

Full length Research paper

Plant species Diversity and Composition of Home Gardens in Benue State, North Central Nigeria.

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Growing of useful plant species in home gardens has a long tradition in various cultural groups but the value of traditional home-gardening in the conservation and management of plant species by indigenous people of Benue State has not been evaluated. The study there for sought to assess the floristic composition of home gardens and their diversity in order to investigate the conservation importance of home gardens through domestication. The study area was Benue State. Two (2) Local government areas from each of the three ecological zones of the State were randomly selected for the study. Data were collected by identifying and listing the plant species found in each home garden. Descriptive statistics and Simpson diversity index were used to analyse the data collected. The diversity indices of plant species found in home gardens in Benue State ranged from 0.01–0.50. Plant species with diversity indices of 0.50 were considered to be the most diverse species. Those with Simpson diversity indices of 0.01 were considered to be the least diverse. The highest number of plant species were found in Vandeikya (57) followed by Katsina-Ala and Ogbadibo with a total of 47 plants each. About 16 plant species were highly diverse in home gardens in Zone A Local Government Areas with Simpson index of (Ds=0.50) each. A total of 21 plant species were highly diverse with diversity indices of (0.50 each) in home gardens in Zone B. A total of 12 plant species showed high diversity indices of 0.50 each in Zone C. It was concluded that a great diversity of plant species were found in home gardens in Benue State. It was recommended that more efforts should be made at conserving important wild plant species through domestication in home gardens in order to prevent them from becoming extinct.

Key words: Assess, Plant, species, diversity, composition and home-garden.

INTRODUCTION

Domestication of tree crops in home gardens has contributed to the development of Forestry as useful but scarce plant species are conserved. Useful Plant species that are on the verge of extinction are also domesticated in home gardens. The diversity of tree crops in home gardens plays an important role in household food security (Uddin and Mukul, 2004). Worldwide, growing useful plant species in home gardens has a long tradition in various cultural groups.

Home gardens consist of a mixture of cultivated fruit trees, agricultural crops, medicinal plants and spices.

They are multispecies mixed agro-ecosystems (Mariam and Ozge, 2017). They are land use practices carried out around a home stead where several species of plants are grown and maintained by the members of the family and their products consumed by family members (Mekonen *et al.*, 2015). Plants grown around the house are a form of agroforestry practice that is ecologically sustainable. They prevent soil erosion, provide shelter during hot weather and serve as wind breaks. Home gardens provide various benefits to the people. They also play an essential role in conserving wild plants because of their uses to home garden owners (Abdoellah *et al.*, 2006). They also enhance nutrient recycling as a result of intimate association between herbaceous and woody component (Kumar and Nair, 2004). Inadequate information about the diversity of plant species in home

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gardens in Benue State may cause people to neglect the usefulness and importance of their home gardens and this may lead to the destruction of diversity of useful plant species.

Home gardens as an aid to Forest Conservation

Home gardens play a significant role in maintaining biodiversity. Biodiversity is crucial for survival, health and well-being of man. One importance of home gardens is to achieve conservation of natural habitats. This stems from the major contributions that plants make in people’s lives in terms of health needs, financial income, cultural identity and livelihood security. People tend to grow species of plants that are of high value and use around their home or in their home gardens. Plant species that have multiple uses, which a majority of the rural people rely on, are conserved. Sustainable use and conservation of plants can be achieved through plant protection, and domestication (Tuli and Jafari, 2009).

In the face of threats posed by increasing demand of vastly increasing human population and extensive destruction of plant rich habitats such as tropical forest (Thomas, 2002).The continuous use of these plants imposes a considerable pressure on the naturally

growing plants. The disappearance of plants from their natural habitats has unseen consequences on the environment and biodiversity (Kajembe *et al.*, 2003). Only few people try to grow in their homestead the important plant species that are on the verge of extinction as a way of conserving them. Home gardens are also sites for the domestication of wild varieties of some species of plants. They are trial sites for new variety of some crops and hence can be considered as entry point for new varieties of crops into our agricultural system. Economically important trees species are usually conserved in home gardens.

Aim of the study

The aim of the study was to assess the floristic composition of home gardens and investigate the conservation importance of home gardens through domestication.

MATERIALS AND METHOD

Description of the Study area

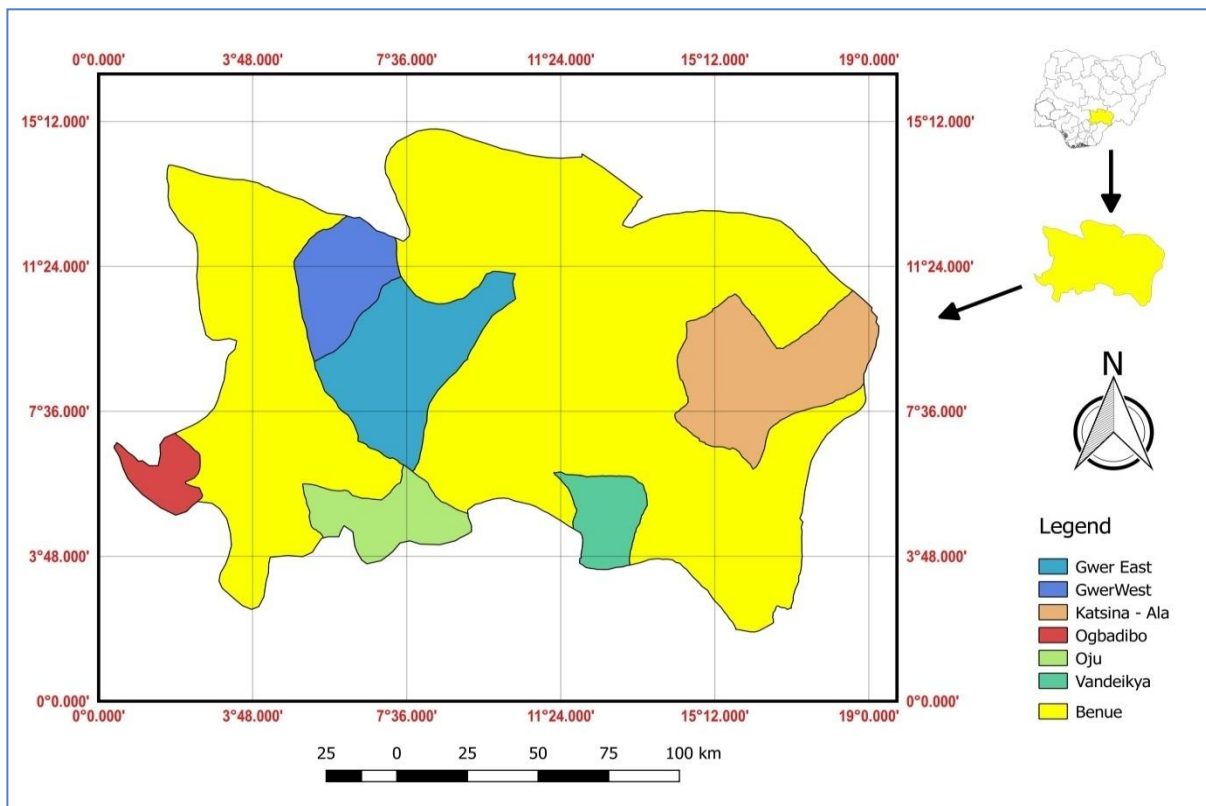


Figure 1: Map of Benue State showing the study areas

The study area was Benue State. Its geographic coordinates are longitude 7°47' and 10°0' E. Latitude 6°25' and 8°8' N; and shares boundaries with five other states namely: Nasarawa State to the north, Taraba State to the east, Cross-River State to the south, Enugu State to the south-west and Kogi State to the west. The state also shares a common boundary with the Republic of Cameroon on the south-east. Benue occupies a landmass of 34,059 km². The state has three agro ecological zones; Zone A, Zone B and Zone C. Benue State experiences two distinct seasons; the wet season and dry season. Temperatures fluctuate between 21–37°C. The State is located in the middle belt region of Nigeria. It is inhabited by Tiv, Idoma, Igede, Etulo, Akweya and Nyifon. The state is a rich agricultural region. The capital of Benue is Makurdi. Benue State experiences two distinct seasons; the wet season and dry season. The rainy season starts from April to October with an annual rainfall of 100–200mm. The dry season begins in November and ends in March. Temperature fluctuates between 21–37°C.

Method of Data collection

The methodology used for this study was that of Labe *et al.* (2019). Two Local government areas from each of the three ecological zones of the State were randomly selected for the study. The Local government areas were Vandeikya and Katsina-Ala (Zone A), Gwer west and Gwer-East (Zone B), Ogbadibo, Oju (Zone C). Four Council wards from each Local Government Area were purposively selected because of insecurity problems that were prevalent in many parts of the State at the time of

data collection. In each Council ward, five (5) compounds with home gardens were visited, making a total of twenty (20) home gardens from each Local Government Area. This means forty (40) compounds with home gardens were visited in each ecological zone. Altogether a total of one hundred and twenty (120) home gardens were visited covering the three ecological zones of the state. Data were collected by listing the plant species found in each home garden. Botanical names of plants were identified using the book titled Tiv, Idoma, Etulo, Igede, Akweya, Hausa, English and Scientific names of plants by E.C.Agishi (2010).

Data Analysis

Descriptive statistics such as percentage, frequency and Simpson diversity index were used to analyse the data collected.

RESULTS

Table 1 showed the average number and abundance of plant species per home garden in each of the six Local Government Areas across the 3 ecological zones of Benue State.

A total of 57 plant species were found in home gardens in Vandeikya with an average number of 13 plant species per home garden. The highest average number of plant species per home garden (14) was found in Ogbadibo Local Government Area. The least average number of plant species per home garden (11) was found in Gwer East.

Table 1: Plant species Abundance per home garden in Each Local Government Area in Benue State

| L.G.A | Total | Average No of plants per home garden |
|-------------|-------|--------------------------------------|
| Vandeikya | 57 | 13 |
| Katsina-Ala | 47 | 12 |
| Gwer East | 45 | 11 |
| Gwer West | 43 | 12 |
| Oju | 45 | 12 |
| Ogbadibo | 47 | 14 |

L.G.A = Local Government Areas

Table 2 showed that, 16 plant species were highly diverse in home gardens in Zone A Local Government Areas (Vandeikya and Katsina-Ala) with Simpson index of (Ds=0.50) each. *Ricinuscommunis* was the least diverse plant (Ds=0.25) followed by *Elaeisguineensis* (Ds=0.28) and *Ocimumgratissimum* (Ds=0.28). Thirty (30) plant species showed complete uniformity (were not diverse). They both showed Simpson index of 0.01 each. Table 3 showed that a total of 57 plant species were

identified in home gardens in Vandeikya while in Katsina–Ala, 47 plant species were identified. Plant species were more diverse in home gardens in Vandeikya (Ds=0.97) than in Katsina-Ala with an index of (Ds=0.96).

Table 4 showed that 21 plant species were highly diverse with diversity indices of (0.50 each) in home gardens in Local government areas in Zone B. About 15 plant species showed diversity indices of between 0.28–0.44

Table 2: Species Diversity indices of plants in Home-gardens in Zone A, Benue State, Nigeria

| Plant species | No of L.G.As | Individuals | Simpson Index (Ds) |
|--------------------------------|--------------|-------------|--------------------|
| <i>Carica papaya</i> | 2 | 27 | 0.50 |
| <i>Irvingiagabonensis</i> | 1 | 8 | 0.01 |
| <i>Elaeisguineensis</i> | 2 | 12 | 0.28 |
| <i>Moringaoleifera</i> | 2 | 21 | 0.49 |
| <i>Newbouldialaavis</i> | 2 | 22 | 0.46 |
| <i>Azadirachtaindica</i> | 2 | 19 | 0.49 |
| <i>Cocosnucifera</i> | 1 | 7 | 0.01 |
| <i>Anacardiumoccidentale</i> | 2 | 11 | 0.46 |
| <i>Gmelinaarborea</i> | 2 | 20 | 0.50 |
| <i>Mangiferaindica</i> | 2 | 26 | 0.50 |
| <i>Psidiumguajava</i> | 2 | 11 | 0.50 |
| <i>Cymbopogoncitratus</i> | 2 | 13 | 0.50 |
| <i>Jatrophaacurcas</i> | 2 | 26 | 0.50 |
| <i>Musa sapientum</i> | 2 | 9 | 0.44 |
| <i>Ceibapetandra</i> | 2 | 36 | 0.50 |
| <i>Cola nitida</i> | 1 | 5 | 0.01 |
| <i>Ricinuscommunis</i> | 2 | 7 | 0.25 |
| <i>Morindalucida</i> | 2 | 9 | 0.44 |
| <i>Spondiasmombin</i> | 2 | 9 | 0.44 |
| <i>Aloe vera</i> | 2 | 6 | 0.50 |
| <i>Citrus sinensis</i> | 2 | 15 | 0.48 |
| <i>Citrus aurantifolia</i> | 1 | 3 | 0.01 |
| <i>Dracaena smithii</i> | 2 | 6 | 0.50 |
| <i>Vernoniaamygdalina</i> | 2 | 11 | 0.46 |
| <i>Ocimumgratissimum</i> | 2 | 4 | 0.38 |
| <i>Musa paradisiaca</i> | 2 | 3 | 0.44 |
| <i>Khayasenegalensis</i> | 1 | 7 | 0.49 |
| <i>Citrus jambhiri</i> | 1 | 2 | 0.01 |
| <i>Parkiabiglobosa</i> | 2 | 17 | 0.48 |
| <i>Erythrinasenegalensis</i> | 2 | 18 | 0.50 |
| <i>Dacryodesedulis</i> | 1 | 6 | 0.01 |
| <i>Danielliaoliveri</i> | 1 | 4 | 0.01 |
| <i>Ficussur</i> | 2 | 8 | 0.50 |
| <i>Emilia coccinea</i> | 2 | 7 | 0.49 |
| <i>Ceratothecasesamoides</i> | 2 | 6 | 0.50 |
| <i>Vitexdoniana</i> | 2 | 8 | 0.47 |
| <i>Sennaoccidentalis</i> | 1 | 3 | 0.01 |
| <i>Meliciaexcelsa</i> | 1 | 3 | 0.01 |
| <i>Maranthespolyandra</i> | 1 | 2 | 0.01 |
| <i>Burkea Africana</i> | 1 | 1 | 0.01 |
| <i>Kigelia Africana</i> | 1 | 1 | 0.01 |
| <i>Ocimumgratissimum</i> | 2 | 6 | 0.28 |
| <i>Thevetianeriifolia</i> | 1 | 1 | 0.01 |
| <i>Caesalpiniaabondue</i> | 1 | 1 | 0.01 |
| <i>Bombaxcostatum</i> | 2 | 3 | 0.44 |
| <i>Tamarindusindica</i> | 2 | 3 | 0.44 |
| <i>Bambusa vulgaris</i> | 1 | 1 | 0.01 |
| <i>Ficuspolita</i> | 2 | 4 | 0.50 |
| <i>Borassusaethiopum</i> | 1 | 1 | 0.01 |
| <i>Gossypium arboretum</i> | 2 | 2 | 0.50 |
| <i>Commiphorakerstingii</i> | 1 | 1 | 0.01 |
| <i>Maytenussenegalensis</i> | 2 | 5 | 0.32 |
| <i>Phoenix dactylifera</i> | 1 | 1 | 0.01 |
| <i>Swartziamadagascaris</i> | 1 | 1 | 0.01 |
| <i>Theobroma cacao</i> | 1 | 1 | 0.01 |
| <i>Eurphorbiahirta</i> | 2 | 2 | 0.50 |
| <i>Laneaschimperiana</i> | 1 | 1 | 0.01 |
| <i>Anonasenegalensis</i> | 1 | 1 | 0.01 |
| <i>Lophiralanceolata</i> | 1 | 1 | 0.01 |
| <i>Sarcocephaluslatifolius</i> | 2 | 2 | 0.50 |
| <i>Delonixregia</i> | 1 | 1 | 0.01 |
| <i>Vitellariaparadoxa</i> | 1 | 16 | 0.01 |
| <i>Hibiscus sabdariffa</i> | 1 | 3 | 0.01 |
| <i>Terminaliacatappa</i> | 1 | 1 | 0.01 |
| <i>Tectonagrandis</i> | 1 | 2 | 0.01 |
| <i>Prosopis Africana</i> | 1 | 2 | 0.01 |
| <i>Lawsoniainermis</i> | 1 | 2 | 0.01 |

Table 3: Diversity index of Home-garden Flora Composition between Vandeikya and Katsina-Ala Local Government Areas (Zone A)

| Variables | Vandeikya | Katsina-Ala |
|-----------------|-----------|-------------|
| Species Sighted | 57 | 47 |
| Individuals | 265 | 248 |
| Dominance | 0.03 | 0.04 |
| Simpson index | 0.97 | 0.96 |

Table 4: Diversity indices of plant species in Home-gardens from Local Government Areas in Zone B of Benue State

| Plant species | L.G.As | Individuals | Simpson diversity (Ds) |
|--------------------------------|--------|-------------|------------------------|
| <i>Carica papaya</i> | 2 | 27 | 0.49 |
| <i>Elaeisguineensis</i> | 2 | 25 | 0.50 |
| <i>Jarophacurcas</i> | 2 | 22 | 0.50 |
| <i>Ceibapetandra</i> | 2 | 29 | 0.49 |
| <i>Moringaoleifera</i> | 2 | 24 | 0.50 |
| <i>Newbouldialaevis</i> | 2 | 25 | 0.50 |
| <i>Musa sapientum</i> | 2 | 18 | 0.48 |
| <i>Mangiferaindica</i> | 2 | 21 | 0.50 |
| <i>Citrus sinensis</i> | 2 | 15 | 0.44 |
| <i>Anacardiumoccidentale</i> | 2 | 17 | 0.50 |
| <i>Gmelinaarborea</i> | 2 | 20 | 0.46 |
| <i>Erythrinasenegalensis</i> | 2 | 14 | 0.50 |
| <i>Vernoniaamygdalina</i> | 2 | 12 | 0.50 |
| <i>Psidiumguajava</i> | 2 | 15 | 0.48 |
| <i>Ricinuscommunis</i> | 2 | 11 | 0.50 |
| <i>Cocosnucifera</i> | 2 | 11 | 0.50 |
| <i>Bambusa vulgaris</i> | 2 | 8 | 0.47 |
| <i>Cymbopogoncitratatus</i> | 2 | 12 | 0.49 |
| <i>Ceratothecasesamoides</i> | 2 | 11 | 0.50 |
| <i>Khayasenegalensis</i> | 2 | 7 | 0.41 |
| <i>Musa paradisiaca</i> | 2 | 5 | 0.32 |
| <i>Spondiasmombin</i> | 2 | 9 | 0.49 |
| <i>Parkiabiglobosa</i> | 2 | 9 | 0.49 |
| <i>Morindalucida</i> | 2 | 9 | 0.49 |
| <i>Daniellialiveri</i> | 2 | 6 | 0.44 |
| <i>Vitexdoniana</i> | 2 | 6 | 0.50 |
| <i>Bombaxcostatum</i> | 2 | 4 | 0.38 |
| <i>Dracaena smithii</i> | 2 | 4 | 0.38 |
| <i>Gossypiumarboreum</i> | 2 | 5 | 0.48 |
| <i>Hibiscus sabdariffa</i> | 2 | 3 | 0.44 |
| <i>Thevetianeriifolia</i> | 2 | 3 | 0.44 |
| <i>Ocimumgratissimum</i> | 2 | 6 | 0.44 |
| <i>Ficussur</i> | 2 | 6 | 0.44 |
| <i>Maranthespolyandra</i> | 2 | 2 | 0.50 |
| <i>Sarcocephaluslatifolius</i> | 1 | 1 | 0.01 |
| <i>Terminaliacatappa</i> | 2 | 5 | 0.32 |
| <i>Telfairiapedata</i> | 1 | 1 | 0.01 |
| <i>Lawsoniainermis</i> | 1 | 1 | 0.01 |
| <i>Anonasenegalensis</i> | 2 | 3 | 0.44 |
| <i>BurkeaAfricana</i> | 2 | 2 | 0.50 |
| <i>Cola nitida</i> | 2 | 2 | 0.50 |
| <i>Aloe vera</i> | 2 | 6 | 0.28 |
| <i>Vitellariaparadoxa</i> | 2 | 4 | 0.38 |
| <i>Prosopis Africana</i> | 2 | 3 | 0.44 |
| <i>Strychnosspinosa</i> | 1 | 1 | 0.01 |
| <i>Azadirachtaindica</i> | 2 | 8 | 0.47 |

and were considered to be moderately diverse. A total of 4 plant species showed weak diversity indices of 0.01. Table 5 showed that home gardens in Gwer East were more diverse ($D_s=0.9638$) in plant species than home

gardens in Gwer West with an index of ($D_s=0.9635$). In Gwer West, a total of 43 plant species were identified while in Gwer East, 45 plant species were recorded.

Table 5: Species Diversity index of Home-gardens in Gwer East and Gwer West LGAs in Benue State (Zone B)

| Variables | Gwer West | Gwer East |
|---------------|-----------|-----------|
| Species | 43 | 45 |
| Individuals | 230 | 228 |
| Dominance | 0.0365 | 0.0362 |
| Simpson index | 0.9635 | 0.9638 |

Table 6: Simpson diversity Indices of plant species of Home gardens in Zone C of Benue State

| Plant species | L.G.As | Individuals | Simpson Index (D_s) |
|----------------------------------|--------|-------------|-------------------------|
| <i>Carica papaya</i> | 2 | 23 | 0.50 |
| <i>Irvingiagabonensis</i> | 2 | 24 | 0.41 |
| <i>Elaeisguineensis</i> | 2 | 29 | 0.50 |
| <i>Moringaoleifera</i> | 2 | 26 | 0.50 |
| <i>Newbouldialaervis</i> | 2 | 26 | 0.50 |
| <i>Azadirachtaindica</i> | 2 | 26 | 0.50 |
| <i>Cocosnucifera</i> | 2 | 24 | 0.49 |
| <i>Anacardiumoccidentale</i> | 2 | 22 | 0.30 |
| <i>Gmelinaarborea</i> | 2 | 24 | 0.50 |
| <i>Mangiferaindica</i> | 2 | 25 | 0.50 |
| <i>Psidiumgaujava</i> | 2 | 19 | 0.49 |
| <i>Cymbopogoncitratu</i> | 2 | 21 | 0.50 |
| <i>Jatrophaacurcas</i> | 2 | 18 | 0.50 |
| <i>Musa sapientum</i> | 2 | 16 | 0.50 |
| <i>Ceibapetandra</i> | 2 | 18 | 0.48 |
| <i>Cola nitida</i> | 2 | 9 | 0.35 |
| <i>Ricinuscommunis</i> | 2 | 7 | 0.41 |
| <i>Morindalucida</i> | 2 | 6 | 0.28 |
| <i>Spondiasmombin</i> | 2 | 13 | 0.47 |
| <i>Aloe vera</i> | 2 | 8 | 0.50 |
| <i>Citrus sinensis</i> | 2 | 11 | 0.46 |
| <i>Citrus aurantifolia</i> | 1 | 4 | 0.01 |
| <i>Dracaena smithii</i> | 2 | 5 | 0.32 |
| <i>Vernoniaamygdalina</i> | 2 | 10 | 0.42 |
| <i>Ocimumgratissimum</i> | 2 | 5 | 0.48 |
| <i>Musa paradisiaca</i> | 2 | 5 | 0.48 |
| <i>Khayasenegalensis</i> | 1 | 3 | 0.01 |
| <i>Chrysophyllumalbidum</i> | 1 | 2 | 0.01 |
| <i>Citrus jambhiri</i> | 1 | 2 | 0.01 |
| <i>Ceratothecasesamoides</i> | 2 | 3 | 0.44 |
| <i>Sennaoccidentalis</i> | 1 | 2 | 0.01 |
| <i>Bambusa vulgaris</i> | 2 | 4 | 0.50 |
| <i>Gossypiumarboreum</i> | 2 | 5 | 0.48 |
| <i>Parkiabiglobosa</i> | 2 | 3 | 0.44 |
| <i>Ficussur</i> | 2 | 6 | 0.44 |
| <i>Tectonagrandis</i> | 2 | 9 | 0.20 |
| <i>Sterculiasetigera</i> | 1 | 1 | 0.01 |
| <i>Laneaschimperiana</i> | 1 | 1 | 0.01 |
| <i>Sarcocephaluslatifolia</i> | 2 | 3 | 0.44 |
| <i>Thevetianeriifolia</i> | 2 | 4 | 0.38 |
| <i>Anonasenegalensis</i> | 1 | 1 | 0.01 |
| <i>Maranthespolyandra</i> | 1 | 1 | 0.01 |
| <i>Erythrinasenegalensis</i> | 2 | 7 | 0.41 |
| <i>Danielliaoliveri</i> | 2 | 5 | 0.32 |
| <i>Daryodesedulis</i> | 2 | 9 | 0.49 |
| <i>Hibiscus sabdariffa</i> | 1 | 2 | 0.01 |
| <i>Lawsoniainermis</i> | 1 | 2 | 0.01 |
| <i>Terminaliacatappa</i> | 1 | 5 | 0.01 |
| <i>Pterocarpussantalinooides</i> | 1 | 7 | 0.01 |
| <i>Ficuspolita</i> | 1 | 4 | 0.01 |
| <i>Ocimumbasilicum</i> | 1 | 2 | 0.01 |
| <i>Bombaxcostatum</i> | 1 | 2 | 0.01 |
| <i>Vitexdoniana</i> | 1 | 1 | 0.01 |
| <i>Prosopis Africana</i> | 1 | 1 | 0.01 |
| <i>Delonixregia</i> | 1 | 1 | 0.01 |
| <i>Nicotinatobaccum</i> | 1 | 1 | 0.01 |

Table 6 showed the diversity indices of plant species of Home gardens in Zone C Local government areas of Benue State. *Elaeisguineensis* was the most abundant plant (29 individuals) found in home gardens in the local government areas of Zone C followed by *Moringaoleifera*, *Newbouldialaevis* and *Azadirachtaindica* which had 26 individuals each. A total of 12 plant species showed high diversity indices of 0.50 each. About 13 plant species were found to be moderately diverse with Simpson diversity indices which ranged from 0.30–0.44. Plant species with Simpson indices less than 0.30 were considered to have weak diversity. About 20 plant species were not diverse and showed Simpson diversity index of 0.01 each.

Table 7 showed Comparison of Plant species composition of home gardens between Ogbadibo and Oju Local Government Areas of Benue State. Home gardens in Oju were more diverse in plant species (0.9651) than home gardens in Ogbadibo with a Simpson index of (0.9635). Simpson index showed that plant species in home gardens in Oju were more diverse ($D_s = 0.9651$) than home gardens in Ogbadibo ($D_s = 0.9635$). But few plant species were more dominant in home gardens in Ogbadibo with an dominance index of ($D = 0.03646$) than home gardens in Oju ($D = 0.03494$). Home garden owners cultivate and protect tree species in their home gardens depending on the need the trees offer and the decision of home garden owners.

Table 7: Diversity indices of Plant species composition of home gardens between Ogbadibo and Oju Local government areas of Benue State (Zone C).

| Variables | Ogbadibo | Oju |
|---------------|----------|---------|
| Species | 47 | 45 |
| Individuals | 278 | 245 |
| Dominance | 0.03646 | 0.03494 |
| Simpson index | 0.9635 | 0.9651 |

DISCUSSION

Floristic Composition

A total of 57 plant species were identified in home gardens in Vandeikya Local government area and the average number of plant species per home garden was 13. Katsina-Ala and Ogbadibo had the same total number of plant species (47) with different average number of plant species per home garden. Ogbadibo Local Government Area had the highest average number of plant species (14) per home garden. Gwer East and Oju had the same total number of plant species (45). The average number of plant species per home garden in Gwer East was 11 while the average number of plant species per home garden in Oju was 12. The difference in composition of home garden was a result of the different uses and values home garden owners get from their gardens. For instance *Ceibapetandra* (Kapok tree) was found almost in every home garden in Vandeikya, Katsina-Ala, Gwer East and Gwer West because it's various uses and the cultural importance the Tiv people attach to this plant.

However the occurrence of *Ceibapetandra* in home gardens in communities in Igede (Oju) and Idoma (Ogbadibo) was different. Floristic composition of home garden differed from one community to another. The

result of this study agrees with Tefera *et al.* (2019), who reported that home garden composition is affected by the cultural practices of the communities which do not allow home garden owners to grow certain plant species. The result also agrees with the report that plants in home gardens vary with ethnicity, culture, religion and spirituality (Sthapitet *al.*, 2004). Home gardens in Benue State consisted of both cultivated and non-cultivated plants. Some plants were found growing naturally in home gardens.

They are maintained by home garden owners because of the several uses such plants provide for them. Some wild plant species like *Chasmantheradependens*, *Maytenussenegalensis*, *Spermacoceoctodon* were found being cultivated in some home gardens in Benue State. Plant species with the highest frequencies of occurrence included *Ceibapetandra*, *Carica papaya*, *Newbouldialaevis*, *Mangiferaindica* and *Moringaoleifera*.

The reason for this high frequency of occurrence was because of the uses of the plant species to home garden owners. This agrees with Das and Das (2005) who maintained that home gardens contain a lot of plant species that are useful to home garden owners.

Certain plants were found growing in one home garden and were never found growing in another even among home gardens within the same community.

Plant species Diversity

Home gardens in Benue State had a rich diversity of plant species. The diversity indices of these plant species ranged from 0.01–0.50. Plant species with diversity indices of 0.50 were considered to be the most diverse species. Those with Simpson diversity indices of 0.01 were considered to be the least diverse. It means the plant species were found in one garden and were not found elsewhere in the community or were not found in another Local Government Area. This underscores that plant species have different uses to different tribes or ethnic groups. The value and use attached to a particular plant in one tribe may not be the same with another tribe. For instance the Igede people love eating the leaves of *Pterocarpussantalinoides* (Uturukpa) and so it was commonly found in home gardens in Oju Local Government Area. It was difficult to find the plant growing in home gardens in Tiv because of the difference in the use and value of the plant. This agrees with Sirmah *et al.* (2017) who reported that plant species preference is closely associated with the importance attached to the products of the plants.

CONCLUSION

The result of the study showed that a great diversity of plant species were found in home gardens in Benue State. Some plant species like *Carica papaya* were found more abundant with 27 individuals in home gardens in Zones A and B which were Tiv speaking areas than in Zone C. In Zone C which comprised of Idoma and Igede, *Elaeisguineensis* was found more abundant with 29 individuals. This indicated that the use and importance of plants found in home gardens across the three agro-ecological zones of the state varies among the ethnic groups in the state namely; Tiv, Idoma and Igede.

RECOMMENDATIONS

Few wild plant species were seen being domesticated in some home gardens. Therefore more efforts should be made at domesticating those wild species which are on the verge of extinction.

Care should be taken while integrating livestock in home garden as destruction by livestock was identified to be a constraint militating against the management of home garden flora.

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