

# MARY HAD A LITTLE LAMB

A Sheep Rancher Struggles with Predators



## CHOICES & CONSEQUENCES LIVING WITH WILDLIFE

### Teacher's Guide

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In cooperation with the  
Colorado Foundation for Agriculture  
and  
USDA Wildlife Services

# DRAFT as of 11/01/01

# DRAFT

This activity is part of a program that asks students to use their problem-solving abilities to evaluate, plan and design a solution to real life dilemmas. This dilemma focuses on predator problems a livestock producer is facing. It is one of a series of dilemmas that allows students to learn about natural resource and environmental issues by developing solutions to complex and actual problems being faced.

As your students discuss and work to develop a solution to the dilemma, they are able to ask questions of professionals working in the area. Wildlife biologists, livestock producers, wildlife managers, university and government agency personnel and others on the advisory panel have agreed to answer your students' e-mailed questions. The questions your class e-mails are sent to everyone on the advisory panel. Different panel members will respond and their responses are sent to everyone participating. This is to prevent duplication of answers. You will find that not all the advisory panel agree on how problems should be handled. It is up to your students to weigh the pro and con of each idea.

*Science standard addressed:*

- Students will know and understand interrelationship among science, technology and human activity and how they affect the world.

*Benchmarks addressed:*

- Design and make a solution that addresses an everyday problem, and communicate the problem, design and solution. (K-4)
- Describe the advantages and disadvantages that might accompany the introduction of new technology. (5-8)
- Analyze benefits, limitations, costs and consequences involved in using technology. (9-12)



# DRAFT

## MARY HAD A LITTLE LAMB

A Sheep Rancher Struggles with Predators

Mary Had a Little Lamb – A Sheep Rancher Struggles with Predators

There are no 'right' answers. Creating public policy is a difficult process that involves balancing conflicting demands.

This dilemma contains multiple, related parts. Read the overview, the additional background, the questions and then the 'Choices and Consequences' section.

Have your students discuss the problems as a class or in working groups. Make a list of questions your student would like members of the panel to answer and e-mail them to the panel. Your questions will be sent to everyone on the panel and their response will be sent to you and other panel members. Don't be surprised if the panel members disagree on their answers. Each panel member comes with different background, experience and education.

After reviewing the panel members' responses and discussing them, have your students create their solution to the scenario and submit it to the panel to review.

The panel will review your solution and pose questions back to your class illuminating the ramifications of their decisions.

After reviewing the questions from the panel, review your students' solution with them and determine whether they feel it is still the best solution.

### Overview:

The object of this exercise is for you to help the sheep producer, Mary, decide what to do about her predator problems. Some of Mary's sheep are being killed by a marauding bear. She also has a pack of coyotes that regularly feed on sheep. She is concerned that not all the damage is being done by these coyotes as she has also seen a pack of dogs roaming the area.

*Black Bear*



Mary, our sheep producer, wants to protect her lambs and do it with as little impact on local wildlife as possible. There are many questions woven into the exercise. Use them to help familiarize yourself with Mary's predicament and think about her options. Some answers are not immediately clear. Not everyone in your class will probably agree on what is the best solution. For each option you will find some advantages and disadvantages. Write those down, and decide as a class which of the options are most and least preferable -- and why. Each day, make a list of questions that you have or decisions you have made as a class about what Mary should or shouldn't do.

*Coyote*



*Mountain Lion*

*Coyote & Sheep*



# DRAFT

Mary HAD a little lamb...

The Dilemma:

Mary has a flock of sheep and is continuing her family's tradition of sheep ranching. Her flock has grown from twenty to 650 sheep. Mary owns 1,000 acres. She has divided the ranch into pastures so she can rotational graze her sheep. On 320 acres she raises hay to feed the sheep in the winter and to sell to people who own horses in the area. In the summer time she rents public lands to graze her sheep. Her grazing allotment is in the forest that border her land. For the last several years she has been working closely with forest service managers to use her sheep to help control some noxious weed problems that have developed on these federal lands. However, this has been causing her some problems when one of her guard dogs chased a person on a mountain bike.



*Akbash Guard Dog*

*Coyote Sheep Kill*



How many sheep would a bear eat?

Near Mary lives a bear that likes little lambs as much as Mary but in a slightly different way. The bear, which may have cubs, has been regularly attacking the sheep. Mary found several of her sheep killed in one area by the bear. She suspects the bear might be teaching its cubs how to kill sheep.

Many of her ewes have also been lost to coyotes. The coyotes form a gang and attack the ewes. When a ewe gets knocked off of its feet, it is helpless to be able to defend itself. The coyotes work in packs with a couple distracting the guard dog and the others killing the sheep. The coyotes eat the sheep. Mary purchased another guard dog for \$750 to help protect the sheep.

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Several times she has found dead sheep on her property, but they have not been eaten. The tracks around the dead animals look more like dog tracks than sheep tracks. Mary suspects that dogs from a new subdivision that is being developed down the road from her ranch are forming packs and chasing her sheep. Many of the people who moved into the subdivision moved there because they liked the open space so their dogs would have room to roam. Mary has built woven wire fences around her pastures, but the dogs or coyotes have dug holes under the fence to get into the pastures.

During lambing season in March and April she keeps the pregnant ewes and mothers with new lambs in a fenced area close to her house so she can protect them from the bear and other predators like coyotes, mountain lions, eagles and bobcats. Even by doing that and using a new guard dog, Mary is losing nearly 20% of her newborn lambs to predators. Five years ago she was losing 15%. The percentage keeps rising.

How Mary deals with the predator problem depends on whether she is trying to control the predators on her private lands or on the federal lands. She has more options on her own land than on federal lands.

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## Questions:

Mary's 650 ewes gave birth to 923 lambs this year. What is her lambing percentage?

$$923 \text{ divided by } 650 = 142\%$$

Name 5 animals that are predators in Colorado.

bears, coyotes, mountain lions, birds of prey—eagles, hawks, owls, bobcats

During what months of the year do ewes usually lamb in Colorado?

April and March

If Mary loses 20% of her 923 lambs to predators this year, how many does she lose?

$$923 \text{ times } .20 = 185 \text{ (rounded up)}$$

If Mary loses 5% of her ewes to predators, how many does she lose?

$$640 \text{ times } .05 = 32$$

If the value of each lamb is \$60, how much money has she lost?

$$185 \text{ times } \$60 = \$11,100$$

If the value of each ewe is \$80, how much money has she lost?

$$32 \text{ times } \$80 = \$2,560$$

If Mary keeps 60 lambs to replace the older ewes or those killed by predators, how many of the lambs will she have available for sale?

$$923 - 185 = 738 - 60 = 678 \text{ lambs for sale}$$

How much will she receive for the sale of these lambs?

At \$90?

$$678 \times \$90 = \$61,020$$

At \$60?

$$678 \times \$60 = \$40,680$$

At \$40?

$$678 \times \$40 = \$27,120$$

## Notes to teacher:

We have printed the answers in blue. There are student worksheets that can be downloaded for your class to answer these same questions.

National average for sheep lost to coyotes is 7% lamb loss and 3% ewe loss.

National average for sheep lost to bears is ??????

National average for sheep lost to mountain lion is ?????

National average for sheep lost to birds of prey is ????

\*\*\*The figures I found were for 1988. There are probably more current data.

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It costs her \$1.35 per animal unit to rent this pasture. Five head of sheep can be pastured for each animal unit. She rents this pasture for six months—May 1 through October 31st (figure costs based on 650 ewes and 785 lambs). What is the cost for renting the forest pasture?

$$650 + 785 = 1435 \text{ sheep } 1435 \text{ divided by } 5 = 287 \text{ animal units} \\ 287 \times \$1.35 = \$387.45 \text{ per month } \times 6 \text{ months} = \$2324.70$$

She hires a sheep herder to stay and move the flock throughout her forest allotment. For the six months the herder tends the sheep, he is paid \$1500 per month. Mary also furnished his food and other extras which run \$300 per month.

What is the total cost for the herder?

$$\$1500 + \$300 = \$1,800 \times 6 \text{ months} = \$10,800$$

A sheep eats 4 pounds of hay/grass per day. How much hay will Mary need to feed the sheep if for 3 months she feeds the sheep 4 pounds of hay per day and for 3 month she feeds the sheep 2 pounds of hay and rotates the sheep in and out of pastures on her ranch. She is only feeding her ewes during this time, so use the figure of 650 ewes being fed hay and figure 31 days in each month.

$$31 \times 3 = 93 \times 4 \text{ pounds} = 375 \text{ pounds } \times 650 \text{ ewes} = 241,800 \text{ lbs} \\ 241,800 \text{ divided by } 2000 = 122 \text{ tons}$$

$$31 \times 3 = 92 \times 2 \text{ pounds} = 184 \text{ pounds } \times 650 \text{ ewes} = 119,600 \text{ lbs} \\ 119,600 \text{ divided by } 2000 = 60 \text{ tons}$$

$$122 + 60 = 182 \text{ tons of hay need to feed her ewes}$$

Her 320 acres of hay averages 1 1/2 ton of hay to an acre.

How many tons of hay does she raise?

$$320 \times 1.5 = 480 \text{ tons}$$

Is this enough to feed her sheep? **Yes**

How much extra does she have? **480 tons—182 tons = 298**

If she sells this for \$80/ton, how much does she receive?

$$298 \times \$80 = \$23,840$$

Mary raises her own hay. She estimates her hay costs \$40 a ton to cut, rake and bale. How much is her profit on the hay she sells? **298 x \$40 = \$11,920 cost and profit**

If she was able to sell her hay for \$90 a ton, how much would she receive? **298 x \$90 = \$26,820**

What would be her profit?

$$\$26,820 \text{ minus } \$11,920 = \$14,900$$

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Shearing is a sheep hair cut. It takes off the heavy wool coat so the sheep can be cooler in the summer time.

Mary also shears her ewes in May. Each ewe produces 8 pounds of wool which Mary sells for \$.50 a pound.

How many pounds of wool do her sheep produce?

$$650 \times 8 = 5,200 \text{ pounds}$$

How much income will Mary receive for the wool?

$$5,200 \times .50 = \$2,600$$

Mary hires a sheep shearer to shear the wool. The shearer charges

Mary \$2.50 per head to shear the sheep.

$$650 \times \$2.50 = \$1,625$$

In addition to her hay and pasture rent costs, Mary also has \$5.00 per ewe per year for veterinary care.

$$650 \times \$ = \$3,250$$

Mary must also feed and care for two guard dogs which costs her \$75 per dog month. (Note: Mary has her ranch, equipment and sheep paid for, so we are not figuring any costs for these items.)

$$2 \times \$75 = \$150 \times 12 \text{ months} = \$1,800 + 750 \text{ cost of new dog} = \$2,550$$

Make a list of all of Mary's ranching costs.

pasture rent	\$ 2,324.70
herder	\$10,800.00
hay	\$11,920.00
vet	\$ 3,250.00
shearer	\$ 1,625.00
dogs	<u>\$ 2,550.00</u>
Total costs:	<u>\$32,469.70</u>

Make a list of all of Mary's sources of income from her ranch. Figure that she received \$40 for each lamb and \$80 per ton for her extra hay.

selling lambs	678 x \$40 =	\$27,120.00
selling hay	298 x \$80 =	\$23,840.00
selling wool	5,200 x .50 =	<u>\$ 2,600.00</u>
Total income:		<u>\$53,560.00</u>

How much money does she earn on her ranch?

(total income minus expenses)

$$\$21,090.30$$

How much more money would she make if the predators had not killed her sheep?

Ewes lost:	32 times \$80 =	\$2,560
Lambs lost:	185 times \$40 =	<u>\$7,400</u>
Total lost		<u>\$9,960</u>

The number of animals lost to predators has been increasing over the last several years. Mary is afraid she will lose the ranch because the bear and other predators are killing so many sheep.

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## Choices & Consequences

Mary is afraid she will lose the ranch because the bear and other predators are killing so many sheep. She is 55 years old and has no other training or skills for other types of jobs. Mary has several choices open to her in dealing with the bear. Here are a few:

### Methods for managing bear:

1. Mary could shoot the bear. The law in her state allows Mary to kill a bear that is destroying her livestock.

**Pros:** Usually the offending animal is removed.

**Cons:** Finding and shooting the bear can be difficult, since bears are usually most active at night. Furthermore, some people would be angry with Mary for shooting the bear because they believe that we should learn to live with all wildlife - including predators.

**Costs:** The price of her bullets.

Questions:

- Is it right to shoot an animal for harming livestock?
  - What are the hazards of chasing a bear with a gun in the dark?
2. Mary could hire a professional trapper to shoot or capture the bear by placing a foot snare along a foraging path. An experienced trapper could snare the animal causing damage, but there is also the possibility that animals that are not threatening the sheep might be caught and injured by accident. Some states have passed laws that limit the time period snares like these can be used. Also permits to use these types of traps on the ranch must be obtained from state's wildlife agency. A bear snared because it has been killing livestock is usually shot.

Is this the right picture???



### *Snare Trap*

**Pros:** Often professional trappers are more successful at removing the bear than the rancher because they have more experience and training.

**Cons :** Professionals are not required to do any reporting or documentation on animals taken.

**Cost:** ????

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Questions:

- How do foot snares work?
- Are these devices cruel?

Are these devices effective in catching predators?

3. Mary could ask Wildlife Services to snare the bear.

**Pros:** Government personnel are required by law to document removal of animals and method used. They also have access to the latest research methods for solving damage problems.

**Cons:** Some people do not like it when the animal is killed to solve the problem.

**Costs:** If Mary is a member of her state's sheep producers association, then she pays \$1.00 per head into a fund to be able to use Wildlife Service assistance.

4. Mary could ask Wildlife Services to track down the bear so that it can be caught in a large live-trap called a culvert trap, and relocated. Relocation requires the permission of the state's wildlife agency. Sometimes they deny relocation requests.

- **Pros:** There are many people who do not want animals shot and relocation appeals to them more.
- **Cons:** There are several disadvantages to relocating a bear. Relocation can be expensive, there seems to be a higher mortality rate among relocated animals than among the average animal population, and many relocated bears end up causing damage again somewhere else. People who live near where a problem bear is to be relocated often do not want the bear brought in for fear it will harm their animals and property.
- **Costs: ???**



*Live Trap*

Questions:

- What problems does relocation solve?
- What problems does relocation create?
- Would relocation be a preferred choice?

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## ***Coyote part of the dilemma:***

Over the last few years the coyote population around the ranch on the federal lands where Mary grazes her sheep has been increasing. These management methods are some she can use on her private land, she is not allowed to use them on public lands.

## **Methods for managing the coyotes:**

1. Kill the coyotes. Calling and shooting coyotes at night using red filtered light is one effective method for removing the coyotes. The coyotes could also be captured in leghold traps or snares then euthanized.

**Pros:** It is an effective way to reduce the number of coyotes in an area.

**Cons:** Some people do not want coyotes killed.

**Costs:** ???

2. Capture and relocate coyotes. Some state wildlife laws prohibit capturing and relocating coyotes. Permission must be obtained from the state wildlife agency.

**Pros:** This is a more appealing option to many people.

**Cons:** Capturing the coyotes can be difficult. Some places do not allow trapping of animals. Coyotes are often too smart to be caught in padded leg-hold traps or neck snares. Coyotes will come back to an area unless they are relocated a long ways away. Coyotes can carry diseases that might be introduced into the new area.

Also, studies have shown that when coyotes and other animals are relocated into a new area conflicts often arise between the resident animals and the relocated animals. Because the relocated animals are unfamiliar with the territory, they often come in conflict with humans. The most common problem is that they are run over by cars.

**Costs:** ?

3. Scare the coyotes away using frightening devices.

**Pros:** This option appeals to some people.

**Cons:** Coyotes commonly get accustomed to most scaring devices and fail to react after the devices have been in place for a while. Harassing them with vehicles is labor intensive and often results in the coyotes running across areas where problems result.

**Costs:** ?

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## Managing the bear and coyote problems

Mary could build stronger fences to keep the predators out. Good electric fencing that might keep out smaller predators such as coyotes but will not stop bears (and even the coyotes will figure out how to get past it eventually), and a tall, deep and sturdy fence that would stop a bear would be very expensive. If Mary's sheep are being killed on her private property, she may be able to get financial assistance for fencing costs from the state's wildlife agency. This agency may have a program to assist with costs to prevent damage, as a preferred alternative to paying for damages as they repeatedly occur. Because Mary grazes her sheep on private property, this assistance may be of some use to her. However, she can not use this assistance when she grazes her sheep on federal lands. Federal land is land managed by the U.S. Forest Service or Bureau of Land Management.

**Pros:** It is a non lethal solution.

**Cons:** It is very expensive to build a predator proof fence and needs to be maintained each year. It can also cause problems for other wildlife like deer that can get tangled in the fence when they try and jump it.

**Costs:** A good bear-resistant fence would cost Mary about \$6 per linear foot to build. If Mary were to enclose a square 320 acre pasture with such a fence, how much would it cost?

320 acres x 43,560 square feet in an area = 13,939,200 square feet in the enclosure. Each side is 3,733.52 feet long x 4 sides = 14,934 feet of fencing needed times \$6 = \$89,604 to fence the property.

*Question:* How does the cost of the fence compare to her losses from predators each year? Her losses this year were: \$9,960; the fence one time cost is \$89,604. This does not include cost to maintain the fence each year.

2. Mary could put her sheep in a barn every night. Mary would have to build a much larger barn than she has now. To build a big barn would cost her \$30 a square foot. She is concerned about enclosing the sheep in a barn because disease and parasites spread easily in large numbers of sheep confined together. Reducing the size of her flock so that they would fit in her existing barns more comfortably would make it impossible for Mary to earn a living from raising sheep.

*Barn Questions:* In "The Stockman's Handbook" 6th ed., M.E.

Ensminger recommends that ewes with lambs be given at least 20 square feet of floor space each when confined to a barn or a shed for long periods. How many square feet of barn floor space would Mary have to provide to house her 650 ewes after they lamb?

650 x 20 square feet = 13,000 square feet time \$30 = \$390,000

If it cost her \$30 a square foot to build a barn, how much would the barn cost her?

How does the total floor space in #1 compare to the floor space in your classroom?

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3. Mary could hire a shepherd to watch her sheep all year. She currently hires a shepherd to watch the sheep in the summer while they are on federal lands. The shepherd would be responsible for protecting the sheep at all hours - but can't, of course, be at all places on her ranch at once. Also, a shepherd faces the same difficulties that Mary does when trying to stop a bear attack in the dark. There aren't many people experienced in herding and caring for sheep any more. She has been asking her sheep producer friends if they know of a shepherd she can hire for the winter months, but no one knows of anyone available.

*Questions:* If she could find a shepherd to hire for the winter as it does in the summer, how much would it cost her?

herder \$10,800.00

How much money would she make from her ranch if she hired a shepherd to work for her year round?

Her current income is \$21,090.30 minus cost of herder \$10,800= \$10290

What kinds of skills should a good shepherd have?

knowledge of sheep

knowledge of health care for sheep

ability to campout

tracking skills

knowledge of plants

4. Mary could submit a claim to the state wildlife agency and ask to be paid for the sheep that the bear had killed. This option would not eliminate the source of the problem, but compensates Mary for the damage she can prove was caused by the bear. The agency pays for these claims because wildlife, including bears, are considered a public resource. Some states have adopted the philosophy that if the people want species like bear and mountain lions to live in the wild then the state should pay ranchers and farmers for the damage these predators cause to agricultural property. These damage claims are paid out of the hunting and fishing license fees collected from hunters and anglers by the agency. The agency does not pay for any damage done by coyotes, however. In recent years, some state's citizens have voted to restrict predator control. Because most voters are not hunters or fishermen, these sportsmen (and women) feel that the voters should pay damage claims themselves through taxes rather than use hunting and fishing license revenues. Furthermore, the U.S. Fish and Wildlife Service (USFWS) is also considering an opinion that it might not be appropriate for the state's wildlife agencies to be paying for these claims, if the payment of claims only assists agriculture but not wildlife. Others feel that these payments are appropriate because they help farmers and ranchers to continue to provide a home for wildlife.

*Questions:*

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How would Mary prove that a bear killed her lambs?

By the tracks around the carcass.

Will the state wildlife agency pay for lambs killed by coyotes?

No.

How much should the wildlife agency pay Mary for her lost lambs? Is it a fair price? How should it be established?

? *How is it usually done??????*

5. Mary could try other guard animals like llama and donkeys to protect her herd.

**Pro:** It is a non lethal method of control.

**Cons:** These animals have the same difficulty as guard dogs in protecting the sheep.

**Costs:** Llamas can cost between \$3,000 to \$4,000 and donkeys between \$500 and \$1,000. Plus there are the cost to feed and care for these animals.

6. Mary could just accept her losses and hope for the best. If the predators continue killing her sheep Mary may have to consider another way of making a living besides raising sheep or other livestock. This means giving up a ranch which has belonged to her family for over 100 years. Selling her land will most likely result in its conversion to houses, roads and businesses which will destroy the habitat necessary not only for the bear but for many of the other native animals and plants which live there.

*Questions:* Why do livestock sometimes become preferred prey for predators?

Livestock, especially sheep are easier for the predator to kill.

Why might it be good to protect some land from development?

It provides habitat for different wildlife than what inhabits developed areas. Many people like to see open areas.

Is keeping land in agriculture a way to preserve wildlife habitat? - what are other alternatives? Yes, keeping agriculture land agricultural help provide wildlife habitat. Other ways are for government agencies like cities to purchase land for open space. The advantage of leaving the land in agriculture is that the land owner absorbs the cost of maintaining the land for the wildlife. When a city purchases land then the taxpayers have an ongoing expense of managing the land.

What are the advantage of

6. Do some variation of all of the above.

7. Find a completely new solution.

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**Managing for packs of dogs.**

**What should Mary do here?????**

**I think we need to address this problem, even if it is not a wildlife services issue....**

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## Sample of Mary had a Little Lamb Questions & Answers

QUESTION: Has the DOW thought of a reverse invisible fence like dog owners use to keep their pets in? Bears who become troublesome could be fitted with a shock collar triggered by a buried wire, or some sort of proximity sensor.

ANSWER: A few years ago some colleagues of mine doing cattle research in eastern Oregon experimented with a new product called "Bo-Zap". It was an electronic eartag that gave cows a mild to severe shock when they came too close to transponders set up to protect a riparian area along some streams. I believe the tags were/are being manufactured by a company in Texas. What the researchers found was that the device worked alright sometimes, but some of the cows found ways to beat the system. Like any electronic devices, there was always some number of defective transponders which the cows would eventually find and sneak through. Some cows were more sensitive to the shock than others. Possibly, as some cows will do with electric fence, some cows might have learned that if they charged through the transponders they'd only get one or two quick shocks before they were far enough away on the other side. You would probably have similar experiences using a device like that on a bear. And I expect a bear is a good deal more creative than a cow. Also, the shock collar is going to have to run on batteries. That means hunting the bear down every few weeks or so to change them. With one bear that might be do-able (I defer to our DOW specialist to answer that), but if you've got several it might become a real headache.

Marc R. Horney  
Agriculture/Natural Resources & 4-H Youth Agent  
El Paso County Colorado State University Cooperative Extension

QUESTION: Perhaps there is a high frequency sound that would irritate the bear and be triggered by a motion sensor.

ANSWER: As for sounds you need to consider (1) the impact that sound barrier will have on all the other wildlife in the area and (2) research seems to indicate that animals which these barriers have been designed for (insects, rodents, small mammals and dogs) tend to get used to the sound after a while and ignore it.

Marc R. Horney  
Agriculture/Natural Resources & 4-H Youth Agent  
El Paso County Colorado State University Cooperative Extension

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QUESTION: How much does she make per sheep?

ANSWER: Assuming today's market prices for commercial sheep, Mary's lambs will be worth \$65 to \$70 dollars per head. However, all of her feed costs, operating costs, living costs etc. must be paid by the income from the sheep.

Sandy Snyder  
Colorado Wool Growers Association

QUESTION: How long does she feed her lambs before sending them to market?

ANSWER: Mary doesn't use any supplementary feed for her lambs so they are grown on the grass and other forage available on the ranch. When they reach 120 to 130 pounds they are marketed. Because the lambs will have different growth patterns it will take from 6 to 8 months to reach that weight and maybe longer depending on the year.

Sandy Snyder  
Colorado Wool Growers Association

QUESTION: Could she shift to cattle? They seem more resistant to predators.

ANSWER: Mary doesn't want to shift to cattle. It would take an investment in equipment and facilities to handle them because they are larger and require specialized chutes and handling facilities. Besides that, cattle are more difficult to handle and work with than sheep. Remember, Mary doesn't have any hired hands to help her. Cattle would be slightly more resistant to predators but bears like beef too. Another factor could be that Mary's ranch and forage is better suited for sheep than cattle.

Sandy Snyder  
Colorado Wool Growers Association

ANSWER: As Sandy stated, simply switching to a different species of livestock is not as easy, knowledgeable accomplished, nor affordable as you might think. Loading shoots, handling equipment etc. for cattle are thousands of dollars more than the equivalent equipment for sheep; essentially none of the sheep equipment could be used for cattle. Raising cattle is not the same as sheep from a "technical" viewpoint, Mary doesn't have experience with cattle or have specific knowledge about cattle health, nutrition etc. You might think that Mary would be better off just to quit farming and go into another field or endeavor. This would take specialized training which would cost Mary money for school

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etc...I haven't heard of any Government programs for training assistance for farmers, similar to what the forest/lumber industry people get. By in large, they are own their own for a career transition...how could Mary do this if she's sold the farm and has no income. You certainly wouldn't suggest that Mary go on welfare.

Phyllis Tracy

Little Flock in the Forest Sheep Company

QUESTION: Numerically, list the predators according to lamb kills.

ANSWER: Predator losses according to species in Colorado in 1997 were as follows:

Coyotes: 21,700 head of sheep at a value of \$1,841,300

Bears: 4,900 head at a value of \$465,300

Lions: 2,600 head at a value of \$225,800

Domestic Dogs: 1,600 head at a value of \$148,600

Eagles: 1,000 head at a value of \$8,100

Fox: 1,000 head at a value of \$8,100

Bobcat: 300 head at a value of \$2,430

Sandy Snyder

Colorado Wool Growers Association

QUESTION: If you were to choose to kill the bear, exactly who would do it and how?

ANSWER: The bear could be shot by the livestock owner or by someone doing so on her behalf. This would only be a possibility if the bear were seen and it was safe and legal to discharge a firearm. The bear could also be captured in a live trap or legsnare and be euthanized using a legal euthanizing drug.

Craig.C.Coolahan

USDA Wildlife Services