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CONNECTING YOU TO NEBRASKA AGRICULTURE

Issue 5

NEBRASKA'S FOOD CONNECTION

It would be so boring if we had to eat the same thing at every meal! Food can come from local farms and ranches down the road, other states in the United States, and other parts of the world. Food is a part of agriculture. Agriculture is the science of growing crops and raising livestock. From the food we eat to the products we use, agriculture provides us a lot of choices every day.

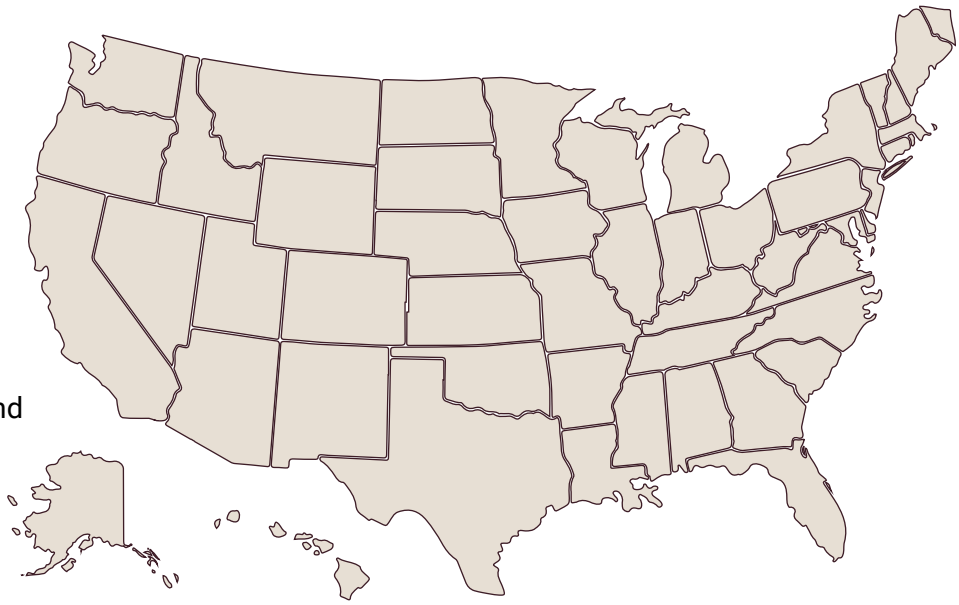
No matter what part of the United States food is produced, we can be assured farmers and ranchers are committed to providing the best and safest food for us to choose! Let's explore how the daily lives of farmers and ranchers across our country produce food we find on our grocery store shelves!

Grain farmers grow corn, wheat, oats, soybeans, and rice. Grains are used to make bread and cereal and provide energy and nutrients like fiber, B vitamins, and minerals.

Dairy farmers produce milk. Dairy products, including milk, cheese, and yogurt provide calcium, protein, and Vitamin D.

Farmers and ranchers raise **livestock** including cattle, pigs, chickens, and sheep. Meat from these animals is high in protein and provides amino acids our bodies need.

Fresh **fruits** and **vegetables** need warm climates. They provide fiber and vitamins that our bodies need.



X **Place an "X"** on what you think are the top 3 corn growing states.

✓ **Draw a checkmark** on what you think are the top 3 states that raise cattle.

☆ **Draw a star** on what you think are the top 3 states that raise fruit like oranges and grapefruit.

O **Place an "O"** on what you think are the top 3 states that raise dairy cattle.

□ **Place a square** on what you think are the top 3 states that raise pigs.

△ **Draw a triangle** on what you think are the top 3 states that raise vegetables and melons.

Corn States: IA, IL, NE; Dairy States: CA, WI, NY; Fruit States: FL, CA, AZ; Vegetable States: CA, AZ, FL; Beef States: TX, NE, KS; Pork States: IA, IL, MN

FROM THE FARM TO YOUR TABLE

Have you ever wondered exactly how food gets from the farm to your table? Explore the journey wheat takes from its start in the field to the bun for your hamburger!

Farmers plant wheat seeds. Then they check for disease and monitor plant health while it grows.

Combines harvest the wheat kernels which are loaded onto a truck. The grain is then sold to a local grain elevator.

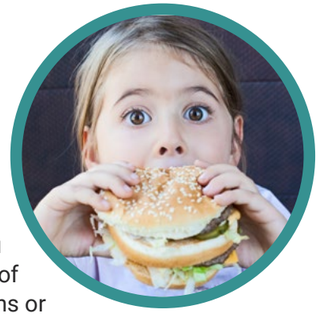
Eventually the grain is sold to a terminal elevator. This is where it is cleaned and separated. The wheat is then sold to flour millers.

The flour miller grinds the wheat into different types of flour (whole wheat, all-purpose, bread flour, etc.) The mills can also make ready-to-eat products like bread and cereal. Both flour and wheat products are shipped to grocery stores and other retailers.

Wheat can be grown all the way from the Arctic Circle to the equator, at sea level or on rolling slopes.

Bakers and chefs use flour to make yummy breads, pastries, and rolls! Consumers like you can buy these products or buy the flour to make your own creations at home.

Finally, wheat products make their way to your table! Next time you open a package of hamburger buns or bread, think of all the steps wheat took to get to you!



*Somewhere in the world, **wheat** is being harvested every month!*

SOYBEANS - PROVIDING PROTEIN FOR OUR PROTEIN

Soybeans are Nebraska's second largest harvested crop. That means a lot of soybeans are grown and produced in our state! Did you know that most of the soybeans grown in Nebraska are not directly consumed by people? But, we do get the benefits of soybeans! Let's learn more!

THE FACTS

Soybeans provide a major source of **protein** for livestock and poultry.

The primary component of soybeans is meal, also known as protein–approximately **80**% of each bean.

The other component is oil—which is about **20%**.

97% of soybean meal is used to feed poultry and livestock.

Did you know? Soybean meal is one of the main ingredients in a pigs diet. Chickens also eat a lot of soybean meal!

DIGGING DEEPER...

What are some other uses of soybeans?

BASED ON THE FACTS YOU READ, ANSWER THE FOLLOWING:

1. What is the connection between soybeans, pigs, and how we get protein?

   _____

   _____

2. What reasons support your thoughts?

   _____

   _____

SUGAR SHOCKER

Did you know Nebraska ranks **5th** in sugar beet production in the United States? You might be wondering, what exactly is a sugar beet? The sugar beet is a root crop that's used for sugar production. In fact, more than half of U.S. sugar production comes from sugar beets!

Sugar beets have been produced in Nebraska for more than 100 years. Almost **90%** of the sugar beets grown in the state are produced in the Panhandle.

Western Sugar Cooperative is located in Scottsbluff, NE and works with over **850** growers to plant, harvest, and process sugar beets, which includes the sugar you bake with and put in your lemonade and on your cereal!

When fully grown, a sugar beet is about a foot long and weighs between **2-5 pounds**.

WHAT IS PRODUCED FROM SUGAR BEETS?

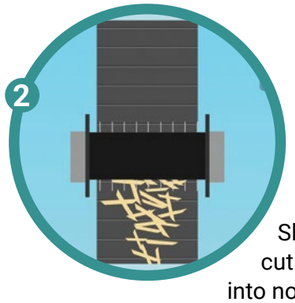
Of course **sugar**! In addition to granulated sugar, sugar beets are made into powdered sugar and brown sugar.

Co-products are also made from extracting the sugar. These include **molasses**, a sweetener for humans AND used in livestock feed.

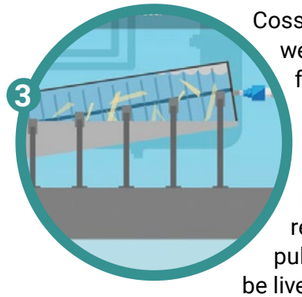
And **beet pulp**, a fibrous material left over after sugar is extracted that is fed to livestock as dried flakes or pellets.

HOW SUGAR BEETS ARE PROCESSED

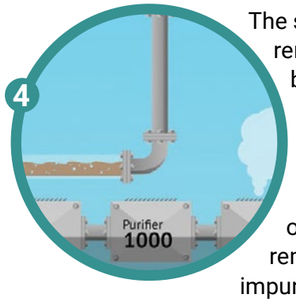
1. Sugar beets enter into a wet hopper which washes to rid them of leaves, dirt, mud, or sand.



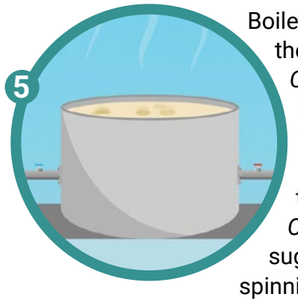
2. Sharp knives cut the beets into noodle-like segments called cossettes.



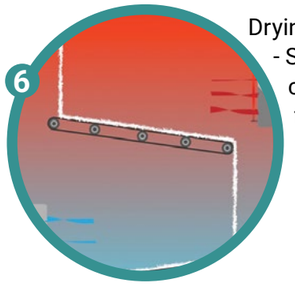
3. Cossettes are weighed and are fed into a system to get the sugar out of the beet. After the sugar is removed, the remaining beet pulp is processed to be livestock feed.



4. The sugar and water removed from the beets is called raw juice. The raw juice moves through various stages of purification to remove particles, impurities, and any remaining non-sugars.



5. Boiler - Evaporators are used to concentrate the juice into a dark syrup called thick juice.
Crystallization - Thick juice, made up of liquid sugar and molasses, goes through the crystallization process and then the crystal and molasses mixture heads to the centrifuges.
Centrifuge - Centrifuges separate the sugar crystal from the molasses by spinning the sugar against a screen while the molasses spins through the screen.



6. Drying the sugar - Sugar is conveyed to the granulator for further drying.

7. Sugar is then packaged into individual bags ranging in size from 1 pound to 100 pounds or is stored to be sold in bulk.

DIGGING DEEPER

1. What other states produce sugar beets?
2. What are four types of sugar produced from Nebraska sugar beets?
3. What animals eat sugar beets or sugar beet by-products?

Check with your teacher for help and the answers!

THE FACTS ABOUT FOOD NUTRITION!

Our bodies need energy to keep us going. Where do we get that energy? From food! Have you thought about the connection between what we eat and the energy it provides? What's in a steak? What's in broccoli? Why are some foods more nutritious than others? It depends on what's inside!

Carbohydrates We get energy from carbohydrates, also called "carbs". Carbs are found in fruits, vegetables, bread and pasta, and dairy products. Our body uses carbs to create glucose which is a fuel that gives us energy!

List THREE specific foods that have carbs:

_____ _____ _____

Protein is in foods like meat, tofu, beans, and milk. It helps keep our bodies strong! It builds, maintains, and replaces tissues in our bodies like muscles and organs.

What are TWO of your favorite foods high in protein?

_____ _____

Fats play a role in a healthy, balanced diet. It is important to eat healthy fats, like the ones in nuts, olive oil, and fish. Fats should be eaten in moderation.

Vitamins play different roles in helping you stay healthy. Our bodies make some naturally. Others are found in food we eat. For example, Vitamin C helps our immune system work, which helps prevent illness. Oranges are high in Vitamin C.

What vitamins are in your favorite foods? _____

Minerals are something our bodies cannot make, which means we need to eat them! Milk is a good source of calcium, a mineral that is needed to keep our bones healthy and strong.

IT'S ON THE LABEL!

What's in our sandwich?
Specifically, what do we know about the slice of cheese we put with our sandwich? Most cheese is made from milk from a dairy cow. All cheese and other food products have a food label. Food labels tell us the key nutritional information we need to know.

Check out this label to answer the following questions.

1. A typical sandwich might have how many servings of cheese?
2. If you ate two servings, how many calories would you consume?
3. You consumed 12 grams of fat. How many slices of cheese did you eat?
4. After studying the cheese label, is cheese a healthy item to eat? Why or why not?

Nutrition Facts

Serv Size 1 slice(21g)
Servings 16
Calories 60
Fat Cal 35

*Percent Daily Values (DV) are based on a 2,000 calorie diet.

Amount/serving	% DV*	Amount/serving	% DV*
Total Fat 4g	**6%**	**Total Carb** 2g	**1%**
Sat Fat 2.5g	**12%**	Dietary Fiber 0g	**0%**
Trans Fat 0g		Sugars 0g	
Cholest 15mg	**5%**	**Protein** 4g	
Sodium 240mg	**10%**		
Vitamin A 2%	•	Vitamin C 0%	
Calcium 35%	•	Iron 2%	
Vitamin D 10%			

THE ABC's OF GMOs: WHAT DOES IT ALL MEAN?

Have you heard of the term "GMO" or seen it on a label or maybe even read about them? Let's explore the basics and facts about GMOs.

THE WHAT!

GMOs are Genetically Modified Organisms. These are crops developed with genetic engineering, which is also known as biotechnology. Plant breeders take a desirable trait (for example: disease resistance in corn) and transfer it from one plant to another to improve the plant's characterisitcs.

THE ABC's OF GMOs!

A AVAILABILITY

There are 10 GMO crops available today: alfalfa, apples, canola, corn (field and sweet), cotton, papaya, potatoes, soybeans, squash, and sugar beets.

B BENEFITS

GMO crops provide benefits to plants which, in turn, benefit us as consumers! Nebraska ranks 3rd in the U.S. in corn production. It is important to our state. The majority of corn planted in Nebraska is GMO corn. Let's look at the benefits:

- *Insect or Disease resistance*—reduces need for farmers to apply chemicals and equals healthier corn plants!
- *Drought tolerance*—plants have better ways to keep and use moisture. It helps them endure drought conditions without need for irrigation.
- *Improved manufacturing processes*–GMO corn more efficiently produces biofuels because it is easier to break down cellulose and starch in the corn and reduces the environmental impact, too!

C CARE

Consumers, such as you, your family, and friends care about the safety of the food they eat. There is an overwhelming agreement of scientific experts that have done research and determined GMOs are safe to eat! All the GMO corn in Nebraska that is processed and is in your grocery store is not only delicious, but also full of nutrition and safe for your family to serve and eat.

MYTHS & FACTS

A MYTH is a widely accepted, but false belief or idea. Basically, the opposite of a FACT, which is proven to be true. There are lots of myths about GMOs. Your task is to read the statement, decide if it is a MYTH or FACT, and circle your answer. Check with your teacher for the answers and information on why it is a myth or fact!

There are dozens of GMO crops, including strawberries, bananas, and wheat. There is even GMO water and GMO salt!

○ MYTH or FACT ◉

GMOs contribute to reducing the cost of food.

○ MYTH or FACT ◉

If livestock eat GMO grain, there are GMOs in meat, milk, and eggs.

○ MYTH or FACT ◉

GMOs allow farmers to preserve land and do more with less resources to produce the food we eat.

◉ MYTH or FACT ○

FOOD SAFETY - WHAT CAN I DO?

You head to the grocery store with your family to get beef for supper. When you purchase beef, you can be assured that farmers and ranchers work hard to provide safe food for us to eat. What can we do at home to make sure the hamburger you bought is also safe to eat?

THE CORE FOUR!

According to the Partnership for Food Safety Education, there are FOUR practices we should use to make sure we keep food safe to avoid foodborne illness!

CLEAN
Wash hands and surfaces often!

- Wash hands with warm water and soap for at least 20 seconds before and after handling food.
- Wash cutting boards, dishes and utensils, and counter tops with hot soapy water after preparing each food item and before you go on to the next food.

COOK
Cook to safe internal temperature

- Use a food thermometer to make sure you get to the safe internal temperature.
- Ground beef: 160 degrees
- Steak: 145 degrees

SEPARATE
Don't cross-contaminate

- Use one cutting board for fresh produce and one for raw meat.
- Never place cooked food on a plate that previously had raw meat, poultry, or eggs!

CHILL
Refrigerate promptly

- Refrigerate foods quickly to slow the growth of harmful bacteria.
- Refrigerate or freeze food as soon as you are home from the store.
- Defrost food in the refrigerator, in cold water, or in microwave.

THE CORE FOUR AND ME!
Think about when you help in the kitchen and how you use The Core Four. Write down two recommendations that you always do:

_____

_____

Want to practice and make something yummy? *Ask your teacher about a Beef Recipe you can take home and make with your family using The Core Four practices for safe food preparation!*

CAREER CONNECTION

When we think of agriculture, food, and healthy lifestyles, a career as a registered dietician combines all three! Get to know Amber Pankonin, a registered Dietitian in Lincoln, NE to learn how you can be involved in agriculture!

What does it mean to be a dietician, and what are your responsibilities?

A dietician is simply a nutrition expert. I am also a media spokesperson. I create educational content for agricultural commodity groups, and I also do a podcast!

What are important things students should know about healthy food, lifestyle, and habits?

Media reports that we need to have restrictions in our diet (limit this, cut this out). I believe it's not about restriction, it's about mindfulness. Think about your plate—make it half full of fruits and vegetables. Get protein and dairy. There is no need to cut out an entire food group to be healthy!

Agriculture in the Classroom® is a program coordinated by the United States Department of Agriculture (USDA). In Nebraska, the Agriculture in the Classroom program is managed by the Nebraska Farm Bureau Foundation, whose mission is to engage youth, educators, and the general public to promote an understanding of the vital importance of agriculture in the lives of all Nebraskans.

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NEBRASKA AGRICULTURE IN THE CLASSROOM
NEBRASKA FARM BUREAU FOUNDATION

Special thanks to these organizations for their continuous support: **Nebraska Corn Board, Nebraska Beef Council, Nebraska Soybean Checkoff, Farm Credit Services, and Nebraska Wheat Board.**