

Daily Lesson Plan (DLP)

Topic: Research species of plants that can be grown in your zone		Day :1
Grade: 4-5	Lesson Name: Research species of plants that can be grown in your zone	Time : (60 Mins.)

Topic	Which variety has the longest growing cycle for each family?
Weekly key words	Hardiness, growing season, life cycle, hardy plants, tender plants, etc.
Seating plan	<input type="checkbox"/> Individual <input type="checkbox"/> Pairs <input type="checkbox"/> Group of 4
Skill development	<input checked="" type="checkbox"/> Reading <input checked="" type="checkbox"/> Writing <input checked="" type="checkbox"/> Discussion <input type="checkbox"/> Presentation <input type="checkbox"/> Reflection <input type="checkbox"/> Illustration <input type="checkbox"/> Collaboration <input type="checkbox"/> Observation <input type="checkbox"/> Research <input type="checkbox"/> Other (Specify)

Objectives: ➤ The students will be able to:	➤ Learn about the longest growing cycle of varieties of each plant family
Teaching Resources:	Multimedia/projector, laptop, YouTube, writing board, notebook, piece of paper, pen/pencil, harvest chart time, worksheet
Teaching Learning Strategies	
<p>Introduction: 5 mins.</p> <p>Start the lesson by asking students to recall and share the plant families with the classroom. Gather their responses and give feedback.</p> <p>Methodology: (20 mins.)</p> <p>The teacher will explain and discuss the longest growing cycle of plants of plant families.</p> <p>Seasonal Plants: Season in the year vary by temperatures, weather, amount of light, and rainfall. Plants go through these seasons in different ways. Some produce seeds and die after a year or two, while others grow and produce seeds for many years. There are three categories of seasonal plants defined by the number of growing seasons they take to complete their full life cycle. These groups are called annuals, biennials, and perennials.</p> <p>What is Growing Season:</p> <p>The definition of a growing season is a period of time in the year when plants can grow. This growing season is limited by many factors, such as climate, temperature, daylight, elevation above sea level, and rainfall. It is determined by where plants live, how they reproduce, and the role they play in the environment. In tropical and equatorial regions, the growing season lasts all year, while in higher latitudes it may last for less than two months. The length of the growing season can be measured in two ways:</p> <ol style="list-style-type: none"> 1. Temperature 2. Frost-free days <p>The first one is to measure the length of the growing season. The farmer has to count the days when the average temperature is higher than what is required for seed germination. This measure is determined by the species of the plants.</p> <p>The other mode of measurement counts the time frame between the last killing frost in the spring and the first frost in the fall.</p> <p>Note: Due to climatic changes, the length of the growing season has increased in some places in the world, such as the United States, since the beginning of the 20th century. For the contiguous 48 states, the US Environment Protection Agency reports that the average length of the growing season has increased by more than two weeks.</p> <p>Since more harvests can be made from the same plot, a longer growing season may seem beneficial at first. But, it also encourages the growth of invasive species and increases the amount of water needed to maintain the plots. On a broader ecosystem level, a</p>	

longer growing season influences the kind of plants that grow in the ecosystem and as a result, affects the range and type of animals that depend on those plants in the area.

Annual, Biennial, and Perennial Plants:

All flowering plants follow the same basic life cycle: germination from seed, growing, producing flowers and seeds, then dying

1. Annual: plants complete that cycle in one germination season
2. Biennials: require two seasons to complete their life cycle and die.
3. Perennials: plants live on for many years, flowering every year.



In regions with winters, the length of the growing season is capped by the days when the temperature is higher than what is required for seed germination or the first and last frost date.

What are The Differences Among Annuals, Biennials, and Perennials?

The difference between annuals and perennials lies in the number of growing seasons they require to complete their life cycle. Biennials are similar to annuals except that they require two growing seasons, not one, to flower and bear seeds.

Every season, seeds are the only things that allow for new annuals to grow. In contrast, perennials can come back year after year without dying. Biennials only produce vegetative parts such as leaves and roots in the first growing season and produce flowers and seeds in the second season, then die.

Some may wonder if annual or perennials are better. While there are key differences in growth requirements and planting times for perennials versus annuals, gardeners can choose a combination of annuals and perennials to fulfill different garden functions. For example, annuals are often brighter plants and offer instant gratification, while native perennials come back year after year and provide a habitat for pollinators and local wildlife.

Do Annual Plants Come Back Every Year?

All **annual plants** (also known as bedding plants) begin their seed germination in the spring, then grow, flower, set seed, and die by the frosts in the fall. Between growing seasons, the dormant seeds are the only way new annual plants establish themselves in the next spring.

What Are plant Hardiness?



Plant hardiness describes how much cold a plant can take and thrive. Some plants enjoy cold, even freezing weather, while others cannot tolerate even a light frost. Common annual fruits and vegetables fall under four types of plant hardiness.

Hardy and Semi-Hardy vegetables are also known as cold season vegetables. Tender and Very tender vegetables are also known as warm season vegetables.

40°F+
daytime temperature

Hardy

Hardy vegetables grow with daytime temperatures as low as 40°F and can survive light frosts. They are often planted for a second crop mid summer. Examples include arugula, peas, lettuce, spinach, radish, broccoli, cabbage, and kohlrabi.

40°-50°F+
daytime temperature

Semi-Hardy

Semi-Hardy vegetables grow with daytime temperatures of 40°F-50°F but are less tolerant of frosty nights. Examples include beets, carrots, cauliflower, parsley, woody herbs, artichokes, potatoes, and Swiss chard.



55°F+
daytime temperature

Tender

Tender vegetables prefer daytime temperatures above 55°F and are not tolerant of frost. Examples include corn, beans, summer squash, cucumbers and New Zealand spinach.

55°F+
nighttime temperature

Very Tender

Very tender vegetables must have evenings above 55°F to thrive and are not tolerant of frost. Examples include basil, tomatoes, peppers, eggplant, melons, winter squash and watermelon.



Activity: (30 mins.) (Group Work)

Make groups of 7-8 students.

Begin the activity 4 weeks before the last average frost date and continue through the year if possible. 1. Take a quick walk around your schoolyard or school garden. Look for some of the plants that are in the Nature Signs Chart Example on page 23. Do you see any of them sprouting or blooming? 2. Record the date and what you see in your garden journal. If you have time, draw a picture of the plants you see sprouting or blooming. Use the What Did You See Today? Worksheet. 3. Each week take a similar walk and record your observations. 4. Use the chart to decide when to plant each type of crop.

Discussion:

1. What other plants do you notice in early and late spring? Add any more signs that you have observed on a new chart. Keep your chart for each year. Do the signs vary from year to year?
2. Have you noticed if there are specific times when you see larvae or insects emerge to eat the plants?
3. When do pollinators such as butterflies, bees and wasps arrive?

Wrap up (5mins.): Wind up the lesson by asking the students randomly to share their findings.

Home Assessment:

The students will do the worksheet as homework.

Worksheet (Day1)

Lesson Evaluation:

- Teacher was able to accomplish all aspects of the lesson well ☐
- Teacher was not able to do warm up activity ☐,
- develop lesson plan well ☐,
- do the learning activity ☐,
- do wrap up ☐,
- accomplish lesson objective ☐,
- manage time well ☐,
- manage class well ☐

Plant Cultivation Chart

Name	Family	Edible Plant Part	Start Inside*	Hardiness†	Warming Mat?	Days until Harvest**	Plant in Succession
Artichoke	Sunflower	Flowers	8-10	SH	No	110-150	No
Arugula	Cabbage	Leaves	No	H	No	40-55	Yes
Asparagus	Lily	Stems	No	H	No	2nd yr	No
Beans, Dried	Legumes	Seeds	No	T	No	85-100	No
Beans, Green	Legumes	Fruit	No	T	No	50-70	Every 4 weeks
Beet	Beets	Roots	No	SH	No	50-70	Yes
Broccoli	Cabbage	Flowers	6-8	H	No	50-65	85-100 days before 1st frost
Cabbage	Cabbage	Leaves	6-8	H	No	60-90	85-100 days before 1st frost
Cantaloupe	Cucumber	Fruit	2-4	VT	No	75-100	No
Cardoon	Sunflower	Leaves	8-12	H	No	110-150	No
Carrot	Parsley	Roots	No	SH	No	60-80	Every 3 weeks
Cauliflower	Cabbage	Flowers	6-8	SH	No	55-80	85-100 days before 1st frost
Celery	Parsley	Leaves	6-10	H	No	100	No
Corn	Grasses	Seeds	No	T	No	65-100	No
Cucumber	Cucumber	Fruit	No	T	No	55-65	No
Eggplant	Nightshade	Fruit	8-12	VT	Yes	75-90	No
Fava bean	Legumes	Seeds	No	H	No	85-100	85-100 days before 1st frost
Fennel	Parsley	Leaves	6-8	H	No	90-115	No
Garlic	Lily	Roots	No	H	No	90-150	No
Kale	Cabbage	Leaves	6-8	H	No	50-85	60-80 days before 1st frost
Kohlrabi	Cabbage	Stem	6-8	H	No	55-70	85-100 days before 1st frost
Leek	Lily	Roots	6-10	H	No	100-120	No
Lettuce	Sunflower	Leaves	No	H	No	45-60	60 days before last frost
Onion	Lily	Roots	6-8	H	No	100-120	No
Parsnip	Parsley	Roots	No	SH	No	110-130	No
Peanut	Legumes	Seeds	4-6	VT	Yes	120-150	No
Pea	Legumes	Seeds	No	H	No	55-85	60-80 days before 1st frost
Pepper	Nightshade	Fruit	8-12	VT	Yes	60-90	No
Potato	Nightshade	Tuber	No	SH	No	90-120	No
Radish	Cabbage	Roots	No	H	No	22-70	Yes
Rhubarb	Buckwheat	Leaves	No	H	No	2nd yr	No
Rutabaga	Cabbage	Roots	No	SH	No	80-100	No
Shallot	Lily	Roots	6-8	H	No	60-75	No
Spinach	Beets	Leaves	6-8	H	No	45-60	Yes
Squash, Winter	Cucumber	Fruit	No	T	No	85-120	No
Squash, Summer	Cucumber	Fruit	2-4	T	No	50-60	No
Strawberry	Rosacea	Fruit	No	H	No	2nd yr	No
Sweet Potato	Morning Glory	Tuber	No	VT	No	100-125	No
Swiss Chard	Beets	Leaves	6-8	SH	No	40-80	Yes
Tomatillo	Nightshade	Fruit	8-10	VT	Yes	85-90	No
Tomatoes	Nightshade	Fruit	8-12	VT	Yes	65-90	No
Turnip	Cabbage	Roots	No	SH	No	45-70	No
Watermelon	Cucumber	Fruit	2-4	VT	No	70-100	No

* Numbers indicate number of weeks before last frost date

† Key: **H=Hardy** (2-4 weeks before last frost), **SH=Semi Hardy** (0-2 weeks before last frost),

T=Tender (after last frost), **VT=Very Tender** (2 weeks after last frost)

** From the date of germination

Worksheet Day 1

Name: _____

Class: _____

Topic: Gardening

Subject: Science

- Write down the growing seasons of any five plants.
- Draw the life-cycle in the given space.
