

Exam One, Plant Ecology BIO 4213/6213 Fall 2001

1. Provide examples of A) structural and B) physiological adaptations plants employ to optimize:

I. Light interception

A

B

II. Water use efficiency

A

B

III. Leaf Temperature

A

B

2. Briefly explain the physiological and biochemical reasons that C4 plants have an advantage over C3 plants in hot, dry environments.

3. We discussed **hydraulic lift** in shrubland and deciduous forest ecosystems.

What is hydraulic lift and how does soil influence its occurrence and importance to the plant community? How does hydraulic lift compare to the physical process of distillation in soil?

4. A. In our discussion of nutrient cycles, strong emphasis was placed on C:N ratios of plant litter and soil organic matter.

What does the C:N ratio tell us with regard to the potential for nitrogen cycling and nitrogen availability to plants?

B. Microbes form a key link between atmospheric and soil pools of nitrogen.

What process imports nitrogen from the atmosphere to the soil, and where does it take place?

C. Most of the steps in the nitrogen cycle involve microbes.

How does this relate to your answer in part "A," and what do the microorganisms (mostly bacteria) obtain in exchange for their transformation of nitrogen compounds?