

Lesson Plan**Grade 4 Social Studies Unit 3 Interdependence Module 3: Agriculture and Related Issues****Livestock Production in Saskatchewan****Knowledge Objectives:**

Students will know that:

- A wide variety of products, other than just food are made from livestock
- Animals raised in Saskatchewan require special care
- The type of care animals require varies with the species and with the season

Skills/Abilities Objectives

Students will:

- Access, organize, and present information on types of animals raised on farms in Saskatchewan and the products made from these animals
- Research and present types of care given to animals raised in Saskatchewan

Attitudes/Values Objectives:

Students will:

- Understand that livestock production is important to Saskatchewan's economy
- Livestock producers are responsible for proper care of their animals.
- Animals have special needs in certain climates
- Animal welfare is a concern of all consumers
- Changes in market economies have an impact on farm animals

Common Essential Learnings

CCT: Students can debate the pros and cons of certain livestock species and certain livestock practices, discuss market fluctuations and their impact on the livestock industry, do case studies and brainstorm what basic need is present or missing in several pictures of farm animals.

PSVS (VALUES): The humane treatment of animals is a social issue.

COMM: Students may research a certain species raised in Saskatchewan and share their information with the class. There may be students in the class who live and work on farms, and they may share some of the care requirements of their animals.

LITERACY: Students can read through information contained in this lesson plan, and also gather and analyze related material for group research projects.

NUMERACY: Livestock producers calculate how much feed and water would be required to feed a herd for a given period of time, including increasing calorie intake for cold weather.

Lesson 1: Types and Uses of Livestock Raised in Saskatchewan

Introduction:

Saskatchewan has an “agriculturally based” economy. This means that much of the money earned in this province comes from products grown on the farm, or on industries that are related to farming such as manufacturing of farm machinery and crop chemicals.

Agriculture has two main components: Crop production and livestock production. Crop production refers to the growing of plants such as grains, trees, flowers, or vegetables. Livestock production means raising farm animals.

Set:

Arrange the any of the following items on a display at the front of the classroom: Glue, crayons, cosmetics, fishing line, rubber from a tire or other source, pesticide spray, cough syrup or lozenges, any medicinal ointment, milk, margarine, butter, yogurt, caramels, gummy bears, marshmallows, Jello, pet food, paint, leather cleaner, leather, contact lens care products, ceramic dishes, shampoo, hair conditioner, gel capsules (such as vitamin e capsules), hair dye, household cleaner, linoleum, foam fire extinguisher, soap, and antibiotic medication.

Ask students what all these products have in common. The answer is they are all made from cattle.

Development: When students are asked what products come from cattle, they will likely answer meat, milk and other dairy products, and possibly leather. The above items are just some of the many every day products made from cattle. For a more complete list of products made from cattle, refer to the table in Appendix A.

Cattle are the most common type of livestock raised in Saskatchewan.

Vocabulary:

Cattle: Any animal belonging to the “bovine” species.

Calf: A baby bovine. A young animal is usually called a calf up until it is a year old.

Cow: A female bovine that has had a calf.

Heifer: A female bovine that has not had a calf yet.

Bull: A breeding male bovine.

Steer: A bovine male that has been castrated (had breeding organs removed).

Castrating calves is a normal part of cattle production. Steers do not fight with each

other like bulls would, nor do they bother the female animals in the herd. Usually calves are castrated when they are a few days to a few months old.

Herd: A group of cattle raised together.

There are three main types of cattle operations in Saskatchewan:

1) Cow-calf operations.

These farmers keep a herd of cows that they feel are of a desirable type; that is, they are large, strong, and hardy animals. Common beef breeds in Saskatchewan are Herefords, Charolais, Angus, Limousin, Blonde D'Aquitaine, Shorthorn. A cow-calf farmer will raise calves from these cows. A cow can normally have one calf a year. Usually cows have their calves in the spring time, so this is a very busy time for these type of farmers. The cow-calf farmer will usually sell his calves in the fall.

2) Feedlot operations:

“Feeder” cattle are young cattle that are being fed well so they grow big enough for slaughter, that is, to be butchered for meat. The provincial government in Saskatchewan has been encouraging more farmers in our province to start feeder operations. Feedlots can be very large, having thousands of animals on a single farm. Saskatchewan sells live animals from feeder operations to countries all over the world. Some of our animals go to meat packing plants within Saskatchewan and those meat products are sold and consumed here at home, as well as being exported to other countries.

3) Dairies

Milk cows are kept on dairy farms. Only certain breeds of cows, like Holsteins, Jerseys, and Guernseys are kept for milking. The milk is kept in large tanks and collected by trucks with large stainless steel tanks every few days. The milk is made into the dairy products we buy in the store.

Other types of livestock

Cattle are only one type of livestock raised in Saskatchewan. There are other traditional types of livestock, like sheep, pigs, poultry and horses. In the last few years, Saskatchewan has developed an “exotics” market. “Exotic” livestock animals are animals that are not native to Canada, such as llamas and alpacas, ostriches and emus, and fallow deer. Another new trend is to raise animals that were once wild animals in Saskatchewan, such as bison and elk.

Have students research what types of animals are raised in Saskatchewan, and what products are made from them. Appendix B has a table with pictures of various species where students can record the results of their research. A key is provided that gives products made from each type of animal and the approximate number of producers of that type of animal in Saskatchewan, where known.

Closing: Livestock production is a vital part of the Saskatchewan economy. Some of our products are consumed within our province, but many are

exported to other countries. There are many different types of animals raised in our province. Many people are surprised at the types of products made from animal parts.

Suggested Activities:

Bulletin board display

Referring to Appendix A, have students construct a bulletin board display of items that are made from cattle bi products.

Research project

Cattle breeds have interesting origins. Cattle are not native to Canada, but were imported years ago from other countries. The Hereford and Jersey breeds were developed in Britain, Black Angus cattle come from Scotland, and Charolais and Blonde D'Aquitain cattle were developed in France. Have students choose a cattle breed to research. They can find its country of origin, its use (meat, milk, or work) and the characteristics of the breed that suit it for its intended purpose. Students can share their findings with the class.

Alternatively, have student groups research different types of livestock, such as cattle, swine, poultry, bison, goats and sheep. They should report on how the animals are raised, when they have their young, how they are fed and cared for and where they are sold. What products are made from the animals? The groups should report their findings to the class. They could supplement an oral presentation with a bulletin board or other display.

Field trip

Likely there is a livestock producer in your area that would provide a tour for the class. A cattle producer may talk about calving and feeding. There may be exotic producers such as emu or llama farmers, or elk or bison farmers.

Other interesting field trips are Agribition, or your local auction market.

Debate

“Intensive farming” refers to large feedlots, large hog barns, or poultry and egg farms. There is some public controversy surrounding intensive farms because animals are often raised in confinement, and because such large concentrations of animals have an impact on the environment. Often the waste from these large operations becomes an unpleasant environmental hazard.

What are the pros and cons of intensive hog farming? What are some public objections to large pig operations and feedlots? North and South Carolina are examples of environmental disasters when hog waste is not handled properly. What is done with hog waste in Saskatchewan to ensure the environment and water systems are not harmed?

Students can role play a debate. A large feedlot is scheduled to open down the road from your community. Some of the roles would be: the feedlot company,

local people who would gain employment at the feedlot, local grain producers who would gain a local market for their grain, local cow-calf farmers who would gain a local market for their calves, neighbors who would object to the smell of the manure, environmental activists who are concerned about the impact to the environment, residents of a nearby town who are concerned about contamination of their water supply, and neighbors who are acreage owners concerned about the smell and the possible decrease in value of their property.

Lesson II: Animals Require care

Vocabulary:

Beef cattle: Cattle raised for meat

Dairy cattle: Cattle raised for milking

Feed: Hay, grain, pellets

Forage: Plants that animals eat on pasture or as hay bales, such as alfalfa, grass, and brome grass

Roughage: Indigestible parts of plant feed. Some roughage is important to all animals. Some feed has too much roughage and not enough nutrients like protein and energy.

Conceive: To become pregnant

Rumen: A large compartment before the stomach. A “ruminant” is an animal that has a rumen. Cows, sheep, and goats are ruminants. Horses are not. In the rumen, bacteria aid in digestion by breaking down food. The process is “fermentation”.

Ruminates: means regurgitating bits of food which have started to ferment in the rumen and rechewing the food. This is commonly called “chewing the cud”.

Calorie: A unit of food energy. Food that is high in calories has more energy in it.

Producer: Another word for farmer.

Set: Get students into groups of 3 or 4. Each group is a type of livestock. They may be cattle, goats, horses, pigs, poultry, bison, elk, or llamas. Have them brainstorm to quickly list all the types of care they require from their owner. Let them share with the class. Some types of care will be repeated. Some types will be different depending on the type of animal.

Development: A farmer has a lot on his mind! He has to be very knowledgeable about the kind of care his animals need, and that is more complicated than you may think!

No matter what kind of animals being raised, they require adequate feed, water, shelter, space, good air quality, and adequate health and veterinary care. We can consider **Five freedoms** * for all animals:

1. **Freedom from thirst, hunger, and malnutrition,** by ready access to fresh water and a diet to maintain full health and vigor

2. **Freedom from discomfort** by providing a suitable environment including shelter and a comfortable resting area
3. **Freedom from pain, injury, and disease** by prevention (such as vaccinations and vitamin supplements) and rapid diagnosis and treatment.
4. **Freedom to express normal behavior** by providing sufficient space, proper facilities and company of the animal's own kind
5. **Freedom from fear and distress** by ensuring conditions which avoid mental suffering.

*Taken from the UK Farm Animal Welfare Council, 1993

Farmers know that content animals are productive animals. For example, if a farmer is raising animals for meat, it makes sense to feed them adequately. Also, animals reproduce better if they are in good condition. A cow may have trouble conceiving a calf if she is in poor body condition. Cows, sheep, and goats are more likely to give birth to twins if they are well fed.

Ensuring adequate feed for animals is not as straightforward as it sounds. A farmer needs to understand the nutritional requirements of the animals. Overfeeding may cause over-fat animals (which are not healthy) and also expensive waste. Underfeeding can lead to loss of body weight and disastrous financial losses, because beef cattle are sold by weight. In extreme circumstances, undernourished animals may die.

Not only the amount of feed, but the type of feed must be considered. For instance, some types of forage, such as straw and slough hay, are high on roughage but low on protein, which may cause animals to lose weight, especially in winter, even though it may look like they have enough to eat.

In Saskatchewan, farmers take special care feeding their livestock through winter. Have you ever wondered how animals can tolerate the cold? Its true, they have a fur coat, but even if we were standing outside in good boots and fur coats for a whole Saskatchewan winter, we would not survive. Not only that, but some types of cattle don't really have that much hair. And their hooves aren't furry, so how do they stay warm?

Animals actually burn food energy to produce body heat. As the temperature outside gets colder, animals need to eat more to stay warm. If they don't get extra feed, or feed that contains more energy, they may actually start to lose weight because they are burning their own fat reserves to stay warm. Farmers supply more feed energy by supplementing cattle's diet with grain or extra hay of good quality. A rule of thumb is to increase the amount of feed by one percent for each two degrees of cold stress. Wet storms and wind chills increase cold stress on animals.

To read more about looking after cattle in cold weather, visit www.cattletoday.com/archive/2003/November/CT302.shtml

An average cow will consume about 2.5% to 3% of her body weight in hay in a day.

Let's calculate how much hay a 550 kg beef cow would eat in a day

To find 3 % of 550 kg, we multiply 550 by .03.

$$550 \times .03 = 16.5$$

That means a 550 kg cow would eat approximately 16.5 kg of hay in one day. If a round hay bale weighs 650 kg, how many cows would that feed for one day?

We know one cow eats about 16.5 kg in a day. So 650 divided by 16.5 = 39.39 or approximately 40. So one large bale would feed about 40 cows for 1 day. If it's colder, the cows need to eat more. If the hay is poor quality, the cows also need to eat more to consume the amount of nutrients they require in a day.

Water consumption is similar. An average cow would need 28-48 Litres of water in a day. When a cow is eating more roughage, she may require more water. Feed and water consumption also depend on the type of animals (beef vs dairy, calves vs adult animals) and on weather and quality of the feed.

Farmers also know that not all animals are the same. For example, a cow and a horse are approximately the same size, but a cow's rumen (a compartment before the stomach) holds about 180 Litres, while a horse has only one stomach, which holds about 20 Litres. A cow may eat a lot of feed at once, and then stop eating to let the feed ferment. "Fermentation" is the same chemical process used to make beer and wine! It is the action of bacteria breaking down the feed substances. The fermentation takes place in the rumen, and a cow may burp up bits of feed and re-chew it. This is called "ruminating", or chewing the cud. Did you know a cow spends about six hours a day eating, and eight hours a day chewing cud?

Horses, on the other hand, eat continually because their stomachs don't hold as much. They don't ruminate. Like cattle, horses burn calories to keep warm in winter. Some horses are left to eat snow in winter, instead of receiving fresh water. Horses tolerate this quite well if they are foraging and consuming enough snow, and if the weather is not too cold for too long. Sometimes leaving horses to rely on snow leads to trouble, because it costs a horse a lot of food energy ("calories") to melt a mouthful of snow. This can rob needed calories from the animal. If the horse is eating a diet high in roughage (indigestible feed), it requires a lot of water to wash the food through the digestive tract. There is not much water in snow! Next time you have snow available, try this experiment. Get a 1 L beaker or other container from your lab or classroom and fill it with snow. Measure the volume of snow. After the snow melts, measure the volume of water. You will be surprised how little water you get from a Litre of snow.

Each type of animal has different food and water requirements and also different shelter requirements. Cattle and horses are usually given access to open shelters, or good bush or hillsides. Young calves and foals need more shelter in cold weather, and cows, mares and ewes are often brought in to barns for calving, foaling and lambing. Also, shelters may be provided for calves on the pasture. Farmers in different parts of our province may have different shelter requirements. For example, there is very little shelter from the wind in the prairies in the south of Saskatchewan. In the north part of the province trees and hills provide natural shelter. Farmers

ensure that their animals have lots of good bedding, such as fresh straw, so they have a place to rest and stay warm. This also helps keep manure from freezing to hooves in the winter.

Pigs in Saskatchewan are often raised in very large barns. You may have heard debates about large pork operations in your area. Can you list some of the arguments that have been made for and against raising pigs in large barns? Here are some ideas:

Pros	Cons
Climate controlled temperature year round	Smell due to manure
Good air quality is ensured	Animals raised in confinement
Quality feed ensured year round	Mother pigs kept in farrowing crates
Continual staff monitoring animals, looking after piglets, etc	
SPF barns (specific pathogen free) have pigs kept in extremely clean conditions. In fact, you would have to take a shower to go visit inside the barn!! This means the animals are free from disease	
Can you think of others?	Can you think of others?

Bison and elk are **not** new to Saskatchewan! In fact, they were here long before any cattle were here. Remember that any cattle in Canada were originally brought here from Europe. Bison and elk, though, evolved in North America and are well adapted to our climate, our natural forage, and our harsh winters. For this reason, they don't require as much shelter as cattle, which are not as adapted to our climate. They do have particular needs in other areas though, such as the proper types of feed which may differ at certain times of the year.

The farming of bison and elk is fairly new, though. These animals require special facilities such as high fences and high strong handling chutes for veterinary care. In general, bison and elk are not as tame and easy to handle as cattle.

All types of livestock receive health care from the farmer, such as vitamin and mineral supplements, vaccinations against disease, hoof trimming, dehorning, parasite control and other routine procedures. Sick or injured animals require Veterinary care. Sometimes the veterinarian can care for the animal on the farm; other times the animal must be taken to a veterinary clinic for care. Just like people, animals sometimes need operations. When they do, they are given anesthetics so they don't feel pain, and good care after the surgery.

Our agricultural industry in Saskatchewan often suffers because of weather, lack of precipitation, trade agreements or disagreements with other countries, crop diseases,

railway and other shipping disagreements, and changes in the economy. Like grain farmers, livestock farmers experience market fluctuations. Some of the current issues affecting livestock producers are diseases like Chronic Wasting Disease (CWD) in elk and Bovine Spongiform Encephalopathy (BSE) in cattle. Diseases like these stop the shipping of animals and products across borders. The result is that often farmers cannot sell animals that they planned to sell, and sometimes must find extra feed and space for animals. The selling of animals and animal products is also the farmer's income, so extra money is needed to keep the farm operation running. Even though the market may have changed and a farmer's animals are not worth much money, they still require all the same feed and care. Without money coming in from animal sales, a producer can not pay to feed and care for the animals.

Another crisis that occurs in Saskatchewan is drought condition. Without adequate spring rain, pastures may not grow enough grass to feed all the cattle.

Closure:

What happens to livestock when the owner can't afford to look after them anymore?

There are organizations that exist that help farmers who are faced with market, weather, and disease disasters. Can you and your class research some of the other difficulties facing livestock producers, and the help that is available to them in Saskatchewan?

Suggested Activities:**Media Research**

Students can collect clippings about the BSE crisis in Saskatchewan and the debate about the closure of the American border to Canadian cattle.

Guest Speaker

Local livestock producer: may talk to your class about the kind of care animals require and the difficulties faced by farmers in Saskatchewan. You may wish to have more than one type of livestock producer speak to the class to demonstrate the difference in the type of care animals require.

Veterinarian: may talk to your class about the kinds of diseases cattle are vaccinated against, the problems associated with calving, and routine livestock care.

Meet an Animal Protection Officer

The Saskatchewan SPCA investigates complaints of animal neglect and abuse, and provides support and education to farmers. There are seven Animal Protection Officers stationed at different regions in the province. They are experts in livestock care and assessment. You can find the Animal Protection Officer in your area by visiting our web site. Also on the web site, you can meet Ian MacMillan, our co-coordinator of Investigative Services. Ian has supplied a short paragraph to tell students what Animal Protection Officers do. Click on www.sspca.ca

Research: Student groups can research the type of care required by different types of livestock. Give all students specific topics to cover, such as type of feed, shelter, fencing, and bedding. What care is given to animals when they are having their offspring, such as calving and foaling barns, farrowing crates for sows, or chick hatcheries?

References:

www.cattletoday.com/archive/2003/November/CT302.shtml

John Pukite, 1996: A Field Guide to Cows; Falcon Press Publishing, Billings Montana

Robin and Arlene Karpan, 2002: Western Canadian Farm Trivia; Parkland Publishing, Saskatoon SK

Research & Technology Transfer Coordinator
Western Beef Development Centre, Saskatchewan Agriculture, Food and Rural Revitalization 72 Campus Drive, Saskatoon, SK. S7N 5B5

Other resources

You may wish to gain further background information by contacting some of the following groups

The Saskatchewan SPCA: Web site: www.sspca.ca. The SSPCA has booklets called “Codes of Practice” which outline minimal care requirements for all types of livestock raised in Saskatchewan.

Saskatchewan Agriculture, contacted through your local Agrologist.

Agriculture in the Classroom

Your local Veterinarian

Local livestock producers

Livestock producer groups, such as Saskatchewan Stockgrowers’ Association, Saskatchewan Pork Producers, and Saskatchewan Elk Breeders’ Association.