

**This presentation is part of an educational modular program designed to provide new and beginning farmers and ranchers with relevant information to initiate, improve and run their agricultural operations**



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# Sheep production



# Sheep breeds

- There are more breeds of sheep than breeds of any other livestock species
- Worldwide, there are more than a thousand distinct sheep breeds
- There are more than 40 breeds in the USA



Type of sheep	General characteristics	Examples of breeds
Fine wool sheep	They are well adapted to arid and semi-arid regions They are known for their longevity and strong flocking instinct	Rambouillet, Merino
Long wool sheep	Well adapted to cool, high rainfall areas with abundant forage	Romney, Lincoln
Medium wool, meat sheep	Meat or 'mutton-type' sheep produce wool, mostly medium but are mainly raised for meat	Suffolk, Dorset Hampshire, Texel
Carpet wool sheep	Well adapted to extreme environments. Produce coarse wool that is used in the manufacture of carpets. They are usually double-coated.	Icelandic, Karakul Navajo Churro, Scottish Blackface
Hair sheep	Well adapted to temperate and tropical climates. They lack wool and are covered with hair instead.	Pelibuey
Fat-tailed sheep	They store large amounts of fat in the tail and rump. They are mostly raised for meat and milk, also produce wool	Karakul, Turki
Short or rat-tailed breeds	Originate from Northern Europe. They have thin tails that are free of wool. Very prolific	Finn sheep, Romanov East Friesian, Shetland, Icelandic

# Wool



Rambouillet



Merino



Lincoln



Romney



Sheep shearing



Dorset



Cheviot



Suffolk



Dorper



# Meat



Texel

# Hair and carpet wool sheep



Pelibuey



Karakul (carpet wool)



Navajo Churro (carpet wool)

# Breed

- Breed selection should be done considering intended market, climate and personal preferences
- When choosing animals for your farm, talk to producers in your area and talk to local extension agent, contact sheep associations



# Sheep products

## Meat

- Lamb is the meat from a sheep that is less than one year old, and mutton is the meat from a sheep that is over one year of age
- The European Union is the largest lamb consumer in the world; while 99% of the lamb production comes from Australia and New Zealand



Lamb chops



Mutton chops

# Wool

- Wool is widely used in clothing from knitwear such as socks and jumpers to cloth used for suits and jackets
- It is used for upholstery, blankets and carpet production
- Wool is also used to fill mattresses, tennis ball covers, pool table felt and hanging basket liners



# Lanolin

- Raw wool contains 10-25% grease or “lanolin”. Extraction can be performed by squeezing the sheep’s recently harvested wool between rollers. Most of the lanolin is removed from wool when it is processed into textiles
- Lanolin is a highly complex mixture of esters, alcohols and fatty acids and is used in adhesive tape, printing inks, motor oils and auto lubrication
- Lanolin is also used in cosmetics and pharmaceuticals. Virtually all cosmetics and beauty aids such as lipsticks, mascara, lotions, shampoos and hair conditioners contain lanolin



# Skins

- Sheep skins are removed from the carcasses after slaughter
- They are treated in a process called tanning and made into soft leather
- Sheep skin is commonly used for making the chamois cloth used to wash the car. A small number of skins are preserved and sold as sheepskins, with the wool still attached



# Persian lambskin

- One of the main reasons for keeping Karakul sheep commercially is for the production of Karakul lambskin, the skin of the newborn lamb
- Newly born lambs have tightly-curved shiny, black fur. It is used in full-fur garments such as coats, skirts, and as trimming, edging, lining and for accessories
- Karakul lamb fur accounts for almost 12% of the world's fur trade, second only to mink



# Dairy

- Sheep's milk is also made into yogurt, butter and ice cream, however it is mostly used to make cheese
- Sheep cheese comprises about 1.3% of the world's cheese production
- Some of the most famous cheeses were originally made from sheep's milk: Roquefort, Feta, Ricotta and Pecorino Romano
- The US is the largest importer of sheep milk cheeses



# Landscape management

- Sheep and goats have been used for centuries to control unwanted vegetation, grazing as a feed-based service is a relatively new phenomenon
- There are “sheep for hire” services to control unwanted vegetation in areas difficult to mow (hills, forests, rocky grounds or where there are harmful weeds)



# How to get started?

- Don't buy animals from sale barns. Usually there is a reason why those animals are for sale, and you don't want to start your herd with unhealthy animals
- Once you have found a producer with sheep for sale, visit the farm and observe the flock and management

The animals will adapt more easily to your farm if you keep them in similar conditions to what they are used to



# Feeding sheep

- Sheep will typically consume 2-4% of their body weight (on a dry matter basis) each day in feed
- Animal size, stage and level and production can make this vary
- Forage from brush, pasture and range can be maximized as low-cost feeds
- Sheep can convert obtain most of their nutrition from forage and transform it into high quality fiber, meat and milk



# Feeding sheep

Since they will get most of their nutrition from the forage, it is important to provide them with good quality vegetation

Perennial Grasses	Cool season	Tall fescue, orchard grass
	Warm season	Bahia grass, Bermuda grass
Annual Grasses	Cool season	Annual ryegrass, oats, wheat
	Warm season	Crab grass, dwarf pearl millet
Legumes		Alfalfa, clover, lespedeza, birdsfoot trefoil
Root crops		Brassicas



# Grazing

In some operations particularly dairies, sheep are raised in confinement and all their feed is brought to them. However allowing sheep to graze can lower costs in the following ways

- By reducing purchased grain costs
- By eliminating forage harvesting costs
- By eliminating manure removal costs
- By lowering fertilizer costs as manure nutrients are returned to the soil



# Controlled grazing

- In the US, continuous grazing is a common practice, characterized by giving the animals unrestricted access to all the pastures throughout the year
- However feeding sheep in a sustainable and economical way is better accomplished by a controlled, rotational grazing system, also known as **management intensive grazing (MIG)**
  - This system is more commonly used for cattle than with sheep or goats
  - It is based in dividing the pasture into smaller areas and controlling the access of the animals into each paddock

- Better use of the pasture
- More uniform grazing
- Can harvest surplus for hay
- Water is closer to the animals



# Intensive rotational grazing

To make sure that the sheep always have access to enough vegetation of good quality, the best grazing system for efficient use is: intensive rotational grazing



# Controlled grazing

- In this grazing system, animals are moved frequently to fresh pasture to maximize quality and quantity of forage growth
- The herds graze one portion of the pasture, or a paddock, while allowing the others to recover
- Resting grazed lands allow vegetation to renew energy masses, deepen root systems and increases total biomass production

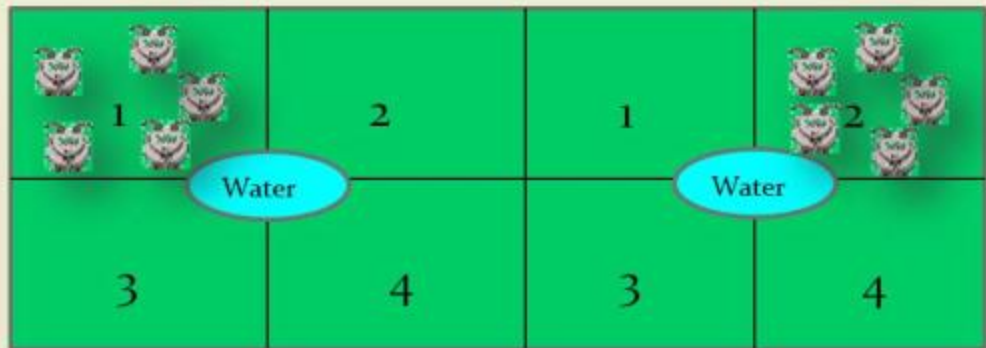


<http://www.ext.colostate.edu/sam/pasture.html>

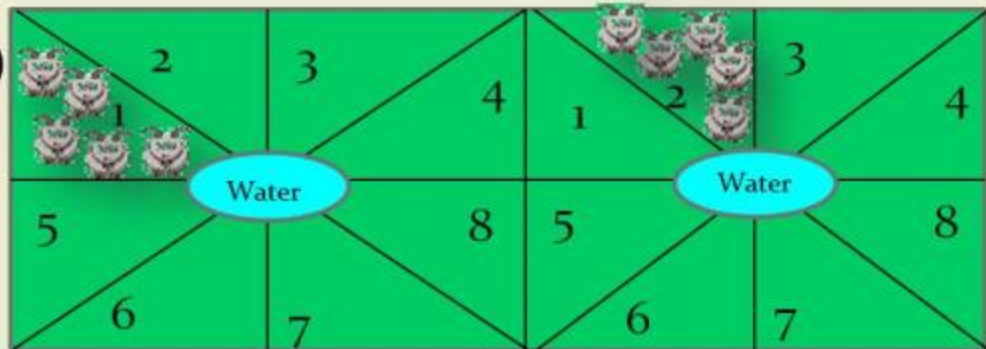
## Continuous grazing



## Rotational grazing



## Management Intensive grazing (MIG)



# Benefits of MIG

- Pasture forage plants can grow back without using up all their root reserves
- Woody plants may need to be rested a full year to remain a forage source for sheep
- Legumes and native grasses may reappear in the pasture, and producers often report that the pasture plant community becomes more diverse
- MIG can improve the pasture, extend the grazing season, and enable the producer to provide a higher quality forage at a lower cost with fewer purchased inputs
- MIG can be useful in reducing internal parasite problems, if farmers are careful to move the sheep to a new pasture before the forage plants are grazed too short (too short is less than about 4 inches)



# MIG notes

- One of the only limitations with this system is that you will require adequate fencing and sufficient watering and shelter facilities
- MIG requires significantly more management skills and may need a lot more work than normal grazing
  - Generally animals are kept in the paddocks for only a few days (less than 1 day and up to 10 days)
- How long the animals can stay in the paddock depends on:
  - Number of animals
  - Quality and quantity of the forage
  - Intensity of management
  - Time of the year
  - Stage of growth of the forage



# MIG notes

- When beginning with IG, make big paddocks and use long rotations
  - As producers become more familiar with the pasture plants and the goats' grazing habits, they usually subdivide paddocks with electric fence
- Temporary subdivisions allow the producer to define the paddock in response to different growing conditions and the sheep's changing feed requirements



# More MIG notes

## MINERALS

- Minerals need to be available at all times. It is best to feed calcium, phosphorus and trace minerals in a salt mixture to ensure that the animals eat them
- Test your forages to determine their mineral content and adjust mineral supplements as needed
- Mineral content of forage is quite variable across the country, and the type, stage and level of production of the animals, therefore no one mineral supplement formula is right for all locations or situations
- Your local extension agent can have your forage analyzed



# Overgrazing

- When grazing sheep, farmers must protect their pastures from being overgrazed.



## Overgrazing can:

- Reduce the longevity of the stand and exposes more soil to erosion
  - Eventually kill the plants
  - Mean the animals don't get enough food
  - Increase the chance of animals ingesting internal parasites larvae
  - Create bare spots, creating opportunities for undesirable weeds and erosion
- 
- The end result of overgrazing is reduced performance of both the pasture and the animals, and health problems for the animals
  - To prevent overgrazing, farmers should be careful to understock rather than overstock land and always remove animals from a pasture when the pasture is grazed down to about 3 to 4 inches
  - Browse must be managed so that it is maintained and not killed. If you want long-term production of browse, you must rotate the animals and not allow the area to become over-browsed

# Supplemental feeding

- During wintertime or during the dry season, the animals will likely need some feed supplementation
  - Grain (corn, barley, oats) provides energy
  - Soybean or cottonseed meal provide energy

Balancing the ration will help to ensure that the animals receive the necessary nutrients to grow and produced



# More MIG notes

## WATER

- Fresh, clean water must always be available
- Animals can have access to a central water source available from every subdivision or water is provided separately to each of the pasture's subdivision
- This can be a challenge and it is another capital expense
- Feed intake will decrease more for sheep than for cattle if clean water is not readily available



# Body condition

- Your goal in feeding your animals is to meet their nutritional requirements and to keep them in a productive condition
- One way to monitor the animal's condition is to assign body condition scores
- Using this system you can adjust your feeding program to allow most of your flock to maintain moderate condition
  - Using this system, you can evaluate the muscling and fat deposition. For most of the life cycle of the sheep, the goal is to keep them in moderate condition (score 3). When ewes are nursing twins, some weight loss is expected. Even with good feed, body condition may be a 2
- This system can also be used to determine market readiness

# Body condition scoring

Body condition scores	
Score 1	Sheep is extremely thin; skeletal features are prominent under the skin; weak but has enough strength to move with the herd
Score 2	Sheep is thin but looks strong; no evident fat over backbone, rump and ribs, but skeletal features do not protrude
Score 3	Sheep are thrifty with evidence of limited fat deposits in fore rib, over shoulders, backbone and tail head; hipbone remains visible
Score 4	Moderate fat deposits give the sheep a smooth external appearance over the shoulder, back, rump and fore rib; hip bone is no visible; fat deposition is evident around the tail head
Score 5	Sheep are extremely fat with the excess detectable over the shoulder, backbone, rump and fore rib. Excess fat deposits in brisket, flank and tail head regions. Sheep appear uncomfortable and reluctant to move about

# Body condition scoring



Your goal should be to keep your animals with a body score of 3

# Predator control

- Due to their size and normal behavior, sheep are easily attacked
- Coyotes, mountain lions and even neighborhood dogs can attack them
- The first step to protect them is to have a good fence
- The next step is get a guardian animal to be with them, it can be a donkey, llamas or most commonly a guardian dog
- The most commonly used breeds of dogs are Great Pyrenees, Anatolian Shepherds, Komondors and Kuvaszcs



Anatolian Shepherd

# Reproduction: Ewes

- A female sheep (ewe) reach puberty between 5 and 12 months of age (depending on the breed and nutrition)
- It should have at least 70% of its mature weight before breeding to ensure that the pregnancy doesn't stump its growth
- Most sheep are seasonal breeders, reacting to shorter days as a cue for breeding
- The presence of a ram stimulates the reproductive cycle
- The typical peak time for breeding is the fall (October-November) and ewes come into heat every 16-17 days
- Gestation is about 150 days



# Reproduction: Rams

- Rams reach puberty between 5-7 months, at approximately 50% of their weight
- Before you breed the ram it is important to have him tested by a veterinarian or other trained professional to make sure that he doesn't have any reproductive problems
- Also it is important to observe carefully the animal before you use him for breeding. Health or behavior problems could be passed on to the lambs and create problems for your herd
- Rams are usually aggressive, especially during breeding season
- Never let children around the rams and never turn your back on a ram



# Lambing

Breeding and lambing should be planned based on factors such as:

- Market demands
  - What type and size of animal do your clients want?
- Timing
  - Avoid lambing in January! Schedule your breeding program so that lambing starts in March
- Resources
  - Will you have feed during the lambing season? Will the ewes have some shelter for lambing?



Lambing in the snow

# Lambing

- In general, healthy ewes will lamb with no assistance
- Lambing can be done in sheds or barns or on the pasture (depending on resources and the weather)
- Pasture lambing reduces the need for buildings. This method is especially used in the South part of the country where inclement weather is not a problem

Lambing in a shed or barn will protect the young animals from bad weather and predators, but by bringing all the ewes together and keeping them in an enclosed building the animals could be exposed to disease agents and the disease can spread to the herd



# Lambing

- Optimum lambing time varies on the production and marketing situation
- By timing lambs to be born around the beginning of spring, you can ensure warmer temperatures for the newborns and enough forage for the lactating ewes
- However, also during this time the number of parasites increases in the pasture

So depending on the conditions and parasite loads in your farm, you should schedule the lambing to ensure they have enough food but before the parasite load peak in the farm



# Lambing

- Newborn lambs must receive colostrum (first milk) as soon as possible (ideally in the first 12 hours)
- This milk contains antibodies that will help protect them from disease
- Monitor lambs to make sure that they are nursing and have bonded with the ewe



# Lambing

- Ewes should have enough milk for twins, but some ewes might not be able to raise triplets or quadruplets
- Lambs that have had enough milk feel heavy when you lift them and have slightly rounded bellies
  - Lethargic or crying lambs may be a sign that they are not nursing or are not getting enough milk
  - Starvation is the leading cause of death in the first two days of a lamb's life



# Docking tails

- It has been traditionally done to prevent fecal matter from accumulating on the tail
- It also can prevent fly strike (wool maggots)
- It helps producers to observe the ewe's udder and detect potential problems
- Some costumers prefer lamb that have not been docked, on the other hand most shearers prefer docked sheep because it is easier to shear them without the long tails



Properly docked tail



Sheep with long tail

# Breeds that are not docked

- Hair sheep do not need tail docking (the most common hair sheep are: Barbado, Barbados Blackbelly, Damara, Dorper, Katahdin, Pelibuey, Royal White, Santa Ines, St. Croix, West African)
- There are certain sheep breeds that normally have short tails, such as the East Friesian, Finnsheep, Gotland, Icelandic, Romanov, Soay, Shetland



Santa Ines



Barbados Blackbelly



Icelandic

# Marketing

- Sale barn
- Pooled sales
- Packed, wholesalers, dealers and retailers
  
- Direct marketing
  - On farm
  - Live
  - Whole/half
  - Cuts
  - Farmers' market
  - Restaurant/stores
  - Ethnic/religious groups
  - Buyers clubs
  - Internet sales



# Sale barns

- Taking sheep to a local auction is one of the most common methods used by producers
- It is fast and requires little effort from the producer
- Visit the sale barn beforehand and meet the owner. Ask about the procedures and talk to customers
- Most auctions are bonded, which means you will be paid within 24 hours of the sale
- The biggest disadvantage is that you have no control over the price



# Pooled sales

- You can cooperate with other producers and sell large volumes of animals and receive a better price than at a traditional sale barn
- The customer will tell you how many animals and what size they are looking for
- The benefit of this sale is that you usually know what the buyer will pay prior to selling the animals
- This type of sales work better if you are part of a group or organization that works well together



## Packers, wholesalers, dealers and retailers

- A meat packing business generally owns its own processing plant and sometimes buy animals to slaughter, process and resell
- A wholesaler buys animals takes them to slaughter and sells the products to a variety of retailers (“middleman”)
- The problem is that you will get a lower price for your product but you don’t have to worry about getting clients



# Direct marketing

- Direct marketing is when producers sell their products directly to their consumers
- This allows the producer to bypass the middleman and be able to set their own prices and conditions
- Direct marketing takes a lot of time and effort and it may be limited to your market, plus you will need to have a facility to talk to clients
- You can make sales:
  - On farm
  - Farmers” market
  - Restaurants/Stores
  - Buyers club
  - Internet sales



# Direct marketing

You will have to decide if you are going to sell the animal:

- Live (some of your clients may ask to slaughter the animal according to their beliefs. Check with state and local authorities before allowing this type of slaughtering in your property)
- Whole/halves (this is your best option because you sell the whole animal including less valuable cuts)
- Cuts (it is very time consuming but it is usually what clients will want, you need to determine the price of each cut and you can also sell value-added products, like sausages, jerky and pet food products)





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