



# Standard Operating Procedure: Cattle Restraint

These SOPs were developed by the Office of the University Veterinarian and reviewed by Virginia Tech IACUC to provide a reference and guidance to investigators during protocol preparation and IACUC reviewers during protocol review. They can be used as referenced descriptions for procedures on IACUC protocols.

However, it is the sole responsibility of the Principal Investigator to ensure that the referenced SOPs adequately cover and accurately represent procedures to be undertaken in any research project. Any modification to procedure as described in the SOP must be outlined in each IACUC protocol application (e.g. if the Principal Investigator plans to use a needle size that is not referenced in the SOP, simply state that alteration in the IACUC protocol itself).

## Table of Contents

- I. Procedure Summary and Goal ..... 2
- II. Personal Protective Equipment (PPE) and Hygiene ..... 2
- III. Supply List ..... 3
- IV. Detailed Procedure ..... 3
- V. Variations ..... 5
- VI. Potential Adverse Effects, Mitigation, or Treatment ..... 5
- VII. References ..... 5

## I. Procedure Summary and Goal

Describes procedures for the safe and humane restraint of cattle for routine handling and treatments.

Considerations:

- a. Having a basic knowledge of the animal's behavior is important in safe and humane handling. Amount of restraint required varies with breed of cattle and frequency of handling. The more frequently animals are handled in a calm, non-stressful manner, the more easily they will become accustomed and accepting of handling and restraint methods.
 

Knowledge and use of the flight zone of cattle is important. To determine flight zone, approach the cow and note at what distance it moves away. When handler is outside of the flight zone, the cow will turn and face the handler. Recognition of the flight zone of an individual or herd as well as understanding of how to work within the flight zone in a calm and patient manner is key to minimizing stress and reducing risk of injury to animals and handlers. Good communication between handlers is also important to maintain control.

  - i. Cattle are herd oriented, motivated to maintain visual contact with each other, and will follow the leader. Separating an individual from the herd may be stressful.
  - ii. Cattle have a large field of vision (330°) and can see in almost any direction without turning their head; they do have a blind spot (approximately 30°) directly behind.
  - iii. Cattle may spook easily and are sensitive to intermittent loud noises, high frequency noises, and hissing sounds. They also are sensitive to harsh contrast in light and dark and may balk at variations in lighting (e.g., shadows, band of bright light); they will tend to move towards light.
  - iv. Cattle will look in the direction that they are about to go and will move toward the point of escape.
- b. Handlers should be vigilant at all times so as to avoid injury to animals or themselves
  - a. Head butting and arc of swing
  - b. Being caught between animal and solid structure (e.g., wall, fence, chute)
  - c. Avoid being kicked or stepped on
    - i. Front foot pawing
    - ii. Hind foot swings forward and then backward out to the side ("cow kick")
- d. Basic types of restraint
  - i. Halters
  - ii. Mechanical restraints (e.g., chutes, stocks, stanchions)
  - iii. Chemical restraint

## II. Personal Protective Equipment (PPE) and Hygiene

- a. Ensure appropriate PPE is used to protect handler from accidental injury or exposure to blood and other body fluids, such as:

- i. Scrubs or coveralls
- ii. Steel-toed shoes or boots
- iii. Leather or fabric gloves

### III. Supply List

- a. Halters
- b. Mechanical restraint equipment (e.g., chutes, stanchions)
- c. Chemical restraint

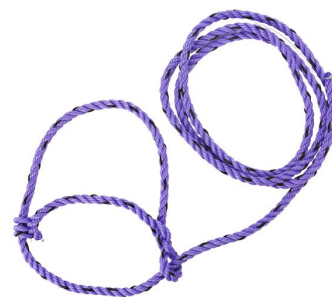


Figure 1. Livestock Rope Halter

### IV. Detailed Procedure

- a. Rope Halters (Figure 1)
  - i. Hold slip lead and top of nose piece in left hand, and head stall in right hand.
  - ii. Approach animal, typically from the left side, being respectful of the animal's flight zone.
  - iii. Slip nose piece over nose with slip lead under chin, and place head stall over the top of the head and behind ears.

**OR**

Place head stall over poll and behind ears, then place nose piece around nose, with slip lead under chin (Figure 2).

- iv. Pull the rope to adjust slip lead to proper size – for length of head and around nose (Figure 3).
- v. Lead can be tied using a quick-release knot to a secure location, such as a ring or post, or to the stanchion if being used, with minimal slack (Figure 4).



Figure 2. Place Head Stall over Poll and Behind Ears

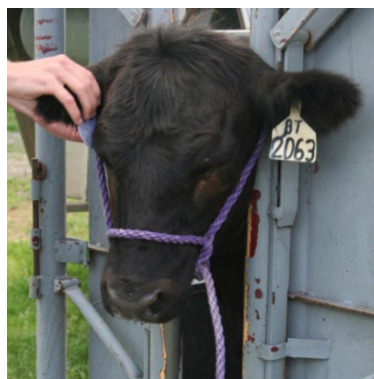


Figure 3. Adjust Slip Lead to Proper Fit

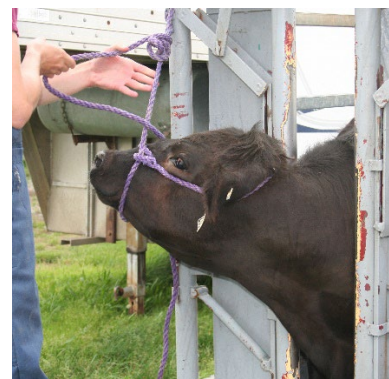


Figure 4. Secure Lead with Quick Release Knot

- b. Mechanical Restraint
  - i. Cattle can be effectively and safely restrained in squeeze chutes, consisting of a headgate, tailgate, and sides that can be moved to change the width of the chute. The working chute

leading up to the squeeze chute may include back-up or tailgate bars so that each animal can be enclosed as they pass through, so as to not move forward or backwards once secured (Figures 5 and 6).

- ii. Handler should inspect all working parts and ensure that there are no obstacles or sharp objects that might injure animals prior to using chute or stanchions.
- iii. As animal moves head through headgate, one handler closes head gate while a second handler places tailgate bar or rear gate depending upon style. Ensure that all latches, catches, or locks are secure. If squeeze chute, handler may be able to slowly squeeze animal to slow its progress to the headgate, to prevent injury from hitting headgate too fast.
- iv. Once chute is secured, a rope halter can be used to restrain head as needed.



Figure 5. Use of Working Chute with Squeeze Chute for Multiple Animals



Figure 6. Use of Squeeze Chute for Single Animal

- v. Applying even pressure with the squeeze allows the animal to remain upright and balanced; optimal pressure induces a calming effect.
- vi. If animal should go down while restrained, prolonged pressure against the carotid can cause asphyxiation. A simple technique for encouraging animal to stand back up involved placing flat hands firmly over both nostrils to occlude breathing (Figure 7). The animal will hop up and back to take a deep breath and usually right itself. Handler should position themselves so as to not get hit by animal movement. If the animal does not get up, the rope lead and squeeze chute and/or head gate should be released.

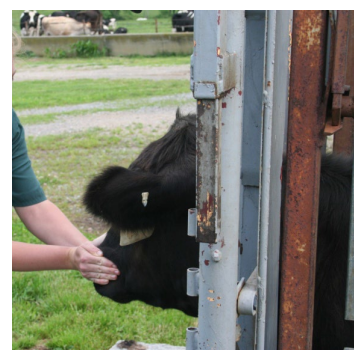


Figure 7. Occluding Nostrils

c. Tail Restraint

- i. The tail lift acts as a distraction to prevent kicking. When done properly this technique will not break the tail, but will pinch the vertebrae and the caudal nerves sufficiently to keep the animal from kicking and reacting to manipulations in other areas.
  1. Tie the animal up or put it in a stanchion, and stand directly behind it.
  2. Lift the tail with one hand and grasp the base of the tail with the other.
  3. Lift the tail gently but firmly straight over the back, until resistance is felt, making sure to only bend up from the base. Maintain constant pressure without excessive exertion.
  4. The tail can also be curled slightly to maintain hold (Figure 8).

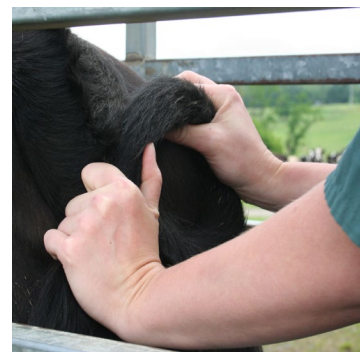


Figure 8. Tail Restraint

d. Chemical Restraint

- i. In addition to the previous methods of restraint, chemical restraint may be required for major procedures under the direction of a veterinarian.

## V. Variations

There are many variations for cattle restraint, including nose tongs or manual nose twitch which divert attention (as does the tail restraint), flank rope, hobbling, flanking and casting.

## VI. Potential Adverse Effects, Mitigation, or Treatment

- a. Trauma
  - i. Bruising, lacerations, fractures, neuropraxia, permanent nerve damage
    1. Contact veterinary staff
- b. Distress
  - i. Physiological changes
    1. Tachycardia, tachypnea, hypertension, hyperthermia, etc.
      - a. Contact Veterinary Staff
- c. Metabolic/hematologic disturbances
  - i. Stress leukogram

## VII. References

Cattle Restraint Laboratory Manual. Foundations in Veterinary Medicine – Restraint of Cattle. Great Plains Veterinary Educational Center. (University of Nebraska-Lincoln. Lincoln, Nebraska)

Grandin, Temple. Animal Behavior and the Design of Livestock and Poultry Systems. Restraint of Livestock. Proceedings from the Animal Behavior and the Design of Livestock and Poultry Systems International Conference. Indianapolis, Indiana. April 19-21, 1995 <http://www.grandin.com/references/abdlps.html>

Grandin, Temple. Behavioral Principles of Livestock Handling (With 1999, 2002, and 2010 Updates on Vision, Hearing, and Handling Methods in Cattle and Pigs). Professional Animal Scientist, pages 1-11. December 1989. <http://www.grandin.com/references/new.corral.html>

Iowa State University Laboratory Animal Resources Cattle Basics

[http://www.lar.iastate.edu/index.php?option=com\\_content&view=article&id=183&Itemid=204](http://www.lar.iastate.edu/index.php?option=com_content&view=article&id=183&Itemid=204)

NSW Department of Primary Industries Agriculture Livestock Husbandry. Handling Cattle. (Agfact A0.1.2 Edition: First edition 2005.) <http://www.dpi.nsw.gov.au/agriculture/livestock/beef/husbandry/general/handling-cattle>

Osbourne, P. and Hockenberry, N. Mid-Atlantic BQA Producer Certification Manual. Chapter 6 Cattle Care – Handling and Facilities. Revised 2010. <http://www.apsc.vt.edu/extension/beef/programs/vabeef-quality-assurance/BQAManual.html>