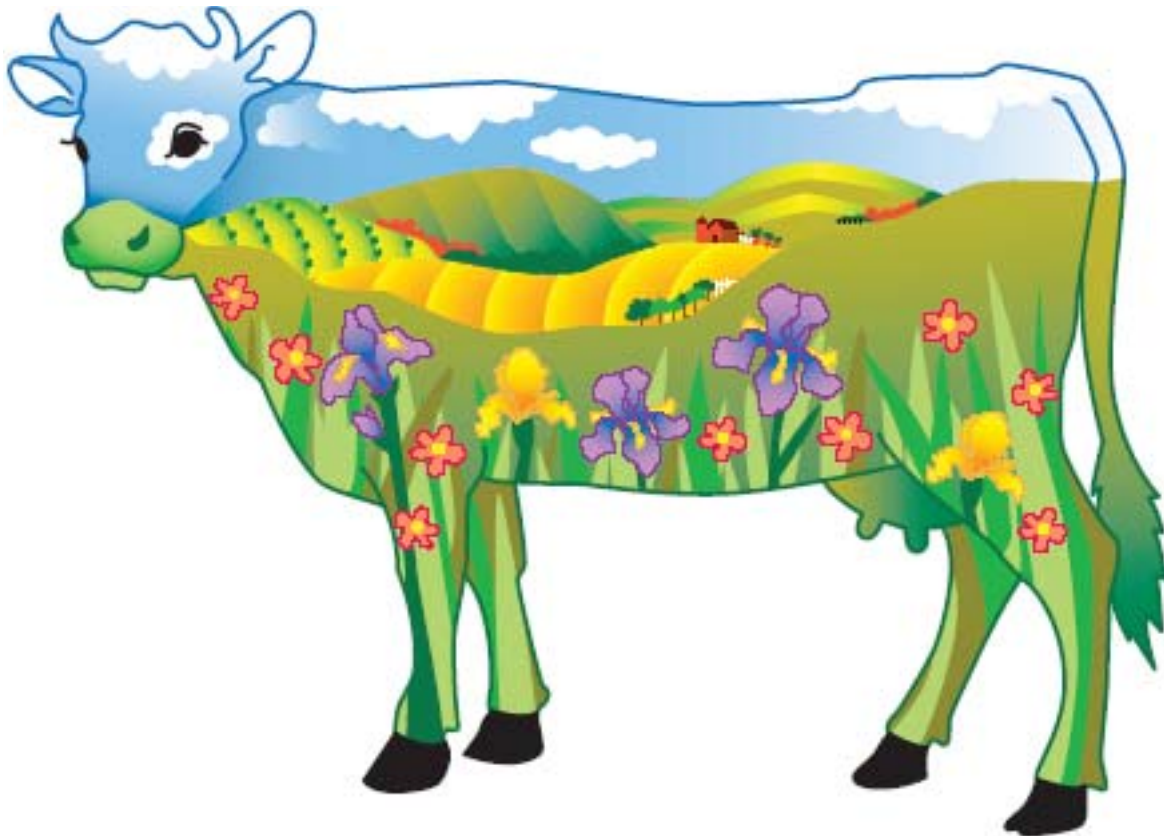# SOLE
Sciences of Life Explorations:
Through Agriculture
Grades 4 and 5

Teacher Guide
Unit: Many Types of Farms

UNIT PLAN

UNIT TITLE
Many Types of Farms

MONTH
November

GOAL
Students will understand that farms come in different sizes and can grow crops, raise animals, or both. Many different animals, traditional or exotic, can be raised on farms. Students will have more awareness about where many foods and other products come from.

OBJECTIVES
Students will:

1. Acquire and interpret information from the Internet, reference books, and magazines, in order to prepare reports. (NYS Learning Standard 1: Language for Information and Understanding, Elementary 1 and 2 - Listening and Reading, and Standard 3a: Universal Foundation Skills, Elementary 1)

2. Construct simple and complex sentences using vocabulary appropriate to agriculture and specific types of farms. (NYS Learning Standard 1: Communication Skills, Checkpoint B)

3. Solve math problems using addition, subtraction, multiplication and division of whole numbers. (NYS Learning Standard 3: Mathematics, Elementary 3)

4. Draw a map of New York State and locate places important to agriculture, identifying what is important about these locations and explaining why farms are located there. (NYS Learning Standard 3: Geography, Elementary 1 and Elementary

5. Identify different types of farms and match these farms to their products, giving examples of products they themselves use (Food and Fiber Systems Literacy I: Understanding, B K-1, C K-1)

6. Identify major commodities produced in New York State. (Food and Fiber Systems Literacy I: Understanding, C 4-5)

7. Identify agricultural jobs and collect pictures relating to agricultural work. (Food and Fiber Systems Literacy I: Understanding, E K-1)

8. Explain how geography influences food and fiber production. (Food and Fiber Systems Literacy II: History, Geography, and Culture D 6-8)

9. Identify tools and machines involved in food and fiber systems and explain their role in agriculture on different types of farms. (Food and Fiber Systems Literacy III: Science, Technology, and Environment, D K-1)

10. Identify parts of the Food Guide Pyramid and explain how they relate to farming. (Food and Fiber Systems Literacy V: Food, Nutrition and Health, B K-1)

TERMS

These terms are highlighted in **bold** throughout the lesson pages.

Bog - wet, spongy ground that is poorly drained. It usually has acidic soil because of accumulated plant material, and it frequently surrounds a body of open water and contains plans like moss, wildflowers, rushes, and sedges.

Breed (noun) - a type of animal that is different from the rest of its kind, and passes these unique characteristics on to its offspring

Breed (verb) - raising male and female animals for the purpose of producing young

Hydroponics: A method of gardening where plants are grown in a water and nutrient solution without any soil.

Industrial - describes companies engaged in the manufacture and/or distribution of products.

Nutrients - vitamins, minerals, and natural chemicals that living things need to grow and be healthy

Pasture - a large area of fenced-in land for grazing animals

Population - the whole number of plants or animals (including humans) in a certain area

Resource - a place or thing that is available for use or for a need. ex: An iron mine is a **resource** for iron ore.

Integrated Pest Management is a specialized form of environmental management wherein scientific research and real world application work together to reduce pests such as insects, diseases or weeds.

1. Properly identify pests
2. Learn the pest/ host biology
3. Sample the environment for pests
4. Determine an action threshold
5. Choose the best tactic
6. Evaluate results

SAFETY

There are no safety concerns for this unit other than general school safety practices.

Standards Matrix for this Lesson:

Month	Unit	Math/Science/and Technology	English Language Arts	Social Studies	HEALTH	ARTS	Food & Fiber Literacy	CDOS	Other Languages	Interconnectedness
11	Many Types of Farms	3:9 e3	1:3 e1	3:16 e1			I:B K-1			
			1:3 e2	3:16 e2			I:C K-1			
			3a:2 e1				I:C 4-5			
			1:6 B				I:E K-1			
							II:D 6-8			
							III:D K-1			
							V:B K-1			

Matrix Key:

NYS Learning Standards arranged by Standard: Category, Level

e = elementary i = intermediate

Categories:

1 Career Development
2 Universal Foundation Skills
3 Language for Information and Understanding
4 Language for Literary Response and Expression
5 Language for Social Interaction
6 Communication Skills
7 Analysis, Inquiry, and Design
8 Information Systems
9 Mathematics
10 Science

11 Technology
12 Interconnectedness: Common Themes
13 Interdisciplinary Problem Solving
14 History of the United States and NY
15 World History
16 Geography
17 Economics

ADDITIONAL RESOURCES

http://www.MyPyramid.gov
http://www.ers.usda.gov/StateFacts/NY.htm
http://library.thinkquest.org/TQ0312380/index.htm
http://www.lymanorchards.com/or/main.htm
http://www.wiscran.org/history.htm
http://www.3838.com/english/beepark/beekeep/beekeep01/beekeep_step1_1.html
http://www.beeguys.com/beekeeping%20class/march%2004.html
http://www.natfish.tafensw.edu.au/courseinfo/PracticalWorkshops.htm

SUPPLIES AND EQUIPMENT

Crayons, makers, or colored pencils
Bulletin board space
Projector (optional)
Agricultural magazines
Scissors
Farmer props (hats, tools, etc. - could be made from cardboard if none can be found)

BACKGROUND FOR TEACHERS

Agriculture Awareness:
New York State ranks in twenty-eighth place nationwide for the production of agricultural commodities. Much of upstate New York is farms, orchards and vineyards. Farming is an important aspect of the state's economy. Some farmers sell their products fresh locally. Other farmers sell their products to large companies to process into other goods such as food, clothing, craft items, or medicine. Students have a connection with agriculture when they sit down to eat or try on new clothes. Many people understand that the foods we eat have to be grown somewhere, like on a farm. For example, some students may understand that their cotton shirt came from cotton plants grown on a southern plantation, or that wool clothing is created from the fleece of sheep.

Farms can be diverse in size and in product. Farms may be **industrial**, family-owned, or hobby sized. They may be for raising animals, such as poultry, livestock, fish, and insects, or for growing produce, such as fruits, vegetables,and grains. Knowledge of the different kinds of farms present in today's world inceases awareness that all of the products we utilize have to come from somewhere. Understanding more about how agriculture affects daily life means that less is taken for granted.

Types of Farms and The Major Food Groups: Grains, Vegetables, Fruit, Dairy, and Meat & Beans

Grains
While each individual species has its own peculiarities, the cultivation of all grain (or cereal) crops is similar. All are annual plants; meaning that one planting yields one harvest. Wheat, rye, oats, and barley are the cool-season cereals. These are hardy plants that grow well in moderate weather and cease to grow in hot weather. Barley and rye are the hardiest cereals, able to survive in cold weather (overwinter). Wheat is the most popular.

Once the cereal plants have grown their seeds, they have completed their life cycle. The plants die and become brown and dry. As soon as the parent plants and their seed kernels are reasonably dry, harvest can begin. Cereal crops are machine-harvested, typically using a combine harvester which cuts, threshes, and separates the grain from the husk, removing any dirt, during a single pass across the field. Farmers commonly deliver their newly harvested grain to a grain elevator, a large storage facility that consolidates the crops of many farmers. The farmer may sell the grain at the time of delivery or maintain ownership of a share of grain in the pool for later sale.

Vegetables

Traditionally, vegetable farming was done in the soil in small rows or blocks, often primarily for consumption by the grower's family, with the excess sold in nearby towns. Later, farms on the edge of large communities could specialize in vegetable production, with the short distance allowing the farmer to get his produce to market while still fresh.

The Three Sisters method used by Native Americans grew squash, beans and corn together so that the plants enhanced each other's growth. Planting in long rows allows machinery to cultivate the fields, increasing efficiency and output. However, the diversity of vegetable crops requires that a number of techniques be used to optimize the growth of each type of plant. Therefore, some farms specialize in one vegetable while others grow a large variety. Due to the need to market vegetables while fresh, vegetable gardening has high labor demands which may be served by workers willing to accept lower wages. Some farms avoid this by running operations where customers pick their own produce. The development of artificial ripening technologies, fast transportation, and refrigeration has reduced the problem of getting produce to market in good condition.

Raised bed gardening has increased yields from small plots of soil without the need for commercial, energy-intensive fertilizers. Modern hydroponic farming produces very high yields in greenhouses without using any soil, but expends much more energy.

Farms may grow large quantites of a few vegetables and sell them in bulk to major markets, a granary, or middlemen; this requires large growing operations. They may produce for local customers, or sell through farm stands and local farmer's markets. Large cities often have a central produce market which handles vegetables and manages distribution to supermarkets and restaurants.

Fruit

An orchard is a planting of trees or shrubs maintained for fruit production. Most orchards contain either fruit or nut-producing trees for commercial production. Most temperate-zone orchards are laid out in a regular grid, with a base of grazed or mown grass or bare soil that makes maintenance and fruit gathering easy. Orchards in New York State are primarily concentrated near Lake Erie, Lake Ontario, the Finger Lakes, and the major rivers, where climatic extremes are moderated and blossom time is retarded until frost danger is past. Crops commonly found in temperate climate orchards (as in New York) include apples, cherries, hazelnuts, peaches, pears, pecans, walnuts, plums, and apricots.

A vineyard is a place where grapes are grown for making wine, raisins, or table grapes. Vineyards are often on hillsides and on soil of marginal value to other plants. A common saying is, "The worse the soil, the better the wine." Planting on hilllsides, especially facing south, is done in an attempt to maximize the amount of sunlight that falls on the vineyard. For this reason, some of the best wines come from vineyards planted on quite steep hills, conditions which would make raising other agricultural products unprofitable. An ideal vineyard site for wine grapes is a hillside in a dry climate with a southern exposure, good drainage (to reduce unnecessary water uptake into the grapes), and balanced pruning (to force the vine to put more of its energy into the fruit rather than foliage).

Cranberries are a group of evergreen dwarf shrubs or trailing vines found in acidic **bogs** throughout the cooler parts of the Northern Hemisphere. The fruit is a berry that is larger than the leaves of the plant. It is initially white, but turns a deep red when fully ripe. It is edible, with an acidic taste that can overwhelm its sweetness. Most cranberries are processed into products such as juice, sauce, and sweetened dried cranberries, with the remainder sold fresh. Historically, cranberry beds were constructed in wetlands. Currently cranberry beds are constructed in upland areas that have a shallow water table. The topsoil is scraped off to form dikes around the bed perimeter. Clean sand is hauled in to a depth of four to eight inches. A common misconception about cranberry production is that the beds remain flooded throughout the year. During the growing season cranberry beds are not flooded, but are irrigated regularly to maintain soil moisture. Cranberries are harvested in the fall when the fruit takes on its distinctive deep red color. This is usually in late September and into October. Beds are flooded with 6-8" of water in the fall to facilitate harvest, when a harvester is driven through the beds to remove fruit from the vines. Cranberry beds are flooded again during the winter to protect against low temperatures.

Apiculture

Bees are a popular insect for farming. Beekeeping (or apiculture) is the practice of intentional maintenance of honey bee colonies, commonly in hives, by humans. A location where bees are kept is called an apiary. A beekeeper may keep bees in order to collect honey and beeswax, for the purpose of pollinating crops, or to produce bees for sale to other beekeepers. Beekeepers may be hobbyists, who also have another job, or full-time commercial beekeepers. A colony of bees is composed of a single queen, many workers (infertile females), drones (males), and a brood (eggs, larvae, and pupae). A hive is the box used by beekeepers to house a colony. Maximal honey production occurs when the most workers bees are present at the exact same time that nectar-producing flowers are also at an optimum. For pollination, both the grower and beekeeper are looking for a surplus of foraging honey bees. Package bee and queen producers try to have as many nurse (young worker) bees as possible on hand. Queen **breeders** also try to manage drone **population** numbers.

Dairy

Dairy farming is an agricultural enterprise, raising female cattle, goats, or other milk-producing livestock for long-term milk production. All female dairy animals begin lactating after giving birth. The milk may be either processed on-site or transported to a dairy for processing and eventual retail sale. Most dairy farms sell the male calves borne by their cows, usually for veal production, rather than raising non-milk-producing stock. Many dairy farms also grow their own feed, including corn, alfalfa, and hay. This is fed directly to the cows, or stored as silage for use during the winter season.

Livestock

Livestock refers to a domesticated animal intentionally reared in an agricultural setting to make produce such as food or fiber, or for its labor. Livestock may be raised for subsistence or for profit. Raising animals (animal husbandry) is an important component of modern agriculture. Livestock are generally kept in an enclosure, are fed by human-provided food and are intentionally **bred**. The type of feed may vary from natural grass to highly sophisticated processed feed. Indoor production systems are generally used only for pigs and poultry, as well as for veal cattle. Indoor animals are generally farmed intensively, as large space requirements would make indoor farming unprofitable.

Ranching

Ranching is the practice of raising grazing livestock, such as cattle or sheep, for meat or wool. People who own or operate a ranch are called stockgrowers or ranchers. Ranching is also a method used to raise less common livestock such as elk, American bison, or even ostrich and emu. If the ranch includes arable (able to grow crops) or irrigated land, it may also engage in a limited amount of farming, raising feed such as hay for the animals' use. Some ranches accept paying guests, and are known as dude ranches.

Poultry

Poultry is the class of domesticated birds used for food or for their eggs. The ost typical are chickens, turkeys, and waterfowl such as ducks and geese. In the United States, chickens were once raised primarily on family farms. Some people still keep chickens for personal use, and may even sell the eggs and meat. These birds are not kept in pens, and are therefore referred to as free range. Very few large-scale commercial farms keep poultry this way. In the twentieth century, large-scale farms and packing plants emerged that could grow birds by the thousands. From these locations, chickens are then frozen, shipped fresh, or sent on for further processing.

Aquaculture

Aquaculture is the cultivation of fish or shellfish, algae, and other aquatic organisms. Aquaculture is different from fishing in that active human effort is used to maintain or increase the animal **population** as opposed to taking them from the wild. Fish farming is the principal form of aquaculture. A facility that releases juvenile fish into the wild for recreational fishing or to supplement a species' natural numbers is generally referred to as a fish hatchery. Fish species raised by fish farms include salmon, catfish, tilapia, cod, and others.

Fish are generally raised in large tanks or in ponds. Some fish farms use synthetic fiber cages in existing water **resources**. Advantages are that many types of water can be used (rivers, lakes, filled quarries, etc.), many types of fish can be raised, and fish farming can co-exist with sport fishing and other forms of use. However, in general, pond systems are easier to manage and simpler to start.
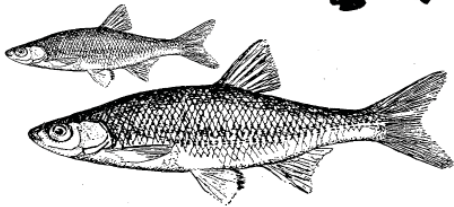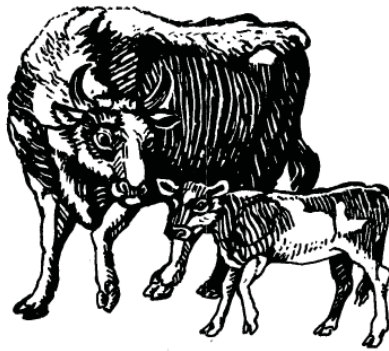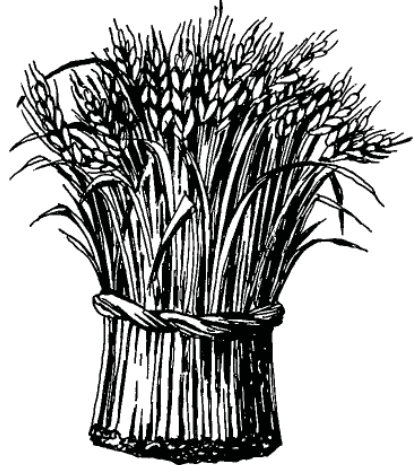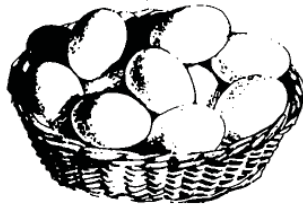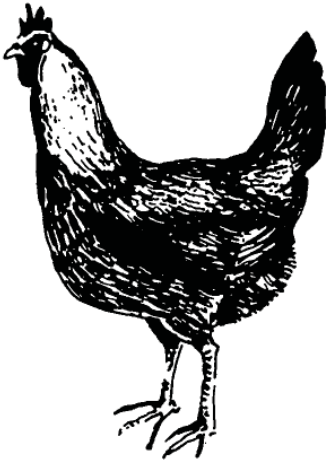
QUESTIONS FOR STUDENTS
How big or small can farms be?
Are cows, pigs, and chickens the only kinds of farm animals?
Can we farm fish and insects?
What kind of crops can we grow?

INTEREST APPROACH ACTIVITIES

FARMING THE FOOD PYRAMID

TEACHER INFORMATION
This activity's goal is to connect the main food groups (meat, dairy, fruits and vegetables, and grain crops) with different kinds of New York State farms and the products produced by each farm. Students will discover not only the variety of farms, but the different apparel, tools, and materials needed by each kind of farmer. Note: The days listed below do not need to be consecutive.

MATERIALS
Magazines (such as *Tractor Supply Company*, www.mytscstore.com)
Scissors
Farmer Props - hats, boots, tools (could be made from cardboard), etc
Projector (optional)
Bulletin Board space (large enough for a map of NYS) and markers

PROCEDURE
1. (Day 1, 20 min) Students will draw either their idea of a typical farm or their idea of a typical farmer, displaying the drawings when complete. Those finished early can help draw a large map of New York on a bulletin board. Students could copy from a projection or draw freehand.

2. (Day 2, 25 min) Divide the class into teams, one for each of the food categories (Grains, Fruits, Vegetables, Oils, Milk, Meat & Beans). Each team will conduct research on a kind of farm that produces that type of food, using the Internet, magazines, and/or books, looking for:

    a. what the farm produces

    b. what equipment and supplies the farmer needs

    c. what special apparel is needed

    d. where in New York State this type of farm might be located

    For example, a dairy farmer might wear a cap and need a bucket; a fruit or vegetable farmer might need a good pair of boots for walking in the fields. Farmers might also need special equipment for chemical safety or other safety gear.

3. Using magazines or printing pictures found on the Internet, students will cut out pictures of anything related to their type of farm.

4. (Day 3, 30 min) Groups will present their findings. Presentations should include: Pictures and drawings that were collected, with brief explanations. Students could bring in a sample of the food product raised on their farm for the class to try.

5. Each group will place their magazine cut-outs on the NYS outline map in the appropriate location. (Ex: apples near lakes and other large water bodies)

6. Breaking the stereotype: Hold a comparison discussion in class. Talk about how the class's original ideas of what farms and farmers look like differ from what they think now, after learning more.

(For related activities, refer to student worksheets #2 - #4)

SUMMARY OF CONTENT	TEACHING-LEARNING ACTIVITIES

SUMMARY OF CONTENT

I. Introduction
   A. Explains that not all farms are the same and introduces the terms **breed** and **resources**.
   B. Asks students to think about what they already know about farms.

II. Big or Small, a Farm Has It All!
   A. Describes the three common sizes of farms: large **industrial**, family farm, and hobby farm.
   B. "Did You Know" activity that exposes students to fractions and percentages.

III. Animal Farms (*3 pages*)
   A. Describe dairy, livestock, fish, horse, and beekeeping farms and ask students to think about products we get from each type of farm.
   B. Introduces the terms **pasture, population,** and **breed.**

IV. Crop Farms
   A. Mentions different types of crop farms, with a focus on cranberry **bogs**.

V. Plan Your Own Farm! Activity
   A. Students are given animals, crops, and associated colors to plan a farm according to where each can be grown or raised.

VI. Review

VII. Test Your Knowledge
   A. Refers to farm sizes, products, and the sources of our foods.

VIII. Vocabulary

IX. Lesson Supplements

TEACHING-LEARNING ACTIVITIES

I. Introduction
   A. This page can be read by students on their own or the questions may be used to stimulate class discussion.

II. Big or Small, a Farm Has It All!
   A. Have students volunteer to read aloud or explain each type of farm.
   B. Answer the "Did You Know" question as a class if students are not familiar with percentages and fractions.

III. Animal Farms (*3 pages*)
   A. These pages may be read aloud or individually.
   B. The class should answer the questions in group discussion. Ask students to think of other products we get from animals, besides those that are listed.

IV. Crop Farms
   A. This page may be read aloud or individually. For more facts, refer to the supplement pages.

V. Plan Your Own Farm! Activity
   A. This activity should be completed individually. Possible answers are provided.

VI. Review

VII. Test Your Knowledge
   A. Students should complete this individually. It may be treated as a quiz.

VIII. Vocabulary

IX. Lesson Supplements

Student Lesson: Many Types of Farms
Introduction

When you hear someone talking about a farm, what do you think of? Is it big or small? What does the farmer grow or raise?

Not all farms are the same! A farmer could choose to grow one kind of crop, or many. He or she may raise one **breed** of animal or many kinds.

Some farmers do both! Depending on what **resources** they have access to, farmers can choose to have a big or small farm. And, depending on how much space they have, they can have both crops and animals.

For example, some farmers raise cattle. They may be called farmers or they may be called ranchers. Farmers may grow enough crops to feed their animals and have some to sell to others.

As you complete this lesson you will learn that not all farms are like Old MacDonald's farm.

How big or how small can farms be?
Are cows, pigs, and chickens the only kinds of farm animals?
What kinds of crops can we grow?

Student Lesson: Many Types of Farms
Big or small, a farm has it all!

When it comes to farms, one size doesn't fit all. A farm can be really big or as small as your school. Farm size depends on the availability of land and **resources**, such as money and workers to manage the farm.

There are three main sizes of farms:

<u>Large **Industrial** Farm</u>

Very big farm or ranch run by a large family or a farming company. They may grow a couple of different crops and raise animals too. They must hire workers because there is so much work to do.

<u>Hobby Farm</u>

Small farm run by a family, often retired couples. They grow small crops or raise a small group of animals. They do not have a lot of money or supplies. They usually have another income besides farming.

<u>Family Farm</u>

Average size farm run by one family, They either raise one kind of crop or animal, sometimes both. It is the family's main money-making job. They may hire extra workers to help out.

Did you know?

About 25 percent of New York state's land area, or 7.6 million acres, is used by 36,000 farms to produce a large variety of food products.

What fraction is the same as 25%? Color in the squares below to show your answer.

Student Worksheet 2

## Student Lesson: Many Types of Farms
Animal Farms

Following are five examples of animal farms. Animals are raised for the products they supply.

Dairy Farms

Dairy farms are very important for many people. These farms raise animals like cows, goats, and sometimes sheep for their milk and dairy products.

Milk can be turned into butter, yogurt, cheese, and ice cream. Cows are the major dairy producer because they can produce a lot of milk to be made into many different things.
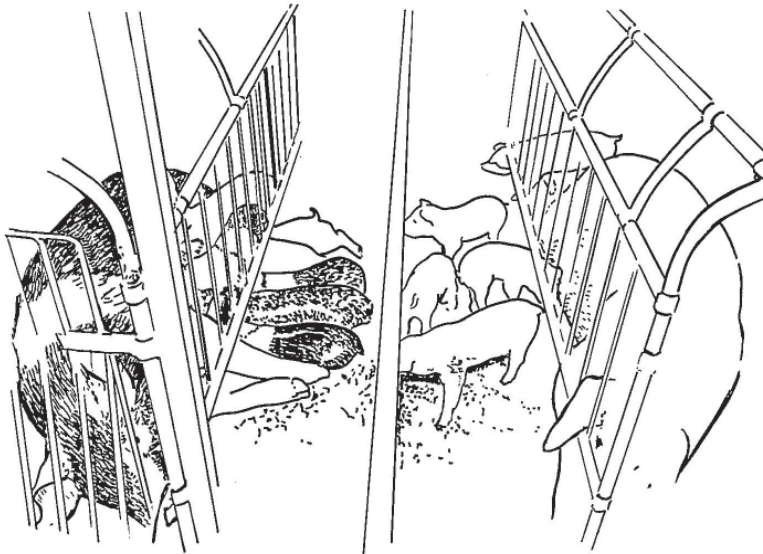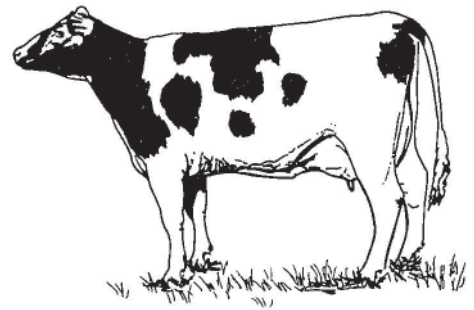
Livestock Farms

Livestock farms usually raise animals like cattle, pigs, chickens, or turkeys for their meat.

The farmers give them a place to live and food to eat until they are ready to be processed into meat.

These farms are sometimes called ranches.

Not all animals are raised for meat. Some products are:

- leather for clothing and shoes from cows
- wool for clothing from sheep
- feathers from geese can be used for stuffing jackets and bedding
- eggs for food from all sorts of birds
- hair from llamas or alpacas for sweaters and scarves.
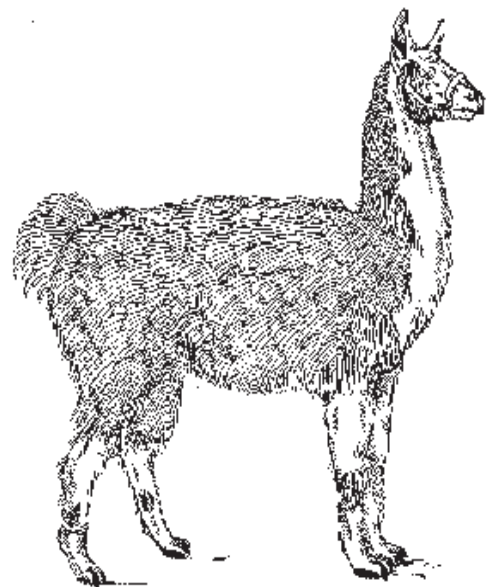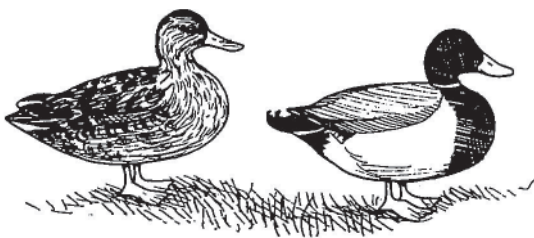
Student Lesson: Many Types of Farms
## Animal Farms

Fish Farms

When you think of farm animals, you often think of the ones that walk around in the backyard or **pasture**.

Fish farms either use nets and cages to hold their fish in one area like a river or lake, or raise their fish in large ponds.

Fish farms can sell their adult fish to grocery stores or large processing companies, allow people to go fishing in the farm space, or they raise the fish and release them into the wild to help increase fish **population**.

Common kinds of fish raised on farms are salmon, catfish, tilapia, and cod.
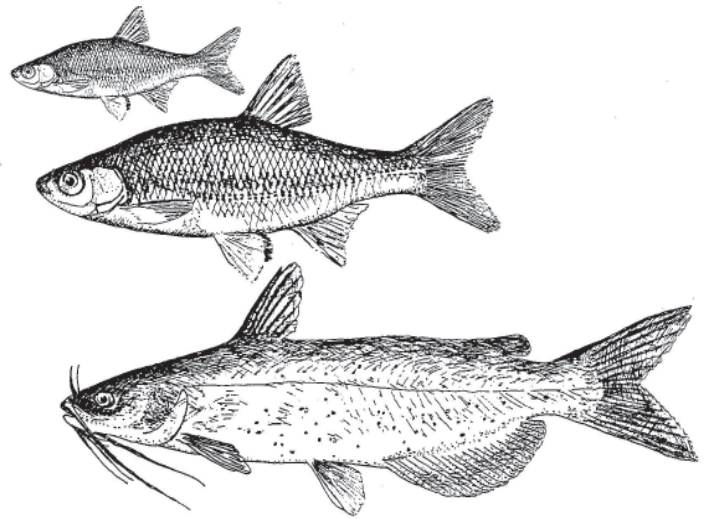
Horse Farms

Horses can be raised for different uses. Some people **breed** horses for horse shows. Other people **breed** them for strength and speed so they can race them. Some farmers still use horses to pull plows or carts around. Oftentimes, people simply enjoy riding horses and taking care of them.
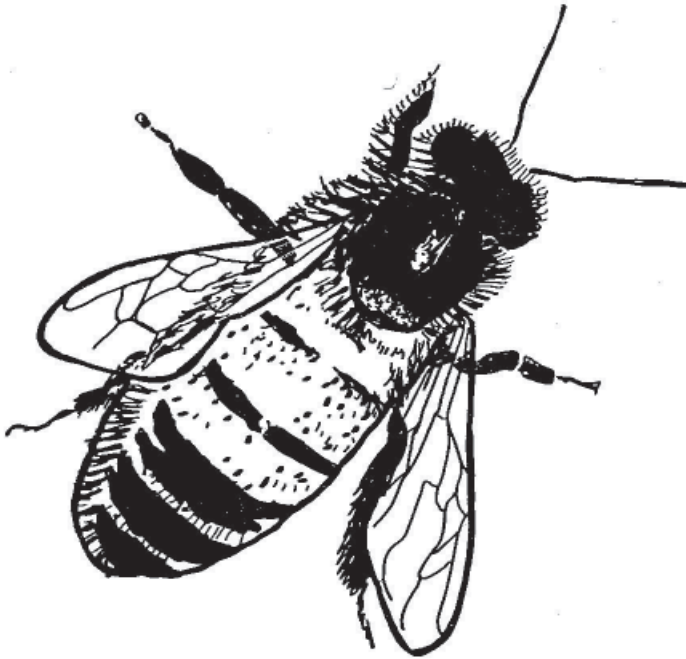
Many horse farms offer housing and care for horses if the owners don't have a place for them at their own homes. The farms will look after their stalls, food supply, and medical needs for a fee. This is called "boarding."
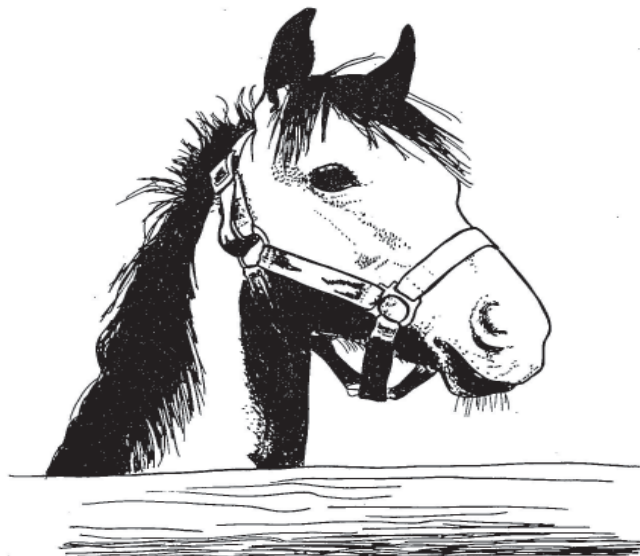
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Student Lesson: Many Types of Farms
Animal Farms

Beekeeping

Honey bee hives do not take up much space, so farms that just raise honey bees are not very big.

The farmer, who is called a beekeeper, sets up stacked boxes with removable sliding sheets to encourage bees to build their hives there.

Each hive has a queen honey bee. Her daughters are called worker bees.

The honey bees produce their own wax to build the combs on the sliding sheets. The bees bring the pollen and nectar back to the hive and use it to make honey.

They fill the honeycomb pits with the honey. Honey is food for young bees, but we like it too!

– –

1. Name at least three animals, other than the ones we've talked about, that could be raised on farms.
   a. _____
   b. _____
   c. _____

2. Animals provide us with a lot more than their meat. What are three products we get from animals on farms?
   a. __ __ __ __
   b. __ __ __ __ __ __ __
   c. __ __ __ __ __ __ __

3. If wild bees can build their own hives, why would a beekeeper build them an empty hive?

_____
_____
_____

Student Worksheet 3-C
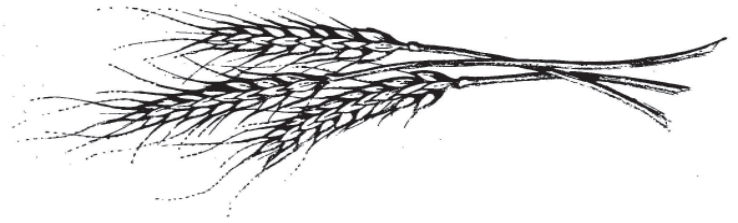
Student Lesson: Many Types of Farms
Crop Farms: Did You Know?

Twenty billion bushels of wheat are grown all over the world each year? Wheat and other grains are very important crops.

Crop farms can provide us with food to eat, cotton for making clothes, wheat straw for livestock bedding, herbs for flavor or scent or nutrition, and many other purposes.

Most of our grains, vegetables, fruits, nuts and beans are grown on farms. Farms that grow only fruit can be called orchards.

Farms that grow only grapes are called vineyards. In New York state, the Finger Lakes Region is famous for its vineyards and wineries (farms that grow grapes to make wine).
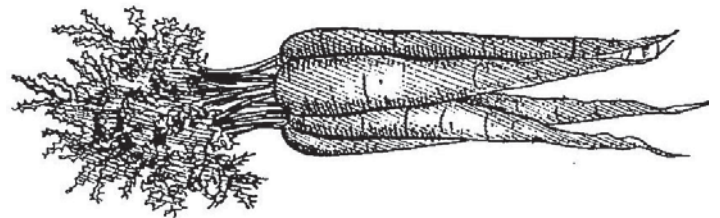
In 2005, New York state ranked in sixth place nationwide for fruit and fruit products, and in third place for dairy and dairy products.

An Unusual Farm

When you think of what a farm looks like, does it include a barn, silos, and some fields? Not all farms will look like that! On a cranberry farm, the berries grow on a vine that likes to grow in **bogs.** Many other plants don't like such wet conditions.

When the cranberries are ripe, some farmers like to save time and energy by "wet harvesting" them. This is when they flood the **bog** with water. They use a machine to stir up the water, and floating yellow barrier keeps the cranberries from floating away. The cranberries break off their stems and float to the top where workers gather them.

Student Lesson: Many Types of Farms
## Plan your own farm!

Plan your own farm! Below is a bird's eye view of your farm. You have fields, **pastures**, a barn, a pond, a **bog**, and some open areas to build more animal homes or plant more crops.

Look at the list of animals and crops and think about where they can be grown or raised on a farm. Color the area where you want to put a plant or animal according to the list. Most of the colors can go in more than one area, and most of the areas can have more than one color in them.Think carefully before you color!

Corn (Yellow)
Pumpkins (Orange)
Cranberries (Red)
Fish (Light Blue)
Dairy Cows (Black)

Chickens (Pink)
Wheat (Brown)
Honey Bees (Purple)
Horses (Green)
Tomatoes (Dark Blue)

Pasture

Bog

Open Area

Open Area

Field

Pond

Open Area
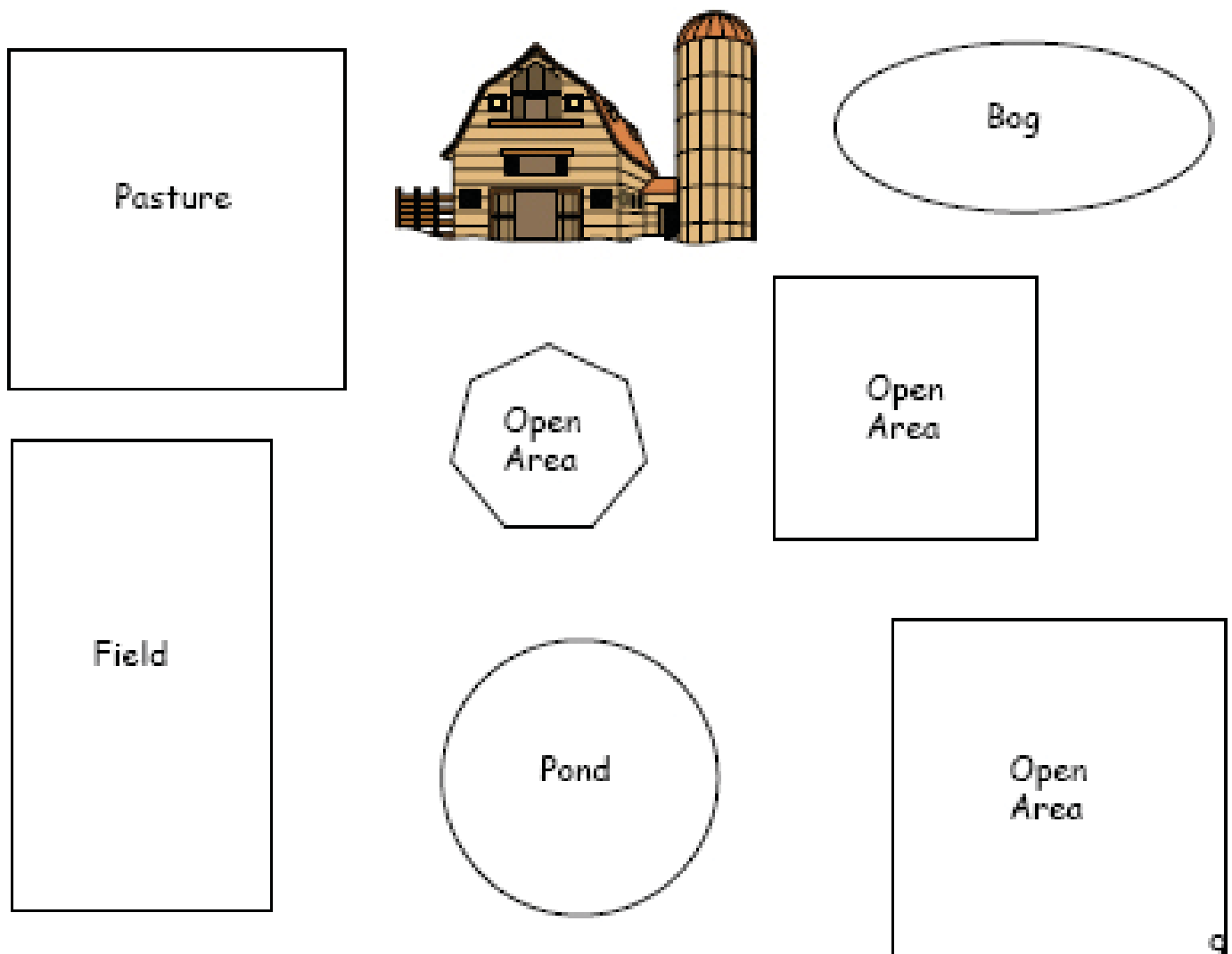
Student Lesson: Many Types of Farms
Review

♦ A farm can grow any kind of grain, vegetable, or fruit as long as the soil and climate are right for that crop.

♦ Most meat and animal products you find in grocery stores come from farms. Some of our clothes are made from things grown or raised on farms. Some examples are cotton, wool, and leather.

♦ Farms can be a mix of animals and crops. They can also just grow or raise one kind of crop or animal.

♦ Farms come in all sizes, and can be owned by a family, multiple families, or a large food company. Usually larger farms have more money to invest in achinery and pay for employees.

♦ Many types of animals, even insects such as bees, can be raised on a farm.

Student Lesson: Many Types of Farms
Test your knowledge!

1. What kind of farm is usually owned by one family and is the family's main source of income.
   a. Large **Industrial** Farm
   b. Family Farm
   c. Hobby Farm

2. Which animals are often raised for their by-products?
   a. Sheep - wool
   b. Cows - milk
   c. Goats - cheese
   d. All of the above

3. What do you call farms that only grow fruit? _____.

4. What do you call farms that only grow grapes? _____.

5. True or False: Most of the foods you see in the grocery store were picked or hunted in the wild.
   _____

6. Some dairy farmers also grow grains and other crops. Why might a dairy farmer choose to grow grains too?

   _____
   _____.

7. Animals like honey bees and fish can be raised on farms. True or False? _____

Student Lesson: Many Types of Farms
Vocabulary

Bog - wet, spongy ground that is poorly drained. It usually has acidic soil because of accumulated plant material and frequently surrounds a body of open water and contains plans like moss, wildflowers, rushes, and sedges.

Breed (noun) - a type of animal that is different from the rest of its kind, and passes these unique characteristics on to its offspring

Breed (verb) - having male and female animals for the purpose of producing young

Hydroponics: A method of gardening where plants are grown in a water and nutrient solution without any soil.

Industrial - describes companies engaged in the manufacture and/or distribution of products.

Nutrients - vitamins, minerals, and natural chemicals that living things need to grow and be healthy
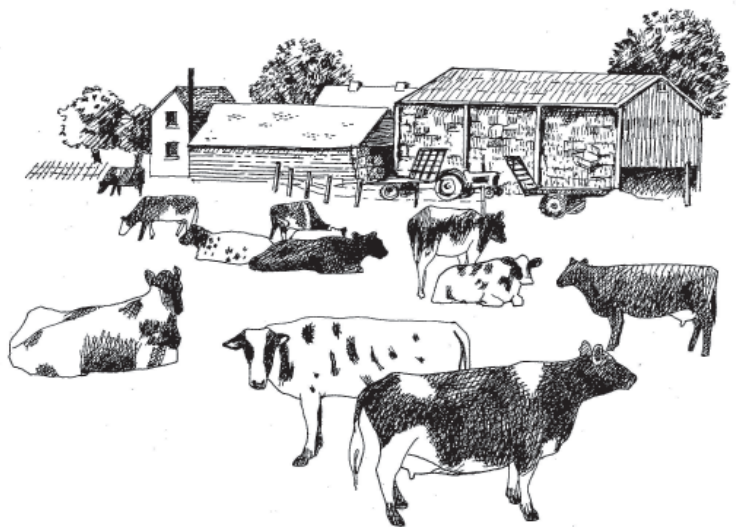
Pasture - a large area of fenced-in land for grazing animals

Population - the whole number of plants or animals (including humans) in a certain area

Resource - a place or thing that is available for use or for a need. ex: An iron mine is a **resource** for iron ore.

Integrated Pest Management is a specialized form of environmental management wherein scientific research and real world application work together to reduce pests such as insects, diseases or weeds.

1. Properly identify pests
2. Learn the pest/ host biology
3. Sample the environment for pests
4. Determine an action threshold
5. Choose the best tactic
6. Evaluate results

Teacher Information for Student Worksheets

Student Worksheet 1
Introduction
Students may read to themselves or you may initiate a group discussion around the essential questions.

Student Worksheet 2
Big or Small, a Farm Has It All!
Reinforce the definitions of the three types of farms by having students volunteer to read the worksheet aloud or explain each type. The question under "Did you know?" should be answered as a class if students have not yet been exposed to percentages and their relationship to fractions.

Student Worksheet 3-A & 3-B
Animal Farms
We suggest that students take turns reading parts of this page aloud. For a class discussion, ask students if they can think of other products we get from animals besides the ones listed here.

Student Worksheet 3-C
Animal Farms:
This page may be read aloud or individually. The class should answer the questions in group discussion. They may need guidance with question 1. In theory just about any animal could be raised with the proper equipment, supplies, and training. For instance, some small farms raise a specific **breed** of pig or alpaca, or grow vegetables for specialty markets such as ethnic restaurants.

Answers:
1. Emu, buffalo, geese, reindeer, silk worm, snakes, or shrimp
2. Milk, leather, clothes
3. To build their hive where the keeper can easily access it.

Student Worksheet 4
Crop Farms
This page may be read aloud or individually. More facts about New York State agriculture can be found at the end of this guide.

Student Worksheet 5
Possible colors for each area:
Pasture: Horses (green), Dairy Cows (black)
Bog: Cranberries (red)
Pond: Fish (light blue)
Field: Tomatoes (dark blue), Pumpkins (orange), Wheat (brown), Corn (yellow)
Open Areas: Horses (green), Dairy Cows (black), Tomatoes (dark blue), Pumpkins (orange), Wheat (brown), Corn (yellow), Honey Bees (purple) Chickens (pink) Student Worksheet 7

Student Worksheet 6
Review
Provides students with a review of the key concepts found in the lesson pages.

Test Your Knowledge
Students should complete this page individually. It may be treated as a quiz or test.
1. A
2. D
3. Orchards
4. Vineyards
5. False
6. Crop
7. Animal
8. A dairy farmer would grow grains to feed his cows or sell another prioduct, or both
9. True

Student Worksheet 9
Vocabulary
Provided for student reference

Lesson Supplements

Supplementary Questions/ Activities:

1. Students can each pick a fruit, vegetable, or animal and research what products can be made from their choice. Students can either generate a list or write it out in complete sentences. They should report what part of the plant or animal is used in the product.

2. Class field trip. If there is one nearby, contact a local farm to see if they will give you and your class a tour of their facilities. If you are not near any farms, try contacting a grocery store to see if they will give the class a tour. Or, invite a farmer or someone who buys meat and produce for grocery stores to come and speak to your class.

A Look at New York Agriculture

New York

Capital: Albany
Population: 19,254,630
Founded: July 26, 1788 (11th state)
State Fruit: Apple
State Animal: Beaver
State Fish: Trout
State Tree: Sugar Maple
Number of Counties: 62
Largest City: New York City **Population:** 8,008,278
Nickname: The Empire State
Area: 54,475 square miles

Climate

- New York has a temperate climate with annual precipitation of 47" per year.

- The temperature ranges between 106°F and -11°F, but the Atlantic Ocean tends to moderate weather extremes in the city.

Crops

- **Fruit** - New York's fruit crops were valued at $216 million in 2004.
  Apples and Grapes lead New York fruit crops in value.

- **Vegetables** - The value of vegetables totaled $470 million in 2004. Fresh Market vegetables rank 6th and processing vegetables are 7th among all states. Leading crops in New York are Cabbage, Sweet Corn and Onions.

- **Field Crops** - New York produces a variety of field crops largely in support of its dairy industry. Corn, oats and wheat are most widely grown with soybeans steadily increasing importance. New York ranks 3rd in corn silage, valued at $208 million. Production of grain corn ranked 20th with a value of $146 million. Soybean production was va1ued at $34.5 million. The state placed 10th in oat production, 31st in wheat, and 27th for soybeans. Hay production put New York 24th and was valued at $327 million in 2004. Most hay is used on farms and its value is realized through sale of milk and livestock. Fall potatoes reached a value of $41.7 million in 20043 and made New York the 14th leading producer.

Soil

- **State Soil: Honeoye**

- The soils in the state fall generally into the groups classified as spodosols. They are acid in reaction and generally light in both color and texture. They are not superior agricultural soils, but because of the proximity of New York's agricultural areas to its heavily populated consuming centers, many of the better soils are intensively cultivated.

General

- Agriculture is important to New York State.

- Agricultural production returned over $3.6 billion to the farm economy in 2004.

- About 25 percent of the state's land area, or 7.6 million acres, are used by the 36,000 farms to produce a very diverse-array of food products.

Animals

- **Dairy** Milk is New York's leading agricultural product and is produced all across the state. Milk sales account for over one-half of total agricultural receipts. Production in 2004 was 11.7 billion pounds, with a value of $1.95 billion. New York is the nation's 3rd leading producer, and Wyoming is the State's leading county.

- **Livestock** - Dairy and animal production in New York provided nearly $2.30 billion to farmers in 2004. That accounts for 63% of all cash receipts.

- **Meat** - New York livestock producers marketed 228 million pounds of meat animals during 2004, bringing in $145 million in cash receipts. Sales from cattle and calves accounted for $127 million of the total, hogs and pigs returned $15 million, and sheep and lambs provided $2.52 million.

- **Poultry** - The value of New York eggs, ducks, broilers, and turkeys, plus the value of sales for other chickens, totaled $112 million in 2004. Eggs made up $59.8 million of the total followed by broilers at $6.57 million. New York ranks 22nd among all egg producing states.