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STUDENT'S PARTICIPATION IN RESEARCH ACTIVITIES

S NO.	TITLE
1.	Samples of Research / Review Article Publications
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Publications by Students

Department of Zoology

Mukt Shabd Journal

ISSN NO : 2347-3150

“Toxicity and repellency of *Tegetes erecta*, *Syzium aromaticum*, *Musa sp.* against termite (*Odontotermes sp.*)”

Priyanka Sinha, Upadhi Singh Tekam and Runa Paul

Department of Zoology St. Aloysius' College (Autonomous), Jabalpur

ABSTRACT

Study was carried out to determine the toxicity and repellency of *Tegetes erecta*, *Syzium aromaticum*, *Musa sp.* against *Odontotermes sp.* under laboratory conditions. Large literature is available on the anti-termite property of *Syzium aromaticum* but no bioassay has been done using *Tegetes erecta* on termites. Plant extracts were prepared with two solvents, water and ethanol. The aqueous extract was made using Maceration extraction and ethanolic extract was made using Soxhlet extraction. The plant extracts were made into preparations of 1:1 proportion. These preparations were made into 3 different concentrations 20%, 40%, 60%. Direct spray bioassay was done to check the mortality of termites. The results obtained showed that the preparation of Clove: Marigold was most significant, showing highest mortality of termites at 60% concentration while the preparation of Clove: Banana was least significant against termites.

Keywords: Clove, Banana, Marigold, Toxicity, Termites

INTRODUCTION

Termites are a large group of cellulose eating insects belonging to the phylum Arthropoda. Termites are social organisms distributed widely. They are destructive as they feed upon, and often destroy, wooden structures or vegetables valuable to humans. Termites are a considerable source of wood degradation in both sub-tropic and tropical regions [1]. They are known as "silent destroyers" as they chew through wood, flooring undetected. In India agriculture is one of the pillars of Indian economy because about 60% of our population depends directly or indirectly on agriculture, in this case it is important to protect the crops from the destructive termites, but using chemical insecticides has a harmful effect on environment as well as human health. Termites are the most damaging insects and could inflict huge loss both for farmers and the economy of the country. For many years plants have been used to manage pests, as they contain natural chemicals that are repellent and toxic against many insects. There is large number of literature available on the effects of some plant extracts on insect species such as *Allium sativum*, *Cannabis indica*, *Azadirachta indica*, and many others. Many plants contain bioactive compounds such as phenols, terpenoids (monoterpenes, sesquiterpenes, diterpenes, sesterpenes, and triterpenes), aldehydes, ketones, and other compounds that have a strong effect against microorganisms and termites [2]. Plants produce phytochemicals (bioactive compounds) called secondary metabolites, which are required by them in little quantity [3]. Other than their pharmaceutical role Phyto-compounds actively used as pesticide [4]. Biological control provides a reasonable solution to the pest problem [5]. To avoid environmental pollution and health problems caused by using traditional wood preservatives or synthetic pesticides, there is increasing interest in naturally occurring toxicants from plants [6]. Plants have very few to no adverse effects on humans and the environment, keeping this in thought these plants were studied for their repellency and toxicity against termites: Marigold (*Tegetes erecta*), Clove bud (*Syzgium aromaticum*), Banana (*Musa sp.*)



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Department of Botany and Microbiology

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Herbal Immunity Boosters : Positive and Negative Aspects

Roshni Choubey and Ruchira Dakhore

ABSTRACT

Exploring the diet-health connections is a prominent topic of research in the nutrition realm. As a result of these treatments, functional and nutraceutical foods have gained broad appeal. Increasing immunity, on the other hand, is a significant focus of dietary plans. Indeed, the immune system is a remarkable collection of organs and cells that have enabled humans to defend them against unwanted responses. Its correct operation is required to maintain bodily homeostasis. Immunomodulating characteristics may be found in a variety of plants and their components. Their prospective inclusion in diets might open up new therapeutic pathways for improved disease immunity. Interactions between medicines and herbs/botanicals, on the other hand, should be thoroughly researched before being approved for safe use, and this knowledge should be shared to all relevant stakeholders. Since history, the spices have been an integral part of human diets and commerce. In recent times, the widespread recognition of diet-health linkages bolsters their dietary importance. The bioactive components present in them are of considerable significance owing to their therapeutic potential against various ailments. This survey work was focused on the good and the possible bad effects of herbal boosters and the results of the survey confirms the fact that herbal boosters are a boon for human health but there are chances of being negatively affected by the improper usage of such boosters.

Key words: immunity, herbal boosters, nutraceuticals, immunomodulators, therapeutics.

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Department of Political Science

IMPACT OF NATIONAL EDUCATION POLICY 2020 ON HIGHER EDUCATION

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Abstract :- India's higher education system is the world's third largest in terms of students, next to China and the United States. The magnanimity and richness of the ancient Indian knowledge system is well known to the world. It was a system based on Vedas, Dharmasutras, Upanishads and Bhramanas. The educational system promoted coexistence of human and nature. As quoted in the NEP2020, the core principles of the Indian Knowledge system were the pursuit of knowledge (Gyan), wisdom (Pragma) and truth(Satya) considered to be the guiding light to achieve the highest human goal of self actualisation. Following the path shown in the Indian knowledge system, NEP is based on approaching the growth of an individual holistically. It emphasises on tapping the creative potential of an individual while exploring their cognitive abilities at the same time. National Education Policy is concerned with integrating both the formal system of education as well the skill based vocational system of education. The present education system can take a ride back to the past to reboot the future and redeem its original grandeur. With the onset of epidemics and unforeseen but unavoidable situations like Poverty, Climate crisis, Unemployment etc., it becomes all the more essential to reform the education system that prepares an individual to tackle these issues in the best of their capabilities. This requires a call for collaborative research and study of a variety of dimensions and this is exactly what NEP has tried to achieve. It is the first step towards a historic endeavour and a comprehensive policy in 34 years. This paper presents an assessment on how the National Education Policy has carved its route from the Ancient Indian knowledge system to produce a modern system which is more research oriented, learner centred, enquiry driven and most of all focused on encapsulating the essence of values, compassion and self fulfilment in an individual. The present research paper is to make an assessment of the Indian Education System as well as Present Education System and its impact on Higher Education.

Keywords :- New Education Policy, Higher Education System, Quality Education.

Introduction :- Education is the most powerful weapon for changing the world, so said Nelson Mandela. In our country, education appears as one of the top priority on the manifesto of each party that comes into power. And even though each government stresses the importance of education and how a literate nation can do wonders for its own growth, not every child is lucky enough to attend school, not every child is lucky to continue school. Surveys have revealed that many youngsters drop out of schools for various reasons, a major reason being lack of books, copies and other essential items that must have a place in a child's school bag. India, with more than a billion residents, has the second largest education system in the world.

Education is the door towards the wider world. And an exposition on rural infrastructure is incomplete without an assessment of the extent to which we have been able to open this door for the children of rural India. We also examine the current position /status of rural education infrastructure in the country and huge gaps in the provisioning. This research includes a discussion



Department of Mathematics

European Journal of Molecular & Clinical Medicine

ISSN 2515-8260

Volume 7, Issue 8, 2020

TWO EXCEPTIONAL PYTHAGOREAN TRIANGLES: A KEY FOR ENCRYPTION

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Abstract - Two remarkably special Pythagorean Triangles are found with their perimeter as eleventh power. These are exceptional in the sense that with the given constraint that their perimeter should be of the eleventh power, do not comply with Euclidean formula of obtaining primitive Pythagorean Triangles. Interesting properties of these Pythagorean Triangles are observed. An application of their use in cryptography is also proposed.

Keywords- Euclidean formula, Mathematica, Opposite Parity, Primitive Pythagorean Triangle, Undecic.

1. INTRODUCTION

The search for special Pythagorean Triangles has held in fascination those who love numbers. Darbari and Darbari (2019) have found out special Pythagorean Triangles with their sum of two legs as undecic and their application, while Darbari et al. (2019) and Darbari et al. (2020) have suggested alternative methods to apply these.

In this paper, exploring the problem further, an attempt has been made to find Pythagorean Triangles with their perimeter as eleventh power of a positive integer. These exceptional triangles are also applied in cryptography in a unique way.

2. DEFINITIONS

2.1 Pythagorean Equation: A quadratic equation

$$X^2 + Y^2 = Z^2$$

is called Pythagorean equation (Robbins, 2006) after the famous mathematician and philosopher Pythagoras. It is one of the most important equations of the world in all times.

2.2 Pythagorean Triangle (Niven et al., 2018): A right angled triangle with sides X , Y and Z is called Pythagorean Triangle if X , Y and Z are positive integers. X and Y are called its legs and Z is called its hypotenuse. Pythagorean triangles satisfy Pythagorean equation $X^2 + Y^2 = Z^2$.

If X , Y and Z satisfy Pythagorean equation, then aX , aY and aZ also satisfy it, where a is positive integer. Therefore, one Pythagorean Triangle can generate infinite Pythagorean triangles.

2.3 Primitive Pythagorean Triangle: A Pythagorean Triangle is said to be primitive if X , Y and Z are co-primes, i.e., their greatest common divisor is one. Or, we can say, $\text{GCD}(X, Y, Z) = 1$.

2.4 Opposite Parity: Two natural numbers m and n are called of opposite parity if one of them is even and other is odd, i.e., $m \not\equiv n \pmod{2}$.

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Department of Mathematics

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Mathematics, Pythagoras, Health and Nature

Dr. (Mrs.) Mita Darbari
Miss Manasi Sahu

Introduction :

Whenever we think of Pythagoras; what comes to our mind is the famous *Pythagoras Theorem* of right angled triangle which has a wide range of applications including Einstein's general theory of relativity. The impact of this theorem was, or rather still is, so great that it outshines all the other contribution of this great teacher and founder of Pythagorean philosophy based on numbers. A recent research in November 2014 has used Pythagoras theorem to identify the point where patient's health begins to improve most effectively [1].

According to Bertrand Russell, Pythagoras was intellectually one of the most important men that ever lived [2].

Pythagoras, considered as the father of pure Mathematics, was the founder a scholarly community. Pythagoras who called himself "philosophos", literally "lover of wisdom", first used the term philosophy, the love of wisdom. His real aim was to reach the truth. He made significant contributions to our knowledge of mathematics, astronomy, and music. Pythagoras tried to answer the essential questions of our existence : What is the purpose of our being? What can we know? And what constitutes the good?

Brief Biography :

Pythagoras, the son of Mnesarchus, who was a seal engraver, and Pythais, was born in 575 B.C. on island of Samos. He spent his childhood in Samos. His father being a merchant had to travel widely and Pythagoras accompanied him. Pythagoras was a rare gifted child who showed wisdom in his childhood also. He got best possible education till the age of 18 in his island and then travelled for 40 years to Lesbos, Tyre (Lebanon), Egypt, Babylon(13 years as prisoner of war) Persia and India to study. He returned to Samos in 520 B.C. and went to Crete to study the system of laws. There he founded a School - Semi-circle, but had to leave Samos due to political unrest. Then he went to Southern Italy to establish his school of Pythagoras [3].



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Department of Mathematics

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A Report on Awareness About Government Schemes in Rural Areas

Pratibha Richhariya
Varsha Dubey
Pooja

Abstract :

The research attempts to understand the level of awareness about various government welfare schemes among rural population. In the first stage, the level of literacy in the villages was judged using simple survey method. After assessing the level of literacy, various questions were asked to the people of the particular village about various schemes they were benefitted with. It was found that the people in the rural areas lack awareness about these ongoing schemes. Ultimately, reasons for failure of such big schemes were extracted and analyzed. There were initiatives taken to improve the level of awareness among the rural people through which they were made aware of Government schemes like Jan-Dhan Yojana etc.

Introduction :

The aim of the survey was to measure the awareness among the rural population about the schemes started by the government for their welfare with Special Emphasis on literacy rate. Indian Government at all levels, announces many welfare schemes for the rural population of the society from time to time, but still the population in the rural areas suffer from problems like illiteracy, poverty, lack of sanitation facilities, health issues, gender discrimination etc. Ultimately, these schemes result in a fiasco. There had been many efforts both from the government side as well as public side for better implementation of these schemes. Our aim was to survey such villages in the outskirts of Jabalpur where people are deprived of these benefits which are meant for their upliftment. During the month January 2019, the students of St. Aloysius college conducted a survey. In order that the students achieved their goal, three clearly defined objectives were outlined, namely :

1. To develop and initiate the proper implementation of government schemes started for the welfare of rural population.
2. To spread awareness about the schemes.
3. To find out the reasons behind improper implementation.

From the above listed objectives were derived a number of specified tasks, which would be the focus for the achievement of the goal. The information was collected from individuals at the household level.



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Department of Political Science

NEW EDUCATION POLICY 2020 ; A POWERFUL TOOL TO BRING CHANGE IN SOCIETY

Dr. Vishwas Patel
Dr. Tuhina Johri
Ms. Nansy Bhadoria

Abstract

Education is elemental for realizing full human potential, developing an impartial and unbiased society. The New National Education Policy introduced on 29 July 2020 solicits to introduce and implement a sea of changes across all levels of education in India. Providing comprehensive access to quality education is the key to bring changes in society. Issues like school drop-out, illiteracy, unemployment, gender discrimination, brain-drain, increasing rate of suicides among youngsters will be targeted. As education must build character, enable learners to be ethical, rational, compassionate while at the same time prepare them for gainful, fulfilling employment. For example, the primary cause of brain-drain is lack of higher education opportunities. National education policy 2020 will tackle the issue of brain drain from India and will become a knowledge economy in the 21st century, once the best institutes are present in India candidate won't need to travel abroad. About a quarter of Indian's say there is a lot of discrimination against women in their country and national education policy 2020 will tackle the issue by economic empowerment of women through skilling in educational institutions will surely be progressive and attract girl students to educational institutions.

National education policy 2020 being based on pillars of "access, equity, quality, affordability and accountability." India moving towards becoming a developed country as well as among the three largest economies in the world, there will be growing demand for humanities and arts. This paper puts emphasis on the

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REVITALISING INDIA THROUGH NEP 2020: IMPACT OF INDIA'S PAST GLORIES

Dr. Vishwas Patel
Vartika Singh Lodhi
Dev Mishra

Abstract

Education is fundamental to mankind, it is an enabler that has aided human evolution, helped mankind in realizing full human potential and catalyzed the formation of just and equitable societies. India has been an eminent contributor to world education and once was rightfully titled "Vishwa Guru's India has given brilliant academicians such as Sushruta, Kanad, Aryabhatta, Varaha Mihir, Chanakya, Patanjali, among numerous others.

The rich culture of education in India could quantifiably be noted through the contributions of vibrant multi disciplinary universities like Takshashila, Nalanda, Vallabhi and Vikramashila which had imparted education to thousands of National and International students. The education system of ancient India focused on holistic development of individual as it is focused on development. Both the inner and outer self, by emphasizing not only on intellectual but moral, physical and spiritual education.

The National Education Policy, 2020 seeks to revive the Indian education system, to produce educated minds capable of fulfilling the requirements of the 21st century. The rich heritage of the ancient Indian knowledge has been the guiding force for this educational policy. This paper seeks to study the influence the glorious past of Indian education system on the current NEP 2020.

Introduction

The NEP 2020 seeks to instil in students a rootedness and pride in India, and in its "rich, diverse, ancient and modern culture and knowledge systems and traditions".

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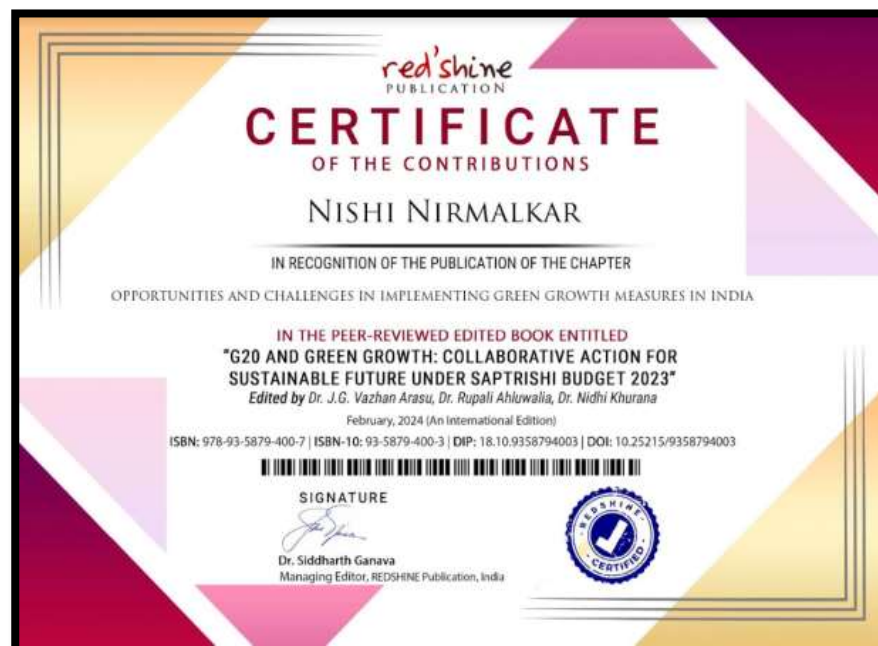
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Best paper Award earned by Ms. Arra Fatima Kareemi





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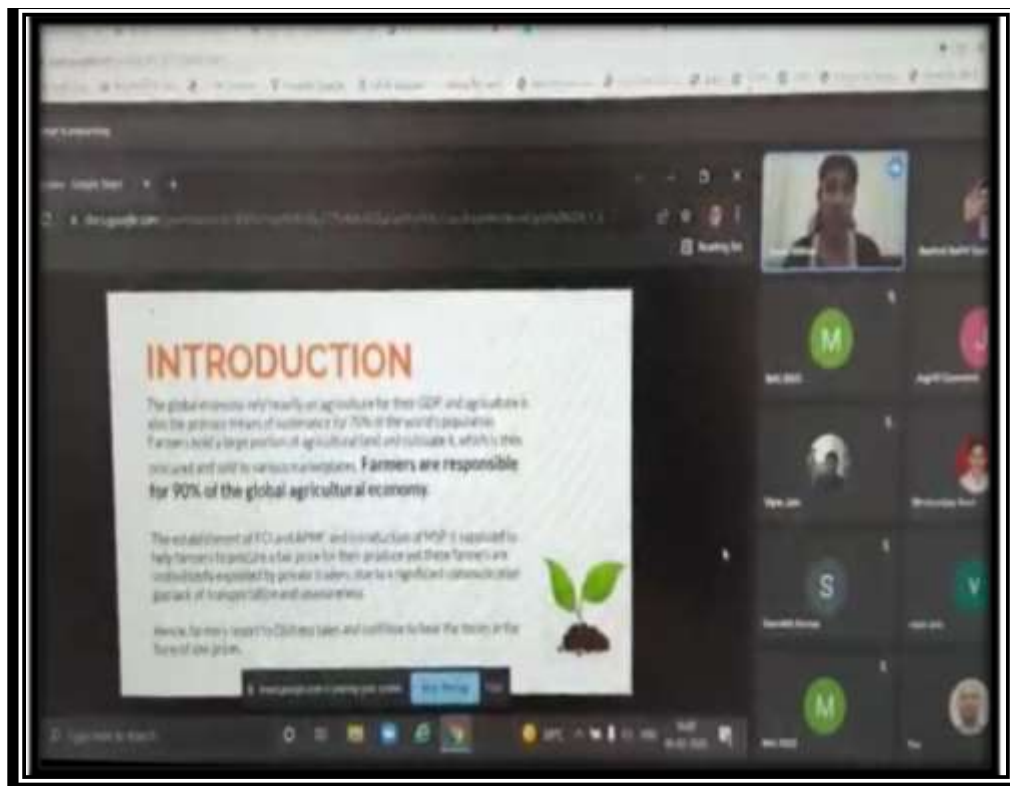
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Biotechnology Student with the certificate for paper Presentation in National Seminar





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PG II sem Microbiology student presenting Research Paper in International Conference on Life Sciences on 15-16 May 2020

