



The How-to Guide for Hosting
**Agriculture Education
Field Trips**



PROJECT R.E.D.

WHAT IS PROJECT R.E.D.?

Project R.E.D. (Rural Education Day) is designed to bring agriculture to school children in a field trip format. In an effort to educate youngsters about how agriculture touches their daily lives, Washtenaw County was the first county in Michigan to hold such an event. Since that time more than 20 county Farm Bureaus across the state conduct a Project R.E.D. or similar event. Project R.E.D. is a great way to reach hundreds of children in a small amount of time. Most events are only one day in length and can reach more than 2,000 children with an array of agriculture and natural resource topics. Each county Farm Bureau that hosts a Project R.E.D. does so for a variety of reasons, but primarily the program is an outreach to help students understand the importance of agriculture and where their food comes from. Your county will need to decide what you want to share with the children and what you hope they will learn.

HOW DOES THE PROGRAM WORK?

Conducting a Project R.E.D. is a little more complex and will vary for each county across the state. Most Project R.E.D.s occur in the late spring or early fall, as most of the typical facilities that are used for these events are in large unheated buildings or outside. Upon arrival students (usually third-graders) typically are welcomed and split into groups of appropriate size. Educational stations are spread throughout the facility with several presentations occurring at once. Each station presentation lasts between 10 and 15 minutes, and then groups rotate. Some programs have students bring their lunch and then provide a lunch break at some point.

WHO MIGHT BE INVOLVED IN PLANNING?

- County Promotion and Education Committees
- MSU Extension / 4-H clubs
- FFA Chapters
- Master Gardeners
- Local Conservation Districts
- Local Agribusinesses
- Farm Bureau Insurance Agents within your county
- Agricultural councils and/or other organizations interested in educating about agriculture.

WHAT DO WE NEED TO CONSIDER FOR PLANNING?

Location to hold the event:

- Is there a fairground facility, career center, farm or another location that can accommodate the event and have alternatives in case of inclement weather?
- Is the facility central for students you intend to invite? How many stations will you have and how much room will be needed for the groups?
- Will you want to have a place to provide lunch for volunteers? Will students bring sack lunches and need a place to sit and eat?

Schools:

- How many children do you want to target and what grade?
- Have you contacted your intermediate school district to see how many students are in a particular grade?
- What other events are held for school children and what grades are targeted? Can you team up with any of those existing events? What can you offer that meets content standards that schools are trying to teach?
- Are scholarships needed to find busing for the schools?

Time of year:

- What is the best time of year for both the school and your volunteers? You may want to modify the sample school request letter attached in this guide.

SUGGESTED PLANNING TIMELINE

Nine months before event:

- Mail first letter to local commodity organizations and agribusinesses, soliciting donations for student bags.

Seven months before event:

- Reserve facilities
- Mail 1st letter to schools asking for participation in this year's event. Request reply for number of students/classes.

Six months before event:

- Determine stations, presenters, and schedule for the day.
- Mail or email letters to presenters asking for participation. Include form for special arrangements (electrical, etc.).
- Committee meeting to set job duties and discuss the overall event.

Five months before event:

- Mail letter to county area businesses soliciting for monetary donations.
- Mail confirmation letters to schools reminding them of the arrangements for the Project R.E.D.
- Mail confirmation letters to responding presenters.
- Check status of commodity donations; call if nothing has been sent yet.
- Contact FFA and/or 4-H to ask for participation from students as volunteers.

Four months before event:

- Coordinate with MFB to design or order any signage for the event. Contact P&E Department for Project R.E.D. specific signs.
- Outline station seating; determine if additional tables and chairs are needed and order.
- Lunch area tables and chairs coordinated/ordered.

Three months before event:

- Contact volunteers with job duties to check on progress
- Recruit any additional station presenters or supplies.

Two months before event:

- Contact volunteers and presenters with important reminders.
- Deadline for donations for student bags; set date for packing.
- Contact FFA and/or 4-H again to remind advisor of all arrangements for volunteering.

Two weeks before event:

- Mail or deliver school packets with nametags, instructions, etc.
- Media – work with MFB communications staff and county communications chairs to coordinate. Send out pre-event press releases detailing event.

One week before event:

- Follow up with presenters on arrangements.
- Follow up with volunteers who have food, facility and packet coordination jobs.
- Student bags are packed and in their classroom boxes.

Day before event:

- Pick up extra tables/chairs for lunch area.
- Set-up day – station set-up, lunch area organization

R.E.D. Day:

- Make sure most things are being handled by those delegated volunteers.

Day After R.E.D.:

- Media – send out post event press release including pictures.

One week after R.E.D.:

- Hold committee meeting to debrief/recap pros and cons of the event.

Two weeks after R.E.D.:

- Committee to mail Thank You's to volunteers, commodity organizations, sponsors, etc.

County Annual Meeting:

- Recognize volunteers

WHAT WILL THE PROGRAM COST?

This number will vary from county to county. Some counties have been very successful in getting local businesses and agribusinesses to donate to the event keeping costs down. The following items are things to consider when determining a budget.

- Presenters: Cost to participate, cost for materials?
- Will we need to pay someone to haul animals?
- What will we provide the volunteers? (Lunch, t-shirt, recognition, etc.)
- Facility rental fees
- Sound system/microphones
- Tables & chairs
- Postage & copy costs
- Busing scholarships
- Committee meeting costs
- Teacher/student packets: copying costs, snacks, tote bags, lesson materials, etc.
- Start up costs for a new event may also include: signage, storage containers, re-usable lesson materials, etc.

HOW DO YOU CHOOSE THE STATIONS AND WHO PRESENTS THE STATIONS?

Choose station topics based on your county demographics and volunteers. There are several different stations utilized in Project R.E.D.'s across the state. Some examples of stations include: sheep shearing, horticulture, dairy, bees, forestry, any sort of livestock and or commodity produced in Michigan that you can teach more about to children. Ask other agricultural organizations and agencies to assist you. Some ideas may include:

- County Promotion and Education Committees
- Extension
- FFA Chapters
- Soil Conservation
- Forester
- Universities
- Commodity groups
- Equipment dealers
- Natural Resource groups
- Veterinarians
- Beekeepers
- EMS/Fire Departments (Rural Safety/First Aid)
- Local Museums/Historical Societies
- Farm Bureau Insurance Agents
- Farmers: exotic animals, dairy, sheep, horses, pigs, chickens
- Anyone who is interested and is able to communicate with elementary students

VOLUNTEER RECRUITMENT: “JUST ASK”

One of the most important parts of conducting a Project R.E.D. is recruiting volunteers. Many volunteers are needed to successfully spread the positive message of agriculture. But don't be alarmed – there are several different types of volunteers needed. There's bound to be one that will fit the many and various interests of your volunteers. Remember, your county is full of potential volunteers. Don't forget to consider 4-H and FFA groups as well. Volunteers are used as presenters, tour guides, lunch, registration, traffic control and more. (See the attached sample job descriptions.)

HOW DO WE PREPARE OUR VOLUNTEERS?

Helping to prepare your volunteers is as important as finding them. You may have experienced presenters and people who have never talked to students about farming and agriculture before. We have provided some commodity fact sheets in the appendix of this book, with talking points about different segments of our agriculture industry. These talking points were developed based on research and input from commodity organizations in Michigan.

You will want to have some type of briefing for your volunteers on the day of the event, but we also suggest meeting with these volunteers about two weeks prior to the event.

Some additional things you will want to consider/cover:

- Discipline of the students is the responsibility of the teachers and school volunteers. If a Project R.E.D. volunteer has an issue with a child, it should be brought to the teacher or school volunteer's attention.
 - When approached with a tough question, use the talking points. If a volunteer does not know the answer or is uncomfortable addressing the question, they should simply indicate that they do not know or that they would like to talk with the student or adult after the group presentation is done. Kids will ask questions like where does the baby come from, or how do you get the meat, does that hurt the animal, etc.
 - "Good question, maybe we should talk about that one-on-one after we are done."
 - Compare shearing to haircuts, hoof trimming to finger nail clipping, etc.
- Make sure volunteers keep animals a safe distance from the kids, and don't allow kids to randomly place their hands in cages/pens without supervision.
- When asking for volunteers to bring animals to the event, be sure these animals are used to being handled by people and are comfortable when out of their normal farm surroundings.
- Help your volunteers think through how they will present their personal agriculture story and connection to the station's topic.

WHAT IF WE HAVE AN EMERGENCY?

Before your event, be certain your county Farm Bureau has contacted their insurance provider to ensure proper coverage for the event. County Farm Bureaus can access an event umbrella for the day of the event. Also be sure to consider these other plans or resources for safety at your event:

- Process for a lost child. Who is the primary contact and how will an announcement be made to reunite the child with the teacher or adult volunteer?
- Injury/Incident report. If someone is injured, do you have a standard form that your volunteers/teachers can fill out for your records? In the event that there is an ongoing situation, these records will be invaluable.
- Have you notified or invited your local EMS?

TEACHER AND STUDENT PACKETS

Teacher Packets:

There are several different ways you can approach teacher packets. The purpose of these packets is to give the teacher agricultural lesson plans they can incorporate prior to and following the event to increase the educational impact and knowledge gained from this sort of activity. Materials that can be used for the packets include the Michigan Farm Bureau lesson plans that can be found on the Web site at www.miagclassroom.org. Several Michigan commodity groups have commodity-specific lesson plans and or activity sheets that can also be utilized in the classroom.

Student Packets:

Students can receive a packet the day of the event. Each packet is filled with activity sheets and educational materials from commodity groups. Unless children are using the materials at your event, it may be best to make arrangements for the materials to be dispersed upon departure or delivered to the buses.

RESOURCES AVAILABLE FROM MICHIGAN FARM BUREAU

- Mentoring, guidance and volunteer assistance from State Promotion and Education Committee members
- Staff assistance from Regional Representatives and the Promotion and Education Department
- Media/promotion assistance
- Graphic design assistance with logos, signage or t-shirt design
- Assist with aligning program to Michigan's educational standards
- Lesson resources can be found at www.miagclassroom.org and ordered by County Administrative Manager's through county shipper form.

SAMPLE SCHOOL REQUEST LETTER

Date _____

Name: _____

Superintendent and/or Teacher

_____ Public Schools

School Street

School City, MI 48909

Dear Superintendent and/or Teacher _____,

We are happy to invite you and your (insert target grade) grade students to the (insert county Farm Bureau) Farm Bureau Rural Education Day (Project R.E.D) on (insert date) at (insert location of the event). The (insert county) Farm Bureau, in cooperation with various agricultural businesses and local sponsors, is supporting this fun-filled day with many hands-on activities. The focus of our event is to help students understand more about agriculture and natural resources in our community. The field trip will be held at (insert location information) and is free for all students and chaperones. If requested, we would be able to provide the appropriate educational standards met through our activities.

During Project R.E.D., children rotate among several different stations to view and learn about animals, horticulture and natural resources. Each station runs approximately 12 minutes with the entire program lasting approximately two hours. We would like to hold a morning program beginning around ____a.m, to conclude by ____a.m. and an afternoon program from ____p.m. until ____p.m. Specific directions, times, and a schedule will be provided closer to the event.

I look forward to hearing from you regarding your interest in this activity. As you know, our population is becoming further removed from production agriculture. Activities like this are a great opportunity to teach children and adults the importance of agriculture and how agriculture touches their life each and everyday. Agriculture can also be used as a vehicle to teach science, math, literature and more.

If your school would like to participate, please mail or fax the completed registration form(s) by (insert date based on timeline). We will do our best to accommodate your requested time slot. Please have one chaperone for every 10-15 students. Reservations are taken on a first come basis.

Please do not hesitate to phone me with any questions. I can be reached at _____.

Sincerely,

_____, Chairperson

Promotion and Education Committee

_____ County Farm Bureau

SAMPLE SCHOOL/CLASS REGISTRATION FORM

CLASS REGISTRATION PROJECT R.E.D. (INSERT DATE OF EVENT)

We request that each teacher register his/her class separately, and return this form by (insert deadline based on timeline). (This form may be copied.)

Please Return to: _____ (county) Farm Bureau

Attention: _____ (P&E Chair or R.E.D. Coordinator)

Address: _____

Or fax to: _____ (county fax number)

Or email: _____ (CAM email address)

School Name: _____

Teacher Name: _____

Email address: _____

Number of Students: _____ Telephone # _____

I request the AM session _____ I request the PM session _____ I can do either AM or PM _____

These are only samples of responsibilities; you will need to develop more based on the volunteer jobs needed at your particular event.

SAMPLE PROJECT R.E.D. JOB DESCRIPTIONS

Tour guide duties:

1. Arrive on site by ____ for orientation.
2. Pick up assignment folder, name tag, and sign for group identification.
3. Meet small group of students and teacher at parking area.
4. Escort them to start point.
5. Greet them with "scripted introduction."
6. Guide them through demonstrations.
7. Hand out "goodie bags" to be filled at stations (one per student).
8. Assist presenters, if needed to hand out "goodies."
9. If a student needs to use the bathroom, please utilize the student volunteers/adult supervision to accompany them – don't suggest bathroom breaks as a group as we are on a tight schedule for the day.
10. Please remain at each station until you hear the signal to move.
11. Interact with the group as you feel comfortable.
12. When sessions are completed, read "script closing."
13. Lunch is _____, please pick up a box lunch. The next group will be arriving soon...I said it was a tight day!
14. At end of day, please turn in signs to the supervisor table.
15. Complete evaluation sheet.
16. Have fun and thanks!

Track/barn supervisor duties:

1. Help set up tables, chairs, place signs.
2. Check to be sure you have all presenters, electricity, supplies.
3. Each station should have presenters and at least one station helper.
4. Check to be sure you have the "give aways" for each station.
5. Attend orientation session to greet your volunteers.
6. Familiarize volunteers with your signal for changing stations.
7. Tell volunteers approximately how long they will have at each station, it's your job to keep time and switch when ready.
8. Identify any volunteers who are not working afternoon group – remind them to turn in their sign before leaving for the day – PM person will pick it up from you.
9. Do general supervision / jump into groups when you want / participate with presenters as you'd like/have FUN!
10. Thank volunteers / presenters.
11. Collect signs: group leaders as well as station signs.
12. Help presenters "clean up" at end of day.
13. Fill out evaluation form.

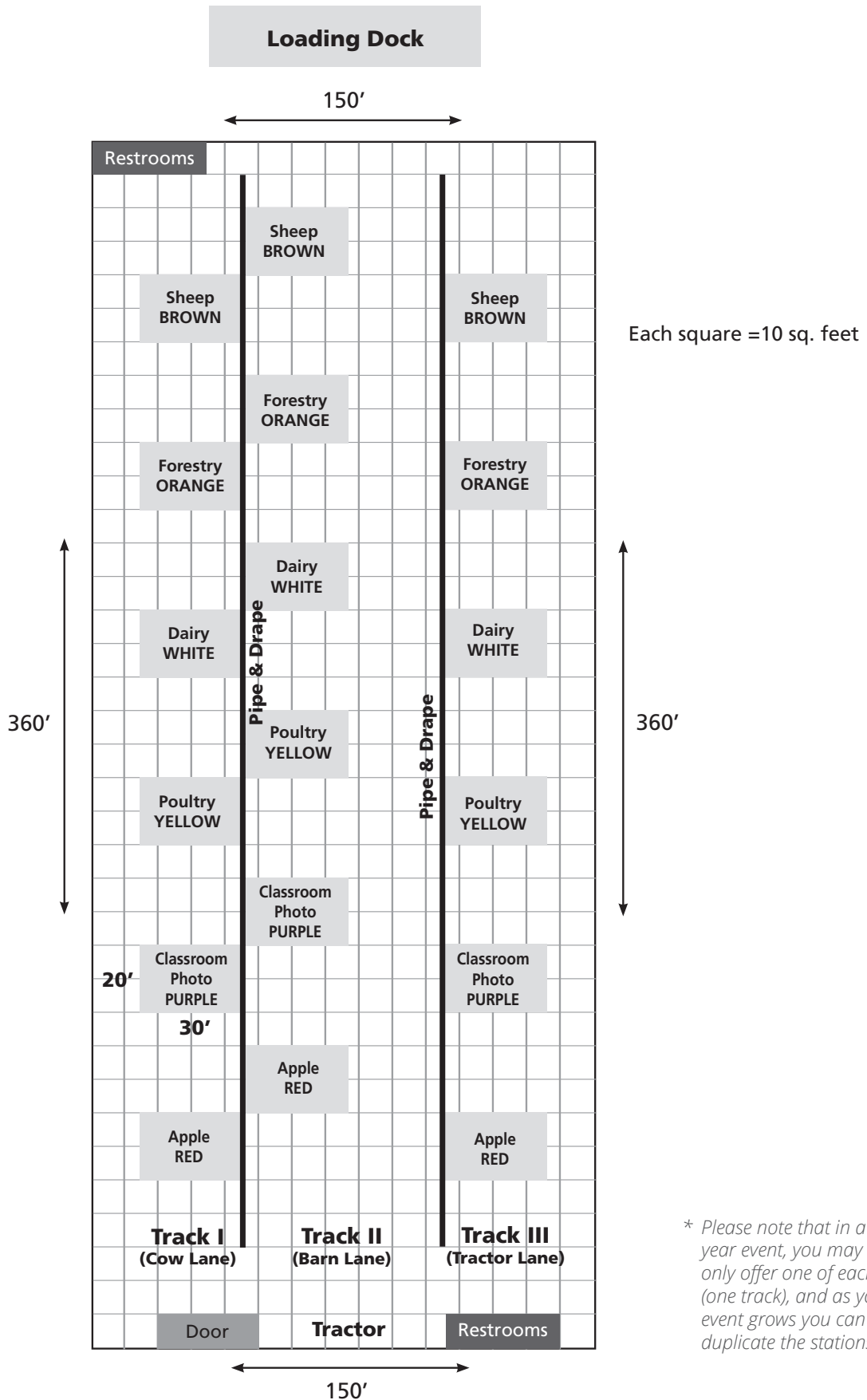
Orientation/check-in desk duties:

1. Arrive on site early be at desk until volunteers are checked in.
2. Set up tables / chairs.
3. Supplies needed: pencils / markers, volunteer packets, name tags/ pins, evaluation sheets, day's schedule / expected groups and times, other supplies (tape, stapler, etc.)
4. As volunteers arrive, give them their packet (their name should appear on the front). Check off on list; get current data if we don't have it.
5. Conduct orientation session.
6. Assist as needed until end of sessions.
7. Collect signs.
8. Hand out / collect evaluation forms.
9. Say a lot of "Thank yous."

Utilize these organizations as resources for information, student/teacher presenters, or materials for goodie bags:

Corn Marketing Program of Michigan.....	www.micorn.org
GreenStone Farm Credit Services	www.greenstonefcs.com
Michigan Ag Council.....	www.michiganagriculture.com
Michigan Agricultural Commodities.....	www.michag.com
Michigan Allied Poultry Industries, Inc.	www.mipoultry.com
Michigan Apple Committee.....	www.michiganapples.com
Michigan Asparagus Advisory Board	www.asparagus.org
Michigan Bean Commission.....	www.michiganbean.org
Michigan Beef Industry Commission	www.mibeef.org
Michigan Beekeepers Association.....	www.michiganbees.org
Michigan Blueberry Growers Association	www.blueberries.com
Michigan Cherry Committee.....	www.choosecherries.com
Michigan Christmas Tree Association.....	www.mcta.org
Michigan Floriculture Growers Council	www.mifgc.org
Michigan Forest Resource Alliance.....	www.michiganforest.com
Michigan Grape & Wine Industry Council.....	www.michiganwines.com
Michigan Horse Council	www.michiganhorsecouncil.com
Michigan Maple Syrup Producers Association	www.mi-maplesyrup.com
Michigan Pork Producers Association	www.mipork.org
Michigan Potato Industry Commission	www.mipotato.com
Michigan Soybean Promotion Committee.....	www.michigansoybean.org
Michigan Sugar Company	www.michigansugar.com
United Dairy Industry of Michigan	www.udim.org
Michigan Wheat Program	www.miwheat.org

SAMPLE ROTATION/SAMPLE STATION MAP



* Please note that in a first year event, you may want to only offer one of each station (one track), and as your event grows you can begin to duplicate the stations.

PROJECT R.E.D. TEACHER/STUDENT NUMBERS SAMPLE ROSTER

PROJECT R.E.D. TEACHER/STUDENT NUMBERS Sample Roster

<u>School AM</u>	Teacher	Students	Group*	Color*	Starting Station	Tour Guides
Shawmut	Kay Berk	33	Milk Bottle	RED	Apple	
Shawmut	Gloria Cangelosi	8	Milk Bottle	PURPLE	Photo	
Buchanan	Diogenes dela Cruz	19	Milk Bottle	PURPLE	Photo	
Buchanan	Tracy Mann	20	Milk Bottle	YELLOW	Poultry	
Buchanan	Sarah Garcia	9	Milk bottle	YELLOW	Poultry	
Buchanan	Sarah Garcia	18	Milk bottle	WHITE	Dairy	
Southeast Academic	Robin Obrenovich	24	Milk Bottle	WHITE	Dairy	
Southeast Academic	LaTonnia Harwick	18	Milk Bottle	ORANGE	Forestry	
Mulick Park	Patricia Allen	12	Milk Bottle	ORANGE	Forestry	
Mulick Park	Elizabeth Myslajek	23	Milk Bottle	BROWN	Sheep shearing	
Mulick Park	Lisa Bowerman	13	Barn	RED	Apple	
Dickinson	Susan Hall	14	Barn	RED	Apple	
Dickinson	Susan Hall	21	Barn	PURPLE	Photo	
Dickinson	Teresa Nickels	22	Barn	PURPLE	Photo	
North Park	Johanna Morrissey	26	Barn	YELLOW	Poultry	
Fountain	Barb Quist	23	Barn	WHITE	Dairy	
Aberdeen	David Dolphin	30	Barn	ORANGE	Forestry	
CA Frost	Ruth Millisor	27	Barn	BROWN	Sheep	
<u>School PM</u>	Teacher	Students	Group	Color	Starting Station	
Madison Park	Stephanie Gaastra	24	Milk Bottle	RED	Apple	
Jefferson	Eather Sutton	15	Milk Bottle	PURPLE	Photo	
Jefferson	Kerrie Grotenhuis	15	Milk Bottle	PURPLE	Photo	
Hamilton	Kelly Rector	30	Milk Bottle	YELLOW	Poultry	
Hamilton	Mish Banks	30	Milk Bottle	WHITE	Dairy	
Bowen	MaryKay Murawski	20	Milk Bottle	ORANGE	Forestry	
Bowen	Lee Ann Bernard	12	Milk Bottle	ORANGE	Forestry	
Bowen	Lee Ann Bernard	20	Milk Bottle	BROWN	Sheep Shearing	
Bowen	Linda Montgomery	20	Milk Bottle	BROWN	Sheep Shearing	

* You may choose to use different symbols for your groups; this pattern uses two die-cut shapes in different colors to differentiate.

BEEF FACT SHEET

Useful Terms:

- Beef cattle: cattle that are raised for meat production
- Calf: baby cattle are called calves
- Heifer: female cattle
- Cow: female cattle that have given birth
- Bull: male cattle
- Steer: male cattle that have been neutered

Starter Questions:

Q: Where do beef cows live?

A: In Michigan, some beef cattle are raised outside all year, on pasture land. Other beef cattle are raised in barns where they have sand to lay on for comfort. On both types of farms, cattle are given water and food to munch on all day.

Q: What do beef cattle eat?

A: Beef cattle eat lots of grass when they are grazing in the pasture. They also eat a mixture of chopped feed that is called silage. Silage usually contains grain (grain, corn stalks, etc.), corn, vitamins and minerals. Cows also drink plenty of fresh water.

Food Products:

- Cuts of meat (steak, roast, hamburger)
- Processed meats (sausages, beef stick/jerky, hot dogs)
- Canned meats (stew, chili, hash)
- Traces in gelatin, marshmallows, candy, cake mixes, and much more!

Other Products:

- Household products (detergents, paper, shaving cream, leather and more)
- Pharmaceuticals (collagen, cortisol, heparin)
- Motor vehicle products (antifreeze, biodiesel, lubricants, tires)

Farm to Table Process:

1. Cow-Calf Operation
 - a. When a female cow is about 2 years old she gives birth to a calf for the first time
 - b. The cows are bred and give birth each year
 - c. A cow is pregnant for 9 months
 - d. After the calf is born, it drinks its mother's milk for the first few months
 - e. Calves are weaned from their mother's milk at 7-8 months
2. Stocker/Brackgrounder
 - a. The 7-8 month old calves are pasture grazed until they are 12-16 months old
 - b. This is the transition time from the cow-calve stage to the feedyard
 - c. Some cattle stay on pasture to be finished out on a grass-fed diet but it does take longer to reach the same weight as those sent to the feedyards.
3. Feedyard
 - a. The yearling cattle are sent here for 4-6 months to add more weight
 - b. Here they are fed a carefully balanced diet or ration to improve their meat quality
 - c. These cattle eat a high portion of grains (corn or soybean meal)
4. Processing Plants
 - a. Between 16-22 months old when the cattle have reached an optimal weight they are butchered
 - b. The carcasses are divided into large sections called primal cuts
 - c. Skilled workers in packing plants then divide the primal cuts further into smaller cuts
5. The Grocery Store
 - a. In the meat section we see the packaged smaller cuts of meat (steaks, roasts and hamburger)
 - b. You purchase this and take it home with you
6. Your Dining Room Table
 - a. After buying the particular meat cut at the store, you cook it and then eat it!

BEEF FACT SHEET

The Butchering Process (if asked to give a more descriptive answer of what occurs at processing facilities)

1. Cattle arrive at packing plants and are moved inside in a quiet and orderly manner.
2. There is little excess movement or unnecessary noise, so cattle are not unduly stressed.
3. Packing plant technicians then use a mechanical stunning device to quickly and effectively render animals unconscious prior to slaughter.
4. Skilled workers in the processing facility then break down the beef carcasses into popular beef cuts.

* *The harvest process has evolved over the years based on scientific research to ensure both humane animal treatment and the production of safe food. The Humane Slaughter Act dictates strict animal handling and slaughtering standards for packing plants. Federally-inspected facilities are under continuous observation by USDA's Food Safety and Inspection Service personnel to ensure compliance with all regulations.*

In-depth Questions:

Q: What happens when a cow is sick?

A: When a beef cow gets sick the animal is closely monitored by a farmer who determines the need of that animal. If the animal needs more care than the farmer can provide, they call a veterinarian. Farmers and veterinarians use modern tools and medications to return that animal to good health. If a cow needs antibiotics, it must be kept from the food supply for a mandatory wait period to ensure no antibiotics enter the human food supply.

Q: How do you keep track of a cow's health and distinguish one cow from another?

A: Keeping track of cattle can be difficult if you have a large number of cattle in one place. That is why farmers in Michigan use a tool called an RFID tag. RFID tags are tags that are clipped into a calf's ear at birth. This tag can be read by a special machine that assists the farmer in identifying each cow. These tags are used to keep track of identification and health information. RFID tags are used in the event there is a food safety concern or disease outbreak to track the individual cow back to the farm it originated from, to ensure any infected animals are properly cared for.

Q: Are there any hormones the beef that I buy from the store?

A: Hormones are chemicals that are produced naturally in the bodies of all animals, including humans. Hormones can be found in beef that you eat at an extremely low amount of 5-7 nano-grams in every 500 grams (a little more than a pound) of beef. For comparison, white bread contains 300,000 nano-grams of hormones in every 500 grams (about a loaf) of white bread.

Q: Why are calves taken away from their mother? What then happens to the cow?

A: Calves are weaned (taken away) from their mother at around 7 to 8 months of age. Calves are weaned in order to give the mother ample time to recover from nursing a calf before having her next calf. These calves are then placed in a stocker/backgrounder operation where they are grazed on pasture.

Specific to Michigan:

- Cattle are raised in 80 of Michigan's 83 counties
- There are 114,000 beef cows in Michigan
- In 2013, Michigan cattle & calf receipts totaled \$541 million

* *Information provided in part by the Michigan Beef Industry Commission – www.mibeeff.org*

PORK FACT SHEET

Useful Terms:

- Market pigs: pigs that are raised for meat production
- Piglet: baby pigs are called piglets
- Gilt: a female pig
- Sow: female pigs that have given birth
- Boar: male pigs
- Barrow: a male pig that have been neutered

Starter Questions:

Q: Where do pigs live? Why do some pigs live outside all year long?

A: Different pig breeds live all over the world. In Michigan, there are approximately 1.07 million pigs. Most pigs live indoors to protect them from predators and protect them from diseases that can easily spread in the open air from wild species. Pigs are also kept indoors, as they are very clever animals and are difficult to keep enclosed in simple pasture systems. Pigs can't sweat like humans can to keep cool on a hot day, so these barns can be temperature controlled to keep the pigs cool in the summer and warm in the winter.

Q: What do pigs eat?

A: Pigs eat grains like corn, barley and soybeans mixed with vitamins and minerals. It can be feed in a loose mixture or in a pellet form.

Food Products:

- Cuts of meat (loin, chop, steak)
- Other Products:
- Household products (detergents, paper, toothpaste, shaving cream, leather and more)
- Pharmaceuticals (Insulin, Chrymotrypsin, Heparin, Prolactin)

Farm to Table Process:

1. Farrowing
 - a. To farrow means to give birth to baby pigs, called piglets
 - b. A female pig who has never farrowed before is called a Gilt, otherwise they are referred to as Sows
 - c. A female pig is bred by natural mating with Boars, adult male pigs or by artificial insemination.
 - d. A sow is pregnant for 3 months, 3 weeks and 3 days.
 - e. The average sow has 8-12 piglets in a litter and farrows approximately 2 times a year.
 - f. Sows are put in farrowing pens just before giving birth so that the mother is comfortable when she lies down and the piglets have a safe place to stay out of harm's way.
 - g. Sows nurse their piglets for about 4 weeks, until they reach 30 pounds
2. Feeder
 - a. A feeder pig is one weighing between 30 and 90 pounds
 - b. The piglets are weaned from the sow and are moved to group pens in another barn.
 - c. These pigs still need warmer temperatures and are kept completely separate from older pigs
 - d. At this stage pigs receive a diet that changes to meet their nutritional needs as they grow.
3. Finisher
 - a. A finisher pig is one over 90 pounds being raised for sale
 - b. Once feeder pigs have reached a certain weight, they are moved to another pen or barn to accommodate their larger size
 - c. The pigs adhere to a diet that is appropriate for their age and weight
 - d. Finisher pigs are kept in groups with other pigs the same size to make feeding the proper diet possible and to prevent bullying of the smaller pigs.
 - e. After 5 ½ or 6 months from birth the pigs are finished or have reached their market weight of 240-280lbs
4. Meat Processing Plants
 - a. Once reaching their proper market weight, the pigs are transported on specific trucks designed for moving pigs to be taken to the meat processing plants
 - b. Processing plants follow strict government guidelines for processing and handling the animals and meat products.
 - c. At the processing plants, each animal is inspected to be sure it is healthy

PORK FACT SHEET

- d. Trained workers handle and euthanize the pigs quickly and humanely by approved methods
 - e. The large carcasses are divided and workers in packing plants then split the primal cuts further into smaller cuts
5. The Grocery Store
- a. In the meat section we see the packaged smaller cuts of meat (pork steaks, tenderloin, chops & bacon)
 - b. You purchase this and take it home with you
6. Your Dining Room Table
- a. After buying the meat at the store, you cook it and then eat it!

The Butchering Process (if asked to give a more descriptive answer of what occurs at processing facilities)

1. Pigs arrive at processing plants and are moved inside in a quiet and orderly manner.
2. There is little excess movement or unnecessary noise, so the animals are not unduly stressed.
3. Packing plant technicians then use a mechanical stunning device to quickly and effectively render animals unconscious prior to slaughter.
4. Skilled workers in the processing facility then break down the pig carcasses into popular meat cuts.

* *The harvest process has evolved over the years based on scientific research to ensure both humane animal treatment and the production of safe food. The Humane Slaughter Act dictates strict animal handling and slaughtering standards for packing plants. Federally-inspected facilities are under continuous observation by USDA's Food Safety and Inspection Service personnel to ensure compliance with all regulations.*

In-depth Questions:

Q: How old are pigs when they are butchered?

A: Pigs are butchered when they are 5 ½ to 6 months years old.

Q: How many baby pigs does a sow have?

A: The average sow has 8-12 piglets in 1 litter

Q: Why are piglets taken away from their mother? What happens to the piglets?

A: When pigs reach a certain age they must start to consume solid food instead of the mother's milk. The sow also needs some time to recuperate/recover after farrowing and nursing the piglets for so long. It requires a lot of energy to care for and nurse 8-12 piglets in a litter. The piglets then move into group housing in another barn that serves as a transition stage before the finisher operation. Here they eat a balanced solid food diet along with plenty of water.

Q: What happens when a pig is sick?

A: When a pig gets sick the animal is closely monitored by a farmer who determines the need of that animal. If the animal needs more care than the farmer can provide, they call a veterinarian. Farmers and veterinarians use modern tools and medications to return that animal to good health. If a pig needs antibiotics, it must be kept from the food supply for a mandatory wait period to ensure no antibiotics enter the human food supply.

Q: How do you keep track of a pig's health/know which pig is which? (Leading to an explanation of identification tags and ear notching.)

A: Piglets are identified by the farmer shortly after birth. Most farms use a system of notching the piglet's ears, which is very similar to piercing ears in humans. These notches help identify the pig throughout its life. Some farms also use eartags for identification. Both systems help the farmer keep track of the pig throughout its life for health and nutrition purposes.

Q: Are there hormones in my pork?

A: Hormones are chemicals that are produced naturally in the bodies of all animals, including humans. In the U.S. it is against federal regulations to use additive hormones when raising pork. So when you purchase pork at the meat counter in a grocery store, there are no extra hormones besides those already naturally occurring in pigs!

Specific to Michigan:

- There are more than 2,000 pig farms in Michigan
- Michigan's pork industry contributes over \$500 million to the state's economy

* *Information provided in part by the Michigan Pork Producers Association – www.mipork.org*

DAIRY FACT SHEET

Useful Terms:

- Dairy cattle: cattle that are raised for milk production
- Calf: baby cattle are called calves
- Heifer: female cattle
- Cow: female cattle that have given birth and produces milk
- Bull: male cattle
- Steer: male cattle that have been neutered

Starter Questions:

Q: Where do cows live?

A: Cows live on every continent except Antarctica. Cows in the U.S. live inside of barns, some of which are freestall barns which allow the cows to roam about and eat, drink or rest as they please. The cows on a dairy farm are the most important asset so their comfort and health is the number one priority.

Q: What do cows eat?

A: Cows are fed a balanced and nutritious diet. Cows that are being milked eat about 100 pounds of feed each day, which consists of hay, grain, silage, and proteins (such as soybean meal), plus vitamins and minerals. Cows have access to and drink 25-50 gallons of fresh water each day depending on how much milk they are producing and the outside temperature.

Food Products:

- Milk
- Cream
- Butter
- Cheese
- Cottage Cheese
- Yogurt
- Ice Cream

Other Products:

- Household products (detergents, paper, toothpaste, shaving cream, leather and more)
- Pharmaceuticals (Insulin, Chymotrypsin, Heparin, Prolactin)

Farm to Table Process:

1. Cow-Calf Operation
 - a. A cow is bred either natural mating with Bulls, adult male cattle or by artificial insemination
 - b. The cow is pregnant for 9 months
 - c. When heifers, female cattle who have not given birth yet, are about 2 years old they give birth to a calf for the first time
 - d. The calves are moved to separate houses, called calf hutches, within a few hours of birth
 - e. The cow is then put into the milking rotation
2. Milking
 - a. Cows are milked at least twice a day by a milking machine
 - b. The cows are milked for about 7 months after giving birth
 - c. The milk is pumped into a large storage tank on the farm and is cooled to keep it fresh
 - d. It is tested to make sure it is safe, pure and wholesome
3. Assembly
 - a. Every day or two, a cold milk tanker truck transports the fresh milk from the farm to the processing plant
 - b. The truck is sealed to ensure the milk's safety
4. Processing
 - a. Milk arrives to the processing plant and is tested again to confirm quality and safety
 - b. After passing many safety tests the milk is pasteurized, a process where milk is heated to a high temperature in order to kill germs
 - c. After pasteurization, the milk is put into plastic bottles or other containers
 - d. If the milk is not bottled, it is made into other dairy products like cheese or yogurt

DAIRY FACT SHEET

5. The Grocery Store
 - a. Milk products are transported in cold trucks to the grocery store
 - b. At the store you buy your dairy product and take it home
6. Your Dining Room Table
 - a. After buying the milk at the store you sit down to enjoy a cold glass of milk!

In-depth Questions:

Q: How old is a milking cow?

A: Cows begin to be milked around two years old, after they have given birth to their first calf. Milking may continue for a period of several years, with dairy cow life expectancy ranging from 7 to 12 years old, depending on the cow's breed and health.

Q: What happens when a cow is sick?

A: Dairy cows receive regular medical care, including periodic check-ups, vaccinations and prompt treatment of illness. Farmers and veterinarians use modern tools and medications to return that animal to good health efficiently.

Q: How do you keep track of a cow's health and distinguish one cow from another?

A: Keeping track of cattle can be difficult when you have a large number of them in one place. That is why farmers and ranchers in Michigan use a tool called an RFID tag. RFID tags are tags that are clipped into a calf's ear at birth. This tag can be read by a special machine that assists the farmer in identifying each cow. These tags can be used as management tools to keep track of identification and health information. RFID tags are used in the event there is a food safety concern to track the individual cattle back to the farm it originated from.

Q: Why are calves taken away from their mother? What then happens to the cow?

A: Calves are moved into an individual house, called a calf hutch, within a few hours after birth. They stay in the hutches for two months where they are given special care and bottle fed the proper amount. After giving birth, the mother is put into the milking rotation where she is milked 2-3 times each day.

Q: Are there hormones in my milk?

A: Hormones are chemicals that are produced naturally in the bodies of all animals, including humans. Each Dairy cows naturally produces some Bovine somatotropin (BST) or bovine growth hormone (BGH) in their pituitary gland. During the 1970's it became possible to synthesize the hormone to create recombinant bovine somatotrophin (rBST) or recombinant bovine growth hormone (rBGH) in order for cows to produce more milk. It is impossible to differentiate between the hormones produced naturally by the animal and those used to treat the animal so it is difficult to determine how much of the rBST stays in the milk product. In animals treated, the hormone level may be slightly higher in the milk but is still within the normal range of natural variation that occurs in untreated animals. In Michigan, milk companies have responded to consumer requests for choices in the dairy aisle and now offer milk from cows not supplemented with rBST. This decision is due to the market demand and is not related to any health or safety issues. Milk is wholesome, safe and nutritious.

Specific to Michigan:

- There are 381,000 dairy cows in Michigan
- Each dairy cow produces around 24,116 lbs. of milk per year, that's approximately 2,800 gallons
- Michigan is ranked #1 in gross income per cow
- In 2012, Michigan dairy exports totaled \$231.9 million

* Information provided in part by United Dairy Industry of Michigan - www.udim.org

CORN FACT SHEET

Starter Questions:

Q: Where does corn grow in Michigan?

A: Corn is grown all over the Lower Peninsula and in a few counties in the Upper Peninsula. The Thumb region produces the most corn with Huron County being number one!

Q: What types of corn are grown in Michigan?

A: In Michigan, sweet corn, popcorn and field (dent) corn is grown. The most common type of corn grown in Michigan is field corn.

Q: Are any of these corn products made in Michigan?

A: The Kellogg Company based out of Battle Creek uses corn in many of its cereals and Jiffy Mixes of Chelsea uses it in many of its boxed mixes, such as corn bread mix.

Food Products:

- Chips
- Cereal
- Grits
- Cornbread
- Vegetable oil
- Corn syrup
- Corn flour
- Corn sweetener
- Cornstarch
- In addition to field corn, people can also eat sweet corn & popcorn

Other Products:

- Livestock feed
- Ethanol
- In carpets, clothing and diapers as a polylactic acid polymer (similar to plastic)
- De-icers
- Packing peanuts
- Magic Nuudles (to see what this is, visit www.magicnuudles.com)
- Cat litter

Farm to Table Process:

1. Corn in the Field
 - a. Farmers plant corn seeds in early May
 - b. While the seed is growing into a mature plant, the farmer keeps a close eye on the crop to make sure there are no pests or diseases affecting the field and that the plants are receiving adequate water and nutrients
 - c. The resulting corn crop is harvested in November
2. Assembly
 - a. Farmers sell their corn to the local elevator either directly after harvest or after storing it on the farm for some time
 - b. The elevator dries the corn in large dryers so the corn doesn't develop mold while shipping or waiting to be processed
 - c. The corn is then shipped by train or truck to the processor
3. Processing
 - a. One type of processing is wet milling.
 - i. This process separates the kernel into its four basic components: starch, germ, fiber and protein.
 - ii. First the incoming grain is inspected and cleaned
 - iii. Then it is steeped for 30-40 hours to begin breaking the starch and protein bonds.
 - iv. The next step involves a coarse grind to separate the germ from the rest of the kernel.
 - v. The germ is then further refined to extract the corn oil.
 - vi. The remaining slurry consisting of fiber, starch and protein is finely ground and screened to separate the fiber from the starch and protein.

CORN FACT SHEET

- vii. The starch is separated from the remaining slurry and then can be converted to syrup or it can be made into several other products through a fermentation process.
- viii. Once the grain is separated into its components it can be converted into higher value products.
- ix. The starch is also used to make many food products
- b. Another type of processing is dry milling process, which is used to make cornmeal
 - i. The first step in this process is to clean the corn.
 - ii. Then the center part of the kernel, or germ, is removed and the rest of the kernel is dried, cooled, and sifted. A portion of this is used as large flaking grits
 - iii. Further separation is accomplished using roller mills, sifters, grinding tables, and aspirators so that an infinite variety of smaller grits, meals and flours can be produced.
4. Manufacturing
 - a. The final products of the processing stage are used as inputs for manufacturers
 - b. The corn products are used to make the final products that companies sell to consumers
5. The Grocery Store
 - a. You can purchase the corn based products here and take it home with you
6. Consumer
 - a. You either consume the corn food product or you use the corn based non-food item in your household

In-depth/ Complex Questions:

Q: What is the difference between organic and conventionally grown corn?

A: The difference between organic and conventional corn is the way it is produced, not the end product. There is no nutritional difference between products containing organic or conventionally raised corn and no added health benefits of one over the other. One of the common misconceptions about organic farming is that it is pesticide-free. However, organic farms can use pesticides, but they have to be certified for use on organic farms, so the pesticides they use are typically different from the ones used in conventional production. To meet USDA's certified Organic standards:

- Land must have had no prohibited substances applied to it for at least 3 years before the harvest of an organic crop.
- Soil fertility and crop nutrients will be managed through tillage and cultivation practices, crop rotations, and cover crops, supplemented with animal and crop waste materials and allowed synthetic materials.
- Crop pests, weeds, and diseases will be controlled primarily through management practices including physical, mechanical, and biological controls. When these practices are not sufficient, a biological, botanical, or synthetic substance approved for use on the may be used.
- Operations must use organic seeds and other planting stock when available.
- The use of genetic engineering is prohibited.

Q: What exactly is high fructose corn syrup? It's not like natural sugar, right?

A: High fructose corn syrup (HFCS) is a natural sweetener made from corn. HFCS is basically the same as natural sugar in terms of composition and calories. Since both of these sweeteners are so similar the body cannot distinguish between them and treats them in the same way. Once they are absorbed into the blood stream they both deliver the same sugars to the same tissues in the same time frame.

Q: Is there GMO Corn?

A: Yes, there is GMO corn. Genetically modified organisms, or GMOs, are a form of biotechnology where a gene for a desired trait from one plant or organism is used in another plant. Farmers use GMOs to boost efficiency and reduce yield loss or crop damage from weeds, diseases, and insects, as well as from extreme weather conditions, such as drought. Farmers choose to use GMOs to reduce agriculture's impact on the environment — by applying pesticides in more targeted ways, for example. GMOs have traits within the plants that help ward of pests so they allow for fewer pesticides to be applied to each field. Biotechnology saves the equivalent of 521,000 pounds of pesticides each year and helps cut herbicide runoff by 70% (sources: ISAAA, PG Economics).

CORN FACT SHEET

Q: Aren't GMO foods bad?

A: Hundreds of studies have demonstrated that GMOs do not present any health risk. In the years that farmers have grown crops from GM seeds (since around 1994), there has not been a single documented instance of harm to human health resulting from genetic modifications. Testing has shown and FDA review has confirmed that GMOs are nutritionally the same as non-GM crops, including the same levels of key nutrients like amino acids, proteins, fiber, minerals and vitamins. Before they reach the market, crops from GM seeds are studied extensively to make sure they are safe for people, animals and the environment. Today's GMO products are the most researched and tested agricultural products in history.

Q: Do farmers use chemicals on their corn?

A: Farmers are committed to using chemicals safely and effectively. While, they do apply chemicals to help control bugs, weeds and different types of fungus, they work very hard to apply only the necessary amount when it is needed. The chemicals that are used are targeted so they only kill the specific bugs, weeds or fungi that are causing problems. Farmers use technology such as GPS units in tractors and connected to application equipment to ensure only the specific amount of a chemical is applied to the exact area of a field that needs the treatment.

Just 20 to 30 years ago, most farmers were spraying for insects and diseases according to the calendar. Nowadays, corn farmers utilize integrated pest management (IPM) practices. Under IPM techniques, farmers either scout their own fields or hire specialists to look for outbreaks of disease or insect infestations. Scouting activity allows crop inputs to be better targeted: Used exactly when needed, restricted to the specific insect or disease currently threatening damage, and often nipping the pest in its first-generation which keeps it under control for the rest of the year. This is far better than spraying every-other week or by calendar-driven dates as in years gone-by. This is called precision agriculture, and it is a win-win-win for farmers, consumers and the environment.

Q: Do chemicals get in my food from this?

A: The FDA and USDA routinely monitor our food supply for chemical residues and post the results on their websites. There are substantial rules in place about how and when chemicals can be used on foods, which are meant to limit human exposure. All chemicals have a set safety limit that is defined by extensive research. Reports show that these limits are almost never exceeded for food (the program surveys food taken from grocery stores all around the country – it is a huge study). The fact is this: we are exposed to chemicals all the time from the air and water, and in cars, houses and workplaces – and even in things like cosmetics. The amount of exposure from food residues is far less than all of these.

Q: What about Round-Up®? Isn't that in our food?

A: Like other herbicides used in the United States in both organic and conventional agriculture, Round-Up® is regulated and poses no concern with regard to human health. Round-Up® used in farm fields is the same as what is used around homes to control unwanted weeds. Farmers are legally required to wait several weeks after spraying to harvest. This gives the Round-Up® time to wear off, break down, and no longer be effective. On top of that, the spray should not come in contact with the seed, and the amount sprayed is very miniscule. There is nothing different or unusual about Round-Up® in that regard.

Specific to Michigan:

- There are 2.6 million acres of cornfields in Michigan
- In 2013, Michigan produced 348.8 million bushels of corn, worth \$1.4 billion

* Information provided in part by the Corn Marketing Program of Michigan - www.micorn.org

SOYBEAN FACT SHEET

Starter Questions:

Q: Where do soybeans grow in Michigan?

A: Soybeans are grown in almost all counties in the Lower Peninsula of Michigan. There are few soybeans grown in the northern Lower Peninsula and Upper Peninsula.

Q: Are any of these soy products made in Michigan?

A: The Kellogg Company based out of Battle Creek uses soy in many of its cereals. Zeeland Farm Services, near Holland manufactures products from soybeans such as popcorn oil, Zoye® cooking oil, and other food grade products.

Food Products:

- Soy sauce
- Tofu
- Soymilk, ice cream, yogurt and cheeses
- Soy sausages and burgers
- Cereal
- Miso
- Baby foods and infant formula
- Candy
- Flour
- Soy nut butter

Other Products:

Adhesives, antibiotics, automotive parts, bar chain oils, biodiesel, candles, concrete sealers, cosmetics, crayons, degreasers, fabric, fifth wheel grease, fish food, graffiti removers, hand/body lotions, hand sanitizer, inks, insulation, lecithin, livestock feed, lubricants, mattresses, mosquito repellents, nail polish remover, paint, paint removers, pet food, plastics, plywood glue, rubber, skateboard wheels, soap/shampoo, sunscreen, teddy bears, toilet cleaner, truck bed liners, wall boards, wall decorations, wood sealer, yarn and more!

Farm to Table Process:

1. Soybeans in the Field
 - a. Farmers plant soybean seeds in the spring
 - b. While the seed is growing into a mature plant, the farmer keeps a close eye on the crop to make sure there are no pests or diseases affecting the field and that the plants are receiving adequate water and nutrients.
 - c. The resulting mature soybean crop is harvested in the fall
2. Assembly
 - a. Farmers sell their soybeans to the local elevator directly after harvest or after storing them in large bins on the farm for some time
 - b. The elevator stores the soybeans they are to be processed
 - c. The soybeans are then shipped by train or truck to the processor
3. Processing
 - a. Once received by the processor, the soybean hulls (exteriors) are removed
 - b. The hulled beans are crushed and rolled into flakes: oil flakes, white flakes and crude oil.
 - c. The end products of processing are vegetable cooking oil or biodiesel and the by product is soybean meal that is used primarily in animal feed
4. Manufacturing
 - a. The end products of the processing stage are used as inputs for manufacturers
 - b. The soybean products are used to make final goods that companies sell to consumers
5. The Grocery Store
 - a. You can purchase the soybean based products here and take it home with you
6. Consumer
 - a. You either consume the soybean food product or you use the soy based non-food item in your household

SOYBEAN FACT SHEET

In-depth/Complex Questions:

Q: What is the difference between organic and conventionally grown soybeans?

A: Michigan has outstanding soybean growers: both organic and conventional. The difference between organic and conventional soybeans is the way it is produced, not the end product. There is no nutritional difference between products containing organic or conventionally raised soybeans and no added health benefits of one over the other. The healthy factors of soyfoods such as amino acids, isoflavones and protein are similar in both organic and conventional soybeans.

One of the common misconceptions about organic farming is that it is pesticide-free. However, organic farms can use pesticides, but they have to be certified for use on organic farms, so the pesticides they use are typically different from the ones used in conventional production. To meet USDA's certified Organic standards:

- Land must have had no prohibited substances applied to it for at least 3 years before the harvest of an organic crop.
- Soil fertility and crop nutrients will be managed through tillage and cultivation practices, crop rotations, and cover crops, supplemented with animal and crop waste materials and allowed synthetic materials.
- Crop pests, weeds, and diseases will be controlled primarily through management practices including physical, mechanical, and biological controls. When these practices are not sufficient, a biological, botanical, or synthetic substance approved for use on the may be used.
- Operations must use organic seeds and other planting stock when available.
- The use of genetic engineering is prohibited.

Q: Are there GMO soybeans?

A: Michigan produces about 85 million bushels of soybeans per year. According to www.ers.usda.gov, approximately 91% of those soybeans are GMO. Genetically modified organisms, or GMOs, are a form of biotechnology where a gene for a desired trait from one plant or organism is used in another plant. Farmers use GMOs to boost efficiency and reduce yield loss or crop damage from weeds, diseases, and insects, as well as from extreme weather conditions, such as drought. Farmers choose to use GMOs to reduce agriculture's impact on the environment — by applying pesticides in more targeted ways, for example. GMOs have traits within the plants that help ward off pests so they allow for fewer pesticides to be applied to each field.. This technology has been around for the past 20 years, and today, 70-80% of the foods we eat in the U.S., both at home and away from home, contain ingredients that have been genetically modified.

Q: Aren't GMO foods bad?

A: Hundreds of studies have demonstrated that GMOs do not present any health risk. In the years that farmers have grown crops from GM seeds (since around 1994), there has not been a single documented instance of harm to human health resulting from genetic modifications. Testing has shown and FDA review has confirmed that GMOs are nutritionally the same as non-GM crops, including the same levels of key nutrients like amino acids, proteins, fiber, minerals and vitamins. Before they reach the market, crops from GM seeds are studied extensively to make sure they are safe for people, animals and the environment. Today's GMO products are the most researched and tested agricultural products in history. Ingredients grown using GM technology require fewer pesticides, use less water and keep production costs down. In fact, GM technology helps reduce the price of crops used for food, such as corn, soybeans and sugar beets by as much as 15-30%.

Q: Do farmers use chemicals on their soybeans?

A: Farmers are committed to using chemicals safely and effectively. While, they do apply chemicals to help control bugs, weeds and different types of fungus, they work very hard to apply only the necessary amount when it is needed. The chemicals that are used are targeted so they only kill the specific bugs, weeds or fungi that are causing problems. Farmers use technology such as GPS units in tractors and connected to application equipment to ensure only the specific amount of a chemical is applied to the exact area of a field that needs the treatment.

Just 20 to 30 years ago, most farmers were spraying for insects and diseases according to the calendar. Nowadays, soybean farmers utilize integrated pest management (IPM) practices. Under IPM techniques, farmers either scout their own fields or hire specialists to look for outbreaks of disease or insect infestations. Scouting activity allows crop inputs to be better targeted: Used exactly when needed, restricted to the specific insect or disease currently threatening damage, and often nipping the pest in its first-generation which keeps it under control for the rest of the year. This is far better than spraying every-other week or by calendar-driven dates as in years gone-by. This is called precision agriculture, and it is a win-win-win for farmers, consumers and the environment.

SOYBEAN FACT SHEET

Q: Do chemicals get in my food from this?

A: The FDA and USDA routinely monitor our food supply for chemical residues and post the results on their websites. There are substantial rules in place about how and when chemicals can be used on foods, which are meant to limit human exposure. All chemicals have a set safety limit that is defined by extensive research. Reports show that these limits are almost never exceeded for food (the program surveys food taken from grocery stores all around the country – it is a huge study). The fact is this: we are exposed to chemicals all the time from the air and water, and in cars, houses and workplaces – and even in things like cosmetics. The amount of exposure from food residues is far less than all of these.

Q: What about Round-Up®? Isn't that in our food?

A: Like other herbicides used in the United States in both organic and conventional agriculture, Round-Up® is regulated and poses no concern with regard to human health. Round-Up® used in farm fields is the same as what is used around homes to control unwanted weeds. Farmers are legally required to wait several weeks after spraying to harvest. This gives the Round-Up® time to wear off, break down, and no longer be effective. On top of that, the spray should not come in contact with the seed, and the amount sprayed is very miniscule. There is nothing different or unusual about Round-Up® in that regard.

Specific to Michigan:

- In 2013, Michigan produced 83 million bushels of soybeans, worth \$1 billion
- Soybeans are Michigan's #1 food export; \$803 million worth of Michigan soybeans were exported around the world in 2012

* *Information provided in part by the Michigan Soybean Promotion Committee - www.misoybean.org*

WHEAT FACT SHEET

Starter Questions:

Q: Where is wheat grown in Michigan?

A: Wheat is grown in most Michigan counties totaling about 8,000 farmers each year. Michigan Farmers grow soft red and white winter wheat primarily. Michigan's top 5 wheat producing counties are Huron, Sanilac, Lenawee, Tuscola and Saginaw.

Q: Are any of these wheat products made in Michigan?

A: Michigan is home to some major processing companies that turn the state's wheat crop into well-known consumer brands. These companies include Chelsea Milling (the Jiffy® brand), Star of the West, Knappen Milling, King Milling, Mennel Milling, Kellogg Company, Kraft Foods, General Mills and Mondelez International including Nabisco® brands.

Food Products:

- Breakfast cereals
- Flour in baked goods, pretzels, crackers, etc.
- Wheat Berries (kernels)
- Malted wheat for brewing beer

Other Products:

- Livestock feed
- Wheat straw (stalks leftover after harvesting the seedhead is harvest is used as animal bedding)

Farm to Table Process:

1. Wheat in the Field
 - a. Farmers plant wheat in the fall as a field rotation crop.
 - b. The seed begins to grow once planted but when winter hits, the small wheat plants overwinter, or stop growing during the winter. When spring comes, the plants begin to grow again.
 - c. While the seed is growing into a mature plant, the farmer keeps a close eye on the crop to make sure there are no pests or diseases affecting the field and that the plants are receiving adequate water and nutrients.
 - d. The resulting mature wheat crop is harvested in July
2. Assembly
 - a. Farmers sell their wheat to the local elevator or local miller directly after harvest or after storing it in large bins on the farm for some time.
 - b. The elevator stores the wheat that will be processed.
 - c. The wheat is then shipped by train or truck to the processor.
3. Processing
 - a. Once received by the processor, the wheat grains are milled into a flour.
 - b. The end product of processing is an enriched wheat flour. This flour can be sold directly to the grocery store for you to use when baking or it is sold in bulk to food manufacturers.
4. Manufacturing
 - a. The end products of the processing stage are used as inputs for manufacturers
 - b. The wheat flour is used to make final goods that companies sell to consumers
 - c. In Michigan, almost all of the wheat crop is processed into food products within the state
5. The Grocery Store
 - a. You can purchase the wheat based products or flour here and take it home with you.
6. Consumer
 - a. You eat the wheat food product or you use it to cook with.

In-depth/Complex Questions:

Q: What is the difference between organic and conventionally grown wheat?

A: Michigan has outstanding wheat growers: both organic and conventional. The difference between organic and conventional soybeans is the way it is produced, not the end product. There is no nutritional difference between products containing organic or conventionally grown wheat and no added health benefits of one over the other.

One of the common misconceptions about organic farming is that it is pesticide-free. However, organic farms can use pesticides, but they have to be certified for use on organic farms, so the pesticides they use are typically different from the ones used in conventional production. To meet USDA's certified Organic standards:

WHEAT FACT SHEET

- Land must have had no prohibited substances applied to it for at least 3 years before the harvest of an organic crop.
- Soil fertility and crop nutrients will be managed through tillage and cultivation practices, crop rotations, and cover crops, supplemented with animal and crop waste materials and allowed synthetic materials.
- Crop pests, weeds, and diseases will be controlled primarily through management practices including physical, mechanical, and biological controls. When these practices are not sufficient, a biological, botanical, or synthetic substance approved for use on the may be used.
- Operations must use organic seeds and other planting stock when available.
- The use of genetic engineering is prohibited.

Q: Is there GMO wheat?

A: There is no commercially available genetically-modified (GM) wheat in production today.

Q: Do farmers use chemicals on their wheat?

A: Farmers are committed to using chemicals safely and effectively. While they do apply chemicals to help control bugs, weeds and different types of fungus, they work very hard to apply only the necessary amount when it is needed. The chemicals that are used are targeted so they only kill the specific bugs, weeds or fungi that are causing problems.

Just 20 to 30 years ago, most farmers were spraying for insects and diseases according to the calendar. Nowadays, wheat farmers utilize integrated pest management (IPM) practices. Under IPM techniques, farmers either scout(walk through and look for pests) their own fields or hire specialists to look for outbreaks of disease or insect infestations. Scouting activity allows crop inputs to be better targeted: Used exactly when needed, restricted to the specific insect or disease currently threatening damage, and often nipping the pest in its first-generation which keeps it under control for the rest of the year. This is far better than spraying every-other week or by calendar-driven dates as in years gone-by. This is called precision agriculture, and it is a win-win-win for farmers, consumers and the environment.

Q: Do chemicals get in my food?

A: The FDA and USDA routinely monitor our food supply for chemical residues and post the results on their websites. There are substantial rules in place about how and when chemicals can be used on foods, which are meant to limit human exposure. All chemicals have a set safety limit that is defined by extensive research. Reports show that these limits are almost never exceeded for food (the program surveys food taken from grocery stores all around the country – it is a huge study). The fact is this: we are exposed to chemicals all the time from the air and water, and in cars, houses and workplaces – and even in things like cosmetics. The amount of exposure from food residues is far less than all of these.

Q: What is gluten, and why do some people have a gluten intolerance?

A: Gluten is a mixture of two proteins found in wheat that causes the elasticity that is desirable in most doughs and baked products. Gluten is common in the diets of U.S. consumers and is present in wheat, barley, rye and other related grains. Some consumers have a more extensive medical condition in which they have an intolerance or a sensitivity to Gluten. The most serious issue is when someone has Celiac Disease, in which consumption of gluten causes a person's immune system to react by damaging the small intestine lining. Then the body cannot absorb nutrients properly, and the person may have diarrhea or constipation, abdominal pain, and skin rashes, and be irritable or depressed. Doctors diagnose celiac disease with a blood test and a biopsy of the small intestine and by checking whether symptoms of the disease go away when the person goes on a gluten-free diet. In reality, only about 1% of the U.S. population has celiac disease that requires them to follow a diet free of wheat and other gluten containing grains.

Q: Do people have allergies to wheat?

A: Yes, there are individuals that are allergic to wheat, just as someone can be allergic to a cat or flower pollen.

* Information provided in part by the Michigan Wheat Program - www.miwheat.org

POTATO FACT SHEET

Starter Questions:

Q: Where are potatoes grown in Michigan?

A: Potatoes are grown in 28 of Michigan's 83 counties. Almost all of the state of Michigan has good conditions for growing potatoes. They are grown all over northern lower peninsula from Kalkaska to Alpena, near the thumb, in the center of the state in Mecosta and Montcalm counties, the west end of the UP and sprinkled throughout the southern lower peninsula.

Q: Are any of these potato products made in Michigan?

A: More than half of the potatoes grown in Michigan become potato chips. Better Made Snack Foods, Great Lakes Potato Chips and Uncle Ray's are the biggest potato chip companies in Michigan. Many of the potatoes for chipping are sold to chip companies in Ohio and Pennsylvania since it is cheaper to get them from Michigan than to be shipped from out west. Some of the chip companies are Utz, EK Bare, Snyder's-Lance and Herr. Many of the fresh potatoes that you find at your local grocery are grown in Michigan. If you find a bag of Russet Potatoes that doesn't say Idaho on the label, there is a good chance it is grown in Michigan.

Food Products:

- Fresh potatoes (mashed, pan fried, boiled, or roasted)
- Frozen potatoes (hash browns, french fries and tater tots)
- Potato chips
- Canned potatoes (soups and diced)

Other Products:

- Potatoes that are too big or too small to be sold in the fresh market are sometimes donated to shelters or food banks.
- Some farmers who raise livestock buy the lower quality potatoes and use them as part of their animal feed

Farm to Table Process:

1. Growing
 - a. In the spring farmers plant whole or cut potatoes
 - b. Some potato farmers actually grow seed potatoes because planting seeds from one potato plant won't necessarily grow the same variety that was planted, so the resulting "seed potatoes" are cut up or wholly planted by the growers that produce all of the state's crop.
 - c. Near the beginning of fall the farmers dig up the mature potato crop and take them to storage
 - d. Farmers have figured out how to keep potatoes fresh for up to 9 months, depending on the variety.
2. Processing
 - a. Fresh potatoes are taken from storage then cleaned and bagged
 - b. These bagged potatoes weigh anywhere from 5-100 pounds and are then sold on the fresh market
3. Manufacturing
 - a. The cleaned and bagged potatoes are used by the food service sector (restaurant or schools)
 - b. Most fresh potatoes in Michigan are used as an input for the chipping industry. The potatoes are shipped to a potato chip plant that washes, slices, cooks and bags the chips that are then sent to the store
4. The Grocery Store
 - a. You can purchase the freshly bagged potatoes that came straight from the processing stage
 - b. Or you can buy one of the products that used the fresh potatoes as an ingredient in their food product
5. Consumer
 - a. You take your purchased potato product home and consume it

POTATO FACT SHEET

In-depth/Complex Questions:

Q: Are there GMO potatoes?

A: There is a GMO potato that was recently approved by the USDA that does not turn brown when cut. What is unique about the technology used is they took genes from a wild potato and inserted them into a domestic potato. The industry is still determining how these potatoes will fit in the marketplace. There is a very slim chance that a potato with this technology will be grown, regardless of if consumers are buying potatoes or potato based products.

Q: Do farmers use chemicals on their potatoes?

A: Farmers do use chemicals as they grow potatoes to ensure that diseases like those that caused the Irish Potato Famine don't destroy their crop. Farmers use modern technology to determine when chemical use is needed, including computer models that predict the probability of a virus or bacteria being present and a variety of scouting practices including walking through their fields weekly to detect problems. Then, if needed, they apply government approved chemicals at the lowest possible rates to ensure they control the disease or pest.

Q: Do chemicals get in my food?

A: Crop protectants applied to potato plants in a field do not touch the potatoes eaten by consumers, since they grow underneath the soil. In storage, the tubers (potatoes) may be treated with a product to control sprouts from growing. When these potatoes are sold to stores they are always washed before being packaged and may be sprayed with clove oil to stop sprouting while in the store.

Specific to Michigan:

- In 2013, Michigan produced 17.2 billion pounds of potatoes, worth \$1 billion
- Potatoes were Michigan's leading produce commodity in 2013, generating \$207.6 million in farm gate sales from farms
- Michigan is the nation's leading producer of potatoes for potato chip processing
- Montcalm county is the largest potato producing county in Michigan

* Information provided in part by the Michigan Potato Industry Commission - www.mipotato.com

MICHIGAN COMMODITY FACT POSTERS

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MICHIGAN FARM BUREAU PROMOTION & EDUCATION

Tonia Ritter tritter@michfb.com • 517. 679.5345

Amelia Miller amille2@michfb.com • 517.679.5688

www.miagclassroom.org