BASIC PLANT PROCESSES

ASSIGNMENT SHEET #1--EFFECT OF LIGHT ON DRY WEIGHT

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part I**

Three hundred bean seeds were divided into three lots of 100 each. One lot of 100 seeds was used to measure the percent moisture in the seeds, from which it was possible to calculate the dry weight of the other two lots. A second lot of seeds was sown in sand in a suitable box and kept in a dark room. The third lot was likewise sown in sand in a suitable box and kept under a daily cycle of 15 hours of light and 9 hours of dark. These two lots of seeds were kept at a temperature of 75oF. Four weeks after planting, each lot of resulting seedlings was harvested and the dry weight of each was measured. The resulting data are tabulated.

Environmental Calculated Dry Dry Weight of Difference Between

Condition Weight of Seeds Seedlings at Dry Weight of Seed-

Planted End of Four lings and Dry Weight

Weeks of Seeds Planted

Seedlings in light 57.9 g 82.2 g +24.3 g

Seedlings in dark 57.9 g 23.4 g -34.5 g

**Part II**

a. What one environmental factor was varied in this experiment?

b. How do you account for the increase in dry weight of the seedlings in light as compared with the dry weight of the seeds which were planted in darkness?

c. Why do the seedlings that developed in the dark not gain in dry weight?

d. Why do the seedlings that developed in the dark actually decrease in dry weight?

e. Is light necessary for the utilization of food in the growth of plants?

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ANSWERS TO ASSIGNMENT SHEET

**Assignment Sheet #1**

a. Light

b. Photosynthesis is greater than respiration

c. Respiration is greater than photosynthesis

d. Sugars are utilized by respiration for basic functions of the plant without being replenished by photosynthesis

e. Yes