

# PLANT BIOLOGY 101

## PLANT STRUCTURE

### PLANT LIFE CYCLES

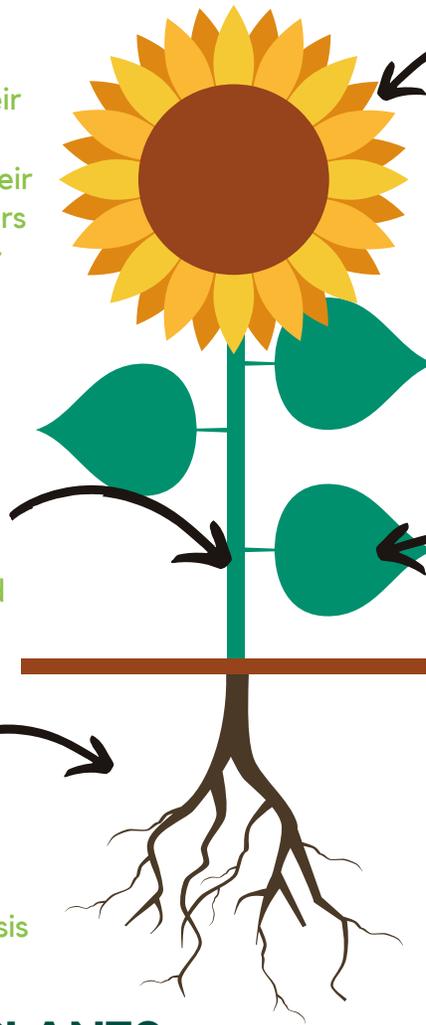
- **Annual:** plants that complete their entire life cycle in one year
- **Biennial:** plants that complete their life cycle in all or part of two years
- **Perennial:** plants that live longer than two years

### STEM

- Gives plants their upright form
- Supports buds and leaves
- Moves water, nutrients and sugars from leaves to roots and vice versa

### ROOTS

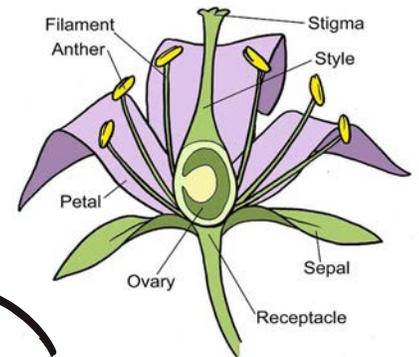
- Absorb water and minerals
- Anchor the plant and provide support for stem
- Store products of photosynthesis



### FLOWER

- Reproductive organs of the plant
- Attract pollinators (fragrance, color)

### FLOWER PARTS:



### LEAVES

- Capture and conserve light energy through the process of photosynthesis
- Take up CO<sub>2</sub> for photosynthesis and release oxygen
- Control water use and leaf temperature through transpiration

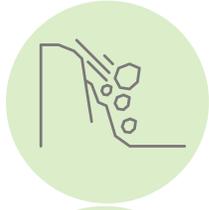
## BENEFITS OF NATIVE PLANTS



Native plants support pollinators, wildlife and create resilient ecosystems.



They require far less water, saving time, money, and the most valuable natural resource, water.



A great management tools for erosion, filtering water run-off, and reducing non-native invasive plant species



For centuries the Diné People utilized native plants for livestock fodder, heat, building material, food, ceremony, and medicine

## NATIVE V.S. NON-NATIVE PLANTS

*A plant is considered native if it has occurred naturally in a particular region, ecosystem, or habitat without human introduction.*

*A plant introduced with human help (intentionally or accidentally) to a new place or new type of habitat where it was not previously found.*



## PLANT IDENTIFICATION TOOLS/RESOURCES

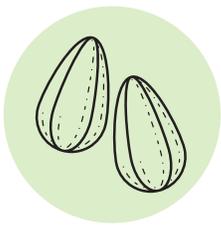
### Books:

- *Plants of Arizona*
- *Nanise' A Navajo Herbal*
- *Botany in a Day*

### Online Resources:

- *NMSU: Selected Plant of Navajo Rangelands*





## WHAT IS A SEED AND WHY ARE THEY IMPORTANT?

A seed is the next generation of a plant that contains valuable genetics. Fruits and seeds evolve from the maturing ovary following pollination and fertilization. Seeds are a critical natural resource to create biodiversity and resilient ecosystems. They play an important roll in plant production and seed storage is cost effective and a space efficient method of plant preservation.

## LOCALLY ADAPTED SEEDS/GENETICALLY APPROPRIATE SEEDS

Native plants are adapted to local conditions and locally adapted seeds will typically survives better than non-local native plants of the same species.

# DINÉ NATIVE PLANTS PROGRAM SEED COLLECTING PROTOCOL

- Sample from **at least 50** plants
- Only collect **20%** of available seed
- Sample from large **wild** populations
- **Collect randomly** and **evenly**

## ESSENTIALS FOR EACH COLLECTION

1. Collection data form
2. GPS - track the origin of seeds collected
3. Photographs of plant, seeds, and collection area.
4. Herbarium voucher for NAVA Herbarium.

## NOT SURE IS THE SEEDS ARE READY TO HARVEST?

### DO A CUT TEST!

The seed will dry when they mature and they will change color from green to brown or white. Cut the seed open to expose the flesh inside the seed coat.

This will help you determine the readiness of the seed.

## POST COLLECTION: WHAT TO DO WITH THE SEEDS?

### Seed storage and Basic Propagation Techniques

Native seeds have protective coatings to help them survive in nature. Seeds have a number of seed dormancy strategies, including a tough seed coat that requires a treatment to kickstart germination. There are many ways to break dormancy, **cold stratification** and **scarification** are two commonly used techniques.

### COLD STRATIFICATION

This method tricks the seed into thinking the winter weather has come and it is time to go dormant. **METHOD:** Place seed in refrigerator (or outside) 34-39 degrees for 1-2 months before planting

### SEED STORAGE:

Dry your seeds completely before storing them. Store seeds in a dark, dry, and cool place. Optimal seed storage conditions: 45-55 degrees with ~25% humidity

### SCARIFICATION

This method mimics fire, high temperatures, digestive acids in animal stomachs, and scraping over sand or ice. **METHODS:** rub with sandpaper, hot water soak, chemical soak in hydrogen peroxide

Online Resources for propagation and storage:

- *Nursery Maunual for Native Plants*
- *RNGR Propagation Protocols*

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