Perspective
Volume 10:7, 2022

Journal of Biodiversity & Endangered Species

ISSN: 2332-2543 Open Access

Integrating Agroecosystems and Biodiversity Conservation

Pavel Dodonov*

Department of Biology, Federal University of Bahia, Salvador, Bahia, Brazil

Abstract

Organic farming upholds the values of health, ecology, fairness, and caring for all, including the soil, with the goal of promoting human welfare without endangering the environment. Modern organic farming is a concept that combines science, innovation, and tradition. Although history claims that the organic lifestyle movement was first identified in 1905, it gained traction in the late 1990s as people began to realise the negative impacts of modern agriculture. The British botanist Sir Albert Howard, who is frequently cited as the originator of contemporary organic agriculture, researched indigenous Indian farming techniques in 1905 and later grew to value them above mainstream agricultural science. Masanobu Fukuoka, a microbiologist in Japan who specialised in soil science and plant pathology, left his position as a research scientist in 1940 and went back to live with his family.

Keywords: Organic Farming System • Human welfare • Organic agriculture

Introduction

Recent research has described how agroecosystems affect biodiversity. However, a number of elements related to the management of these areas are still disregarded in studies at the landscape level, particularly in regions where agriculture has recently become more intensive. Because the resources and conditions that agroecosystems offer to various species vary greatly across both geography and time, failure to take this fluctuation into account could result in inaccurate judgments regarding the level of biodiversity in these habitats. In this viewpoint, we present a conceptual overview to highlight why and which landscape elements still require further investigation in order to properly assess the impacts of agroecosystems on biodiversity. We outlined the elements we think are crucial for understanding biodiversity using an example of a varied intensive-farming landscape in Brazil [1].

Natural habitats have been the focus of biodiversity preservation up until recently, despite the fact that they only account up around 5% of the terrestrial environment. On the other hand, 20% of land is currently used for commercial forestry, while about 50% of land is currently used for agricultural production. Given this tendency, it is becoming increasingly understood that most species interact with agricultural systems, even if natural areas still serve as their principal habitat. Agro ecosystems are also likely to contain a significant share of a region's total biodiversity. The management of these agricultural systems has a significant impact on species success and biodiversity levels in general [2].

Description

Agro ecosystems are referred to as groups of plants and animals interacting with their physical and chemical environments in order to create goods for human use and processing, such as food, fibre, fuel, and other goods. They make up around 47% of the land area in the EU and are made up primarily of farmland and grassland. Only a few grassland habitats actually exist in a natural condition; these ecosystems are largely managed. Numerous millennia have passed since the beginning of agriculture, which is enough time for certain species and environments to coevolve with human stewardship. The latter is essential to keeping agro ecosystems healthy. However, what constitutes a favourable environment for a controlled ecosystem in a highly existent ecosystem? [3].

Natural selection mechanisms, careful selection, and creative inventions by farmers, herders, and fishers over millennia are what lead to agrobiodiversity. A crucial part of biodiversity is agrobiodiversity. The continued management of numerous biological resources that are vital for food and agriculture is essential for the security of many people's food and livelihoods. Agrobiodiversity, also referred to as the genetic resources for food and agriculture, or agricultural biodiversity, the types of crops, cattle breeds, fish, and non-domesticated (wild) resources that have been harvested from fields, forests, and rangelands, including items made from trees, wild animals that have been hunted for food, and aquatic ecosystems (such as wild fish); Non-harvested species, such as soil microbiota, pollinators, and other insects including bees, butterflies, earthworms, and greenflies, are found in production ecosystems that support the production of food [4].

Natural selection mechanisms, careful selection, and creative inventions by farmers, herders, and fishers over millennia are what lead to agrobiodiversity. A crucial part of biodiversity is agrobiodiversity. The continued management of numerous biological resources that are vital for food is essential for the security of food and livelihood for many people. According to the methodology used in this research, a healthy environment necessitates balance: in the use of natural resources while preserving biodiversity, in the provision of a variety of ecosystem services, and in the requirement to meet the requirements of both the present and the future generations. Through a number of processes, agriculture has a substantial impact on biodiversity, including: as a political and economic tool, through the use of commodity prices or subsidies; as a production technology utilising [5].

As a biological process resulting in habitat fragmentation and species invasions, fertiliser, soil disturbance, and other factors Landscapes have become mosaics of managed and uncontrolled ecosystems as a result of the spread of agriculture, which has led to the habitat loss and fragmentation of several species of flora and fauna. Because of the predominance of monoculture in modern commercial agriculture, the composition and abundance of the related biota, including wildlife, pollinators, insect pests and their natural enemies, soil invertebrates, and microbes, are affected. Low genetic and species diversity of the crop leads to reduced diversity at higher trophic levels, such as herbivores and predators, because a less diverse resource base is available. Furthermore, the broad application of enhanced crop types that is genetically.

***Address for Correspondence:** Pavel Dodonov, Department of Biology, Federal University of Bahia, Salvador, Bahia, Brazil; E-mail: pdodonov100@gmail.com*

Date of Submission: 02 July, 2022, Manuscript No. jbes-22-73751; **Editor Assigned:** 04 July, 2022, PreQC No. P-73751; **Reviewed:** 15 July, 2022, QC No. Q-73751; **Revised:** 20 July, 2022, Manuscript No. R-22-73751; **Published:** 26 July, 2022, DOI: 10.37421/2332-2543.2022.10.433

Conclusion

Genetically homogenous monocultures frequently require larger pesticide inputs because they are more susceptible to diseases and pests. These insecticides harm and kill a wide range of nontarget creatures, including decomposing organisms, pollinators, wildlife, and natural adversaries. High rates of nutrient addition are also necessary for monocultural, high-yield production systems; normally, this is done with chemical fertilisers. The extremely complex community of soil microbes and invertebrates that control nutrient cycle in ecosystems can be significantly impacted by these compounds. Agrochemicals like pesticides and fertilisers can have an effect on biological communities in far-off freshwater and marine habitats through drift and runoff.

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How to cite this article: Dodonov, Pavel. "Integrating Agroecosystems and Biodiversity Conservation." J Biodivers Endanger Species 10 (2022): 433.