Good and bad practices in agroecosystems

1.Definition of agroecosystem

Agroecosystems are defined as the result of the interactions between plants, animals, humans and the environment in agriculture and food systems. They are influenced by biophysical, socioeconomic and cultural factors that shape the decisions, behaviors and outcomes of different actors. Agroecosystems can be managed according to ecological and social concepts to optimize the functions and services of agroecosystems.

2. The good Practices in an agroecosystem

2.1. Crop rotation and diversification

Growing different crops in sequence on the same land offers multiple benefits for both productivity and biodiversity. This practice breaks pest and disease cycles naturally.

2.2. Organic farming

Organic agriculture eliminates synthetic pesticides and fertilizers, relying instead on ecological processes to maintain soil fertility and control pests. This approach typically supports higher biodiversity both on farms and in surrounding areas. It often maintains higher plant diversity, including crop varieties and wild plants along field margins.

2.3. Integrated pest management strategies

This technique combines multiple pest control methods to minimize pesticide use while maintaining crop protection. This approach treats the farm as an ecosystem and uses ecological principles to manage pests sustainably. It concerns applying treatments only when necessary and at optimal timing.

2.4. Corridors and connectivity

Agricultural landscapes can provide crucial habitat corridors that connect fragmented natural areas. Hedgerows, riparian buffers, and field margins create pathways that allow wildlife to move between habitat patches.

2.5. Agroforestry systems

Combining trees with crops or livestock creates diverse vertical habitat structure. Diversified farms can provide crucial habitat for pollinators that benefit both wild plants and agricultural crops.

2.6. Sustainable Practices

Implementing sustainable agroecosystem practices requires a thoughtful and well-planned approach. First, it is necessary to gain a deep understanding of sustainable agriculture techniques by attending training sessions, consulting experts, and keeping up with the latest advancements in the field.

3. Bad practices in agroecosystem

3.1. Chemical Usage

The use of certain chemicals has led to soil degradation, water contamination, and adverse effects on human health. These chemicals often reach bodies of water, causing contamination of rivers, lands, and wetlands.

3.2. The Unsustainability of Monocultures

The practice of cultivating large quantities of a single type of crop, known as monoculture, has led to significant environmental problems such as deforestation and reduced plant biodiversity. However, alternatives such as crop rotation and intercropping can mitigate these impacts

3.3 Overproduction, Food Waste and unsustainable Use of Fertilizers

Despite food insecurity, the trend toward unsustainable agriculture driven by the global market economy promotes overproduction. This results in significant food waste. Dependency on conventional fertilizers is another facet of unsustainable agroecosystem.

3.4. Impacts of Large-Scale Unsustainable Agriculture

Under pressure from global demand and food security concerns, many farmers have adopted unsustainable agriculture practices, utilizing their land to the maximum extent. However, this approach exposes the soil to erosion and habitat degradation.

3.5. Industrial & Agricultural Wastes

Among several negative effects of agriculture on the agroecosystem, industrial & agricultural waste is the most dangerous and harmful for the ecosystem and humans. Agricultural remains of several crops like., rice straw and hull, because of improper handling act as agricultural waste.

3.6. Intensive agricultural practices

Intensive agricultural practices, driven by the need to maximize crop yields and meet global food demands, have profound negative impacts on the environment and ecosystems. Such activities degrade soil quality, reduce biodiversity, and contribute to water pollution through runoff laden with agrochemicals.