

IOWA as TODAY

FOOD & NUTRITION

EXPLORING THE CONNECTION BETWEEN AGRICULTURE AND YOU!

YOU ARE WHAT YOU EAT

Have you ever thought about why you eat what you do? Or why people in other parts of the world eat different things than you? There are lots of reasons, including differences in culture, consumer preference, marketing, and agriculture! **Agriculture** is different all over the world because of climate and geography.

Think for a minute about what your family usually buys at the grocery store. What are some reasons you buy the things you do? Is it available at the store? Do you personally prefer one product over another? Is your family familiar with it? Have you eaten it in the past? Did you see a fun commercial for a new product? Do you pick one product over another because of cost? Do you need specific food for your diet?

People all over the world have a similar checklist - protein, fruits, vegetables, and grains. However, what's available, affordable, or cool where they live may be different.

Think about soybeans. Iowa grows lots of soybeans and is consistently in the top two soybean producing states (along with Illinois). However, we don't eat raw soybeans very often. Instead, we may eat our soybeans in tofu, vegetable oil, or margarine.

But in other parts of the world, like Asia, soybeans are eaten a lot! They may be boiled or steamed when they are green and in the pod. This is called edamame, and you can find it in the freezer section of your grocery store!

Maybe this difference is because soybeans are native to Asia. Soybean plants have been raised **domestically** in China for almost one thousand years! The soybean is rich in protein and oils that would have been an essential part of a healthy diet for early soybean farmers.

Since soybeans didn't reach the U.S. until Benjamin Franklin brought seeds in 1765, most Americans had already established a diet of things they were familiar with. Growing and eating soybeans didn't catch on right away. By the early 1900s, the **U.S. Department of Agriculture** began researching soybeans to be used in livestock feed. However, this wasn't very popular until around World War II when Chinese soybean production fell. After WWII, the economy was good and families wanted to buy more meat. Soybeans then became a staple part of livestock diets and eventually were processed into oils, and meat and butter substitutes!

DID YOU KNOW?

Many cultures have unique and cool dishes that we as Americans don't see often. One of those is oxtail, a cut of meat from the tail of beef cattle! It is popular to use in making stews and soups in places like China, Spain, Korea, Cuba, and the Philippines!



TO PROCESS or Not TO PROCESS

What is a **processed food**? Why do companies process some of the food we buy? **Processing** is physically and chemically altering a raw food from the original state. This can be as simple as cleaning, cutting, and chopping fruit. Or it can be more complex, like cooking, dehydrating and packaging meat.

Humans have altered food products for thousands of years to improve and preserve it. Processed food is a convenient option in today's busy world. Processing food can make foods like dairy products healthier through pasteurization. **Pasteurization** is a way to kill harmful bacteria by heating a liquid to a high temperature. However, sometimes processing can make food unhealthy by adding salt, fat, and sugar.

Some foods are less processed than others. For example, sliced apples are minimally processed before eating. Other foods like apple pie are highly processed. Apple pie has many different ingredients and has been chemically changed through baking. As consumers, we tend to eat a lot of processed food.



THINK AND DISCUSS.
Think about what you ate today. What foods were processed? How did processing affect them?

DIGGING DEEPER!

What processed foods look very different from the whole food? (ex. potato → French fries) How can processing food keep us healthy? How could processing affect the nutritional content?

PROS of processed food

1. **Fortification:** People with **lactose** intolerance can't have milk but still need calcium. Luckily, they can have calcium-fortified water or bread!
2. **Health Benefits:** Raw inputs must first be cleaned, cooked, or sanitized before eating. This prevents us from eating harmful bacteria. Canned food is processed to protect against contaminants.
3. **Longer Shelf Life:** Some food products can last longer without a freezer or fridge thanks to processing. This means food can be easily shipped farther from where it was produced.
4. **Palatability:** Before being processed, some foods are not appealing or able to be eaten. Adding salt, fat, or sugar may make it taste better and appeal to consumers.

CONS of processed food

1. **Loss of Nutrients:** When some ingredients are processed, they may lose vital nutrients. A lot of fiber and protein is removed from wheat when milled to flour. Nutrients can be added back in but may not be as nourishing.
2. **Health Risk:** Too much processed food that contains a lot of salt is risky and could lead to high blood pressure or heart disease.
3. **Extra Fats, and Sugars:** Even though desserts taste good, they aren't very healthy. That's because there can be extra sugars and trans fats!
4. **Palatability:** If you chemically change a raw food, it may change its taste and texture in a bad way. Fresh, frozen, and canned peas are a good example of how processing changes the taste and texture. Which type of peas do you prefer?

Safe Food is Everybody's Responsibility

- THE DOS AND DON'TS

Washing:

Do wash your hands, especially when you're cooking.

Do wash fresh fruits and vegetables with cold running water before eating them. Produce with a hard surface (like potatoes, pears, or cantaloupe) may require a brush to scrub dirt off the surface. Remove any damaged areas because bacteria can live in scratches or bruises on food's surface. **Do** clean all utensils and keep raw food separated to prevent cross contamination.

Cross contamination is the spread of bacteria from one item to another. **Don't** clean produce with a soap. This could lead to consuming soap, which isn't edible. **Don't** wash raw meat. Water splashed from raw meat can spread bacteria around your kitchen.

Storing:

Do allow for meat to thaw before cooking. The best way to thaw frozen food is to move it from the freezer to the refrigerator. **Don't** place raw meat on the top shelf of your refrigerator. Raw juices could drip and spread to lower shelves. **Don't** let it thaw on the counter at room temperature or in warm water. Bacteria can multiply quickly between the temperatures of 40° and 140°F. This range is called the **Danger Zone**. **Don't** leave other perishable food items in the Danger Zone for longer than two hours. It's important to keep warm food above 140°F and chilled food below 40°F before eating. **Don't** keep perishable items like milk in the refrigerator door. The fluctuating temperature will cause it to spoil faster.

Cooking:

Do cook raw meat to the right temperature to kill harmful bacteria. Ground meat should be cooked to a minimum internal temperature of 160°F. Steaks, roasts, hams, and fish should reach an internal temperature of 145°F. Poultry products (legs, wings, breasts, etc.) should be cooked to 165°F. Pathogens that may be in the meat will be killed at these temperatures. **Do** thoroughly clean the cooking area when done working with raw meat. **Don't** put cooked meat on the same plate that held raw meat. **Don't** use the same cutting board for vegetables and raw meat. Even if it's cooked properly, **don't** store food for longer than its lifespan.

The quality of food can decrease if not consumed fast enough.

LIFE SPAN IN...	FRIDGE	FREEZER
Unopened lunch meat	2 weeks	2 months
Opened lunch meat	3-5 days	2 months
Raw bacon	1 week	1 month
Raw sausage	2 days	2 months
Raw steak	3-5 days	6-12 months
Poultry	1-2 days	9-12 months
Ground meat	1-2 days	3-4 weeks
Pizza	3-4 days	2 months

DID YOU KNOW?

It takes 24 hours to thaw 5 pounds of turkey in the fridge?

It could take four or five days to properly thaw a Thanksgiving turkey!



CAREER CORNER

**1 IN EVERY
5 JOBS IN
IOWA IS IN
AGRICULTURE.
MAYBE YOU
COULD HELP
FEED AND FUEL
AMERICA WITH
A CAREER IN
AGRICULTURE!**

Mary Kuster-Shell, Food Scientist

Mary Kuster-Shell has developed new food products for local, regional and even Fortune 500 companies! As a **food scientist**, she works to ensure the stability, safety, and appeal of a product.

All food products start with an idea. Sometimes the idea comes from within the company, and other times it comes from customers. As a product idea takes shape, food scientists like Mary research flavor combinations, ingredient function, product costs, shelf life, and more.

Then they develop a formula, similar to a recipe. Small batches of the product are made. Physical and chemical properties are tested and tweaked. Samples are taste-tested.

Results are analyzed and the product is adjusted more.

Finally, the formula is taken to the plant floor to be made on a large scale. Food scientists work with the production team to troubleshoot problems and test to ensure that every batch yields a consistent product. It usually takes at least a year to take a product from an idea to the grocery store shelf.

"Food science is a great career path! It is a highly creative and high-tech field,"

Mary said. "It is also rewarding to know that I am part of the process of feeding people."



Steven Peterson and John Turner, Meat Buyers

Has your family purchased meat at a Fareway meat market before? Then you've been impacted by Steven and John! Steven Peterson and John Turner are meat buyers for [Fareway Stores](#). They purchase all of the fresh and packaged meats that are sold in Fareway's 120 grocery stores, three stand-alone meat markets, and the online meat market. They predict demand, negotiate prices, and monitor delivery of all the meat inventory.

Steven says most of his knowledge has been learned on the job. He says he loves to learn at work. John says that his background growing up on a livestock farm and attending Iowa State University for animal science helped him prepare for the job.

Communication, English, and speech are also very important in a career, Steven says. In his job, he communicates with co-workers, various store representatives, and sales people.

"The classes that teach you how to present information, like speech and English, are vital to nearly any career you choose," he says.

John added some other topics that are important in food industries, like food safety, animal welfare, animal science, and marketing.

"It is important to understand how the food you eat is raised, and ends up on your plate," John says. "Living in Iowa, we are blessed with a wide array of farmers and farms that raise a wide variety of protein to feed the world."



"FOOD SCIENCE IS A GREAT CAREER PATH! IT IS A HIGHLY CREATIVE AND HIGH-TECH FIELD. IT IS ALSO REWARDING TO KNOW THAT I AM PART OF THE PROCESS OF FEEDING PEOPLE." – MARY KUSTER-SHELL



Jason Grimm, Local Foods Advocate

Helping build local food systems is a passion for Jason Grimm, who works for the [Iowa Valley Resource Conservation](#) and Development. Grimm works with beginning farmers, food entrepreneurs, food distributors, and fruit and vegetable producers by making connections.

He is also a part-time farmer and raises black beans and potatoes. He provides these crops to local schools through the [Farm to School](#) program. Farm to School helps connect local farmers to local schools. Grimm worked with the Cedar Rapids school district. National school lunch standards require schools to serve a legume at least once a week. Grimm helped develop a new recipe – black beans and rice – to serve. Students were able to taste the recipe and provide feedback. The students rated the meal – tried it, liked it, or loved it. “We had a 75% liked it or loved it response,” said Grimm. Now, Grimm’s black beans are served twice a year to all 22 elementary schools in Cedar Rapids.

Grimm is proud that his black beans, which are a legume, are served to local school students. He works to connect other farmers to their local schools.

“You have to figure out how to make it economical so that it is still beneficial for the farmer,” he said.

Grimm wants students to know, “No matter what kind of career you choose – you can impact the food system.”

“NO MATTER WHAT KIND OF CAREER YOU CHOOSE – YOU CAN IMPACT THE FOOD SYSTEM.” – JASON GRIMM

Kristen Robbins, Food Scientist

I like the challenges and the opportunities.”

As a food scientist, Kristen Robbins has a passion for science and chemistry. After going to college in Delaware, she moved to Iowa to work for [Kemin Industries](#). Kemin is a global company that strives to improve food. Kristen works to identify specific ingredients that solve manufacturers’ problems and improve flavor. She believes the shelf life of food is important! One billion dollars of ground beef is wasted in grocery stores each year because it’s brown, not because it’s unsafe to eat.

On a normal day, Kristen does experiments in a lab and spends the rest of the day reviewing and reporting results. To test some of her ingredients, she makes foods like sausage, crackers, and salad dressing in a lab. This food is sent to a sensory team to determine if the food is good or needs changed.

“My job is a good mix of lab work, kitchen work, and paper work,” she said.

But before Kristen can do any lab work, she first must extract a chemical or compound from a crop. Knowing

how food goes from the field to your plate is essential. She has great trust in the U.S. food supply, and believes we have the safest in the world!



ON A NORMAL DAY, KRISTEN DOES EXPERIMENTS IN A LAB AND SPENDS THE REST OF THE DAY REVIEWING AND REPORTING RESULTS.

Cindy Jordan, Food Safety Specialist

Food safety is important because so many people don’t realize they might be contaminating their food,” said Cindy Jordan.

Jordan is a ServSafe Instructor for the [Iowa Restaurant Association](#). She trains food service workers to practice food safety in all aspects of their jobs.

She says the most important things to practice are often the simplest; like washing hands before working with food. Food service workers and home cooks shouldn’t set food out on the counter to defrost it. Workers should make sure there is no cross contamination by washing utensils and cutting boards with hot, soapy water.

Jordan says there are a lot of opportunities in the food service industry like cooking, managing, food trucks, restaurants, and any place that serves food. Some ideas for places that serve food include schools, hospitals, golf courses, and more. She says there is even an opportunity to work for the government and become a food safety inspector.

“There is a lot of opportunity,” says Jordan. “Students with a passion for cooking can pursue culinary programs at community colleges or universities to study and learn more.”



THE BUZZ ON BUZZWORDS

Food has labels that help us understand ingredients and nutrition information. Other food labels come with flashy designs, slogans, and marketing claims so we can recognize the product.

The marketing labels on products helps us know what we are buying. However, they can be confusing with a variety of buzzwords.

In the egg section of your local grocery store, there are many different brands and types of eggs you can buy. Each might have different labels and terms, but what do those terms mean?

Eggs sold in the U.S. generally leave the farm 1-2 days after being laid. They are then cleaned, sorted, graded, and packaged before heading to the grocery store. Most of these eggs come from **conventional** egg farms. The hens are kept in cages in small groups to keep them safe from predators, disease, and other birds. If an egg carton has no marketing buzzwords, the hen was probably raised conventionally.

Some packages say **all natural** or farm fresh. These terms aren't regulated, so they really don't mean much. Cartons that say **hormone-free** also don't mean much, because no U.S. poultry are given hormones. **Antibiotic-free** eggs are also slightly misleading, because it is very rare that laying hens are given antibiotics. The eggs are likely still from conventionally raised hens.

The term **pasture raised** isn't currently defined by the U.S. Department of Agriculture but means that the hens live in some type of outdoor pasture area. Birds on these farms can forage for bugs but still eat a grain-based feed ration.

Other buzzwords are regulated more strictly. **Cage-free** eggs come from hens that do not live in cages, but instead live in large barns. These birds can move freely throughout the barn. One problem is that these birds may fight with each other as they establish a **pecking order**.

Free-range eggs come from chickens

that have access to an outdoor area. Usually, these areas are fenced in and protected to keep predators away from the hens. In both cage-free and free-range farms, enrichment areas like scratch areas, perches, and nests are to be included.

The term **certified organic** is regulated very closely. These eggs must come from cage-free or free-range farms with outdoor access. These hens must be fed a certified organic feed. This means their food must be grown without most synthetic pesticides, fertilizers, or genetically modified crops.

The important thing to remember when shopping for food is to look at the nutrition label. Are there vitamins? Is this a good source of protein? Is there calcium to keep your bones strong? Eggs, for example, are a great source of protein and are also very cost-efficient. Marketing labels allow for choice but don't change the nutrition of the food!

EXPLORE MORE! **Organize a taste test with your family or classroom! Can you tell a difference between eggs with different types of marketing labels?**



THE LOWDOWN ON NUTRITION LABELS

Wouldn't it be great if there was an easy way to tell if a food was healthy or not? Well there is! The **Food and Drug Administration (FDA)** requires all major food manufacturers to use a standardized label so customers can easily see and compare the nutrition information of the food and drinks we purchase. The **Nutrition Facts label** is a tool for making informed food choices and living a healthy lifestyle.

Try these three easy steps to learn a lot from a Nutrition Facts label:

Step 1: Look at the serving size. A serving size is based on the amount of food that people usually eat at one time. All the nutrition information listed on the rest of the label is based on one serving.

Step 2: Look at the calories. Calories tell us how much energy you get from one serving of food. To achieve or maintain a healthy body weight, eat the same or fewer calories than the calories you burn. As a rule, 100 calories per serving is considered moderate and makes a healthy snack or side dish. If you select a food with more than 300-400 calories per serving, the rest of your meal should include low-calorie choices.

Step 3: Look at the percent Daily Value (%DV). This tells you if there is a little or a lot of a nutrient in one serving of the food. Use the percent daily value to compare food products of the same serving size.

- Choose foods that are higher fiber, calcium, iron, and other essential nutrients.
- Choose foods that are lower in saturated fat, cholesterol and sodium.

Nutrition Facts

6 servings per container

Serving size 1 burrito (113g)

Amount Per Serving

Calories 300

% Daily Value*

Total Fat 10g 15%

Saturated Fat 8g **10%**

Trans Fat 2g

Cholesterol 15g 5%

Sodium 220mg 10%

Total Carbohydrate 36g 13%

Dietary Fiber 5g **25%**

Sugars 1g

Proteins 8g

Vitamin D 0mcg 0%

Calcium 89mg 6%

Iron 1mg 6%

Potassium 14mg 0%

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Berto's Beef & Bean Burritos

THINK & DISCUSS.

Take a close look at this label. Is this burrito a healthy option? Is it a better choice as a snack or for a meal? Why? What could you pair with it for a nutritionally-balanced snack or meal?

THE POWER of CHOICES

Food is essential for the survival of human beings. In our modern society, farmers are responsible for ensuring that enough food is produced to feed all humans. Farmers make choices about how to produce that food. Government workers make choices about regulating food production. Researchers make choices about the science they conduct to advance agriculture. Industrial workers, lawmakers, technology developers, consumers, and protesters all make choices.

It is these choices that determine the ethics of agriculture. Are the choices good or bad? Are they right or wrong?

Not every choice has a purely positive outcome. Some choices have negative consequences. But to determine if a choice is good or bad sometimes we need to decide if the positives of the choice outweigh the negative impacts of the choice.

In agriculture we consider sustainability when making choices. Sustainability has three parts: economic sustainability, social sustainability, and

environmental sustainability. If the farm will be profitable and the farmer will stay in business, it will lead to economic sustainability. If the choice is good for individual humans and the community, it will lead to social sustainability. If the production method doesn't degrade the natural environment (soil, water, air, and plant and animal communities), then it will lead to environmental sustainability.

Humans are omnivores that eat meat, animal products, and plants as part of their diet. Livestock like pigs serve a purpose and produce that meat. Pigs have to be harvested, or killed and butchered, for humans to eat their meat. Farmers work hard to ensure the pigs have a healthy life and that they are well cared for up until the time they are harvested. This means that farmers give them all the food and water they want. They are kept indoors to protect them from sun, predators, cold, and disease. If they get sick, they are treated with medicines to help them get healthy. The barns help protect the environment by collecting manure. The manure can be spread on fields to make the soil healthy. If a farmer cares for their pigs well and takes care of the environment well, then they should be able to sell their pigs and earn a profit. This is environmental and economic sustainability.

When pigs are harvested, food safety inspectors help ensure the meat is processed in clean facilities and packaged well so that humans who eat it won't get sick. The pork can then be traded with people all over the world who don't raise pigs and need to eat. Ensuring safe food and international trade helps ensure social sustainability. Farmers and others in agriculture make choices every day with the hope that they are making the right, good choices.

DIGGING DEEPER!
What local, state, or federal policies impact food security, food integrity, or food nutrition? How do you think lawmakers decided on those policies? What ethical choices did they make?

THINK & DISCUSS.
Farmers make ethical choices in the production of livestock like pigs. What other choices do crop and livestock farmers make?

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