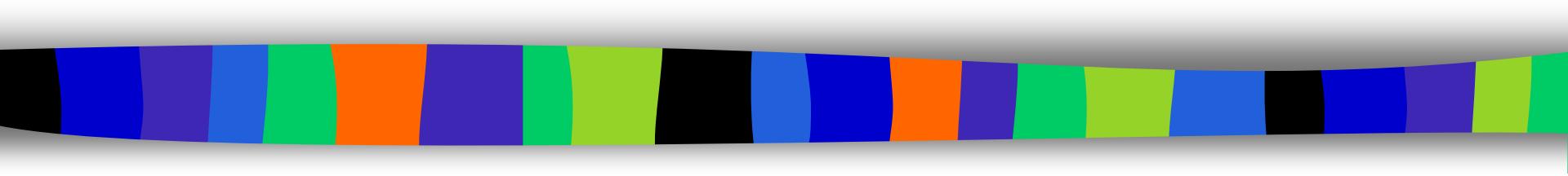
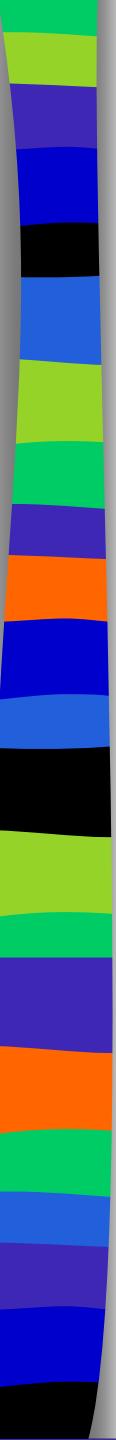


# **Unit B: Seed Germination, Growth, and Development**



## **Lesson 2: Understanding Plant Life Cycles**



# Terms

- Annuals
- Biennial
- Deciduous
- Evergreen
- Herbaceous perennials
- Life cycle
- Perennial
- Summer annuals
- Winter annuals
- Woody perennials

# How is a Plant Life Cycle Defined?



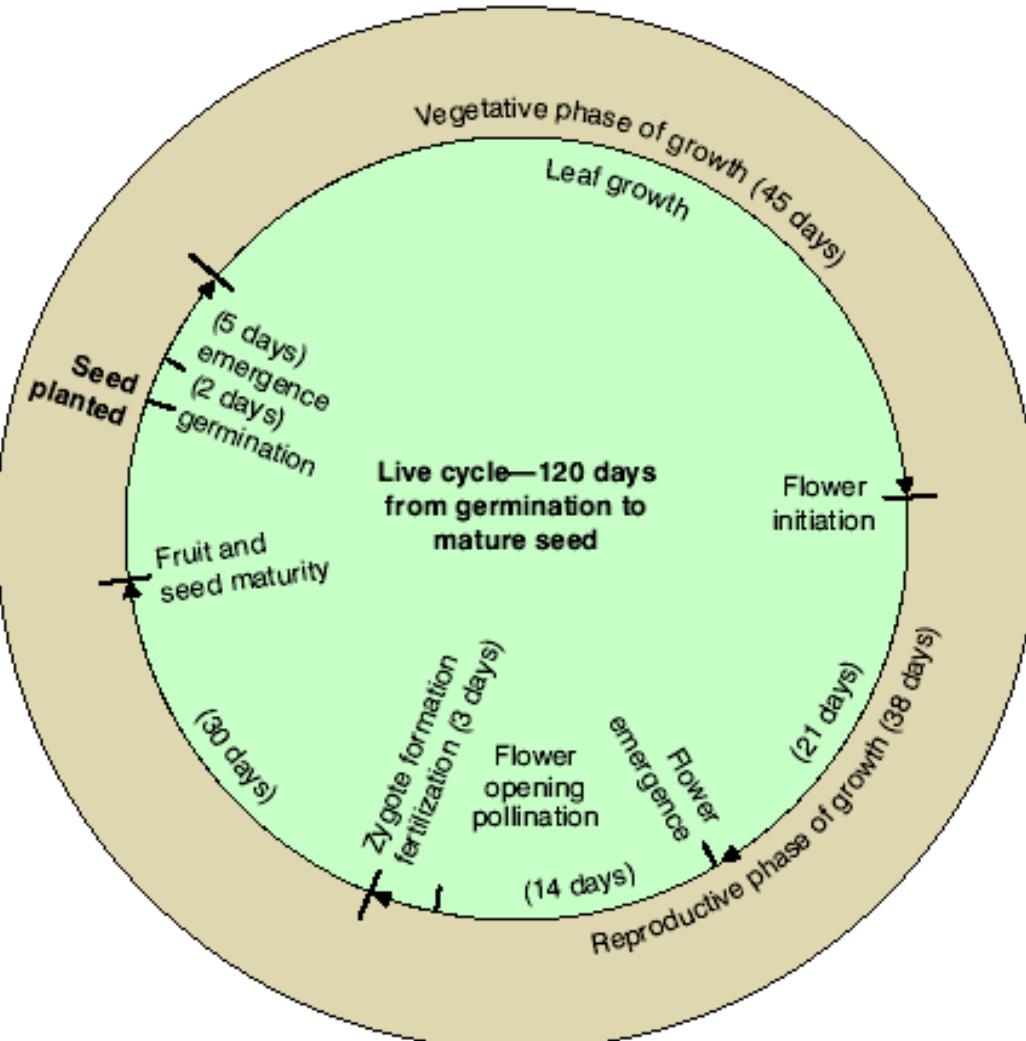
- Plants can be grouped or classified on the basis of their life cycles.
  - A **life cycle** is defined as the length of time from when a seed germinates until the resulting plant produces new viable seed. The plants that surround us fall into three main life cycles: annual, biennial, and perennial.

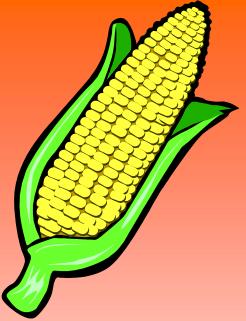


# What is an Annual Life Cycle?

- Plants that complete their life cycle within one growing season are considered to be **annuals**.
  - A typical annual plant might require about 120 days after seed germination to produce seed. The germination process takes roughly 5 days. When the seedlings emerge, the plant enters a vegetative phase. The vegetative phase, which involves leaf growth and food production through photosynthesis, might last 45 days. The plant shifts to a stage in which flower bud development is initiated. Flower bud initiation lasts about 21 days. Flowers develop and emerge in about 14 days. Pollination and fertilization take place over about 3 days. In the final 30 day phase, seeds and fruits mature.

# TYPICAL LIFE CYCLE OF AN ANNUAL





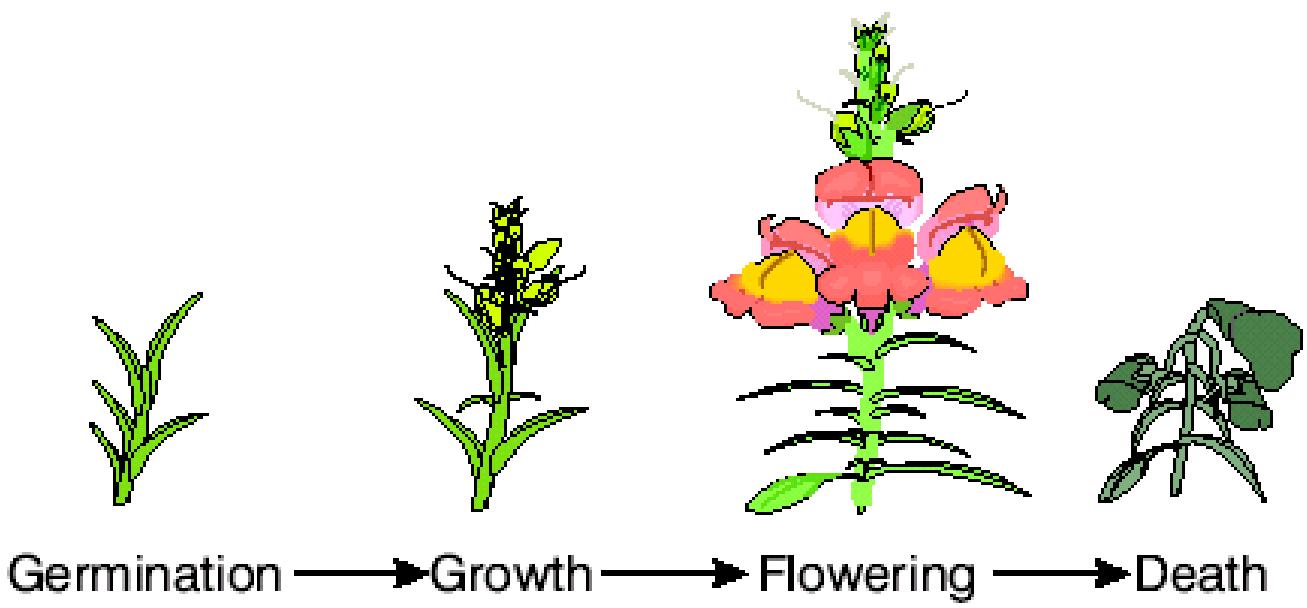
B. One type of annual plant is the summer annual.

**Summer annuals**, such maize, cotton, tomatoes, and many other vegetable plants that germinate in the spring. They mature, produce seed, and die during the spring and

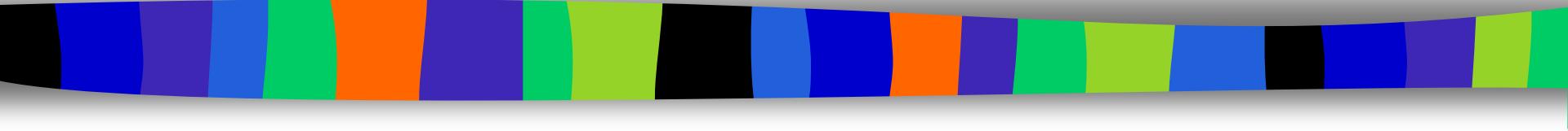
summer. Summer annuals are usually sensitive to cold temperatures.

C. Another type of annual is known as the winter annual. **Winter annuals** germinate in the fall, form a compact rosette of leaves, sit dormant over the winter, and resume growth in the spring. In the spring they flower and produce seed. Wheat and chickpeas are two common winter crops in Afghanistan.

# **ANNUAL LIFE CYCLE**



# What is a biennial life cycle?

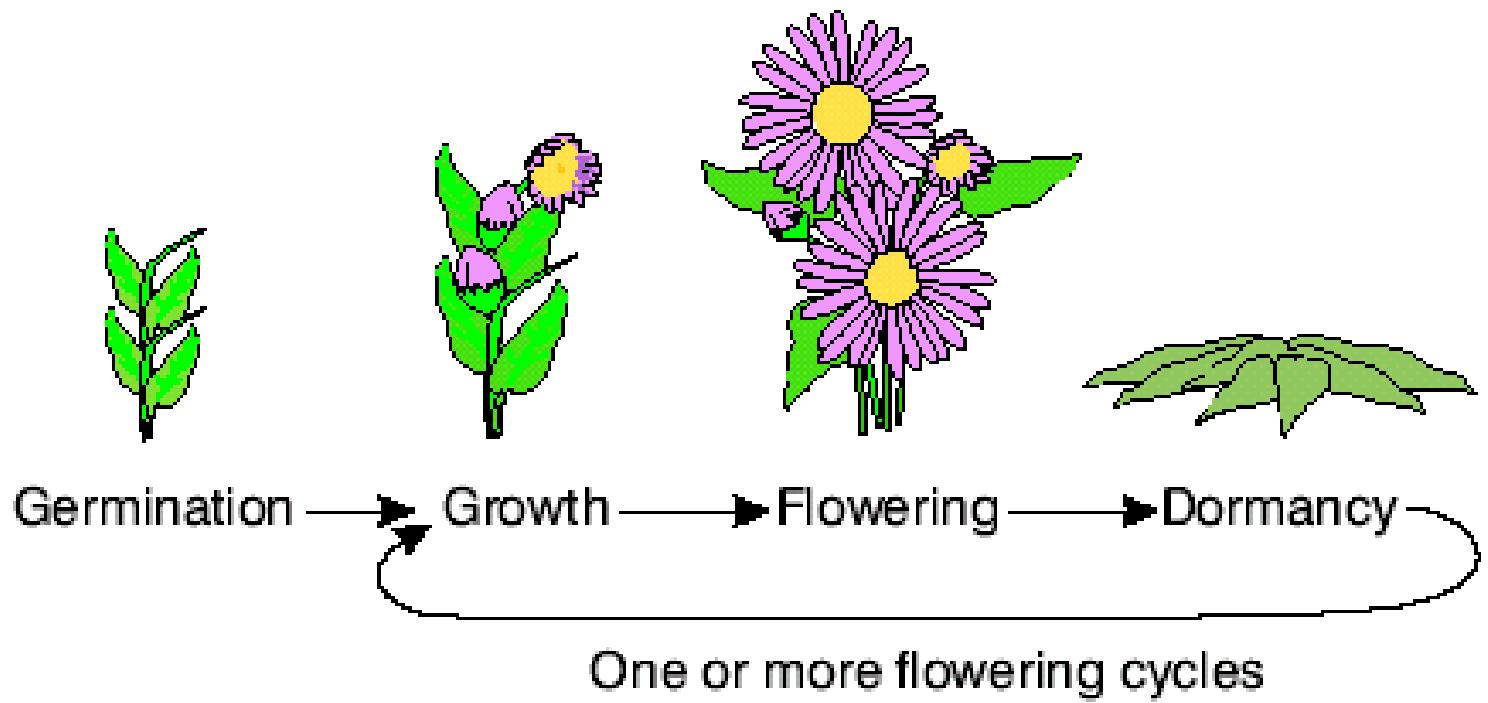


- **Biennial** plants are plants that require two years to complete their life cycle.

Typically, biennial plant seeds are sown in the spring. In the first year the plant grows leaves, stems, and roots (vegetative structures), then it enters a period of dormancy over the colder months. They overwinter and in the second spring or summer the stem of the biennial plant elongates greatly. The plant then flowers, producing fruits and seeds before it finally dies. Two examples of biennial plants are carrots and beets.



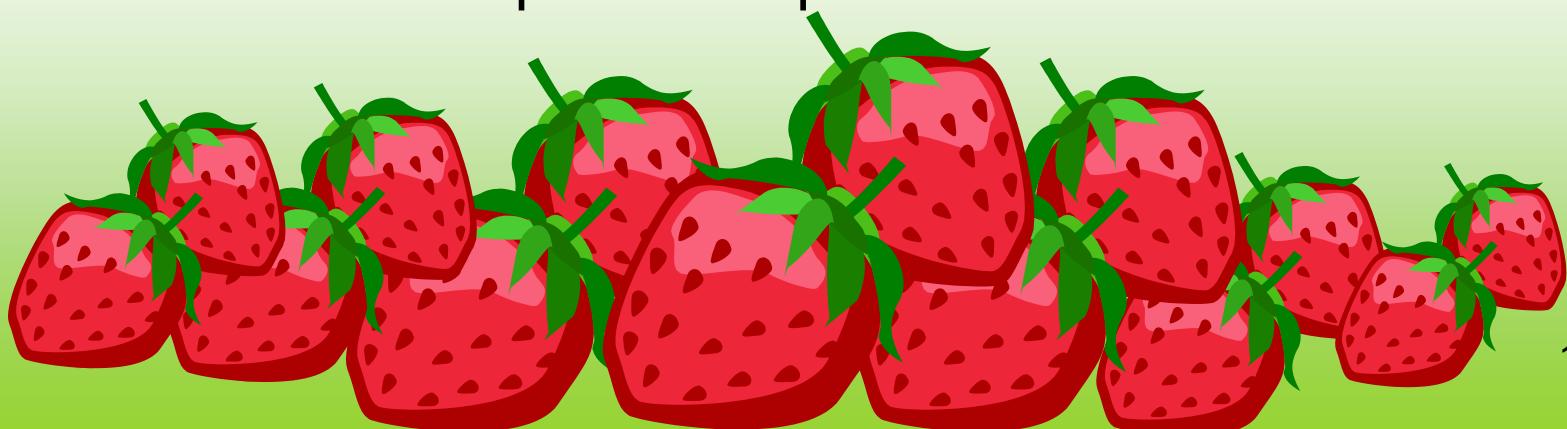
# BIENNIAL LIFE CYCLE



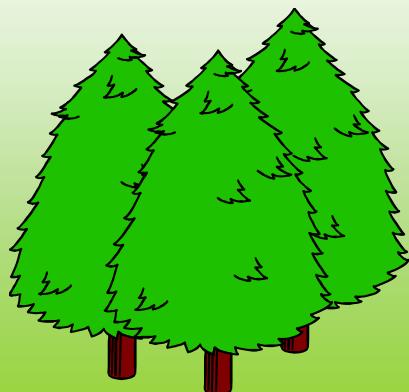
# What is a perennial life cycle?



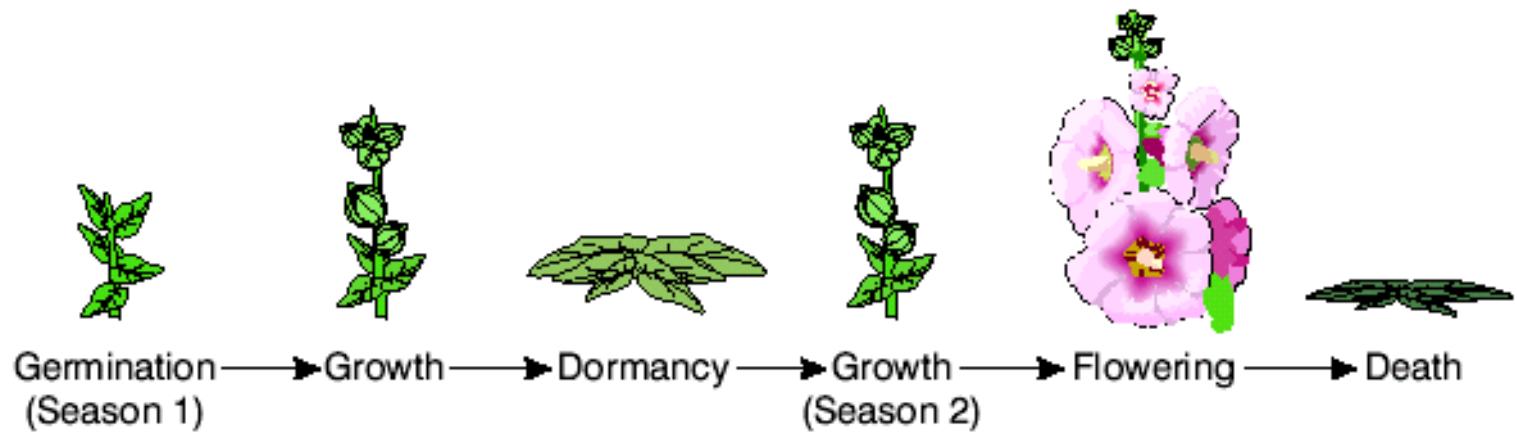
- **Perennial** plants are a group of plants that have life cycles that go beyond 2 years.
  - **Herbaceous perennials** have shoots that die to the ground each fall. The root system survives the winter, and provides energy for the growth of new shoots in the spring. Asparagus, strawberries, artichokes, and onions are examples of herbaceous perennial plants.



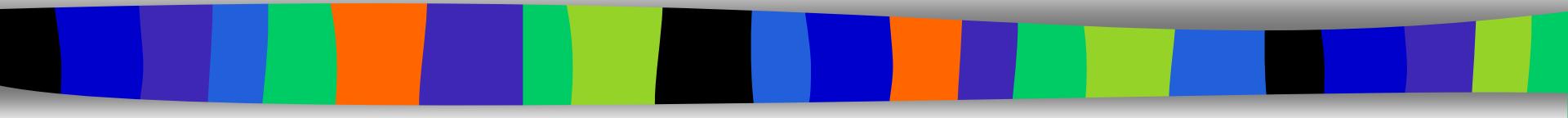
- **Woody perennials** have a top that persists through winter. In the spring shoot growth resumes from latent or adventitious buds. Trees and shrubs are woody perennials. Trees and shrubs that drop all of their leaves in the fall are said to be **deciduous**. Plants whose leaves persist throughout the year are termed **evergreen**. Evergreen plants shed some leaves every year. A typical evergreen leaf lasts 1–3 years before dropping.



# PERENNIAL LIFE CYCLE



# Review/Summary

A decorative horizontal bar at the bottom of the slide consists of a series of colored squares in various sizes and colors, including black, blue, purple, green, and orange.

How is a plant life cycle defined?

What is an annual life cycle?

What is a biennial life cycle?

What is a perennial life cycle?