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Dr. Panjabrao alias Bhausaheb Deshmukh
Founder President

3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five year

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Interdisciplinary Research
(ICAIR-2021)
(October 26-28, 2021)**

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A-83

A Case Study of the Deo River Mini -Watershed, Using Dug Well Recharge Technique: An Effective Method of Artificial Recharge

A. D. Fuladi * and M. S. Deshmukh **

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ABSTRACT:

The use of a dug well for artificial recharge is an easy and cost effective method. But due to uneven rainfall and diverse hydrogeological setup, water resources are not evenly distributed especially in hard rock terrain. During this study an area of Deo river is selected, comprising Deccan Basalt lava flows and alluvium. This mini-watershed is declared as over-exploited by Groundwater Surveys and Development Agency (GSDA) and Central Groundwater Board (CGWB). The mini-watershed is an assured rainfall zone, but most of the rainfall is lost as surface runoff, without much infiltration due to rapid overland flow on the hard rock terrain and dominant impermeable lithology. With these objectives, analysis of mini-watershed was carried out with the help of remote sensing and GIS techniques to prepare artificial recharge plans. Based on the field observations, it is proposed that a high percentage of the surplus water is available in some patches, especially near the main course of Deo river which can be allocated to the artificial recharge structures. After careful analysis, it is observed that an inverted well method of artificial recharge is suitable at some places within the mini-watershed. In this method movement of water is in the reverse direction as compared to an ordinary well. This method is generally used when a deep confined aquifer is present but in the present case this method is found suitable to recharge the unconfined aquifer.

Keywords: Groundwater, Artificial Recharge, Dug Well Recharge Technique, Watershed Management.

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Watershed Management and Development Planning Using Remote Sensing and GIS Technique: A Case Study of the Shirkhed Area, Chargarh River Basin, Amravati District, Maharashtra.

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Assistant professor

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^{2*}Rashtrasant Tukadoji Maharaj Nagpur University.

The focus of watershed management has shifted from physical water and soil conservation to the integration of social, economic, and environmental changes. Intensive agricultural activities, especially orange cultivation in the study area, place excessive stress on the aquifer system, causing water levels to drop. As a result, groundwater levels in the study area are depleted and the area is declared as over-exploited. The major issues in this region are over-exploitation of groundwater, decreasing groundwater levels, restricted aquifer thickness and water shortage during the summer season. It is essential to study these areas using a scientific approach to the hydrogeological and agricultural development and management.

The IRS-LISS-III multispectral images, SRTM information and Survey of India top sheets were utilized for this purpose. The geology, geomorphology and slope aspects are considered while preparing conservation plans for the land and water resources management. For the ecological development and management of the forest areas of the Chargarh river basin, conservation planning was very important. On the basis of field geological aspects and remote sensing technique various conservation measures like continuous contour trenches, gabion plug, village tank, KT-weir, percolation tank, minor irrigation tank, underground plug, recharge shaft, farm ponds, cement nala bund and other soil and water conservation structures are proposed for groundwater recharge, environmental management and control of soil erosion within the watershed.

KEYWORDS: Remote Sensing and GIS technique, Water and soil conservation, Artificial recharge of groundwater, Watershed Management.

STUDY AREA:

The study area (Shirkhed area, Chargarh river basin) is included in Survey of India top sheets 55G/16 and has 77°57'27"E Longitude and 21°13'39"N Latitude, covering an area of approximately 25 km² (Figure 1). The Shirkhed area is covered by dominant perennial crops like Orange. The area is a part of an assured rainfall zone, which receives about 900 to 1000 mm rainfall/year.



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ABSTRACTS

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Department of Botany

Abstract

OP104

Study Of Floristic Diversity Of JijamataMahavidyala College Campus, Buldana, Maharashtra.(M.S)

Reshma P.Sonwalkar
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The present study is regarding the diversity of flora in the JijamataMahavidyalaya College Campus, Buldana. To understand and asses the richness of the species diversity a taxonomic study Flora is very much essential. Floristic study is useful to assessment of conversation management, phyto-diversity and sustainable utilization. The flora of Jijamata Mahavidyalaya College Campus, Buldana, is not yet documented and the present paper on floristic diversity. JMV Buldana was studied for two consecutive years, from 2019-2020. In the present study natural as well as cultivated flora is documented. A total of 400 were observed in the month of January - April. In college campus of 23 acre, out of 400 plants of different species includes herb, shrub, trees, have been recorded and identified by flora of Maharashtra. Most of them are used as medicinal purpose.

Keywords: JMV Campus, floristic diversity, floras, herb, shrubs, trees

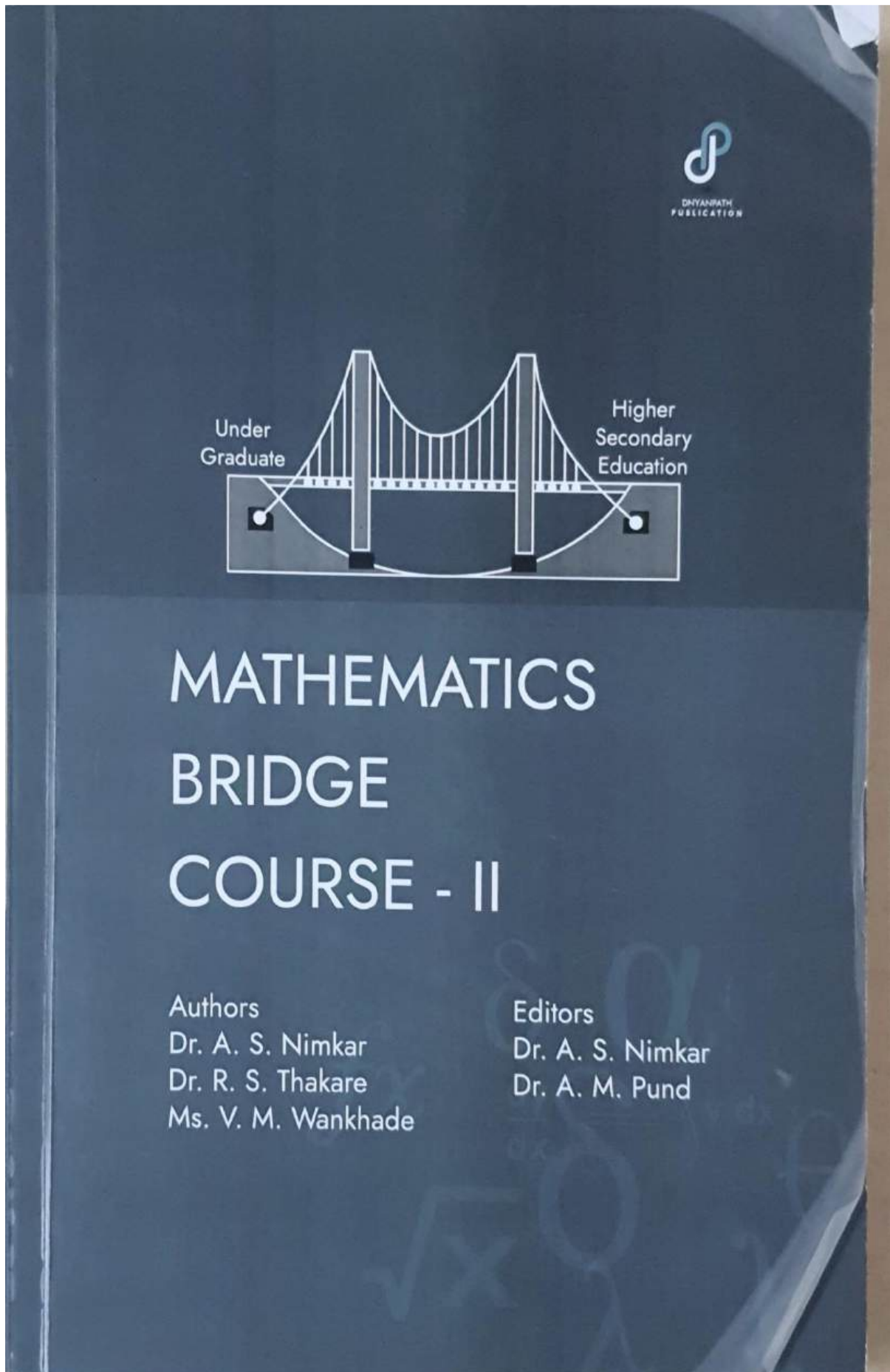
OP105

Phytochemical Screening of Methanol Root Extract of *Lagerstroemia speciosa* (L).Pers (Lythraceae).

Dr. P.S. Sujatha* and Amith. T
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Medicinal plants have bioactive compounds which are used for curing of various human diseases and also play an important role in healing. The aim of the present study was to investigate the phytochemicals of *L. Speciosa*. Phytochemicals have two categories i.e., primary and secondary constituents primary constituents have chlorophyll, proteins sugar and amino acids. Secondary constituents contain terpenoids and alkaloids. The root of the selected medicinal plants were washed, air dried and then powdered. The methanolic extract of root samples were used for the phytochemical analysis to find out the phytochemical constituents in the *Lagerstroemia speciosa*. The main objective of the work was to check the presence or absence of the phytochemical constituents in *L. speciosa* root. Phytochemical screening of the methanolic extract of *L. speciosa* roots showed the presence of alkaloids, steroids, aminoacids, phenol, saponins, tannins, flavanoids, phytosterols, cardiac glycosides, reducing sugar. Out of ten compounds identified the major volatiles in root were phenol, saponins, flavonoids, cardiac





MATHEMATICS BRIDGE COURSE - II

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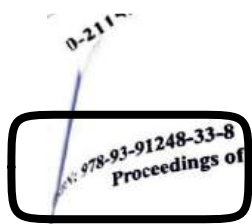
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A-40

The Impact of Environmental Factors on Leech Fauna

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Abstract:

Leeches (Hirudinea) are predatory parasitic annelids with terminal suckers serving in attachment, locomotion and feeding. They are closely related to the oligochaeta in possession of suckers, mouthparts and analogous jaws in the absence of setae. They are diagnosed as a very vital invertebrate group of versatile habits and habitats and are playing significant role for the existence of human being in this planet. The biological diversity reveals that Leech (Hirudinea) fauna world accounts to 680 species, of these 482 species are freshwater, 102 marine and ultimate 92 are terrestrial. Leeches are most affected by means of agricultural activity, excessive use of hazardous chemical compounds in water, growing urbanization and world climate change. Leeches which are a member of the Clitellata class, are at the forefront of aquatic organisms affected by environmental catastrophe. Leeches are most affected via moderate land use, collection of pesticide compounds in water, reduction of wetlands, growing urbanization and international change.

Keywords - Leeches; Environmental Factors; Climatic Condition; Human pressure



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About the Editor



Dr. Shalini S. Chahande is presently working as Assistant Professor at Seth Resarimal Porwal College of Arts and Science and Commerce, Kamptee, Nagpur. She has 25 years of teaching experience. She has been awarded with ICAR Junior Research Fellowship UGC Junior and Senior Research Fellowship in science and humanities. She is recently awarded with Bharat Ratna Dr. Radhakrishnan Gold medal award for excellence in her field by Global Economic Progress and Research Association, New Delhi. Recently an invited lecture was given under the popular lecture series organized by Indian Women Scientists Association supported by BRNS, DAE, GOVT OF INDIA. She has Published and presented Articles and Research papers in National and International Journals of Repute.



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Deepfakes, a Threat to Society

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ABSTRACT

Nowadays, people faced a problem of face swapping images and forged videos, widely known as the Deepfakes. These kind of images and videos are being circulated on social media, freely causing problem peoples privacy. Some deepfake images are very hard to distinguish from original ones and cannot be identified by human eye. This concept of fabrication and manipulation of digital videos and images are not new. This paper discusses about the fact of face swapping algorithms, their impact on the media, a review of deepfake and its development over the years. Conclusion of this paper offers recommendations based on the analysis.

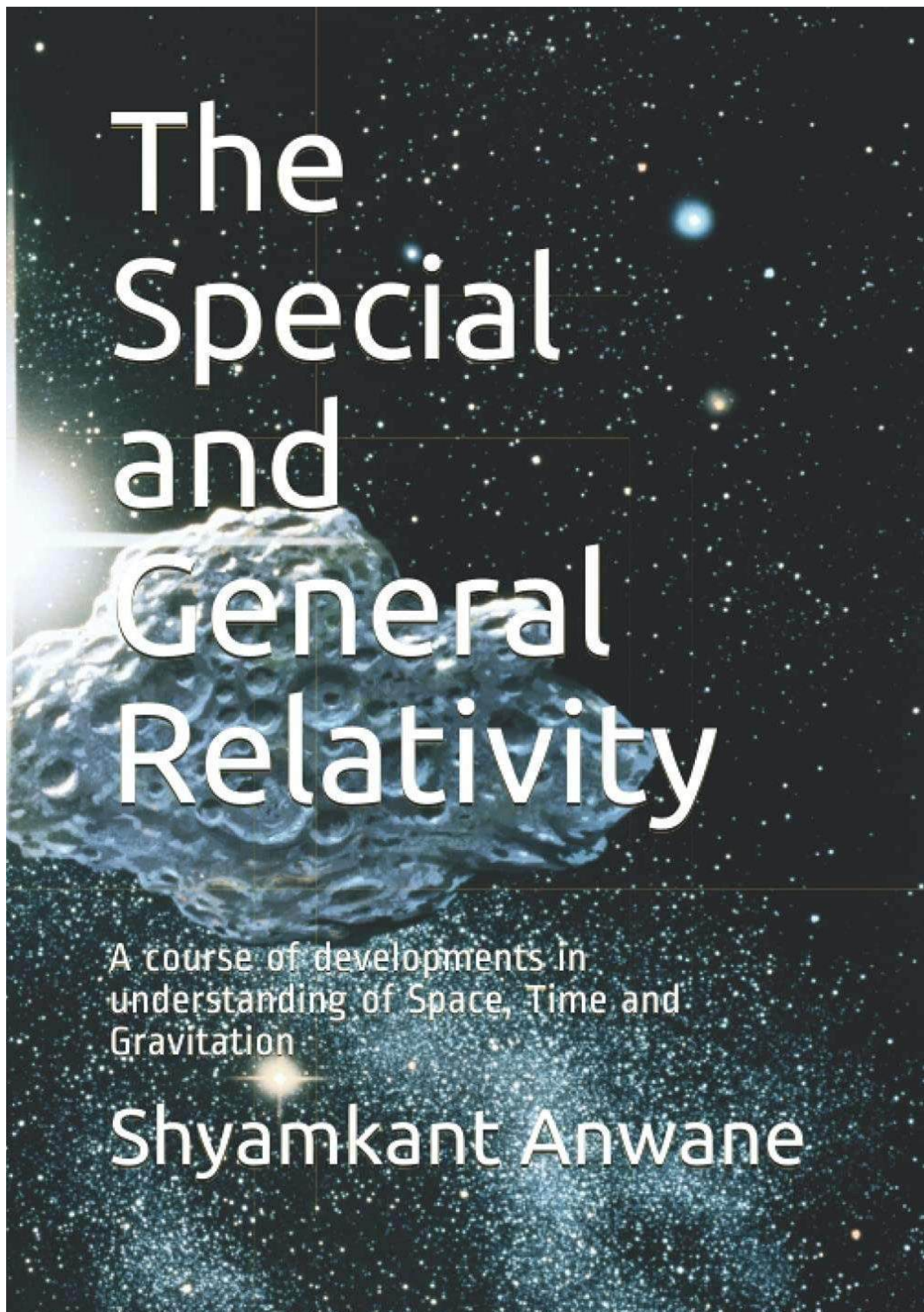
Keywords: Deepfakes, Generative Adversarial Networks(GANs), deepfake threats Machine Learning.

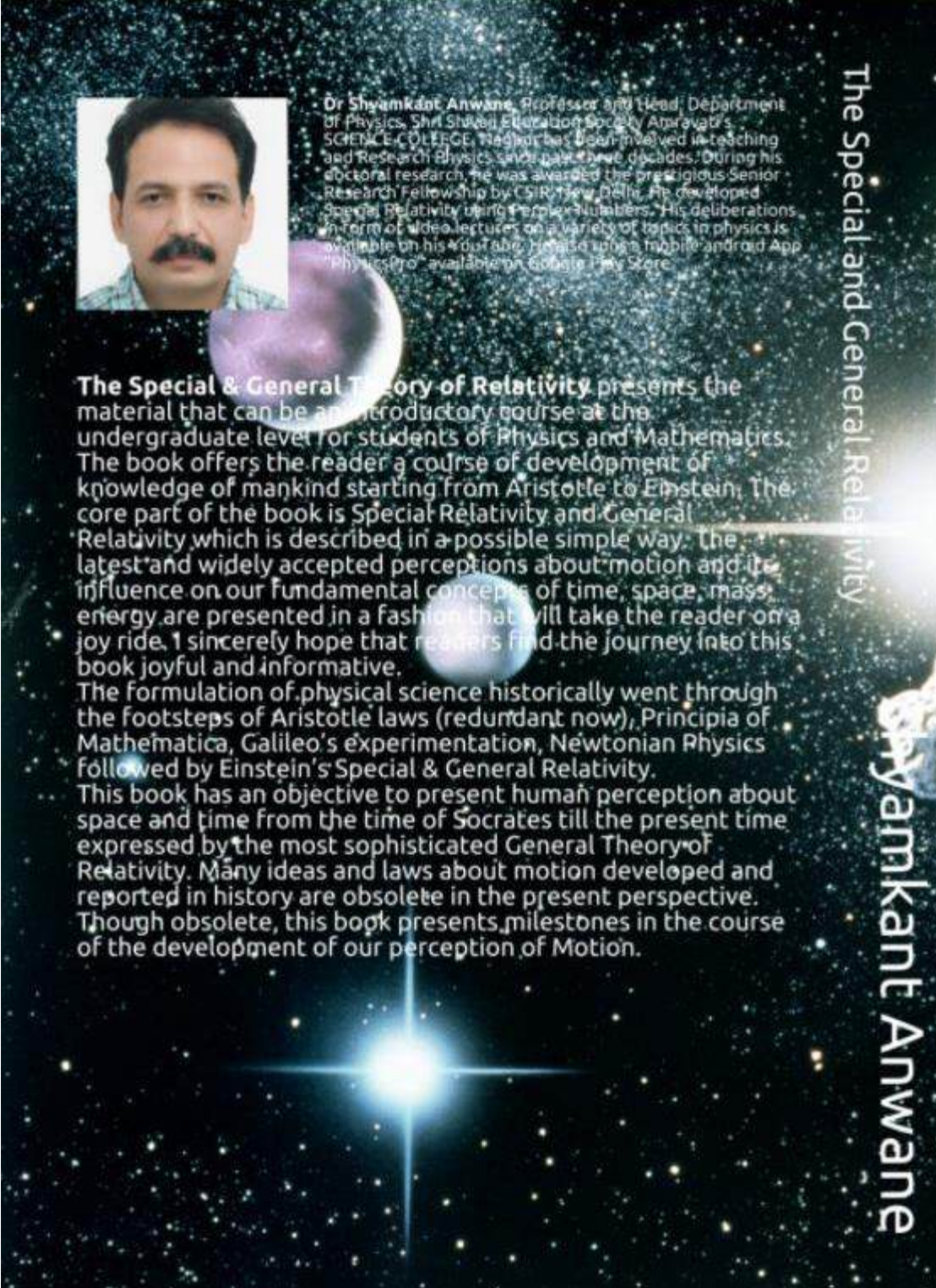
I. INTRODUCTION

In the recent times, multimedia is used as a tool for alteration and manipulation. This altered and manipulated multimedia is freely circulated on the social media platforms without any hesitation [7]. The concept of deepfake was invented in 2014 by Ian Good fellow. Deep fakes are produced using Artificial Intelligent (AI) applications and Machine Learning that merge, combine, replace, and superimpose images and video clips to make fake videos that appear as if they are original ones [2].

Recently Social Networking sites like Facebook and Instagram have announce their policy in January 2020 regarding banning of deepfake videos. There are many examples of Superimposing someone's face with someone else's. Specially faces of celebrities are used for this purpose to tarnish their image in society. Like in a photo the U.S.A. president Lincoln's head was swapped with politician John Calhoun's was produced in mid-19th century.

A study recently published in Cognitive Research[1] tried to measure people's ability to recognize whether a photo has been manipulated or not. The study showed that only 62% to 66% of the photos were correctly classified as original or manipulated ones. In a similar study published by Harisha et al [2] that only 58% of the images were correctly classified as original and only 46% of the images were identified as manipulated ones. The threat represented by widespread image forgery has stimulated intense research in multimedia forensics. Because of this we need an automatic algorithms for better detection of original and manipulated





Dr. Shyamkant Anwane, Professor and Head, Department of Physics, Shri Shukel Education Society Amravati's SCIENCE COLLEGE, Nagpur has been involved in teaching and Research Physics since past three decades. During his doctoral research, he was awarded the prestigious Senior Research Fellowship by CSIR, New Delhi. He developed Special Relativity using Fermi's numbers. His deliberations in form of video lectures on a variety of topics in physics is available on his YouTube. He also has a mobile android App "PhysicsPro" available on Google Play Store.

The Special & General Theory of Relativity presents the material that can be an introductory course at the undergraduate level for students of Physics and Mathematics. The book offers the reader a course of development of knowledge of mankind starting from Aristotle to Einstein. The core part of the book is Special Relativity and General Relativity which is described in a possible simple way. The latest and widely accepted perceptions about motion and its influence on our fundamental concepts of time, space, mass, energy are presented in a fashion that will take the reader on a joy ride. I sincerely hope that readers find the journey into this book joyful and informative.

The formulation of physical science historically went through the footsteps of Aristotle laws (redundant now), Principia of Mathematica, Galileo's experimentation, Newtonian Physics followed by Einstein's Special & General Relativity.

This book has an objective to present human perception about space and time from the time of Socrates till the present time expressed by the most sophisticated General Theory of Relativity. Many ideas and laws about motion developed and reported in history are obsolete in the present perspective. Though obsolete, this book presents milestones in the course of the development of our perception of Motion.

The Special and General Relativity

Shyamkant Anwane

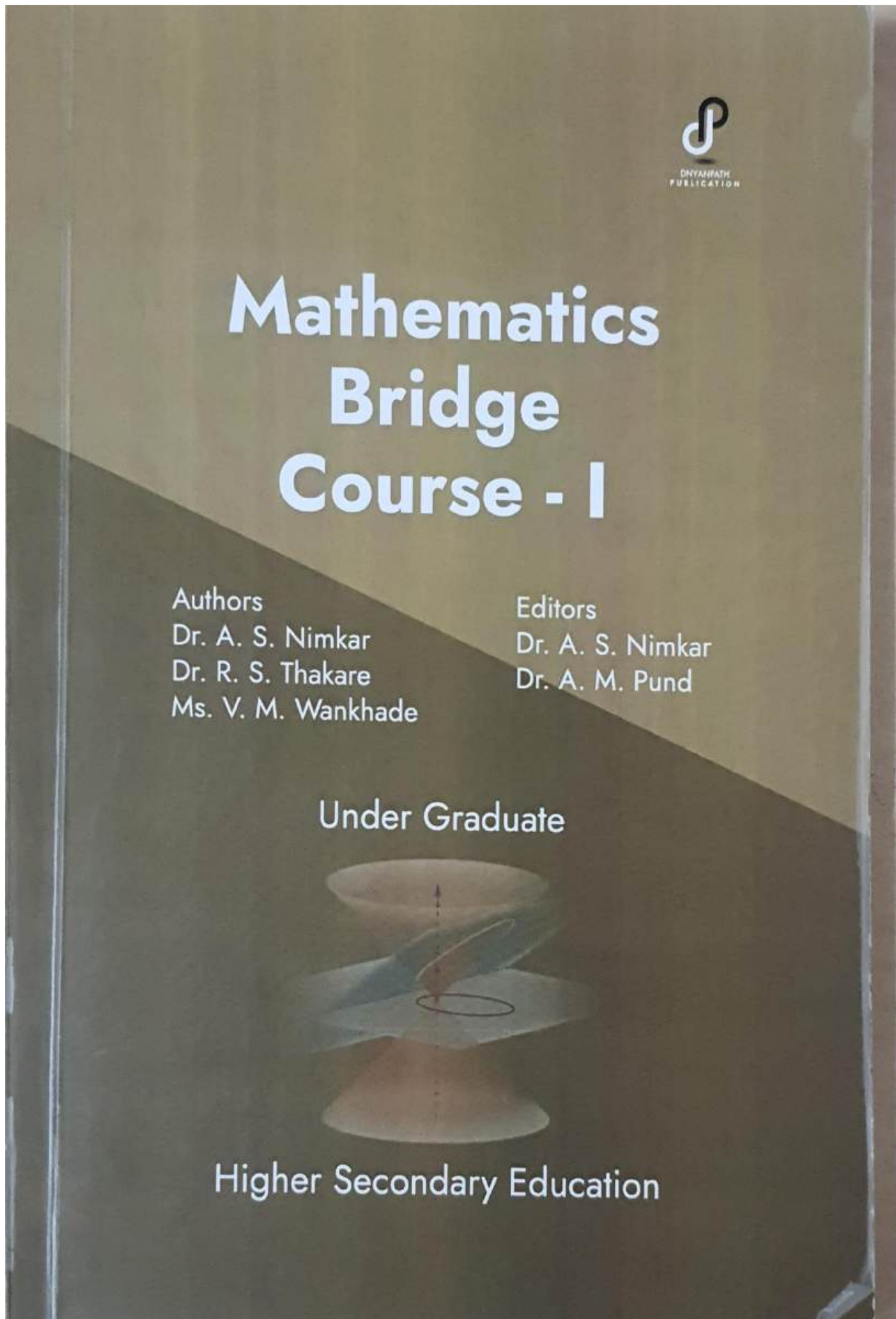


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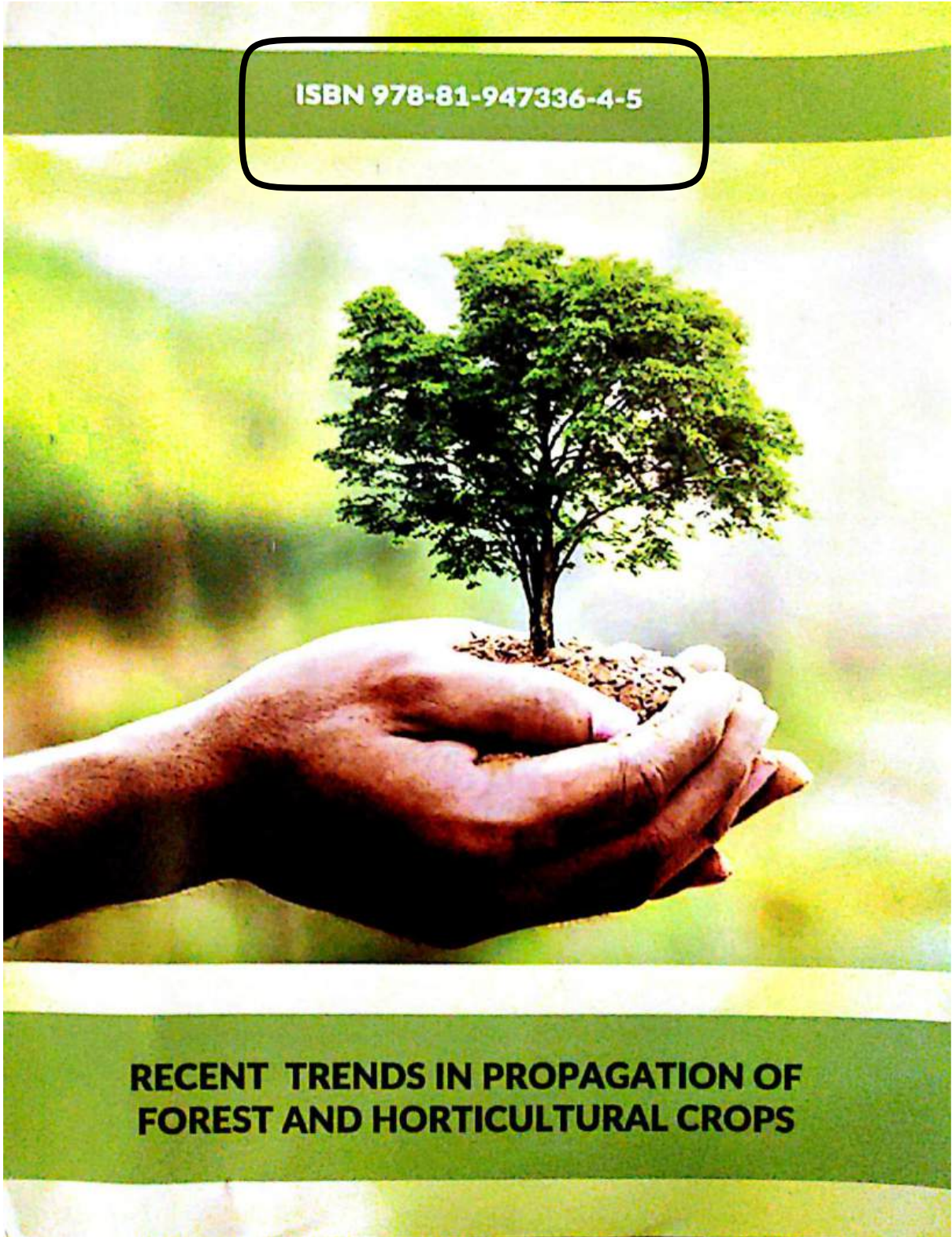
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The Phyto-Medica: Exotic Medicated Plants And Their Utilization

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Abstract:

Tephrosia purpurea and *Opuntia* sp. both are perennial plants. Wide grown up in India and other continents. Both the plants and their components are very helpful as medicines and also the plants have many aromatic properties. Healthful uses of medicine includes tonic, laxative, diuretic, bronchitis, bilious symptom attack, boils pimples, diarrhea, gonorrhoea, rheumatism and cures unwellness of heart, spleen and blood. The pharmacologic studies have shown this plants have several healthful of biological activity like antiulcer, antimicrobial, medicament, antiviral, anti-unhealthy, hepatoprotective, antihyperglycemic and antihyperlipidemia, Antiatherogenic, immuno-stimulatory activity, inhibitor, wound healing property, anti-allergic activity. A good style of helpful chemicals are extracted from this plants have involved with their healthful uses. This review high lights the extraordinary and main healthful, therapeutic and agricultural aspects of the *Tephrosia* and *Opuntia* plant along with their cultivational and agro economic importance.

Keywords: Agricultural, Aromatic, Medicinal, *Opuntia*, *Tephrosia purpurea*, Therapeutic.

1.1 General Introduction

Tephrosia purpurea

Tephrosia purpurea is associate erect or spreading annual or short lived perennial herb that is 40-80 cm tall and is cosmopolitan in countries like India, China, Malay Peninsula, Democratic Socialist Republic of Sri Lanka and Hawaii. It naturally happens in sedgy agricultural areas, thickets, misspend places and on ribs and on roadsides in many countries. It's found close to the shore in Hawaii. The herb is native to warm parts of Asia and additionally found from India and Sri Lanka to Southern China and through Southern –Eastern Asia to tropical Australia and Austronesian Islands. It's cultivated pantropically. The plant is perennial herb found all over India.

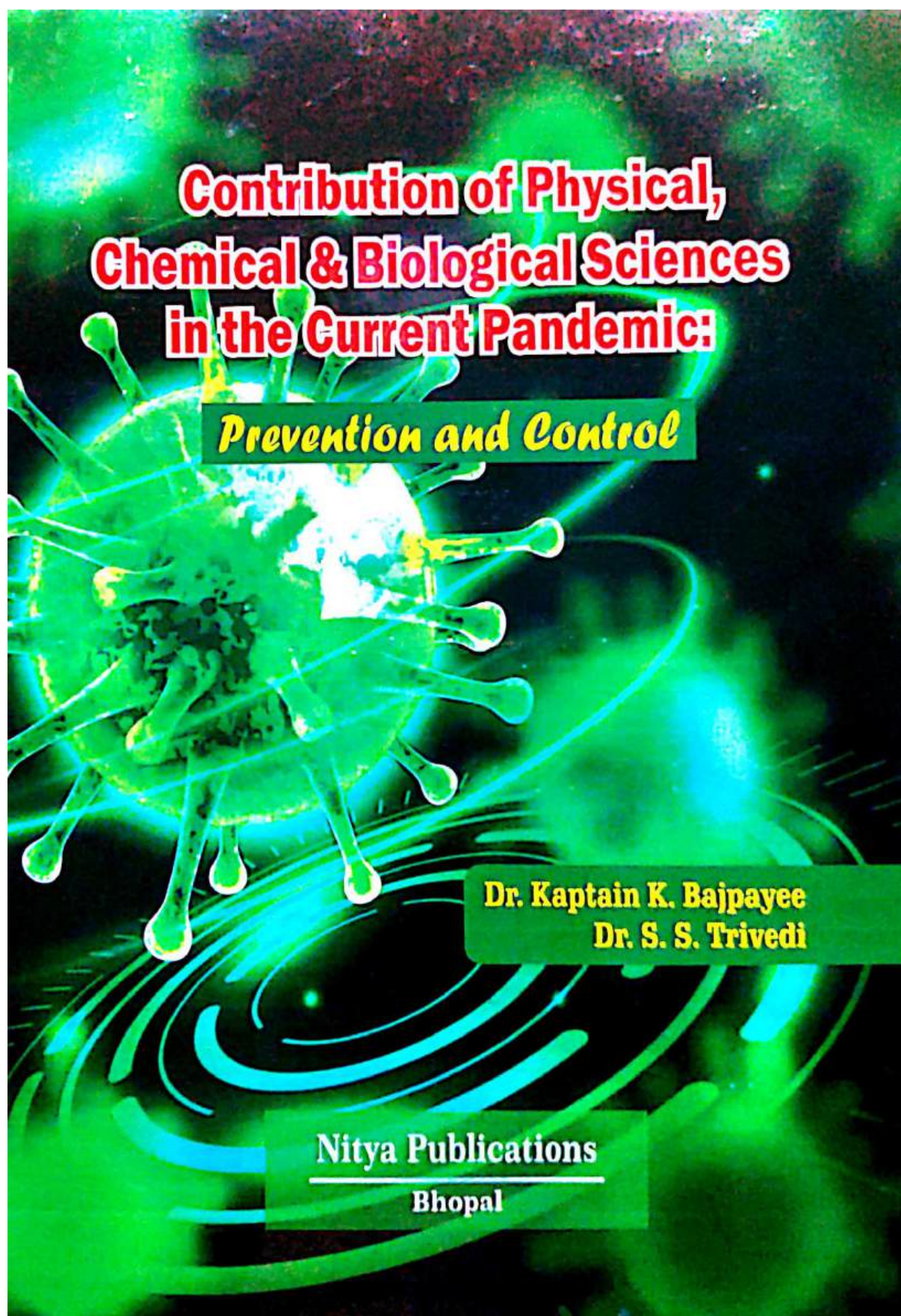
The plant may be a tiny woody plant that grows up to 1.5 meters tall with bi-pinnate leaves. The leaves have 9-17 leaflets and therefore the extreme leaflet is solitary. Flowers are purple to white and regarding 4 to 8.6 mm long. Calyx may be a persistent, curve, cup 1.5-2.3 mm x 1.6-3.3 mm. Pods are unit flat, linear, 2.0-4.5 cm x 3-5 millimeter and somewhat bend towards the top. Seed are transversally ellipsoid, rectangular regarding a pair of 0.5-5 mm x 1.8-3 mm, lightweight to dark brown to black.

All components of the plant own medicative properties like stimulant and evacuant. Roots have sour unhealthy style associated with an alexipharmic used for curing laceration, abscess, bronchitis, snake bites, swelling, asthma, amplification of spleen and pimples. Leaves are tonic to boost appetite.

1.2 Classification

Table.1. General Classification of *Tephrosia*

Kingdom	Plantae – Plants
Subkingdom	Tracheobionta – Vascular plants
Superdivision	Spermatophyta – Seed plants
Division	Magnoliophyta – Flowering plants
Class	Magnoliopsida – Dicotyledons
Subclass	Rosidae
Order	Fabales



About the Editor

Dr. Kaptain K. Bajpayee got his research training in the field of Ethnomedicobotany, Medicinal Plants and Phytotherapy leading to the award of Ph.D. degree from Rohilkhand University in 2004 under the able guidance of Dr. S. C. Sharma. Soon after the completion of doctoral degree, he joined the Department of Botany, Dr. R.M.L.PG. College, Allipur, Hardoi. Dr. Bajpayee starts his research career just after the completion of his Master Degree in (1994) Botany from G.F. College,

Shahjahanpur and Published a number of Research Papers in the field of Medicinal Plants. Today, Dr. Bajpayee is an eminent researcher of interdisciplinary subjects like Phytotherapy, Medicinal Plants, Ethnomedicobotany, Plant Antimicrobials and published more than 30 research articles. He is the Member of Editorial Board Team in more than 50 Research Journals of National and International origin. He published several Chapters in National and international Books of global repute. Now a days Dr. Bajpayee is the Head of Centre for Research in Ethno and Medico Botany, and Principal at M.G. College, Marhpura, Kannauj Uttar Pradesh. Under his able guidance four doctoral student and 8 M.Phil. student completed his research Degree in the field of Medicinal Plants, Phytotherapy and Ethnomedicobotany. He is the Life member of Indian Science Congress Association, Kolkata., Indian Ethnobotanical Society., Excel Research Management Association., BioLeagues Worldwide., and a number of World fame institutions. With unexhausted academic and research activities Dr. Bajpayee completed Master Degrees in more than 7 subjects and NET of UGC in two subjects. He is working scientist on the original innovative interdisciplinary fields in the Medical Sciences, Medicinal Plants, Plant Antimicrobials etc. His dedication to the subject will revolutionize the future theories in the field of Phytotherapy, Phytopharmacy and Medicinal Plant's studies.



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CONTRIBUTION OF PHYSICAL, CHEMICAL & BIOLOGICAL SCIENCES IN THE CURRENT PANDEMIC;

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A THERAPEUTIC ROLE OF SOME MEDICINAL PLANTS IN TREATMENT OF COVID-19 AND POST COVID COMPLICATIONS

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ABSTRACT

Plants are very rich in substances, with a potential beneficial on health, and some of these could have an antiviral action or be important in modulating the immune system and in defending cells from the oxidative stress associated with infection. In current COVID-19 pandemic, the therapeutic and powerful role of medicinal plants and supplements come out as a focus of attention. The Indian Traditional Medicine Systematics: Ayurveda, Yoga, Unani, Siddha, and Homoeopathy i.e. AYUSH has an established role in everyday self-care and health care. There traditional and clinical evidence that therapeutically plants can offer some protection and remedy of disease symptoms as well as encouraging general well-being. Newly appearing viral infections like COVID-19 represent a distinctive challenge in their originality and absence of specific antiviral treatment or immunization. This study suggests about roles and limitations of medicinal plants in helping to prevent and cure the specific viral infections which are much like Covid -19 and belongs to the same viral family as that of this virus i.e. Retrovirus family and their effects on immune response. Medicinal plants with a documented antiviral, immunomodulatory, immunostimulatory and antiinflammatory effects include *Allium sativum*, *Aloe vera* (L.) Burm. , *Azadirachta indica* A., *Camellia sinensis* (L.), *Curcuma longa* L., *Glycyrrhiza glabra* L., *Momordica charantia* L., *Ocimum sanctum* L., *Phyllanthus emblica* L., *Syzygium cumini* L., *Tinospora cordifolia*, *Zingiber officinale*, *Citrus* sp. etc. This analysis also includes potential clinical data on approaches and safety of these herbs in prevention, onset, progression, and convalescence from respiratory viral infections.

Key words: Covid-19, Coronavirus, Pandemic, Retrovirus, SARS-CoV-2, Therapeutic Plants.

INTRODUCTION

In December 2019, a novel Coronavirus was found to cause respiratory disease including sever pneumonia, identified in China. The viral infection

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