TEACHERS RESOURCE PAGE FOR PHOTOSYNTHESIS LAB
DISCOVERY APPROACH

BACKGROUND INFORMATION:

The TOPS lab has been modified to accommodate a discovery approach. A prelab scenario has been provided which can be changed to fit any classroom situation. This particular scenario, which deals with the identification of a plant of unknown origin, has been designed to include several prelab and postlab activities. Teachers should allow students to generate their own labs in this identification process or guide students to choose a prepared lab.

The TOPS lab has been edited to a more inquiry oriented format. The title is now the major question of the lab. The background reveals less information and includes questions to think about while performing the lab. An application and synthesis section has been added to aid the student in determining relevance.

GOAL:

Students will identify the origin of a mystery organism of extraterrestrial origin using the scientific method. In this process they will be using the following TOPS lab.

MOTIVATION:

Bring in many exotic plants—especially CAM plants, to pique their interest. A partial list of CAM plants is included with this reference page.

POSSIBLE PERFORMANCE OBJECTIVES:

The students will, after reading and discussing the scenario:

1. Discover some important plant processes which can lead to biochemical testing.

   Suggested activities: Brainstorming, students design experiments

2. Inspect macro- and micro-scopically two CAM plants, one with stomata open and one with stomata closed.

   Suggested activities: Student generated investigations, any plant anatomy lab, a stomata lab, or microscope lab.
3. Measure the pH values of two succulents, one with the stomata closed and one with the stomata open.

Suggested activity: TOPS lab *How Do Some Plants Differ In their Photosynthetic Pathways?*

4. Discover the factors in plant metabolism which may affect pH, thereby inferring the conditions that created the results.

Suggested activity: TOPS lab application and synthesis sections in *How Do Some Plants Differ In their Photosynthetic Pathways?*

5. Separate photosynthetic pigments using TLC chromatography on a mystery CAM plant or any other plants as a comparison.

Suggested activities: TOPS lab *How Can Plant Pigments be Analyzed Using Thin Layer Chromatography?*

6. Design their own investigation on the mystery plant and write it up formally.

Suggested activities: library research, computer search, cross curriculum writing assignment.