

PLANT KINGDOM ICA & WORKSHEET
CHAPTERS 22-25

I. IMPORTANCE OF PLANTS:

A. Human dependence on plants:

1. Plants as a source of food

a. Summarize briefly the history of the plants, humans relationship:

b. Describe each of the following types of plants and their role in human nutrition:

1. Cereals-

2. Legumes-

3. Root Crops-

4. Fruits-

Which group of plants supplies the major source of food today?

c. What was the *Green Revolution*, and what were some of the positive and negative results?

2. Other uses of plants:

a. Medicines that are made from plants:

b. Other plant uses:

B. Plants and the environment:

Describe the role of plants in the recycling of nutrients in the environment.

II. PLANT EVOLUTION AND TAXONOMY

A. BRYOPHYTES: (the non-vascular plants)

1. Trace the transition of plants as they made the move from water to land during the Silurian period by answering the following questions:

a. What advantages does a terrestrial environment offer to plants?

1.

2.

3.

b. What adaptations did plants have to make as they made the move to land?

1.

2.

c. What evidence is there that land plants evolved from the Division Chlorophyta?

1.

2.

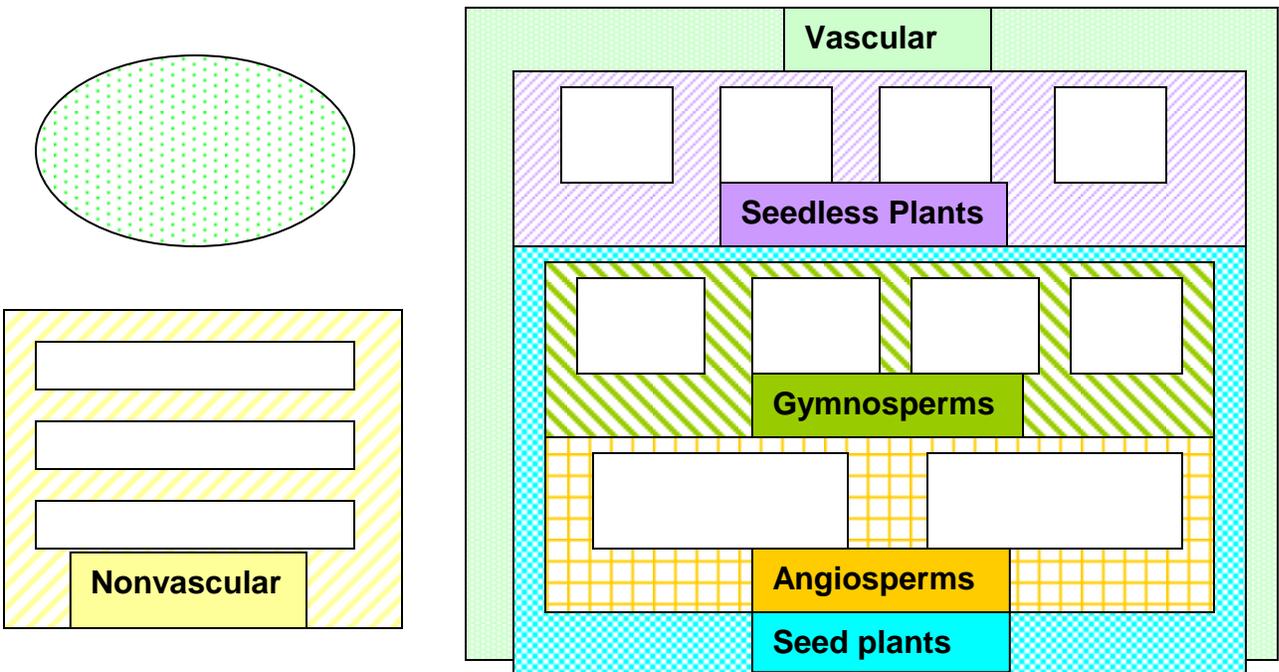
3.

4.

d. Describe Alternation of Generations by defining the following terms :

1. Spore-
2. Gametophyte-
3. Haploid-
4. Fertilization-
5. Zygote-
6. Sporophyte-
7. Diploid-
8. Meiosis-

Taxonomy and Evolution of Plants



A. Bryophytes (Nonvascular plants) - Mosses, Hornworts, and Liverworts:

The bryophytes were probably the major group of plants on earth in the early part of the Paleozoic Era (350 million years ago). It is believed they were originally water plants and that some of them gradually adapted to life on land. Very few have survived to the present time. Those that have done so with few structural changes.

Answer the following questions about the bryophytes:

1. What is the dominant generation in the life cycle?
2. How does the sperm get to the egg of Bryophytes?
3. In what type of environment would you expect to find bryophytes?
4. Why would you think that mosses and hornworts have never grown taller and bigger than what they are?
5. List the ways in which mosses and liverworts affect their surroundings.

Mosses:

Hornworts:

Liverworts:

B. TRACHEOPHYTES: (the vascular plants)

1. Why are vascular plants so numerous?

2. For the two types of vascular tissue listed below, describe their functions:
 - a. Xylem-

 - b. Phloem-

3. What was *Rhynia major*, and why is it important?

4. List and describe five evolutionary trends in plants during the Devonian period:
 - a.
 - b.
 - c.
 - d.
 - e.

5. During which period of time were seedless vascular plants most common?

6. Describe each of the Divisions of seedless vascular plants below, and give examples and characteristics for each.
 - a. Psilophyta-

 - b. Lycophyta-

 - c. Sphenophyta-

 - d. Pterophyta-

7. During the Permian period (225-280 million years ago), what sort of changes were taking place on the earth that forced an increase in the evolution of plants to occur?

8. What are the advantages that a seed plant has over the seedless plants?

9. Describe the characteristics and give an example, and any interesting facts about each of the following Gymnosperms:
 - a. Cycadophyta-

b. Ginkophyta-

c. Gnetophyta-

d. Coniferophyta-

10. When did the angiosperms first appear in the fossil record?

11. There are about 235,000 species of angiosperms (about 90% of the earth's vegetation) What are some reasons for the success of the Division Anthophyta?

12. Complete the following chart comparing Monocots and Dicots:

Characteristic	Monocot	Dicot
Cotyledons (seed leaf)		
Flower parts		
Pollen grains		
Leaf venation		
Vascular bundles		
Secondary growth		

III. PLANT STRUCTURE AND FUNCTION

A. Define and give an example for each of the following types of plants:

a. annual-

b. biennial-

c. perennial-

B. ROOTS:

1. List and describe four functions of roots:

a.

b.

c.

d.

2. Name, describe, and draw in the boxes, the two types of root systems:



3. What is an adventitious root? Give some examples.
4. Color the picture of the root tip. Know the functions of the parts of the root tip. See plant lab II .
5. What is the difference between the primary and secondary growths of roots?
6. How do root hairs increase the ability of the root to absorb water?
7. In what two areas of the root would you probably find parenchyma cells?

D. STEMS:

1. What are the functions of the stems?
 - a.
 - b.
 - c.
 - d.
 - e.
2. How is the growth of plants different from the growth of animals?
3. What are the differences between monocot and dicot stems?
4. Complete the drawings of the stem, and know the various parts. Plant Lab II.
5. Describe the stems of the following, and the adaptations they have made:
 - a. cactus-
 - b. iris-
 - c. strawberry-
 - d. onion-
 - e. crocus-
 - f. potato-

E. LEAVES:

1. Color the leave drawing, learning all of the parts of the leaf. Plant Lab II.
2. What two important functions occur in the leaf? Describe each.
 - a.
 - b.
3. Describe each of the following tissues of the leaf

a. Dermal tissue:

1. Describe the action of the stomata.

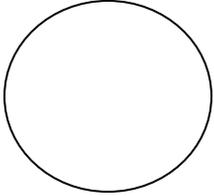
2. Cuticle-

b. Mesophyll-

1. palisade parenchyma-

2. spongy parenchyma-

c. Vascular tissue-



1. What is the make up of a vein? Draw and label a cross-section of a vein.

4. Why do leaves change color in the fall?

5. What are window plants, and what adaptations have they made to life on the desert?

IV. PLANT REPRODUCTION:

A. LIFE CYCLES:

1. Know the parts of the flower by coloring the Basic Flower diagram. Plant Lab II

2. What is the difference between self-pollination and cross-pollination?

3. What are the roles of the tube cells and the generative cell in fertilization?

4. Define a fruit, and describe the parts:

5. Describe the following types of fruits:

6. What are the three main requirements for seed germination?

a.

b.

c.

7. Give three examples of vegetative propagation.

a.

b.

c.

V. PLANT RESPONSES:

A. PLANT HORMONES-

1. Describe each of these hormones and give some functions of each:

Hormone	Function
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2. Describe the plant responses for each of the following tropisms:

a. Phototropisms-

b. Thigmotropisms-

c. Gravitropisms-

d. Chemotropism-

e. Hydrotropism-

3. Define the following terms and types of plant responses:

a. photoperiodism-

b. flowering-

1. critical length-

2. long-day plants-

3. short-day plants-

4. day-neutral plants-

c. vernalization-