

Michigan Farm Bureau Ag in the Classroom – Connections to Michigan Content Standards

4th GRADE LESSON – “Michigan Food: From Farm to You”

Michigan Farm Bureau Promotion and Education Committee

This lesson meets the following Social Studies and Science content standards for the upper elementary level:

SOCIAL STUDIES

Content Standard II: Geographic Perspective

- 2-2: Describe the ways in which their environment has been changed by people, and the ways their lives are affected by the environment.
- 3-1: Identify locations of significance in their immediate environment and explain reasons for their location.

Content Standard V: Inquiry

- 1-3: Organize information to make and interpret simple maps of their local surroundings and simple graphs and tables of social data drawn from their experience.
- 2-2: Gather and analyze information in order to answer the question posed.

SCIENCE

Content Standard V: Use Scientific Knowledge from the Earth and Space Sciences in Real-World Contexts

- 1-1: Describe major features of the earth’s surface. (Key concepts: Types of features – rivers, mountains, deserts, plains, valleys, oceans. *Real-world contexts*: Examples of local surface features such as hills, valleys, rivers; pictures of non-local land features, including mountains, deserts.)

“Michigan Food: From Farm to You”
Written by: Laurie Isley and Deb Schmucker

Introductions/Welcome
(2-3 Minutes)

Introduce yourself and give an overview of your farm.

Show map of Michigan
Pass out the Lab Sheet #1
(blank map.)

Michigan Geography
(10 Minutes)

Today, we are going to talk about Michigan Agriculture.

Michigan is located in the Midwest region in the United States and is the only state to be surrounded by four of five of the Great lakes – **can you name them?** Michigan, Superior, Ontario, Huron and Erie. Ontario is the only one that doesn't touch the state. One easy way to remember the Great Lakes is to remember the word HOMES (Huron, Ontario, Michigan, Erie, and Superior.) Michigan is also unique because it has two peninsulas, an upper and a lower. **Can you tell me what connects the two of them?** (Mackinac Bridge) **What country is just north of Michigan?** (Canada).

Label directions, Lake Michigan,
Lake Huron, Lake Superior, Lake Erie
Lake Ontario

Because Michigan is surrounded by the lakes; a special climate is created that allows the state

Velcro directions & lakes.

Pass out lab sheet #1

Use large Michigan map to color regions
Write the direction name on the board and Velcro
the tag on that region.

to produce many different crops. **What is Climate? The weather conditions typical to our area. Can you guess how many crops Michigan produces?** (Over 125 different crops) these crops contribute more than **60 Billion dollars** to the Michigan economy. That's a lot of money, isn't it?

Today, we're going to talk about some of these different crops and where they're grown.

We are right here on the map now – **if we go this direction, we are traveling? North. If we go towards Ohio or Indiana, we are traveling? South. If we go toward Lake Michigan, we are going? West or if we go towards the thumb of Michigan or Lake Huron, we are going? East.**

Sometimes we combine our directions. On your map, you see the corners outlined. **What do you think the lower left corner would be?** That's right – it is southwest. Color that area yellow and write southwest on the top line that says region. Now let's move east to southeast Michigan. Color that part of your map purple and write southeast on the top line that says region. Now let's move northwest to central Michigan. Color that portion of the map red and write central on the top line that says region. Now move farther north and west to northwest Michigan. Color that portion of the map green and write

Show Map of Michigan with all commodities
Pass out small Michigan map – Lab Sheet #2

Michigan Products (15 Minutes)

northwest on the top line that says region. Let's move east again to the northeast region. Color that region orange and write northeast on the top line that says region. This region includes the "thumb" of Michigan. Now let's move north to the Upper Peninsula. Let's color this region blue and write Upper Peninsula on the top line that says region.

Now that you have the regions of Michigan identified let's play a short trivia game to identify some products and see where they grow in Michigan. ***Does anyone know what a product is? A product is something that is produced an example would be a cow produces milk which would be a product of the cow.***

Show the meat chart and cuts of meat.

Velcro the product tags in that region.

The first product comes from cattle. It's often grilled in the summertime and can be found at McDonald's. ***What is it? HAMBURGER*** – This is a form of beef. Let's take a look at this meat chart; we enjoy several cuts of beef which include steaks and roast. Do you have a favorite cut of beef? ***Look at your commodity map of Michigan. Do you see where beef cows are raised?*** All over Michigan, but a lot of cattle are grown in the Upper Peninsula. Write beef on one of the product lines in the

Show product samples of tomatoes.

Show milk products.

Upper Peninsula. Now find a few other products using your large map and write them in the UP and list them under beef. (Use the large map to find a few other products).

The second product can be red or green. It grows on a vine and can be used for sandwiches or on salads or even made into products like these. **What is it? TOMATOES – where do you think the most tomatoes are grown?** Southeast Michigan. Write tomato in southeast Michigan. Now look again and find some other products from that area and write them on the product lines for the southeast region.

The next product is important to stay healthy. It comes from a cow and lots of people like it chocolate. **What is it? MILK – Where do you think the most milk is produced?** Milk is produced across the state but two major areas are the thumb and northwest Michigan, so write Milk on the product line in both of those areas. **What types of products can be made from Milk?** Yogurt, ice cream, cheese and more (show products).

What other products do you see in Northwest? Lots of fruit? That's right. Areas near the lake are great for raising everything from peaches to blueberries. Write in a few fruits or other products that come from that area on the product lines.

Show samples of corn products.

The fourth product is a grain and is used to make products you wouldn't think would go together like pop, gum, cereal, ethanol for fuel and tortillas. ***What is it? CORN – Where do you think the most corn is grown in Michigan?***

Corn is grown all over Michigan, in fact, all over the United States. Today we are going to place corn in the southwest region. Write corn and a few other products grown in southwest Michigan.

Show samples of bean products.

The fifth product is a great source of fiber. It is used in a variety of products including many Mexican dishes. Sometimes it is made into soup and sometimes it is refried - ***What is it? BEANS*** – there are lots of different kinds of beans – ***Can you name a few?*** (soybeans, green beans, navy, kidney beans, pinto beans & black beans.) Michigan is a top producer of some varieties of beans. ***Where in Michigan are they grown?*** That's right, northeast Michigan. Write beans on the product line and use your map to write a down a few other products from that area.

Now find a few products in the central region on your map and write them down on the product line for the central region.

**Processing a raw
Product
(5 Minutes)**

Hold up processing poster.

Read definition out loud.

Put processing plant tag on the central region.

That's a lot of different products. ***What do you suppose farmers do with those products after they grow them?*** (eat them, sell them) ***Who might they sell them to?*** (restaurants, grocery stores, processors.) Some products, especially fruits and vegetables may be sold fresh, but most Michigan products are shipped to other areas to be processed. ***What do you think processing might mean?***

Remember the corn and beans we looked at?

You probably wouldn't want to eat them as seeds but you'd enjoy them as gum or nachos, wouldn't you? That's what processing is. It's changing or modifying a product into a form that people want to eat or use.

REPEAT. It's changing or modifying a product into a form that people want to eat or use. To understand this better, let's look at an example. Let's pretend that a new processing plant is moving to central Michigan and wants to make beef tacos that can be sold at schools. ***What will they need to make the taco?*** Look at your map and see what Michigan products might be in a taco. Raise your hand if you have

Have the students get into five different groups.

Pass out the envelopes by region name.

Refer back to seeds and milk.

Have groups Velcro puzzle
Pieces to the strip of paper

Let all groups present prior to
putting together large taco
puzzle.

an idea. What did you find? beef, tortilla, cheese, tomatoes, etc.

That's good. Of course, they won't be very good tacos if they just use those raw products. We can't make a very good taco with just corn or beans. Seeds must be processed into products that can be used in the taco. We are going to need your help in order to get this taco plant working. We are going to divide you into five groups and then we are going to give each group an envelope for a region in the state. In it you will find processing steps for a specific commodity (another word for product.) See if you can put them in order for your product. You will also need to choose a reporter from your group to share the results with the class.

Now that each group has the puzzle put together let's talk about what you have. (Ask each group have a representative to talk about their product puzzle when completed.)

Velcro finished product puzzle on processing plant. Discuss how each product is brought to the plant and a finished product is produced – the taco.

Pass out the lab sheet # 3 and have students follow along when groups are discussing their product.

Show career cards. Walk around the room with each card.

Write the career on the board.

Show finished poster with puzzle(s) Velcro on.

Of course, that's still not the end of the product journey. ***What does the owner of the taco plant still have to do?*** (advertising, packaging) It often takes a lot of different steps to get a product from the farm to the school, grocery store or restaurant. It also takes a lot of people with different careers to do each of these jobs. ***Can you guess how many careers are related to agriculture?*** (more than 400). Let's look at a few careers that are involved in processing each of these products. Many of these careers are involved in all areas however, we going to relate a career to each product. Let's start with a farmer (that's what we are.) A farmer is at the beginning of all our products, but we are going to list farmer with beef. Write farmer in the box at the bottom of beef. Let's move on to tomatoes. ***Can you think of a career involved in processing the tomato to salsa?*** All of those ideas are good – ***have you ever thought of a Food Processing Engineer?*** Food Processing engineers ensure food quality and safety while researching new products. Write food processing engineer in the box at the bottom of tomatoes. Let's move

Conclusion

on to milk/cheese. **Can you think of a career involved in processing the milk into cheese? Have you ever thought of a Food Scientist?** Food scientists ensure our products taste good while researching ways to develop new varieties. Write food scientist in the box at the bottom of milk/cheese. Let's move on to corn. **Can you think of a career involved in processing corn into a tortilla? Have you ever heard of an agronomist?** Agronomists work with plants, soil and the environment to research tools and techniques to develop new crop varieties that grow efficiently. Write agronomist in the box at the bottom of corn. Let's move on to beans. **Can you think of a career involved in processing beans? Have you thought of a nutritionist?** Nutritionist's help people eat right by determining the health benefits in products. Write nutritionist in the box at the bottom of beans.

Maybe one of these careers sounds interesting to you but if not, remember, there are 395 more you could choose from.

Let's review what we have learned today. We have explored a variety of commodities in Michigan. **Do you remember how many different commodities are produced in Michigan?** That's right, 125 different products. Michigan's agricultural diversity makes

agriculture the second largest industry in Michigan.

Who remembers what HOMES stands for?
(Huron, Ontario, Michigan, Erie, Superior)
Good job!

How about our directions, not just north, south, east and west but combining them, too. **What region was this?** (point) **How about this?** (point) We also learned about processing – **what does that mean?** That right, it's changing or modifying a product. After we did our processing and assembled our beef tacos, we talked about all the careers related to agriculture. **Do you remember how many?** (more than 400.)

I hope that the next time you buy a school lunch or go with mom or dad to the store you remember that it takes lots of people doing lots of different jobs to bring you fresh, healthy and great-tasting food. Thank you!

“Michigan Food: From Farm to You”
Material list
(Designed for 2 classes of 35)

35-70 Lab Sheet # 1

35-70 Lab Sheet # 2

35-70 Lab Sheet # 3

Large Michigan Commodity Map

Large Michigan County Map

Direction tag with Velcro

Lake tags with Velcro

Product and Region tags with Velcro

Product bags for: Corn (Tortilla chips, gum), Tomato (salsa, ketchup), Milk (cottage cheese, butter), Beans (refried, soup), Beef meat poster

Processing definition poster

Beef cuts poster

Factory poster

Career cards (Food Process Engineer, Food Scientist, Agronomist, and Nutritionist)

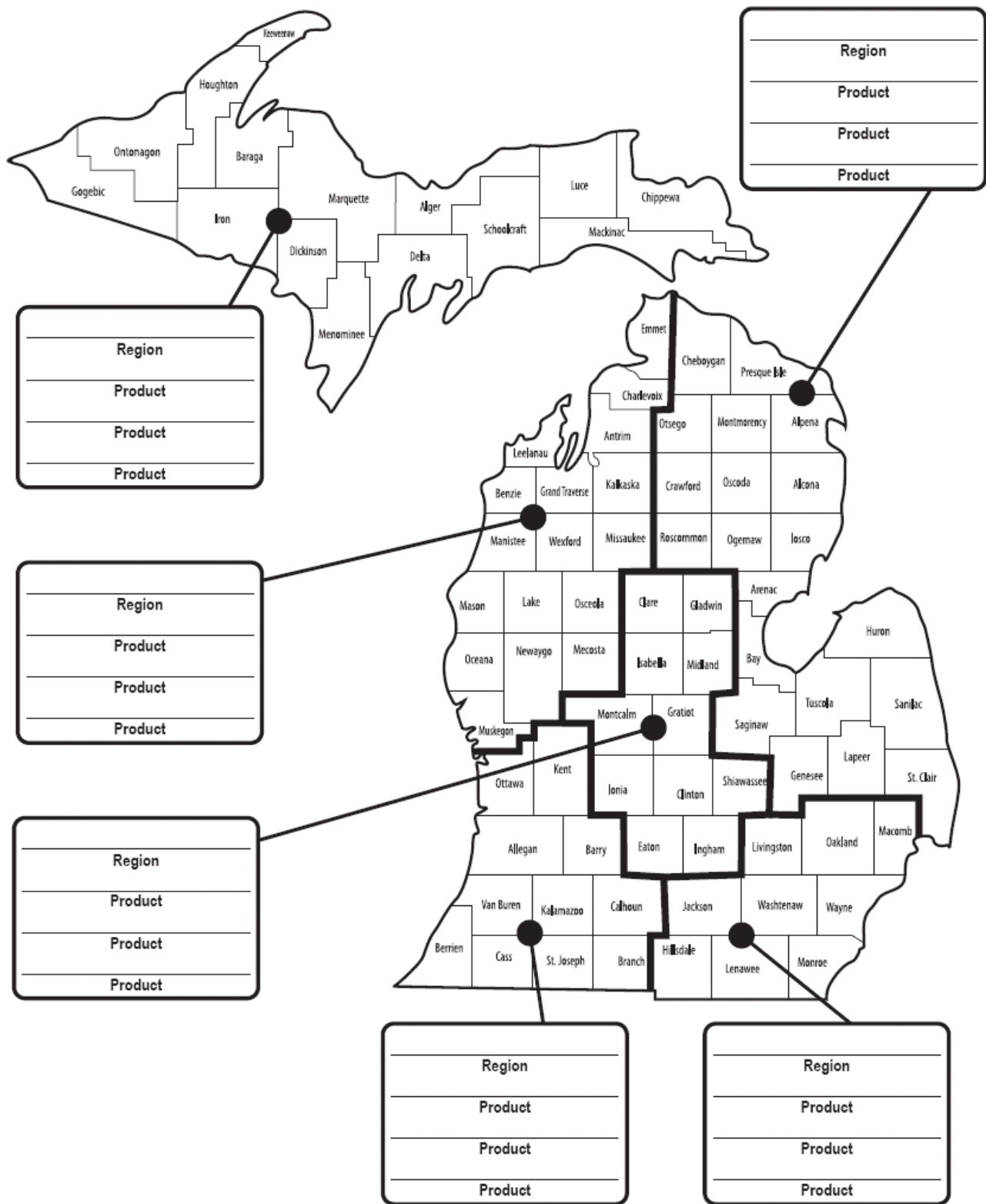
Product Puzzle for Corn, Tomato, Milk, Beef and Beans

Strips of card stock with Velcro to place puzzle

Masking tape

Wet-Erase Overhead Projector Pens (yellow, red, orange, purple, blue, green)

Wipes to clean the poster





Name _____

Lab Sheet #1

PRODUCTS PRODUCED BY REGION

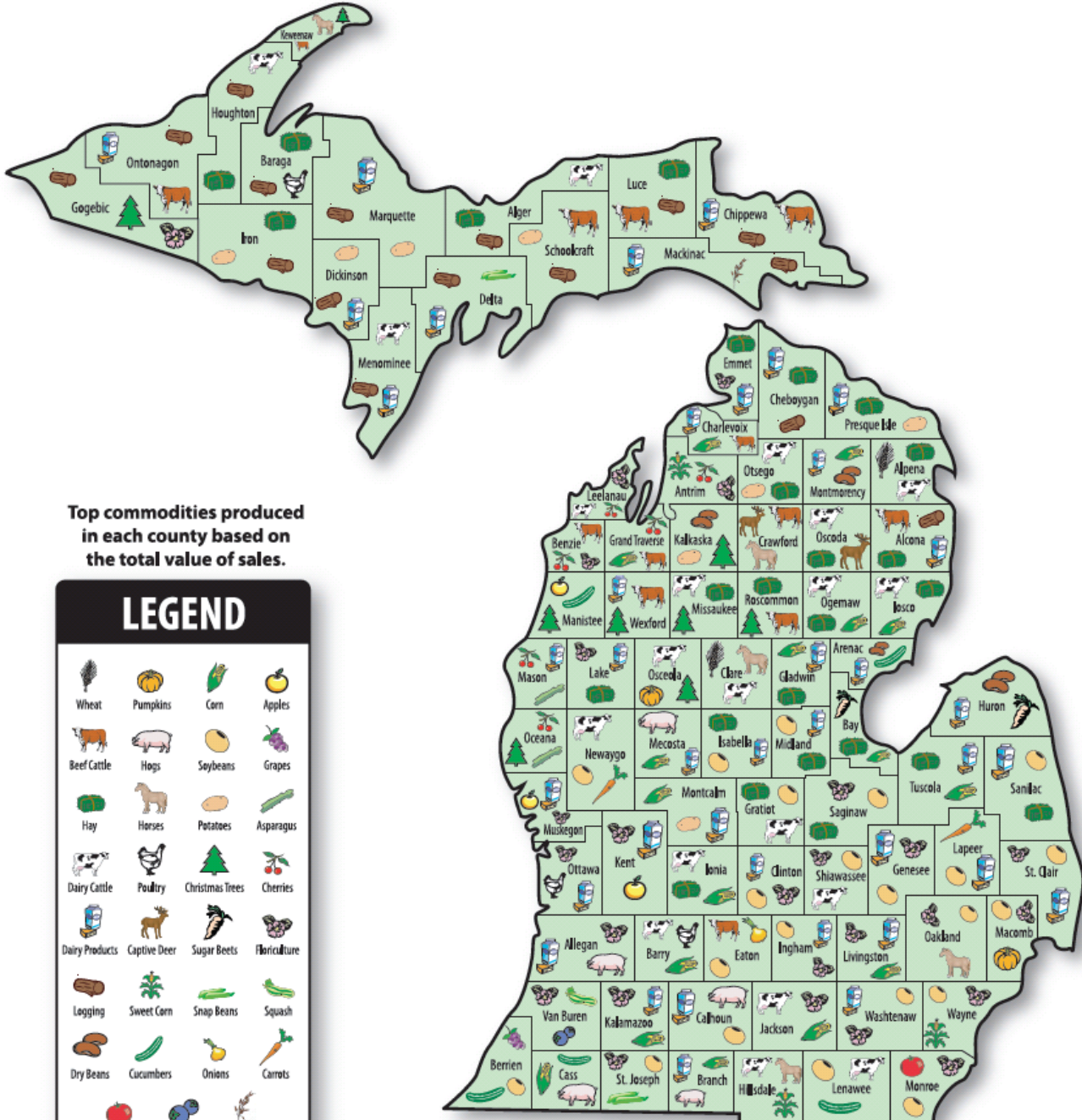
The map shows Michigan divided into its 83 counties. Six callout boxes are connected to specific regions by lines. Each callout box contains a table for recording information:

Region
Product
Product
Product

The callout boxes are connected to the following regions on the map:

- Top-left: Iron County
- Top-right: Presque Isle County
- Middle-left: Grand Traverse County
- Center: Montcalm County
- Bottom-left: St. Joseph County
- Bottom-right: Hillsdale County

MICHIGAN COMMODITY MAP



Name _____

Lab Sheet #3

FOOD PRODUCTS PROCESSING PUZZLE

BEEF

Farmer raises beef cattle



Shipped to meat processing facility



Inspected



Ground and seasoned



Packaged/
Frozen

Possible Careers

TORTILLA

Farmer raises corn



Harvest/
delivery to elevator



Washed/
inspected



Ground
and
shaped



Baked
and
packaged

Possible Careers

CHEESE

Farmer raises Dairy cow who produces milk



Cooled



Pasteurized



Enzymed/
Cultured
Aged



Packaged

Possible Careers

REFRIED BEANS

Farmer raises and harvests Pinto beans



Beans are cleaned/
sorted



Boiled



Mashed



Packaged

Possible Careers

SALSA

Farmer raises tomatos



Washed/
sorted/
inspected



Chopped/
seeded

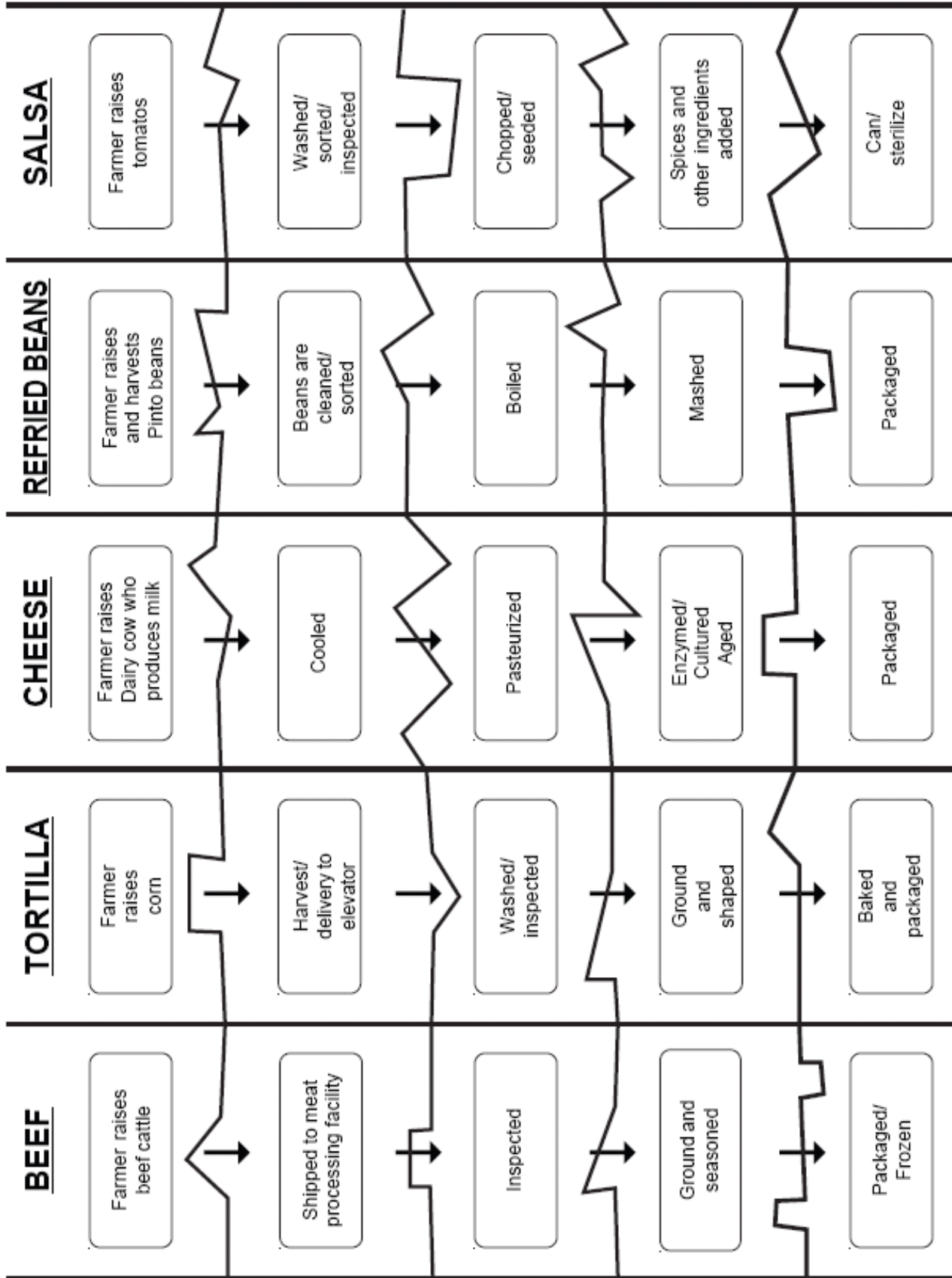


Spices and other ingredients added



Can/
sterilize

Possible Careers



Huron
Michigan
Superior
Erie
Ontario
Southwest
Southeast
Central
Northeast

Upper Peninsula
Northwest
Corn
Tomato
Bean
Milk
Beef
Factory
Canada

Huron
Michigan
Superior
Erie
Ontario
Southwest
Southeast
Central
Northeast

Upper Peninsula
Northwest
Corn
Tomato
Bean
Milk
Beef
Factory
Canada

Processing

Changing or modifying a product into a form that people want to eat or use.



Tomatoes

=



Ketchup



Wheat

=



Bread



Trees

=



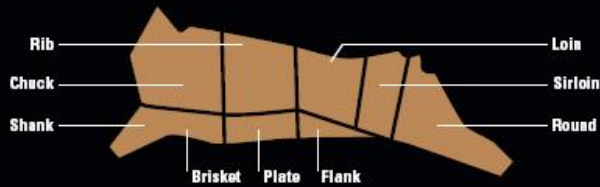
Paper

Beef Made Easy[®]































Retail Beef Cuts and Recommended Cooking Methods



IT'S WHAT'S FOR DINNER:



Chuck

 CHUCK 7-BONE POT ROAST Boneless 	 CHUCK POT ROAST Boneless 	 CHUCK STEAK Boneless  	 CHUCK EYE STEAK Boneless  	 SHOULDER TOP BLADE STEAK  	 SHOULDER TOP BLADE STEAK Flat Iron  
 SHOULDER POT ROAST * Boneless 	 SHOULDER STEAK * Boneless  	 SHOULDER CENTER * Ranch Steak 	 SHOULDER PETITE TENDER *  	 SHOULDER PETITE TENDER MEDALLIONS * 	 BONELESS SHORT RIBS 

Rib

 RIB ROAST 	 RIB STEAK 	 RIBEYE ROAST Boneless 	 RIBEYE STEAK Boneless  	 BACK RIBS 
--	--	--	--	--

Loin

 PORTERHOUSE STEAK  	 T-BONE STEAK *  	 TOP LOIN STEAK * Bone-in  	 TOP LOIN STEAK * Boneless  	 TENDERLOIN ROAST * 	 TENDERLOIN STEAK *  
--	---	---	--	---	---

Sirloin

 TRI-TIP ROAST *  	 TRI-TIP STEAK * 	 TOP SIRLOIN STEAK * Boneless 
--	--	---

Round

 TOP ROUND STEAK * 	 BOTTOM ROUND ROAST * 	 BOTTOM ROUND STEAK * Western Griller  	 EYE ROUND ROAST * 	 EYE ROUND STEAK *  
 ROUND TIP ROAST * 	 ROUND TIP STEAK *  	 SIRLOIN TIP CENTER ROAST * 	 SIRLOIN TIP CENTER STEAK *  	 SIRLOIN TIP SIDE STEAK * 

Key to Recommended Cooking Methods

-  Stir-Fry
-  Grill or Broil
-  Marinate & Grill or Broil
-  Stir-Fry
-  Roast
-  Stew
-  Braise
-  Pot Roast

Shank and Brisket

 SHANK CROSS CUT * 	 BRISKET FLAT CUT * 
--	---

Plate and Flank

 SKIRT STEAK 	 FLANK STEAK * 
---	--

Other

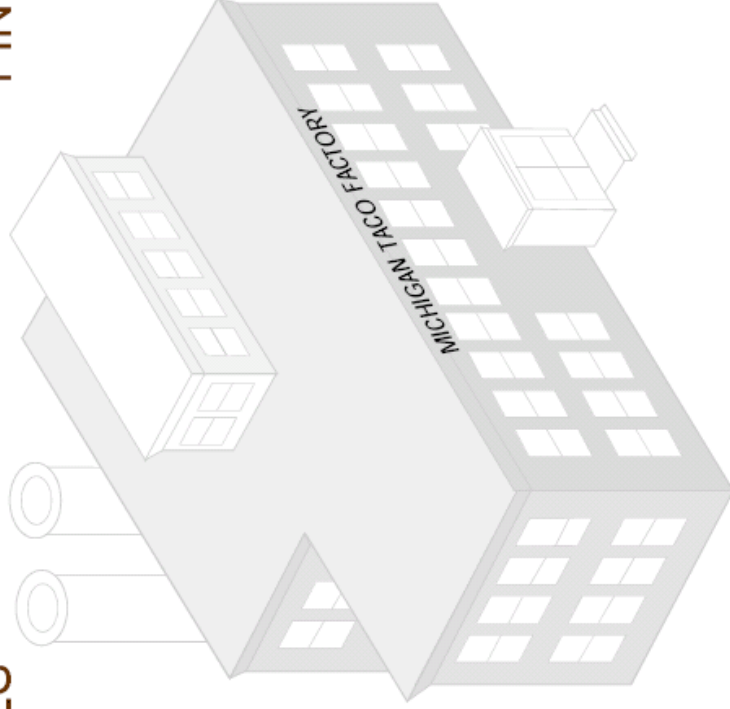
 GROUND BEEF  	 CUBED STEAK 	 BEEF FOR STEW 	 BEEF FOR KABOBS 	 BEEF FOR STIR-FRY OR FAJITAS 
--	--	--	--	---

* These cuts meet government guidelines for "lean" and are based on cooked servings with visible fat trimmed.

Lean is defined as less than 10 grams of total fat, 4.5 grams of saturated fat, and less than 95 milligrams of cholesterol per serving and per 100 grams (3.5 oz).

MICHIGAN TACO FACTORY

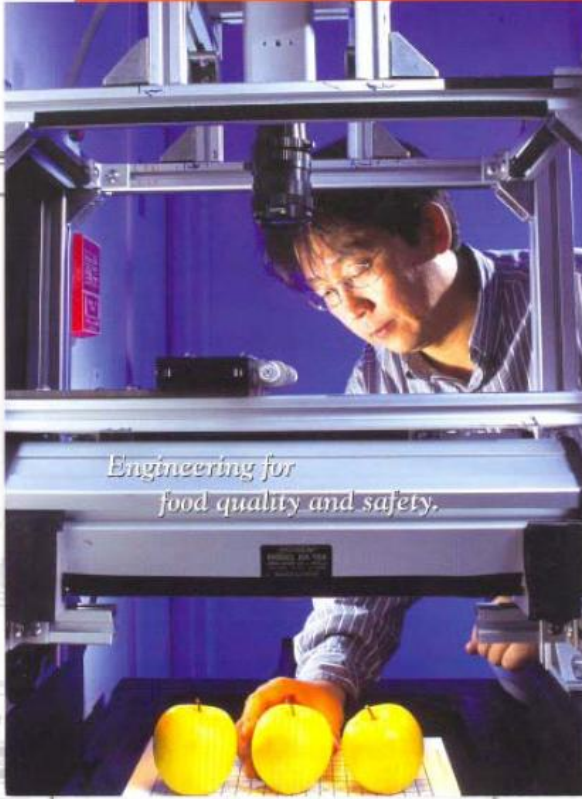
RAW MATERIALS



FINISHED PRODUCT

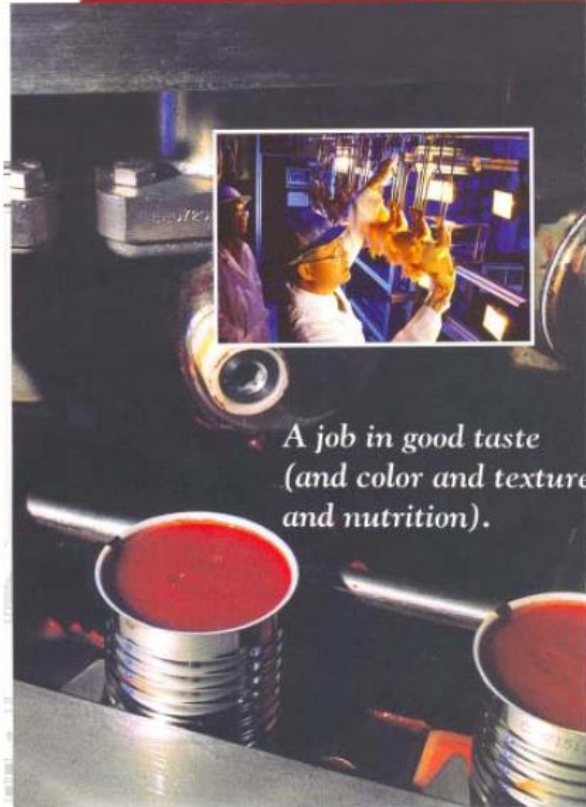


FOOD PROCESS ENGINEER



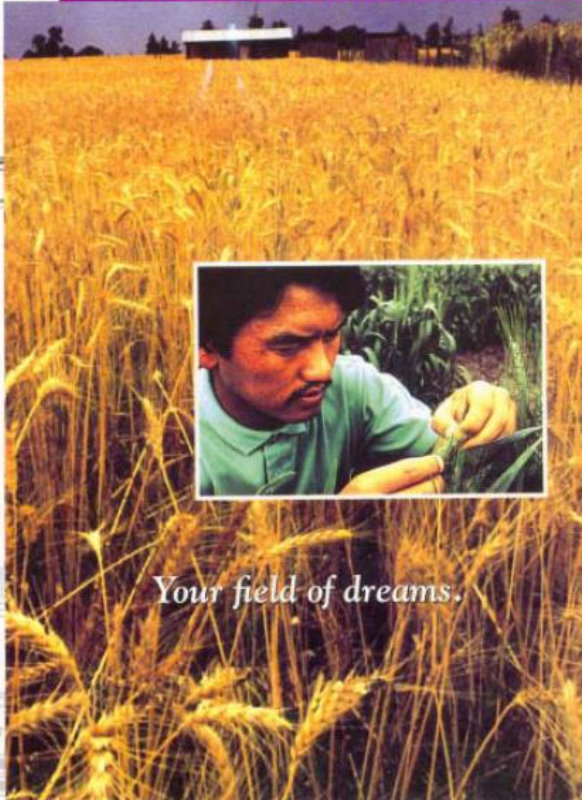
*Engineering for
food quality and safety.*

FOOD SCIENTIST



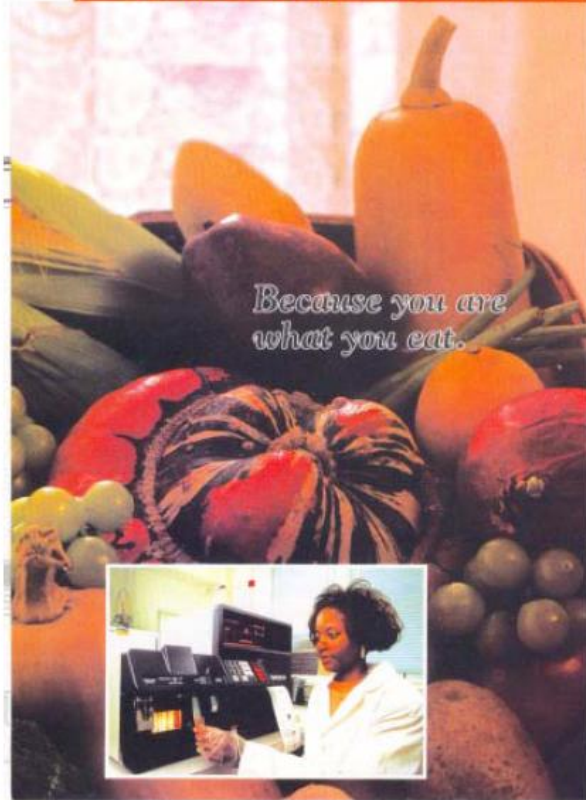
*A job in good taste
(and color and texture
and nutrition).*

AGRONOMIST



Your field of dreams.

NUTRITIONIST/DIETITIAN



*Because you are
what you eat.*

FOOD SCIENTIST

A job in good taste (and color and texture and nutrition).

Food scientists preserve our food supply by assuring its flavor, color, texture, nutritional quality, and safety. They use their knowledge of chemistry, biochemistry, microbiology, and engineering to convert grain, livestock, fruit, and vegetables into new food products. Food scientists work as production supervisors, quality assurance specialists, product developers, and managers of processing plants.



Food scientists work for food processing companies, food equipment and ingredient suppliers, and government agencies. They conduct food research and act as trouble-shooters in solving problems. They are sales and marketing representatives and consumer educators. Food scientists in local, state, and national government hold jobs as food inspectors, researchers, and laboratory workers. Others develop government regulations to safeguard our food.

To be a food scientist you should earn a bachelor's degree in food science. You will take courses such as biology, business, chemistry, engineering, management, mathematics, microbiology, physics, and statistics, as well as classes in food science. With more education (graduate level) or experience you could go on to work in food chemistry, food microbiology, or food processing and engineering.

In high school, take mathematics, biology, chemistry, physics, and computer science. Communications courses are also important.

CSREES Living Science
Food, Agriculture and Natural Resources Careers



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FOOD PROCESS ENGINEER

Engineering for food quality and safety.

Food process engineers (FPEs) research and develop new and existing products and processes. They also design processing, handling, and packaging equipment. When they are hired as project engineers, they supervise the design, construction, installation, and start-up of processes. As plant engineers they keep factories running smoothly. Some FPEs manage or supervise other workers, work in technical sales and service, act as specialized consultants, and market products.



Food process engineers work in food, chemical, biochemical, and pharmaceutical industries. Some work in government or educational institutions. FPEs work with processors, equipment suppliers, design and consulting firms, and ingredient suppliers.

Typically, engineers are curious about how things work. They enjoy solving problems. To be successful as a food process engineer, you must like math and science, especially chemistry and biology. The four-year FPE program includes calculus, chemistry, biology, physics, engineering science and design classes, and a sprinkling of liberal arts electives. In five years you can earn either a dual degree in biochemistry and food process engineering or a dual degree in pharmaceutical sciences and food process engineering.

In high school, develop as strong a background as possible in mathematics (especially calculus) and science (chemistry and biology). A basic understanding of computer programming would be beneficial, though not mandatory.

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NUTRITIONIST/DIETITIAN

Because you are what you eat.

Nutritionists/Dietitians help people look and feel well by making the connection between food, nutrition, and health. They can be healthcare workers, researchers, managers or educators. Dietitians are part of the healthcare team with doctors, nurses, or therapists to speed patients' recoveries. A nutritionist/dietitian is responsible for medical nutrition therapy for disease conditions, such as diabetes and kidney disease and preventative healthcare issues such as weight loss, cholesterol reduction and other diet-related concerns. Some nutritionist/dietitians counsel families, the elderly, pregnant women, children, and disabled, while others direct experiments to find alternative foods or diet recommendations.



Nutritionists/dietitians can work in medical centers, hospitals, nursing homes, health departments and other government agencies, schools, restaurants, daycare centers, and health and recreation clubs, as well as food and pharmaceutical companies. Some teach in colleges, universities, or community or technical schools.

Nutritionists/dietitians can work in healthcare institutions, schools, cafeterias, restaurants, daycare centers, health and recreation clubs, government agencies, and food and pharmaceutical companies. Some teach in colleges, universities, or community or technical schools.

To be a nutritionist/dietitian you must enjoy working with people and have a strong interest in food and nutrition. You should be able to work independently to identify and solve problems. In college, your course of study will include biology, anatomy, and chemistry. Math, English, sociology, psychology, and business courses are also important. If you want to become a registered dietitian, you must complete an undergraduate American Dietetic Association accredited academic program and supervised practical experience, then pass the Registration Examination for Dietitians.

In high school, follow a college preparatory program. Take as many science and mathematics courses as possible; two years of chemistry is beneficial. Also take English and communications courses.

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AGRONOMIST

Your field of dreams.

Agronomists deal with interactions among plants, soils, and the environment. They use sophisticated research tools and techniques to develop new crop hybrids and varieties that grow more efficiently and are more beneficial to society. Soils specialists conduct research in everything from the very basic to applied issues of soil and water management and land use. Agronomists research ways to produce crops and turf, and ways to manage soils in the most environmentally friendly way. Agronomists can be found teaching, conducting business, and doing research in food production and environmentally oriented industries around the world.



Agronomists work for USDA, State Departments of Agriculture, the Soil Conservation Service, and as agriculturists in foreign countries. They work for banks; farm co-ops; seed, ag supply, and lawn care companies; and government agencies. Agronomists also are employed as weather forecasters, environmentalists, researchers, and teachers.

To be an agronomist, you should have an interest in science and environmental issues. A bachelor's degree is necessary to obtain a rewarding and productive job. In college you should enroll in agriculture, biology, chemistry, mathematics, physics, and statistics courses, as well as broad-based general education courses, including English and speech. You should enjoy working with people and should have a keen interest in applying science to practical feed and food production issues.

The high school college preparatory curriculum that includes biology, chemistry, physics, and mathematics will provide excellent background. English, speech, and foreign language will strengthen communication skills.

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