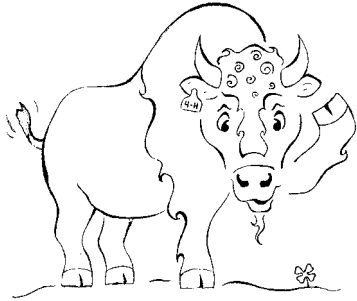


Nutrient Requirements



Roll Call:

Name a nutrient. _____

Name a feed item that is a good source of this nutrient.

This roll call will provide a good introduction to this topic. Some of the answers you should hear are:

Nutrient	Good source of this nutrient
Water	clean, fresh drinking water that is available to the animals at all times
Protein	soybean meal, canola meal, corn gluten meal, fish meal, meat and bone meal
Energy	grains, forages
Vitamins	forages, grains, sunshine, manufactured in the rumen, vitamin supplements
Minerals	forages, grains, mineral supplements

Objectives

Level One

1. To introduce the members to the concept of essential nutrients.
2. To create an appreciation of the importance of these nutrients.

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Level Two

1. To understand that different animals require different amounts of nutrients.
2. To learn more about the different vitamins and minerals and their importance.

Level Three

1. To learn some of the effects of deficiencies of vitamins and minerals.
2. To understand about energy and how the body uses it.

Level Three

1. We have provided the level three members with some interesting information about vitamin and mineral deficiencies and energy. As activities to accompany these topics, we ask that they share the concepts with the club members. Use these level three members!

Activity Solutions for Nutrient Requirements

Activity solution level one - page 31

There are **5 nutrients** the beef animal needs in its diet. The answers we are looking for here are

Water, Protein, Energy, Vitamins, Minerals

Activity solution level one - page 36

Match up the vitamins

<u>Vitamin</u>	<u>Characteristic</u>
C	ruminants manufacture this vitamin, but humans must receive it in their diet
D	needed along with the minerals calcium and phosphorus for healthy bones; known as the "sunshine vitamin"
B	vitamins in this category include niacin, riboflavin, thiamine and others
K	needed for proper blood clotting
A	needed for vision, healthy skin, digestion and reproduction
E	needed along with the mineral selenium for muscle function

Activity solution level one - page 37

Keyword:

V	I	T	A	M	I	N	S
---	---	---	---	---	---	---	---

To find the keyword, fill in the blanks in words 1 through 8 with the correct missing letters. Transfer those letters to the squares above.

1. V I T A L
2. B I S O N
3. N U T R I T I O N
4. A L B E R T A
5. M A R K E T
6. Z I N C
7. M I N E R A L
8. S T O M A C H



Activity solution level two - page 23

Which vitamins

1. C is made by the bison but not by the human.
2. D is the "sunshine vitamin".
3. A is most often deficient.
4. A, D, E and K would be supplied if you fed leafy, green forages.
5. E works together with selenium to cause muscle action.
6. B and C are made in the rumen.
7. A is needed for good vision.
8. D is needed for strong bones.
9. K is deficient if your animal bleeds heavily from a minor wound.
10. B and C are not stored in the body.

Activity solution level two - page 23-24

Unscramble Macro & Micro

Macrominerals

- 1 SODIUM
- 2 CHLORINE
- 3 CALCIUM
- 4 PHOSPHORUS
- 5 MAGNESIUM
- 6 POTASSIUM
- 7 SULFUR

Microminerals

- 1 IODINE
- 2 COBALT
- 3 IRON
- 4 MANGANESE
- 5 ZINC
- 6 SELENIUM
- 7 COPPER
- 8 MOLYBDENUM

Activity solution level three - page 22

Word Find

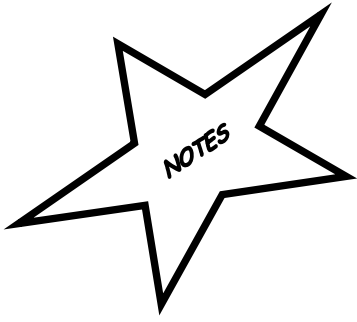
COPPER

IRON
SELENIUM

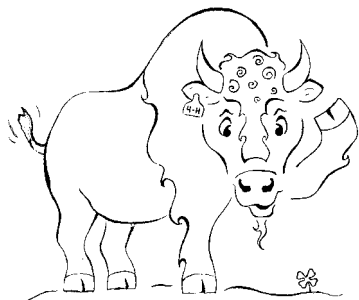
IODINE
ZINC

MANGANESE
SALT

F	S	L	D	T	A	F	E	I	S	I	T
U	S	E	G	R	C	R	P	D	E	P	E
G	M	O	T	N	I	E	C	I	L	E	R
H	R	A	I	O	N	E	R	T	E	L	N
I	R	Z	N	I	E	N	E	R	N	I	O
E	O	A	D	G	I	H	A	R	I	E	R
I	A	O	S	Z	A	I	T	N	U	R	I
O	I	Z	W	I	A	N	D	L	M	E	E
D	H	I	C	O	P	P	E	R	A	C	H
T	O	N	M	A	S	U	U	S	W	S	I
S	R	G	U	M	V	O	E	E	E	U	E
A	I	T	E	E	H	I	R	I	A	M	N



Feeds for Bison Leader's Manual



Roll Call:

Name a feed ingredient that is used in a ration.

Encourage the members to name any ingredient that comes to mind. Rather than looking for good ingredients, you should be interested in having the members realize what a wide variety of feedstuffs are used for feeding bison. You can get into the least and most desirable later.

You may wish to have a member record all of the different answers on a flip chart or blackboard.

Objectives

Because the information and research available on feeding bison is somewhat limited this section has focused on a limited number of topics. For more information on feeds for bison, consult one of the Diversified Livestock specialists with Alberta Agriculture.

Level One

1. To understand the difference and similarity between rations and diets.
2. To understand what is palatability.
3. To become aware of the different roughages and grains.
4. To become aware of the factors that affect feed intake.

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Level Two

1. To learn more about feed intake.
2. To begin to understand how to formulate rations for bison.

Level Three

1. To gather resources available on feeding bison and to build your club reference library.
2. To research computer programs available for formulating bison rations.
3. To become aware of the practice of feed sampling - why it is done, when it should be done, how to do it, where to send samples and what information can be provided.
4. To put all of the knowledge they have gained about bison nutrition together.

Level One

The questions asked in this unit are an excellent way to stimulate discussion. Have the members share what they are feeding their animals. It is important for the members to realize that there are other things that they could be using.

Level Two

1. Bison Ration Formulation

Where possible, encourage the members to work through this section, filling in the blanks as they go. Try to arrange for a feed representative or nutritionalist to come and work through the sheets with the club members. There is a sample feed that should help to understand where the different components of the feed analysis would be useful.

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Level Three

1. More about feeds for bison.

As many resources are available on the subject of feeding beef cattle, we encourage you to gather some of these for your members, and compare it to the feeding needs of bison. A good way of storing and utilizing these is as a resource library for your club. Gathering of resources is mentioned as one activity for level three members.

2. Feed sampling.

In the level three unit, we provided information about feed sampling. You may wish to use this information and, or one of your level three members to explain or demonstrate the importance of feed sampling to the members in your club.

Activity Solutions for Feeds for Bison

Activity solution level one - page 46

"Pack a lunch"

We have all been told about the importance of packing a balanced nutritious lunch for ourselves. If you were told to pack a lunch right now, what would you put in it? Make a list of the 5 things that you think would go into the perfect lunch. (If you choose a sandwich you must expand on what type of sandwich it is.)

The purpose of this exercise is to get the members to relate to their own feed interests and the things that we consider when making a lunch. For instance, palatability and our own taste preferences, availability of feeds and convenience of packing certain things like apples, and the cost of items.

Activity solution level one - page 47

"True or false"

This exercise is another way to stimulate discussion. It also provides a good review of the information in this unit.

1. False Barley has less energy than wheat but more than corn.
2. True Oats are more palatable than barley.
3. False A ration is the amount of feed required by the animal daily. A diet is the mixture or combination of feeds that provide the nutrient requirements.
4. False Because most Alberta climate conditions are not suited to growing corn, very little corn is used in beef rations. However, in other parts of North America, corn is the most commonly used energy feed.
5. True Barley is denser than oats.
6. True Silage contains approximately 60% moisture. Hay has a low moisture content.
7. True
8. False Alfalfa is a legume.
9. False Bison will consume from 1.4 to 2.7 percent of their body weight in dry matter per day.
10. True
11. True
12. True

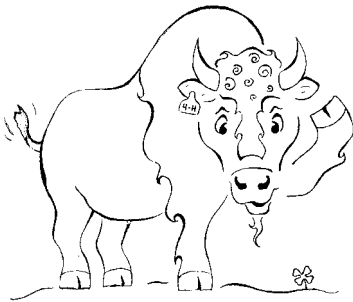
Activity solution level two - page 39

Feed intake

The following events cause the animal to increase feed intake
1, 2, 3, 6, and 7.

The following events cause the animal to decrease feed intake
4, 5 and 8.

Parasites of the Bison



Roll Call:

Name a parasite. _____

You will hear some of the following answers:

Roundworms	lice
stomach worms	ticks
tapeworms	lungworms
mange	mites
flies	flukes

Objectives

Level One

1. To learn what a parasite is.
2. To learn the difference between an internal and an external parasite.
3. To understand how cattle might become infected with parasites, using the roundworm as an example.

Level Two

1. To introduce members to more internal and external parasites that might affect a bison herd.
2. To have members understand common livestock diseases that may affect bison.

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Level Three

To challenge members to think of ways to control parasites within bison herds.

Research and develop an experiment that might help to obtain more information about the levels and effects that parasites have on bison.

Research disease that is or could become a threat to bison in Canada.

Level One

An internal parasite - is an organism that lives inside the body of your animal, getting its life support (food and shelter) from the animal.

Examples: roundworms, tapeworms, coccidiosis, liver flukes, eyeworms and lungworms.

An external parasite - is an organism that lives outside the body of your animal, getting all its life support from your animal.

Examples: mange, warbles, nose bot flies, ticks, and lice.

The way your animal becomes infected will depend on the type of parasite. It may be through sharing corrals, eating grass, or sharing water with infected animals or conditions.

You can prevent your animals from becoming infected by:

following good management practices

keeping your facilities clean and dry

following a routine prevention schedule

being able to recognize the symptoms of infections.

Suggested meeting plan

Invite a guest speaker.

There are many knowledgeable people out there who may be interested in coming to speak to your club about parasites.

Some examples are: bison or diversified livestock specialist, entomologists, veterinarians, or a local producer.

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See samples of parasites.

Your local veterinarian may have bottled samples of worms and other parasites. Keep in mind the saying - "A picture is worth a thousand words." If the members can actually see the parasites, they will get a better feel for the damage they can do.

Visit a local producer.

Use this meeting to find out how a local producer controls, prevents and treats parasites and diseases on his farm.

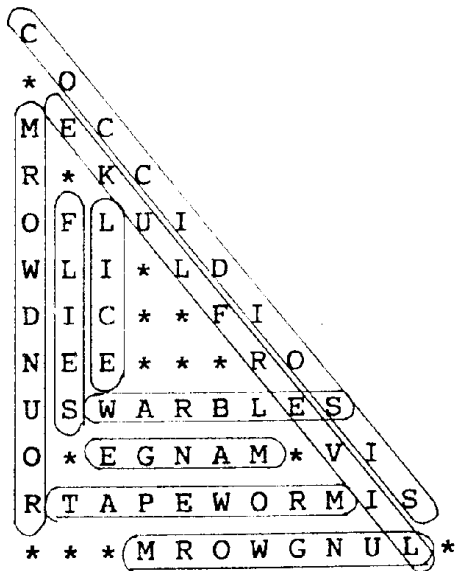
Have a senior member working on a level three activity do a presentation of what they discovered about a disease or research project that could be conducted to find out more about parasites and diseases that affect bison.

Activity Solutions for Parasites of the Bison

Activity solution level one - page 50

Find the parasites

These words are in the puzzle: lungworm, tapeworm, mange, warbles, roundworm, flies, lice, liver fluke and coccidiosis.



Activity solution level two – Page 46

Activity: Parasite investigation

Following are the solutions:

I am small and I bite which makes me not nice.
Can you think of who I am, I am a *biting lice*.

If you notice your bison out on the range,
are missing patches of hair it might be *mange*.

My manure is runny, please use your powers,
should you suspect that I have *scours*.

They live in my intestine and under no uncertain terms,
I need to get rid of these parasites we call *worms*.

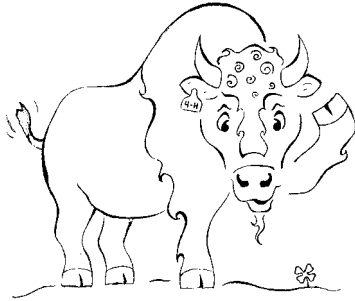
My favourite drink is blood. I like it with no ice,
I hatch in 1 to 20 days, I am a *sucking lice*.

Activity solution level two - Page 52

Activity: Disease fill in

B	R	U	C	E	L	L	O	S	I	S
V			A							
D			P							D
			T							I
			U							A
			R	E	D	W	A	T	E	R
			E		E					R
					A		S			H
					T	I	C	K		E
					H		O			A
							U			
B	A	C	I	L	L	A	R	Y		

Bison Herd Health



Roll Call:

Name one sign of a bison animal that shows when it is not healthy.

You may hear some of these answers:

fever	dehydrated	depressed
no appetite	weak	rapid breathing
grunting	cough	uncomfortable
restless	droopy ears	runny nose
diarrhea	runny eyes	urinating more

Objectives

Level One

1. To learn how to identify healthy and unhealthy animals.
2. To look at how to give medications.
3. To think about preventing disease on the farm.

Level Two

1. To learn how to take the beef animal's temperature.
2. To be able to identify, treat and prevent some diseases found in beef calves.

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Level Three

1. To learn more about some of the diseases which can affect feedlot animals.
2. To learn more about vaccinations.
3. To look at herd health management year-round.

Activities

Level One

Looking at Medicine

There are several things which could be demonstrated here: using a balling gun, drenching gun or flexible tube, or injections. Emphasize the importance of following the directions on the bottle.

Level Three

Identify potential diseases that could affect a bison herd. Research the material and present the information to the other members in the club either through a presentation, a write up, a poster, or contact a guest speaker.

Design a vaccination program for a herd of bison.

Develop a management calendar that will help to identify any potential problems for the herd health.

Suggested meeting plan

1. Invite a guest speaker.

A local veterinarian could discuss some of the common beef diseases that may also affect bison in your area. The veterinarian may also be able to provide advice on when and how to administer drugs, or talk about the importance of monitoring the health and condition of the bison herd.

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An animal health sales representative could be invited to discuss certain diseases and how the drugs work to combat these diseases. The representative may also wish to discuss safe handling of drugs, withdrawal periods and labeling and storage.

A local bison producer may be able to share information about his or her herd health plan and how he or she manages the care of the herd.

2. Use an interactive game to stimulate members to think about what they have learned.

Develop a Jeopardy type game to help all members learn about a variety of different diseases and prevention or treatment techniques. Invite a junior leader, senior member or 4-H volunteer to design this activity.

You may even wish to have members ask questions about certain diseases at one meeting, and then later in the year use those questions with the proper answers for the game night. By doing this you can test them on the information that they considered to be important.

Activity Solutions for Bison Herd Health

Activity solution level one - Page 58

How are Betsy and Boris
Boris is healthy and Betsy is unhealthy.

Activity solution level one - Page 62

P" or "N"

1. N 2. N 3. P 4. N 5. P 6. N 7. P 8. N

Activity solution level two - Page 55

Circle it!

Using the list from the previous page the members will be able to determine the diseases that have been reported to have caused disease, not infection, in bison. The correct answers are underlined for you here. (Remember this information is current up to the summer of 2001, there could be future developments and information that you can use to educate your members, so we encourage you to use the bisoncentre.com website to keep up to date with new information.

PI -3

BVD

Hemophilosis

Rota and Corona virus (known to have caused diarrhea)

Brucella abortus

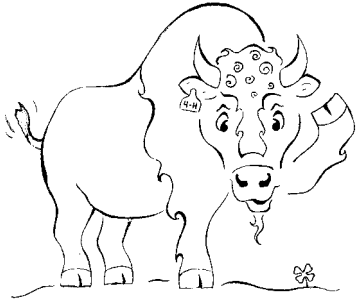
Footrot (occasionally occurs)

Pinkeye (occurs)

I BR

BRSV

Breeding and Reproduction



Roll Call:

List one thing you must consider when managing your bison herd for fertility.

Objectives

Level One

Understand the care that is needed to maintain healthy productive cow herd.

Understand the management needed to maintain healthy breeding bulls.

Understand the basics of breeding.

Recognize the signs of a female that is calving.

Level Two

Parts of the male reproductive system.

Semen evaluations

Parts of the female reproductive system.

Pregnancy testing

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Level Three

Heredity...why do we care?

Selection

Activities

Level One

Name the five nutrients:

Water

Energy

Protein

Vitamins

Minerals

Level Two

Can you identify the problem?

This activity allows the members an opportunity to see what could be potential calving problems that may cause cows to have dystocia, or difficulty calving.

Suggestions for meeting

Kids of all ages like to learn by hands on. Talk to the local butcher and see if you can arrange for them to keep the female reproductive organs so that the members can see what the parts really look like. The domestic cow system is the same as the system of the bison cow, however the bison is slightly smaller.

Because there is so much to know this is a great section to play a game of "Pictionary" using words or phrases that have to do with reproduction and calving.