



**Duration-**  
**30 minutes**

**Location-**  
**North barn on  
Flanders Road**

**Supplies -one mat  
per student**

**Standards** Teachers:  
Your field trip to the farm  
or pond easily connects to  
Next Generation Science  
and Connecticut Common  
Core Standards. We create  
an opportunity for students  
to compare farm life from  
the past to a farms  
contribution to our  
community today.  
We can custom design  
programs to meet your  
needs.

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## **THE WEATHER GAME**

**Grade Level/Range: Grades K-5**

### **OBJECTIVE**

- Students will understand that farm production depends on weather conditions and that activities on a farm change with the seasons.
- Students will connect food purchased at grocery stores to the farms that grow them.

### **Game Instructions**

Have students sit on a mat while listening to directions. We are going to play a weather game called HURRICANE

The presenter asks, “Does anyone know what a hurricane is”?

We look for key answers...a big storm with high winds and rain. What would happen to the pile of leaves I raked in a hurricane? They would blow away...or change places. That’s what students will do during this game.

Presenter then asks, do I have a mat to sit on? No...But during this game I am going to try to be sneaky and take one of your mats.

Before we start, here is an important question.

Why would we play a weather game at a farm?

Do you think weather is important on a farm?

Weather plays an extremely important role during farm activities...The weather is your boss. Everyone pretend you are a serious, stern boss. Our presenter asks students to put your hand on your hip, point your finger at me and say (in a strict voice), DO YOUR WORK!

## **If you are a farmer, the weather is your boss!**

### **Planting in Spring**

We wait for the weather to become warm enough for us to plant seeds. The temperature of the soil needs to be warm for the seeds to sprout and grow. Spring tree blossoms tell us it's time to put bee hives into the orchard for pollination.

### **Hay in Summer**

If we are trying to make hay we need three days in a row of hot, dry weather.

Rain occurring while cut hay is lying in the field causes both yield and quality losses that reduce the value of the crop as an animal feed and a marketable commodity.

Hay can also get dusty and moldy and become unsuitable to feed to our animals. Dusty, moldy hay can cause severe respiratory problems. Everybody coughs...pretend you ate moldy hay. Rain damage is to be avoided or minimized as much as possible.

So... the weather tells us when to cut the hay.

### **Fall Harvest**

We harvest pumpkins and corn before the frost. Mature pumpkins can withstand a light frost that kills the foliage and leaves the fruit intact. However, extended exposure to frost or hard frost can damage the pumpkins, leaving them vulnerable to fungal or bacterial problems that can result in rapid decomposition.



The amount of damage to corn from a frost or killing freeze depends largely upon two factors: (1) How cold it gets and for how many hours; and (2) The plant's stage of development.

**Winter** is time for planning for the next year.

The hay may be in the barn and the crops may be out of the fields, but there are still plenty of chores to be done after harvest and in preparation for the next growing season. For livestock farmers, the winter may even mean a busier time of work as animals never take a day off and newborns may be arriving any day.

### **Throughout the seasons...the weather is your boss!**

Are you ready to play the game?

Everyone stand on your mat.

Presenter (caller) stands in the middle of the circle... I am going to call out a delicious, healthy product grown on a farm. (Choose one-apples, carrots...ice cream)?

When I call out my food choice...everyone should change places. There are only enough mats out for all but one person to have a mat. If the caller steals a mat, a new person will be in the middle of the circle and they call out the next food.

Note-the game works best when students try to get a new mat to stand on. If students want to be in the middle, teachers should intervene and pick individual students to be the caller.

Time-30-40 minutes

#### **Teachers:**

Our weather game is a fun, exciting game for students to play and to connect weather's effect to our food source. Production of all agricultural commodities is vulnerable to **direct impacts** (from changes in crop and livestock development and yield due to changing climate conditions and extreme weather events) and **indirect impacts** (through increasing pressures from pests and pathogens that will benefit from a changing climate).

Students can connect local farms impact of weather conditions to global climate conditions, concerns and predictions.

Many independent lines of evidence demonstrate that the world is warming and that human activity is the primary cause. Carbon dioxide is produced when humans burn gasoline, natural gas, and coal to produce electricity and drive cars, trains, ships, and aircraft. This carbon dioxide is the major factor responsible for warming the atmosphere. Other changes flow from global warming, including melting of snow and ice, rising sea level, and increases in some types of extreme weather, such as extreme heat and heavy downpours. Students should start to understand that **Climate change** is a serious, complex topic that will affect generations to come.

## VOCABULARY

**Autumn** - The season of the year that occurs after summer and before winter. Autumn officially begins in late September and the cooler temperatures creates colorful foliage.

**Breeze** - A light wind.

**Climate** - It describes the average weather conditions in a certain place or during a certain season. Weather may change from day to day, but climate changes only over hundreds or thousands of years. Many animals and plants need one kind of climate to survive. Dolphins and palm trees can live only in a warm climate, while polar bears and spruce trees need a cold climate.

**Clouds** - A visible collection of tiny water droplets or, at colder temperatures, ice crystals floating in the air above the surface. Clouds come in many different sizes and shapes. Clouds can form at ground level, which is fog, at great heights in the atmosphere, and everywhere in between. Clouds offer important clues to understanding and forecasting the weather.

**Drought** - A period when a region has a lack of rainfall. Droughts can affect a fairly small area for a season or an entire continent for years. Too little rainfall can cause shortages in the water supply, destroy crops, and cause widespread hunger. Droughts also dry up soil, which then gets picked up by the wind and causes dust storms.

**Environment** - The external conditions and surroundings, especially those that affect the quality of life of plants, animals and human beings.

**Erosion** - The wearing away of the Earth's surface by the action of the sea, running water, moving ice, precipitation or wind.

**Flood** - It results from days of heavy rain and/or melting snows, when rivers rise and go over their banks.  
**Freeze** - It occurs when the temperature falls below 32 degrees over a large area for an extended period of time.

**Freeze Warning** - It's issued during the growing season when the temperature falls below 32 degrees over a large area for an extended period of time. A freeze can destroy crops.

**Frost** - White ice crystals that form on a surface, like the ground or leaves of a plant. Frost is created when the air temperature drops below freezing and the water vapor in the air freezes into ice crystals.

**Global Warming** - The theory that increased concentrations of greenhouse gases are causing the Earth's surface temperature to warm.

**Greenhouse Effect** - The heating effect of the Earth's atmosphere. The atmosphere acts like a greenhouse because sunlight freely passes through it and warms the surface, but the Earth's re-radiated heat is slowed in its escape from the planet back into space.

**Hard Freeze** - A freeze when the air temperature is 26 degrees or colder for at least four consecutive hours. It usually means that seasonal vegetation will be destroyed.

**Hurricane** - They are intense storms with swirling winds up to 150 miles per hour. Usually around 300 miles across, hurricanes are 1,000-5,000 times larger than tornadoes. Hurricanes are known by different names around the world. In Japan they are Typhoons, while Australians call them Willy-Willys.

**Hurricane Season** - A six-month period from June 1 to Nov. 30, when conditions are favorable for hurricane development.

**Meteorologist** - A scientist who studies and predicts the weather. Meteorologists use sophisticated equipment, like Doppler radar and supercomputers, but they also rely on old-fashioned sky watching.

**Meteorology** - The study of the atmosphere and all its phenomena, including weather and how to forecast it.

**Ozone** - A form of oxygen that has a weak chlorine odor. Ozone heats the upper atmosphere by absorbing ultraviolet from sunlight. In the troposphere, ozone is a pollutant, but in the stratosphere it filters out harmful ultraviolet radiation.

**Precipitation** - General name for water in any form falling from clouds. This includes rain, drizzle, hail, snow and sleet. Although, dew, frost and fog are not considered to be precipitation.

**Radar** - An electronic instrument, which determines the direction and distance of objects that, reflect radio energy back to the radar site. This is what meteorologists use to see rain or snow.

**Rain** - Liquid precipitation in the form of water drops that falls from clouds for several hours.

**Rainbow** - They are one of the most common but most spectacular sky displays. Rainbows are caused by the reflection and refraction (bending) of sunlight passing through raindrops. In heavy rains a double rainbow can often be seen. The sequence of a rainbows color is red, orange, yellow, green, blue, indigo and violet.

**Seasons** - The earth's position in relation to the sun is always changing. The earth spins around its axis, an imaginary line that runs between the north and south poles. One complete spin takes 24 hours, and at any moment, half of the earth is lit and warm (day), while the other half faces away from the sun (night). While it spins the earth also moves around the sun in a circle, called an orbit, and the orbit takes one year to complete. As the earth moves and spins it is tilted in one direction at an angle of 23 degrees. It stays tilted all the time as it orbits the sun, so that each area of earth receives different amounts of the sun's energy at different times of the year. This is why we have seasons.

**Spring** - The season between winter and summer. Spring officially begins in late March and lasts until late June.

**Storm** - Any disturbed state of the atmosphere that creates unpleasant weather like rain, lightning, thunder, hail, snow, sleet, and freezing rain.

**Summer** - The warmest season of the year. Summer officially begins in late June and last until late September.

**Sun** - It's responsible for most of the earth's weather, even though it is 93 million miles away. The Sun's intense heat gives energy to the earth's atmosphere and sets it in motion. The Sun is a star, 868,000 miles across, in the center of our solar system.

**Temperature** - The measurement of how hot or cold something is.

**Thermometer** - The instrument that measures temperature.

**Thunder** - The explosive sound of air expanding as it is heated by lightning.

**Thunderstorm** - A storm produced by a cumulonimbus cloud and always has lightning and thunder. Rain, hail and high winds may or may not occur.

**Transpiration** - The process by which water in plants is transferred as water vapor to the atmosphere.

**Weather** - It describes the condition of the air at a particular time and place. Weather also tells how the air moves (wind) and describes anything it might be carrying such as rain, snow or clouds. Thunder, lightning, rainbows, haze and other special events are all part of weather.

**Wind** - The movement of air relative to the surface of the earth. It's considered to be severe if 58 M.P.H. or greater. Hurricane winds are 74 mph or greater and the highest tornado winds are about 318 m.p.h.

**Winter** - The coldest season of the year. Winter officially begins in late December to late March.

## TEACHER RESOURCES

EPA Climate impact on agriculture

<https://www.epa.gov/climate-impacts/climate-impacts-agriculture-and-food-supply>

NCSU effects of Climate change on agriculture

<http://climate.ncsu.edu/edu/k12/ClimateChange-Ag>

Global Climate Change-agriculture

<http://nca2014.globalchange.gov/report/sectors/agriculture#intro-section-2>

National Center for Science Education

<https://ncse.com/climate>

# THE WEATHER GAME

Teachers: Your field trip to the farm easily connects to Connecticut Common Core Social Studies Standards. We create an opportunity for students to compare farm life from the past to a farms contribution to our community today.

## CT Common Core Science Standards

- PK.1 Objects have properties that can be observed and used to describe similarities and differences  
PK.2 Many different kinds of living things inhabit the earth.  
PK.3 Weather conditions vary daily and seasonally  
PK.4 Some objects are natural, while others have been designed and made by people to improve the quality of life.
- K.1 Objects have properties that can be observed and used to describe similarities and differences  
K.2 Many different kinds of living things inhabit the earth  
K.4 Some objects are natural, while others have been designed and made by people to improve the quality of life.
- 1.2 Living things have different structures and behaviors that allow them to meet their basic needs.  
1.3 Organisms change in form and behavior as part of their life cycles.  
2.4 Human beings, like all other living things, have special nutritional needs for survival  
3.2 Organisms can survive and reproduce only in environments that meet their basic needs.  
4.2 All organisms depend on the living and nonliving features of the environment for survival.

Connecticut Core Standards: [http://ctcorestandards.org/?page\\_id=9591](http://ctcorestandards.org/?page_id=9591)

## Next Generation Science Standards

Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment

K-LS1-1., K-ESS2-2., K-ESS3-1. K-ESS3-3.

Weather and Climate,

K-PS3-1. K-PS3-2. K-ESS2-1. K-ESS3-2.

From Molecules to Organisms: Structures and Processes

1-LS1

Interdependent Relationships in Ecosystems

2-LS2-1. 2-LS2-2. 2-LS4-1

Earth and Human Activity

K-ESS3-1. K-ESS3-2. K-ESS3-3

K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface.

K-PS3-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area

K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time

K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted

1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live

K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment

Next Generation Science Standards: <http://www.nextgenscience.org>