

Activity: Nutritional Snack

Activity Level: Advanced

Source: *Louisiana and Illinois Agriculture in the Classroom*

PURPOSE

Understand basic nutritional needs of certain farm animals.

EXAMPLE TOPICS IT SUPPLEMENTS

Nutrients; basic needs of living things.

ACTIVITY SNAPSHOT

1. Organize and Prepare Supplies
2. Read Background Information
3. Interest Approach
4. Conduct Activity

The class will have a discussion about the different types of nutrients and their purposes. Students will determine how much of each nutrient the animal in question needs. Then, using snack items, students will create a ration for pigs and cattle.

5. Ask follow-up questions and make the connection to agriculture
 - What is the function of the different nutrients discussed?
 - How do animals and humans have similar dietary needs?
 - Why is it important to feed animals a properly balanced diet?
 - Why is livestock raised in Nebraska?

STATE STANDARDS IT SUPPORTS

Science 2.3.1.b—Identify basic needs of living things.
MA 6.1.2.d—Add, subtract, multiply, and divide decimals using the standard algorithm.
MA 6.1.1.f—Explain and determine unit rates.
MA 6.2.3.d—Solve real-world problems using ratios and unit rates.

MATERIALS

- Small plastic zipper bag, pint size—2 per student
- Handout “Balanced Animal Nutrition” worksheet—1 per student
- White Jellybeans
- Candy Corn
- Fruit Loops
- Raisins
- M&M’s
- Cheerios

WHAT’S THE CONNECTION TO AGRICULTURE?

Proper nutrition is essential in raising healthy and productive animals. Animal products are all around us—the food we eat, medicine we use, and clothes we wear, contain animal products. It is important to know that animals require proper maintenance and nutrition and our farmers and ranchers are providing that for animals.

VOLUNTEER ENRICHING ACTIVITY

PROCEDURES:

1. Organize and Prepare Supplies

See “Materials” on cover page.

2. Read Background Information

There are six basic nutritional requirements for good health. Both animals and humans have similar needs. The nutrients are carbohydrates, protein, fat, vitamins, minerals, and water. Animals need to have the correct amount of the nutrients to grow and be healthy. Animals of different sizes, ages, and purposes require different amounts of the nutrients.

3. Interest Approach

Discuss with students how both animals and humans have the same basic nutritional needs. Initiate a discussion using questions, such as: What types of needs do animals have that are similar to humans? What would animals eat to meet those needs?

4. Conduct Activity

Explain to students that they will create a ration that represents the nutritional needs of a specific animal.

Distribute supplies and make ration.

- a. Distribute and discuss “Balanced Animal Nutrition” worksheet.
 - b. As a class, complete the “Balanced Animal Nutrition” worksheet.
 - c. Have students create the pig ration in the zipper bag and add the indicated amount of the white jellybeans, candy corn, Fruit Loops, raisins, and M&Ms®.
 - d. Have students create the cow ration in the zipper bag and add the indicated amount of the white jellybeans, candy corn, Cheerios, raisins, and M&Ms®.
5. Ask follow up questions and make the connection to agriculture.
- What is the function of the different nutrients discussed?
Carbohydrates: energy source.
Protein: building and repairing body tissues.
Fat: energy source increases absorption of fat-soluble vitamins.
Water: maintain homeostasis, transport nutrients to cells, removing waste from the body.
Vitamins: essential for overall health, cell function, and growth and development.
Minerals: builds bones and teeth, helps body grow, develop, and stay healthy.
 - How do animals and humans have similar dietary needs?
Animals and humans alike need nutrients in proper balance to stay strong and healthy
 - Why is it important to feed animals a properly balanced diet?
Farmers want their animals to be healthy, comfortable, and grow quickly. A top priority for farmers is their animals' welfare. Farmers also want to use their inputs (feed, water, medicine, etc.) in a fiscally responsible way.

VOLUNTEER ENRICHING ACTIVITY

- Why is livestock raised in Nebraska?

Several inputs needed for raising livestock are found in Nebraska. Refer back to the ration sheet and notice that corn and soybeans are primary ingredients in animal rations. Those crops are grown in Nebraska, which makes transportation and processing easier. There is also space for animal production in Nebraska. Because our state has a low population density, there is pasture land available.

- What is something you would share with your friends and family about animal nutrition?

Proper nutrition is essential in raising healthy and productive animals. Animal products are all around us—the food we eat, medicine we use, and clothes we wear, contain animal products. It is important to know that animals require proper maintenance and nutrition and our farmers and ranchers are providing that for animals.

Balanced Animal Nutrition

Name: _____ Date: _____

Directions: Read through the scenario for the animal. Calculate how much of each nutrient is required for the ration. Build the ration by using a zipper bag and snacks. Enjoy the nutritional snack!

Scenario 1—Pig Feed Ration

The pig is a market ready barrow that weighs 250 pounds. A barrow is a castrated male pig that is used for meat and by-products. The barrow would need to eat 7 pounds of feed per day. 80% of the pig's diet would be carbohydrates and 20% of the pig's diet would be protein, with trace amounts of minerals and vitamins (not measurable in pounds). The pig would drink about 3 gallons of water per day.

Pig's Nutritional Need	Pig Eats/Drinks	Represented With
Hydration	Water	White Jellybeans
Carbohydrates	Corn	Candy Corn
Protein	Soybean Meal	Fruit Loops
Minerals	Minerals	Raisins
Vitamins	Vitamins	M&Ms®

- How much water does the pig need each day?
- How many pounds of corn does the pig need each day? Record answer in decimal format.
- How many pounds of soybean meal does the pig need each day? Record answer in decimal format.
- How much does the pig need for vitamins and minerals?
- Build a ration for 5 pigs** using a zipper bag and the snack items. Use 1 piece of candy to equal 1 gallon or 1 pound. For trace amounts of vitamins and minerals, round up to 1 piece of candy per pig per nutritional need.

VOLUNTEER ENRICHING ACTIVITY

Scenario 2—Cattle Feed Ration

This ration is for a 1,000-pound cow. A cow is a female that has had a calf. Nutrition is important for cows because they are providing milk for calves—so they are caring for themselves and their offspring. Daily, this cow needs to eat 2.5 pounds of feed per 100 pounds of body weight and drink 1 gallon of water per 100 pounds of body weight. 91% of the cow’s diet would be carbohydrates and 9% of the diet would be protein. Trace amounts of minerals and vitamins need to be added.

Pig’s Nutritional Need	Pig Eats/Drinks	Represented With
Hydration	Water	White Jellybeans
Carbohydrates	Corn	Candy Corn
Protein	Corn Gluten	Cheerios
Minerals	Minerals	Raisins
Vitamins	Vitamins	M&Ms®

1. How much water does the cow need each day?
2. How many total pounds of feed is the cow eating daily?
3. How many pounds of corn does the cow need each day? Round to nearest pound.
4. How many pounds of corn gluten does the cow need each day? Round to nearest pound.
5. How much does the cow need for vitamins and minerals?
6. **Build a ration for 2 cows** using a zipper bag and the snack items. Use 1 piece of candy to equal 1 gallon or 1 pound. For trace amounts of vitamins and minerals, round up to 1 piece of candy per cow per nutritional need.

Balanced Animal Nutrition—KEY

Name: _____ Date: _____

Directions: Read through the scenario for the animal. Calculate how much of each nutrient is required for the ration. Build the ration by using a zipper bag and snacks. Enjoy the nutritional snack!

Scenario 1—Pig Feed Ration

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Carbohydrates	Corn	Candy Corn
Protein	Soybean Meal	Fruit Loops
Minerals	Minerals	Raisins
Vitamins	Vitamins	M&Ms®

- How much water does the pig need each day?
3 gallons
- How many pounds of corn does the pig need each day? Record answer in decimal format.
 $.8 \times 7 = 5.6$ pounds
- How many pounds of soybean meal does the pig need each day? Record answer in decimal format.
 $.2 \times 7 = 1.4$ pounds
- How much does the pig need for vitamins and minerals?
trace amounts
- Build a ration for 5 pigs** using a zipper bag and the snack items. Use 1 piece of candy to equal 1 gallon or 1 pound. For trace amounts of vitamins and minerals, round up to 1 piece of candy per pig per nutritional need.

<u>3 gallons</u>	X	<u>5 pigs</u>	=	<u>15 gallons of water</u>	<u>(15 white jellybeans)</u>
<u>5.6 lbs. corn</u>	X	<u>5 pigs</u>	=	<u>28 lbs. corn</u>	<u>(28 candy corns)</u>
<u>1.4 lbs. soybean meal</u>	X	<u>5 pigs</u>	=	<u>7 lbs. soybean meal</u>	<u>(7 fruit loops)</u>
<u>1 mineral</u> (trace amounts)	X	<u>5 pigs</u>	=	<u>5</u>	<u>(5 raisins)</u>
<u>1 vitamin</u> (trace amounts)	X	<u>5 pigs</u>	=	<u>5</u>	<u>(5 M&Ms®)</u>

VOLUNTEER ENRICHING ACTIVITY

Scenario 2—Cattle Feed Ration

This ration is for a 1,000-pound cow. A cow is a female that has had a calf. Nutrition is important for cows because they are providing milk for calves—so they are caring for themselves and their offspring. Daily, this cow needs to eat 2.5 pounds of feed per 100 pounds of body weight and drink 1 gallon of water per 100 pounds of body weight. 91% of the cow’s diet would be carbohydrates and 9% of the diet would be protein. Trace amounts of minerals and vitamins need to be added.

Pig’s Nutritional Need	Pig Eats/Drinks	Represented With
Hydration	Water	White Jellybeans
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Minerals	Minerals	Raisins
Vitamins	Vitamins	M&Ms®

Activity: Nutritional Snack

- How much water does the cow need each day?
 $1,000 \text{ lbs.} / 100 = 10 \text{ gallons}$
- How many total pounds of feed is the cow eating daily?
 $1000 \text{ lbs.} / 100 = 10$
 $10 \times 2.5 \text{ lbs.} = 25 \text{ lbs. of feed per day}$
- How many pounds of corn does the cow need each day? Round to nearest pound.
 $.91 \times 25 = 22.75 \text{ lbs. corn (round up to 23 lbs.)}$
- How many pounds of corn gluten does the cow need each day? Round to nearest pound.
 $.09 \times 25 = 2.25 \text{ lbs. corn gluten (round down to 2 lbs.)}$
- How much does the cow need for vitamins and minerals?
 trace amounts
- Build a ration for 2 cows** using a zipper bag and the snack items. Use 1 piece of candy to equal 1 gallon or 1 pound. For trace amounts of vitamins and minerals, round up to 1 piece of candy per cow per nutritional need.

<u>10 gallons of water</u>	X	<u>2 cows</u>	=	<u>20 gallons of water</u>	<u>(20 white jellybeans)</u>
<u>23 lbs. corn</u>	X	<u>2 cows</u>	=	<u>46 lbs. corn</u>	<u>(48 candy corns)</u>
<u>2 lbs. corn gluten</u>	X	<u>2 cows</u>	=	<u>4 lbs. soybean meal</u>	<u>(4 fruit loops)</u>
<u>1 mineral</u> <u>(trace amounts)</u>	X	<u>2 cows</u>	=	<u>2</u>	<u>(2 raisins)</u>
<u>1 vitamin</u> <u>(trace amounts)</u>	X	<u>2 cows</u>	=	<u>2</u>	<u>(2 M&Ms®)</u>