Understanding the Importance of Agriculture to Society

Unit A. Agricultural Literacy

Problem Area 2. Recognizing the Role of Agriculture in Society

Lesson 2. Understanding the Importance of Agriculture to Society

New Mexico Content Standard:

Pathway Strand: Natural Resources and Environmental Systems

Standard: **I:** Recognize importance of resource and human interrelations to conduct management activities in natural habitats.

Benchmark: **I-A:** Identify resource management components to establish relationships in natural resource systems.

Performance Standard: **1.** Identify natural resources. **2.** Identify organizations and agencies involved in resource management. **3.** Identify impacts by humans on natural resources. **4.** Describe ecosystem relationships.

Student Learning Objectives. Instruction in this lesson should result in students achieving the following objectives:

1. Define quality of life.

2. Discuss modern agriculture's role in basic human nutrition.

3. List agricultural products used to provide food.

4. Identify agricultural products used to provide clothing.

5. Identify agricultural products used to provide human shelter.

List of Resources. The following resources may be useful in teaching this lesson:

Recommended Resources. One of the following resources should be selected to accompany this lesson:

> Herren, Ray. *Exploring Agriscience*. Albany, New York: Delmar Publishers, 1997. (Chapters 9, 11, and 13)

> Morgan, Elizabeth M., et al. *AgriScience Explorations*, Second Edition. Danville, Illinois: Interstate Publishers, Inc., 2000.

Other Resources. These resources may be useful to teachers and students:

> Crunkilton, John R., et al. *The Earth and AgriScience*. Danville, Illinois: Interstate Publishers, Inc., 1995. (Chapters 4–7)

> *Food Science, Safety and Nutrition*. Alexandria, Virginia: National Council for Agricultural Education. (Units 1 and 13)

> Lee, Jasper S. and Diana L. Turner. *AgriScience,* Third Edition. Danville, Illinois: Interstate Publishers, Inc., 2003. (Chapter 1)

> Seperich, George J., *Food Science and Safety*. Danville, Illinois: Interstate Publishers, Inc., 1998.

List of Equipment, Tools, Supplies, and Facilities

> Writing surface
> Overhead projector
> Transparencies from attached masters
> Dark-colored paper plates
> A solid fat (such as Crisco)

Terms. The following terms are presented in this lesson (shown in bold italics):

> Aquaculture
> Beef
> Conifer
> Deciduous tree
> Exports
> Food Guide Pyramid
> Forestry
> International trade
> Imports
> Lamb
> Mutton
> Natural fiber

Nutritional groups
Pork
Poultry
Pulp
Quality of Life
Seasoning
Swine
Synthetic Fibers

Interest Approach. Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A sample approach is given here.

Before class, mass 55 grams, 39 grams, 22 grams, and 12 grams of a solid fat, such as Crisco, onto separate dark-colored paper plates. Set the containers out of sight. These amounts represent the amount of fat in each of the food items listed below. When the class arrives, talk about fast food. Have the students pick their favorite food item from the four choices listed below.

1. *A bacon cheeseburger from Burger King*

2. *A hamburger from Burger King*

3. *A chocolate shake from Dairy Queen*

4. *A baked fish from Long John Silvers*

After they have picked their favorite, bring out the plates to show the grams of fat. Use this as a basis for introducing human nutrition and agriculture's role in it.

Summary of Content and Teaching Strategies

Objective 1: Define quality of life.

Anticipated Problem: What is meant by quality of life?

  I. Agriculture is important in the quality of life people enjoy.

    A. *Quality of life* includes adequate supplies of basic needs like food, clothing, and shelter.

    B. Agriculture provides food, clothing, and shelter. It helps people to enjoy a higher quality of life.

    C. The U.S. is a strong nation that produces an abundance of nutritional food, an ample supply of fibers for clothing, and material for the construction of homes.

      1. Americans spend only 11% of their total income on food. This compares to 70% in other countries.

      2. This allows for more money to be spent on clothing, housing, and entertainment.

D. Agriculture helps meet our needs and the needs of millions of people in other countries. *International trade* is buying and selling commodities by two or more nations.

   1. Goods sold to or in another country are **exports**. Examples of agriculture exports are corn, rice, soybeans, wheat, poultry, and cotton.

   2. **Imports** are products bought from another nation. Imports include bananas, cocoa, vanilla, shrimp, and coffee.

E. Agriculture provides jobs for more people than any other industry in the United States. Approximately 16 out of every 100 people in the U.S. work in agriculture.

Many techniques can be used to help students master this objective. Students need text materials to help understand the concept of quality of life. Have students read the first section of chapter 4 in the AgriScience Explorations textbook. Lead the class in a discussion of the lesson content. Summarize the content on the classroom writing surface. Use student questions to form the basis for any concepts that need to be retaught.

Objective 2: Discuss modern agriculture's role in basic human nutrition.

Anticipated Problem: What role does modern agriculture play in basic human nutrition?

II. Advancements in fertilizers, crops, and technology have resulted in the production of more food. Today, one American farmer feeds over 130 people.

A. Consumers have a year-round wide selection of agricultural products at the local grocery store. Even with all of the nutritious food available, most consumers do not make the right choices. Americans consume foods that are high in fat, salt, and sugar.

B. The **Food Guide Pyramid** is a tool to help people make healthy eating choices.

   1. The Food Guide Pyramid was developed by the United States Department of Agriculture and the Department of Health and Human Services. It is made up of ***nutritional groups***, which are the main types of food recommended for consumption. The nutritional groups include:

      a. Bread

      b. Fruit

      c. Vegetables

      d. Milk

      e. Meat

C. Healthy eating choices depend on factors other than food:

   1. Age

   2. Activity level

   3. Gender

   4. Body size

D. Nutritional fact labels must be present on all food products except raw single-ingredient products. Nutritional fact labels were created by our government to help consumers follow a well-balanced diet.

Provide students with copies of suggested resources. Have them read the "Agriculture Provides Nutrition" section in Chapter 4 of AgriScience Explorations. Display TM: A2–2A to help students understand the Food Guide Pyramid. Use TM: A2–2B to demonstrate the types of foods that make up the nutritional groups in the Food Guide Pyramid. Display TM: A2–2C to demonstrate a nutritional fact label and the type of information it contains.

Objective 3: List agricultural products used to provide food.

Anticipated Problem: What agricultural products are used to provide food?

II. Agricultural products used to provide food include:

A. Grain—
   1. Grain crops are grown throughout the United States, with the greatest region of production in the Midwest.
   2. Grain crops are used for bread, pasta, rice, cereal, and many other food products.
   3. Wheat and rye are two important examples of grains.

B. Fruit—
   1. Citrus is grown in California and Florida and imported from Mexico and South America.
      a. Citrus grown in the United States includes oranges, grapefruit, tangerines, tangelos, lemons, and limes.
      b. Most of the fruit crop is sold as fresh fruit, and the rest is processed for juices.
   2. Blueberries are predominantly grown in Michigan.
   3. Apples are grown in Washington, New York, Michigan, and California. About half of the apples produced are marketed fresh and the rest are processed into juice, jellies, pies, and other products.
   4. Cranberries are widely grown in New England.

C. Vegetables—
   1. Cool weather crops, such as lettuce and broccoli, are grown in northern states in the summer and in the southern states during the winter.
   2. Most warm weather vegetables are grown in California and Florida.
   3. Many vegetables consumed in the U.S. are imported from South America and Mexico.

D. Milk—
   1. Dairy foods are made from milk.
   2. Most milk comes from cattle on dairy farms.
   3. Another source of milk is from goats.

4. Leading milk production states are California and Wisconsin.

E. Meat—

1. Meat includes poultry, beef, pork, fish, and lamb.

    a. ***Poultry*** includes any domesticated birds grown for food.

        (1) The most poplar poultry is chicken followed by turkey.

        (2) Chickens also produce most of the eggs consumed in this country.

    b. ***Beef*** is meat from cattle. It is prepared into popular dishes like steak and hamburger.

    c. ***Pork*** is the meat of swine.

        (1) ***Swine*** is the plural term used to define hogs and pigs.

        (2) Pork chops and bacon are two popular forms of pork.

    d. ***Aquaculture*** is the production of aquatic plants and animals for food.

        (1) Fish are being farmed in oceans, streams, lakes, ponds, and raceways.

        (2) Fish are harvested, processed, and prepared for the fresh or frozen market.

    e. ***Lamb*** refers to meat from a sheep that is less than a year old.

        (1) ***Mutton*** refers to meat from a sheep that is over a year old.

        (2) Compared to beef, chicken, and pork, Americans eat relatively little lamb and mutton.

F. Nuts—

1. Each year in the United States 430,000 tons of nuts are produced.

2. There are four major types of nuts with commercial importance—almonds, pecans, walnuts, and filberts.

3. Nuts are removed from a tree by a machine that gently shakes the tree. The nuts are then picked up form the ground by a nut sweeper.

Provide students with copies of the suggested resources. Have students read the "Food Production" section in Chapter 4 of AgriScience Explorations. Summarize the content for this objective on the classroom writing surface. Ask the class to list the foods they have eaten that day in the various categories. Try to demonstrate the categories that are being missed in the diets of the students!

Objective 4: Identify agricultural products used to provide clothing.

Anticipated Problem: What agricultural products are used to provide clothing?

III. Clothing is made form natural and synthetic fibers. A ***natural fiber*** is from a plant or animal. ***Synthetic fibers*** are manufactured from petroleum and other substances.

A. Cotton is a shrub-like perennial plant (cultivated as an annual plant). It requires a long growing season and warm temperatures.

1. Leading states in the production of cotton are California, Texas, Arizona, and the states of the lower southeast.

2. Cotton is picked by large machines that use rotating fingerlike projections on rotating drums to remove the lint from the bolls. The lint is then taken to a gin to remove the seeds. (The seeds can be pressed and used for cooking oils). The cotton is cleaned and the lint is pressed into 500-pound bales. It is then graded and stored or sent to a mill.

B. The flax plant produces fibers used in making a high quality cloth called linen.

1. This popular cloth is used for making tablecloths, napkins, and clothing.

2. The flax plant requires climates with plenty of rain and moderate temperatures. Most of today's flax is grown in Europe and New Zealand. However, North and South Dakota and Minnesota produce substantial amounts of flax.

3. Flax plants grow to a height of about 3 feet and before they are harvested. Linen comes from the fibers (bast fibers) that make up the phloem of the plant.

4. Fibers are removed from the stem by soaking the stem in warm water.

5. When the phloem fibers are removed, they are rolled and later combed to be spun into yarn.

6. The seeds of the flax plant are pressed for linseed oil. This oil is used in making paints and varnishes.

C. Kenaf is a relatively new crop used to make cloth and paper.

D. Jute is used to make burlap.

E. Hemp and sisal are coarse fibers used in making rope.

F. Wool and fur are two animal fibers used in making clothing.

1. Sheep and goat fleece are two sources of wool. The sheep and goat fleece are sheared, cleaned, dyed, and woven into thread.

2. Angora goat–grown fleece is woven into mohair. It is used to make soft blankets and clothing.

3. Fur is used to make coats, hats, and other clothing. Rabbit and mink are two common sources of furs used in clothing.

G. Much of the cloth produced today is manufactured from petroleum. This process was developed in the first half of the 20th century. Petroleum is processed into long fibers that are used to make cloth such as rayon, nylon, and polyester. Synthetic fibers tend to be more wrinkle resistant and durable, but cannot match the comfort of natural fibers. Today, cloth is generally a blend, or a combination of artificial and natural fibers. Blended cloth is durable yet has the comfort of natural fibers. This also makes us less dependent on imported petroleum.

Provide students with copies of the suggested resources. Have them read the "Agriculture Provides Clothing" section in Chapter 4 of AgriScience Explorations. Summarize the content on the classroom writing surface. Have the class read the labels in their clothing. Depending on the clothing and the time of year, students' should be able to identify a number of agricultural products used in making the clothing. Let this exercise lead to a discussion of the important role agricultural products play in providing people with adequate clothing.

Objective 5: Identify agricultural products used to provide human shelter.

Anticipated Problem: What agricultural products are used to provide shelter?

IV. *Forestry* is the science of planting, caring for, and harvesting trees. In the United States there are 736.7 million acres of forest land. Forestry products are made into many kinds of lumber, plywood, particle board, veneer, and paper. These products are used in many ways—shelter being the most important.

  A. Forestry products are grouped by the types of trees harvested. The two major types of trees are hardwood and softwood.

    1. Hardwood trees are deciduous trees. A *deciduous tree* sheds its leaves in the winter.

    2. Softwood trees are conifers. *Conifers* are evergreen trees that usually have cones and needles instead of leaves.

  B. Lumber is made by sawing logs into boards. Logs are the large stems of trees that require many years to grow. Trees are cut down (felled) and cut into log-lengths. Most logs are 12 to 20 feet.

    1. At a saw mill logs are cut into boards and graded. Most logs are sawed into lumber while still green. Lumber must be seasoned. *Seasoning* is the natural or artificial drying of lumber.

      a. Natural drying involves stacking lumber so that air can move between the pieces.

      b. Artificial drying involves using heat to speed up the drying process.

    2. Lumber is then smoothed and sized by planing. Planing removes the roughness resulting from sawing.

    3. Some of the lumber is treated with chemicals to make it resistant to rot and insect damage. Lumber that is used for outdoor structures is often pressure treated with such chemicals.

  C. Smaller trees are used to make paper. Paper is made by breaking wood into smaller pieces and cooking the pieces in a chemical bath. These smaller pieces are called *pulp*. The steps in making paper are:

    1. Pulp is screened and washed.

    2. The mixture of pulp and water is spread over a meshed wire to drain.

    3. The remaining mat of fibers is then rolled and dried.

    4. The fibers bond together during the drying process.

Provide students with copies of the suggested resources. Have them read the "Forestry Provides Shelter" section in Chapter 4 of AgriScience Explorations. Display TM: A2–2D to help students understand the various products that are derived from trees. Use TM: A2–2E to demonstrate the products that are derived from a sawlog.

Review/Summary.
Focus the review and summary of the lesson around the student learning objectives. Call on students to explain the content associated with each objective. Use

their responses as the basis for determining any areas that need reteaching. Questions at the end of each chapter in the recommended textbooks may also be used in the review/summary.

Evaluation. Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as a written test. A sample written test is attached.

Answers to Sample Test:

Part One: Matching

     1=g, 2=b, 3=a, 4=d, 5=h, 6=f, 7=c, 8=e

Part Two: Completion

1. Synthetic
2. import
3. consumer
4. Lamb
5. Rye, wheat

Part Three: Short Answer

1. Quality of life involves having a good environment for living, ample food, adequate housing, and clothing.

2. The Food Guide Pyramid is a tool or guide to help people get the proper nutrients. The five main groups are bread, fruit, vegetables, milk, and meat.

3. Students can list any two of the following: cotton, flax, kenaf, jute, hemp, and sisal.

4. Students can list any two of the following: sheep, goats, mink, and rabbits.

Test

Lesson A2–2: Understanding the Importance of Agriculture to Society

Part One: Matching

Instructions. Match the term with the correct response. Write the letter of the term by the definition.

a. international trade   d. deciduous   g. softwood
b. linen   e. export   h. nutritional fact panel
c. hardwood   f. aquaculture

_____   1. A coniferous tree.

_____   2. Cloth woven from the stem of a flax plant.

_____   3. Buying and selling among two or more nations.

_____   4. A tree that sheds it leaves.

_____   5. A label on food that gives nutrition information.

_____   6. Water farming.

_____   7. A deciduous tree.

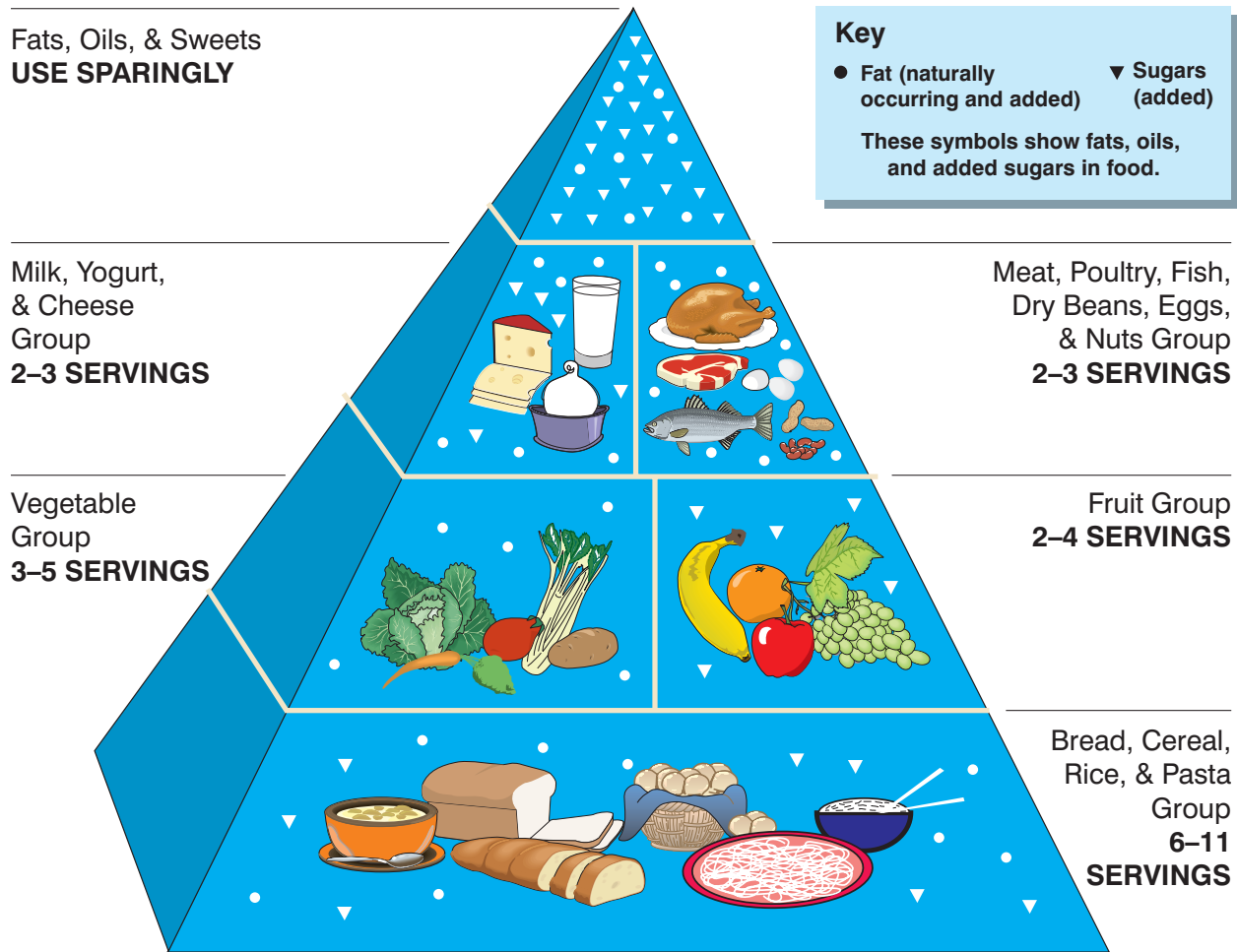_____   8. To send or carry goods to another country for sale.

Part Two: Completion

Instructions. Provide the word or words to complete the following statements.

1. _____ fibers are manufactured from petroleum and other substances.

2. Products bought from another nation are known as _____.

3. A _____ is a person, business, or agency that uses goods and services.

4. _____ is the meat from sheep that are less than a year old.

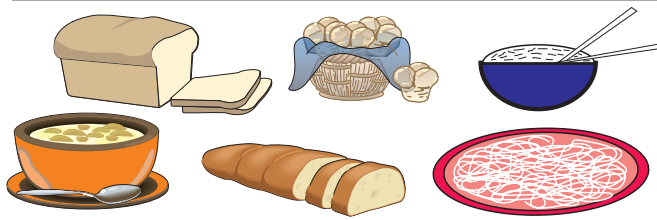5. _____ and _____ are two important grains.

Part Three: Short Answer

Instructions. Answer the following questions using correct spelling and complete sentences.

1. What is quality of life?

2. What is the Food Guide Pyramid, and what are the five nutritional groups?

3. What are two plant fibers used for clothing?

4. What are two animals fibers used for clothing?

Food Guide Pyramid

Food Guide Pyramid
A Guide to Daily Food Choices

Fats, Oils, & Sweets
USE SPARINGLY

Key
- Fat (naturally occurring and added)   ▼ Sugars (added)

These symbols show fats, oils, and added sugars in food.

Milk, Yogurt, & Cheese Group
2–3 SERVINGS

Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group
2–3 SERVINGS

Vegetable Group
3–5 SERVINGS

Fruit Group
2–4 SERVINGS
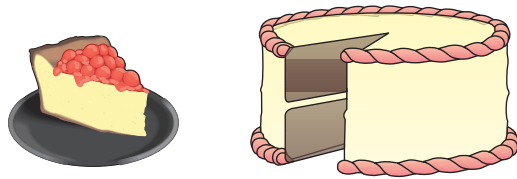
Bread, Cereal, Rice, & Pasta Group
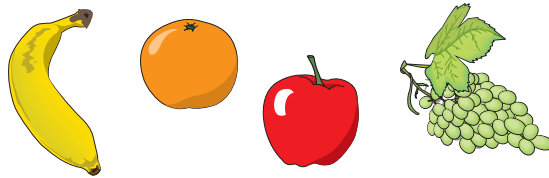**6–11 SERVINGS**
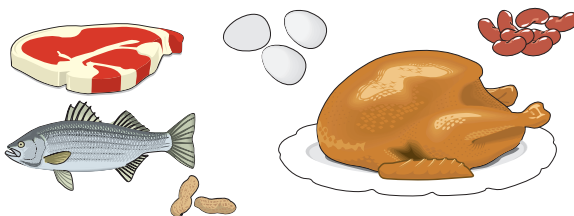
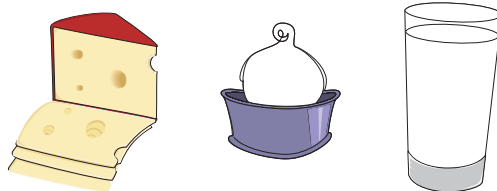# Food Guide Pyramid Discussion Topics

Bread, Cereal, Rice & Pasta

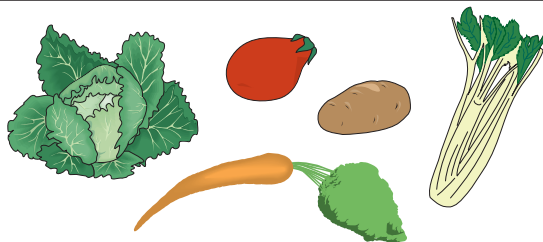**Fats, Oils, and Sweets**

Fruits

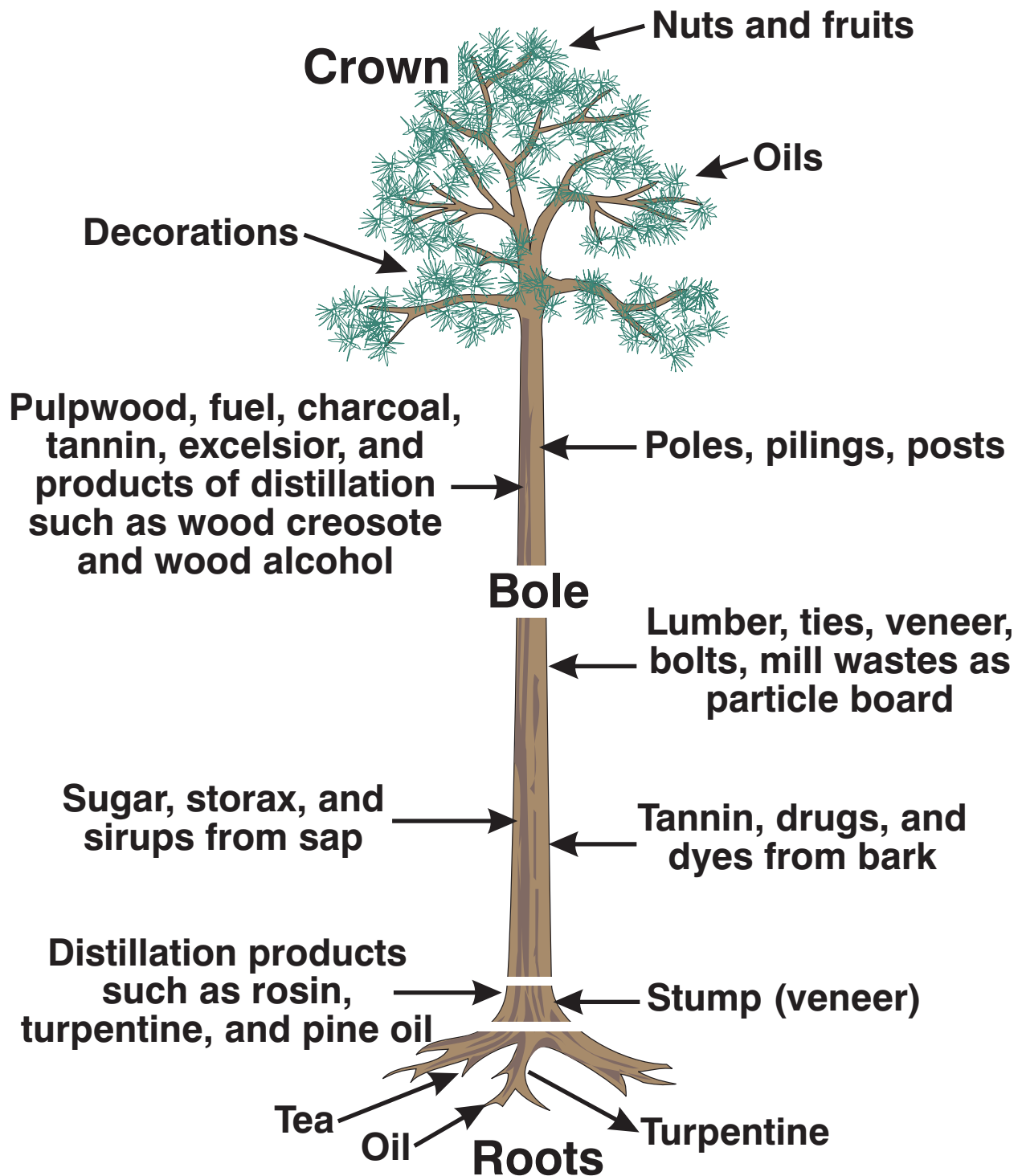**Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts**

Milk, Yogurt, & Cheese

Vegetables

Nutrition Label

Nutrition Facts

Serving Size 0 cup (000g)
Servings Per Container 0

Amount Per Serving

Calories 000	Calories from Fat 000

	% Daily Value*
Total Fat 00g	00%
Saturated Fat 0g	00%
Cholesterol 00mg	00%
Sodium 000mg	00%
Total Carbohydrate 00g	00%
Dietary Fiber 0g	0%
Sugars 00g	
Protein 00g	

Vitamin A 0%	●	Vitamin C 0%
Calcium 00%	●	Iron 0%

Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
* Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Forest Products From Trees

Crown

Nuts and fruits

Oils

Decorations

Pulpwood, fuel, charcoal, tannin, excelsior, and products of distillation such as wood creosote and wood alcohol

Poles, pilings, posts

Bole

Lumber, ties, veneer, bolts, mill wastes as particle board

Sugar, storax, and sirups from sap

Tannin, drugs, and dyes from bark

Distillation products such as rosin, turpentine, and pine oil

Stump (veneer)

Tea

Oil

Roots

Turpentine

Products From a Sawlog

Bark

Slabs

Short clears

Structural timbers

Dimension lumber

Sawdust