
Ecological Processes As a Foundation for Regenerative Organic Agriculture

1. Energy Flow

Carbon dioxide → carbohydrates → root exudates → organic matter → energy. Photosynthesis is the pathway that carbon follows out of the atmosphere, through the plant and into the soil where it feeds microbes and builds soil structure. A healthy landscape is an unending flow of energy. Carbon flows constantly from the atmosphere through plants, into soils and into higher order animals. It structures soils, feeds food webs and is released again and again. The speed this process takes and the effect it has are intrinsically linked to land and water. The influence of the landscape on the cycling of energy should not be underestimated.

2. Water Cycle

A healthy landscape is a moderator of environmental stressors. It soaks up, filters and stores water. It cools temperatures, creates rain and can withstand both flood and drought. The influence of the landscape on the water cycle and of the water cycle on the landscape is so important.

3. Mineral Cycle

A healthy landscape is a repository of nutrients. It moves them in and out of available forms. Stores them in the short and long term and houses mechanisms that makes them available to plants when needed. The influence of soil biology on the cycling of nutrients should not be underestimated.

4. Diversity

Biodiversity is a tool for resilience. Every actor has a part to play; most have more than one. Built in redundancy and the capacity to adapt are the built in safety mechanisms of the natural world. The higher our biodiversity, the more rapidly and efficiently we can pivot. Without biodiversity, we soon run out of options.