction and Genetics. *Beef resource handbook* (pages 6-3 through 6-7).
- Ohio State University Extension. (2008). Reproduction. *Goat resource handbook* (pages 39-41).
- Ohio State University Extension. (2011). Reproduction and Genetics. *Sheep resource handbook for market and breeding projects* (pages 119-121).
- Ohio State University Extension. (2000). Breeding Management. *Swine resource handbook for market and breeding projects* (pages 18-1 through 18-7).
- Yager, A., Neary, M., & Singleton, W. (2003). Farm Animal Management @ Purdue. *Estrus detection in farm animals*. AS-559-W. Purdue University Cooperative Extension Service.

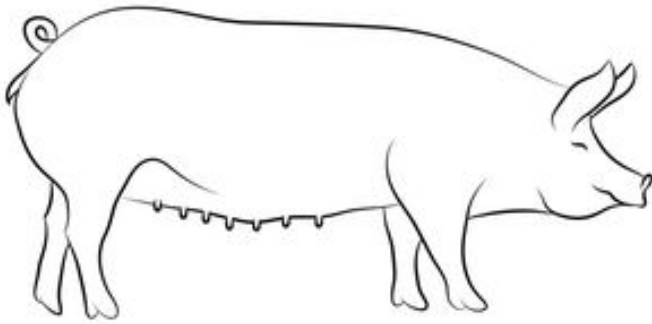
REPRODUCTION: HEAT DETECTION – HANDOUT 1

Signs of Estrus in Livestock



Signs of Estrus in Cattle

- Standing for other cows, allowing others to ride her
- May try to ride other cows
- Loss of appetite
- Head is up, in air – lot of sniffing/smelling
- Bawling, nervous/excited behavior, walking fences
- Increase in mucous discharge from vulva
- Vulva is red and swollen



Signs of Estrus in Swine

- Stands for back pressure
- Ear carriage more erect
- Increased activity
- More vocal
- Sticky discharge from vulva
- Swelling of vulva



Signs of Estrus in Sheep

- Nervous/excited behavior, walking fences
- Shaking of the tail
- “Ruttish” behavior around rams – will seek rams out, rub necks or bodies against them
- Slightly swollen vulva



Signs of Estrus in Goats

- Standing to be mounted by herd mates
- Flaggng (rapid tail wagging)
- Attempting to mount other goats
- Excited behavior, walking fences
- Clear, mucous discharge from vulva
- A swollen, red or wet vulva

REPRODUCTION: HEAT DETECTION – HANDOUT 2

Estrus Detection & Tools

Directions: Use the terms listed below to answer questions 1-13.

1. The herdsman in image D is demonstrating the _____.
2. Images E and F demonstrate the _____.
3. The heat detection tool in image A is placed under the chin of the bull and causes paint to be smeared on the back of a cow when mounted. It is called a _____.
4. The _____ contains a red dye, and is glued on the tail-head between the pins and hooks of the cow. If the cow is mounted, pressure on the device causes the dyes to mix, creating a visible color change as illustrated in image _____.
5. _____ is one of the signs to identify estrus in gilts and sows.
6. The ram is exhibiting the _____ after sniffing an ewe's urine.
7. The presence of a male goat known as a _____ can help detect heat in does. Does will respond with increased _____.

Terms/phrases for questions:

Buck

Erect ears

H

Mounting behavior displayed by females approaching estrus

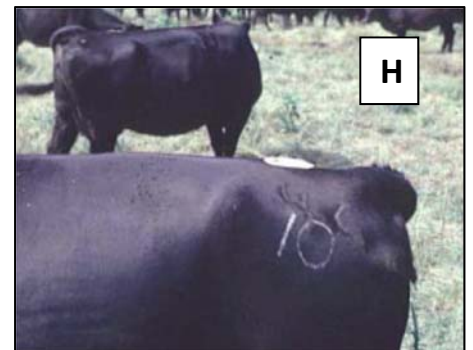
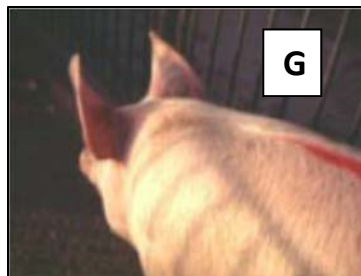
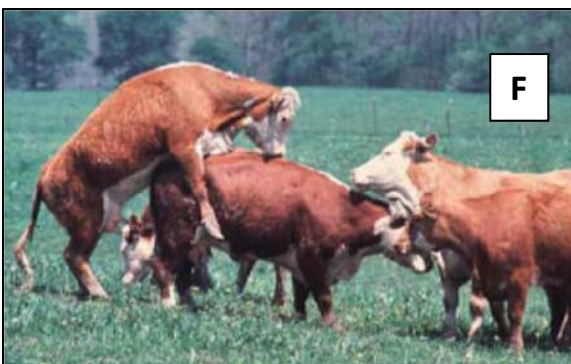
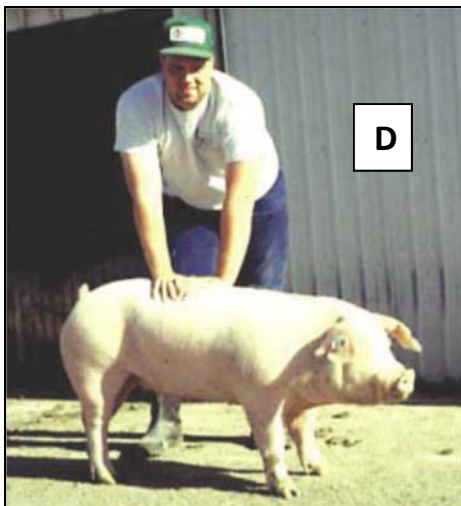
Flehmen response

Heat patch

Chin-ball marker

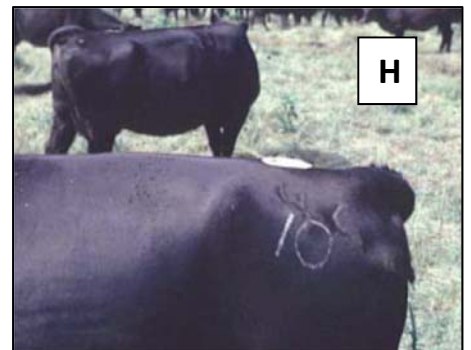
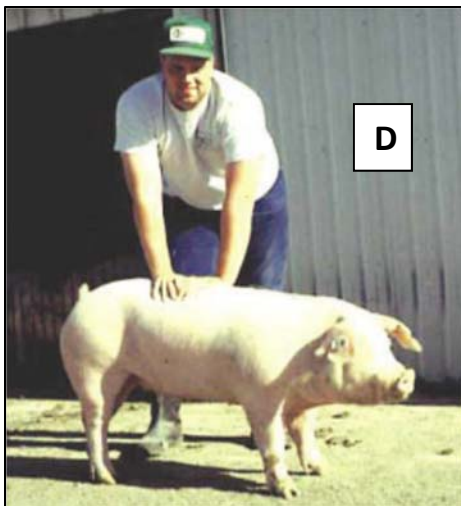
Tail wagging

Back pressure test



REPRODUCTION: HEAT DETECTION – HANDOUT 3

Estrus Detection & Tools – ANSWER KEY



Directions: Use the terms listed below to answer questions 1-13.

8. The herdsman in image D is demonstrating the Back pressure test
9. Images E and F demonstrate the Mounting behavior displayed by females approaching estrus
10. The heat detection tool in image A is placed under the chin of the bull and causes paint to be smeared on the back of a cow when mounted. It is called a Chin-ball marker.
11. The heat patch contains a red dye, and is glued on the tail-head between the pins and hooks of the cow. If the cow is mounted, pressure on the device causes the dyes to mix, creating a visible color change as illustrated in image H.
12. Erect ears is one of the signs to identify estrus in gilts and sows.
13. The ram is exhibiting the Flehmen response after sniffing an ewe's urine.
14. The presence of a male goat known as a Buck can help detect heat in does. Does will respond with increased tail wagging.

Terms/phrases for questions:

- Buck
- Erect ears
- H
- Mounting behavior displayed by females approaching estrus
- Flehmen response
- Heat patch
- Chin-ball marker
- Tail wagging
- Back pressure test