International Journal of Geography, Geology and Environment

P-ISSN: 2706-7483
E-ISSN: 2706-7491
IJGGE 2021; 3(2): 158-160
https://www.geojournal.net
Received: 28-04-2021
Accepted: 30-06-2021

Dr. Sweta Vyas
Assistant Professor, Department of Home Science, Government Meera Girls College, Udaipur, Rajasthan, India

Corresponding Author:
Dr. Sweta Vyas
Assistant Professor, Department of Home Science, Government Meera Girls College, Udaipur, Rajasthan, India

Biodiversity and foods

Dr. Sweta Vyas

Abstract
Biodiversity refers to the variety found in biodata from genetic makeup of plants and animals to cultural diversity. There are different levels of biodiversity i.e genetic, species and ecological biodiversity. Food biodiversity is unlimited, variations occur from one segment of community to other segment. There are about 20,000 species of edible plants in the world, yet fewer than 20 species now provide 90 percent of food. There are several unique and increasingly rare minor plants that are collected from the wild and eaten mostly by locals. As per Gurdev S. Kush (1996) [6], biodiversity is the basis of agriculture and our food systems. It contribute directly to food security nutrition and well being by providing a variety of plants and animals from domesticated and wild sources.

Keywords: Biodiversity, food, varieties

Introduction
Term "Biodiversity" was given by E. Wilson (1992) [13]. According to him, the occurrence of different types of genes, species, habitat and ecosystem in particular place and various parts of earth is called as biodiversity.

Biodiversity is divided into four levels

(1) Genetic diversity
It is the measure of a variety in genetic information contained in it. It enables a population to adapt to its environment. For example, medicinal plant Rauwolfia serpentine growing in Himalaya shows variation in potency and concentration of the active chemical reserpine that it produces. Genetic diversity of plant genetic resources is the basis of the crop component generation of farmers and breeders have converted wild ancestors of our food 10 C plants into productive varieties which feed the world today. (Gurdev S.K., 1996) [6]
There are more than 50,000 genetically modified varieties of rice &1000 varieties of maize in India. In order to feed an ever growing population, innovative and acceptable ways of integration biodiversity conservation and food productivity need to be identified. The nutritional and livelihood benefits of diverse production systems are one way of achieving food security. Such systems are also more resistant to climate induced events or other shocks (Sundarland 2011) [12].
Homogeneous diets and poor food access means that one in three people would suffer from micronutrient deficiencies. Carmen *et al*. (2016) [3] have reported that nearly 2 billion people are overweight or obase due to intake of imbalance diet.

(2) Species diversity
It is a measure of varieties of species, their abundance and their distribution or evenness, eg. the Western Ghats have greater amphibian species diversity than Eastern Ghats. Global species diversity: According to the International Union of conservation of nature and natural resources, the total number of species on earth values from 2 to 50 millions. Shreya Dasgupta (2016) [2] reported that plant species are 3,91,000 while IUCN (2007) [7] reported that total number of species in all over world is more than 8.7 million and 10000 species of animals are discovered every year. Elke and Zannine (2013) [4] reported that there are over 20,000 species of edible plants in the world and less than 20 species provide 90% food. There are hundreds of edible plants still available but they are unused. These plants from all over world can provide delicious and nutritional food. For example, root crops like yam, oca, finger nuts, leaves like Mallow, fruits like Japanese raisin, tomatillo and cereals like Buckwheat are similar in all the way to popular known food.

Even pseudo cereals like amaranth and quinoa can be better supplements to gluten free diet. Traditional methods like hulling is more beneficial according to Biacs *et al* (2002) [1] Chiya crop is able to grow in acidic and semi acidic soil that makes Chia cultivation good alternative crop. (Munoz *et al*., 2013 and Bochicchio *et al*., 2005) [7, 2] Not only that, in several parts of India, for example in Punjab declining groundwater is a big problem, alternative crops from rice and sugarcane to crops such as maize, soyabean and cotton can solve the problem.(Ram *et al*, 2005) [10]

The Pea is a member of the food legume family and historically was first cultivated as a protein rich crop primarily in West Asia and North Africa. Researchers are trying to find out the potential of these ignored crops-plants, as they are either forgotten or under use or alternative. They are displaced by increasingly uniform fuelled by processed ingredients from the major crops (Preeti Jha, 2018) [9].

Gurdev (1996) [10] reported that food we humans eat everyday throughout our lives comes from agricultural biodiversity. Biodiversity, food and nutrition are directly related. It contributes directly to food security, nutrition and well being by providing a variety of plants and animals from domesticated and wild sources.

Coping mechanisms based on indigenous plants from domestic source for a little segment of people who have small land and little market opportunities. Wild indigenous plants provide ultimate sources of food when harvests fail.

(3) Ecosystem diversity

It is a measure of diversity at community and ecosystem levels. They represent the local unique habitat and regional components of species diversity, eg. ecological diversity is greater in India due to presence of large number of ecosystems like desert, hills etc.

(4) Food/Functional biodiversity is the diversity of plants, animals and other organisms used for food covering the genetic resources within species, between species and provided by ecosystems (FAO, 2017) [5].

Biodiversity provides us with a wide range of plants and animals. These species form basis for nutrition, family and cultural traditions, medicines and ways to learn about and respect the life around us. Over the centuries, farmers grew over 7000 plants and raised 30 species of animals for food and other uses. We eat many different parts of plants :stocks, seeds, flowers, leaves, bark and even roots. Biodiversity is not limited only to plants. It applies to animals as well. Chickens, goats, cows, pigs Alamas and other domesticated animals also play a vital role in feeding the world's population. It takes a lot more energy and resources to raise animals than to grow plants.

Food systems are the key drivers of biodiversity worldwide. Globally, key drivers of food system transformations include climate change, population growth, economic development, urbanization, globalisation and production system intensification and homogeneous equation. As a result, human diets that used to be composed of a wide variety of plants and animals have gradually shifted to a diet composed of processed foods and comprising Limited number of species while an estimated 300000 edible plant species are available to humans more than half of the Global energy need is currently made by only for crops that is rice, potatoes, wheat and maize.

Low quality diets are the leading risk factors for poor health worldwide and are determined by social, economic and political factors including income, education, social cohesion, gender empowerment and inequality.

The diversity of species used in agricultural and livelihood systems is essential for human nutrition and sustainable food systems agricultural biodiversity results into farm resilience particularly in the times of problems such as climate change, disease outbreaks and market price fluctuations. Wild food diversity obtained in or around agricultural fields or extracted from forest and other natural landscapes is an additional source of resilience in the food system in particular during the lean season.

Reduced biodiversity of both wild and agricultural species can have major effects on diet quality and environmental sustainability by reducing availability, assess to nutritious seasonal foods and loss of ecosystem functions as sustainable management of food diversity. The diversity of plants, animals and other organisms used for food, cultivated as well as from the wild is essential for sustainable food systems.

Conservation and management of broad-based genetic diversity within the domesticated species have been improving agricultural production for 10000 years. Biodiversity can maximize production levels which are sustained through beneficial impact of ecosystem services for agricultural modified and natural ecosystems. Reliance on a narrow range of crops for crop varieties can disturb food production systems, for example, the great Irish potato famine. Potatoes were introduced into Ireland from the new world in ye about 1600 and then they became the major food source of most Irish people. The potato blight fungus spread throughout the country in 1845 -1847 and it caused almost complete failure of the potato crop. It is estimated that 1 million people died of starvation, cholera and typhoid. (Carmen *et al*., 2016) [3] Concluding, it can be said that biodiversity has vital role in sustainability of life on earth through food.

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