



SPECIES DIVERSITY AND PHYTOSOCIOLOGICAL STUDIES IN CITRUS BASED AGROFORESTRY SYSTEM

V.M. ILORKAR* AND P. MANOHARE

AICRP on Agroforestry, PDKV, College of Agriculture, Nagpur, Maharashtra

*Corresponding author: ilorkar @ yahoo.co.in

ABSTRACT: The maximum diversity index 1.41 was estimated for Katol taluka. Further the minimum and equal diversity index e.g. 1.00 was estimated for all other talukas Kalmeshwar, Nagpur and Saoner. The values of diversity were estimated at lower ranges. This is mainly due to study area is a manmade agro-ecosystem and is dominant with monoculture of Nagpur mandarine (citrus) the diversity index presents at lower values. *Tectona grandis*, *Ziziphus jujuba*, *Acacia nilotica*, *Leucaena leucocephala*, *Azardichta indica*, *Sesbania sesban* and *Mangifera indica* are dominant vegetation of Citrus based agro-forestry system in the region. Highest and equal (33.70) Importance value index (IVI) was represented by *Azardichta indica*, *Acacia nilotica* and *Leucaena leucocephala*.

Keywords: Diversity, Abundance, Importance Value Index, *Tectona grandis*, Agroforestry

Citation: Ilorkar VM, Manohare P (2017) Species diversity and phyto-sociological studies in citrus based Agro-forestry system. Indian J Trop Biodiv 25(2): 224 - 228

Received on : 10 Oct. 2017
Accepted on : 06 Nov. 2017
Published on : 30 Dec. 2017

Biodiversity is considered as a key resource for raw material that contributes to biotechnological development in agriculture, Climate change and carbon mitigation Phenomena. There are many studies pertaining to plant diversity in protected area and natural forest (Sukumar *et.al*, 1992.). Citrus cultivation is major cropping system in the region and more than 1.25 lac ha area has been brought under citrus cultivation. Due to high nutritious value and export potential the area under citrus cultivation is increasing. The traditional cropping system is being replaced by this citrus cultivation. There by the natural farm flora is being modified for this orchard system. The progressive farmer's however has accepted the concept of agro-forestry and they are trying to maintain trees on farm/ orchard boundary. This has given rise to citrus based agro-forestry system. In order to study the floristic diversity in citrus orchard the present study was planned in a dominant citrus growing area from Nagpur district of Vidarbha region in Maharashtra.

MATERIAL AND METHODS

The present study was carried out in orange (Nagpur mandarin) growing area of Nagpur district .Out of Six orange growing talukas of Nagpur district four talukas namely Katol, Kalmeshwar, Nagpur and Saoner were selected for the study . The study area fall between 21.150North to 79.080 E. The Mean annual temperature rises to 470C during summer months and falls to 7.80C during winter. The total annual rainfall is 1250 mm. Soils of the study area are medium to deep

and black cotton type. Vegetation enumeration for the assessment of plant species diversity and quantitative characteristics was conducted during May to December, 2016. A stratified random sampling technique was followed for vegetation survey (Chaturvedi and Khanna, 1982). Phytosociological parameter for the vegetation occurring along the borders of Nagpur mandarin (citrus) orchard in four Tehsil namely Katol, Kalmeshwar, Nagpur and Saoner from Nagpur district were studied as per the transect survey method (Mishra 1982).The observed values were transformed to per ha for interpretation. The mensuration measurements (girth at breast height, plant height) were recorded for the tree vegetation occurring along the border of Nagpur mandarin orchards (Chaturvedi and Khanna, 1982). The Shannon and Wiener Diversity index was calculated following Shannon and Wiener (1949).

Results and Discussion:

1. Species Distribution, Abundance, Density and Frequency.

The data presented in table 1 revealed that, in Katol taluka *Tectona grandis* and *Ziziphus jujuba* were having highest abundance (2.25) and lowest abundance was found in the tree species *Sesbania sesban* (1) and *Melletia pinnata* (1). The highest density/ha for tree species was found in *Tectona grandis* (30.00), *Ziziphus jujuba* (30.00) whereas the lowest density (1.67) was recorded for *Sesbania sesban* tree species. The highest frequency percent were estimated in *Acacia nilotica* (91.67) followed by *Leucaena leucocephala* (75) and *Ziziphus jujuba* (75.00) whereas the lowest