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Types of Ropes Used for Large Animal Restraint

Our topics for this week are animal handling ropes, such as:

- **Natural fiber ropes**
- **Synthetic fiber ropes**
- **Construction of ropes**

Ropes are essential tools for working safely with livestock and horses. They can save a handler's life or endanger it depending on the judgement and skill exercised in using them.

Definition of Terms
Ropes are more than 5/12 inches in diameter. Smaller fiber diameters are referred to as cord twine, string, or thread. Ropes are made of natural fiber or synthetic fibers. A rope that is used to handle or restrain livestock and horses is called a lariat from the Spanish word for the rope, "la reata". A lariat may have a running noose for catching animals or no noose for tying (tethering, picketing) animals. The word lasso comes from the Spanish word "lazo" meaning noose or snare.

Natural Fiber Rope
Among natural fibers, manila and hemp are the strongest plant fibers for ropes. Hemp is smoother than manila and is the oldest rope fiber, but its use declined approximately 200 years ago due to preference for the stronger manila rope. Cotton and flax are both softer and more manageable than manila and hemp, but cotton and flax will stretch and rot. Cotton continues to be widely used for lead ropes and is the preferred type of rope for restraining animal legs.
Jute and sisal are less expensive, weaker plant fibers. Jute and sisal are natural fibers more often used for making twine.

Leather was used by Spanish and Mexican vaqueros to plait 4 to 12 strands of leather into 3/8 inch diameter rope called a reata (riata is an Americanized spelling of reata) of 50 to 65 feet in length. However, they require frequent treatment with tallow to prevent sunlight or water damage. Leather reatas are also about 10 times more expensive than other ropes.

Maguey ropes (from fibers of the maquey plant) are hand-made 4 stranded ropes, 3/8 inches in diameter from the maguey plant in Mexico. These have a smooth surface and are relatively firm, which aid in forming loops. Reatas and maquey ropes should be dallied (wrapped around an object) rather than tied due to the risk of breaking if jerked on with large animal force.

Advantages and Disadvantages of Rope Types
The advantages of natural fiber ropes are a hairy-like rough surface that provides better traction and an easier grip. The disadvantages of natural fiber ropes are that they absorb water and swell, making knots difficult to untie. They can support mildew and rot, and they become brittle from strong sunlight or salt.

Natural Fiber
Natural fiber rope is always twisted (also called laid) to increase strength from alternate twisting ("laying up") of components. Synthetic fiber rope is occasionally twisted. Fibers are twisted commonly to the right to form yarn. Three yarns are twisted to the left to form strands. Three strands are twisted to the right to form the rope.

Twisting creates a knobby exterior that is easier to grip and less likely to let a knot or hitch slip. A splice is interweaving sections of untwisted rope. Twisted rope can be untwisted in sections to form a loop on an end of a rope with an eye splice or to join two ropes together by a short splice of the end of each rope. The disadvantage of twisted rope is that there is no protective outside layer. Every fiber twists to the outside multiple times being exposed to abrasion, moisture, and sunlight.

Synthetic Fiber Rope
Synthetic ropes vary in material and in strength. Because synthetic rope is generally made of continuous fibers that run the length of a rope, synthetic ropes are stronger than natural fiber ropes. Natural fiber ropes are composed of short fibers that do not extend the length of the rope. Most ranch ropes are a nylon-polyester combination for strength with moderate elasticity in a twisted pattern. Synthetic ropes are lighter, stronger, and less expensive than natural fiber ropes. In addition, they do not rot or become brittle. The disadvantages of synthetic fiber ropes are that heat, even friction, can cause them to melt and that their smoothness, if not twisted, can cause hand grips and knots to slip.

Synthetic fiber ropes are constructed in a variety of patterns. They may be twisted, as with natural fiber ropes, plaited in 4 to 8 stranded solid plaits, or braided in 16 or more strands (the mantle) around a core of long twisted center fibers, called the kern. The mantle of braided rope protects the inner fibers while all fibers of twisted or plaited rope are exposed to the elements. Due to their smooth exteriors, plaited and braided ropes do not hold knots and hitches as well as twisted rope.

The Shoof Vet-Rope is a marine grade polyester, oval-shaped, rope that is woven with a hollow center, which causes it to flatten with tension. The Shoof rope is used for leg restraint of large animals and permits greater comfort to the animal and the handler. However, its construction also allows it to stretch more than conventional twisted rope, which can be disadvantageous in some restraints.

Rope Parts

Ropes have a working end, standing part, and standing end. A 180-degree bend in a rope is called a bight. A circular bend is a loop. A sliding loop (noose) can be made with a knot, called a honda, that forms a small, fixed loop or channel for the rope's standing end to slide through. Rope hondas may have a small leather wrap called a "burner" around the honda loop to reduce friction as the slip loop slides through. Other rope hondas may have a metal lining inside the tied loop to permit better sliding similar to a complete metal honda. Hondas may also be metal (aluminum or stainless steel) or plastic. Metal hondas allow the rope to slip back and forth more easily to provide immediate pressure release when a horse stops resisting restraint. If to be used around the neck of a horse, a double-overhand knot can be tied in the rope (2 ft from the honda for 2-year-olds and 18 inches for weanlings and yearlings) to prevent the loop from completely closing and squeezing the neck of young horses. Metal hondas are also more reliable in wet conditions than rope hondas.

A quick release honda is a metal honda that can be opened to release a caught animal without the need to loosen the slip loop. Quick release hondas have a finger latch to quickly open the metal honda. The finger latch has a hole in it so that a leather string can be grabbed to open the latch rather than putting a finger in the honda and endangering that finger if the animal moves while the finger is entrapped.

If you have comments or you're interested in particular animal handling subjects contact us at CBC@BetterAnimalHandling.com

Now let's recap the key points to remember from today's episode:

1. **Synthetic fiber ropes are more resistant to environmental damage than natural fiber ropes.**
2. **Natural fiber ropes are easier to grip and hold knots and hitches better than synthetic fiber ropes.**
3. **The tubular, woven, Shoof Vet-Rope provides more gentle leg restraint of large animals but can stretch to an undesirable degree in some cases.**

More information on animal handling can be found in my book, ***Animal Handling and Physical Restraint***, published by CRC Press and is available on Amazon and from many other fine book supply sources. My new spiral-bound handbook, ***Concise Textbook of Small Animal Handling*** was recently published and is available from all major science book supply sources.

Additional information is provided at: www.betteranimalhandling.com . This website has more than 150 past podcasts with notes on handling of dogs, cats, other small mammals, birds, reptiles, horses, cattle, small ruminants, swine, and poultry.

Don’t forget, serious injury or death can result from handling and restraining some animals. Safe and effective handling and restraint requires experience and continual practice. Acquisition of the needed skills should be under the supervision of an experienced animal handler.