

Program Type: Lab Activity		Duration: 150 minutes (3 class periods)
Standards: SC.912.L.17.8 Explain how human activities impact biodiversity and the importance of protecting endangered species to maintain ecosystem balance. SC.912.L.17.20 Explain how human activities can impact the environment and the importance of sustainable practices in conserving natural resources		
Learning Objectives: Predict how unsuitable plant choices negatively affect environmental systems (e.g., through increased water waste). Analyze a drought prone landscape scenario and identify factors contributing to biodiversity loss. Select and recommend native/Florida friendly plants that promote ecological sustainability.		
Guiding Questions: What are the indicators of a drought prone landscape? What conditions are essential for plant survival and growth? How do human plant choices impact the ecological role? What specific environmental conditions exist at your site? Which plants are right for this place, and why?		
Intended Outcomes		
As a result of the program, what I want my audience to LEARN... Invasive plant species disrupts ecosystems and reduces biodiversity Native, drought tolerant plant choices reduce water consumption Thoughtful landscaping can help restore ecological balance	As a result of the program, I want my audience to ACT by... Evaluate specific site conditions including soil, sunlight and water stress Recommend native/Florida Friendly drought tolerant plants Advocate for sustainable landscaping practices at their school community	Assessment: (How will you know your audience has reached your intended outcomes) <i>Completion of a Landscape Rescue Challenge by:</i> Selecting 6 appropriate native/Florida Friendly plants to replace unsuitable species Justifying their selections based on hardiness zone, light requirements, soil texture and pH
Schedule Layout:		Items Needed:
DAY 1- INTRODUCTION + KEY TERMS (25 MINUTES): Introductory lesson on FFL Principle #1: "Right Plant, Right Place" <i>Key terms:</i> invasive species, native species, drought tolerance, drought prone, biodiversity, sustainability SITE ANALYSIS (35 MINUTES): Conduct a site visit to observe a drought prone landscape on campus. <i>In groups of 4:</i> Students discuss and record at least two probable causes of the site issues, determine light ability and record USDA hardiness zone		FFL Handbook extract on Principle #1. (1 per group). Printed worksheet (1 per student). Pen/Pencil
DAY 2: SOIL SAMPLING AND ANALYSIS Collect soil samples from the site (15 minutes) Analyze soil texture through sedimentation testing (15 minutes) Determine the soil pH using field testing methods. (20 minutes)		Shovels, soil sampling bags, gloves Baking soda, vinegar, plastic cups, distilled water Transparent bottles with lids, dish soap Digital pH meter (if available)

DAY 3: PRESENTATIONS AND REFLECTION

Bellwork (10 minutes): Observation and conclusion on soil texture

Group Presentations (35 minutes):

- Use their findings to identify suitable native/Florida friendly plant species with the FFL Plant Mobile App/ website
- Each team presents their proposed 6 native/Florida Friendly plants
- Students justify their choices based on environmental data (hardiness zone, light, soil pH and texture)

Exit ticket (5 minutes): Submission of worksheet with all sections completed.

Powerpoint presentations from each group

Technology to access to the FFL mobile app/website

Rubric for assessing presentations

Details:

Activity Set-Up: Groups of 4 students

Need to print before activity: Landscape Rescue worksheets (1 per student) for observations and planning, FFL handbook extract on Principle #1. (1 per group), Protocols for soil pH and texture analysis. (1 per student)

Lab materials:

Soil sampling: Gloves and sampling bags

Soil texture test: Transparent bottles with lids, water and dish soap

Soil pH test: Plastic cups, baking soda, vinegar, distilled water

Optional Extension: Partner with the school's FFA and Green Team to advocate for sustainable landscaping. Develop posters or infographics to promote the “Right Plant, Right Place” Principle.

FFL Principle 1- Right Plant, Right Place Landscape Rescue Student Worksheet

Name: _____

Date: _____

Period: _____

Part 1: Site Analysis

Light Availability	
USDA Hardiness Zone	
Description of Site Conditions	

Part 2: Soil Analysis Procedures

A. Determining Soil pH (Using Vinegar and Baking Soda)

Procedure (adapted from UF/IFAS Extension and Home Soil Testing methods)

1. Place 2 teaspoons of soil into two separate containers.
2. Add distilled water to both containers until the soil is muddy.
3. To the first container, add 1–2 teaspoons of vinegar and observe for fizzing- FIZZING INDICATES ALKALINE SOIL.
4. To the second container, add 1–2 teaspoons of baking soda and observe for fizzing- FIZZING INDICATES ACIDIC SOIL.
5. If neither reacts, the soil is likely neutral.

Observations:

Alkaline Soil Test (positive or negative)	
Acidic Soil Test (positive or negative)	
Conclusion on soil pH	

B. Determining Soil Texture (Sedimentation Test)

Procedure (adapted from USDA NRCS and Gardening Know How sources):

1. Fill a transparent bottle about 1/3 with dry soil.
2. Add water until the jar is nearly full.
3. Add a few drops of dish soap.
4. Shake the bottle vigorously for 1–2 minutes.
5. Set the jar on a flat surface and let it sit undisturbed for 24 hours.
6. Observe the layers:
 - *Sand settles first (bottom layer)*
 - *Silt settles next (middle layer)*
 - *Clay remains suspended longest (top layer)*
7. Measure the height of each layer to estimate percentages.

Observations:

Total Height of sediment layer (cm)	
Sand Layer	Height (cm): _____ Percentage of total: _____
Silt Layer	Height (cm): _____ Percentage of total: _____
Clay layer	Height (cm): _____ Percentage of total: _____

Soil Texture Classification Guide

Use the percentages from your soil test to determine your soil type:

	<i>Sand</i>	<i>Sandy Loam</i>	<i>Loam</i>	<i>Silt Loam</i>	<i>Clay Loam</i>	<i>Clay</i>
Percentage of sand	85-100	70-85	40-60	0-20	20-45	0-45
Percentage of silt	0-10	0-20	30-50	60-90	15-40	0-40
Percentage of Clay	0-10	0-20	10-20	0-20	27-40	40-100

Classification of your soil: _____

Part 3: Florida-Friendly Plant Recommendations

List and describe six Florida-friendly plant species suitable for this sight based on your soil and light analysis.

Common Name	Scientific Name	Features	Justification