



Dear Wisconsin Agricultural Educator:

Thank you for your interest in information for your students about the Wisconsin Dairy Industry. Wisconsin Milk Marketing Board is pleased to provide valuable resources to assist with lessons about the Wisconsin Dairy Industry and cheesemaking for your classroom.

Please review the following resources:

- www.dairyimpact.com/DairyImpactFacts
- www.eatwisconsincheese.com
- www.eatwisconsincheese.com/cheese/cheesecyclopedia.aspx
- www.eatwisconsincheese.com/wisconsin/travelers_guide.aspx
- DVD: America's Dairyland: Now and into the Future
- DVD: Living on the Wedge
- DVD: Art of Cheesemaking

Included with these materials are four suggested lesson plans to guide you as you teach the production and marketing of cheese. Discuss the impact that the dairy industry has on our state's economy. Use the DVDs and websites as instructional tools and resources.

Enjoy the materials and lessons with your students.

Sincerely,

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LESSON #1

America's Dairyland: Now and into the Future



Grade Level: 9-12

Length of Lesson: 50 minutes

Subject area: Agriculture/Science/Agri-science

Topic: Dairy's impact on Wisconsin

Materials Needed:

- DVD: America's Dairyland: Now and into the Future
- DVD student handout
- Website: www.dairyimpact.com/DairyImpactFacts
- Website: www.eatwisconsincheese.com

Objectives:

- Students will learn the financial impact of dairy on Wisconsin
- Students will understand the business of Wisconsin cheesemaking and the economic impact it has on the state
- Students will be able to identify 3 facts that make Wisconsin "America's Dairyland"

Lesson Context:

This lesson gives students background information on the dairy industry in Wisconsin and its economic impact. It lays the groundwork for further investigation into the history of Wisconsin cheesemaking, how cheese is made, and the importance of cheese to our state's economy.

Lesson Procedure:

1. Initiate a discussion about the dairy industry in Wisconsin by asking students the following questions:
 - What percentage of Wisconsin farms are family owned? (99%) Why is this important?
 - What impact do dairy farms have on the local economy? (Jobs created by dairy businesses bring long-term stability. Most revenue created by dairy farms stays within the community)
2. Name ways that dairy farming impacts the average Wisconsinite?
 - Generates \$20.6 billion a year and accounts for more than 40% of jobs in the agricultural sector.
 - Creates jobs, supports local communities and preserves the natural beauty of our landscape.
3. Why is Wisconsin called, "America's Dairyland?"
 - Wisconsin is home to more cows than any other state
 - We are the #1 cheesemaker in the country
 - Home to 1200 licensed cheesemakers and the only state with a Master Cheesemaker® Program
 - Some of the world's leading dairy-related companies, employing thousands of residents, are headquartered here. Ex: Sargento Cheese/ABS Global
 - First in number of organic and grass-based farms
4. Introduce the DVD, America's *Dairyland: Now and into the Future* and handout worksheets.

- Ask students to complete worksheets while watching the DVD and to be prepared to discuss the DVD and their answers.
5. Discuss the DVD using student worksheet responses.
 6. Assignment: Students review the following websites and familiarize themselves with the contents of each one:
www.dairyimpact.com/DairyImpactFacts
www.eatwisconsincheese.com
www.eatwisconsincheese.com/wisconsin

Assessment:

Assessment will be based on student discussion and class participation. Students should be able to express an understanding of the economic impact that dairy has on Wisconsin and the relationship that dairy farms have with the local communities in which they reside.

Name: _____

Lesson 1

AMERICA'S DAIRYLAND

Now and into the Future



Answer the following questions while watching the DVD.

1. How much money does the Wisconsin Dairy Industry pump into our state's economy?
2. In one year, how much income can one cow generate?
3. Name 2 ways in which dairy is an integral part of the Wisconsin economy.
4. Name 3 reasons why Wisconsin is a special place for dairy farms.
5. Wisconsin is home to approximately how many dairy farms?
6. Why is Wisconsin the best place to make cheese?
7. Identify 3 things that will keep the Wisconsin Dairy Industry growing into the future.
8. How are nutrient management practices on dairy farms protecting our land and water resources?
9. What has revolutionized the milking process?
10. How can dairy farms be a source of renewable energy?

AMERICA'S DAIRYLAND

Now and into the Future



• ANSWER GUIDE •

1. How much money does the Wisconsin Dairy Industry pump into our state's economy?

Over 20 billion dollars

2. In one year, how much income can one cow generate?

\$17,000

3. Name 2 ways in which dairy is an integral part of the Wisconsin economy.

**Trucks transporting finished products or milk to processors
Employees at processing facility, farmers, on farm suppliers**

4. Name 3 reasons why Wisconsin is a special place for dairy farms.

**Resources: water, soil, weather
Infrastructure: feed companies, veterinarians, nutrient consultants
Diversity: Hills and valleys, central sands provides opportunity to grow different crops and have a variety of dairy farms**

5. Wisconsin is home to approximately how many dairy farms?

14,000

6. Why is Wisconsin the best place to make cheese?

Infrastructure: knowledge of cheesemakers, equipment manufacturers, ingredient manufacturers

7. Identify 3 things that will keep the Wisconsin Dairy Industry growing into the future.

**Production agriculture: cropping, milking, how we feed and handle cows
Genetics
Rotational grazing**

8. How are nutrient management practices on dairy farms protecting our land and water resources?

Monitoring every nutrient that goes on the fields and what comes off and by putting only the nutrients that you need to grow whatever crops you need the next year.

9. What has revolutionized the milking process?

Computerized technology

10. How can dairy farms be a source of renewable energy?

Manure is being turned into renewable energy through the use of biodigesters

LESSON #2

Wisconsin's Cheese Heritage



Grade Level: 9-12

Time: 50 minutes

Subject Area: Agriculture/Science/Agri-science

Specific Topic: The History of Wisconsin Cheese

Materials Needed:

- DVD: **Art of Cheesemaking**
- Website: www.eatwisconsincheese.com
- Website: www.eatwisconsincheese.com/cheese/cheesecyclopedia.aspx
- Order *Wisconsin Cheese Variety Guide* through www.eatwisconsincheese.com website

Objectives:

- Students will understand how cheese is made
- Students will understand the reasons and resources that make Wisconsin the leader in cheesemaking
- Students will learn about the many varieties of cheese and what makes each one unique

Lesson Context:

This lesson will introduce the students to the art of cheesemaking. Through the viewing of the DVD, researching various websites, and classroom discussion, students will become familiar with the specific steps to cheesemaking, along with the necessary resources needed to produce high quality cheeses and understand why Wisconsin leads the country in cheesemaking.

This lesson will assist students in understanding the following:

- Why European cheesemakers chose Wisconsin to craft their cheeses
- Reasons why Wisconsin creates more award winning cheeses than any other state
- How milk is graded
- Master Cheesemaker program
- Vocabulary: curd, whey, bacteria, lactose, casein, rennet, raw milk, pasteurization, homogenization, starter culture
- What symbol is used to identify Wisconsin cheese (arm holding cheese with the words, "Wisconsin Cheese")

Lesson Procedure:

1. Initiate a discussion about cheese and how it is made by asking students the following questions:
 - What is the primary ingredient of cheese? (milk)
 - Why did European immigrants choose Wisconsin to bring their expertise in cheesemaking? (lush pastures, quality of milk, reminded them of their homelands)
 - How much milk does it take to make one pound of cheese? (10 pounds)
 - How many cheeses do we make in Wisconsin? (over 600 varieties, types and styles)
 - What is the difference between curds and whey? (curds: milk solids/ whey: liquid)
 - What does "cured" mean? (aged) Are all cheeses cured for the same amount of time? (no)
2. Introduce the DVD, "Art of Cheesemaking" and handout worksheets.
3. Ask students to complete the worksheets while watching the DVD and to be prepared to discuss the DVD and their answers.
4. Show DVD (Approximately 13 minutes)
5. Discuss DVD using student worksheet responses

Assignment:

- A. Divide class into groups and assign each group a cheese variety from the 8 categories found at www.eatwisconsincheese.com/cheese/cheesecyclopedia.aspx
- B. Assign each student in each group to bring in a different sample of a **Wisconsin** cheese from their assigned group. (Example: **Group: Soft/Fresh**- samples would include-Cottage cheese, Cream cheese and Neufchatel, Feta, Mascarpone, Queso Blanco, Queso Fresco and Ricotta)
- C. One pound of cheese can easily be cut into 30-40 pieces
- D. Assign each group to provide a description/explanation of their category
- E. Assign each student to provide the following information about their cheese:
 - Describe the appearance (color, texture)
 - Characteristics and flavor
 - Serving suggestions/food pairings

Assessment:

Assessment will be based on student discussion and class participation.
Students should be able to express an understanding of how cheese is made.

THE ART OF CHEESEMAKING



Answer the following questions while watching the DVD.

1. Why did European cheesemakers choose Wisconsin to craft their cheese?

2. Name the 2 resources that cheesemaking requires.

3. Name the 4 areas that cheese graders consider when evaluating cheese.

4. Describe the Master Cheesemaker Program and identify one requirement to participate.

5. Name the 2 things that the process of cheesemaking depends on.

6. How many pounds of milk are needed to make one pound of cheese?

7. What are starter cultures?

8. What are curds and whey?

9. What role does salt play in the cheesemaking process?

10. What is *affinage*?

THE ART OF CHEESEMAKING



• ANSWER GUIDE •

1. Why did European cheesemakers choose Wisconsin to craft their cheese?
Lush pastures, quality of milk, limestone filtered water
2. Name the 2 resources that cheesemaking requires.
Intense labor, craftsmanship/skill, and lots of time
3. Name the 4 areas that cheese graders consider when evaluating cheese.
Flavor
Body and texture
Color
Finish and appearance
4. Describe the Master Cheesemaker Program and identify one requirement to participate.
Classes and apprenticeships/highest most rigorous training
Must have 10 years of cheesemaking experience
5. Name the 2 things that the process of cheesemaking depends on.
Skill of cheesemaker
Highest quality of milk
6. How many pounds of milk are needed to make one pound of cheese?
10 pounds
7. What are starter cultures?
Favorable bacteria that contribute to flavor and texture in cheeses
8. What are curds and whey?
Curd is the solid produced from milk by the addition of rennet
Whey is the excess liquid removed in cheesemaking
9. What role does salt play in the cheesemaking process?
It lowers the moisture, enhances flavor and prevents over ripening
10. What is *affinage*?
Aging or curing

LESSON #3

A Taste of Wisconsin



Grade Level: 9-12

Length of Lesson: 50 minutes (possible 2 classes)

Subject Area: Agriculture/Science/Agri-science

Topic: Tasting Wisconsin cheeses

Materials Needed:

- Student group cheese information
- Student cheese samples
- Student cheese sample information
- Traveler's Guides-ordered ahead of time at:
www.eatwisconsincheese.com/wisconsin/travelers_guide.aspx

Objectives:

- Students will understand how cheeses are categorized
- Students will learn about the varieties of cheeses and explain what makes them unique
- Students will taste a variety of cheeses
- Students will identify Wisconsin cheesemakers who make specific cheeses and the location of their cheese plants

Lesson Context:

This lesson provides students with an opportunity to taste and experience a wide variety of cheeses produced in Wisconsin.

Lesson Procedure:

1. Choose a group to present their cheese category and all information related to that specific category.
2. One by one, have the students from the group pass out their cheese sample and share with the class the following information:
 - Name of the cheese
 - Appearance of the cheese (color, texture)
 - Flavor characteristics of the cheese
 - Serving suggestions/food pairings
 - Optional: Identify a specific cheesemaker and location of a cheese plant
3. Continue having the rest of the groups/students present their information and cheeses
4. Discuss students' preferred cheeses and have them explain why
5. Have students vote on their favorite cheese

Assessment:

Assessment will be based on student's ability to bring in cheese samples, research and collect information along with their class presentations.

LESSON #4

Living on the Wedge/Artisan Cheesemaking



Grade Level: 9-12

Length of Lesson: 50 minutes

Subject Area: Agriculture/Science/Agri-science

Topic: Production to Marketing

Materials Needed:

- Living on the Wedge (DVD)
- Student worksheet (optional)

Objectives:

This class is a culminating lesson that reviews:

- The impact that cheese has on Wisconsin's economy
- How cheese is made
- Varieties and characteristics of Wisconsin cheeses

Lesson Context:

This lesson will provide a summary of the past lessons and activities. Begin with a review of the cheese tasting activity and finish with a discussion of the economic impact of cheese on Wisconsin's economy and the ways in which we market Wisconsin cheeses.

The DVD provides a good review of the past lessons.

Assessment:

Assignments turned in
Classroom participation
Cheese tasting participation

LIVING ON THE WEDGE



Answer the following questions while watching the DVD.

1. What is the cheese lover's highway?

2. Name 5 cheese plants/stores visited and one cheese they make or highlight:

Name	Location	Cheese Produced

3. What is used as "acid-control" in the cheese?

4. What coagulates milk into curds?

5. Why is salt applied to the outer layer of the Pleasant Ridge Reserve Cheese?

6. What is affinage? Why is it used?

7. Why are cheeses washed?

8. What is the process of cheddaring?
9. In Wisconsin, what role did the glaciers play in cheese?
10. Name at least 2 factors cheeses are judged on.
11. What type of cheese is tied in "tidy" little knots?
12. Why are all artisan cheeses different?
13. Why are there holes pierced into the blue cheese?
14. How much cheese does the average American eat in one year?
15. Where does the celebration of Cheese Days take place? What events occur at Cheese Days?
16. How many licensed cheesemakers are in Wisconsin?
17. Name 2 breeds of dairy cows Bert Paris milks.
18. Name 2 benefits to grazing cows.
19. What makes goat milk so white?

LIVING ON THE WEDGE



• ANSWER GUIDE •

1. What is the cheese lover's highway?
Highway I-94 through Wisconsin

2. Name 5 cheese plants/stores visited and one cheese they make or highlight:

Name	Location	Cheese Produced
Larry's Market	Brown Deer	Pleasant Ridge Reserve/Wide variety of Artisan cheeses
Uplands Dairy	Pleasant Ridge	Pleasant Ridge Reserve
Carr Valley	LaValle	50 different cheeses American originals
United State Cheese Championship	Milwaukee	Champions!
Crave Brother's Cheese	Waterloo	Mozzarella, Les Frères, Mascarpone
Hook's Cheese	Mineral Point	Blue Cheese

3. What is used as "acid-control" in the cheese?
The culture added to the milk in the beginning of the cheesemaking process

4. What coagulates milk into curds?
Rennet

5. Why is salt applied to the outer layer of the Pleasant Ridge Reserve Cheese?
It is the first part of the aging process. It dries the whey out of the cheese for preservation and flavor

6. What is affinage? Why is it used?
Aging or curing
Cheese is aged in affinage rooms where the humidity and temperature is regulated
"What cheesemakers do in the dark"

7. Why are cheeses washed?
Cheeses are washed with a brine to prevent bad bacteria and molds from growing on the cheese surface.

8. What is the process of cheddaring?
Instead of using a pressing table, thick slabs of curd are repeatedly stacked and turned to remove the most amount of whey. "The original cheese whey-loss program"

9. In Wisconsin, what role did the glaciers play in cheese?
Glaciers created a variety of soils and plants that now influence the flavors of the cheese.

10. Name at least 2 factors cheeses are judged on.

Texture

Flavor

11. What type of cheese is tied in "tidy" little knots?

Mozzarella/String cheese

12. Why are all artisan cheeses different?

Every batch is different and cannot be duplicated

13. Why are there holes pierced into the blue cheese?

Assists mold spores to start growing and allows the air to activate blue molds

14. How much cheese does the average American eat in one year?

31 pounds

15. Where does the celebration of Cheese Days take place? What events occur at Cheese Days?

Monroe, Wisconsin

Traditional cheese making

Many eating/tasting opportunities

16. How many licensed cheesemakers are in Wisconsin?

1,225 licensed cheese makers

17. Name 2 breeds of dairy cows Bert Paris milks.

Holstein, Jersey, Milking Shorthorn, Dutch Belted, Normandy

18. Name 2 benefits to grazing cows.

They pick the feed, easier to harvest feeds

Exercise for cows

Grass flavors milk that flavors cheese

19. What makes goat milk so white?

Lack of carotene