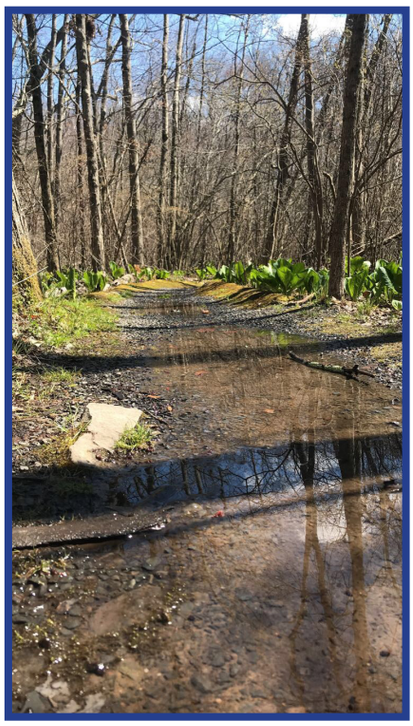
NITROGEN

DINOSAUR STATE PARK

The Essential Cycle

Written by: Khiana Maenza, Dinosaur State Park, Horticulturist



Non-living things do not eat, grow, breathe, move or reproduce, they have no lifespan and are immortal, whereas living organisms undergo growth and development and are not immortal. All organisms exist within ecosystems with characteristics for their specific needs. Living things have various cycles and structures that enable them to survive, such as the nitrogen cycle.

Nitrogen is the most abundant element in earth's atmosphere.

Approximately 78% of the atmosphere is made up of nitrogen. It's essential for all living things because it is a major part of amino acids, which are the building blocks of proteins and of nucleic acids such as DNA. Nitrogen can be found in the water we drink, the air we breathe, soils for plants and much more. Nitrogen is needed for plant growth therefore necessary for the food we grow. As with everything balance is key. Too little nitrogen in plants prevents them from thriving, leading to low crop yields, but too much nitrogen can be toxic as well as harmful to the environment. Yellowing, unhealthy and slow growing plants are most likely a result of low nitrogen levels. On the other hand excess nitrogen can drain from the soil into underground water sources, or it can enter aquatic systems as surface runoff. This excess nitrogen can build up, leading to a process called eutrophication. Eutrophication happens when too much nitrogen enriches the water, causing excessive growth of plants and algae. At Dinosaur State Park, in Rocky Hill CT., we do not use any fertilizers to avoid Eutrophication and run off of excess nitrogen, into our wetlands. Here we rely on the natural processes of the nitrogen cycle for getting nitrogen into the soil for our plants, by rainfall and decaying animals and plant matter.

What is the nitrogen cycle?

There are five stages of the nitrogen cycle, fixation or volatilization, mineralization, nitrification, immobilization, and denitrification. The nitrogen cycle is a repeating cycle of processes during which nitrogen moves through both living and nonliving things such as the atmosphere, soil, water, plants, animals and bacteria. In order to move through the different parts of the cycle, nitrogen must change forms. In the atmosphere, nitrogen exists as a gas, but in the soils it exists as nitrogen oxide and nitrogen dioxide. When used as a natural fertilizer, from decomposers such as decaying plants and animals, it can be found in other forms, such as ammonia. Which can be processed naturally even further into a different fertilizer, ammonium nitrate.

The cycling of nitrogen through the ecosystem is crucial for maintaining productive and healthy life with neither too much nor too little nitrogen.

Understanding the nitrogen cycle, and how it moves from the atmosphere to earth, through the soil and back to the atmosphere in a constant cycle, helps to grow healthy crops and protect the environment.

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