

### Animal Health: A Balancing Act

**These activities are intended to be used by Dairy Farmers and Dairy Princesses to visit the classroom and introduce the students to concepts presented in the “Discover Dairy - Animal Health” lessons for all levels. Each activity should last about 20 minutes.**

**Objective:** Demonstrate to students the steps dairy farmers take in ensuring that their dairy herd receives a nutritious diet, healthy living conditions and good medical care.

**Desired Outcome:** Students will be able to list three or four things farmers do to ensure their dairy cows receive adequate care.

**Preparation:** Use large Ziploc bags to gather samples of the ingredients that you or your family uses in your milk cow ration. Keep ingredients in separate bags. Be sure to include any unique ingredients like cotton seed or pretzel salt that you may use.

Write on a poster how many pounds of each ingredient each cow eats each day and how many pounds total you feed to your cows each day. See example to left.

Find feed tub or large mixing bowl to take in to the class, along with a mixing spoon. Make sure the bowl is large enough to fit all of the ingredients.

**Video:** If time and technology allow, show students the four-minute video on Discover Dairy and Animal Care. Show elementary students the elementary version and upper level students middle school version. Both videos can be found online at [www.discoverdairy.com](http://www.discoverdairy.com).

Ingredient	One Cow	120 cows
Corn Silage	40 pounds	4,800 pounds
Haylage	30 pounds	3,600 pounds
Shelled Corn	11 pounds	1,320 pounds
Soybean Meal	6 pounds	720 pounds
Mineral Mix	3 pounds	360 pounds
Total	90 pounds	10,800 pounds

#### **Classroom Discussion (Set materials up in front of classroom):**

Introduce yourself and your role in the dairy industry. If you are a dairy farmer, talk about your farm, many cows you have, where your farm is and why you love being a dairy farmer.

Explain that a cow's health is of the utmost importance to dairy farmers, because proper animal care leads to the production of high-quality milk. A cow must receive a nutritious diet, regular medical care and be kept in clean and comfortable living conditions to remain healthy. "Today's classroom activity will show how farmers feed their cows a nutritious diet."

*Ask: How can you make sure you eat a nutritious diet? (Answers may include choose foods from the five food groups, eat vegetables and fruits, avoid junk food, etc.)*  
*Do we always make the right choices when it comes to our diet?*  
*Do we sometimes have a bag of chips or a candy bar?*

Explain that cows are a little like kids. They won't necessarily make the right choices if given a choice of foods they can eat. To make sure cows eat a well-balanced diet, farmers blend their foods together into something called a "Total Mixed Ration." Today we are going to make our own Total Mixed Ration.

**Activity:**

Pass around the bags of feed ingredients and explain that these are feeds your/the farmer's cows eat on the farm. Let them feel the feeds to see what they feel like. You can add what some of the feeds provide — for example, corn silage and haylage provide fiber and energy, while soybean meal provides protein.

Tell students how a TMR mixer is used to mix the feed together on the farm. A farmer works with a nutritionist who decides how much of each feed ingredient a cow needs to meet her nutritional needs. Then a farmer uses a TMR mixer, which looks like a big mixing bowl on wheels with a built-in weight scale, to weigh out the exact amount of the different feeds that the herd needs. The TMR mixer blends all of the feed together so that every bite a cow takes is perfectly balanced.

Have students add the ingredients together in the large mixing bowl or feed tub. In older classrooms, you can actually have the students weigh the ingredients with measuring cups or a weight scale to add value to the exercise. They can write down how much of each ingredient is in the tub and what the total amount is.

**Summary:**

Remind the students that providing a well-balanced diet for the cows to eat is just one way the farmer makes sure cows are kept healthy and well cared for.

*Ask: Do you remember other ways the farmer cares for their cows?*  
*(Answers could include providing a comfortable place to live and regular veterinary care.)*



### Biosecurity: Outbreak Tag

**These activities are intended to be used by Dairy Farmers and Dairy Princesses to visit the classroom. This activity will last about 20 minutes.**

**Objective:** Demonstrate to students the importance of biosecurity and the potential for rapid disease transmission on farms.

**Desired Outcome:** Students will be able to explain the importance of biosecurity measures and understand that there are measures to help prevent disease outbreak.

**Preparation:** For this activity, all you need is a large, open space. You can also use cones or ropes to keep the kids contained in one area.

**Classroom Discussion (Set materials up in front of classroom):**

Introduce yourself and your role in the dairy industry. If you are a dairy farmer, talk about your farm, many cows you have, where your farm is and why you love being a dairy farmer.

*Ask: What do you do when you're sick? Answers may include staying home, washing your hands, wearing a mask, taking medicine. Explain that animals can get sick too and so it is important that the farmer does these same things to make sure the other animals don't get sick.*

Explain that biosecurity means living and working safely near animals so that neither animals or people get sick so that we can have healthy pets, people, and farm animals. Washing your hands is one of the best everyday biosecurity practices.

*Ask: Can you think of any examples of biosecurity in everyday life? Answers may be washing your hands after playing with a pet or touching a farm animal, taking your pets to a veterinarian for checkups and vaccines, staying away from any wild animals, and cooking all meat and eggs before eating them.*

**Follow these steps:**

- Gather the students in the large empty space. Tell the students that they are going to pretend to be the animals in a herd of dairy cattle.
- Designate one person to be the infected animal that person is it. Instruct the rest of the class (healthy members of the herd) to run around and avoid being tagged (infected) by the person who is it. Every person tagged becomes an infected cow as well and must also try to infect others.

- Once all of the students are tagged, *Ask: Once a few of you were tagged (infected) did it get harder to get away?* Explain that if one cow were to get sick and she spread her germs to another cow, pretty soon the whole herd would be sick.
- Play again, this time designating a veterinarian, as well as an infected animal.
- Explain that the veterinarian cannot become infected but instead must tag as many infected animals as possible. As soon as they tag someone, they are no longer infected.
- This shows that disease can be better managed when there is an animal health plan.
- Next, designate one student to be the infected animal and tell them they have to stay in one spot and cannot move. Have the participant try to tag others while standing still in one location.
- *Ask: Was it harder to tag people when you couldn't move?* Explain that when an infected animal is isolated, or kept separate from the rest of the herd, disease spreads more slowly, if it all.
- Explain that there are other ways that disease can spread between animals, such as visiting a farm and then going to another farm. If the first farm has a disease, these germs can be transferred to the next farm using people's shoes or if you don't wash you hands.
- This is why it is important to make sure you wash your hands after touching animals and not touching anything the farmer or your teacher tells you not too.

### **Summary:**

Remind the students that farmers want what is best for their animals and don't want them to get sick, just like you don't want your pets to get sick. This is why washing your hands and taking good care of your pets is so important. Thank them for the opportunity to visit.

*Ask: Can you share some of the things that dairy farmers do to keep their cows from getting sick? Reinforce their answers by adding a few examples from your discussion.*



### Cow Salad

**These activities are intended to be used by Dairy Farmers and Dairy Princesses to visit the classroom. Each activity is intended to last about 10 minutes.**

**Objective:** Create a fun, hands-on learning activity to teach students about dairy cow nutrition.

**Desired Outcome:** Demonstrate to students how dairy farmers use Total Mixed Rations to provide their animals with the best nutrition so that they can produce delicious milk.

**Preparation:** You will need mini pretzel sticks, candy corn, M&Ms, white yogurt raisins, and sugar babies. You will also need snack sized individual bags for each student, a large mixing bowl, and gloves.

**Classroom Discussion (Set materials up in front of classroom):**

Introduce yourself and your role in the dairy industry. Explain that you take good care of your cows because you want to make sure they are happy and produce lots of milk.

*Ask: Why can't cows eat whatever they want? Explain that farmers feed a Total Mixed Ration (TMR) that combines different types of food to provide high amounts of energy for the cow.*

- Explain that TMR stands for 'Total Mixed Ration,' which is a way that farmers ensure that dairy cows get the right mix of food for their diet, like a salad for cows!
- Dairy farmers weigh out the right ingredients, then mix them together. Like your family might use a mixing bowl, farmers use a giant mixer called a feed mixer to ensure each bite the cow takes has the nutrients, or energy, protein, minerals and vitamins, needed by the cow.
- *Show the pretzel sticks and add them to the large mixing bowl*—don't forget your gloves! Explain that these represent forages like corn silage or alfalfa hay. These provide high energy through protein, carotene, and calcium to help the cow produce high—quality milk.
- *Show the students the candy corn and add them to the bowl.* These represent corn, which is another source of energy for the cow.
- *Show the students the M&Ms and add them to the bowl.* Explain that these are protein representatives, which help provide energy for cows.
- *Show the students the white yogurt raisins and add them to the bowl.* These represent cottonseed, which is a great source of fiber, protein, and fat.
- *Show the students the sugar babies and add them to the bowl.* Explain that these represent a sugar source or liquid feed, such as molasses. These provide the cow with carbohydrates, sugars, protein, and additional nutrients. They also help the feed stick together.
- Mix the all the ingredients in the bowl together and fill the individual bags with a handful for each student.
- Now you have a fun and educational snack for your tour/visit!

### Environment: Top Crop

**These activities are intended to be used by Dairy Farmers and Dairy Princesses to visit the classroom and introduce the students to concepts presented in the “Discover Dairy - In the Environment” lessons for all levels. Each activity should last about 20 minutes.**

**Objective:** Demonstrate to students what farmers do to take care of the environment. Show how they play a role in the environment by protecting the soil, air and water quality.

**Desired Outcome:** Students will be able to explain the connection between the environment, the farmer and the consumer and list ways dairy farmers play a role in protecting the environment.

**Preparation:** Fill a Ziploc bag with top soil from your farm. Put some seeds (corn, soybeans, etc.) in another bag. If appropriate, take some dried cow manure and put it in a bag. Fill a gallon jug with water. Get a soda can or other type of can to use in your presentation. Gather pictures of your/another farm—the dairy barn, fields and the farmstead.

**Video:** If time and technology allow, show students the four-minute video on Discover Dairy in the Environment. Show elementary students the elementary version and upper level students middle school version. Both videos can be found online at [www.discoverdairy.com](http://www.discoverdairy.com).

**Classroom Discussion (Set materials up in front of classroom):**

Introduce yourself and your role in the dairy industry. If you are a dairy farmer, talk about your farm, many cows you have, where your farm is and why you love being a dairy farmer. Explain that taking good care of the environment is an important part of the dairy farmer’s job, just as it is an important responsibility that we all share.

*Ask: How can we take care of the environment? (Answers could range from recycling to not littering.) Explain that you are going to talk about what the farmer does on the farm to take good care of the environment and our soil, air and water resources.*

Use the items that you brought to go through your discussion. Use the farm photos to explain that dairy farms are often in families for many generations, and that most farmers have a deep connection to the land where they farm. They want to take good care of the natural resources on their farm for their family and for future generations.

Review the items on the table.

- *Hold up the Ziploc bag of top soil and pass it around the class.* Tell the class that top soil is very important to you as a farmer. It holds the nutrients and moisture that helps crops grow. If top soil is not taken care of properly, it can run off the land and into local streams and rivers, which can be hard on both the land and the river.



- Explain that farmers do many things to protect the soil on their farm. *Hold up bag of seeds and pass them around.* Each year, when they plant their crops for the cows to eat, they use farming methods that prevent top soil erosion. Two examples are no-till farming (when they plant the seed without disturbing or tearing up the soil) and rotational cropping (when they plant different crops on a rotation to add nutrients back into the soil).
- *Hold up water jug.* Explain that water is another resource recycled on the dairy farm. Water on the dairy farm is used to wash the milking system, wash down barn alleys, cool milk more quickly and to water the animals. Cows drink a lot of water, about 40 gallons a day. That water is also recycled on the fields to use as a fertilizer and for irrigation.
- Along with drinking a lot of water, cows eat a lot of food, about 90 pounds a day. They use that food and water to produce two things, milk and cow manure. *(Hold up bag of cow manure and pass it around).* Instead of looking at the cow manure as a waste product, farmers recycle it and use it as a natural fertilizer for the soil. That manure adds nutrients and moisture back into the soil to help crops grow and prevent soil erosion.
- Explain that some farms are producing energy from the natural resources on the farm, including manure, sunlight and wind. Manure from a 200 cow herd is able to produce enough electricity for the farmstead and 50 other homes. This is one more way farmers are caring for their environment.
- *Hold up the metal can.* Taking good care of the land on the farm is not just the farmer's responsibility, but everyone's. Ask the class if they know what the can is. Explain that if someone decides to litter and throw the can out the window, it can be harmful for both the environment and for the cow. The can could end up in a hay field or a corn field. If a cow would eat the can as part of her feed, it could harm her. Everyone needs to be respectful of their environment.

### Summary:

Remind the students that farmers do many things on their dairy farm to take good care of the environment. Farmers play an important role in providing a safe, wholesome food supply and taking good care of the environment. Thank them for the opportunity to visit.

*Ask: Can you share some of the things that dairy farmers do to take good care of the environment? Reinforce their answers by adding a few examples from your discussion.*



### Haybale Relay

**These activities are intended to be used by Dairy Farmers and Dairy Princesses to visit the classroom. Each activity is intended to last about 10 minutes.**

**Objective:** Create a fun, hand-on learning activity to get kids active and learn about dairy's role in nutrition.

**Desired Outcome:** Students will learn that refueling with chocolate milk is a great way to rehydrate after physical activity,

**Preparation:** You will need two or three haybales (depending on the age of students small buckets of grain may be used) . Divide the class into teams depending on the amount of students. To keep the game quick, use smaller teams. You can use a rope or baler twine to mark where to turn around. You will also need some chocolate milk.

**Classroom Discussion (Set materials up in front of classroom):**

Introduce yourself and your role in the dairy industry. Explain that you take good care of your cows because you want to make sure they are happy and produce lots of milk.

***Ask:** What do you drink after physical activities? Explain that chocolate milk is actually an ideal sports recovery drink!*

- Research shows that consuming chocolate milk after exercise or sports performance is a great way to replenish the important nutrients our bodies needs for recovery—carbohydrates, protein, fluids, and even electrolytes!
- After exercise, our body needs sugar to replace all that we just used, chocolate milk has both natural milk sugars and added sugars to help give our muscles energy!
- Muscles also need protein after physical activities to support the repair and rebuilding of muscle tissues. Cow's milk is a great source of protein because it contains all nine essential amino acids!
- Chocolate milk also contains electrolytes, vitamins, and minerals, which are all very important after a workout.
- Don't forget about hydration, chocolate milk also has the most vital nutrient of all—water! Everyone needs fluids after a workout to recover.
- ***Ask:** How do farmers get their exercise? Explain that farmers need to stay healthy too, but they're in luck, their backyard is just like a gym!*
- Divide your class into teams for the relay and give each team a haybale. Have them carry their haybale to the line and back. The first team to have their last player return to the line wins!
- After they're done, offer everyone some chocolate milk to refuel!



### Manure Management: Manure is Stacking Up!

**These activities are intended to be used by Dairy Farmers and Dairy Princesses to visit the classroom. This activity will last about 20 minutes.**

**Objective:** Demonstrate to students the steps dairy farmers take to ensure that the manure produced on the farm is being managed in a safe and practical way.

**Desired Outcome:** Students will be able to explain what happens on the farm to ensure the manure is being handled safely to prevent pollution.

**Preparation:** Gather the following items: A laminated copy of a map of your farm, dry erase or overhead markers (could also print paper copies of the map and use colored pencils/markers). If you do not have a map of your farm, you can use a demonstration farm's map on page 3.

**Video:** If time and technology allow, show students the two-minute video on Mideast Dairy called Managing Cow Manure at [drink-milk.com](http://drink-milk.com)

#### **Classroom Discussion (Set materials up in front of classroom):**

Introduce yourself and your role in the dairy industry. If you are a dairy farmer, talk about your farm, many cows you have, where your farm is and why you love being a dairy farmer. Explain that you make sure the manure produced on your farm is managed best for your farm and the environment.

*Ask: Why is manure is good for the environment? Explain that if manure is managed safely, it is an excellent fertilizer and provides nutrients to plants to help them grow.*

Use the items that you brought to go through your discussion. Explain that manure is an excellent fertilizer which is alive with nitrogen, phosphorus, and potassium—all which help plants grow, but they also contain pathogens and parasites that can cause diseases. This is why it is important to practice safe manure management.

- Animals in a farm operation are enclosed in pastures and barns, which leads to concentrated areas of manure. One dairy cow produces about 100 lbs. of manure everyday. *Ask the students to multiply 100 lbs. times the number of milking cows on your farm to determine the pounds of manure produced everyday.* Explain that this is why having a manure management plan is essential.
- Composting manure is recommended before using it as fertilizer. As temperatures in a compost pile rise, pathogens and fly eggs are killed.

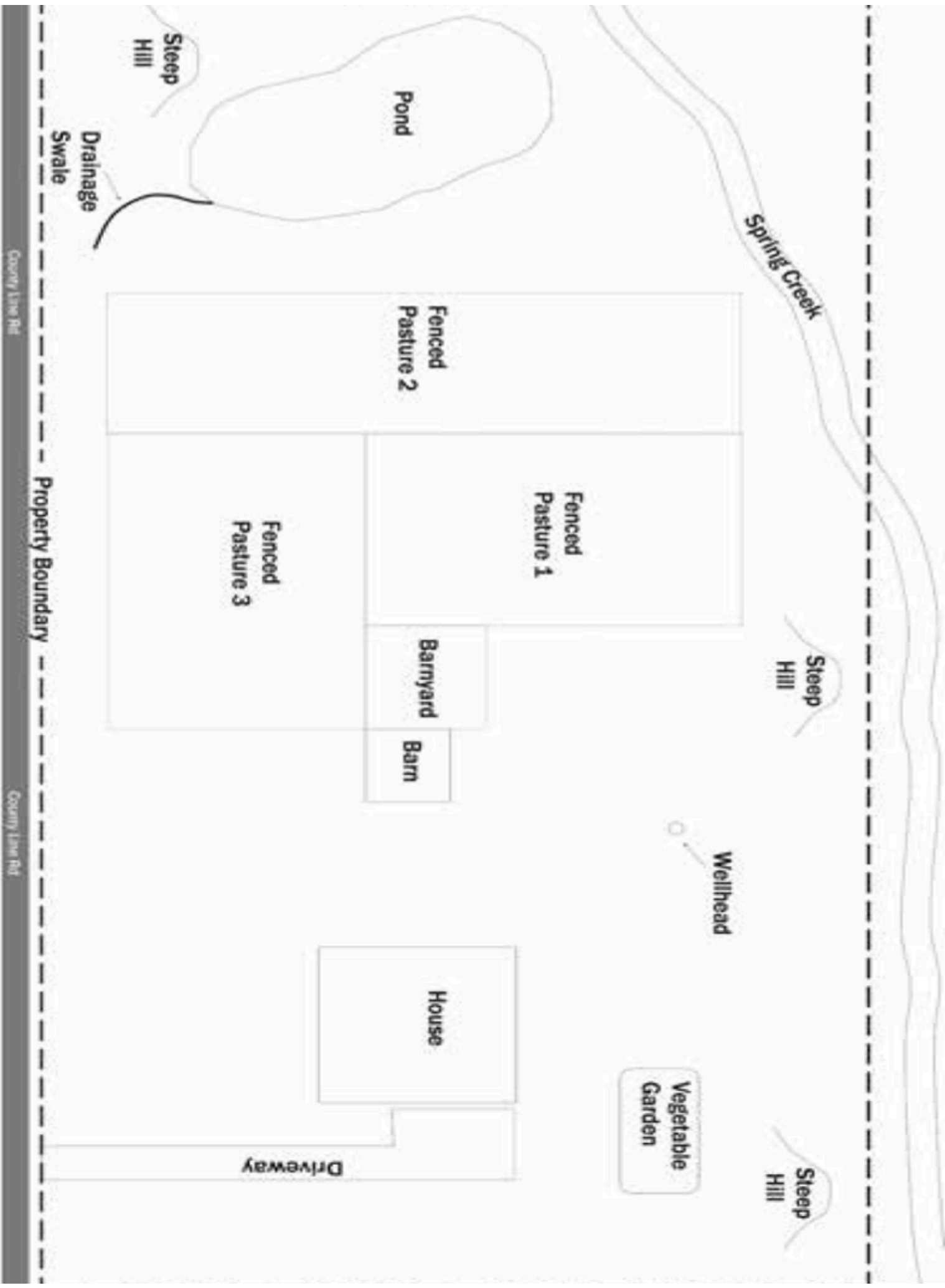
- *Pass the farm maps that you have prepared around the room along with the drawing materials.* Explain that this is a map of your farm and it is important that your manure is stacked in a safe space for the environment and your family's health. The students will identify areas around the farm where it would be unwise to stack manure and then design a solution for stacking manure.
- Manure should be stacked away from any waterways or wellheads. Runoff from a manure stack should not directly reach any environmentally sensitive areas. *Ask the students to outline any waterways or wellheads on the farm map to show the manure cannot go near these areas.*
- Manure should also be stacked on flat areas at higher elevations and away from steep slopes. *Ask the students to color in any steep slopes seen on the farm map.*
- Explain to the students that manure must be stacked on an elevated, improves surface, like a concrete pad in order to prevent runoff. If the manure was just placed on the ground, all of the important nutrients would seep into the ground, and potentially contaminate a waterway.
- A manure stacking pad that is completely covered and allows no rain or other water to pass through would properly manage all of the potentially polluted runoff. *Ask the students what are some ways you could cover your manure storage area?*
- Take a look at the map, do you see any places where you might place a manure stacking pad that would be away from all of the areas you just marked as "bad" places for your manure? *Ask students to place a star on the map where they would like to build their manure stacking pad. Ask for volunteers to explain why they chose that spot.*

### **Summary:**

Remind the students that farmers do many things on their dairy farm to take good care of the environment. Farmers play an important role in providing a safe, wholesome food supply and taking good care of the environment. Thank them for the opportunity to visit.

*Ask: Can you share some of the things that dairy farmers do to keep the environment safe? Reinforce their answers by adding a few examples from your discussion.*





### Milk Safety: Look, Mom, No Hands!

**These activities are intended to be used by Dairy Farmers and Dairy Princesses to visit the classroom and introduce the students to concepts presented in the “Discover Dairy - Milk Safety” lessons for all levels. This activity will last about 20 minutes.**

**Objective:** Demonstrate to students the steps dairy farmers take to ensure milk coming from their farm is wholesome, the highest quality and safe.

**Desired Outcome:** Students will be able to explain what happens on the farm to ensure the milk being produced there is wholesome, the highest quality and safe.

**Preparation:** Gather the following items: milker gloves, milker claw with four inflations attached, teat dip o sanitizing solution, milk sample bottle or milk tester kit, and thermometer. Make sure all items are clean and sanitized. Bring large photo, graphic or poster of a farmer milking a cow to show how a cow is milked. (Discover Dairy Poster would work)

**Video:** If time and technology allow, show students the four-minute video on Discover Dairy and Milk Safety. Show elementary students the elementary version and upper level students middle school version. Both videos can be found online at [www.discoverdairy.com](http://www.discoverdairy.com).

#### **Classroom Discussion (Set materials up in front of classroom):**

Introduce yourself and your role in the dairy industry. If you are a dairy farmer, talk about your farm, many cows you have, where your farm is and why you love being a dairy farmer. Explain that making sure the milk you produce on your dairy farm is safe and wholesome is an important part of what you do on the dairy farm.

*Ask: How do we know the milk we drink is safe? (Answers could range from keeping it cold to checking the expiration date.) Explain that you are going to talk about what the farmer does on the farm to make sure the milk they produce is safe to drink.*

Use the items that you brought to go through your discussion. Explain that the most important thing the farmer does to ensure milk safety is take good care of the cows. Cows must be healthy and well cared for to give high quality milk. Cows need a well-balanced diet, fresh water and proper veterinary care.

Explain that on the table are other items we use to ensure milk is safe.

- *Ask the students why it is important that the farmer wears gloves to milk the cows.* Explain that the gloves are used to protect the cows. Human hands can carry germs. That's why we use disinfecting soap. We don't want those germs to get on the cow's udder, so we wear plastic gloves to protect the cow. *(Pass the gloves around.)*

- Before the cow is milked, the farmer uses sanitizing solution to make sure the udder, which is where the cow stores her milk, is clean and ready to be milked. The solution is dried off the udder with a towel before she is milked, and a protective coating is added after milking to protect her after she is done getting milked.  
*(Show group sanitizing solution.)*
- Show the milker claw and inflations. Human hands never touch the milk during the milking process. This machine is used to gently remove the milk from the cow's udder. It is hooked into a pipeline that carries the milk to a milk tank where the milk is cooled to below 40 degrees Fahrenheit.  
*(Pass around milker claw and inflation.)*
- *Show thermometer.* It is very important that milk is kept cold — both on the farm, in the processing plant, at the store and in your refrigerator. Milk must be kept below 40 degrees at all times, except during pasteurization which is when milk is heated to high temperatures and quickly cooled to remove any harmful contaminants and make it safer.
- *Show milk testing kit or milk sample bottle.* Before the milk is taken from the farm, a milk sample is taken to ensure the milk is safe to drink and free from any harmful substances. Milk is tested multiple times in route from the farm to your grocery store. Milk containing antibiotics or other harmful substances must be discarded at the farmer's expense.
- Remind students that keeping milk safe isn't just the farmer's job. Many other people, including the consumer, need to do their part to keep food safe. Encourage them to follow directions for storing foods, and to make sure they wash their hands to keep food products clean. Remind them that all milk products, especially fluid milk, must be kept clean, cold and covered to stay fresh and wholesome.

### Summary:

Remind the students that farmers do many things on their dairy farm to produce safe, high quality milk.

*Ask: Can you share some of the things that dairy farmers do to keep milk safe and clean?  
Reinforce their answers by adding a few examples from your discussion.*

Encourage the students to learn more about what dairy farmers do on their farms to provide high quality milk and take good care of their cows. Remind them that farmers play an important role in providing a safe, wholesome food supply and taking good care of the environment. Thank them for the opportunity to visit their classroom.



### Milking Activity

**These activities are intended to be used by Dairy Farmers and Dairy Princesses to visit the classroom and introduce the students to concepts presented in the “Discover Dairy - Milk Safety” lessons for all levels. Each activity is intended to last about 10 minutes.**

**Objective:** Create a fun, hands-on learning activity to teach students about the milking process in a safe manner.

**Desired Outcome:** Students will learn about what the milking process is like for both the farmer and the cow.

**Preparation:** You will need a container or cup, a milking glove, water, and a needle. Take the needle and prick the ends of one or two fingers of the milking glove. Then, fill the glove with water and tie the end so that the water does not spill out.

**Classroom Discussion (Set materials up in front of classroom):**

Introduce yourself and your role in the dairy industry. Explain that making sure the milk you produce on your dairy farm is safe and wholesome is an important part of what you do on the dairy farm.

**Ask:** *How do we know the milk we drink is safe? (Answers could range from keeping it cold to checking the expiration date.) Explain that you are going to talk about what the farmer does on the farm to make sure the milk they produce is safe to drink.*

- Once your milking glove is prepared, allow the students to come up one at a time to “milk” the glove into the container or cup. As they take turns milking, explain some of the milking process as below.
- **Show the students an unfilled milking glove.** Explain that gloves are worn when milking to protect the cows from human germs. The cow’s udder is cleaned using a sanitizing solution to ensure that there is no dirt before she is milked.
- Explain that cows are milked 2-3 times a day and it only takes about 5-10 minutes for each cow. The milking process does not hurt the cows, in fact, they enjoy it!
- Tell the students that a cow produces about 8 gallons of milk everyday, or about 70 lbs. Explain that this translates to about 128 glasses of milk from just one cow! For older elementary students, tell them how many cows you have on your farm. **Have them multiply that by 70 lbs. to find how much milk is made on your farm everyday.**
- Explain that cows are milked using a machine—human hands never actually touch the milk that they drink!

Encourage the students to learn more about what dairy farmers do on their farms to provide high quality milk and take good care of their cows. Remind them that farmers play an important role in providing a safe, wholesome food supply and taking good care of the environment. Thank them for the opportunity to visit their classroom.