

**UNIVERSITY OF TENNESSEE
AT MARTIN**

Beef Teaching and Research Farm

STANDARD OPERATING PROCEDURES

EFFECTIVE: 5-20-05

REVISED: 5-17-10

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The intent of this document is to describe the routine husbandry and standard operating procedures at University of Tennessee at Martin Teaching Farm Complex. This document is approved by the University of Tennessee at Martin Agricultural Animal Care and Use Committee. The beef cattle facility also has supplemental SOPs included in this document. Any exemption must be submitted for approval to the Agricultural Animal Care and Use Committee. The rules and recommendations in this SOP follow those set forth by the Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching (referred to as Ag Guide).

1. Animal Care
2. Animal Health
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4. References
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1. Animal Care

A. Observations of Animals

- i. Animals are observed and cared for daily, including weekends and holidays, by qualified personnel to assess their health and well-being.

B. Emergency Care

- i. Emergency veterinary care is available at all times including after working hours and on weekends and holidays through the University veterinarian or area veterinarians.
- ii. Contact information for emergency assistance is posted in the Headquarter's office or farm manager's office

C. Animal Identification Methods

- i. Ear tags and neck tags, with or without electronic transponders. Pure bred animals are also tattooed. University of Tennessee at Martin will also follow any recommendations to comply with COOL.

D. Records and Documentation

- i. Individual records may be kept for sick, injured, or breeding animals.
- ii. Records will be kept in farm office and veterinary records will be kept of treatment and treatment protocols.

E. Feeding Routine

- i. Animals are fed to meet current National Research Council recommendations for beef cattle nutrition. Feed ingredients and finished feeds are stored and delivered to the cattle to minimize their contamination or spoilage. Feeds that are not consumed are removed daily from feeders.
- ii. Calves are seen to nurse cows or are given colostrum within 24 hours of birth.
- iii. Water is available at all times and is checked daily for cleanliness if applicable. Animals on pasture receive water from tubs or ponds.

F. Breeding Program

- i. Cows are bred by artificial insemination and/or natural breeding depending on breed and use of cow. Artificial insemination is performed by experienced technicians.

G. Social Environmental Enrichment

- i. Cows have visual and physical contact with one another and with animal care personnel.

2. Animal Health

A. Quarantine Procedures

- i. Animals obtained from other farms are physically separated from the rest of the cattle for a minimum of 14 days before introduction into the herd.
- ii. Health information available is evaluated to assess the need to vaccinate or treat incoming animals as required.
- iii. Animals used for Beef Science Feedlot Project are assessed upon arrival. Rectal temperatures are taken and antibiotic injections may/may not be given (refer to supplemental SOPs on rectal temps and injections).

B. Potentially Painful or Distressful Procedures

- i. Dehorning - Breeds of cattle maintained at UTM Teaching Farm are polled, therefore, no need for dehorning. If, in the future, cattle are brought in that need to be dehorned, a supplemental SOP may be written and approved by the AACUC.
- ii. Foot Care - All hoof trimming will be performed by experienced personnel as needed for that individual animal. Restraint is by a trimming table. Animals that are found lame due to foot problems will be treated promptly and possibly referred to the University veterinarian if needed.
- iii. Castration - Covered in supplemental SOPs.

C. Preventative Medicine Program

Animal	Time	Vaccinations	Deworming Protocol
Calves	Birth	Rota & Corona Viruses	
	3 months old	IBR & BVD	
	4 months old	IBR & BVD	X
Heifers		IBR	
		BVD	
		PI3	
		BRSV	
		5 Strains of Lepto	
		Moraxella bovis	X
Adult Cattle	2x per year	IBR	X
		BVD	
		PI3	
		BRSV	
		5 Strains of Lepto	
	1x per year (Spring)	Moraxella bovis	

D. Euthanasia and Disposal of Dead Animals

- i. Euthanasia is conducted under the supervision of a veterinarian by the IV administration of an overdose of barbiturate.
- ii. Disposal of dead animals is rendering by a commercial company and in accordance with the Implementation of Animal Welfare by University of Tennessee at Martin

E. Pest Control

- i. Pest control is carried out by farm personnel with professional pest control as needed.

3. Facilities

A. Housing

- i. There is a wide variety of accommodations for beef cattle at University of Tennessee at Martin. There are pastures with shelter, barns with pens and stalls which are bedded.

B. Space Requirements

- i. The size of barns, pens, stalls, and pastures are appropriate for the size and the number of animals housed in or on them, exceeding recommendations set forth by Table 5-1, p. 31 of the Ag Guide. Every animal should have sufficient space to move about at will, adequate access to feed and water and a dry resting site, and the opportunity to remain reasonably clean.

C. Cleaning and Sanitation

- i. Barns, pens, stalls and other facilities should be maintained with cleanliness and order to prevent disease and promote a healthy environment for cattle.

D. Transportation

- i. Trailers should be of adequate space for cattle hauled according to the Ag Guide. Trailers should be disinfected after hauling animals from an outside source.

E. Waste Management

4. References

- A. Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching (FASS, 1999)
- B. Cornell Center for Animal Resources and Education, CARE 518.01, Cattle Husbandry
- C. University of Missouri Beef Teaching and Research Farm Standard Operating Procedures
- D. Handbook of Livestock Management, Battaglia

5. Supplemental SOPs

Animal Restraint

Procedures:

Head Chutes

1. Movement of animals should always be slowly and quietly as possible to reduce stress to the animal.
2. With one person operating the head chute the other person/people moves the animal.
3. Move the animal into the squeeze tub and into the alley.
4. The person operating the head chute should have experience with this type of chute and opens the head gate about half way and the tail gate completely.
5. As the animal comes up the alley into the chute the tail gate is closed.
6. Then as the animal puts their head through the head gate it is closed.
7. The sides of the chute may be squeezed to limit the animals movement from side to side.
8. To let the animal loose make sure the squeeze is released first, then open the head gate fully.

Baby Calves

1. Catch the calf by the head and flank.
2. While standing on one side of the calf raise it off the ground by the flank and front leg on its opposite side.

3. Gently lay the calf on the ground and put your knee on his neck and maintain your hold on his leg.

Use of Nose Leads

1. To place the nose lead, move the animal into a headgate, or otherwise restrict its movement, and back up to one side of the animal's head, facing the same direction it is facing.
2. Grasp the nose by tightly clamping your index finger in one nostril and your thumb in the other nostril.
3. Quickly place the nose lead into position with your other hand and squeeze it shut.
4. Insert the nose tongs into the nostrils using a rotating motion. Do not attempt to push the tongs into the nose in a straight motion from the front.
5. The nose lead should have a short length rope attached to it.
6. After the tongs have been inserted, pull the head to the side, take a double wrap around a pipe or post with the nose lead rope.

Injections

GUIDELINES SET FORTH BY TENNESSEE AND NATIONAL
BQA POLICIES WILL BE FOLLOWED.

Procedure:

Subcutaneous

1. Use a disposable syringe with sterile needle.
2. Needle size will be dependent on animal. 16 or 18 gauge, 3/4 or 1 inch.
3. ALWAYS read and follow label directions.
4. Restrain animal in head chute or as previously described.
5. With proper syringe and needle, draw correct dosage into the syringe.
6. Best injection site is the neck.
7. Grasp some loose skin in one hand and pull out creating a tent effect with the skin.

8. Insert the needle into the center of the “tent” at a 45° angle to the animal.
9. Make sure the needle does not go into the muscle or through both layers of skin.
10. Push the plunger giving the drug and withdraw.

Intramuscular

1. Most injections should be given subcutaneously unless for synchronization purposes or unless otherwise directed by a veterinarian.
2. Use a disposable syringe with sterile needle.
3. Needle sizes: 16 or 18 gauge, 1 or 1 1/2 inch
4. ALWAYS read and follow label directions.
5. Restrain the animal in a head chute.
6. With proper syringe and needle draw the correct dosage into the syringe.
7. The best injection site is in the neck.
8. Insert the needle into the animal at a 90° angle.
9. Make sure the needle goes into the muscle.
10. Push the plunger giving the drug.

<h3>Castration</h3>

Procedure:

1. Castration of male beef cattle is least stressful when performed on calves at birth, before 2-3 months of age, or before the animals reach a body weight of 230kg as recommended by the Ag Guide.
2. The procedure should be conducted by or under the supervision of a qualified, experienced person and carried out according to accepted husbandry practices (Battaglia and Mayrose, 1981).
3. Restrain the animal in a head chute unless baby calf where restraint is stated elsewhere.
4. Have one person bend the tail straight up over its back to reduce injury to the castrator.
5. Palpate the scrotum to make sure two testicles are present and that the calf does not have a scrotal hernia.
6. Grasp the bottom of the scrotum between your thumb and finger.

7. With Newberry knife or scalpel blade with handle in other hand position the blade so it will slice through the bottom 1/3 of the scrotum.
8. Squeeze the knife so the blade goes completely through the scrotum (make sure to cut from the animal's right to left).
9. Remove your original hand from the scrotum to avoid injury to yourself and pull the knife down and back opening the scrotum.
10. Both testicles should be visible at this time.
11. Grasp one testicle in one hand and use your other hand to "milk" or break any connective tissue that holds the testicle to the scrotum.
12. After the testicle is free of the scrotum pull it out and repeat the procedure with the other one.
13. Observe the animal for excessive bleeding and if there is none, turn the calf loose or preferably, back with its mother.
14. If excessive bleeding is noted, contact the University veterinarian.
15. Instruments used (Newberry knife/blade) must be sanitized between each calf. Ex. Nolvasan or Betadine solution.

Tattooing

Procedure:

1. Assemble necessary equipment
2. Restrain animal
3. Locate area of the ear that you wish to tattoo
4. Two ribs of cartilage divide the ear into top, middle, and lower thirds
5. Tattoo should be placed in top third of the ear just above the cartilage rib and approximately equidistant from the base and the tip of the ear
6. Avoid tattooing in the edges of the ear or in the hairy portion of the ear
7. Do not tattoo between the two cartilage ribs
8. Clean the inside of the ear where the tattoo will be placed
9. Position the tattooing instrument inside the ear so that the needlepoint dies are above the ribs as described in No. 7
10. Squeeze the handles of the tattooing instrument together completely and quickly and then release them fully
11. Rub tattoo paste or ink into all of the needle marks

12. Release the animal
13. Clean tattooing equipment

Ear-Tagging

Procedure:

1. Restrain animal
2. Select the ear to be tagged
3. Load applicator
4. Select the tagging site on the ear. Most should be placed between cartilage ribs
5. Hold the ear with one hand while using the other hand to insert the ear tag
6. Squeeze the handles of the applicator
7. Release the animal

Body Temperature Measurements

Procedure:

1. Restrain animal
2. If using mercury thermometer, make sure to shake it down. Digital thermometers are preferred
3. Moisten the end of the thermometer
4. Insert about one-half to three-fourths of the length of the instrument into the rectum
5. If a clip is on thermometer, attach the clip to the animal's hair
6. If using a mercury thermometer, allow three minutes. If using a digital, most will beep
7. Remove thermometer and read. Clean thermometer after use.

Cattle Collection of Blood

Blood can be collected from the jugular vein in cattle of all ages or from the tail (coccygeal) vein of older cattle. A variety of collection devices may be used including vacutainers, bleeding tubes, syringe and needle. Operators

should use gloves and disinfect them between animals to prevent the transmission of blood-borne diseases.

Jugular Bleeding

Procedure:

1. Restrain animal with head elevated and the jugular groove exposed
2. Raise the jugular vein by pressure at the base of the jugular groove
3. Pass the needle through the skin and into the vein by a firm thrust directed at an angle of 20° to the skin surface
4. Withdraw blood sample

Tail Bleeding

Procedure:

1. Restrain to prevent animal from moving away during the procedure.
2. Raise the tail vertically with one hand until it is horizontal with the ground.
3. Approximately 150mm from the base of the tail, locate the groove lying in the ventral midline of the tail.
4. Midway along the body of a coccygeal vertebra, insert the needle perpendicularly to the surface of the skin to a depth of a few millimeters.
5. Withdraw blood sample.
6. Apply pressure to the venipuncture site after withdrawal of the needle until the bleeding stops.

Procedures should only be repeated two times per animal for demonstration. For research purposes, animals may be sampled twice daily.

<h2>Cattle Pregnancy Palpation</h2>

There should be a maximum of 8 examinations per animal. Appropriate marking (using a proprietary stock marker) should be applied to each animal before examination to identify each examination. Cows may be

used in one session per day and may be used on a second day after an overnight rest. They may be used for a maximum of two days in succession. Reuse should only occur after assessment of the cow by a veterinarian or a qualified instructor. Cows which show evidence of thickening of the rectal wall should be withdrawn immediately and not used for a period of one month, after which reuse should only occur after the assessment of the cow by the veterinarian or a qualified instructor.

Care of animals:

During the procedure:

Cows showing any signs of stress during a procedure must be removed. Any cow showing more than slight rectal bleeding should be withdrawn immediately and not used until veterinary clearance has been given. Use of cows must be discontinued if they show frank blood, severe straining or ballooning of rectum.

After the procedure:

Cows should be checked twice daily for the first two days after a procedure and once daily for a further five days. Records must be kept for individual cows of the incidence of discharge, other abnormal event or behavior, or any treatment administered. An autopsy must be performed on any cow that dies unexpectedly following a procedure and the supervising AEC informed of the results as soon as possible.

Cattle Artificial Insemination

- Only cows of quiet temperament should be used for instruction. Animals under 15 months of age or undersized animals should not be used. They must be individually identified by ear tag prior to use. They should be pregnancy tested prior to the commencement of instruction; only non-pregnant cows should be used.
- They must be restrained to prevent lateral or forward movement.
- Cows should be up to date all current vaccinations.

- A new glove should be used on each cow to avoid the possible transmission of diseases per rectum.
- Only recommended test guns or insemination guns with sleeves should be used.
- Cows showing vaginal discharge (other than oestrus discharge) should not be used. The oestrus state of cows used for instruction should not be significant. Easier penetration of the cervix in oestrus cows is very transient and would not justify the use of oestrus synchronization.

There should be a maximum of two inseminations per cow if used in the first “hands-on” session. Cows used in subsequent sessions may have a maximum of four inseminations. Appropriate markings should be applied to each animal before insemination to identify each. Cows may be used in one session per day and may be used on a second day after an overnight rest. Reuse should only occur after an assessment of the cow by a veterinarian or qualified instructor.

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