

SEASONAL AVAILABILITY OF BEE FLORA AT CORONATION GARDEN, KIRTIPUR, NEPAL



A Dissertation Submitted to the Central Department of Botany, Tribhuvan University for
partial fulfillment of the requirement for M. Sc. Degree in Botany

Submitted By

UMA PANTA

CENTRAL DEPARTMENT OF BOTANY

TRIBHUVAN UNIVERSITY

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TU Registration No: 5-2-19-375-2009

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RECOMMENDATION

This is to recommend that the thesis entitled "**SEASONAL AVAILABILITY OF BEE FLORA AT CORONATION GARDEN, KIRTIPUR NEPAL**" has been carried out by Ms. Uma Panta for the partial fulfillment of the requirement for the degree of Master of Science in Botany. This is her original work and has been carried out under my supervision. To the best of my knowledge, this thesis work has not been submitted for any other degree in any institutions. I recommend this thesis to be accepted for the degree of Master of Science in Botany, Central Department of Botany, Tribhuvan University, Kirtipur, Kathmandu, Nepal.

.....

(Supervisor)

Assoc. Prof. Dr. Chitra B. Baniya

Central Department of Botany

Tribhuvan University

Kirtipur, Kathmandu, Nepal

Date: 17th Feb 2021

LETTER OF APPROVAL

On the recommendation of the supervisor Asso. Prof. Dr. Chitra Bahadur Baniya this thesis submitted by Ms Uma Panta entitled "**SEASONAL AVAILABILITY OF BEE FLORA AT CORONATION GARDEN, KIRTIPUR NEPAL**" is approved for the examination and submitted to the Tribhuvan University in partial fulfillment for the requirements of Master's Degree in Botany, Central Department of Botany, Tribhuvan University, Kirtipur, Kathmandu, Nepal.

.....
(External Examiner)

Ram Chandra Poudel
Senior Scientific Officer
Nepal Academy of Science and
Technology (NAST)
Khumaltar, Lalitpur

.....
(Internal Examiner)

Asst. Prof. Dr. Achyut Tiwari
Central Department of Botany
Tribhuvan University
Kirtipur, Kathmandu, Nepal

.....
(Supervisor)

Assoc. Prof. Dr. Chitra B. Baniya
Central Department of Botany
Tribhuvan University
Kirtipur, Kathmandu, Nepal

.....
(Head of Department)

Prof. Dr. Ram Kailash Prasad Yadav
Central Department of Botany
Tribhuvan University
Kirtipur, Kathmandu, Nepal

Date: 5th March 2021

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Central Department of Botany

ABSTRACT

The investigation on the bee flora and their identification and classification was undertaken during 2015-2016 at the Coronation Garden, Tribhuvan University, Kirtipur. Flowering plant species were observed during field survey to convey whether the flowering species visited by bees or not. Whether the visited flowering species confirmed as bee flora or not distinguished after visual observation. The identified bee flora was further grouped into major, medium and minor bee floras on the basis of nectar and pollen they collected. The flowering period of the bee flora documented to prepare the floral calendar. Pollen picture of each bee flora has been prepared in order to prepare pollen library. A total of 197 plant species identified as important bee flora by this study. Among them 35 species were horticultural species, 77 were ornamental flowers, 27 were vegetables, cereals, pulses and others, 8 were naturalized and 50 were wild plant species. Among them 45 species were considered as the major bee flora, 41 species were as the medium and 62 as the minor bee floras for both pollen and nectar they collected. Some of the common and important bee forage plants were *Trifolium repens*, *Oxalis corniculata*, *Cuphea micrantha*, *Lagerstroemia indica*, *Callistemon citrinus*, *Grevillea robusta*, *Citrus* spp., *Salvia splendens*, etc. This study was carried out to indicate the present condition of food crisis and malnutrition. Which is due to declining of pollinators, floral species, mis-use of land farming system, pesticides use, being neglected by everyone etc. So, it is important to know everyone, if we are not aware of this type of problems it would be great loss to human society. To conduct my research, I have use following data analysis. Diversity analysis, species diversity, Shannon-Weiner's index, Simpson index, Non-metric multidimensional scaling (NMDS), Correlation coefficient.

Being abandon and neglected area this area gives the clear vision there is abundance of bee flora species. Bee flora was categorized into ornamental, horticultural, vegetable and crop species, naturalized and wild forms. Among three seasons in Summer & Spring there were 118 & 116 bee flora. There were 139 species were near ones, 28 as far and 30 as very far species. Out of 197 bee floras 56 species were red color, 15 as blue color, 46 as yellow and 79 as white. This area can be home of many pollinators and hotspot of bee floral species.

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ACRONYMS

Apr	April
Aug	August
D1	Near
D2	Far
D3	Very Far
Feb	February
g	gram
GDP	Gross Domestic Product
GPS	Global Positioning System
hr ⁻¹ yr ⁻¹	Per Hour Per Year
ICIMOD	International Centre for Integrated Mountain Development
i.e.	That is
KATH	National Herbarium and Plant Laboratories, Godawari
KM	Kilometer
M	Meter
ML	Milliliter
N1P1	Major Source
N2P2	Medium Source
N3P3	Minor Source
PAN	Pesticide Action Network
Sq. km	Square kilometer
TUCH	Tribhuvan University Central Herbarium
µg	microgram
µl	micro liter
µm	micro mete