

Feed Critters



Overview:

The *Feed Critters* lesson is designed to help participants compare human food and animal feedstuffs. By creating a feed critter mosaic, participants will learn more about what animals should and should not eat, helping human caretakers be better caregivers.



Sample feed critter mosaic.

Objectives:

After completing this activity, participants will be able to:

- ▶ Describe at least two similarities and two differences between animal and human feedstuffs.
- ▶ Identify items as animal feed options.
- ▶ Explain why animals should or should not eat the feedstuffs in their mosaics.

Skill Level:

Beginner

Life Skills:

Critical thinking, communication, decision-making, learning to learn

Setting:

An outdoor or indoor space with tables, seating and easy clean-up (sweeping the floor, vacuuming) for feed items that may fall on the floor

Time:

30–45 minutes

Materials:

- Animal feedstuffs – approximately 1 to 2 pounds of each will be enough for up to 25 participants. If fewer participants are doing the activity, fewer materials are needed.
 - ▶ Beet pulp
 - ▶ Black beans
 - ▶ Cottonseed hulls
 - ▶ Feathers (natural colored)
 - ▶ Hay
 - ▶ Kidney beans
 - ▶ Oats
 - ▶ Popcorn kernels
 - ▶ Salt
 - ▶ Shelled corn
 - ▶ Soybeans
 - ▶ Split peas
- Small cups, bowls or plates to distribute feedstuffs to participants (One cup, bowl or plate is needed for every group of each feedstuff item listed. For example, if there are five groups, five plates of soybeans will be needed.)
- Labels for feedstuffs containers
- Marker
- Gel glue (one per 3 to 4 participants)
- Pens or pencils (one per participant)

Materials, Continued

- ❑ Copies of animal outlines for mosaic (Each participant will choose one animal so print off extras since you will not know ahead which they will choose.)
 - ▶ Beef cow
 - ▶ Chicken
 - ▶ Dairy cow
 - ▶ Goat
 - ▶ Horse
 - ▶ Llama
 - ▶ Pig
 - ▶ Sheep
- ❑ “Feed Critter” worksheet (one per participant)
- ❑ Cardstock (optional)

PROCEDURE:

Before the meeting:

1. Review the lesson and verify you have all the supplies. You may wish to copy the “Feed Critter” worksheet on cardstock.
2. Become familiar with terms that will be helpful for you and the participants to know for this lesson (consumption, feedstuff, caretaker, caregiver).
3. Make a sample mosaic to show as an example to the participants.
4. Create a supply table. Each group will pick up its own supplies: feedstuffs in labeled containers, gel glue, and a pen or pencil for each group member. Make sure to label the containers to help guide the participants.
5. Gather a few volunteers to help with each group to answer questions and assist with gluing.

Table 1. Feed Items Used, Nutritional Component of the Diet and Animal(s) That Consume(s) This Item

Item	Nutritional component of the diet	Animal(s) that consume(s) this item
Beet pulp	Fiber	Beef and dairy cattle, pigs, goats
Black beans	Protein	Not a feedstuff for animals
Cottonseed hulls	Fat and fiber	Beef and dairy cattle, pigs, sheep
Feathers (natural colored)	Protein	Chickens
Hay	Fiber	Beef and dairy cattle, pigs, sheep, goats, horses, llamas
Kidney beans	Protein	Not a feedstuff for animals
Oats	Energy	Beef and dairy cattle, pigs, sheep, goats, horses
Popcorn kernels	Energy	Not a feedstuff for animals
Salt	Mineral	Beef and dairy cattle, pigs, sheep, goats, chickens, horses, llamas
Shelled corn	Energy	Beef and dairy cattle, pigs, sheep, chickens, horses, goats
Soybeans	Protein	Beef and dairy cattle, pigs, sheep, goats, chickens
Split peas	Protein	Not a feedstuff for animals

During the meeting:

1. Introduce the activity by reading aloud or paraphrasing the following:

Knowing what an animal needs to eat is important to make sure it stays healthy and productive. Just as humans do, animals under our care require a balanced diet to maintain health and an active lifestyle. There are some food items that both humans and animals eat. There are also items that only humans consume or items that only animals consume. Today, we are going to take a closer look at what feedstuffs animals

eat and how they compare to human foods by creating a feed critter mosaic.

2. Divide participants into small groups of three or four individuals to share resources.

3. Read aloud or paraphrase the following:

A mosaic is a picture or pattern that is created by using small pieces of various materials (glass, paper, beads, beans and other items) to create the bigger image. The image you will make is of an animal. You will create a feed critter mosaic.

4. Hold up your example mosaic. Read aloud or paraphrase the following:

This is just one example of what your animal could look like. To get started, each of you will choose an animal design for the feed critter mosaic. Start by choosing an animal you would like to learn more about. There are several options for you to explore. You can pick one you are already familiar with or one that you might not know a lot about. Once you have selected your animal, look at the food items on the table. You will be using these items to make your feed critter mosaics. All the items are labeled to let you know what they are. Once you have all of your supplies, you can begin gluing the feedstuffs on your animal outline by placing glue where you would like a feedstuff to stick.

5. Take mosaic outlines around to participants and allow them to select their animals.

6. Have a participant from each group come to the supply table and gather their feedstuffs.

7. Allow participants time to create their feed critter mosaics on the animal outline. Participants should apply glue to the paper where they want the feedstuffs to stick. Allow them approximately 10 minutes to complete this portion. While participants work, distribute one “Feed Critter” worksheet to each.

8. Read aloud or paraphrase the following:

If you have not already finished your mosaic, add your finishing touches. You will then glue the mosaic onto the “Feed Critter” worksheet.

9. After participants finish their feed critter mosaics, each should glue his or her mosaic onto the “Feed Critter” worksheet. It will work best for participants to put the glue on the worksheet and then place their mosaic creation onto the glued area of the worksheet.

10. Read aloud or paraphrase the following:

In your group, help each other to answer the four questions on the worksheet. Write your answers down in the appropriate places.

11. Provide participants 5 minutes to answer the questions. During that time, walk around to the groups to make sure that they are answering the questions. After 5 minutes, have participants share their answers to the four worksheet questions in their small groups.
12. Have participants help clean up extra supplies and work areas.
13. Bring participants back to one large group. As a group, review the worksheet by using the guide below to help encourage participant discussion. You are also encouraged to use the “Talking It Over” questions to help participants process the lesson.
 - What feedstuffs did you use? (*Corn, oats, hay and other feedstuffs*)
 - Why did you pick that choice? (*color, texture, knowing this is part of the animal's diet and other reasons*)
 - Why would your animal eat these items? (*to grow, they taste good, to remain healthy, to build muscle, to keep the rumen microbes healthy and other reasons*)
 - Why is it important that animals don't eat some of the foods that humans eat? (*too sweet, poisonous, not healthy for the animal, the animal can't digest it and other reasons*)
 - What can you do to improve how you take care of animals you may have at home? (*feed them consistently, make sure they are eating the correct feeds, make sure they are eating the right amount of feeds and other ideas*)
14. To summarize, read aloud or paraphrase the following:

The feed critter mosaic helped you to creatively explore animal feedstuffs. Knowing what an animal eats is important for you to know as an animal caretaker to ensure animals stay healthy and grow or produce as we expect. Recognize that humans and animals eat many of the same foods such as corn, oats or beets, but these items may be in different forms. There are items animals can eat that humans cannot, such as cottonseed hulls. Knowing what feedstuffs are appropriate for animals will help keep them healthy.

Talking It Over:

Ask the group the following questions.

- ▶ Would you design your mosaic differently now that you know what your animal eats?
- ▶ Which items are foods both people and animals eat? Do they look the same or are they different?
- ▶ What jobs could you explore that are related to this lesson?
- ▶ Where could you find more information about jobs or careers related to today's lesson?

ADAPTATIONS & EXTENSIONS:

For Older or More Experienced Participants:

- ▶ Have participants pick a different animal other than those listed. Draw or trace the silhouette and then complete the mosaic. This allows youth an opportunity to learn something new about another species they are unfamiliar with. Also, have older youth share facts about the animals they choose with younger participants, such as what other animals eat, where they live, how long they live and similar facts.
- ▶ Have more experienced participants pair up with a less experienced participant to work together on the activity. Have the more experienced youth explain what each feedstuff is and how it is used by the body.
- ▶ Using the same feedstuffs, have participants prepare what they feel is a balanced diet and include those proportions in the mosaic.

For Younger or Less Experienced Participants:

- ▶ Have everyone work as a group, deciding on one animal to work on and discuss the answers to the questions as a group. A different animal could be done at several different meetings so participants learn over a period of time about what various animals eat, introducing them to new species.

ALIGNMENT TO SCIENCE AND ENGINEERING PRACTICES:

How does 4-H increase science literacy?

Nationally and in Michigan, 4-H has long enjoyed a reputation for engaging young people in positive, experiential (hands-on), and nonformal activities that are inquiry-based. The lessons in the *4-H Animal Science Anywhere* series can be used to enhance classroom science education. The lesson activities are aligned with the eight Scientific and Engineering Practices from [A Framework for K-12 Science Education](#) (National Research Council, 2012, p. 42).

The activities in the *4-H Animal Science Anywhere: Feed Critters* lesson were evaluated for their alignment with the Science and Engineering Practices by Michigan State University Extension Educator Tracy D'Augustino in 2017.

Table 2. How This Lesson Aligns With the Science and Engineering Practices (National Research Council, 2012, p. 42)

Science & Engineering Practice	Action	Activity Step
Asking questions and defining problems	▶ Participants explore what animals including humans need to eat and why.	1 & 14
Developing and using models	▶ If a discussion about the visible characteristics of the animals and their purpose takes place, then participants are using a model.	4-7
Planning and carrying out investigations	▶ Participants use sequential thinking when creating their mosaic.	4-7
Analyzing and interpreting data	▶ Participants review the types of feedstuff, the animals that need it and why.	13-14

Table 2. How This Lesson Aligns With the Science and Engineering Practices (National Research Council, 2012, p. 42), continued

Science & Engineering Practice	Action	Activity Step
Using mathematics and computational thinking		
Constructing explanations and designing solutions	▶ Participants discuss the feedstuffs they used, if they are consumed by their animals, and why or why not.	13 and Talking It Over
Engaging in argument from evidence	▶ Participants discuss various differing nutritional needs of domestic animals, including humans.	13-14 & Talking It Over
Obtaining, evaluating, and communicating information	<ul style="list-style-type: none"> ▶ Participants analyze and evaluate the written information provided and determine the appropriate food for various animals. ▶ Participants communicate information as they discuss various feedstuffs and the needs of various animals. 	13-14 & Talking It Over

REFERENCE:

National Research Council. (2012). *A framework for K-12 science education: Practices, crosscutting concepts, and core ideas*. Washington, DC: National Academies Press.

RESOURCES:

For more information on what animals in this lesson eat, please see the following resources:

- ▶ **Beef Cow** – beet pulp, shelled corn, soybeans, hay, salt, oats, cottonseed, feather (meal)
 - Source: Olson, K. C., (2005, October). Feed ingredient composition for beef cattle. *Agricultural MU Guide*. (Rev. ed.). Columbia, MO: Missouri Extension, University of Missouri–Columbia. Retrieved from: <http://extension.missouri.edu/explorepdf/agguides/ansci/q02051.pdf>
- ▶ **Chicken** – corn, peas, soybeans, cottonseed meal, feather meal, salt
 - Source: Jacob, J. (2015, May 5). *Common feed ingredients in poultry diets*. eXtension. Retrieved from <http://articles.extension.org/pages/68432/common-feed-ingredients-in-poultry-diets>
- ▶ **Dairy Cow** – beet pulp, shelled corn, cottonseed, salt, oats, soybeans, hay
 - Source: Penn State Extension. (2017). *Use of commodity ingredients for dairy cattle*. University Park, PA: Author. Retrieved from: <http://extension.psu.edu/animals/dairy/nutrition/nutrition-and-feeding/ration-ingredients/use-of-commodity-ingredients-for-dairy-cattle-1>
- ▶ **Goat** – corn, oats, soybean, beet pulp, salt
 - Source: Mendell, M. (n.d.). *Goat health and nutrition*. West Lafayette, IN: Purdue University. Retrieved from <http://www.ansc.purdue.edu/goat/factsheet/health-nutrition.htm>

▶ **Horse** – hay, corn, salt, oats

- Source: Lawrence, L., & Camargo, F. (2014). *Selecting feeds for horses* (ASC-205). Lexington, KY: University of Kentucky Cooperative Extension Service. Retrieved from <http://www2.ca.uky.edu/agcomm/pubs/ASC/ASC205/ASC205.PDF>

▶ **Llama** – hay, salt

- Source: Penn State Extension. (2017.) *What is forage quality and how does it effect a feeding program?* University Park: PA: Author. Retrieved from: <http://extension.psu.edu/animals/camelids/nutrition/what-is-forage-quality-and-how-does-it-effect-a-feeding-program>
- Source: Washington State University Extension. (2002). *4-H leader's manual for llama activities* (EM4891). Pullman, WA: Author. Retrieved from: https://extension.unh.edu/resources/files/Resource002965_Rep4334.pdf

▶ **Pig** – beet pulp, shelled corn, oats, soybean hulls, peas, salt

- Source: Boggess, M., Stein, H. H., & DeRouchey, J. M. (2008). *Alternative feed ingredients for swine rations*. Urbana-Champaign: University of Illinois. Retrieved from <http://nutrition.ansci.illinois.edu/sites/default/files/AlternativeFeedIngredientsSwineDiets.pdf>

▶ **Sheep** – hay, shelled corn, oats, salt, soybean hulls, cottonseed

- Source: Umberger, S. H. (2009). *Feeding sheep* (Publication 410-853). Virginia Cooperative Extension. Retrieved from https://pubs.ext.vt.edu/410/410-853/410-853_pdf.pdf

ACKNOWLEDGMENTS:

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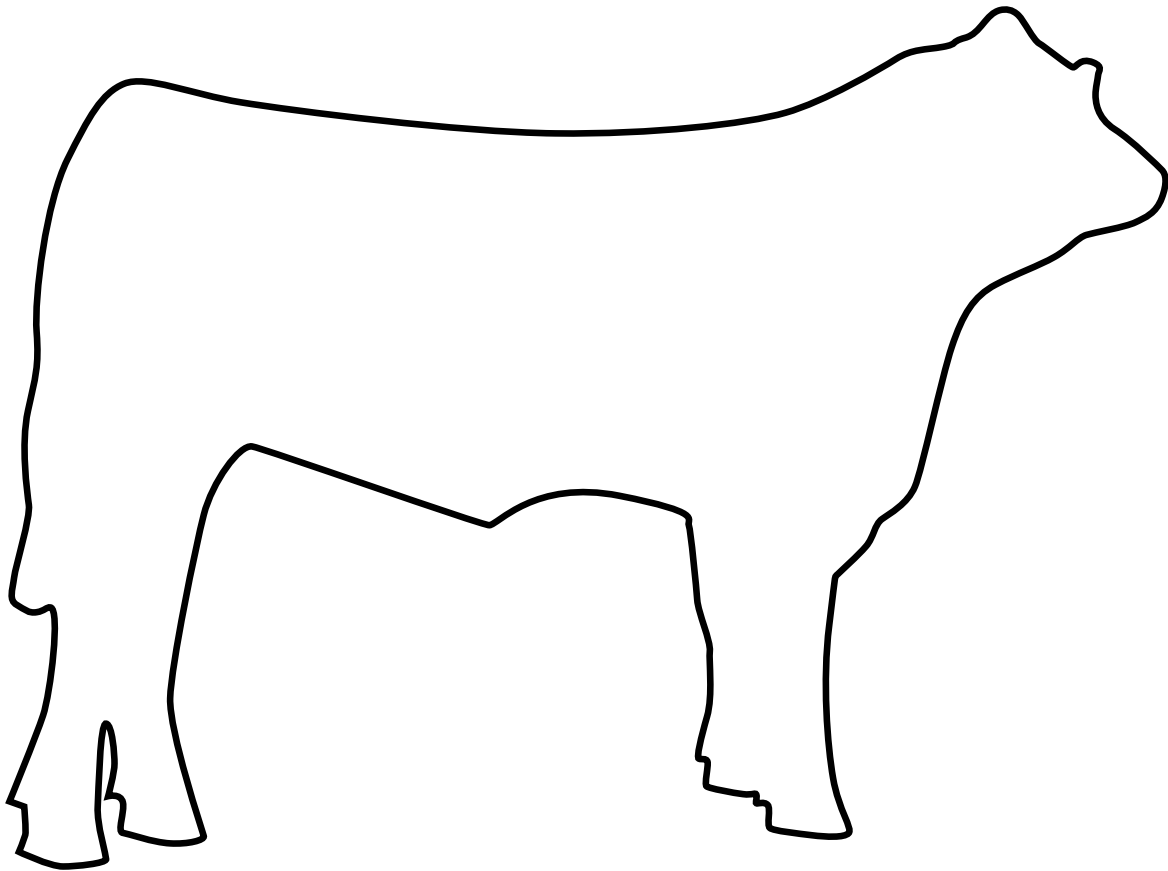
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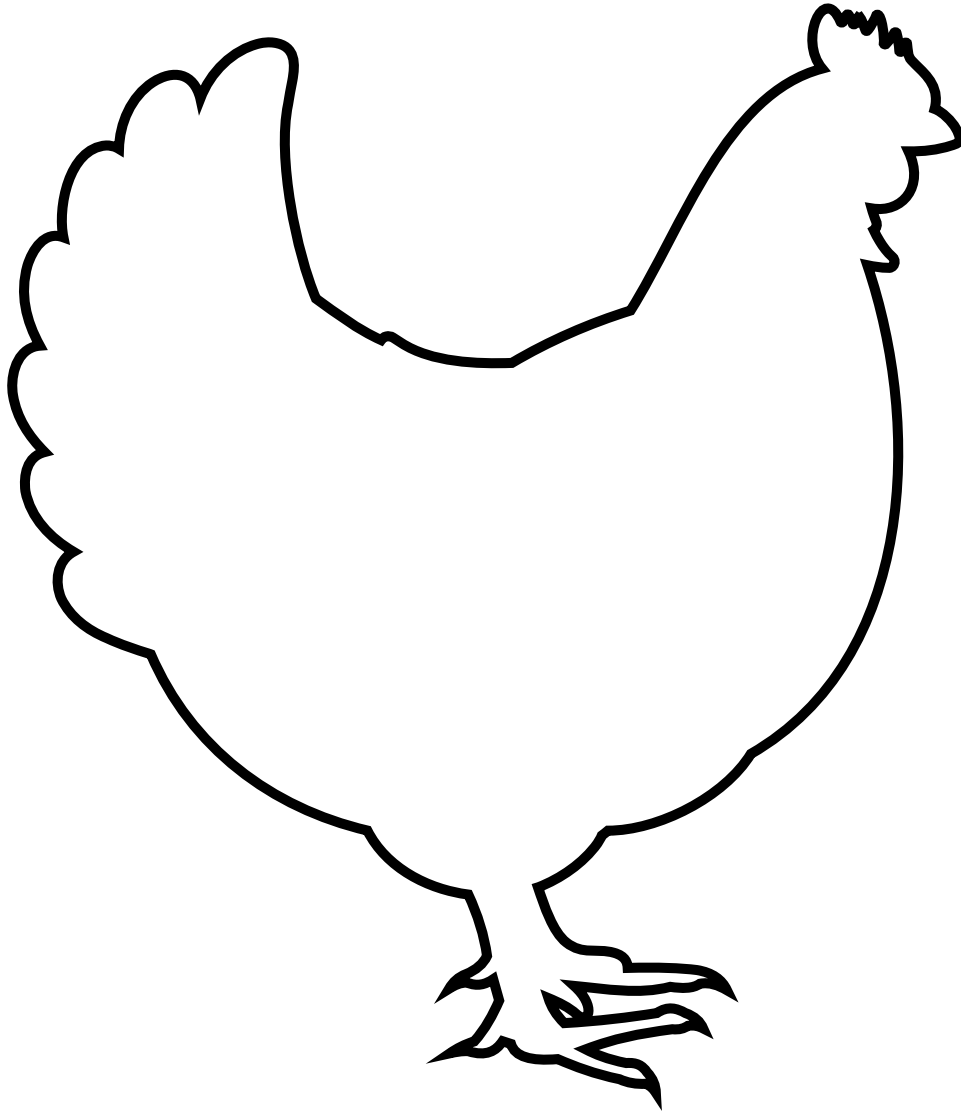
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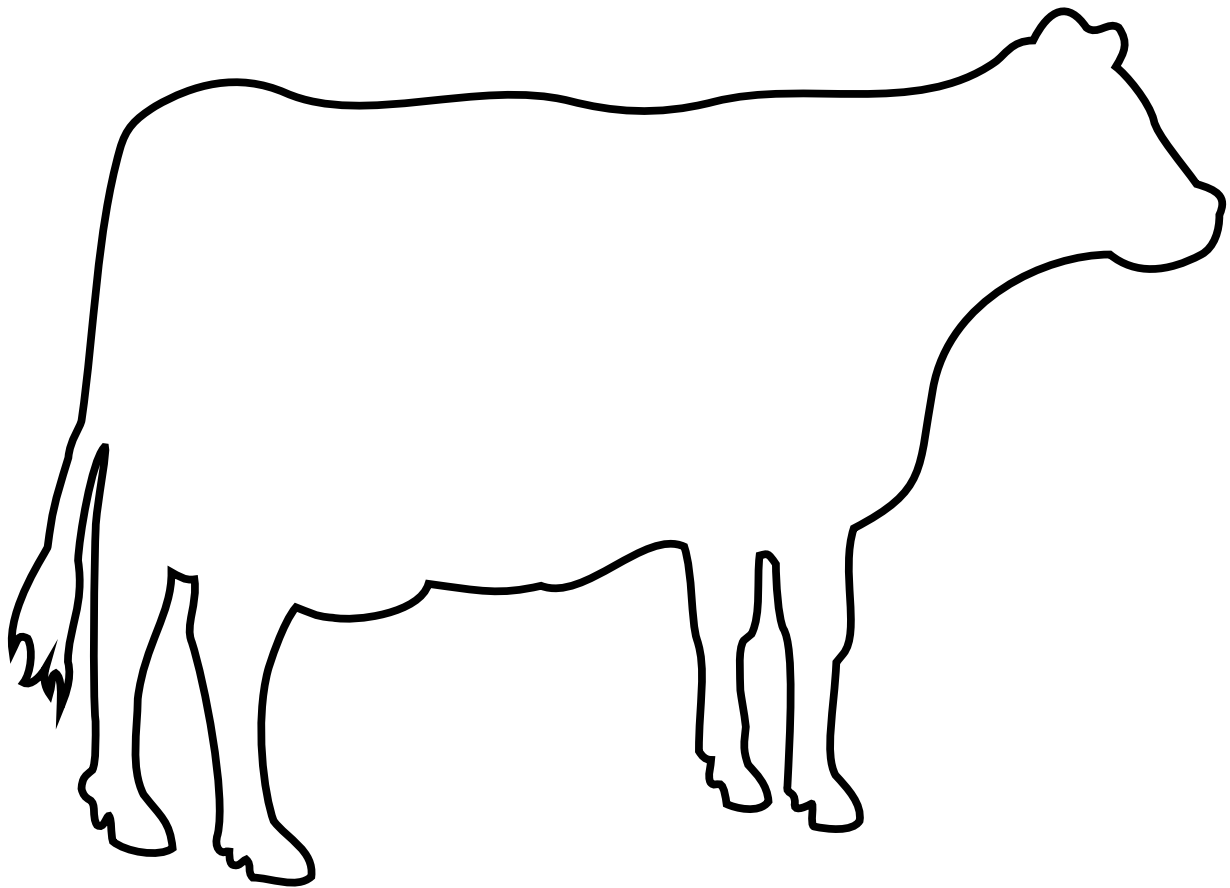
Feed Critter Animal Outlines: Beef Cow



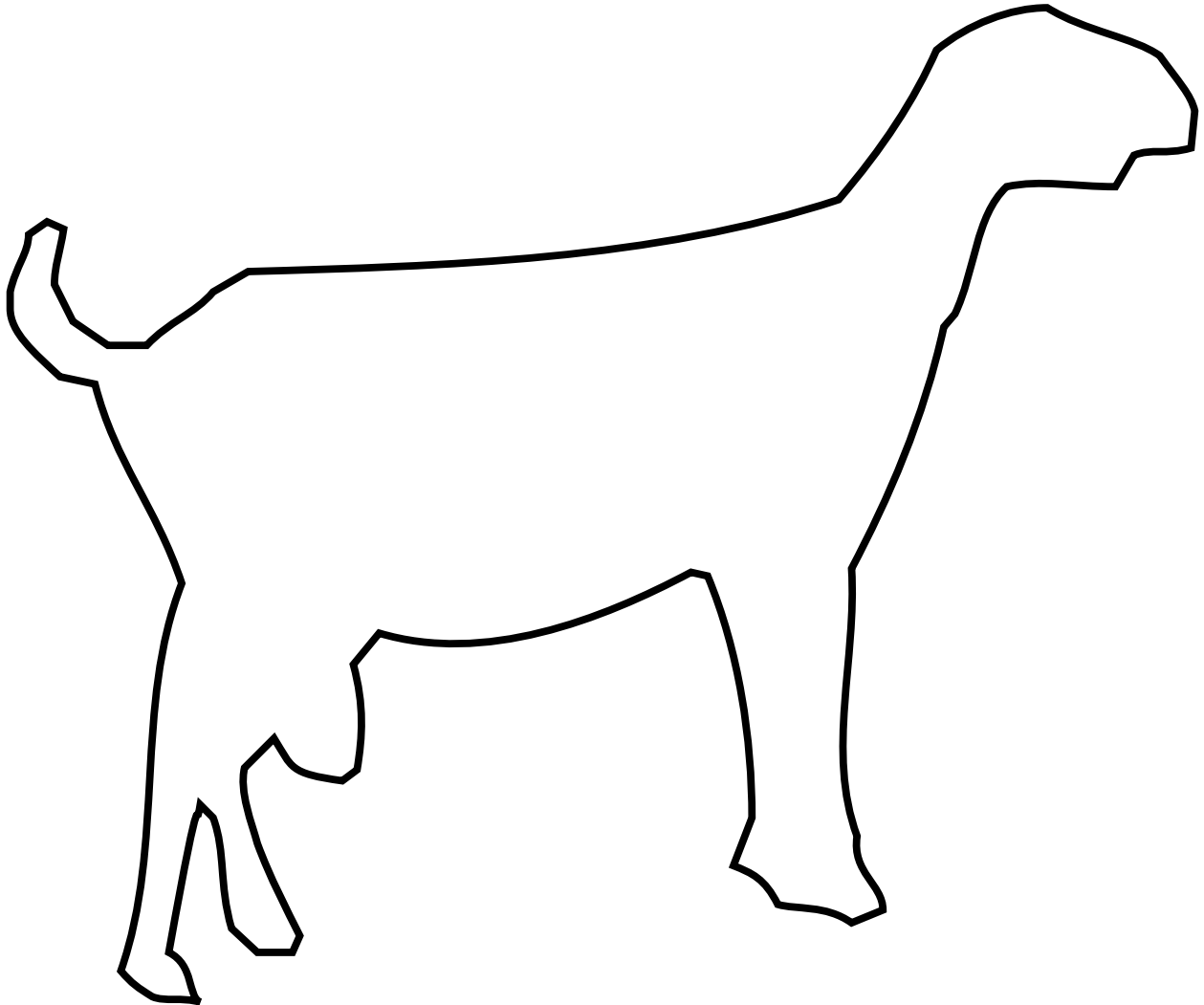
Feed Critter Animal Outlines: Chicken



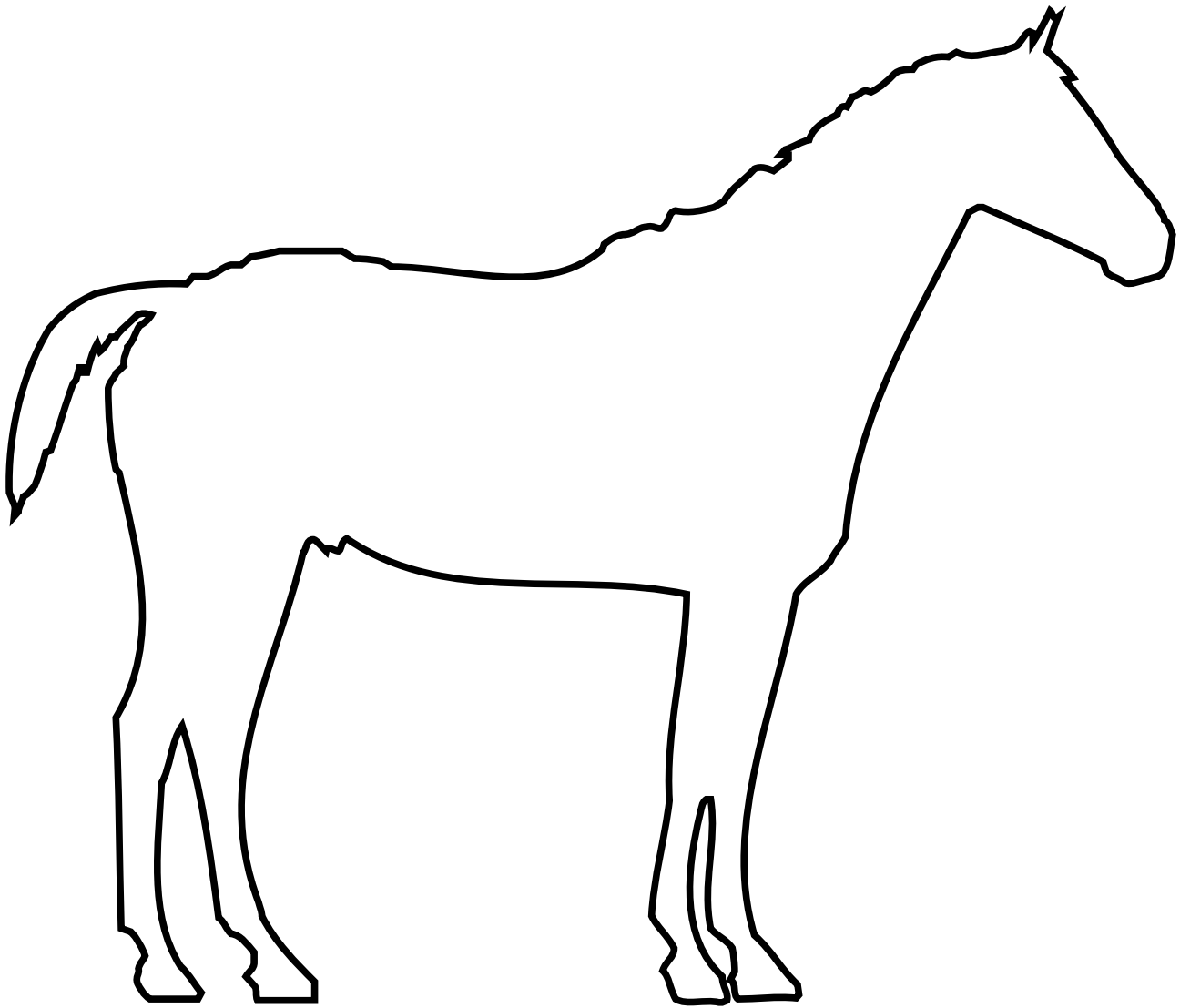
Feed Critter Animal Outlines: Dairy Cow



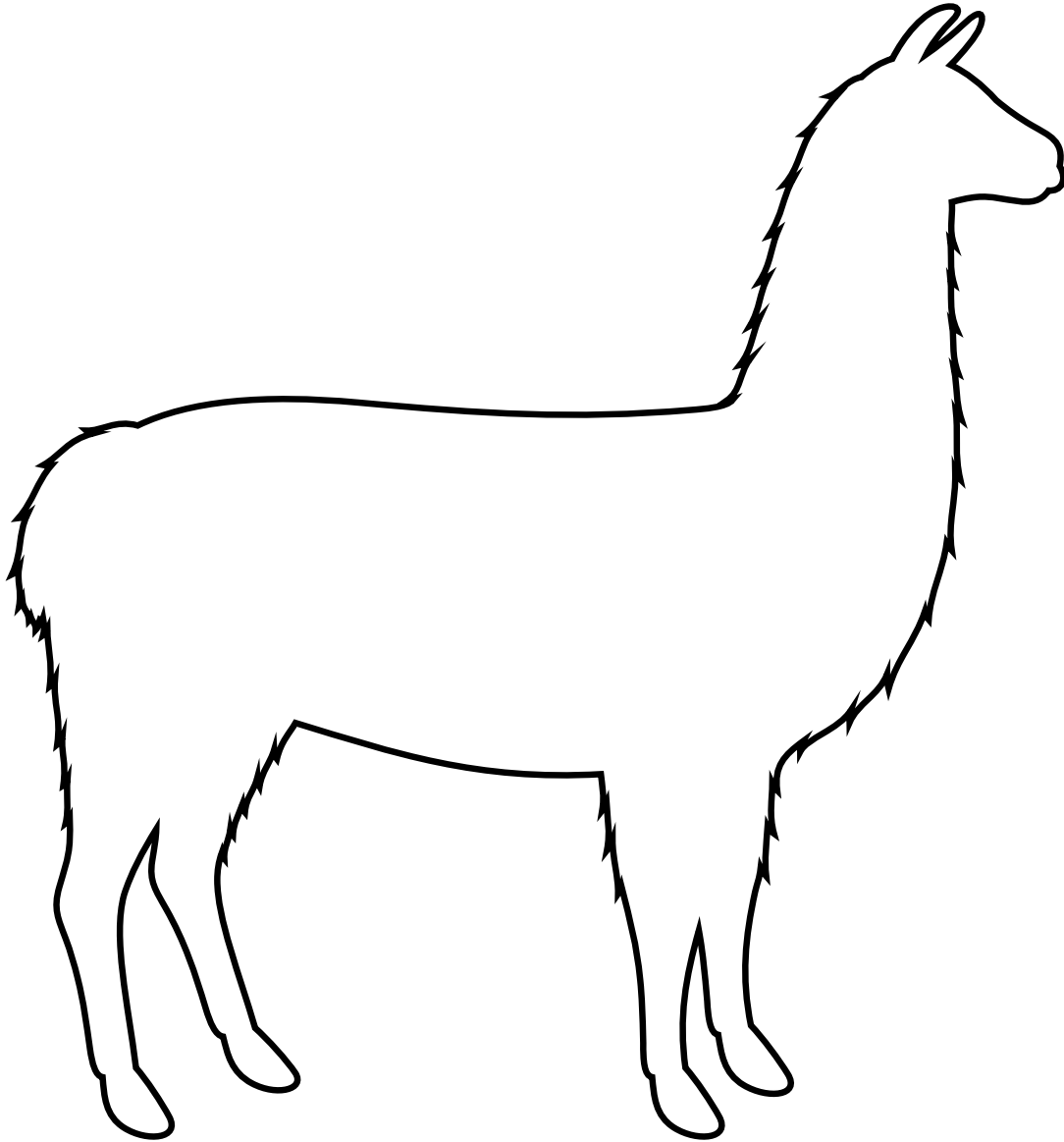
Feed Critter Animal Outlines: Goat



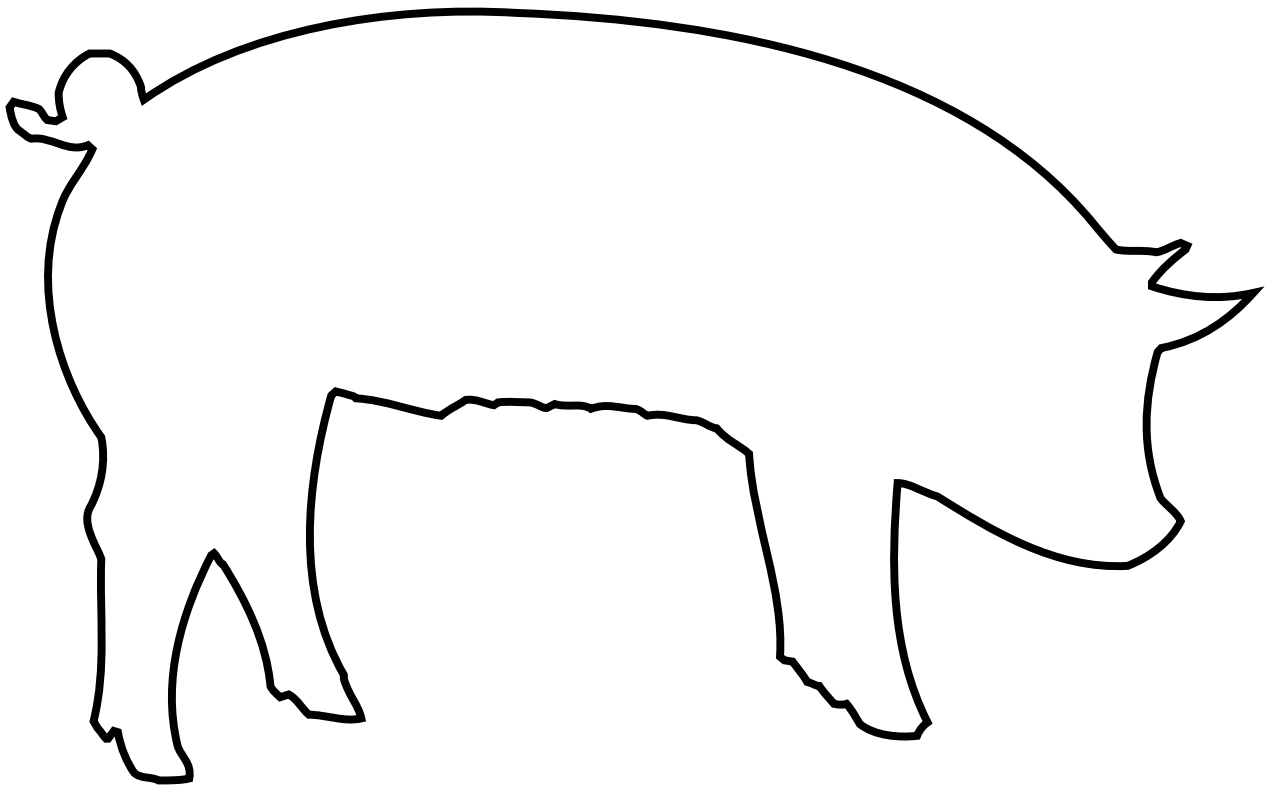
Feed Critter Animal Outlines: Horse



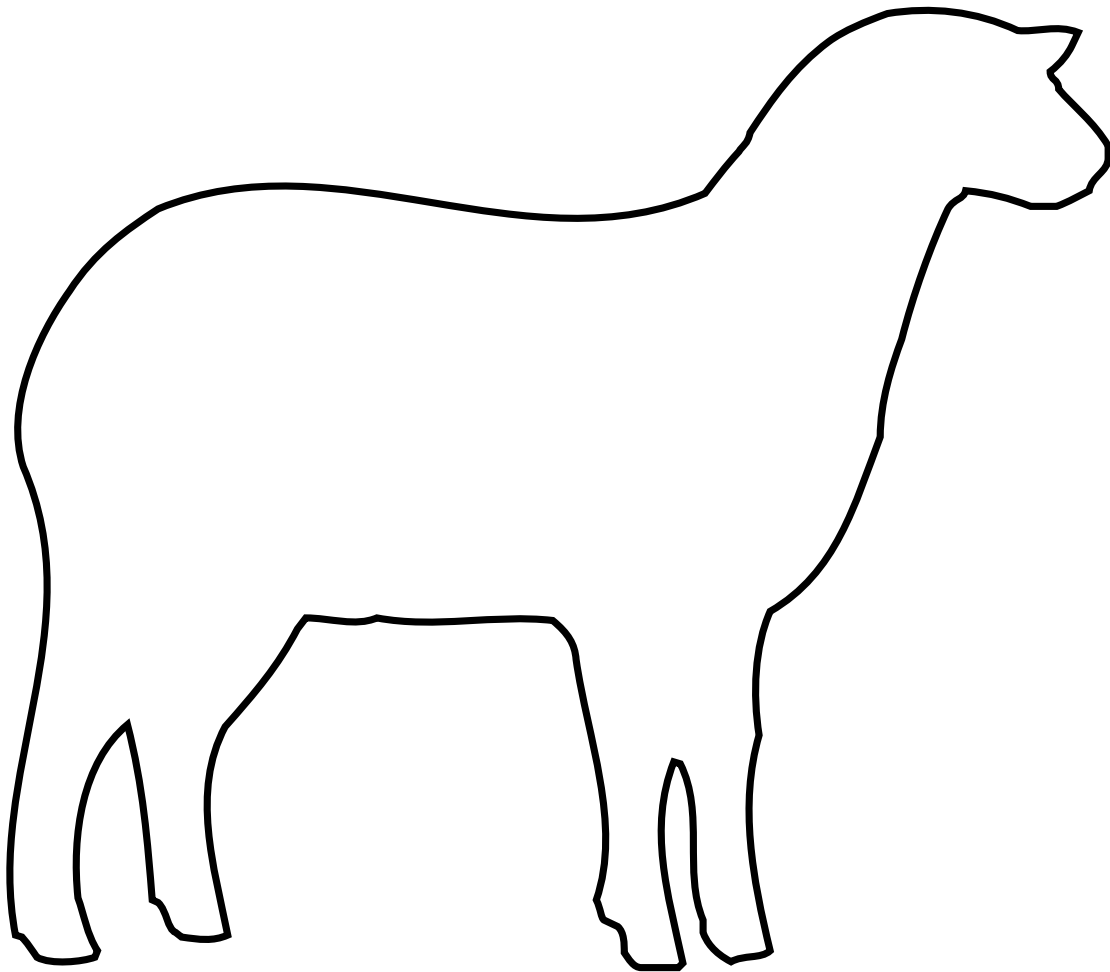
Feed Critter Animal Outlines: Llama



Feed Critter Animal Outlines: Pig



Feed Critter Animal Outlines: Sheep



Feed Critter Worksheet

Name: _____

What do you think this
animal eats?

What items did you
use that **are human
foods?**

Paste Feed Critter
HERE

What items did you
use that **are for
animal feed?**

What items did you
use that **animals and
humans both eat?**