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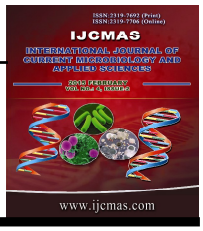

Original Research Article

Comparative Physical parameters of the litter collected from the selected tree canopy related with urban greening in Nirmala college campus, Coimbatore, Tamilnadu, India

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Keywords

Urban greening, Tree canopy soil, Physical parameters of litter, Minerals

A B S T R A C T

Over the coming decades, our cities likely face an array of associated problems, including: rising temperature, water shortages, food scarcity and increased storminess with concomitant flooding, wind damage and coastal erosion. Gardens play a strong role in improving the environmental impact of the domestic cartilage by insulating houses against temperature extremes they can reduce domestic energy use. Gardens also improve localized air-cooling, help mitigate hooding and provide a harem for wildlife. Less favourable aspects include contribution of gardens and gardening to green house gas emission, misuse of fertilizers and pesticides and introduction of alien plant species Effective environmental planning, including urban greening, can assist greatly in improving the quality of the urban environment and the livelihoods of the people who live in urban areas. There is need to plant trees that provide multiple benefits, particularly in house compounds for providing edible pods, flowers, fruits, leaves etc. When the more barren lands are covered to urban use there is a less drastic reduction in vegetation with initial clearing, and then essentially the same transition assuming water is available to support the vegetation transition. As a result of impacts associated with urban infrastructure, arborists and urban landscape managers perform remedial management actions to make urban soils more suitable plant-growing environments, remedial soil management actions include irrigation, aeration, radial trenching, mulching, and fertilization, all of which further alter the physical, chemical and biological properties and thus the nitrogen status of urban soils. In the present study, Physical parameters of the litter collected from the tree canopy in the college campus were analysed and the result were compared with the standard soil profile.

Introduction

Cities emerge from various settings: Forests, grasslands, deserts and farmlands are consequently environmental change is highly variable. Where green material precedes urban development and there is quick reduction in vegetation and increase in exposed soil with initial clearing. Urban

greening is an integrated approach to the planting, care and management of all vegetation in cities, towns, townships and informal settlements in urban and peri-urban areas. Urban green spaces play a significant role for people to have social contacts or find rest in order to achieve this inner harmony and well being.

Urban Forestry and Urban Greening contribute significantly to the urban society's physical, social and economical wellbeing. The tree as they grow sequester the CO_2 in their body (trunk, branches and roots) and this results in an increase in their biomass, indicative of an increase in carbon sequestered by them. Soil vegetation systems play an important role in the global carbon cycle. Soil contains about three times more organic carbon than vegetation and about twice as much carbon is present in the atmosphere (Batjes and Sombrook, 1997; Kumar and Nair, 2006; Dinakaran, 2008).

Terrestrial vegetation and soil currently absorb 40% of global CO_2 emission from human activities (Sheikh and Kumar, 2010). The biomass of leaf and branch cover of each tree was calculated with the help of crown volume. Plant litter and residual quantity but also directly affected soil nutrient supply and soil properties in urban areas (Zhao and Wang, 2010). As many urban forest ecosystem services are directly related to the amount of healthy and functioning leaves, tree covers becomes a simple measure of the extent of the urban forest and consequently the magnitude of services provided by the forest.

Materials and Methods

Study Area

Coimbatore is a city in Tamil Nadu, South India. It is the second largest city and urban agglomeration in the Indian state of Tamil Nadu after Chennai. It is the capital city in Kongu nadu region and is often been referred to as the Manchester of south India. The city is located on the banks of the Noyyal River surrounded by the Western Ghats and is administered by the Coimbatore Municipal. Nirmala college academic campus is located in the southern parts of the Western Ghats. The total area of college campus is 20 acre. The temperature during both summer and winter varies between 28º c to 34º c. Soil in this area is red loamy soil which is more fertile than sandy soil. Its porosity allows high moisture retention and air circulation

Collection of tree canopy soil samples

For the present study five different trees of different genera were selected in the college campus to find out the Physical parameters of tree canopy soil. The tree canopy soil samples were collected during the year, 2013.

Soil with litter formation and ground vegetation from the corners and center of the selected samples of *Butea monosperma*, (*Lamk.) Taub., Jacaranda mimosifolia, D. Don., Cassia fistula, Linn., Albizzia lebbeck (L), Benth., and Peltophorum pterocarpum (DC.)k. Heyne.*, were collected separately in sterile bags. Barren land soil is taken from the same campus was kept as control. Soil was taken from the depth of 0-50cm. Soil samples were packed in sterile bags, and as soon as possible returned to the laboratory and processed within 2 days.

Mineral profile of the litter formed by the selected tree

Mineral profiles of the litters formed by the selected trees of the leaves, wood logs, flowers, fruits were analyzed. The fallen

fresh and dry leaves, flowers, fruits and seeds were powdered and kept in airtight container and the mineral profiles were analyzed

Results and Discussion

Physical parameters of the litter collected from the selected tree canopies were represented in Table &Charts (1-3).

Physical analysis of litter collected from the selected tree canopy

Comparative Moisture content present in the litter collected from the selected tree canopy

In *Peltophorum pterocarpum, (DC.) k. Heyne.,* the moisture was recorded as (12.56) percentage. In *Butea monosperma,(Lamk.) Taub.,* (10.4) percentage, *Cassia fistula, Linn.,* (9.27) percentage, *Albizzia lebbeck,(L), Benth.,* (8.98) percentage and *Jacaranda mimosifolia, D. Don.,* (8.09) percentage was recorded (Chart 1).

Comparative pH values of the litter collected from the selected tree canopy

Among the five selected tree canopies in *Albizzia lebbeck (L), Benth.,* pH value was found to be high and in *Jacaranda mimosifolia ,D. Don.,* pH value was found to be 4.67. All the five selected tree canopy litters the pH was found in between 4.67 to 5.85 and all the litters was found in acidic range (Chart 2).

Comparative Electrical conductivity of the litter collected from the selected tree canopy - Table 4

The Electrical conductivity of the litter was found to be very high in *Peltophorum pterocarpum (DC.) k. Heyne.,* (837.1). Electrical conductivity was low in *Jacaranda mimosifolia, D .Don.,* (298.7), (Chart 3).

Table.1 Physical parameters of the litter collected from the selected tree canopy

Parameter	***Butea monosperma***	***Jacaranda mimosifolia***	***Cassia fistula***	***Albizzia lebbeck***	***Peltophorum pterocarpum***
Moisture	10.40%	8.09%	9.27%	8.98%	12.56%
pH	5.72	4.67	5.32	5.85	5.06
Electrical Conductivity	631.4 µmhos/cm	298.7 µmhos/cm	565.7 µmhos/cm	363.1 µmhos/cm	837.1 µmhos/cm

SAMPLE: 1 -Plate 3
Butea monosperma, (Lamk.) Taub.,

SAMPLE: 2 -Plate 4
Jacaranda mimosifolia, D. Don.,

SAMPLE: 3 - Plate 5
Cassia fistula, Linn .,

SAMPLE*:* 4- Plate 6
Albizzia lebbeck, (L,) Benth.,

SAMPLE: 5- Plate 7
Peltophorum pterocarpum, (DC.) k.Heyne .,

Chart.1 Comparative Moisture content of the litter collected from the selected tree canopy

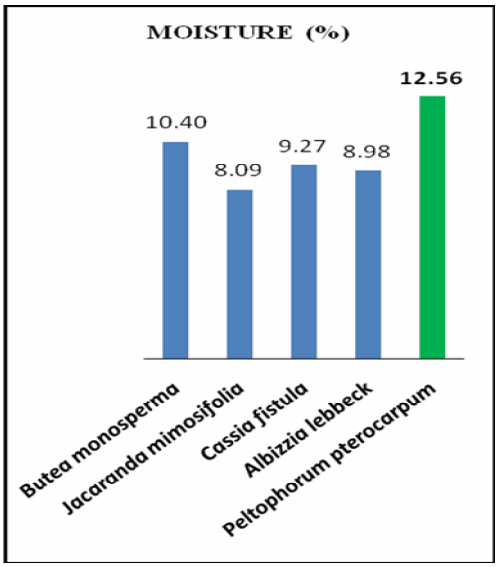


Chart.2 Comparative pH values of the litter collected from the selected tree canopy

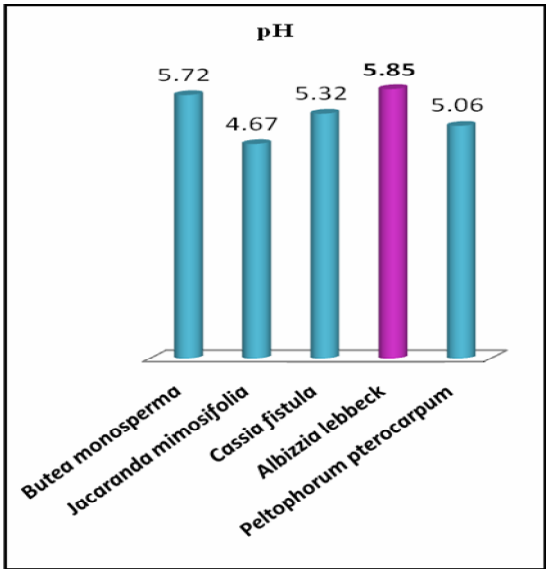
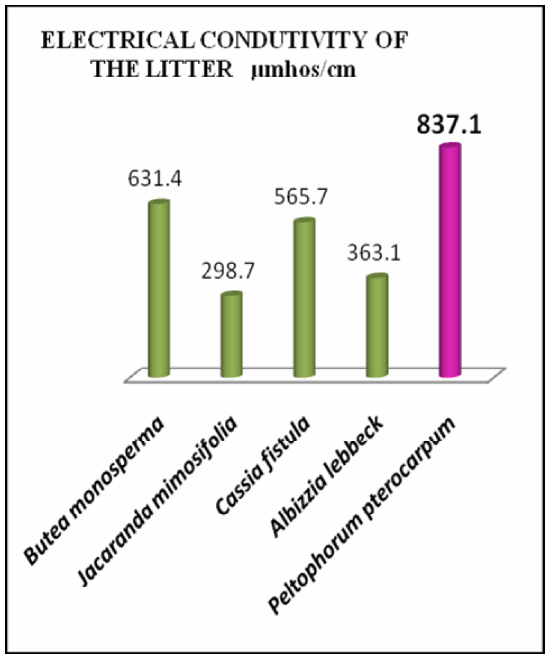


Chart.3 Comparative Electrical conductivity of the litter Collected from the selected tree canopy



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