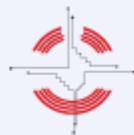
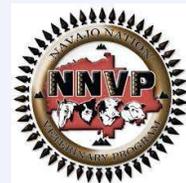


Sheep and Wool Production on the Navajo Nation



**NAVAJO
TECHNICAL UNIVERSITY**

- NTU Annual Spring Sheep Conference— May 1 & 2, 2015
- Sheep Is Life Celebration (3rd weekend in June annually)

Navajo Sheep Quality Assurance

Authors: Identified on each topic.

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- ◆ Prunell Charley, NMSU, McKinley County, Tribal Agent—*An initial meeting with Benita Litson resulted in the creation of this reference book. The simple information derived from internet searches could easily be done at the local level. The sources have been provided and a reference list has been listed below as well. The information gathering took sometime but thankful for all the intellects listed above who helped with this project to become a reality, especially the editors. Sheep production is our nature and making it even better will allow younger producers to come into the business with knowledge about quality assurance.*
- ◆ Gerald Moore, Extension Agent, UofA—*As the Tri-State Extension Program, this particular handbook is on a vital part of our history. A compliment to those who compiled this information together, time to go viral with the information; YouTube segments of it for educational purposes.*
- ◆ Bonnie Hopkins, NMSU, San Juan County Cooperative Extension, Agriculture Agent—*The Cooperative Extension Service hopes this handbook will be used to create sustainable, diverse, and profitable sheep operations across the Navajo Nation.*
- ◆ Aretta Begay, Director, DBI, Inc.—*We at DBI hope that this handbook will be beneficial for all sheep producers and ranchers across the Navajo Nation.*

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Table of Contents

Sheep and Wool Production on the Navajo Nation—Navajo Sheep Quality Assurance

History

 Navajo Sheep

Common Sheep Breeds found on the Navajo Nation

In the Beginning—A Short History on Navajo-Churro

Maintaining Proper Sheep Records and Animal Identification

Nutrition

Grazing Planning is Necessary to Managing for Healthy Land and Sheep—Land Management

Vaccinations

 Sheep Health – Seasonal Program

 Western Navajo Recommendation

 Eastern Navajo Recommendation

 Proper Use of Drugs for Vaccination

Scrapie

Reproduction

Meat vs Wool

 Sheep types

Wool Composition and Characteristics

 Wool Grading

Shearing

 Wool Quality, Shearing, Skirting Fleeces

Adding Value to Cheep Production—Marketing

Sheep Handling

Predator Control

Safe Handling of Raw Lamb and Mutton—Food Safety

USDA Meat Inspection

Sample Record-Keeping Sheets

Sheep and Wool Production on the Navajo Nation—Navajo Sheep Quality Assurance

Written and adapted by— Prunell Charley, Tribal Extension Agent, NMSU

Navajo producers have been raising sheep for centuries now. The brief historical information that has been presented herein is marginal; there is more. We determined early on that that was a limited amount of direct information and resources surrounding sheep although we have a distinct tenure. In the efforts here, we want to share with you what can be found on the internet and local sources to help you define a simple management approach for the purpose of achieving responsible sheep management.

Stories of our grandfathers reveal that sheep was a livelihood and a way of life for the people. The management of sheep earlier indicates that there was an appreciation to having healthy animals and numbers. We would like to try and imitate what they did by trying to present some current ideas to stimulate the sheep production here on the Navajo Nation. The intent is to recommend that maybe you could change some things so that as a producer you can realize that through health care, quality animals, and proper grazing practices it will be economical.

We want to establish what we deem here is what we are realizing that is benefitting non-Navajo producers. Hence, the subtitle, “Navajo Sheep Quality Assurance.” The guidelines and subject content are similar to other handbooks related to raising better livestock. These Quality Assurance programs all stress good management practices in the handling and views of their approach to their animal health programs. By reading this handbook, Navajo sheep producers will begin to show their promise to quality assured production and management practices.

Why & What is Quality Assurance?

- Are the products good to eat?
- Increases awareness of food safety
- Are they tender?
- Avoids volatile drug residues
- Are they safe and healthy?
- Do they taste good?
- Decreases production costs Improves animal care and management practices

Assurance means “a pledge or promise.” And quality means “high grade; superiority; excellence.” So, quality assurance for sheep producers means making a promise to consumers that they will have high quality meat for the people who consume the meat and/or milk that come from sheep. Under Quality Assurance, everyone involved in the food business is responsible for quality assurance, including: sheep producers; food processors, including packing plants and milk plants; retailers and food services, including restaurants; and consumers.

Your role in Quality Assurance as a Sheep Producer

1. Daily Care and Management
2. Prevention
3. Handling
4. Carcass Quality
5. Medication

Source—<http://assuringquality.unl.edu/>

History– Navajo Sheep

Written and adapted by – Prunell Charley, Tribal Extension Agent, NMSU



America's first domestic livestock, including sheep, came in 1494 with Spanish explorers and settlers. Spanish prominence gradually expanded into the Southwest; in 1540, Coronado's expedition searching for the Cities of Gold brought sheep. Don Juan de Oñate, in 1598, brought more sheep that helped shape initial settlements in the Southwest. Spanish ranches grew in the region with some flocks numbering in the thousands. The sheep were used for daily consumption and large numbers were taken back into Mexico to feed miners.

During this time period, Native Americans were often captured or hired to be herdsmen and weavers of the wool. The Navajo people living near these towns soon acquired a few sheep and horses by trades and by raids. In 1680, the Pueblo Revolt against Spanish encouraged the Navajos to obtain more sheep. The sheep they took were nurtured and they expanded their flocks. Thereafter, European settlers came out west increasing the demand for fine wool. The churros brought here were improved by crossing with Merino and English long-wools (for fine wool).

In traditional Navajo belief, all domestic livestock, including sheep, are intertwined with daily life; in that the sheep symbolizes the Good Life, a life in harmony and balance with the land. The Navajo's early acquisition of the Churro sheep from their Spanish neighbors did initiate a change in the

nomadic lifestyle. It is told that the Churro sheep flourished, it shared growth along with songs, prayers, and techniques taught by Spider Woman and looms first built by Spider Man.

Distinctively, the Churro's wool is described as a carpet-wool due to the fact that it is low in lanolin (oil). The minimal oil in the wool allows for less preparation, cleaning and carding. After shearing and cleaning, the Churro wool was carded and spun into yarn; the prepared wool easily absorbed native vegetal dyes. The dyed wool varied in color and shades allowing the Navajo weaver/artist to design the weaving and/or felting to be achieved. The wool was used for clothing, rugs, and other distinct art pieces for bartering.

Source:

<http://navajosheepproject.com/churrohistory.html>

Navajo-Churro: America's First Sheep, Connie Taylor, Registrar and Breeder; <http://www.navajo-churrosheep.com/sheep.html>



Common Sheep Breeds found on the Navajo Nation

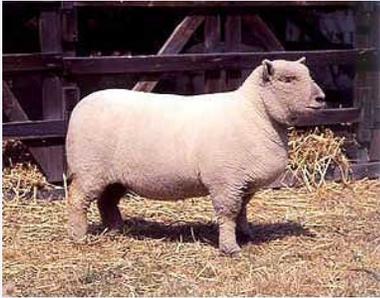
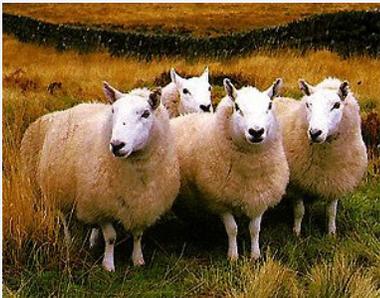
Fine Wool Sheep

	Picture	Description	Wool Character
Merino		Merino were developed from the Spanish Merino and has an unbroken line of breeding for more than 1,200 years. Modern Merinos have wool extending down the legs. They are hardy and are long lived. They produce very high-quality, fine-wool fleeces.	No other wool can compare with the wool of the Merino in its color, uniformity, strength, density, and fineness. Fleece should be from 2.5 inches to 4 inches long in one year's growth. It should be fine enough to grade from 64's in spinning count to as high as 80's.
Rambouillette		Rambouillette were developed from the Spanish Merino in France and Germany and is the foundation of most Western U.S. range flocks. The Rambouillet is the largest of the fine-wool breeds, and is also long lived.	Mature ewes will have a fleece weigh of 8 to 18 pounds (3.6-8.1 kg) with a yield of 35 to 55 percent. The fleece staple length will vary from two to four inches (5-10 cm) and range in fiber diameter from 18.5 to 24.5 microns or 60 to 80 for the numerical count.

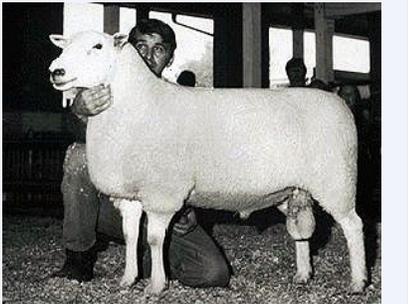
Medium Wool Sheep

Suffolk	 <p>http://www.ansi.okstate.edu/breeds/sheep/</p>	Suffolks were the result of crossing of Southdown rams on Norfolk Horned ewes; apparently, the product of this cross was a great improvement over either one of the parents. The first Suffolks were brought into this country in 1888 by Mr. G. B. Streeter of Chazy, New York. The Suffolk did not make its appearance in the western states until 1919. Three ewes and two rams had been donated by the English Suffolk Sheep Society to the University of Idaho; since that time, the University of Idaho has played a part in developing and advancing the Suffolk in the western states.	Fleece weights from mature ewe are between five and eight pounds with a yield of 50 to 62 percent. The fleeces are considered medium wool type with a fiber diameter of 25.5 to 33.0 microns and a spinning count of 48 to 58. The staple length of Suffolk fleece ranges from 2 to 3.5 inches.
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Common Sheep Breeds found on the Navajo Nation

<p>Southdown</p>	 <p>provided by Sally Anne Thompson</p>	<p>The Southdown is best suited for farm flock production. It is a medium to small sized breed with a gray to mouse-brown face and lower legs and is polled (hornless). Southdown are an early maturing breed with good lambing ability and average milk production. They excel in a cross breeding program in their ability to produce meaty lamb carcasses at light weights and hot-house lambs.</p>	<p>Fleece weights from mature ewe are between five and eight pounds with a yield of 50 to 62 percent. The fleeces are considered medium wool type with a fiber diameter of 25.5 to 33.0 microns and a spinning count of 48 to 58. The staple length of Suffolk fleece ranges from 2 to 3.5 inches (5-8.75 cm).</p>
<p>Hampshire</p>		<p>In 1889, the American Hampshire Down Sheep Association was organized, now known as The American Hampshire Sheep Association. Hampshire sheep were reported in the U.S. around 1840 (<i>no records to indicate that any survived the Civil War</i>). Around 1865 to 1870, Hampshires were again imported from England, but the first authentic record of importations was made until 1879. The Hampshire is a large, open faced and active sheep with a mild disposition; further, they are noted for their rapid growth and efficient feed conversion.</p>	<p>Mature ewes will average a six to ten pound (2.7-4.5 kg) fleece that has a micron measurement of 25.0 to 33.0 and a spinning count of 46-58. The staple length of the fleece will be 2 to 3.5 inches (5-9 cm) with a yield of 50 to 62 percent.</p>
<p>Long Wool Sheep</p>			
<p>Cheviot</p>		<p>Cheviots need less husbandry and recognized as hardy originating from border of England and Scotland as early as 1372 . Their ease of lambing and strong mothering instinct means fewer lambing problems. Hard black feet make them less prone to foot rot. Their tendency for worm resistance means less drenching, less crutching and less fly strike. With wool-free faces, Cheviots never suffer from wool blindness.</p>	<p>Mature ewes will average a five to ten pound (2.25-4.5 kg) fleece that has a micron measurement of 27.0 - 33.0 and a spinning count of 48-56. The staple length of the fleece will be three to five inches (7.5-12 cm) with a yield of 50 to 75 percent.</p>

Common Sheep Breeds found on the Navajo Nation

<p>Lincoln</p>		<p>Lincoln originated in England from Leicester x Old Lincoln crosses. They were imported into the U.S. in 1825. It is a large, deep-bodied sheep with a large frame. They have a bluish-white face, forward-pointing ears and a characteristic forelock of wool. Lincoln's produce a heavy fleece that is very coarse, highly crimped, long and lustrous and loved by weavers and handspinners.</p>	<p>The staple length in Lincolns is among the longest of all the breeds, ranging from eight to fifteen inches. Lincolns produce the heaviest and coarsest fleeces of the long-wooled sheep with ewe fleeces weighing from 12 to 20 pounds. The fleece has a numeric count of 36's - 46's and ranges from 41.0 to 33.5 microns in fiber diameter.</p>
<p>Dual-Purpose Sheep</p>			
<p>Columbia</p>		<p>Columbia was the first breed developed in the U.S. It is from Lincoln x Rambouillet crosses. Columbias are very hardy and are one of the larger-sized breeds in the U.S. They have white faces with wool extending down the legs which yields heavy, medium-wool fleeces with good staple length.</p>	<p>The females weigh 150 to 225 pounds, the average fleece weight of the ewes ranges from 10 to 16 pounds with a yield of 45 to 55%. The staple length of the wool ranges from 3.5 to 5 inches. The wool is classified as medium wool with a numeric count of 50's -60's and varies from 31.0 to 24.0 microns.</p>
<p>Corriedale</p>		<p>The Corriedale was developed in New Zealand and Australia during the late 1800s' from crossing Lincoln or Leicester rams with Merino females. The development of the breed occurred in New Zealand during the time from 1880 to 1910. Similar crosses were also being done in Australia during this time. The breed was first imported into the United States in 1914.</p>	<p>Produces bulky, high-yielding wool ranging from 31.5 to 24.5 micron fiber diameter. The fleece from mature ewes will weigh from 10 to 17 pounds (4.5-7.7 kg) with a staple length of 3.5 to 6 inches (9-15 cm). The yield percent of the fleece ranges from 50 to 60 percent.</p>
<p>Montadale</p>		<p>The history of the Montadale breed dates back to over half a century. It is one of the most amazing success stories in modern sheep-breeding. In 1932, E. H. Mattingly, a well-known commercial lamb buyer, drove to Kalispell, Montana, where he purchased the first Columbia ram to go east of the Mississippi River. This ram was crossed on purebred Cheviot ewes, resulting lamb crop provided sufficient proof that his mission was on target.</p>	<p>Produce wool that grades from 48's to 58's on the spin count or 32 micron up to 25 micron range. Uniquely, wool is extremely white in color. Very little lanolin makes their wool very high-yielding (45-60%). Ewe fleeces will weigh from 8 to 12 pounds with a staple length of 3.25 to 4.5 inches.</p>

Common Sheep Breeds found on the Navajo Nation

<p>Shropshire</p>		<p>Today's Shropshire is one of the better dual-purpose breeds adapted to farm conditions. Shropshires are a medium sized sheep which stresses soundness, carcass quality and breed type. Shropshire lambs are hardy, vigorous and meaty. They have the ability to feed out to choice grade at an earlier age and with less investment in feed, thus producing greater overall profit. It is one of the heaviest wool producers among the medium-wool breeds. The fleece is dense and elastic to the touch, light shrinking and of a quality which is readily marketable. Rams may produce a fleece of 10-to 14 pounds while ewes will shear an average of 9 to 11 pounds.</p>	<p>Medium wool - fiber diameter of 24.5 to 32.5 microns and a numerical count of 48 to 60. The staple length of Shropshire fleece ranges from 2.5 to 4 inches (6-10 cm).</p>
<p>Navajo-Churro</p> <p><i>*Rare Indigenous Sheep Breed List</i></p>		<p>Navajo-Churro sheep are descended from the Churra, an ancient Iberian breed. The Churro was the very first breed of domesticated sheep in the New World. They were prized by the Spanish for hardiness, adaptability and fertility. By the 17th century the Churro had become the mainstay of Spanish ranches and villages along the upper Rio Grande Valley. Native Indians acquired flocks of Churro for food and fiber through raids and trading. Within a century, herding and weaving had become a major economic asset for the Navajo. Churro wool that the early Rio Grande, Pueblo, and Navajo textiles were woven -- a fleece admired by collectors for its luster, silky hand, variety of natural color and durability.</p>	<p>Coarse wool with long staple of protective top coat and soft undercoat are well suited to extremes of climate. The inner coat measures 3-5" and the outer coat 6-12" (fibers range from 10-35 microns; outer coat fibers measuring 35+ microns; and kemp fibers 65+ microns.</p> <p>Some rams have four fully developed horns, a trait shared by few other breeds of the world. The Navajo-Churro is highly resistant to disease</p>

Source (adapted) - <http://www.ansi.okstate.edu/breeds/sheep/>

Written by and adapted – Prunell Charley, Tribal Extension Agent, NMSU



In the Beginning—A Short History on Navajo-Churro

Read more at—<http://navajolifeway.org/navajo-churro-history.html>

"In the early 1600s, Navajo acquisition of "la raza churra" sheep from the Spanish colonists inspired a radical lifestyle

change to an agro-pastoralist way of life and expanded mobility. In the high deserts and wooded mountains of Diné Bikéyah (Navajo Land) Diné pastoralists developed the Navajo-Churro breed, which thrived under the spiritual and pastoral care of their new companions and assumed a central role in the People's psychology, creativity, and religious life. With songs, prayers, and techniques taught to them by Spider Woman and looms first built by Spider Man, traditional Navajo weaving evolved to utilize the special qualities of the glossy Navajo-Churro wool.

As the Navajo managed their flocks for over 350 years, they evolved the Navajo-Churro, a breed recognized by the American Sheep Industry. They are hardy and have excellent mothering instincts and successfully lamb out on the range with little assistance. Smaller than many commercial breeds, they eat less and do well on forage alone. They do not need grain. Their legs, faces and bellies are free of wool so they do not pick up burrs. They are tall, narrow in build with fine bones, making them sound, agile and fast out on the range.

Carpet-wool sheep have two lengths of fiber, an inner coat of fine wool with an outer coat of hair. Navajo-Churro fleece is low in lanolin requiring little water for washing. It may be spun directly from the raw fleece without time-consuming carding. The wool comes in natural colors and is very high in luster which are highly prized by hand-spinners. Yarn spun from this type of wool is extremely strong and durable, making it excellent for the Navajo rugs, horse cinches, and belts. In addition the wool can be easily felted for a variety of uses including hats and outer garments; the distinctive long-haired pelts are highly valued. ...

A series of Federal government actions led to the almost total eradication of the Navajo-Churro breed, disrupting

the chain connecting Navajo culture, weaving, traditional lifestyle, and self-sufficiency. In the early to mid-1900s, market forces, ignorance, and misguided attempts to "improve" Navajo wool, depressed the economic value of Navajo-Churro sheep and led to their almost complete extinction. ...

By the 1970s, only about 450 of the old type Navajo-Churro existed on the entire Navajo Nation, and only a few specimens were preserved in other locations. The conventional wisdom of the time was "the breed is not useful - let it die out," an attitude often directed towards the traditional cultures, themselves. The disappearance of the Churro has adversely affected the Navajos' health, as well as economic opportunities for specialized niche markets for meat and wool.

In the mid-1970s, animal scientist Dr. Lyle McNeal, sheep industry expert with Utah State University, recognized the genetic and cultural significance of the Navajo-Churro. He searched out enough remaining Navajo-Churro sheep to start a foundation flock. From this flock he has been able to re-introduce Navajo-Churro Sheep to the Navajo people. In 1977, Dr. and Mrs. McNeal founded the Navajo Sheep Project. The project has placed many breeding stock with Navajo families and helped form the nucleus of Ganados del Valle/Tierra Wools flocks in Los Ojos.

[excerpt from "A Short History on Navajo-Churro Sheep" found at Diné bé'íiná - *The Navajo Lifeway* website; sponsors of annual "Sheep is Life" Celebration every 3rd week of June.]



Maintaining Proper Sheep Records and Animal Identification

Written and adapted by – Prunell Charley, Tribal Extension Agent, NMSU



Weighing lambs for records...

Record-keeping is an important part of sheep production. Records should be kept to check herd performance, identify replacement lambs, determine if ewes should be kept or culled, and identify the ram that sires the best lambs. The records should include sire and dam, lambing date, sex of lambs, and ID of lambs. You may also want to record comments about lambing ease, the ewe's mothering ability, and the vigor of the lambs.

Record-keeping begins with individual animal identification at birth or when animal is acquired. The ideal sheep identification is permanent, resistant to loss or tearing, easy to read from a distance, easy to apply, and gives all of the information. There are many methods to identify sheep and lambs, with ear tags being the most common. Other methods of sheep identification include paint, markers, DNA tags, tattoos, ear notches, neck chains, and electronic ID.

The Navajo Nation Veterinary and Livestock Program (NNVLP) along with the U.S. Department of Agriculture (National Scrapie Eradication Program) requires all sheep and lambs to have Scrapie tags and have premise identification ear tags. The ear tags have owner's premise identification number and a sequential number on the other side. Its main purpose is to follow movements of the sheep.

The sequential number on both of the ear tags could be used for record-keeping because producers are required to keep records for five years after the animals have been sold. To get a premise identification number and order

free ear tags, producers should call toll-free 1-866-873-2824. Also, the NNVLP can assist with the application for the ear tags.

Record keeping could be a positive event where the producer could be recognized for their quality of sheep and their management program. As we move toward the future, more scrutiny will fall on the producers, it is time to learn and become familiar with this practice.

**Two sample record-keeping sheets attached at the end...*

Source:

- <http://www.sheep101.info/201/recordkeeping.html>



Ear tag for identification used in recordkeeping.

Ewe ID	7062	Scrapie ID	483	Breed	Katahdin				
Date of birth	3/15/07	Sire	524	Dam	513				
Type of birth	2 - 2	Birth weight	8.0	Weaning weight	70.0				
SAMPLE Record-Keeping Sheet									
Date lambled	Sire	Sex of lambs	Birth weight	Type of birth	Type of rearing	Lamb ID	Date weaned	Weaning weight	Comments
5/1/08	607	R	8.5	1	1	750	7/15	68.0	sold
3/20/09	559	R	9.0	2	2	934			
3/20/09	559	E	8.8	2	2	935			

Nutrition

Written and adapted by – Prunell Charley, Tribal Extension Agent, NMSU



Sheep chewing cud.

Sheep are ruminants characterized by their four-chambered stomach and "cud-chewing" behavior. After feeding off the land for some time, sheep chew their cud which is a food bolus that is regurgitated, re-chewed, and re-swallowed.

Along with the sheep there are about 150 different domestic and wild ruminant species including cows, goats, deer, buffalo, bison, giraffe, moose and elk. These ruminant animals are further classified by their foraging behaviors such as grazers, browsers, or intermediate grazers. The sheep are intermediates with nutritional requirements halfway between the grazers and browsers.

The sheep's four chambers are the rumen, reticulum, omasum, and abomasum. At birth, the lamb's rumen and reticulum are not yet functional until 50 to 60 days old. In that, a highly digestible creep feed should consist of feedstuffs that have been cracked, rolled, ground, or pelleted. The benefit in creep feeding lambs is that their rumens will develop quicker than other lambs feeding on a forage diet. This improves their rate of gain for the meat market.

Proper nutrition is the key to sheep production. It involves how efficient feed resources are converted into products of economical value, i.e., meat, wool, and milk. Studies and figures reveal that an unbalanced nutrition program is a major cause in which 5% of all ewes fail to lamb and about 15 to 20% of all lambs die between birth and weaning.



Deer chewing cud too.



Creep feeding lambs.

Nutrition

The daily water consumption in ewes varies from 0.72 gal during the winter to 2.2 gallons during the summer. Water intake increases with the increased intake of dry-matter (DM), protein, or minerals, the temperature above 70 F, and during the late gestation and lactation. So, a ewe's nutritional needs change correlating to her stage of production and development surrounding breeding.

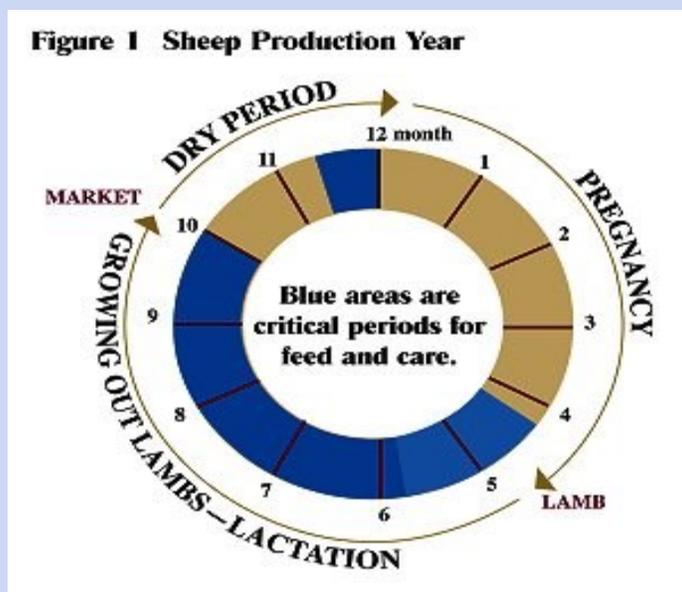
For 16 to 20 weeks of the year, the ewe energy varies due to lambing and lactating. Feeding levels can be lowered to reduce the feed cost during the early stages of gestation and when ewes are dry. As you know for our own health, proper nutrition is essential at different stages of our lives for growth; it also includes water, energy, protein, minerals (salt, calcium, and phosphorus), and vitamins (vitamin A).

In summary, the ruminant's natural diet is forages like grass, weeds, browse, hay, and silage. A commercial approach is to feed grain, if too much grain is consumed at one time or if their diet is switched quickly to grain, then a large amount of lactic acid is produced in the rumen. This drops the pH of the rumen which can be a fatal condition.

Some pastures and rangelands will require a mineral block or mineral lick to provide salt and trace minerals. Feeding a supplement of grain can be helpful however it can become expensive.

Source:

<http://www.sheep101.info/201/nutritionreq.html>
http://aces.nmsu.edu/sheep/sheep_nutrition/ewe_nutrition.html



<http://www.admani.com/Sheep/Sheep%20production%20guide.htm>

In general, maintenance of the ewe is thought of in terms of her nutritional requirements. However, wool production is a continuous process that must be considered as part of the nutrient requirements throughout the year.



Sheep grazing in the high country...

Grazing Planning is Necessary to Managing for Healthy Land and Sheep

By Cindy Dvergsten, Farm and Ranch Management Educator

Shepherds have learned that if they work with nature, grazing animals like sheep become a valuable tool they can use to heal erosion, build soil and create healthy grasslands. With careful management grazing sheep restore health and productivity to the land. Planning and monitoring plays a critical role in proper management of grazing.

Sheep are nature's gardeners:

- Most types of grass evolved with grazing animals. Healthy plants withstand grazing. Grass depends on grazing animals like sheep to stay healthy, just as much as the sheep depend on the grass to be healthy.
- Like the farmer's hoe, the hooves of sheep break up hard soil crusts so rainwater can soak into the soil. They stomp seed into the soil, just as a farmer presses his corn seed into the ground. This creates seed-to-soil contact that dormant seed needs in order to germinate and establish.
- Healthy grasslands depend on grazing animals to breakdown standing vegetation and keep the mineral cycle working. Their guts are like living compost piles. They are full of microbes that turn vegetation into manure—nature's own high-quality fertilizer.
- By pruning stale growth, sheep keep forage plants at peak production. Robust grass roots capture rainfall and hold soil in place. Plant matter and dung help build new fertile soil.

Proper grazing is good for healthy full grown plants.

It helps grasses be healthy and strong. This is true as long as plants have time to recover before being grazed again. Just like people, grasses need a chance to rejuvenate its leaves and its roots to gain energy. Overgrazing happens when grass plants are grazed again

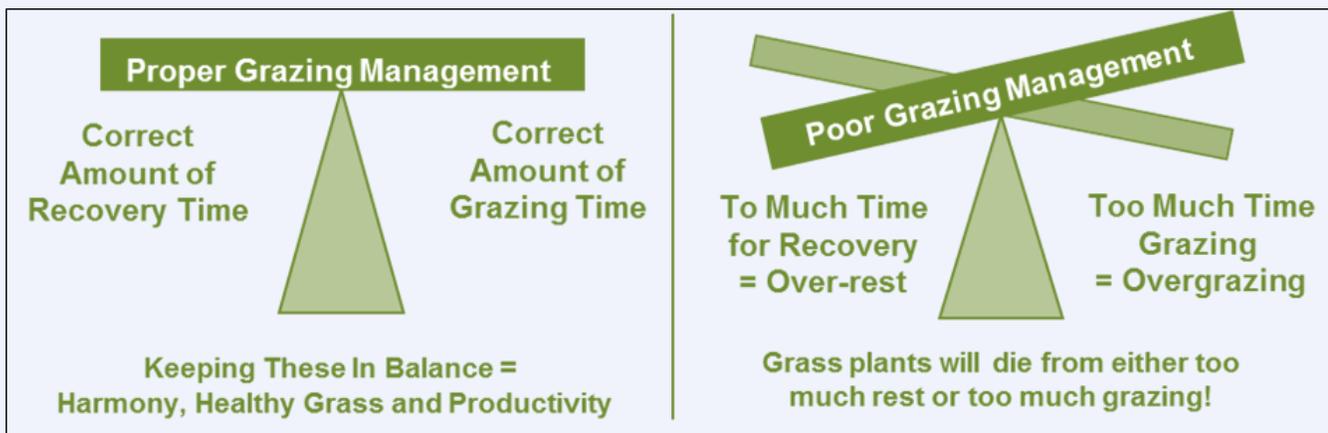
and again without having any time to recover and regrow roots and leaves. When grass does not have enough time to recover, it will suffer.

Overgrazing happens in only two situations:

- **When sheep stay in one area too long.** If plants start growing again, and your animals are still in the area, you run the risk of overgrazing. Once an area is grazed, it is necessary to move sheep to a new grazing area to prevent overgrazing.
- **When sheep return too soon to an area previously grazed.** If sheep comeback before the plants that have been grazed have had a chance to fully recover both leaf and root growth, you run the risk of overgrazing.

Too much rest also harms grasses. Just like people, grass will suffer if it gets too much rest. Without grazing animals, many grasses lose their vigor and some may die out. When grazing animals are mismanaged or are completely removed from the land you will observe these changes:

- Moderate to large amounts of standing dead, gray colored grass plant residue, builds up. New growth is shaded. This keeps the grass from growing and in time the plant will die back.
- The amount of bare soil increases and number of woody plants might increase.
- The soil becomes hard or crusted. Rainfall runs off. Seedlings cannot sprout or survive.
- The land may become like a desert with increased erosion, flash flooding & sand dunes forming.
- Eventually agriculture will fail and the people will leave the land.



Grazing Planning is Necessary to Managing for Healthy Land and Sheep

By Cindy Dvergsten, Farm and Ranch Management Educator

Grazing and overgrazing are a function of time — not only numbers of sheep

Grazing and over-grazing is dependent on the length of time plants are exposed to the grazing animal and the length of time they have to recover and re-grow before they are grazed again. It takes only one sheep staying too long or coming back too soon to overgraze a grass plant. Therefore we must learn to manage the time sheep graze, not just numbers of sheep and keep the sheep moving from one area to the next.

Wild grazing animals like deer and domestic animals like sheep behave in a similar manner. Wild animals need predators like wolves to keep them moving. Sheep need people and dogs to keep them moving.

If there is a shortage in pasture or range, the manager must consider de-stocking or supplementing with hay. Simply reducing the number of animals will not prevent overgrazing since it only takes one animal to overgraze a plant! Having emergency plans thought out ahead of time is the best way to manage for drought and hard winters!

Grazing planning is important to successful land management

You may plan the time, timing and frequency of grazing in advance to minimize the chance of overgrazing. It is important to know these two things: The amount of forage one animal eats in one day and the amount of forage available for your sheep to eat in the area you want to graze. Sheep will eat 3-7 pounds a day of forage depending on their size. For example, Navajo-Churro Sheep are smaller than most commercial breeds and will need only 3-5 pounds of forage a day.

This information will help you plan how long you can graze in an area without overgrazing. Visual assessments of forage quantity and quality are simple to make and surprisingly accurate. Field measurements and past records help hone your accuracy.

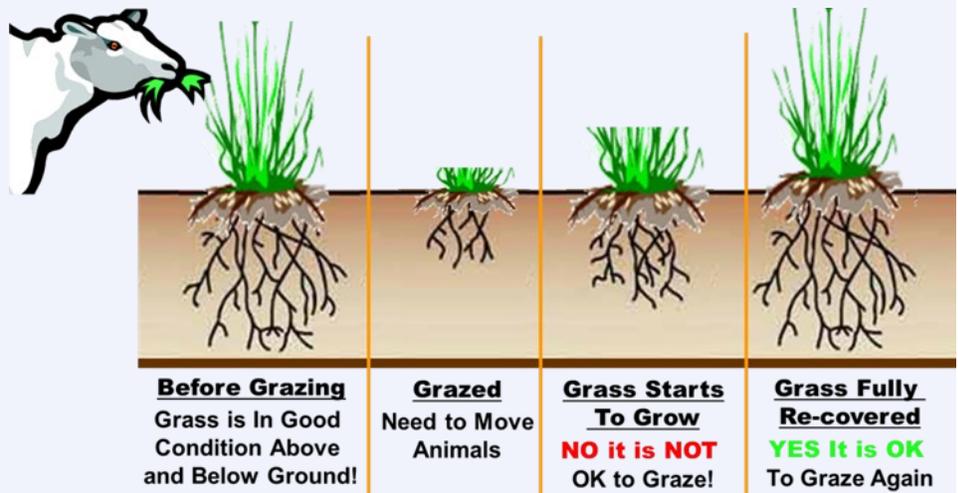
The best way to manage grazing is to make daily observations and adjustments!

The faster the rate of growth there is in the plants being

grazed or browsed, the sooner you will need to move your animals to avoid overgrazing new growth. This can be planned out in advance only to a degree. Daily observations are necessary because moisture and growing conditions constantly change.

Record your observations and estimates in a notebook. Keep an eye on what actually happens as you graze through the season. Pay close attention to the first grasses grazed to see when they start to grow again. If the animals start to graze these plants again, before they have fully recovered, you will be overgrazing.

Traditional shepherding practices kept animals moving all the time. The sheep never stayed in one place too long, and they never came back too soon. Grasses had time to recover and grow between grazing events. Only when sheep herders were forced to stay on one area with the permit system, did overgrazing become a big problem. Simply reducing the number of livestock does not solve the problem of overgrazing and may actually create more problems because grazing animals are nature's gardeners and play a role in keeping land healthy.



Grazing stewardship is about honoring the needs of the grass.

Vaccinations

Western & Eastern Navajo — NNDA-NNLVP & Navajo Technical University Recommendations

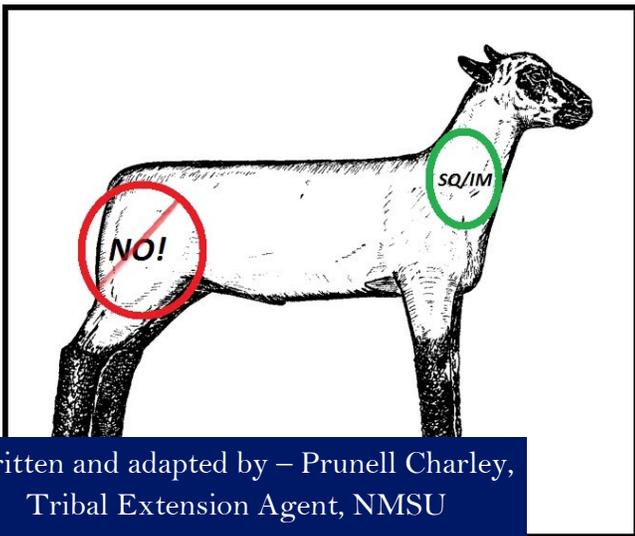
	Fall	Winter	Spring	Summer	Withdrawal	Dosage
Ewes:	<p>NNLVP—Deworm (Ivomec); Synergized Pour-on (keds); Covexin 8/tetanus; Vitamin A & D</p> <p>NTU—Midgestation – vaccinate ewe lambs or previously vaccinated animals against Campylobacter & Chlamydia abortion.</p> <p>NTU/NNVLP-Deworm</p>	<p>NTU—Last Month of Pregnancy – Vaccinate for Clostridium species (C.perfringens type C & D, C. novyi, C. sordelli, C. chauvoei, C.septicum, C.tetani).</p>	<p>NNVLP—Deworm (Valbazan); Synergized Pour-on (keds); Covexin 8/tetanus</p> <p>NTU—2-4 wks after birth – Repeat Chlamydia & Campylobacter vaccinations for previously unvaccinated animals and yearly booster to other ewes.</p> <p>NTU/NNVLP-Deworm</p>		21 days	<p>Clostridium—5 ml SQ, followed by a 2.5 ml dose in six weeks, revaccinate annually with 2 ml</p> <p>Covexin™-8—5 ml SQ, followed by a 2 ml dose in six weeks, revaccinate annually with 2 ml</p>
Rams:	<p>NNVLP—Deworm (Ivomec); Synergized Pour-on (keds); Covexin 8/tetanus; Vitamin A & D.</p> <p>NTU—Vaccinate against Campylobacter & Chlamydia abortion.</p> <p>NTU/NNVLP-Deworm</p>		<p>NNVLP—Deworm (Valbazan); Synergized Pour-on (keds); Covexin 8/tetanus</p> <p>NTU/NNVLP-Deworm</p>		60 days	<p>Campylobacter—5 ml SQ shortly after birth, repeat in 60-90 days. Revaccinate annually (single dose)</p> <p>Clostridium—5 ml SQ, followed by a 2.5 ml dose in six weeks, revaccinate annually with 2 ml</p>
Lambs	<p>NNVLP—Deworm (Ivomec); Synergized Pour-on (keds); Covexin 8/tetanus; Vitamin A & D</p> <p>NTU—Midgestation – vaccinate ewe lambs or previously vaccinated animals against Campylobacter & Chlamydia abortion.</p> <p>NTU/NNVLP-Deworm</p>		<p>NTU—If mother was NOT vaccinated during pregnancy (1-3 wks old): Vaccination for Clostridium species (C.perfringens type C & D, C. novyi, C. sordelli, C. chauvoei, C.septicum, C.tetani). Repeat vaccinations TWICE—at 3-4 week intervals.</p> <p>NTU/NNVLP-Deworm</p> <p>Lambs: lambing (first milk)</p>	<p>NTU—If mother was vaccinated during pregnancy—1 to 2 MONTHS old: Vaccinate for Clostridium species (C.perfringens type C & D, C. novyi, C. sordelli, C. chauvoei, C.septicum, C.tetani).</p>	21 days	<p>Ivomec—safe in pregnant ewes, rams, and lambs. Dosage is 3 ml per 26 lbs. of body weight.</p> <p>Valbazan—Do not use in the first 45 days of pregnancy. Give sheep 3 ml per 100 lbs. body weight. Give goats 4 ml per 100 lbs. body weight.</p> <p>Synergized Pour-on—pour along back. Apply 1/4 fl oz (7.5 cc) per 50 lbs body wt of animal, up to a maximum of 3 fl oz for any one animal. For optimum control, all animals in the flock should be treated after sheari</p>

Vaccinations and Proper Use of Drugs

The Navajo Nation is very vast and widespread, conditions and environment vary throughout but the elevations in both Arizona and New Mexico have permitted similar plant communities and conditions almost. The past reflects that there were winter and summer camps earlier and the movement may have disallowed some diseases to increase as have been mentioned by extension programs and veterinary programs working closely with the producers today. The cost of vaccinations does hamper the elders who maintain flocks, but as times move forward there will be regulations emplaced and certain practices we will need to adhere to.

We do need to learn new and current best practices in our sheep management. In that, vaccinations are a significant part of a herd health management program, it is an inexpensive "insurance" against diseases that can affect sheep. It has been recognized that disease and health problems do show the range of a producer's management level. Sheep can be more difficult to raise for reasons that they are vulnerable to parasites (lice) but less susceptible to diseases (infections).

Most vaccines are given subcutaneously (sub-Q), under the skin, while some are given intramuscularly (IM) around neck region, and others are given intranasal. For subcutaneous vaccines, use a 1/2 or 3/4 inch, 18- or 20-gauge needle. Note that the same needle used to withdraw vaccine from the bottle should not be the needle used to inject the animal. For the purpose of quality assurance, the targeted area for sub-Q or IM is the neck area.



Written and adapted by – Prunell Charley,
Tribal Extension Agent, NMSU

Source:

- <http://www.sheep101.info/201/drugs.html>
- http://aces.nmsu.edu/sheep/sheep_health/sheep_health.html



There are two classes of drugs: over-the-counter (OTC) and prescription. OTC drugs can be purchased and used as directed on the label without a veterinarian. Sheep treated with prescription/extra-label medications shall comply with given extended withdrawal times as prescribed by a veterinarian. Producers are not allowed to adjust the dose outside the label directions.

Proper storage of drugs and vaccines will help prevent improper use and maintain effectiveness. The label should determine temperature conditions for storage. The label will also describe an expiration date, out-of-date drugs should not be used, but rather disposed of properly. Clearly, records of treatment with any medications must be maintained for any pesticide, medication, or biological product administered. The records include the following:

- Date administered; Group identification number; Individual identification number; Name of product administered; Manufacturer of product administered; Lot/serial number of product administered; Dosage administered; Route and location of administration; Withdrawal period; and Name of person administering the product.



Scrapie

Written and adapted by – Prunell Charley, Tribal Extension Agent, NMSU

More than 250 years ago, Scrapie was first recognized as a disease of sheep in Great Britain and other countries of Western Europe. Australia and New Zealand are the only two countries recognized as being free of Scrapie.

The first known case of Scrapie in the United States was diagnosed in 1947 in Michigan. The owner imported sheep of British origin through Canada and from this first case through July 2001, Scrapie has been diagnosed in more than 3000 herds in the U.S.

In the United States, Scrapie has primarily been reported in the Suffolk breed and blackface crossbreds, but has also been diagnosed in Border Leicester, Cheviot, Corriedale, Cotswold, Dorset, Finnsheep, Hampshire, Merino, Montadale, Rambouillet, Shropshire, Southdown, and a number of crossbreeds. The disease has also been found in goats; two cases on the Navajo Nation.

Currently, the Navajo Nation has a federally funded program under the Navajo Nation Veterinary Program. The program offers educational outreach to Navajo producers acquire scrapie tags. The undertaking will create an avenue for the sale of sheep for producers. First case have been identified 1998. To date, five Navajo herds have been depopulated.

In 1995, the Scrapie tag program was introduced to help identify the origin of Scrapie infections. Scrapie tag identification became mandatory for all sheep and goats in the United States and Navajo Nation in 1998. Identification for all livestock arrived in the United States in March

12, 2014. So far 4-H livestock shows and fairs require Scrapie tags, and it is mandatory for

all sheep and goats being sold at off-reservation sale barns. It has been established that Scrapie came onto the Navajo Nation through import of black face sheep.



www.gryphontor.com



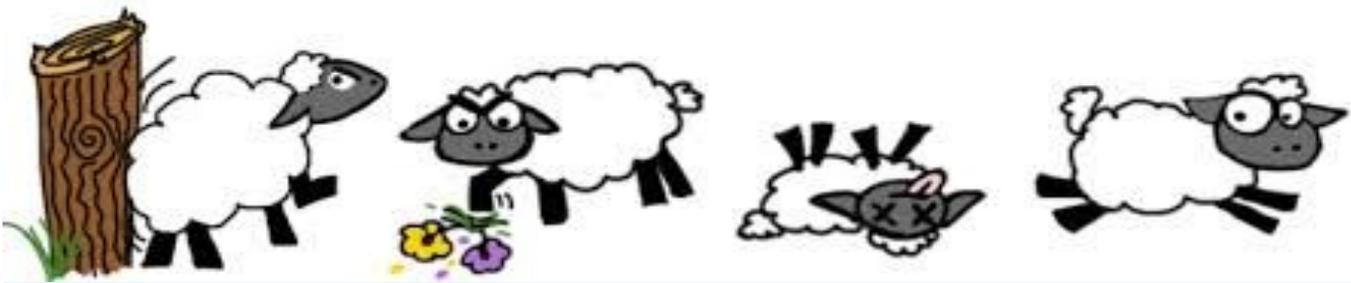
www.showstopperequipment.com

The Scrapie Program has been helping producers with the application to acquire free sheep and goat tags. Also, they have launched a buying program in an attempt to buy old sheep for testing that could locate any hidden scrapie affect herds. The purchased sheep are tagged and are shipped off the Navajo Nation for testing. The research and tests are to identify if there are any known cases on the Navajo Nation. RR and QR rams pass the resistance to the disease to their off-spring.

QQ can easily catch the disease so you don't want to be using breeding rams that make the lambs easier to catch Scrapie.

As a producer you are also encouraged to call the scrapie toll free number 866-USDA-TAG (866-873-2824 Select option 7 for Epidemiologist officer) to request official ear tags at no cost and/or a flock ID number or for more information.

Scrapie



Scrapie is a fatal, degenerative disease affecting the central nervous system of sheep. There is no cure and there is no treatment. One or more of the following clinical signs of Scrapie may be present in affected animals:

- Chronic Weight loss despite retention of appetite ,
- Behavioral change,
- Itching and rubbing,
- Wool pulling,
- Biting at legs or side,
- Lip smacking,
- Loss of coordination,
- High-stepping gait of forelimbs,
- Bunny-hop or frog hopping movement of rear legs,
- Swaying of back end,
- Increased sensitivity to noise & movement,
- Tremor,
- Down, unable to stand,
- Weakness, difficulty getting up, and
- Death

The key to the new eradication program are:

- Ability to detect pre-clinical sheep through live animal testing and active slaughter surveillance.
- Ability to trace infected sheep to their herd of origin through new identification requirements.
- Effective clean-up strategies that will allow producers to stay in business, preserve breeding stock, and remain economically viable.

USDA/APHIS will do this by providing the following to exposed and infected herds that participate in clean-up plans:

- Payment for high risk, suspect, and Scrapie positive sheep which owners agree to destroy.
- Live-animal testing.
- Genetic testing.
- Testing of exposed animals that have been sold out of infected and source herds.

Source:

- <http://en.wikipedia.org/wiki/Scrapie>
- <http://www.eradicatescrapie.org/index.html>
- http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/animalhealth?1dmy&urile=wcm%3apath%3a%2FAPHIS_Content_Library%2FSA_Our_Focus%2FSA_Animal_Health%2FSA_Animal_Disease_Information



www.gryphontor.com

Reproduction

Written and adapted by – Prunell Charley,
Tribal Extension Agent, NMSU

For the sheep, the reproductive rate is the number of healthy lambs born (#lambs/#ewe). The higher reproductive rates the more profitable sheep producer. It is not just about the number of animals, it is more about the quality.

Ewe—The ewe as it reaches puberty will determine when the additional lambs will come. At puberty the ewe reveals estrus (heat) for the first time. Ewe lambs will likely reach puberty their first Fall which happens in most between 5 and 12 months of age and is often influenced by breed, genetics, body size, nutrition, and season of birth. Vaccinations and deworming should be administered to them as well. It is known that vaccinating with *Clostridium perfringens* type C and D with tetanus three weeks before lambing will provide protection for lambs against tetanus during docking and castration done a few days after birth.

Reproduction is regulated by an estrus cycle. Estrus ranging from 13 to 19 days (averages 17 days) is the period of time when the ewe is receptive to the ram and will stand for mating during a 24 to 36 hours period later in the estrous cycle. There are four phases of the estrous cycle: proestrus, estrus, metestrus, and diestrus. Ovulation, release of eggs by the ovary, occurs in mid to late-estrus.



In sheep, the estrous cycle is affected by the seasons, the number of hours daily that light enters the eye of the animal which affects the brain. Thus, as the days get shorter, the most natural time for sheep to breed is in the fall (Oct-Nov). The most seasonal breeds are the British

long wool and meat breeds. However, some sheep breeds are less seasonal, and can breed year round. These breeds are: Dorset, Rambouillet, Merino, Finnsheep, Romanov, Karakul, and Navajo Churro.



Lamb Management—Managing and saving lambs is the key to your success, the highest death occurs during birth and after. Largely, the financial success of a sheep operation depends upon pounds of lamb weaned.

The three causes of death of lambs at birth are:

- Difficulty during the birthing process
- Starvation
- Hypothermia

Therefore, solid management practices at lambing time are essential and as a producer you will need to check on ewes often to eliminate losses. Ewes will be restless, will separate, and be in a corner or area along a wall when close. Once you see the front feet, it should be another 30 minutes beyond that you have to do examinations. If that is prolonged, you may have to help.

After they arrive, the first 24 to 48 hours are critical, separating into dry holding pens will allow bonding. At this time, the lamb's navel should be treated with 7% iodine and ensure that lamb get their first milk (colostrum) for immunity. Sometimes the lambs may need help, you can assist and if it still can't then you may have to tube.

Hypothermia is low body temperature, normal temp is 102-103 degrees, caused by exposure, weakness, trauma, and starvation. Lambs will look weak, gaunt, hunched up and worst ones can't hold head up. You may have to put them under heat lamps if temp is below 100 degrees. If everything is normal then you can remove lamb and ewe into smaller group of lambs and ewes. Importantly, you have to note and see that the lambs are nursing and that they are healthy. Also, you have to record ear tags and any other description on forms you have.

Reproduction



Docking and Castration-There are several tools available for docking and castration, including:

- Knife
- Emasculator
- Elastrator
- All-in-one Castrator
- Burdizzo Emasculatome



All-in-one Castrator

Docking and castration should be done at the same time, usually two to five days after birth. There is less stress while it is faster and simpler when the lambs are young. Really, lambs should be docked before they reach two weeks of age, and castrated by six weeks of age. The tail should be docked where the caudal skin folds join into the tail found on the underneath side of the tail, about 1 inch down the tail.

The choice for castration is using the knife; with the lamb in a sitting position, a person cuts the bottom third of the scrotum off with a knife or the all-in-one tool. Push the cut end of the scrotum towards the body to expose one testicle. Use your fingers, or all-in-one tool to grab the testicle firmly. With your free hand use your thumb and index finger to grab the neck of the scrotum and hold it firmly against the lamb's body. Between your fingers you should feel the cord of the testicle. Slowly and gently pull the testicle out until the cord breaks,

Ram—The mate to the ewe is the ram who is the most important member but overlooked. The rule of thumb is that a ram should be used for only two years and then should be traded out or sold off. Significantly, a ram provides half of the genetics and ensures a rewarding lamb crop. At puberty, between 5 and 7 months of age,



Ram checking a ewe.

the ram's reproductive organs become functional, and it is that time when the secondary sex characteristics develop.

The start of puberty allows readiness for mating which is influenced by breed, genetics, and nutrition.

Ram lambs on a low nutrition diet may not reach puberty until 12 months of age or older. Some breeds reach puberty earlier, meat breeds earlier than wool breeds.

The ram's testicle size is a good indication of a ram's sperm-producing ability. Nutrition is important, some research reveal that feed improvement the last two months prior to breeding season actually helps the ram by insuring the testicle size increases which then adds up to 100 percent sperm production. Always be ahead of the breeding season, a producer should not wait until the season to purchase, select or do an exams on the ram.

If purchased, the ram should be brought home several months in advance with a breeding soundness exam (BSE). A BSE should be performed by a veterinarian or trained technician: a physical examination and a semen



Testicle diameter size is important.

evaluation. Further, a blood test under the management of Scrapie eradication and identification is necessary.

The producer should always evaluate for lameness, body condition, and hoof should be free from footrot or foot scald. Further, in general the ram should be evaluated by observing his eyes, feet, legs, prepuce, and penis for blemishes that would hinder the breeding.

Source:

<http://www.sheep101.info/201/ramrepro.html>

<http://www.sheep101.info/201/ewerepro.html>

<http://www.pubs.ext.vt.edu/410/410-026/410-026.html>

Meat and/or Wool

Written and adapted by – Prunell Charley,
Tribal Extension Agent, NMSU

The sheep is ever evolving, it has gone through many changes since brought to this country. In the beginning, sheep were used for everything from nutrition to clothing. Stories of the elders remember times when every part of the harvested sheep was used; the cured hide was used for bedding, cheese was made from the milk when sheep or goat milk was an important part of the diet.

In essence, sheep have provided all the essentials for centuries and remarkably the meat, milk, and cheese are still ideal prized foods today. The taste for Navajo lamb and mutton still exist in the homes and it will remain that way for years to come. Not only are the meats in demand, the internal body parts are a delicacy for all ages. There is some pride to the fact that a whole sheep will be used as a food source.

The wool has withstood the test of time and it is used less but those who use these natural fibers do it for the niche and because they enjoy it. The USDA assistance on wool has diminished parallel to prices, but on the Navajo Nation, however, there are niche markets established by the Churro sheep producers. Not only do they have the wool, the marketing suggest that their meat is healthier as well.

Clearly the wool market has plummeted but the meat continues to be a strong market and the milk and by-products are now a niche. The value of having sheep for their meat and/or wool establishes the changing times. A 100 years ago, wool would be a common staple and so would the meat. Today, the wool raw markets have declined unless you find the niche. Technical knowledge and its progression will continue to flourish, the making of synthetic fibers will evolve some more but the meat and milk are valuable and nutritional as determined by the sheep industry people.

On the other hand, the Navajo people will always have an appreciation for sheep; the traditional teaching is on the recovery. They are indispensable since they eat weeds other livestock species won't touch and sheep can graze lawns, ditches, woodlots, and mature orchards. If someone had interest in raising them, it will be feasible for sheep are cheaper to raise. Sheep reproduce faster, a good choice for small-property owners and with minimal upfront cost, a person can have a decent herd in short order.

The question in sheep production is produce meat or wool? Today there are many breeds of sheep, some are adapted to certain environments, climates, and pasture.

Categorically, the sheep can be sorted as hair-sheep, fine-wool, medium-wool, long-wool, and carpet-wool breeds.

Hair-sheep breeds are produced for meat only, or for meat and milk. The drop of wool prices have made these breeds more popular and are in demand, especially for their milking abilities. These breeds have coarse wool but have the ability to shed on their own in the spring eliminating shearing. It is known that these sheep produce tastier meat than the wool breeds. The hair sheep breeds include Barbados, Blackbelly, Dorper, Katahdin, Painted Desert, Royal White, St. Croix and Wiltshire Horn.

Fine-wool breeds attracts the significant wool producers targeting the hand spinning and commercial markets. The diameter of the wool fiber is the appeal. If a person is interested in producing fine wool, the breeds to consider include Debouillet, Merino, and Rambouillet.

Medium-wools include the most common breeds of sheep, Suffolk and Hampshire and the less common breeds are Cheviot, Dorset, and Texel. These breeds produce wool that are sold into the wool-market but also produce large carcasses with good flavor for the meat market.

Long-wool breeds please hand spinners by producing abundant and radiant fiber. The Bluefaced Leicester is the queen of the group, other long-wool breeds to consider are Border Leicester, Leicester Longwool, Lincoln Longwool and Romney.

Carpet-wool breeds are producers of coarse fleeces. Their meat has a more enticing flavor than the fine-wool or long-wool breeds. Their colored wool is of interest to hand spinners. They are hardy requiring no pampering. Some breeds to consider are Jacob, Scottish Blackface, Karakul, and Navajo Churro.

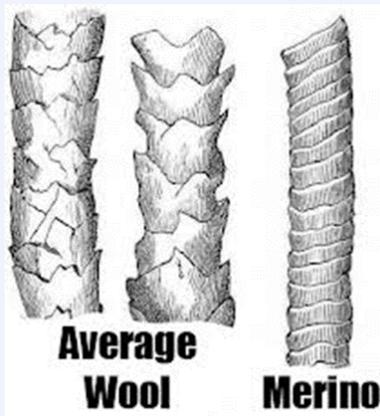
Source:

1. <http://www.sheep101.info/wool.html>
2. <http://www.sheep101.info/201/woolmarketing.html>
3. <http://www.motherearthnews.com/homesteading-and-livestock/raising-sheep-zmaz10aszraw.aspx?PageId=1#axzz3H6CY3QDj>

Wool Composition and Characteristics—Wool Grading

Sheep wool is comprised of the cortex, elasticum, and a core. The overlapping scales of the cortex causes the fibers to join together. Wool products are woven from carded shorter fibers made into soft yarns which were originally made only from long-staple fibers. The fibers are carded and combed to remove shorter ends and finally laid parallel to another. Then the wool fiber is drawn into roving and spun, and twisted.

The wool from one sheep is called a fleece and wool from many sheep is called clip. One sheep produces from 2 to 30 pounds of wool on a yearly basis. The amount of wool varies amongst breeds, genetics, nutrition, and number of shearings per year. The longer wool sheep produces the heaviest fleeces due to the length of their fibers. The long wool breeds are preferred because it is easier to spin and prepare for weaving. Sheep with very coarse fibers are called carpet wool.



There are two basic sheep groups, the medium and fine wool sheep. The medium wool sheep has the less valuable fleece since they are raised more for meat. Often the medium wool fibers produce blankets, sweaters, socks, or it is felted. The fine wool sheep makes fleece that

has the best value on the count that the fibers are smaller diameter and has many uses.

Wool Grading

Fineness, length, color and appearance determine the end use and value of wool. Fineness—the fiber diameter, or grade, and its distribution—is one of the most important factors. Grade refers to the average diameter or thickness of the fibers. Three systems of wool grading are commonly used in the United States:

1. American or Blood system;
2. the English or Spinning Count system; and
3. the Micron system.

The American or Blood System

Developed in the early 1800s, this is an older system of grading wool based on amount and percent of fine wool. The cross breeding gathers that offspring will grow fleeces that is medial in fineness. Inadvertently, the grade names just refer to the diameter of the fiber not the quality of the fleece. At present, this system of grading is

too general to suit the purposes of wool processors. The grading is termed as follows: fine, 1/2-blood, 3/8-blood, 1/4-blood, low 1/4-blood, common and braid

The English or Spinning Count System

This system of grading wool uses a measurement called the “spinning count.” This is based on the amount of “Hanks” of yarn that can be spun from 1 pound of washed wool; one Hank = 560 yards of yarn. The finer the wool, the more hanks of yarn is spun from a pound of clean wool. For instance, a Rambouillet with a grade 64s at a pound of clean wool could yield over 20 miles of yarn (64 X 560 yards of yarn).

English or Spinning Count grades of wool universally used in the United States today are: 80s, 70s, 64s, 62s, 60s, 58s, 56s, 54s, 50s, 48s, 46s, 44s, 40s, and 36s. This system grades with the lowest being 36s and the highest 120s, larger numbers will be a finer wool.

The Micron System

This system was created in the United States around 1966-67. The measurements are actually microns taken with a micro-projection unit where individual fibers are accurately measured. The magnification of 500 X allows the unit to measure in microns, one micron = 1/25400th of an inch. This system is a standard in the United States and most major wool producing regions of the world utilize this system now.

Source:

- <http://www.sheep101.info/201/woolmarketing.html>
- <http://store.msuextension.org/publications/AgandNaturalResources/MT198380AG.pdf>
- http://aces.nmsu.edu/pubs/_b/b-409/welcome.html

Written by and adapted – Prunell Charley, Tribal Extension Agent, NMSU



Shearing

Written and Adapted by – Felix Nez, Extension Agent, Dine' College



Meat production and its use from sheep is a given thoroughly throughout history. The other part of sheep production considers creativity and ingenuity on the part of

those who domesticated sheep. Historical and cultural knowledge, and evidence of archeological sites depicts that wool products (i.e., garments) have been produced continuously for centuries. It was a necessary commodity for eons on the contrary things have changed amidst technological advances.

There is a niche still today though considering the appreciation of wool wear qualities and cultural artistry of the Navajo people. The opportunities therein considers that wool preparation and gathering wool from sheep is still important. The people have gather wool and have learned to prepare the raw product though information that has been passed down from the grandmothers. Today, some people still shear, wash, dye, comb, and spin their own wool gathered from their own flocks. As a way to target those who still do this, we are going to share some information that could be helpful.

Wool Quality

Most breeds grow wool continuously, the breeds, their genetics and shearing intervals allows a variation of the fiber's thickness and attributes. The Navajo elders, weavers, and shepherds knew when the proper time to shear was. More than likely, for efficiency, the weavers of the clan informed them when would be the best time. The wool fibers should have been less oily, less debris and with uniform growth; this would be early spring before the winds started in. They probably sheared once per year with hand shears, usually before lambing or spring season.

Today, on the average a wool clip from one commercial range-sheep will be around 8 to 10 pounds. Preferably, as the weavers had determined when to shear, today Navajo sheep producer should know

the real justified preferences and specifications of the wool buyer and/or weaver. Producers can meet wool market through genetic selection if wool production is one priority of the operation.

Shearing

Navajo sheep producers should be prepared for shearing by having extra labor, a good working facility and that it is organized. Before electric shears sheep were sheared with hand shears or blades. In some parts of the Navajo Nation where electricity is limited or not available, sheep are still blade sheared.



The New Zealand method is the most common method of electric shearing. Many shearers of Spanish or Mexican descent use a style of shearing that requires the legs of the sheep to be tied. Electric shears have three basic parts: the handpiece, the comb and the cutters. Commercial sheep shears, having a powerful electric motor attached while the portable electric shears have the motor inside the handle of the handpiece.

A good set of electric shears is about \$250-\$500. As you look into modernizing, remember that more teeth on a comb generally mean a cut closer to the skin. Cutters generally have 4 points, triangular protrusions, and attach to the handpiece by way of four "fingers" that press them firmly against the comb. Also, cutters are the first thing to dull, and you will probably want about 3 cutters for every comb. Changing cutters is quick, and it ensures a sharp tool since dull tools are dangerous. Cutters cost about \$10-15, and when purchasing shearing combs, it is important to buy a type of comb that is best suited to the sheep you will shearing.



Shearing



Preparing Sheep for Shearing

A sheep shearer should be contacted well in advance of shearing time. Sheep should be penned and sorted before shearing; sorted as lambs, yearlings, rams, and ewes. Sheep should be fasting before shearing due to a full stomach causes the animal discomfort. Other tips that should be followed are: wet sheep should not be shorn; and shear on a clean, dry surface (on wood or concrete flooring). The shearing area should be swept after each sheep to provide a clean surface for the next.



- Black and colored fibers should be sheared last and kept from the white wool;
- Wool should be free of polypropylene contaminants: hay baling twine, poly tarps, and poly feed sacks;
- Prevent and control internal/external parasites;
- Keep well balanced feeding program. Quality feed can influence quantity of wool produced; and
- Maintain proper flock health.

Skirting Fleeces

After shearing, belly wool and tags should be separated from the rest of the fleece ensure a better end product. To skirt, throw the fleece flesh side down so the dirty end of the fleece faces up; remove off-color wool, tags around the breach, very short and matted wool and other contaminated areas. Roll the two sides of the fleece in toward the middle, the flesh side will face out created a clean, attractive package for the buyer.

Wool is ordinarily sold by the pound based on grade, class and quality: Grade the fineness of fiber; Class refers to length of the staple or fiber; and Quality freedom from foreign material, "life" or character of wool. The fleece can be packaged in clear regulation plastic wool bags free of air, burlap or canvas fabric. Do not pack fleece in plastic gain or trash bags.

Different grades or classes of wool should be packaged separately; bags of wool should be labeled. Properly sorted and labeled wool will bring more money to the grower. Wool should be stored in a clean, dry place until ready for market.

Improving Wool Quality

There are many steps Navajo producers can take to improve the quality of their wool clip and increase economic returns, some recommendations are as follows:

Paint branding can also be damaging to wool, you should only use approved washable solutions. However, the sheep should not be paint branded prior to shearing time and only medium size paint irons that should be applied lightly. Vegetable matter (e.g. seeds, straw, chaff, and burrs) is a primary source of wool contamination. To help prevent this type of contamination sheep should not be bedded on hay or straw before shearing.

Overhead hay feeders should be avoided. Hays which allow sheep to poke their heads through will also result in wool contamination. Poor nutrition can weaken the strength of the wool fiber and result in breaks in the wool fiber.

Source:

<http://www.sheep101.info/201/shearing.html>



Hand Shears used before electric shears.

Adding Value to Sheep Production

By Dine' Be' lina,' Inc. (DBI)

Historically farmers and ranchers have focused on producing large quantities of raw products for as cheap as they could and then selling it as a low price commodity. This works if you can produce and sell large volumes.

Since the USDA ended price supports for wool, the lower prices are due to competition from foreign countries like New Zealand. It is difficult for Navajo producers to compete in the commodity market because production costs are higher and most Navajo producers are small scale having only a small flock.

The concept of adding value to lamb, mutton, wool and other products is new, but offers an opportunity for producers to increase income and add new business opportunities to their communities. Some Navajo producers have taken the lead and are experiencing higher levels of income from adding value to their sheep production.

So what does “adding value” to sheep mean? You “add value” to sheep by changing the raw agricultural product (meat and wool) into something new through packaging, processing, storytelling, different production practices or any other type of process that differentiates the product from the original raw commodity. The goal is to make what is produced into something new or different. This gives producers a competitive edge and allows them to create niche markets for products.

Here are some examples:

1) You could add value to wool by simply washing the wool and selling it ready to use by the pound for a higher price, perhaps for four or five dollars per pound for commercial fine wool breeds. You could add even more value to wool by washing, carding, spinning, and dyeing it. Each step of the way you add value and therefore can receive a higher price.

2. You may add value by raising a specialty breed of sheep. For example Navajo-Churro Sheep are considered a specialty breed because it is rare and it has special qualities.

- Navajo-Churro wool is highly valued by spinners and weavers. A raw Navajo-Churro fleece may be sold to fiber artist and crafts people for five to fifteen dollars a pound depending on its color and quality. It is possible to add even more value to Navajo-Churro wool by washing, carding, spinning, and dyeing it.

- Also, meat from Navajo-Churro Sheep is lean and lightly flavored. Therefore restaurants and health conscious consumers will pay more for the meat.

3. You may add value to sheep by raising them in a healthier sustainable way. Consumers demand and will pay more for meat that is raised without antibiotics, or raised only on rangeland and without grains.

4. You may add value to sheep and wool by telling your own unique story. Today, consumers want to know more about who grows their food and raises their wool. They want to connect to the farmer and rancher and feel good about what they eat.

- Navajo-Churro Lamb Presidium is excellent at adding value. By working together, Navajo producers agree to raise only high quality Navajo-Churro Sheep on rangeland forage and hay – no grains. A lean lamb is prized by Chefs who will pay a much higher price.

Hand spun, vegetal dyed Navajo-Churro yarn is a good example of what it means to add value to wool



Adding Value to Sheep Production

By Dine' Be' Iina,' Inc. (DBI)

- A broker sets up relationships between the sheep producer and the buyer. The sheep producer delivers a certain number of lambs to the USDA processor and then the meat is delivered to the restaurant. Through cooperation, members have created a brand and a niche market.

5. You may add value by creating finished products from your sheep and/or wool. For example you could make felted hats, weave horse cinches, clothing and many other products. Processing lamb into flavored sausages is another way to add more value. The possibilities are endless.

Adding value to sheep and wool products may require learning new skills, changing the breed of sheep you raise, learning how to raise sheep differently, learning how to price and sell your products, working with others to build a brand, finding ways to process and ship meat products, understanding food safety regulations, and finding ways to market outside the Navajo Nation.

Keys to success when pursuing a value-added business include starting small and growing naturally, making decisions based on good records; creating a high-quality product and understanding your customers. Here are key considerations:

- Identify the type of value-added product you want to create.
- Determine who will buy your product and how many customers you will need to find.
- Determine the type and level of processing or manufacturing needed for your product.
- Create a marketing package with brochures, website, business card, and other material that helps you tell customers about your product and your story.
- Develop a plan for how to price your product and how get your product to your customers.

Understanding Western business practices and gaining access to markets pose challenges. Dine' Be' Iina' Inc. provides training and assistance to persons who are interested in learning how to add value to their sheep and wool production, build a business and learn how to market their products. Visit the Dine' Be Iina website at www.navajolifeway.org for more information.

Starting a value-added agricultural business is an exciting opportunity for the small farmer interested in

diversifying and exploring new markets, but starting small and finding your niche is key to your long-term success. Evaluate the risks associated and have a solid plan in place to keep you on the right track.

“The majority of the Navajo Churro Heritage Lamb project members come from informal business backgrounds, so they are quite unfamiliar with the concept of business in the Western sense. Primarily, the concept that Navajos are used to is helping/volunteering/bartering for a sheep, etc. The Navajos believe the value of the sheep is tied with the traditional and medicinal ways of how sheep producers raise and care for the sheep. Every business process is a step-by-step process, which is a hard concept to accept for them sometimes. Interpreting legal terminology in Navajo is always dry and not convincing. However, when realistic examples are given a majority are persuaded.”

- Roy Kady, Navajo-Churro Lamb

Presidium



The “DBI Store” allows to participants to sell value-added product at a fiber festival in Telluride.

Sheep Handling

Written and adapted by – Prunell Charley,
Tribal Extension Agent, NMSU

The early Navajo people acquired sheep were more nomadic. Further, there may have been Navajo shepherds that possibly approached sheep as a subsistence. As a means of their survival, sheep may have been handled and watched day and night and movement was distinct. In comparison, today Navajo sheep graze one general area and the movement between two homesteads no longer exist. This practice has permitted the sheep to use one pen year round.

The recommendation is that sheep pens should be moved around and/or cleaned regularly. The manure build up in the pens have been observed by individuals working closely with the people. The contaminated pens harbor diseases and parasites often infecting newborn. The present trend is that a lot of the Navajo sheep belong to older citizens. When people are asked to assist, most of the time the facilities to work the sheep are inadequate. At this point, we are venturing in promoting quality assurance and one particularly upkeep that needs some attention is handling them in a safe and clean environment. That way the sheep are less likely to lose lambs and where the producer and helpers can do some work efficiently and effectively.

Due to the increase in numbers and/or the size of the sheep, it is important to have the adequate handling facilities. The labor of sheep is physically demanding and exhausting work; sorting, weighing, worming, and vaccinating a number of sheep. A good working or handling facility, whether permanent or temporary, can reduce the physical demands.

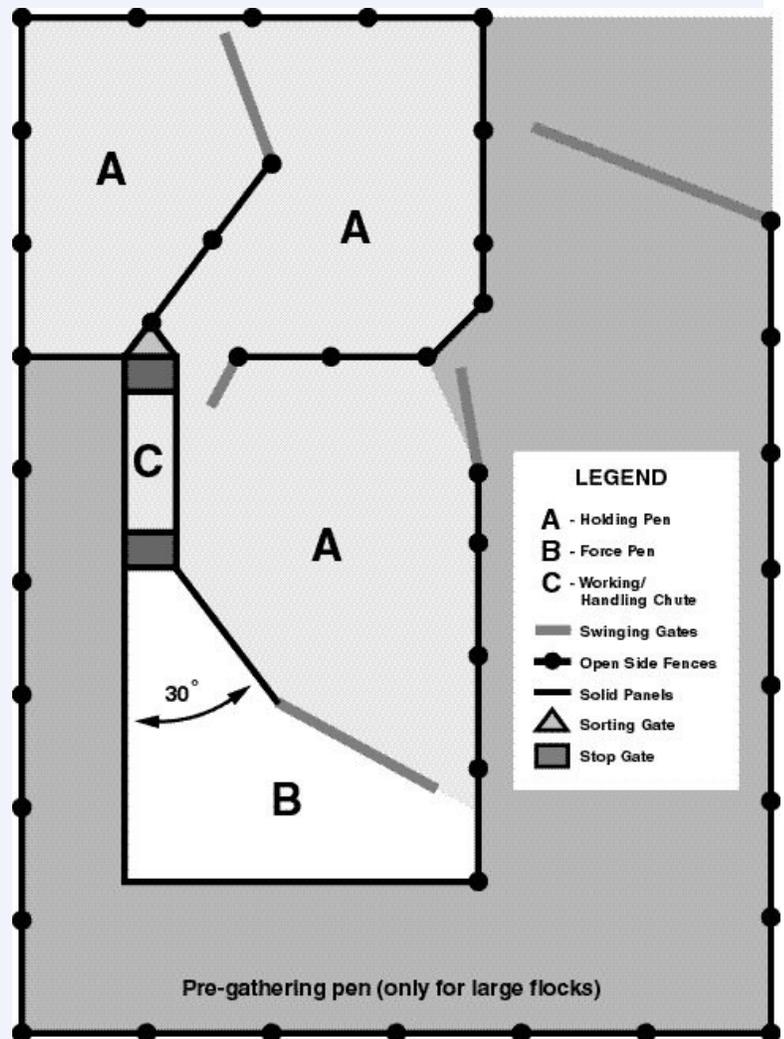
Handling facilities have been in existence for centuries. On the Navajo Nation, we are more concerned with the more basic conditions for a practical facility. A place where the sheep can be moved easily and quickly split into different groups for handling. No one design is best for all but must be fitted to the producer. Some ideas are that the pens can be divided into the following parts:

1. Storage area: the size will be determined by the number of sheep. A 100 ewe herd would require a larger area than one just with 20 ewes.

2. Drafting chute: from the storage area the sheep could be moved into a single file into a drafting chute. If there is a drafting chute, then one person can identify the sheep and separate into breed groups, etc. Further, a couple people could treat and vaccinate an entire herd.

As you plan a design to work with the sheep, keep in mind that:

1. Sheep will follow one another.
2. Sheep prefer to move uphill/slight incline vs. downhill.
3. Sheep flow better with slight corners or curves.
4. Sheep will move away from things that frighten them.
5. Sheep will move toward another sheep.
6. Sheep do not like to walk into the sun.



Sheep Handling

The sheep handling facilities should consider those things that the sheep do instinctively. Some factors to be considered:

1. Centrally located to the sheep population.
2. Free draining.
3. Shaded.
4. Chute should be north and south to avoid sheep moving into the sun.
5. Well-situated for loading and access.

When constructing the pens, please consider these factors:

1. Pens should be no larger than necessary.
2. Obstructions and sharp edges should be avoided.
3. Rails or sheeting should be on the inside.
4. All surfaces should be smooth and timber splinter free.
5. Gates and catches should be easily operated.
6. The basic layout should be as simple as possible.

The drafting chute area should correspond to the following specifications:

1. Narrow enough to present sheep singly. (Ideal width from 14 inches for small breeds up to 20 inches for larger breeds.)
2. Long enough that permits an unobstructed view to identify sheep well in advance. (Fifteen to twenty feet is a good length.)
3. Sides should be smooth and free of projections.
4. Sorting gates must present a clear view ahead to the oncoming sheep.
5. Both entries and exits must overlap with views of sheep psychology.
6. Height of the chute should not interfere with working. (A good height is 36 inches.)

A proper sheep handling facility is essential for all sheep operation. It will help with timesaving effort, as opposed to chasing each one down, and it will be safe. Sheep handling facility construction adds a new dynamic; simply because it will add efficiency of your total operation.

- A working chute can be used to drench, pregnancy test, and sort ewes into breeding bands.
- A working chute brings the sheep to you, one at a time, single file, so that you can check their teeth,

udders, etc.

- You can trim or shear around their eyes, check ear tags and/or replace ear tags, and
- You can also paint brand, trim feet.

Source (adapted):

1. **Sheep Handling Facilities**, Richard Cobb (01/22/1999); <http://livestocktrail.illinois.edu/sheepnet/paperDisplay.cfm?ContentID=2>
2. **Sheep Handbook, Housing and Equipment** — published by Midwest Plan Service, Iowa State University, Ames Iowa, 50010 and available at your state university sheep extension office.
3. **Farm Buildings Information Center, #16** — a British booklet and available from U.K. Products, Washington, Iowa.



http://www.farmingmagazine.com/wp-content/uploads/2014/10/A11216_3_full.jpg

Predator Control



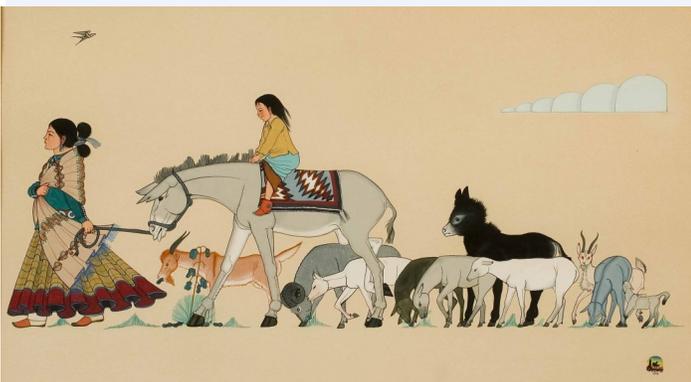
Woven wire mesh to limit/stop predators.

The best predator control for the sheep herds on the Navajo Nation came through actually having the physical presence of the sheep herder. The herder often were members of the family unit, immediate or clan, but most times they were the children and/or grandchildren.

As a Navajo sheep producer who wants more profits from your time put in, you can learn and plan how to manage the sheep so that a predator will opt to hunt at another place rather than yours. In that, all that we have presented thus far has a bearing since it is known that sheep suffer less from predation if they are strong and healthy. Good feed, acceptable health care, and herding sheep will pay in more ways than one.

There are certainly less Navajo sheep producers today, many are elders. Some Navajo producers have let their herds dwindle due to predator losses. Just like dealing with various vaccination and deworming plans, predator control does require various methods, no one strategy will ensure success. The following are some practices to help, a combination of them will be helpful.

Initially, planning should consider the predator's movement and character. Predators attack mostly at night. Penning sheep at nights near buildings and near humans will deter many predators. Further, proper disposal of a dead carcass will be helpful since it can introduce coyotes to come back to eat the sheep. Also, lambing inside a shed instead of pasture helps protect the lambs which are the main prey.



Tahoma's 1942 painting of a mother and child herding sheep, Courtesy of Charlotte G. Mittler (<http://>

Predation accounts for a significant portion of sheep and lamb losses in the United States. Other than parasites and disease, predation is a danger to sheep production, their health and your profitability often jeopardized. In general, sheep possess limited ability to defend themselves when compared with other livestock. Sheep are defenseless to every predator of any size; including dogs, bears, bobcats, mountain lions, coyotes, and wolves.

Fencing

Predator control first begins with a clean good fence and/or holding pen. It may not be a save all since some predators can dig under, crawl through holes in the mesh, or jump over the top of the fence.



The best fence and/or holding pen could be a woven wire mesh that is no more than 6 in. apart vertically and spaced 2 to 4 inches apart horizontally in the bottom portion of the fence. Another option is an electric fence that costs a bit more; to be effective, the wires need to be properly spaced. It is recommended that the bottom wires need to be closer than the top wires.

Written and adapted by – Prunell Charley, Tribal Extension Agent, NMSU



Predator Control

Livestock Guardians

Keeping guardian animals, such as dogs, donkeys, or llamas can be very helpful. Livestock guardians are a popular method of controlling predators.

Frightening devices

Frightening devices have been used for centuries. Livestock producers have used frightening devices to surprise most predators. A known device used is a bell put on sheep and other noisemakers. A modern device is an Electronic Guard which combines two scare methods: light and sound. It has a sensing device that activates it at night when there is movement near the perimeter.

Plastic collars

Plastic collars were patented in 1998, the collars cover the cheek and the neck. Most predators attack the throat area in essence the collars prevent that. The collars are designed for lambs a few days old to about a year old.

Lethal Predator Control

Lethal methods of control result in the death of a predator; usually it is legal to kill coyotes, foxes, and mountain lions. However, it is not legal to kill many other predators because they are protected by federal or state laws. Some species protected are vultures, eagles, wolves and bears.

Shooting - hunting causes less pressure on their natural foods and decreasing the predators in turn provides more for the existing population.

Trapping - one of the most effective methods for controlling troublesome coyotes. Leghold or snare traps can be used to kill troublesome coyotes. Snares are more selective, but it will also routinely injure or kill non-target species. Leghold traps are banned in many states. A steel leghold trap restrains the foot of a captured animal. After the animal is captured, it should be humanely destroyed.

Livestock Protection Collar - coyotes that attack lambs wearing a Livestock Protection Collar will receive a lethal dose of 1080 and die 2 to 7 hours later. The collars are most effective in areas with a high frequency of attacks and where other control measures have failed. They can only be used in cooperation with USDA Wildlife Services staff. They are authorized for use in 10 states (TX, SD, MT, NM, VA, WV, UT, OH, WY, and PA).



Source and adapted from:

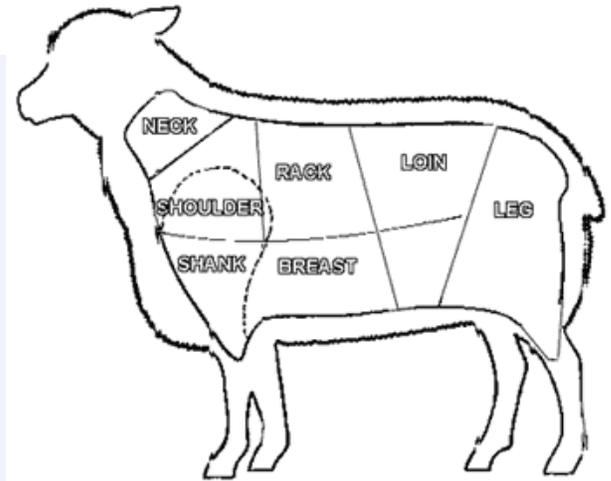
- <http://www.motherearthnews.com/homesteading-and-livestock/raising-sheep-zmaz10aszraw.aspx#ixzz3H6CsNHQu>
- <http://www.sheep101.info/201/predatorcontrol.html>
- http://en.wikipedia.org/wiki/Domestic_sheep_predation#cite_note-storey-1



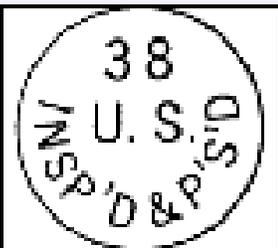
Safe Handling of Raw Lamb and Mutton

Written and adapted by – Prunell Charley, Tribal Extension Agent, NMSU

Talk to any person on the Navajo Nation, one of the conversations surrounding food does all lead to lamb or mutton. Whether the individual is an elder, college student, or a child, each of these persons do have a taste for lamb meat. As a culturally significant animal for consumption use, somehow it all relates back to the upbringing of the grandparents and parents of the younger children. The meat is a delicacy and its demand continues to increase with the population. (*home use verses market (concession), needs usda stamp*)



Studies have revealed that sheep is the oldest domesticated meat species and today are classified as lamb, yearling mutton, or mutton based on their age determined by muscles and bones. The younger the sheep the milder the taste and the meat will be more tender compared to mutton. However, no matter the taste or tenderness, both the lambs and older sheep have to be considered wholesome first before marketing to a restaurant or market through its inspection. On the other hand, if a Navajo producer processed the lamb for his/her own consumption, then no inspection is necessary.



All lamb found in stores in the U.S. is either USDA inspected or is inspected by state systems for wholesomeness. The animals are each checked for signs of diseases in its internal organs as well. The "Passed and Inspected by USDA" seal insures the lamb is wholesome and free from disease. In earlier days, the primary concern of the inspectors were animal diseases, and they relied mostly on visual inspection of the animals, products, and plant operations. The concerns of today's inspectors are broader and include unseen hazards such as microbiological and chemical contamination.

Under USDA, there are five grades for lambs and only two grades are found at the retail level — prime and choice. Lower grades of lamb and mutton — good, utility, and cull — are rarely marked with the

grade. Lamb meat is produced according to the age of the animal; relevant to that, one should buy lamb that has been USDA graded.

- Prime grade - high in tenderness, juiciness, flavor, and marbling (enhances flavor and juiciness).
- Choice grade - less marbling than prime, but still very high quality.



Prime and choice grade lamb cuts are chops, roasts, shoulder cuts, and leg; these cuts are tender and can be cooked by broiling, roasting, or grilling. The less tender cuts such as breast, riblets, neck, and shank needs to be braised to make them enticing.



Safe Handling of Raw Lamb and Mutton

Written and adapted by – Prunell Charley, Tribal Extension Agent, NMSU



The lamb and mutton are perishable food items that needs to be cooked immediately or it has to be stored properly. As a delicate food source, safe steps in food handling, cooking, and storage are essential to stop any foodborne illnesses. When meat is handle unsafely, harmful bacteria that a person can't see, smell, or taste may cause illness. The following four steps can keep food safe:

- Clean — Wash hands and surfaces often.
- Separate — Don't cross-contaminate.
- Cook — Cook to the right temperature.
- Chill — Refrigerate promptly.

At times a person buys in bulk, freezing the food item as fast as possible does maintain quality. Properly packaging food/meat helps maintain quality and prevents freezer burn. Food stored at 0 °F will always

be safe. Freezing preserves food for extended periods because it prevents the growth of microorganisms that cause both food spoilage and foodborne illness.

Never thaw foods in a garage, basement, car, dishwasher or plastic garbage bag; out on the kitchen counter, outdoors or on the porch. These methods can leave your foods unsafe to eat. There are three safe ways to thaw food: in the refrigerator, in cold water, or in the microwave. It's best to plan ahead for slow, safe thawing in the refrigerator. For faster thawing, place food in a leak proof plastic bag and immerse it in cold water. The water needs to be checked frequently and change the water every 30 minutes so it stays cold and after thawing, cook immediately. When microwave-defrosting food, plan to cook it immediately after thawing because some areas of the food may become warm and begin to cook during microwaving.

Source –

http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/meat-preparation/focus-on-lambfrom-farm-to-table/CT_Index

http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/safe-food-handling/freezing-and-food-safety/ct_index

http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/safe-food-handling/basics-for-handling-food-safely/ct_index



USDA Meat Inspection



Written and adapted by– Bonnie Hopkins, Agriculture Agent, San Juan County, NMSU

The Food Safety and Inspection Service (FSIS) is the public health agency in the U.S. The United States Department of Agriculture (USDA) is responsible for ensuring that our commercial supply of meat, poultry, and egg products is safe, wholesome and correctly labeled and packaged. To ensure the safety of meat products sold in the United States, all retail and commercial meat products must be slaughtered and processed in a facility inspected by the USDA's Food Safety and Inspection Service (FSIS).

The mandates determined under the [Federal Meat Inspection Act](#) and the [Poultry Products Inspection Act](#) allow the FSIS to inspect all raw meat and poultry. This process ensures that all meat products sold to American consumers are safe, wholesome and correctly labeled and packaged by the facilities in which they are processed. Lamb and mutton products must be processed in a USDA inspected facility if it is to be sold to retail markets such as restaurants or grocery stores. Meat that is intended for personal consumption does not require a USDA inspection, and may be processed in a regular facility or in the home.

The FSIS inspection process involves the implementation of the Hazard Analysis and Critical Control Point (HACCP) system to minimize the likelihood of dangerous and potentially hazardous bacteria contaminating raw meat products. Exams, observations and inspections of meat products must be made by a federally licensed USDA inspector. The inspection process includes an exam of the animal prior to slaughter as well as observation of humane methods of slaughter. Post mortem meat products are fully inspected; once considered to be wholesome the meat is stamped with a round purple mark on each carcass and major cuts and may be labeled as "USDA certified".

The term "certified" implies that the USDA's FSIS and the [Agriculture Marketing Service](#) have officially evaluated a meat product for class, grade, or other quality characteristics. Inspectors are also responsible for the rejection of adulterated meat or meat food products that are not satisfactory for

human consumption. In order to further encourage safe handling after being processed, the USDA also requires that safe handling instructions to be placed on all packages of raw and not fully cooked meat products.



An up to date list of licensed USDA processing and slaughtering facilities can be found at the following web address: <http://www.fsis.usda.gov/wps/portal/fsis/topics/inspection/mpi-directory>.

Source -
<http://www.fsis.usda.gov/wps/portal/fsis/home>
<http://www.fsis.usda.gov/wps/portal/fsis/topics/rulemaking/federal-meat-inspection-act>



Glossary

Abscess—Pus-filled pocket. Leading cause of ewe carcass condemnation. Also causes pelt damage.

Acaricide—Describes any drug used for control of external parasites that is effective against ticks and mites.

Anthelmintic—Describes any drug used for control of internal parasites, also called a dewormer.

Bale—A compressed pack of wool in a convenient form for transit, ranging in weight from 150 pounds to 1000 pounds.

Belly wool—Wool from the belly region with a pronounced crimp. It is often shorter staple length and discolored.

Bolus—A large oval pill often containing antibiotics.

Bots—Fly larvae that crawl into nasal passages.

Break wool—Due to illness or poor nutrition at some time during growth of the wool, it is weak at one particular point of the staple, but sound above and below the break.

Britch wool—Wool from the hindquarters of the sheep, usually the coarsest on the body, often approaching hair in its characteristics.

By-products—Edible and inedible items produced from non-meat portions of lamb carcasses. Items include leather, sausage casings, tallow, cosmetics, glycerine, sutures and lanolin.

Carbonizing—Removing vegetable matter from wool after converting it into carbon by the action of acid and heat.

Coccidiosis—Disease in feeder lambs characterized by diarrhea, dehydration, loss of weight and weakness.

Colored fleeces—Presence of colors, other than white, which cannot be removed in scouring of fleeces.

Corrective Action—Procedures to be followed when a deviation occurs.

Crutching—Shearing of wool from around the tail, rear legs and udder.

Deworming—Management practice of administering medication to kill internal parasites.

Disinfection—Using chemicals to kill disease-causing organisms on equipment or facilities.

Drenching—The oral administration of medication.

Drug residue—Presence of drug in an animal product or by-product.

External parasite—Parasites that may be found on the fleece, skin and in the nasal and ear passages.

Extra-label drug use—Use of a product that is different, in dosage or species treated, from what is specified on the label.

Euthanize—Painless death administered for humane purposes.

Facing—Correcting wool blindness by removing wool from the face.

Feed additive—Drug added to the feed mix.

Fiber diameter—Thickness of individual wool fibers.

Fiber length—Describes the length of an individual wool fiber or group of fibers.

Fleece—The entire coat of wool shorn from the sheep at one time.

Flight zone—Minimum zone of comfort or security; the animal will take flight if the zone is penetrated by another animal.

Fungicides—Chemicals used to destroy fungi: GMPs - 1. Good Management Practices are guidelines used to achieve the criteria set forth by the Sheep Safety and Quality Assurance program. 2. Good Manufacturing Practices are guidelines that commercial feed companies are required by FDA to follow.

Herbicides -Chemicals used to destroy plants, especially weeds.

Injection—Introducing a substance into the body using a syringe and needle.

Insecticides—Chemical agent used to kill insects.

Internal parasites—Usually a type of nematode worm located in the stomach, intestines or lungs of sheep.

Intramuscular injection (IM) - An injection into the muscle tissue.

Intravenous injection (IV) - An injection directly into the bloodstream (usually through the jugular vein).

Keds—Bloodsucking wingless flies that pierce the skin causing damage to pelts.

Lambs weaned per ewe exposed - Measure of reproductive efficiency. Calculated by dividing the number of lambs weaned by the number of ewes that were exposed to rams.

Lanolin—Purified wool grease.

Lousiness—Infestation of biting or sucking lice.

Mange mites—Mites which infest and damage the skin and wool.

Mycotoxin—Poisonous substance produced by a fungus.

Paint branding—identification method that is a source of wool contamination.

Parasite—An organism that lives off a host.

Pelt—The skin of a sheep including the wool.

Pesticide—Any chemical used for killing insects, weeds, etc.

Pinkeye—Highly contagious disease that affects the eyes of sheep.

Pneumonia—A respiratory disease that affects the lungs of sheep.

Prescription drug—Drug which requires a veterinarian's written permission for use.

Range wool—Wool shorn from sheep raised under ranching conditions. In the U.S., better known as territory wool.

Salmonellosis—Serious disease of feeder lambs characterized by gastroenteritis, diarrhea, septicemia and death. In humans, it is a type of food poisoning.

Scouring—The removal of grease and soil from wool by washing with water, soap and alkali.

Scours—Diarrhea.

Scrapie—Slow, progressive, degenerative disease of the central nervous system.

Seedy—A term applied to wools containing grass seeds of various descriptions that are difficult to remove.

Shearing—The removal of the wool from sheep.

Skirting—The practice of removing the stained or inferior wool, such as grows on the belly and legs of the sheep, from fleeces.

Stained wool—Wool which has become discolored through the effects of urine, feces, or any other coloring agent.

Subcutaneous injection (SQ) - Injection given just beneath the skin.

Tagging—Practice of shearing wool on the udder and tail regions.

Tags—Trade term for dung locks, floor sweepings or stained pieces of wool.

Ticks—Wingless bloodsucking insects that infest sheep during the summer.

Vaccination—Injection, given to healthy animals, used to stimulate prolonged immunity to specific diseases.

Vegetable matter (VM) - Burrs, seeds, straw, chaff and small pieces of stick and bark.

White muscle disease—Disease caused by deficiency in selenium, Vitamin E or both that causes degeneration of the skeletal and cardiac muscles of lambs.

Withdrawal time—The time from the last treatment to the time when products from the animal can safely be consumed.

Wool blindness—Excess wool around sheep's eyes causing limited vision.

Wool contamination—Foreign substance adhered to fleece.