

Name \_\_\_\_\_

## Nature's Ingenious Hydration: How Non-Vascular Plants Get Water and Nutrients

### Open-Ended Response Answer Key

1. Osmosis is essential for non-vascular plants as it allows them to absorb water from the surrounding environment through their rhizoids. This process is crucial for maintaining turgor pressure within the plant cells, facilitating nutrient transport and metabolic processes necessary for growth and survival.
2. Non-vascular plants utilize cuticles and mucilage to reduce water loss through evaporation and retain moisture in their tissues. Cuticles are waxy coverings on the surface of plants that help prevent water loss, while mucilage absorbs and holds water within the plant, providing a continuous source of hydration during dry periods.
3. Symbiotic relationships with microorganisms, such as mycorrhizal fungi, play a vital role in nutrient uptake for non-vascular plants. These fungi colonize the roots of the plants, forming a mutually beneficial association where the fungi provide nutrients like phosphorus and nitrogen to the plant in exchange for carbohydrates produced through photosynthesis.
4. Non-vascular plants contribute significantly to soil moisture retention and nutrient cycling in terrestrial habitats. By absorbing water and nutrients from the environment and releasing organic matter as they decompose, non-vascular plants help maintain soil fertility and provide habitat and food for various organisms in the ecosystem.

