

# **FRACTALS IN PLANT LEAVES**

## *PROJECT REPORT*

submitted to Calicut University  
In practical fulfillment of the requirements for the award of the Degree of

### **MASTER OF SCIENCE IN PHYSICS**

submitted by

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**Reg. No : KVATMPH001**

UNDER THE GUIDANCE OF

**Dr. K. M. UDAYANANDAN**



Department of Physics,  
MES KEVEEYAM COLLEGE,  
VALANCHERY  
MARCH, 2021

***Dedicated to my family***

## CERTIFICATE

Certified that work incorporated in the project entitled " FRACTALS IN PLANT LEAVES " is the bonafide work done under my supervision by AFA NAHAN T P , Reg. no : KVATMPH001, Department of physics, MES KEVEEYAM COLLEGE, VALANCHERY towards the practical fulfillment of the requirements for the award of the Master Degree in Physics during the period 2019-2021



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## **DECLARATION**

It is declared that the work presented in this project is based on the work done under the guidance of Dr. K. M. UDAYANANDAN (Retd.), Department of Physics, Nehru Arts and Science College, Kanhangad and has not been included in any other project submitted previously for the award of any M. Sc degree either to this university or to any other university/institution.

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May, 2021.

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# Contents

<b>1</b>	<b>INTRODUCTION TO CHAOS</b>	<b>2</b>
<b>2</b>	<b>FRACTALS IN NATURE</b>	<b>7</b>
2.0.1	ORIGIN OF THOUGHTS TO THE FRACTAL GEOM- ENTRY . . . . .	9
2.0.2	OBSERVE FRACTAL AROUND US . . . . .	12
<b>3</b>	<b>CHAOS, FRACTAL AND THEIR INTERRELATIONSHIP</b>	<b>20</b>
<b>4</b>	<b>QUANTIFYING FRACTAL</b>	<b>24</b>
<b>5</b>	<b>FRACTAL DIMENSION FOR KOCH CURVE</b>	<b>32</b>

<b>6</b>	<b>BOX COUNTING METHOD</b>	<b>36</b>
6.0.1	THEORY . . . . .	36
6.0.2	EXPERIMENTAL TECHNIQUE . . . . .	38
<b>7</b>	<b>STUDY OF FRACTALS IN LEAVES</b>	<b>40</b>
7.1	TABULAR DATA . . . . .	41
<b>8</b>	<b>OBSERVATIONS</b>	<b>60</b>
<b>9</b>	<b>Conclusion</b>	<b>62</b>
<b>10</b>	<b>Reference</b>	<b>64</b>



# List of Figures

2.1	The fractal nature of Tree . . . . .	13
2.2	The fractal nature of Growth spirals . . . . .	13
2.3	The fractal nature of different Flowers . . . . .	14
2.4	The fractal behavior of Lightning . . . . .	15
2.5	The fractal in Coastlines . . . . .	16
2.6	The fractal nature of River . . . . .	16
2.7	The fractal behavior shown in Fruits . . . . .	17
2.8	The fractal nature shown in different types of Leaves . . . . .	18
2.9	The fractals observed in Other living things . . . . .	19

4.1	Dimension of straight line . . . . .	28
4.2	Dimension of basic shapes . . . . .	29
5.1	The dimension of Koch curve . . . . .	34
6.1	The Neem leaf with grid . . . . .	39
6.2	The log-log plot of sample leaf obtained from the software . . . . .	39

## List of Tables

7.1	The fractal dimension of leaves of <i>Syzygium jambos</i> . . . . .	42
7.2	The fractal dimension of leaves of <i>Hibiscus</i> . . . . .	42
7.3	The fractal dimension of leaves of <i>Chromolaena odorata</i> . . . . .	43
7.4	The fractal dimension of leaves of <i>Artocarpus heterophyllus</i> . . . .	43
7.5	The fractal dimension of leaves of <i>Myristica fragrans</i> . . . . .	44
7.6	The fractal dimension of leaves of <i>Chrysanthemum morifolium</i> . .	44
7.7	The fractal dimension of leaves of <i>Magnolia champaca</i> . . . . .	45
7.8	The fractal dimension of leaves of <i>Anacardium occidentale</i> . . . .	45
7.9	The fractal dimension of leaves of <i>Piper nigrum</i> . . . . .	46

7.10	The fractal dimension of leaves of <i>Mangifera indica</i> . . . . .	46
7.11	The fractal dimension of leaves of <i>Jasminum</i> . . . . .	47
7.12	The fractal dimension of leaves of <i>Tabernaemontana divaricata</i> . .	47
7.13	The fractal dimension of leaves of <i>Citrus limon</i> . . . . .	48
7.14	The fractal dimension of leaves of <i>Plectranthus amboinicus</i> . . . .	48
7.15	The fractal dimension of leaves of <i>Psidium guajava</i> . . . . .	49
7.16	The fractal dimension of leaves of <i>Rosa claret</i> . . . . .	49
7.17	The fractal dimension of leaves of <i>Punica granatum</i> . . . . .	50
7.18	The fractal dimension of leaves of <i>Manilkara zapota</i> . . . . .	50
7.19	The fractal dimension of leaves of <i>Ixora coccinea</i> . . . . .	51
7.20	The fractal dimension of leaves of <i>Ocimum tenuiflorum</i> . . . . .	51
7.21	The fractal dimension of leaves of <i>Murraya koenigii</i> . . . . .	52
7.22	The fractal dimension of leaves of <i>Torenia fournieri</i> . . . . .	52
7.23	The fractal dimension of leaves of <i>Azadirachta indica</i> (Neem) . . .	53

7.24	The fractal dimension of leaves of <i>Saraca asoca</i> . . . . .	53
7.25	The fractal dimension of leaves of <i>Syzygium samarangense</i> . . . .	54
7.26	The fractal dimension of leaves of <i>Ficus microcarpa</i> . . . . .	54
7.27	The fractal dimension of leaves of <i>Vitex negundo var purpurescens</i>	55
7.28	The fractal dimension of leaves of <i>Aegle marmelos</i> . . . . .	55
7.29	The fractal dimension of leaves of <i>Lantana camara</i> . . . . .	56
7.30	The fractal dimension of leaves of <i>Bauhinia tomentosa</i> . . . . .	56
7.31	The fractal dimension of leaves of <i>Morus</i> . . . . .	57
7.32	The fractal dimension of leaves of <i>Woodfordia fruticosa</i> . . . . .	57
7.33	The fractal dimension of ten different fruit-bearing plant leaves .	58
7.34	The fractal dimension of ten different flowering plant leaves . . .	58
7.35	The fractal dimensions of eleven different medicinal plant leaves .	59

## **Preface**

The project titled, 'Fractals in plant leaves', is to find the fractal dimension of thirty-one species of plant leaves collected from various plants which including fruit-bearing plants such as *Manilkara zapota*, *Mangifera indica*, etc..., flowering plants like *Lantana camara*, *Hibiscus*, etc..., and medicinal plants such as *Azadirachta indica*, *Ficus microcarpa*, etc..., present in our nature using the box-counting method. This project aims to check and compare the fractal dimensions of different types of leaves that consist of different shapes and variations. It also finds the relationship between fractal dimension and distinct factors connected to this structure. It also attempts to prove the fact that mathematics is an integral part of our nature. It also checks whether the leaves can be distinguished using their fractal dimension.