

IOWA **ag** TODAY

EXPLORING THE CONNECTION BETWEEN AGRICULTURE AND YOU!

AGRICULTURE is EVERYWHERE

You use agriculture every day and might not realize it!

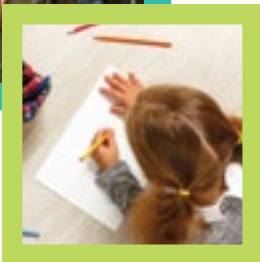
Everything we eat, use, or wear comes from either a farm or nature. Our foods (like milk, eggs, bacon, and bread) come from plants and animals on farms. Some things, like paper from trees, can come from farms AND the natural world!

Your clothes use cotton that was grown on a cotton plant. Your hand soap uses fats and oils from animals and plants.

Your school bus uses soybeans as biofuel!

As you read this magazine, think about how you use agriculture. How do pigs and cattle impact you? How do corn and soybeans make a difference in your life? It might surprise you!

HOW DO EACH OF THESE PHOTOS CONNECT TO AGRICULTURE?



What is AGRICULTURE?

The business, science, and methods of raising plants and animals to be used for food, fiber, fuel and more!

- **FOOD** comes from plants and animals.
- **FIBER** is used to make things like fabric, clothing, or rope. Fiber can be made from cotton, wood, wool and even soybeans!
- **FUEL** made from **renewable resources**, like corn or soybeans, is called **biofuels** for vehicles. Farms also can have **wind turbines** that make **electrical energy**.





CELEBRATING OUR NATURAL RESOURCES

Prairie grass used to cover all of Iowa. Prairies make **natural ecosystems** that make habitat for animals and plants. Though you can still find prairies, the people of Iowa have changed the land. They have planted a new grass – corn! Corn fields are considered agroecosystems and are part of the **biosphere**, like prairie grasses.

Agroecosystems focus on one plant (**crop**) or animal (**livestock**) to make food, fuel, or fiber.

Air makes up the atmosphere. Air has chemicals that plants, and animals need to grow like oxygen and carbon dioxide.

LOOK AT THE PICTURE. CAN YOU FIND SIMILARITIES AND DIFFERENCES BETWEEN THE TWO ECOSYSTEMS?

Water makes up the hydrosphere and is recycled through the water cycle. Only 1% of Earth's water can be used to drink and grow food. Farmers protect water by planting buffer strips to slow run-off from fields.

The sun is the closest star to Earth. Living things need the sun for food, warmth, or to reproduce. Farmers need the sun, so their soybean fields know when to flower.

Soil is part of the geosphere. Farmers protect soil by using cover crops to hold soil in place.



MADE IN IOWA

This map shows some goods that come from agriculture in Iowa! These goods are used or eaten every day. It would be hard to live life without them!

Each of these goods gives jobs to the town. Which goods are closest to you?

Honey

Soy Biodiesel

Shrimp

Flowers and Plants

Eggs

Laundry Detergent Ingredients from Corn

Cheese

Pork Tenderloin

Breakfast Cereal

Turkey Deli Meat

Towns: Sioux City, Story City, Marshalltown, Cedar Rapids, Eddyville, Clearfield, Mt. Pleasant, Dubuque, Mason City

THINK & DISCUSS

Can you name the businesses in each of the towns?



IOWA'S TOP CROPS & LIVESTOCK

Take a ride across Iowa and you will see corn and soybean fields from one side of the state to the other. Crops thrive here thanks to our state's soil and climate. Most of these crops are used as food for animals or people. Corn and soybeans can also be turned into fuel for our vehicles.

Animals are a huge part of Iowa's agriculture landscape too! Our state is the perfect place to grow the food (corn and soybeans) livestock need. Some of them, like cattle, also graze on grass in the summer or hay in the winter.

CORN grown in Iowa is mostly **field corn**. It is different from the sweet corn we buy at the grocery store whole, frozen, or canned. Field corn can be fed to livestock, made into ethanol, and used to make foods like cereal, corn chips, and cornbread. This corn can also be used to make biodegradable plastic, packing peanuts, and carpet. There are typically more than 4,000 products in grocery stores that use corn. There are thousands of industrial uses for corn and corn by-products too!



PIGS are sometimes called hogs or swine. The meat from pigs is called pork. If you had bacon, sausage, or ham for breakfast, it is likely that it came from a pig raised on an Iowa farm. Nearly one-third of the nation's pigs are raised in Iowa. Corn and soybeans are important ingredients in a pig's diet. This is one of the reasons why there are many farmers who raise pigs and grow corn and soybeans too!

SOYBEANS are legumes and related to peas, lentils, peanuts, and other beans. Soybeans are grown across Iowa. They are used to make animal feed, biodiesel, and hundreds of items found at the grocery store. Most vegetable oils used for cooking are from soybeans. Soybean ingredients can also be found in salad dressing, noodles, and even chewing gum. Crayons, candles, and newspaper ink can be made from soybeans too!

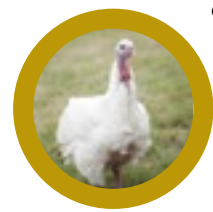


CATTLE are raised in all of Iowa's 99 counties. Iowa farmers raise two types of cattle, **beef** and **dairy**.

BEEF CATTLE are raised for meat and have more muscular bodies. They turn the plants they eat into meat we call beef.



DAIRY CATTLE use the plants and food they eat and turn it into milk. Only female cattle, called cows, produce milk. Milk from dairy cattle is made into products like cheese, yogurt, ice cream, and butter. While dairy cattle are used for beef too, producing milk is their main purpose.



TURKEYS are the only major meat animal native to North America. Turkeys raised on farms today have white feathers, not brown like wild turkeys. The turkey on your Thanksgiving table is likely a **hen** (female turkey). Nearly all turkeys raised in Iowa are **toms** (male turkeys). Their meat is enjoyed year-round as deli meat, ground turkey, and other tasty turkey products.

CHICKENS are raised for meat and eggs. Farmers raise two types of chickens, **laying hens** and **broilers**.

LAYING HENS are female chickens bred and raised for laying eggs. A hen can lay an egg every 24 to 26 hours – or about five or six eggs a week. Iowa is the top egg producing state. Almost one out of every five eggs in the United States is from an Iowa farm.



BROILERS are male or female chickens bred and raised for meat. Broilers grow to between 6 and 8 pounds before they are harvested.

AGRICULTURE AND DOMESTICATION

Plants and animals first started to be domesticated around 10,000 years ago. As humans shifted away from hunter-gather societies, they began to plant crops and raise livestock to meet their basic needs. The domestic species of animals that we raise today came from wild ancestors thousands of years ago.

Our modern crops too once had wild ancestors. **Teosinte** (tēō'sintē) is a wild grass that has been selectively bred to produce modern corn. With each year, small improvements in the crops and livestock are made to better suit our needs. Teosinte for example has roughly eight seeds or kernels on it. Our modern ear of corn can have up to 800 seeds or kernels on it. That is a big improvement!

Agriculture helped provide societies a surplus of food. They could use the extra food when crops failed, or they could trade it for other goods. Food surpluses allowed people to work at other tasks unrelated to farming or gathering food. This paved the way for the advancement of societies with art, architecture, writing, and much more.

DID YOU KNOW?
Iowa farmers raise more corn, pork, and eggs than farmers in any other state!



THE STEM IN AGRICULTURE



BEAN SEEDS: Scientists know that soybeans work with bacteria in the soil to produce nitrogen. Plants use the nitrogen to grow. Most soybean seeds are treated with this living bacteria to start the process.

MATURE PODS:

Combines are an important tool for harvesting. Engineers design them to cut the plant down and remove the seed from the pod. The combine then puts stems and leaves back onto the field. Belts and **augers** are simple machines. They move the beans into bins where they can be transported or stored.

POD FILL:

Farmers can use *technology* like drones and computer systems to check the quality of their crop. They can see if the soybeans are growing well. They can **irrigate** with water or apply nutrients if needed.

FLOWERING: Many plants need insects like bees to reproduce. Soybeans can pollinate themselves. Farmers use plant reproduction *science* to produce more crops.

SOYBEAN LIFECYCLE
Combine computers are programmed to monitor yield using *math*. The computers calculate how many bushels of soybeans were grown. This data is stored and then used to make decisions for planting next year's crop.

GERMINATION:

Technology in tractors allows seeds to be planted at exactly the right depth. Too deep and the plant won't push through the soil. Too shallow and the seed won't reach the water it needs.

SPROUT:

Once seeds sprout they need nutrients to grow. Engineers design nozzles and hose systems that can be installed on tractors. These engineered systems apply nutrients to the field.

LEAF GROWTH: Farmers only apply the right amount of nutrients needed. They use *math* to decide how much fertilizer to apply. They mix fertilizer with water and get the correct ratios.



GET THE FACTS ON NUTRITION!

Did you know that the things you eat keep you healthy? Fruits and vegetables are filled with vitamins, minerals, and fiber.

Humans are **omnivores** and get high quality protein from eating meat. Dairy like milk and yogurt give your body the calcium that you need for strong bones.

One way to choose healthy foods is to start with fresh fruits

and vegetables. These can be very colorful and fun to eat. Be sure to mix it up and eat a variety of foods. Each meal should have fruits, veggies, dairy, grains, and a protein like meat.

Carbohydrates like bread, pasta, rice, and potatoes are cool! These foods will provide energy for running, playing, and staying active. Portion sizes are important. That means you should limit the amount that you eat.

Sugar can provide quick

energy too. But too much sugar can be stored as fat in your body. Think about how you feel after eating a ton of junk food? Sugary junk food tastes good and can make you feel good for a short time. But sugary unhealthy food can lead to an energy crash, and you'll be hungrier sooner. **To have energy all day, what types of food should you choose?**

- A candy bar or an apple
- A soda or a glass of milk
- Fried cheese sticks or oatmeal

- CAREER CORNER -



Agriculture and the Environment

Rose Danaher is an environmental specialist. She works with the Iowa Department of Agriculture and Land Stewardship. As a **conservationist**, she works with farmers. Her skills in life science, agriculture, and natural resources help her to develop practices for farmers.



Plants and Animals for Food, Fiber & Energy

Sara Lira is a research scientist for Corteva Agriscience. She **breeds** new types of corn and other crops. She manages test plots and works with farmers to improve sustainability. She says that scientists with diverse experiences are needed to help make big discoveries.



Food, Health & Lifestyle

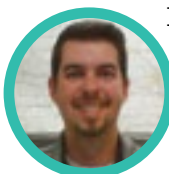
Jeff Hodges is a butcher and owns a **meat locker**. He uses his strength and good hand-eye coordination to cut animal carcasses. He cuts meat into steaks, roasts, and hamburgers.

As his main tools, Jeff uses saws, slicers, and knives. Meat cutters make it possible for consumers to buy meat for individual meals.



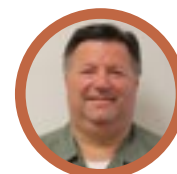
Science, Technology, Engineering & Mathematics

Zach Breja works at New Modern Concepts. He helps to build **hog barns**. He works with farmers and builders to make sure the barn is exactly what pigs need. Zach says that people who are hard workers, good communicators, and problem solvers will go far in any career!



Culture, Society, Economy & Geography

Dan Neenan is a director for the National Education Center for Agricultural Safety, Transportation, Fire and EMS. Dan makes **safety and rescue plans** to help farmers stay safe. He has stopped many farmers from getting hurt on the job.



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