Understanding Ecosystems:

Natural and Agricultural Ecosystems Explained

What Is an Ecosystem?

An ecosystem is a geographic area where living organisms (plants, animals, and microorganisms) and nonliving components (rocks, temperature, and humidity) interact and depend on each other. Changes in any factor, like temperature, can impact the entire ecosystem. Ecosystems can range in size from large landscapes to small tide pools.

What Is an Agricultural Ecosystem?

Agricultural ecosystems are human-designed and managed environments for growing crops and raising animals. They are simpler than natural ecosystems, with limited types of plants and animals. Farmers control or eliminate other plants or animals, like weeds or pests, to maintain the ecosystem. Soil, microbes, and organic matter play crucial roles in supporting these agricultural systems.
Agricultural ecosystems require the same essentials as natural ecosystems, such as nutrients, energy sources, moisture, suitable habitat, and gas exchange. They feature similar interactions between living (biotic) and nonliving (abiotic) components. These interactions between biotic and abiotic elements are crucial for the health of agricultural ecosystems.

Components Of An Ecosystem?

Biotic Factors: All living components such as animal, plants, and the microorganisms like fungi, etc.

- Producer: Organisms that produce food for themselves and other organisms.
- Consumer: Organisms that depend on other organisms for food.
- Decomposer: Organisms that break down remains and waste, releasing simple inorganic molecules back into the environment.

Abiotic Factors: Non-living or physical components like air, weather, water, temperature, humidity, altitude, the pH level of soil, type of soil, etc.

- Edaphic Factor: Refers to the soil and ground surface characteristics, including texture, nutrient composition, and density, which determine the types of plant species that can grow there.
- Climate Factor: Components such as water, sunlight, humidity, climate, temperature, and pH.
- Topographic Factor: Includes surface exposure, altitude, slope, etc.

Sources:

1. Baniya, S. (2023). Abiotic Factors- Definition, Types, Examples and Responses. Microbe Notes. https://microbenotes.com/abiotic-factors/
2. Biology Dictionary. (2020). Biotic and Abiotic Factors. https://biologydictionary.net/biotic-abiotic-factors/
3. Brainard, J., & Wilkin, D. (2023). Producers, Consumers, and Decomposers. CK-12 Foundation. https://flexbooks.ck12.org/cbook/cbse-biology-class-10/section/4.3/primary/lesson/producers-consumers-and-decomposers/
4. Geeks for Geeks. (2024). Components of Ecosystem – Biotic and Abiotic. https://www.geeksforgeeks.org/ecosystem-and-its-components/
5. National Geographic. (n.d.). Ecosystem. https://education.nationalgeographic.org/resource/ecosystem/
6. Project Agriculture. (n.d.). How are natural and agricultural ecosystems connected? https://www.pr ojectag ricultu re.ca/t opic-ite m/how- are -natu r al-and -agric ultural -ecosystems-connected/
7. World Business Council for Sustainable Development. (2008). Agricultural Ecosystems Facts and Trends. https://docs.wbcsd.org/2008/07/Agricultural_Ecosystems.pdf