

Utility Of Horse Gram: A Narrative Review

Anamika Chauhan

Assistant Professor, Department of Home Scienc, Chamanlal Mahavidhyalya

Landhora, Haridwar, Uttarakhand

Email ID: chanhanana6252@gmail.com

ABSTRACT

A neglected pulse crop that can be grown in a range of unfavorable environmental conditions is horse gram (kurthi dal). It is mostly cultivated in South India and Uttarakhand. Horse gram is widely used in South Indian dishes like Rasam and Sambar. The present study used new scientific knowledge to review the potential for exploring the horse gram as a source of food and nutraceutical components with an eye toward the growing demand for food with nutraceutical features. An integrative analysis of the literature was carried out in June-July 2022 by the narrative review method. The result of the study shows that It has a significant impact on human nutrition as a result of its high protein, mineral, and vitamin content. Because it contains non-nutritive bioactive compounds, in addition to its nutritional benefits, it has also been associated with a lower risk of contracting several ailments. These bioactive compounds have a big impact on metabolism and physiology. The nutrients and photochemical present in horse gram impart various physiological benefits, starting from relieving intestinal diseases, diabetes, heart diseases, and prevention of dental carries to treating kidney stones, urinary diseases, piles, common cold, throat infection, fever, etc.

Keywords: Horse gram dal; kurthi dal; medicinal value; medicinal dal; healthy dal; Medicinal pulses; non-nutritive compounds.

Introduction

Horse gram dal (*Macrotyloma uniflorum*) is known as Kulathi, Kulath, Kharthi, Garhat in Hindi, and Kulathika in Sanskrit. Horse gram is also known as Kulthi in Gujarati and Hulga in Marathi and "Gahhat" in the local language of Uttarakhand¹. Kurthi dal is consumed as a staple food mostly in the southern part of India⁴. Its stem is bushy, slender, gray, 30 to 45 cm high, and with many branches from the root². Its leaves are yellowish green with bilva-like triplets and long stems. Its seeds are like urad in appearance, light red, black pied, sticky, and shiny. Its color is dark brown and looks like lentils¹. It is used to prepare some major dishes of South India like Rasam etc. Apart from Karnataka, Andhra Pradesh, Odisha, and Tamil Nadu, this pulse is also grown in Chhattisgarh, West Bengal, Madhya Pradesh, Bihar, Uttarakhand, and Himachal Pradesh¹.

It not only provides adequate nutrition to the body but can also reduce the risk of much serious health problems³. Let us tell you that the problem of stones can be overcome by the consumption of regular horse grams⁴. Not only this but horse gram is also considered very beneficial for weight loss and heart health⁴.



SiNPLs/CoPc hybrid heterostructures based photodetector with low dark current and enhanced sensitivity

Arvind Kumar^{a,*}, Prajith Karadan^{b,c,d}, Soumen Samanta^c, Ankita Pathak^c, A.K. Debnath^c, Shovit Bhattacharya^c, Ajay Singh^c, Veerender Putta^c, Harish C. Barshilia^c, D.K. Aswal^d

^a Department of Physics, Chaman Lal Mahavidhyalaya, Mandla, 492004, India

^b Surface Engineering Division, CSIR, Material Science Laboratories, Bangalore, 560017, India

^c Technical Physics Division, Bhabha Atomic Research Centre, Mumbai, 400085, India

^d Health Safety and Environment Group, Bhabha Atomic Research Centre, Mumbai, 400085, India

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ABSTRACT

Fabrication of hybrid heterostructures, consisting of two different nanostructured materials are an efficient approach for further improving photodetecting performance over their individual counterparts. In this paper, we demonstrate the fabrication of an inorganic-organic hybrid heterostructure comprising of Si nanopillars (SiNPLs) and cobalt phthalocyanine (CoPc). Photodetecting performance of SiNPLs/CoPc heterostructure is investigated in photoconductive mode. It exhibits a low dark current of 2.05×10^{-6} A and enhanced sensitivity (~ 4.5 times) in contrast to pristine SiNPLs. Suppression of dark current with enhanced sensitivity is ascribed to the transfer of electrons from SiNPLs to CoPc layer and their trapping in disorder states present in CoPc layer. The process of electron transfer is confirmed by work function measurements. These results indicate that by employing heterostructure method, the trap states originating from the non-uniform molecular packing of organic semiconductor may be used to further improve the photodetecting performance of one-dimensional nanostructured materials. Additionally, the long-term stability of the SiNPLs/CoPc heterostructure was evaluated by exposing it to ambient conditions for 30 days.

1. Introduction

The photodetector (PD) is a very important optoelectronic device and one of the foremost components in numerous applications such as optical communication, imaging, missile launching, environment monitoring, finger print detection systems and biological sensing [1–4]. Since the late 1950s, silicon (Si) has been one of the most alluring materials in semiconductor industries due to its greater abundance and excellent stability, and it is still being used as a dominant material in variety of electronic applications [5–7]. The annual market of electronic products containing Si based PDs has been estimated at about several billion dollars [8]. In the last decade, one-dimensional (1D) Si nanostructures such as Si nanowires (SiNWs) and nanopillars (SiNPLs) have been widely investigated and exploited for PD applications owing to their unique properties such as superior light trapping, quantum

confinement, excellent anti-reflection and efficient charge transport [9–11]. Additionally, 1D nanostructures can extend the lifetime of charge carriers, and provide straight paths for charge conduction, which makes them exceptionally advantageous for constructing fast and highly sensitive PDs [12–14]. This has led to these nanostructures being seen as very promising building blocks for PDs and other optoelectronic applications.

To improve PD performance and resolve the issues associated with the Si's absorption limit, 1D Si nanostructures have been hybridized with other low-dimensional materials including plasmonic metal NPs decorated SiNWs, core (SiNWs)/shell (Au-nano/film) structures, graphene/SiNWs heterostructure, SiNWs/organic heterostructure, etc [15–17]. The researchers have reported different mechanism for improved PD performance of these heterostructures. For instance, metal NPs helps concentrating the absorption of light in NIR region via light induced surface plasmonic electron injection into SiNWs [18]. Huang

* Corresponding author.

** Corresponding author.

*** Corresponding author.

E-mail addresses: arvindk@mandla.ac.in (A. Kumar), prajith@msl.res.in (P. Karadan), soumen@msl.res.in (S. Samanta).

[†] Paul Scherrer Institute, 5232 Villigen PSI, Switzerland.

Principal

Chaman Lal Mahavidhyalaya
Ladhega, Dadi-Hajdwar, Mandla



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Zinc stannate microcubes with an integrated microheater for low-temperature NO₂ detection†

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Nirav Joshi,^{a,b} Hu Long,^c Pranav Naik,^d Arvind Kumar,^e Valmir R. Mastelaro,^b Osvaldo N. Oliveira Jr.,^f Alex Zettl^g and Liwei Lin^h

This paper reports a facile technique to construct an oxide nanostructured film on a low-power microheater sensor platform to detect NO₂ gas with high sensitivity and selectivity at a low temperature. Microcube-shaped zinc stannate (ZnSnO₄) nanostructures prepared through a co-precipitation method were used to detect NO₂ down to 85 ppb at 110 °C with a fast response and recovery time. Specifically, a 192% response in the resistance change was measured for 5 ppm NO₂ gas, with a response time of 3.36 min, excellent reproducibility, long-term stability, and high selectivity. The good gas-sensing performance of the ZnSnO₄ microcubes is due to their porous surface, which provides a large surface area and suitable adsorption-desorption processes. The versatility of the ZnSnO₄ nanostructures may be further exploited with various sensing units on a single chip towards the development of arrays, as in electronic noses.

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1. Introduction

Chemiresistive gas sensors made using metal oxide semiconductors (MOS) on ceramic substrates have been used widely to detect hazardous gases in industrial factories, and in commercial spaces for the monitoring of air quality.¹ However, state-of-art sensors used in these fields are bulky and costly and have high power consumptions (~500 mW), which makes them unsuitable for portable and battery-powered devices since a heater is needed to boost the sensitivity and response/recovery rates.^{2,3} To overcome these limitations, miniaturization with microfabrication techniques has been employed to produce small and low-cost devices that have low power requirements.⁴ Nanostructured metal oxides with large surface areas and porous structures, including microspheres, microcubes, and nanowires with facile adsorption-desorption processes, have been proposed to increase the sensitivity.^{5–8} The choice of nanostructured metal oxides is usually determined by the target gases. For instance,

various metal oxides/binary oxides have been investigated, including ZnO, SnO₂, Fe₂O₃, and Co₃O₄.^{9–14} The primary challenges with gas sensor devices are their selectivity and operation temperature. Researchers are particularly interested in room-temperature operation, and there have been numerous attempts to increase the selectivity of these sensors. The selectivity towards a specific analyte can be enhanced by adjusting the surface-to-volume ratio, the grain orientation, and the film morphology.^{13–15} Other reported methods include substitutional doping, the formation of composites and hybrids with other nanomaterials, such as metal oxides, 2D materials, carbon nanotubes, and so on, as well as chemical functionalization with noble metal nanoparticles. For example, Ma *et al.*¹⁶ reported 3D SiO₂@MWCNT core-shell nanospheres for the highly sensitive detection of nitrogen dioxide gas (NO₂) at room temperature, with a maximum sensitivity of 82.61%. The response time was observed to be 25 min, and they used UV illumination to achieve complete recovery (44 s). Similarly, Zhang *et al.*¹⁷ synthesized In₂O₃ NWs using electrospinning and they reported a high sensing response of 740 at 5 ppm NO₂ in the dark at room temperature. However, they utilized visible-light irradiation to shorten the recovery time (20 s). Huang *et al.*¹⁸ developed a robust NO₂ sensor using SnS₂/rGO nanohybrids, which showed a sensitivity of 650% with a response time of 75 s at room temperature and achieved complete recovery in the visible-light region. UV-light has been utilized to increase the performance of oxide and 2D material-based gas sensors. However, degradation of the structure of the material by UV-light can significantly impair its reproducibility.¹⁹

Nitrogen dioxide (NO₂) is an air pollutant with a pungent odor and high toxicity, and is generated from fossil fuels in

^a Department of Mechanical Engineering, University of California, Berkeley, CA, USA. E-mail: nirav.joshi1960@gmail.com

^b São Carlos Institute of Physics, University of São Paulo, CP 368, São Carlos 13560-970, São Paulo, Brazil

^c Department of Mechanical Engineering, School of Mechanical Science and Engineering, Harbin University of Science and Technology, Wulian, Hebei 430024, China

^d Department of Physics, University of California at Berkeley, Materials Sciences Division, Lawrence Berkeley National Laboratory, Ross Energy Nexus Science Institute, Berkeley, CA 94720, USA

^e Department of Physics, Goa University, Taligao Plateau, Goa, 407305, India

^f Department of Physics, Chawan Lal Mahavidyalaya, Haridwar, India

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Genotypic Sensitivity of Salt in Chickpea (*Cicer arietinum* L.)

Dr. Richa Chauhan and Dr. Piyush Kumar Patel

Assistant Professor, Department of Botany, Chaman Lal Mahavidhyalaya, Landhora, Haridwar Distt
Government Degree College, Chudiyalab (Hagwanpur), Haridwar Distt.

Abstract

The effect of sodium salinity on plant growth was studied in seven cultivars in chickpea. With increasing salinity level resulted in a progressive absorption of Na^+ in detriment of K^+ , thereby increasing $\text{Na}^+:\text{K}^+$ ratio and causing an ionic disequilibrium which possibly suppressed plant growth. Genotype, K-850 showed maximum germination under 1.71 mM NaCl. Genotype CSG 8890 showed maximum reduction in radical as well as plumule length and minimum with Bio 201.

Key words: Salt, NaCl, Plant growth, Chickpea.

Introduction

Salinity, particularly in arid and semi arid land is a problem of great concern to agriculture. In many areas of the world, characterized by a short rainy winter and a long dry summer, non-saline soils may gradually become salinized to varying degree with intensive irrigation. The problem of secondary salinization, in particular are serious in developing countries, since they can be responsible for loss of once productive agricultural land (Chavan and Karadge, 1986). The extent and rate of salt accumulation in the soils is a function of irrigation water quality, irrigation methods and quality, soil properties and annual precipitation.

Salinity generally inhibits the growth of plants which may either due to osmotic reduction in water availability, specific ion toxicity usually associated with either excessive chloride and sodium intake and ion imbalances (Bernstein 1963, Gorham et al., 1985 and Cheeseman, 1988). Plants grown in saline conditions have higher contents of Na^+ and Cl^- ions and K^+ content in the developing tissues, both affecting the establishment of equilibrium necessary for the normal metabolic reactions (Bange, 1959, Greenway and manns, 1980 and Cusido et al, 1987). Differences in salt tolerance occur not only in different species of the same genus but also in different varieties of the same species. An experiment was conducted to determine the effect of salt and salt mixtures on the plant growth of chickpea (*Cicer arietinum* L.).

Materials and Methods

Seeds of seven chickpea cultivars viz., C 235, K 850, BG 256, CSG 8962 Kamal Channa-1, CSG 8890, Bio 104, Bio 201 sown into petridishes layered with Whatman filter paper. Four levels of salinity were created to give 0.0, 43, 7.36 and 8.0 ds/m, respectively. Each petridish was used after saturation with 20ml of salt solution daily after draining out previous salt solution. The whatman filter papers were also replaced after every two days. Observations were recorded after every alternate days on germination percentage under different treatments after 15 days of culture.

Fresh plants were dried at 80°C for 24h. The samples were then ground in a blender for Na^+ and K^+ estimation. For the estimation of Na and K, 500 mg dry weight of the tissue was digested in 5ml of tri acid mixture (Conc. 10 HNO_3 : 4 HClO_4 : 1 H_2SO_4) in a corning necked flask for overnight. Refluxing in the digestion block at 180°C for 30 minutes resulted in decolouration of the digested solution which was followed by addition of 20-30 ml. of deionized water. It was filtered by whatman filter paper and Na^+ and K^+ were estimated by the flame photometer from the stock solution using NaCl and KCl as standard.

Results and Discussion

In general, increasing the dose of NaCl decrease the germination percentage (Table 1). The maximum reduction in germination (25%) was noticed at 1.71mM NaCl. However, least


Principal



Abstract

The recent decade has witnessed many landmark observations, which have added to the scientific credentials of Ayurveda. It is however believed that instead of a retrospective approach of looking into Ayurveda through scientific reappraisals, a prospective approach through a primary understanding of Ayurveda followed by a search into scientific linkage would be more appealing. This article brings the simplified yet scientific decoding of the core concepts of Ayurveda that form the framework of this ancient science of health.

Keywords: Ayurveda, Science, Biodiversity.

Introduction

India with a total geographical area of 329 million hectares is the second-largest nation in Asia and seventh in the world. The great diversity of habitats due to varied climates and altitudes certified India's rich and diverse flora. India is fortunately endowed with a wide range of agro-climatic conditions that support the growth of an equally diverse range of plant and animal species. But the loss of Biodiversity is a very serious problem for the country. Several species of a living organisms are disappearing and biodiversity is more threatened now than at any time in the past. It is generally believed that deforestation is the main cause behind the current crisis and along with this global climatic change, shifting cultivation, soil erosion, unchecked expansion of urban areas, etc are the other main causes of this problem. The current rate of extinction demands immediate concerted efforts for the conservation of biodiversity for future generations. Conservation of biodiversity could be accomplished using both in-situ and ex-situ methods. It has been well-recognized that valuable and productive biological resources are crucial for sustainable economic development. Rural populations always believe that biodiversity is important for their livelihood and survival. Protecting and conserving biodiversity is our interest and industries such as pharmaceuticals, cosmetics, pulp and paper, construction, Agriculture and agro-industries, Horticulture and waste treatment are dependent on biological resources. Between 70-80% of the population in developing countries relies on plants as the only source of medicine.

Heritage and Traditional Knowledge

Heritage is everything that defines the distinct identities of our people. This is bestowed on us by our ancestors and endowed to us by nature. It includes our social, political, cultural, and economic systems and institutions as well as our belief systems, principles and moral values, and our customary laws and norms. Heritage includes traditional knowledge which is the creative production of human thought and craftsmanship, language and cultural expressions which are created, acquired, and inspired such as songs, dances, stories, ceremonies, symbols and designs, pottery, artworks, scientific, agricultural, technical and ecological knowledge and skills required to implement this knowledge and technologies. Heritage also includes what we inherited from nature such as the natural features in our territories and landscapes, biodiversity which consists of plants and animals and microorganisms, and the various diverse ecosystems which we have nurtured and sustained.

Traditional Knowledge and Communities

Biological resources and related traditional knowledge are often of great commercial value to business corporations in developing commercial products. Corporations often want to


Principal

Chaman Lal Mahavidhyalaya
Landhora Distt. Haridwar Uttarakhand



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Information Seeking Behaviour of Staff Over Social Sites

Dr. Anil Kumar Dhiman

*Information Scientist
Gurukul Kangri (Deemed to be University)
Haridwar-249 404 (Uttarakhand)
E-mail: akvishwakarma@rediffmail.com*

Dr. Kuldeep Kumar

*Assistant Professor (LIS)
Chaman Lal Mahavidyalaya, Landhaura
Haridwar (Uttarakhand)
E-mail: kuldeepkumar150276@gmail.com*

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ABSTRACT

It is observed that the advent of social media have emerged as a result of ICT which has changed the way information is generated, disseminated, and is used. Online users now have access to her information 24/7. Various social media such as WhatsApp, Facebook, LinkedIn, etc. are there which are used not only for entertainment but also for educational purposes. This article describes the information seeking behaviour of staff members working in Chaman Lal Degree College, Landhaura (Haridwar) when using social media

Key Words: Social Media, Information and Information, Seeking Behaviour.

1. Introduction

Information is a general term for everything with the capacity to inform. Information is most fundamentally concerned with the interpretation of what may be sensed. Any naturally occurring process that is not entirely random, as well as any discernible pattern in any medium, can be said to convey some level of information (<https://en.wikipedia.org/wiki/Information>). Earlier, the information is resided and provided manually. However, the introduction of online information retrieval systems in the 1960s, moved information access from the physical environment to a machine environment, as noted by Subhash Rao Krishnamurthy, and Asundi (2018). The use of information retrieval tools like a structured thesaurus was made possible by studies on information retrieval and more in-depth studies on users' interactions with information retrieval machines. The physical environment of libraries has completely changed in the new millennium due to the ordered impact of information and communication technology, as more and more sources of knowledge are becoming digital. This change later gave rise to emergence of social media.

भारत में ग्रामीण विकास योजनाएं डॉ सूर्यकांत शर्मा

सहायक आचार्य इतिहास विभाग चमन लाल महाविद्यालय लड़ौरा हरिद्वार उत्तराखण्ड

देश की जनसंख्या का तीन चौथाई हिस्सा गांव में निवास करता है। अतएव राष्ट्र तभी शक्तिशाली एवं समृद्ध हो सकता है, जब हमारे गांव गरीबी एवं पिछड़ेपन से मुक्त हों। भारत सरकार ग्रामीण क्षेत्रों में दूरगामी एवं निरंतर विकास के लिए कटिबद्ध है। ग्रामीण विकास का अर्थ लोगों का आर्थिक सुधार और बड़ा सामाजिक बदलाव दोनों ही है। ग्रामीण विकास कार्यक्रमों में लोगों की बड़ी हुई भागीदारी, योजनाओं का विकेंद्रीकरण, भूमि सुधारों को बेहतर तरीके से लागू करना और ऋण की आसान उपलब्धि करवाकर ही लोगों के जीवन को बेहतर बनाने का लक्ष्य ग्रामीण विकास कार्यक्रमों का होता है। देश का ग्रामीण विकास मंत्रालय अनेक योजनाओं के क्रियान्वयन में रतलगन है। जिनका उद्देश्य ग्रामीण जनता को योग्य बनाकर उनके जीवन स्तर को सुधारना। गरीबी उन्मूलन तथा त्वरित सामाजिक आर्थिक विकास के उद्देश्य के साथ-साथ विकास कार्यक्रमों को एक विविधता पूर्ण रणनीति के द्वारा समाज के सर्वाधिक उपेक्षित वर्ग तक पहुंचाने के लिए क्रियान्वित किया जाना है। स्वच्छ पेयजल, ग्रामीण आवास तथा सुरक्षा संपर्क को उच्च प्राथमिकता दी जा रही है।

भारत में ग्रामीण विकास की आवश्यकता :

ग्रामीण विकास एवं बहुआयामी अवधारणा है जिसका विश्लेषण दो दृष्टिकोणों के आधार पर किया गया है: संकुचित एवं व्यापक दृष्टिकोण। संकुचित दृष्टि से ग्रामीण विकास का अभिप्राय है विविध कार्यक्रमों, जैसे- कृषि, पशुपालन, ग्रामीणहस्तकला एवं उद्योग, ग्रामीण मूल संरचना में बदलाव, आदि के द्वारा ग्रामीण क्षेत्रोंका विकास करना। वृहद दृष्टि से ग्रामीण विकास का अर्थ है ग्रामीण जनों के जीवन में गुणात्मक उन्नति हेतु सामाजिक, राजनितिक, सांस्कृतिक, प्रौद्योगिक एवं संरचनात्मक परिवर्तन करना। बसन्तदेसाई (1988) ने इसी रूप में ग्रामीण विकास को परिभाषित करते हुए कहा कि "ग्रामीण विकास एक अभिगम है जिसके द्वारा ग्रामीण जनसंख्या के जीवन की गुणवत्ता में उन्नयन हेतु क्षेत्रीय स्त्रोतों के बेहतर उपयोग एवं संरचनात्मक सुविधाओंके निर्माण के आधार पर उनका सामाजिक आर्थिक विकास किया जाता है एवं उनके नियोजन एवं आय के अवसरों को बढ़ाने के प्रयास किये जाते हैं। ग्रामीण विकास सिर्फ कृषि व्यवस्था एवं कृषि उत्पादन के साधन एवं सम्बन्धों में परिवर्तन तक ही सीमित नहीं है बल्कि ग्रामीण परिप्रक्ष्य में सामाजिक, आर्थिक, सांस्कृतिक, प्रौद्योगिक, संरचनात्मक सभी पहलुओं में विकास की प्रक्रियायें ग्रामीण विकास की परिधि में शामिल हैं।

भारत में ग्रामीण विकास की रणनीति अलग-अलग अवस्थाओं में बदलती रही है। इसका कारण यह है कि ग्रामीण विकास के प्रति दृष्टिकोण बदलता रहा है। वस्तुतः ग्रामीण भारत को विकसित करने हेतु राज्य द्वारा अपनाये गये प्रमुख अभिगम(दृष्टिकोण) है।

बहुदेशीय अभिगम :

बहुदेशीय अभिगम की प्रमुख मान्यता यह थी कि गावों में लोगों के सामाजिक आर्थिक विकास हेतु यह आवश्यक है कि उनकी प्रवर्तीया एवं व्यवहारों को बदलने का संगठित प्रयास किया जाय। इस दृष्टिकोण के आधार पर 1952 में सामुदायिक विकास कार्यक्रम की रणनीति अपनाई गयी। जिसमें राज्य के सहयोग से लोगों के सामूहिक एवं बहुदेशीय प्रयास को शामिल शामिल करते हुए उनके भौतिक एवं मानव संसाधनों को विकसित करने का लक्ष्य निर्धारित किया गया। इस प्रकार बहुदेशीय उपागम के अन्तर्गत एक शैक्षिक एवं संगठनात्मक प्रक्रिया के रूप में सामाजिक आर्थिक विकास के अवरोधों को दूर करनेपर बल दिया गया।

जनतांत्रिक विकेंद्रीकरण अभिगम :

इस दृष्टिकोण की प्रमुख मान्यता यह थी कि ग्रामीण विकास के लिए प्रशासन का विकेंद्रीकरण एवं लोगों की जनतांत्रिक सहभागिता का बढ़ाया जाना आवश्यक है। इस अभिगम के अनुरूप भारत में पंचायती राज संस्थाओं का विकास किया गया एवं क्षेत्रीय स्तर पर स्थानीय विकास कार्यक्रमों के निर्धारण एवं क्रियान्वयन के द्वारा ग्रामीण संरचना में परिवर्तन की गुणवत्ति अपनाई गयी।

Principal
Chaman Lal Mahavidhyalaya
Ladourah, Dist. Haridwar, Uttarakhand

Dr. Neetu Gupta
Assistant Professor, Deptt. of Home Science
Dr. Shweta
Assistant Professor, Deptt. of Commerce

Introduction

Biodiversity describes the richness and variety of life on earth. It is the most complex and important feature of our planet. Without biodiversity, life would not sustain. The term biodiversity was coined in 1985. It is important in natural as well as artificial ecosystems. It deals with nature's variety, the biosphere. It refers to variabilities among plants, animals and microorganism species. Biodiversity includes the number of different organisms and their relative frequencies in an ecosystem. It also reflects the organization of organisms at different levels. Biodiversity holds ecological and economic significance. It provides us with nourishment, housing, fuel, clothing and several other resources. It also extracts monetary benefits through tourism. Therefore, it is very important to have a good knowledge of biodiversity for a sustainable livelihood.

Relation of biodiversity with human health

We rely upon biodiversity in our regular routines, in manners that are not clear or valued all the time. Human wellbeing at last relies on biological system items and administrations, (for example, accessibility of new water, food and fuel sources) which are imperative for good human wellbeing and useful occupations. Biodiversity misfortune can have critical direct human wellbeing influences assuming environment administrations are at this point not satisfactory to address social issues. In a roundabout way, changes in biological system administrations influence occupations, pay, neighborhood movement and, every so often, may try and cause or fuel political struggle. Moreover, natural variety of microorganisms, verdure gives broad advantages to organic, wellbeing, and pharmacological sciences. Critical clinical and pharmacological disclosures are made through more prominent comprehension of the world's biodiversity. Misfortune in biodiversity might restrict disclosure of expected medicines for some sicknesses and medical conditions.

Threats of biodiversity and Health

Due to biodiversity loss health issues are growing rapidly. Biodiversity modifications affect atmosphere functioning and large disruptions of ecosystems can result in existence maintaining ecosystem items and services. Biodiversity loss also way that we're dropping, earlier than discovery, a lot of nature's chemicals and genes, of the type which have already provided humankind with extensive fitness advantages.

Impact of nutrition on biodiversity

Biodiversity plays a critical role in human nutrients via its effect on international meals production, because it ensures the sustainable productivity of soils and affords the genetic resources for all crops, farm animals, and marine species harvested for meals. Access to a sufficiency of a nutritious form of food is an essential determinant of health.

Nutrition and biodiversity are connected at many tiers: the atmosphere, with meals production as an surroundings carrier; the species within the ecosystem and the genetic diversity within species. Nutritional composition between ingredients and amongst sorts/cultivars/breeds of the identical meals can differ dramatically, affecting micronutrient availability in the weight loss plan. Healthy neighborhood diets, with adequate common stages of vitamins intake, necessitates preservation of excessive biodiversity stages.

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Study on the Sale of Spurious Products in Indian Rural Market

Dr. Shweta

Assistant Professor, Department of Commerce, Chaman Lal Mahavidhyalya, Landhaura,
Haridwar Distt.

Dr. Neetu Gupta

Assistant Professor, Department of Commerce, Chaman Lal Mahavidhyalya, Landhaura,
Haridwar Distt.

Indian rural market is one of the potential emerging markets in the world due to its mass market and increase in their disposable income. The rural consumers depend on weekly markets to purchase essential things are often cheated due to lack of choice. They are generally ignorant so they are exploited by the traders and the service providers on account of lack of competition among the sellers. Rural consumers face various problems like adulteration, short weighing and measuring, lack of fair warranties and guarantees, imitation, sales gimmicks and unreasonable pricing. This study aims to discuss the major factors behind sale of spurious products in rural market and to study the effect of sale of spurious product on consumer buying behavior. The analysis revealed that lack of awareness/deficiency, ambiguity and consciousness are the major factors driving the sale of spurious products in rural areas.

Keywords: Rural market, spurious products.

Introduction

Consumer Exploitation in Indian Market

Consumer Exploitation is common in India. This occurs mainly due to the lack of awareness among people and also due to the manipulative mentality of certain sellers. They are exploited by giving incomplete or wrong information. They may be exploited by sellers who may weigh less or measure wrongly. Sometimes, a consumer may be given low quality of goods.

One of the very common and a serious problem by which a consumer may be exploited is created by the shop-keeper is by providing impure or adulterated-goods with harmful substances. Food adulteration is a serious problem in the rural markets where the administrative machinery is not able to tackle this menace. As far as the service sector is concerned a large number of complaints regarding medical services, banking, insurance and electricity go unreported as the consumer is unaware of the redressal mechanism. Cases of medical negligence are common in the rural areas but then the consumer has no choice.

Exploitation of Rural Consumers

Indian rural market is one of the potential emerging markets in the world due to its market advantage and increase in the disposable income of rural consumers. The rural consumers who generally depend on weekly markets to purchase essential things are often cheated due to lack of choice. The rural consumers in India are generally ignorant and they are unorganized. Thus, they are exploited by the manufacturers, traders and the service providers in different way. There are vast opportunities for rural marketing. The manufacturers and traders take advantage of the condition of the rural consumers. It has been observed that the exploitation of the rural consumers is deplorable because they are largely exploited in the rural markets on account of lack of competition among the sellers. The rural consumers face various problems like adulteration, short weighing and measuring, lack of safety and quality control in appliances and equipments, electrical and mechanical, unfair Warranties and guarantees,

गणित सीखने में वैदिक गणित के प्रभाव पर अध्ययन

डॉ० देवपाल

असिस्टेंट प्रोफेसर, वाणिज्य विभाग, चमन लाल महाविद्यालय, लंदीरा, हरिद्वार, उत्तराखण्ड

डॉ० सूर्यकांत शर्मा

असिस्टेंट प्रोफेसर, इतिहास विभाग, चमन लाल महाविद्यालय, लंदीरा, हरिद्वार, उत्तराखण्ड

शोध सारांश

यह एक सिद्ध तथ्य है कि गणित विभिन्न क्षेत्रों में एक प्रमुख भूमिका निभाता है। यह अध्ययन का एक महत्वपूर्ण विषय है और इस प्रकार शिक्षा का एक अभिन्न अंग है। दुर्भाग्य से, बहुत सारे छात्रों को गणित विषय के साथ समस्याओं का सामना करना पड़ता है। कम उम्र में कुछ परिस्थितियों में गणित विषय के प्रति अरुचि पैदा हो सकती है। इस प्रकार, यह सुनिश्चित करना आवश्यक हो जाता है कि छात्रों में गणित विषय के प्रति रुचि विकसित हो। इसके लिए वैदिक गणित सबसे अच्छा उपाय है। वैदिक गणित भारतीय गणित की प्राचीन रूपि विकसित हो। इसके लिए वैदिक गणित सबसे अच्छा उपाय है। वैदिक गणित भारतीय गणित की प्राचीन प्रणाली को दिया गया नाम है जिसे श्री भारती कृष्ण तीर्थजी द्वारा 1911 और 1918 के बीच वेदों से फिर से खोजा गया था। इस प्रणाली की सबसे खास विशेषता इसकी सुरक्षितता है जहां असंबद्ध तकनीकों का एक समूह आपस में जुड़ा हुआ है और एकीकृत है। शिक्षा के क्षेत्र में वैदिक प्रणाली में रुचि बढ़ रही है। स्कूलों में प्राथमिक स्तर से वैदिक गणित पढ़ाया जा रहा है। वैदिक गणित का अभ्यास करने वाले छात्रों में गणित का विकास बेहतर देखा गया है। बच्चों पर वैदिक गणित सीखने के प्रभाव, विभिन्न क्षेत्रों में वैदिक गणित के गणितीय क्षेत्रों को विकसित करने आदि सहित कई क्षेत्रों में अनुसंधान भी किया जा रहा है। यह शोधपत्र वैदिक गणित के महत्त्व पर और गणित सीखने में वैदिक गणित के प्रभाव पर प्रकाश डालता है। इसके अलावा, हम इस तथ्य पर जोर देते हैं कि वैदिक गणित, यदि प्राथमिक स्तर से शिक्षा का एक अभिन्न अंग बना दिया जाए, तो प्राथमिकी के विशाल विकास में मदद मिल सकती है। साथ ही, छात्रों का प्रदर्शन अधिक कुशल हो जाता है।

कुंजी शब्द : वैदिक गणित, वैदिक गणित का महत्त्व, वैदिक गणित के प्रभाव।

The Application of Vedic Mathematics in Commerce

Dr. Kiran Sharma

Assistant Professor, Department of Commerce, Chaman Lal Mahavidhyalaya, Landhaura

Pallavi Bhardwaj

Research Scholar, Faculty of Management Studies, Gurukula Kangri
(Deemed to be University) Haridwar

Abstract

Vedic Mathematics is an ancient system of mathematical techniques that has gained popularity in recent years due to its simplicity and speed. It is based on sixteen sutras and thirteen sub-sutras, which are easy to understand and apply. Vedic Mathematics promotes creativity and problem-solving skills, and has been shown to be effective in improving mathematical ability. It is also versatile and can be applied in many different fields, making it a valuable asset for professionals in a wide range of industries. In commerce, the application of Vedic Mathematics offers many benefits. This paper highlights on various applications of Vedic mathematics in the field of commerce and explores and elaborates various benefits applications of Vedic mathematics in the field of commerce.

Keywords: Vedic mathematics, commerce, management, applications.

Introduction

The application of Vedic Mathematics in commerce is a topic of growing interest as the world increasingly relies on data and mathematical models to make informed business decisions. Vedic Mathematics is a system of mathematics that originated in ancient India and is based on 16 sutras, or aphorisms, and 13 sub-sutras. These sutras and sub-sutras provide a simple and efficient approach to solving mathematical problems and have been used for centuries in India.

The use of Vedic Mathematics in commerce is not a new concept, but it has gained significant attention in recent years due to its potential to improve business efficiency and decision-making. In particular, Vedic Mathematics can be used to solve complex mathematical problems quickly and accurately, making it an essential tool for financial analysis, accounting, and auditing.

One area where Vedic Mathematics can be applied is in financial analysis. The financial analysis is a critical function in commerce as it involves assessing the financial health of a company and making predictions about its future performance. Vedic Mathematics can be used to analyze financial data quickly and accurately, allowing businesses to make informed decisions about investments, mergers and acquisitions, and other financial transactions.

For example, Vedic Mathematics can be used to calculate the net present value of a future cash flow stream. The net present value is a crucial financial metric that measures the present value of a future cash flow stream, adjusted for the time value of money. By using Vedic Mathematics to calculate this metric, businesses can make more informed decisions about investment opportunities.

Vedic Mathematics can also be applied in accounting and auditing. Accounting involves the recording and reporting of financial transactions, while auditing involves verifying the accuracy of financial statements. Vedic Mathematics can be used to perform complex calculations quickly and accurately, making the accounting and auditing process more efficient.

For instance, Vedic Mathematics can be used to perform double-entry bookkeeping, which is a standard accounting practice. Double-entry bookkeeping involves recording financial transactions in two separate accounts to ensure accuracy. By using Vedic Mathematics, businesses can perform these calculations more efficiently and reduce the risk of errors.

Dr. V.S. Rawat,¹ Dr. Raj Bahadur,² Dr. Mahesh Kumar,³ Dr. Vimal Kant⁴

^{1,2,3} Associate Professor, Department of Economics, S.G.R.R. (P.G.) College, Dehradun
(HNB Garhwal University)

⁴ Assistant Professor, Department of Economics, Chamanlal Degree College, Laundra,
Haridwar

Abstract

It was for the first time after the great depression that the developing economies as well as advanced economies suffered recession. The macroeconomic uncertainty created by Covid-19 is hard to measure. The government and the monetary authority have responded to the pandemic using both conventional and non-conventional instrument and fiscal policy on a large scale. The central bank in each country played a very major role to uplift the economy and to restore the balance in terms of unemployment rate, interest rates, changes in the rates of instruments of monetary policy, inflation, providing support to financial system, security market intervention, and financial support to households and business sector. For this there must be decisive policy which maintains a time to time development of unconventional instrument of monetary policy for the recovery of the economy.

Keywords: COVID-19, pandemic, uncertainty shock, inflation, macroeconomic Policy, aggressive policy, slow policy.

Introduction

According to Shaw, monetary policy can be referred as, “any conscious action undertaken by the monetary authorities to change the quantity, availability or cost of money.”

It is a policy by which the monetary authority controls the supply of money in an economy by its control over interest rates to maintain inflation rates, consumption, achieve economic growth, maximizing employment, maintain balance of payment equilibrium and maintaining price stability. It is the process of drafting, announcing, implementing, and executing the plan of actions taken by Reserve Bank of India. It is classified into Expansionary monetary policy and contractionary monetary policy. Monetary authority opt for expansionary policy when the country is going through recession and is facing high unemployment rate which means slowdown situation of an economy. Expansionary policy aimed at increasing economic growth and better function of economic activities.

The rise in the quantity of money supplied will lower the interest rate so business can take loans on convenient terms which will further increase the investment and consumer spending. for example :- since 2008 financial crises, many leading economies across the globe maintained very low or zero interest rate. It is a fuel to economic growth and may lead to inflation.

Depending upon the objective of central bank i.e., inflation, unemployment, currency exchange rate etc., the RBI opt for expansionary and contractionary monetary policy.

Instruments of monetary policy are :-

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GRACEFUL LABELING OF CLOSED CATERPILLARS

AJAY KUMAR, AJENDRA KUMAR, VIPIN KUMAR, TARUN KUMAR GUPTA,
AND DIPSA SHARMA

ABSTRACT. For the sake of simplicity, we emphasize on simple, connected and finite graphs. After a long period of scramble over analysis and investigations, the notion of graceful labeling came into existence and therefore the credit goes to Rosa (1967) and then by Golomb (1972) for the first definition of graceful labeling. If there exists a bijective mapping $f : V(G) \rightarrow \mathbb{N} \cup \{0\}$ such that each edge $e \in E(G)$ has the induced label $\omega(f, V(G)) = \{|f(u) - f(v)| : u, v \in V(G)\}$ and $\min \omega(f, V(G)) \leq \omega(e) \leq \max \omega(f, V(G))$ such that the resulting edge labels are distinct, then f is said to be graceful labeling for the graph $G = (V, E)$. In this paper, we develop a new operation "superimposition" for joining two smaller graphs by which we can obtain a new larger graph. By this operation, we generate a new graph from a caterpillar $P_n \odot K_1$ and call it closed caterpillar. We prove that all closed caterpillars admit graceful labeling. We also conjecture that all two sided closed caterpillars have graceful labeling.

1. Introduction

Any graph $G = (V, E)$ use in this paper is simple, connected and finite. We have had a lot to say so far about graceful graphs but what about the graphs obtained from smaller graceful graphs? After a long period of scramble over analysis and investigations, the notion of graceful labeling (β -valuation) came into existence and therefore the credit goes to Rosa [14] and then by Golomb [8] for the first definition of graceful labeling. If there exists a bijective mapping $f : V(G) \rightarrow \mathbb{N} \cup \{0\}$ such that each edge $e \in E(G)$ has the induced label $\omega(f, V(G)) = \{|f(u) - f(v)| : u, v \in V(G)\}$ and $\min \omega(f, V(G)) \leq \omega(e) \leq \max \omega(f, V(G))$ and the resulting edge labels are distinct, then f is said to be graceful labeling for the graph $G = (V, E)$. A graceful labeling with the property that there exists an integer k so that for every edge $uv \in E$, either $f(u) \leq k < f(v)$ or $f(v) \leq k < f(u)$ is called α -labeling (or α -valuation) [14]. An α -valuation and β -valuation of n -gon exists if and only if $n \equiv 0 \pmod{4}$ or $n \equiv 0$ or $3 \pmod{4}$ respectively made by Rosa [14]. A similar result made by Habbare [10] for cycles C_n that C_n is graceful if and only if $n \equiv 0$ or $3 \pmod{4}$.

A new operation between two graphs G_1 and G_2 is presented by Frucht and Harary [6]. They called this operation corona between G_1 and G_2 as follow: the corona $G_1 \odot G_2$ of the two graphs G_1 and G_2 (where G_1 has p_1 points and q_1 lines)

परिवेश का सामान्य अर्थ 'घेराव' या 'वातावरण' अर्थात् मनुष्य सामाजिक प्राणी होने के कारण जन्म से लेकर मृत्यु तक वह जिस घेराव या वातावरण से संबंध रखता है, वहीं परिवेश कहलाता है। मनुष्य के व्यक्तित्व के निर्माण में परिवेश का ही अगाध योगदान रहता है। क्योंकि समाज से घिलग रह नहीं सकता। अरस्तू के मतानुसार 'समाज से मानव या तो पशु है या देवता'। जिस प्रकार मनुष्य से परिवेश का निर्माण होता है उसी प्रकार मनुष्य के निर्माण में समाज की भूमिका प्रमुख होती है।

डॉ. महीप सिंह परिवेश के बारे में बतते हुए कहते हैं कि 'अपने परिवेश में जो कुछ भी घटित होता है, उसके वे मात्र दर्शक या पीड़ित मजदूर भोक्ता ही नहीं हैं वे उसके सक्रिय सहभागी भी हैं। वे जीवन को ढालते नहीं जीते हैं।'

परिवेश से अभिप्राय है कि जिस वातावरण में आदमी, मानव की वास्तविकता को, व्यवहारों को, उसके रहन-सहन को, बनी बिनली बातों को हर्ष-वेदना को सिर्फ आंखों से देखता ही नहीं बल्कि जिसमें रहकर स्वयं उसे भोक्ता भी है, अनुभव करता है वही परिवेश है।

व्यक्ति तथा उसके व्यक्तित्व का निर्माण भी उसका परिवेश ही करता है यहां तक कि व्यक्तित्व निर्माण विषयक कुछ महत्वपूर्ण प्रयोगों के परिणाम इस बात का संकेत करते हैं कि व्यक्ति में ईमानदारी और नेतृत्व के गुणों का निर्माण करने में भी उसके आस-पास के सामाजिक तत्व कार्यरत रहते हैं। यदि उसे विस्तार दिया जाए तो यह कहना होगा कि 'व्यक्ति के समस्त व्यक्तित्व का निर्माण में उसका समस्त परिवेश कार्यरत कहलाता है। यह क्रिया प्रत्यक्ष और पराक्ष दोनों रूपों में चलती है और व्यक्ति इन्हीं रूपों से अपने परिवेश से संबंध रखता है। इस प्रकार व्यक्ति और परिवेश एक समीकरण का निर्माण करते हैं - 'व्यक्ति: परिवेश=व्यक्तित्व'।

अधुनिक युग में पश्चात्य ज्ञान-विज्ञान के प्रचार एवं प्रसार से प्रभावित होकर समाज के सामाजिक, राजनीतिक, आर्थिक, धार्मिक और सांस्कृतिक सभी क्षेत्रों में प्राचीन रूढ़ियों और बंधनों के विरुद्ध ज्ञान की दृढ़भी बजने लगी है। इन परिस्थितियों से ही हर युग का बोध होता है। अतः परिवर्तनशील संवेदनाओं के इन पहलुओं का अध्ययन आवश्यक है।

समाज में ही व्यक्ति का विकास होता है। व्यक्ति के अंतः संबंधों के फलस्वरूप आर्थिक, सामाजिक, धार्मिक, सांस्कृतिक और राजनीतिक संगठनात्मक व्यवस्थाएं उत्पन्न होती हैं। इन व्यवस्थाओं और संकटव्यवस्थाओं के योग से ही 'सामाजिक संगठन' निर्माण होता है। इस संगठन से पृथक समाज की कोई भी व्यवस्था संभव



शैलेश मटियानी के उपन्यासों में नारी जीवन का यथार्थ

-डॉ० मीरा चौरसिया

रहायक आचार्या, हिन्दी विभाग, चमनलाल महाविद्यालय, लण्डौरा (हरिद्वार), उत्तराखण्ड

शैलेश मटियानी के उपन्यासों में नारी की यथार्थ स्थिति का निरूपण हुआ है। जिसमें प्रायः देखने को मिलता है कि एक स्त्री को किस प्रकार वेश्या का जीवन जीने को विवश हो जाती है। जिन्दगी जीने के जितने भी साधन हो वह सभी स्त्री के लिये बंद हो जाते हैं, जिसके कारण वह अंत में न चाहते हुये भी इस कुमार्ग को अपनाकर जीवन जीते हुये अपनी जीवन लीला समाप्त कर देती है।

नारी को ईश्वर की सर्वोत्तम रचना माना जाता है; भारतीय नारी दया, ममता, सहनशीलताए प्रेम आदि गुणों से भरपूर होती है। भारत में उनका अतीत गौरवपूर्ण था। इसीलिये मनु ने अपनी 'मनुस्मृति' में 'यत्र नार्यस्तु पूज्यन्ते रमन्ते तत्र देवताः', कहकर नारी के स्थान को निर्धारित किया है।

कालान्तर में इस स्थिति में काफी बदलाव आ चुका है। जिस कारण उनकी स्थिति अत्यन्त दयनीय हो चुकी है, "जननी जन्म भूमिश्च स्वर्गाद उपरि गरीयसी।" अर्थात् जननी और जन्मभूमि स्वर्ग संगी अधिक परिभाषा है। इस धारणा को मान्यता देने वाले भारतवासी आज भी स्त्री को केवल अपने पैरों की जूती के समान मानते हैं। दूसरी तरफ पुरुष की अर्द्धांगिणी के रूप के मान्यता प्राप्त नारी को केवल भोग्या और दासी के रूप में माना जाने लगा। मैथिलीशरण गुप्त ने वर्तमान नारी के जीवन का चित्र अंकन करते हुये कहा है कि-

"अबला जीवन, हाथ तुम्हारी यही कहानी।

अँचल में है दूध और आँखों में पानी।"

आज समाज ने नारों तरफ शोषण, हिंसा और व्यभिचार का बोलबाला है, 'नारी तुम केवल श्रद्धा हों का भाव तिराहित हो गया है। नारी को केवल काम पिपासा शांत करने का साधन मात्र मान लिया गया है।

नारी का समाज में तरह-तरह से शोषण हुआ है और आज भी हो रहा है। आधुनिक युग समाज सुधारकों का ही नहीं अपितु साहित्यकारों का ध्यान भी नारी से सम्बद्ध विभिन्न समस्याओं की विशेषरूप से आकर्षित हुआ है।

हिन्दी उपन्यास के क्षेत्र में प्रेमचन्द जी ने पहली बार अनेक रूढ़ियों से ग्रस्त नारी की दयनीय स्थिति को पहचाना और उसके जीवन की विभिन्न समस्याओं को औपन्यासिक धरातल पर प्रस्तुत किया है। प्रेमचन्द के बाद ऐसे अनेक उपन्यासकार सामने आये जिन्होंने नारी के समग्र जीवन को प्रस्तुत करने का प्रयास किया।

नारी का जीवन अनेक समस्याओं से भरा हुआ है। ये समस्याएँ विभिन्न युगों में विभिन्न तरह की रहती हैं। शैलेश मटियानी ने अपने उपन्यासों में नारी का यथार्थ एवं मार्मिक चित्रण करते हुये नारी सम्बन्धी समस्याओं



Stubble Burning in the Farmland of North India and Its Implications on Environment and Health

Gourav Kumar Singh¹, Deepika Saini² and Jyoti Bhadouria³

¹Department of Environmental Science, ITM University, Gwalior, Madhya Pradesh, India

²Chaman Mahavidhyalaya, Landhora, Uttarakhand, India

³School of Management, Amity University Madhya Pradesh, Gwalior, India

*Corresponding author: saini.deepika1984@gmail.com

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ABSTRACT

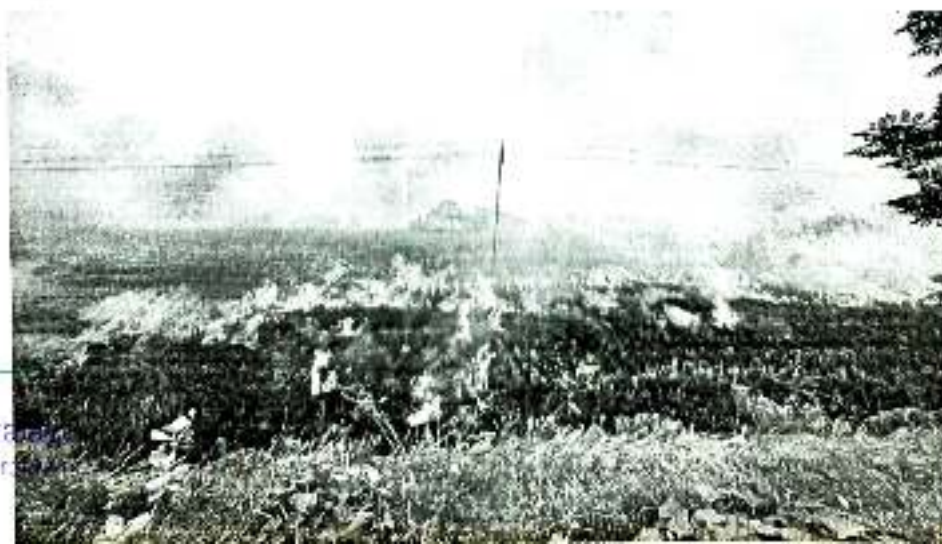
Farmers burn the stubble that remains after harvesting the paddy crop every year in regions like Punjab, Haryana, and Uttar Pradesh around the months of October and November. The air pollution in the Indo-Gangetic plains is caused by the burning of large fields in these states, as well as by the lowering temperatures and slackening of the wind. Particularly the landlocked Delhi-NCR region is shrouded in a cloud of toxic fog. Government of Haryana and Punjab is promoting the farmers to use ICAR recommended machineries to stop stubble burning. Special subsidies are also been provided to the farmers to use Happy Seeder, Paddy Straw Chopper, Rotavator, Turbo Happy Seeder (THS) to stop stubble fire and reduce air quality of north Indian states. More than 30% stubble burning deduction have been seen in Haryana and Punjab because of technological advancement. This chapter

deals with the present scenario of stubble burning in north India and its impact on environment, health and deteriorations of the AQI of NCR region.

Keywords: AQI, Stubble burning, harvesting, air pollution, paddy crop, NCR, Land lock

INTRODUCTION

Stubble burning is the deliberate setting of straw stubble that remains after grains like wheat and rice have been harvested on fire. The method is still used often nowadays. In order to prepare a field for planting wheat from the last week of September to the beginning of November, stubble (parali) is burned. Burning straw stubble is the process of igniting the material that remains after harvesting grains such as rice, wheat, etc. In regions where agricultural residue is left behind during combined harvesting, it is typically necessary. In regions where agricultural residue is left behind during combined harvesting, it is typically necessary.



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Principal

Chaman Lal Mahavidhyalaya
Landhora, Distt- Haridwar, Uttarakhand



भारत में संघवाद की प्रवृत्ति में पंचायतीराज व्यवस्था की भूमिका

डॉ० नीशू कुमार
सहायक आचार्य, राजनीति विज्ञान विभाग
चमनलाल महाविद्यालय, लंदौरा, हड़की (हरिद्वार)

भौगोलिक परिस्थितियों के अनुसार बड़े देशों में छोटे-छोटे प्रांत एवं राज्यों के रूप में विकसित हुए विकासशील एवं अल्प विकसित देशों में 1950 के दशक से ही केंद्र और प्रांत के बीच शक्ति एवं आर्थिक राजस्व बँटवारे को लेकर कई बार संघ की परिस्थितियों पर संकट पैदा हो जाता है। हालाँकि वाद-विवाद और संघवाद की परिस्थितियों के आधार पर ही किसी भी राष्ट्र राज्य का राजनीतिक ढाँचा विकसित होता है। भारत में प्राचीन राजनीतिक सभ्यता से ही लोकतांत्रिक परिस्थितियाँ रही हैं, जिसके आधार पर गोप संस्कृति में छोटे-छोटे गाँव में अपने पंच परिवार या मुखिया को चुनने की संस्कृति लोकतंत्र का मूल आधार रही, जिसे सैकड़ों वर्षों तक क्रियान्वित किया गया। किंतु राजनीतिक शक्ति एवं बढ़ते राज्य के प्रभाव के कारण भौगोलिक सीमाएँ राजनीतिक रूप से बढ़ती चली गईं। जिसके परिणामस्वरूप एक बड़े भूभाग में बड़े राज्य का निर्माण होने लगे, किंतु कुछ राजनीतिक लोगों के द्वारा इतने बड़े भूभाग को चलाना अत्यंत कठिन कार्य था। कौटिल्य ने राज्य के स्वरूप एवं राज्य की राजनीति को उल्लेख करते हुए राज्य के पड़ोसी राज्यों से संबंध एवं उनकी प्रकृति को भी व्याख्यात्मक रूप से प्रस्तुत किया है जिसमें उन्होंने सप्तमं राज्य की कल्पना की है।

अँग्रेजी शासन व्यवस्था में सिविल सर्विसेज नामक एक प्रशासनिक व्यवस्था को स्थापित कर भारत में स्थानीय स्तर के शासन को मजबूत करने एवं शासन और जनता के बीच संघवाद का एक प्रभावी मजबूत तंत्र चुना। जिसे आगे चलकर इस्पात तंत्र का नाम दिया गया। 1857 की क्रांति के बाद अँग्रेजी शासन व्यवस्था ने अपने अंतर्गत बदलाव करते हुए, जनता के हितों को धरोर देते हुए कानून व्यवस्था से लेकर स्थानीय स्तर के राजनीतिक एवं आर्थिक हितों को स्थापित किया। जिसमें अँग्रेजी व्यवस्था ने छोटे किसान एवं कृषक समुदाय से अपने आर्थिक हित स्थापित किए, वहीं 1870 के दशक में पंचायती राज व्यवस्था एवं 1880 के दशक में जनगणना की स्थापना कर अँग्रेजी शासन व्यवस्था में संघवाद की प्रवृत्ति को पैदा कर दिया। जिसे आगे चलकर 1890 के दशक में एक राजनीतिक विधान परिषद का गठन किया गया। हालाँकि इस परिषद में एक तरफा एवं प्रत्यक्ष रूप से अँग्रेजी शासन के ही लोग थे। किंतु धीरे-धीरे बदलाव के बाद अँग्रेजी शासन व्यवस्था में अलग-अलग राज्यों को उनके अधिकार एवं स्थानीय स्तर को विकास करने की संकल्पना को पैदा किया।

संघीय संरचना

भारतीय संविधान के अंतर्गत तैयार किए गए प्रावधान 1947 में स्वतंत्रता-प्राप्ति के बाद

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Dr. Nishu Kumar

Department of Political Science, Chamanlal Mahavidhyalaya Landhora, Roorkee,
Uttarakhand, India

Corresponding author email: nishubhati1988@gmail.com

Abstract---The study was conducted in Haridwar district, Uttarakhand, India (2022 Jan). The primary purpose of the study was to analyze the role of women in the Panchayati Raj program in the study area. Data were collected from 129 randomly selected respondents randomly assigned to different polling stations in Haridwar district. The purpose of this study was to explore the platform provided to Panchayati raj institutions in improving women's participation in decision-making. On the basis of which the conclusion can be drawn whether the test is successful or not. If so, to what extent and in what circumstances? And if not, why not? After studying and analyzing the role of women in the Panchayati raj in selected areas of Haridwar district, it is commendable that women's education is important because an educated woman can play a more important role in decision-making than an illiterate woman. For this purpose, better educational resources should be provided to women. In addition, the promotion of research into women's issues and problems is important. Women's incomes in the Haridwar region are low due. Research shows that there is not much awareness about political issue and their rights. Active membership that is ignored in the community means two things. Either there is a complete lack of political indifference among the people about the political system or there is a lack of political awareness. There were other ways of getting involved in politics. Through general observation, it was found that women were not encouraged because of cultural barriers to becoming active members of political attire.

Keywords---Panchayat, women rights, Haridwar.

Introduction

Panchayati Raj Institution (PRIs) is a grassroots democracy in our country they have provided a new dimension to rural development and democratic




रूस यूक्रेन युद्ध का एक विश्लेषण: विश्व व्यवस्था के संदर्भ में

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 सहायक आचार्य
 राजनीति विज्ञान विभाग
 चमन लाल महाविद्यालय लंदीरा, रुड़की।

सारांश—

21वीं शताब्दी के सूचना प्रौद्योगिकी और तकनीकी दौर की दुनिया संवाद और संप्रेषण पर इतने नजदीक आ गए हैं कि राष्ट्र हितों की भूमिका द्वितीयक प्रतीत होने लगी हैं, अर्थात् आज विश्व के सभी देश एक दूसरे के प्रति आर्थिक, सामरिक, राजनीतिक रूप से परस्पर निर्भरता के रूप में जुड़े हैं। जिसके कारण उनके राष्ट्रीय हितों की परिभाषाएं इस परस्पर निर्भरता के कारण बदल रही हैं। रूस और यूक्रेन के बीच संघर्ष एवं युद्ध की स्थितियों में ना केवल दुनिया को बीसवीं शताब्दी के शीतयुद्ध की श्रेणी में लाकर खड़ा कर दिया है। बल्कि इस आर्थिक और सूचना प्रौद्योगिकी व तकनीक की दुनिया में कैंपिंग डिप्लोमेसी का नया आयाम शुरू हो चुका है। जिसके परिणाम ना केवल विश्व की अर्थव्यवस्था पर पड़ेगा, बल्कि वैश्विक परिदृश्य में कल्याणकारी और सार्वजनिक हितों के संदर्भ में कार्यरत संस्थाओं की कार्यविधि भी प्रभावित होगी। क्योंकि संयुक्त राष्ट्र संघ ने जहां पिछले 70 वर्षों में पर्यावरण और मानव के बीच के संबंध को सरल और सतत रूप में स्थापित करने के लिए अनेक प्रयास किए हैं। वही युद्ध की परिस्थितियों में उक्त प्रयासों को नजरअंदाज करते हुए अपने राष्ट्रीय हितों की पूर्ति के सभी सही और गलत आयामों को सैद्धांतिक और व्यावहारिक रूप से अपनाया जाएगा। जिससे 21वीं शताब्दी की यह दुनिया नई व्यवस्था के रूप में चिह्नित होगी। जिसमें विकासशील देश भारत, चीन, दक्षिण अफ्रीका सहित अनेक तीसरी दुनिया के देश निर्णायक भूमिका के रूप में होंगे, क्योंकि यहां ना केवल उत्पादक के रूप में समृद्धि का आई है बल्कि एक बड़े बाजार के रूप में विकसित राष्ट्रों के उत्पाद के लिए उपलब्धता हैं।


 Principal
 Chaman Lal Mahavidyalaya
 Landira, Rudra, Uttarakhand

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Stubble Burning in the Farmland of North India and Its Implications on Environment and Health

Gourav Kumar Singh¹, Deepika Saini² and Jyoti Bhadouria³

¹Department of Environmental Science, ITM University, Gwalior, Madhya Pradesh, India
Chaman Mahavidhyalaya, Landhora, Uttarakhand, India

³School of Management, Amity Univesity Madhya Pradesh, Gwalior, India

*Corresponding author: saini.deepika1984@gmail.com

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ABSTRACT

Farmers burn the stubble that remains after harvesting the paddy crop every year in regions like Punjab, Haryana, and Uttar Pradesh around the months of October and November. The air pollution in the Indo-Gangetic plains is caused by the burning of large fields in these states, as well as by the lowering temperatures and slackening of the wind. Particularly the landlocked Delhi-NCR region is shrouded in a cloud of toxic fog. Government of Haryana and Punjab is promoting the farmers to use ICAR recommended machineries to stop stubble burning. Special subsidies are also been provided to the farmers to use Happy Seeder, Paddy Straw Chopper, Rotavator, Turbo Happy Seeder (THS) to stop stubble fire and reduce air quality of north Indian states. More than 30% stubble burning deduction have been seen in Haryana and Punjab because of technological advancement. This chapter

deals with the present scenario of stubble burning in north India and its impact on environment, health and deteriorations of the AQI of NCR region.

Keywords: AQI, Stubble burning, harvesting, air pollution, paddy crop, NCR, Land lock

INTRODUCTION

Stubble burning is the deliberate setting of straw stubble that remains after grains like wheat and rice have been harvested on fire. The method is still used often nowadays. In order to prepare a field for planting wheat from the last week of September to the beginning of November, stubble (parali) is burned. Burning straw stubble is the process of igniting the material that remains after harvesting grains such as rice, wheat, etc. In regions where agricultural residue is left behind during combined harvesting, it is typically necessary. mbined harvesting, it is typically necessary.



Figure 1: Stubble Burning near NCR Region

In some areas of north India, burning farm stubble is one of the main sources of air pollution, which worsens the air quality.

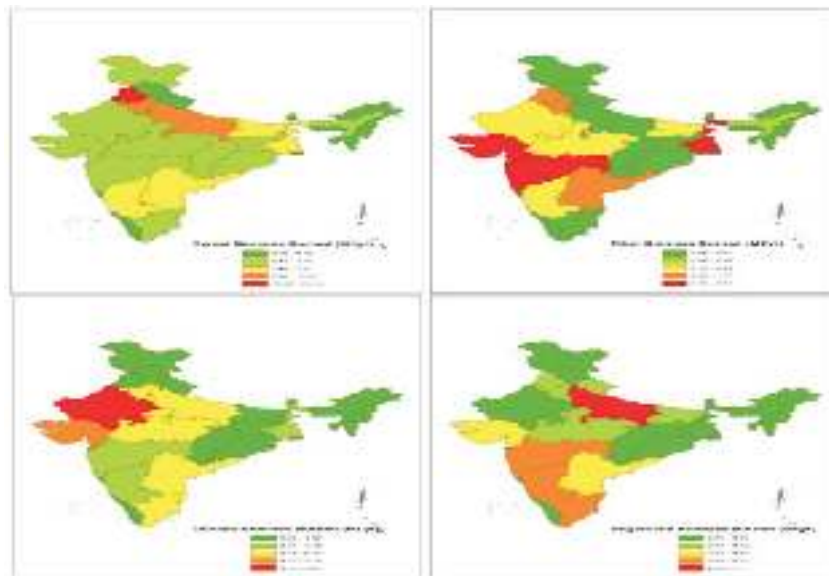


Figure 2: Statewise distribution of stubble burning in India

It has an impact on the National Capital Region's (NCR) Air Quality Index (AQI), along with vehicle emissions. Farmers in Haryana, Punjab, and western Uttar Pradesh are said to be a major source of air pollution in Delhi and the surrounding areas. To prepare the fields for the seeding of the Rabi crop, paddy stubble is typically burned in the Indo-Gangetic plains of Punjab, Haryana, and UP. Between the first and last weeks of October, Punjab and Haryana harvest their paddy crops. The wheat crop is then sown by farmers from the first week of November until the middle of December.

The lack of time between rice harvest and wheat sowing is a crucial factor in the stubble burning since a delay in sowing wheat will have an impact on the wheat crop. Only two to three weeks remain between the harvest of the paddy crop and the sowing of the

subsequent crop. Punjab and Haryana rank first and second in terms of rice stubble burning, respectively, while Uttar Pradesh tops the list for wheat stubble burning. Farmers use crop residue burning to prepare the soil for the following crop. The leftover from crops, such as straw that is left in the field after harvest, is burned using this technique. As a result, one of the least expensive ways to clear the field after harvest is to burn the stubble.

ENVIRONMENTAL IMPACT

These pollutants have terrible consequences. In 2019, air quality monitoring stations in Delhi-NCR recorded readings above 999 on the Air Quality Index, which is much beyond the threshold for an emergency. Schools and offices were compelled to close for many days.



Figure 3: Emission of Air Pollutants from Stubble Burning

Burning twigs releases dangerous pollutants into the air, including volatile organic compounds (VOC), carcinogenic polycyclic aromatic hydrocarbons, methane (CH₄), and carbon monoxide (CO). These pollutants spread across the area and eventually create a thick layer of smog, which has an impact on the air and people's health.

Fertility of the soil: Burning the husk on the ground reduces soil fertility and destroys its nutrients. Heat penetration: Burning snags produces heat that seeps into the soil, accelerating erosion and erasing beneficial bacteria and moisture. One centimeter of soil is heated by burning paddy straw, bringing the soil's temperature up to 33.8 to 42.2 degrees Celsius. The bacterial and fungal communities necessary for a rich soil are eliminated as a result. Burning crop debris harms both the organic quality and other microorganisms present in the soil's top layer. The wrath of "enemy" bugs has increased as a result of the extinction of "friendly" pests, making crops more susceptible to disease. The ability of the higher soil layers to dissolve has also decreased.

5.5 kg of Nitrogen (N), 2.3 kg of Phosphorus (P), 25 kg of Potassium (K), and more than 1 kg of Sulphur (S) are lost with every tonne of stubble burned, in addition to organic carbon, according to reports. Many nations, including China, the UK, and Australia, have outlawed or discouraged the burning of stubble burning.

HEALTH IMPACT

Stubble burning is a substantial source of particulate matter and gaseous pollutants such carbon dioxide (CO₂), carbon monoxide (CO), nitrogen oxides (NO_x), Sulphur oxides (SO_x), and methane (CH₄) (PM₁₀ and PM_{2.5}). When levels of these air pollutants are excessive, it is a risk for people's health. Particularly, PM_{2.5} and PM₁₀ cause cancer. Asthma, chronic obstructive pulmonary disease (COPD), bronchitis, lung capacity loss, emphysema, cancer, and other serious neurological, cardiovascular, and respiratory disorders are only a few of the additional health repercussions of air pollution. As a result of the prolonged exposure to excessive pollution, mortality rates also rise.

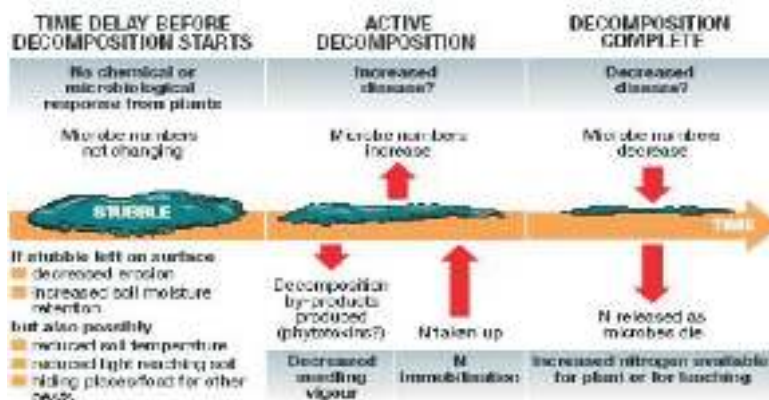


Figure 4: Stubble biological and physical decomposition process

LAND UNDER PADDY CULTIVATION		STUBBLE MANAGEMENT MACHINES			
Sangrur	2.63 lakh hectares	District	Total	Super seeders	Balers
Patiala	2.19 lakh hectares	Sangrur	8,500	3,200	20
Kaithal	1.6 lakh hectares	Patiala	5,548	3,000	60
		Kaithal	9,553	1,977	210

Note: Used 70% more super seeders and balers to manage stubble in Punjab districts than Kaithal. This shows lower costs for Punjab farmers to manage their crop.

Figure 5: Land use pattern and Stubble Management methods in Haryana & Punjab

Sources: ICAR Sangrur and Patiala districts in Punjab are covered in burnt-out fields, and the air is dense with smoke. The visibility gets better 80 kilometres to the southeast, in the direction of Kaithal district in Haryana. On the horizon, green fields and golden hay are visible. In a nutshell, this describes how the two states are doing with regards to putting out farm residue fires that worsen Delhi's air pollution during the kharif harvesting season, which lasts from October to November. On November 3, this year, the contribution of farm fires to Delhi's PM_{2.5} reached its highest level of 34%. This indicates that the main source of PM_{2.5} in Delhi on that day was pollution from farm fires, with Punjab recording the highest levels. Between September 15 and November 11, Punjab had 40,677 fires, while Haryana had 2,880 during the same time.

Fine polluting particles known as PM_{2.5} can enter our lungs and lead to respiratory problems because they are 20 times thinner than human hair. This

month, 17 percent of Delhi's PM_{2.5} was caused by farm fires. Sangrur district, which includes the Dhuri constituency of Punjab chief minister Bhagwant Mann, had the most farm fires in the state up until November 9 with 5,207, followed by Patiala with 3,167. Haryana's highest number was 592, recorded in Kaithal.

Supply Chain of Crop Residue for Ex-Situ Management:

The ex-situ management of crop residues and analysis of the economics of the agricultural residue supply chain in Punjab play a key role in preventing air pollution. It compares the delivery costs of various biomass products, including bales, briquettes, and pellets, to end users. In addition, it examines the potential of using paddy residue in coal-fired power plants to supplement the state's use of coal. Additionally, the report provides concrete strategies to enhance the biomass supply chain and expand ex-situ management in Punjab.

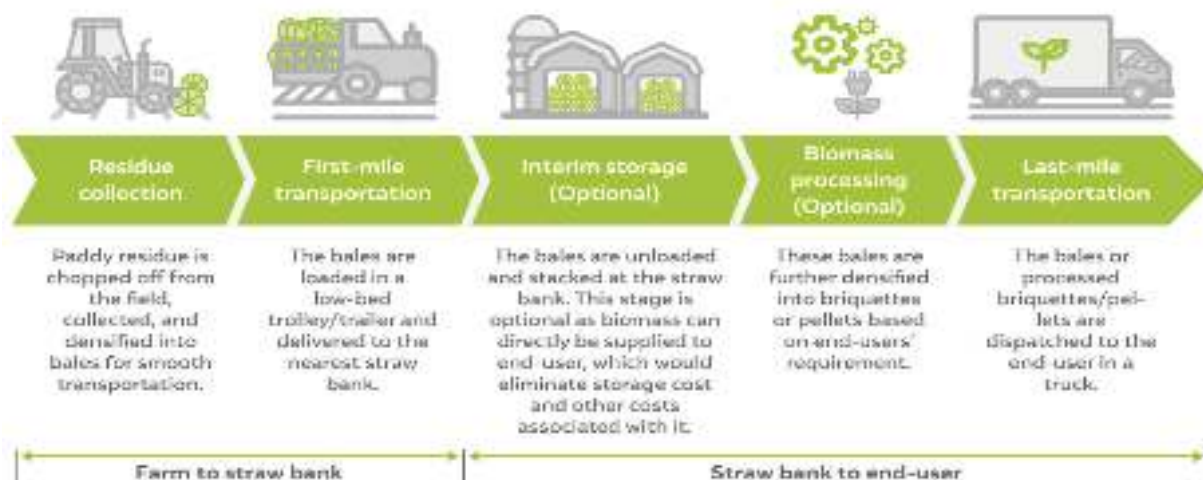


Figure 6: Supply Chain of Crop Residue for Ex-Situ Management

Solution to this Problem

- ? The National Policy for Management of Crop Residue was made public in 2014 by the Union government.
- ? Additionally, farmers can properly manage crop wastes by using equipment like:
- ? Happy Seeder (used for sowing of crop in standing stubble)
- ? Rotavator (used for land preparation and assimilation of crop stubble in the soil) (used for land preparation and incorporation of crop stubble

in the soil)

- ? Zero till Seed drill (used for land preparations directly sowing of seeds in the previous crop stubble)
- ? Baler (used for collection of straw and producing bales of the paddy stubble) (used for collection of straw and making bales of the paddy stubble)
- ? Straw Chopper Paddy (cutting of paddy stubble for easily mixing with the soil)
- ? Reaper Binder (used for harvesting paddy stubble and making into bundles)

Among these, the Turbo Happy Seeder appears to be the most effective technique to combat crop burning at the moment (THS). The THS is essentially a tractor-mounted device that can drill wheat seeds into freshly cleared soil in addition to cutting and uprooting the stubble. In order to create a mulch cover, the straw is simultaneously placed over the seeds.

Policy to Monitor and Control Stubble Burning:

- ? A range of national and subnational policy methods are utilised to combat crop stubble burning in India. As previously mentioned, a National Policy for the Management of Crop Residues and a Crop Diversification Programme exist.
- ? Air (Prevention and Control of Pollution) Act violators are subject to prosecution under the law. There are also programmes that promote in situ and ex situ agricultural residue management by subsidising farm equipment such as the "happy seeder," rotavator, and baler. Nevertheless, there are significant gaps in policy formulation, implementation, and awareness.
- ? The National Programme on Crop Diversification lacks, in terms of policy design, precise means for outreach activities to educate farmers on alternative crop options.
- ? Convergence with other programmes, such as the National Rural Employment Guarantee Scheme, the National Rural Livelihood Mission, and agro-enterprise-related programmes, is inadequate. Interconvergence can aid in paddy stubble management and crop diversification.
- ? In terms of execution, despite the availability of subsidies, many farmers are still unable to acquire necessary equipment.
- ? Other factors influencing the adoption of the happy seeder and other farm machines include supply chain and rental market constraints.

CONCLUSION

Despite the fact that government programmes call for the establishment of farm machinery banks to offer farmers employment services, there are severe problems with timely machine availability. Crop rotation and diversification must be encouraged throughout the medium term (the next seven years). While short-term technology solutions for agricultural

residue management may be helpful, the government has to place more emphasis on crop diversity as a policy solution. This is important in light of the numerous negative environmental impacts of current farming practises, including groundwater depletion, poor soil quality, and air pollution. Increased climatic variability and catastrophic occurrences can be mitigated to a larger extent through crop diversity. Crop rotation, polycultures, greater structural diversity, or agroforestry are a few ways it can be put into practise. Understanding the cause of the lack of progress in crop diversification despite regulatory policy nudges and fiscal policy incentives from both the federal and state governments will require a comprehensive investigation with all parties involved. Nowadays Delhi is suffering from high level of air pollution specially PM_{2.5} concentration.

RECOMMENDATIONS

- ? Awareness among the farmers about its negative impacts on human health
 - ? Strict implementation of Government Policy against stubble burning
 - ? Monitoring Investigation team to be deployed to crosscheck the violators
 - ? Need more research and development of new devices and chemicals to decompose the stubble at point source only
 - ? Subsidies given to farmers for machineries should be monitored properly
 - ? Establish a dense network of straw banks and an ecosystem for the supply chain.
 - ? Increase biomass demand to encourage greater participation in the biomass supply chain.
 - ? Implement price regulation for products derived from crop residues.
 - ? A database of end-users and their annual crop residue demand should be mapped and published.
 - ? Convert stubble into Biochar which can be used as fertilizers
 - ? To trade crop leftovers, develop a digital network connecting farmers, straw banks, end-users, and other stakeholders in the biomass supply chain.
- Concentrate on in-situ solutions in regions with little biomass demand or potential end-users.

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A study on problems and challenges faced by girl students in higher education

*Anamika Chauhan¹ and Sushil Kumar²

¹department of home science, chamanlal p.g. college, landhaura, roorkee, haridwar (uttarakhand), India

²principal and professor, chamanlal p.g. college, landhaura, roorkee, haridwar (uttarakhand), India

*Email:Chauhanana6252@gmail.com

Abstract: Education is an essential instrument to bring social revolution. It is the only remedy to bring about the desired social change in the society, at all levels and ages of children. Higher education is the third stage of education, which is acquired by the learners through the learning process. Sex biases are very common everywhere whether it is in educational institution, society in general and in home. Girls face the sex-bias in curriculum transaction, books, allocation of subjects, participation in activities etc. Poor family status and care of siblings and household chores at home are also considered the factors affecting education of girls. Minimizing the above mentioned problems, girls in rural area may achieve success in their higher education. Proper guidance and counselling to illiterate parents, fees concessions and other facilities offered for the rural girls regarding higher education and career development may also be key stone in carrier of girl and their higher education. In present study the sex biases reported as major problem in maximum girls at home and society level followed by early age marriage and financial problem. The household chores at home are also considered the factors affecting education of girls. The girl students are highly motivated to avoid higher education. At college level, financial problem is major factor affecting girls' education followed by transportation, co-educational problem; gender discrimination and physical harassment at college level were reported as factors affecting girl's higher education.

Keywords: Problems, Challenges, Girl, Higher Education

INTRODUCTION

Education is an essential instrument to bring social revolution among. It is the only remedy to bring about the desired social change in Indian society, at all levels, and at all ages of children. Education has been considered as one major agency of socialization, while teachers and educational institutions as socializing agents. It is the key tool, which can be successfully used against the deep rooted evils prevailing in the society. Higher education is the third stage of education, which is acquired by the learners through the learning process. It is under taken in Universities, colleges or Higher Education Institution and virtual or distance mode.

Sex biases are very common everywhere whether it is in educational institution, society in general and in home. These biases generate barriers in terms of both structure and attitude in girls of rural areas. The girls are facing problems in society in terms of social, economic and educational problem. The social attitude towards girl's education is generally negative. Education for girls is considered as an important practice to expel out the evils of society such as pardah system, early marriage, parental illiteracy, lack of educational facilities at home. The male tutors and teachers and responsibilities of girls at home are the other difficulties among girls to access the education. Poor family status and care of siblings and household chores at home are also considered the factors affecting education of girls. The girl students are highly motivated to avoid higher education. Parent's opinion about expensiveness of higher education, family guidance and out of reach to counselling for higher education in rural girls and their parents are also hindrance factors. Minimizing the above mentioned problems, girls in rural area girls may achieve success in their higher education. Proper guidance and counselling to illiterate parents, fees concessions and other facilities offered for the rural girls regarding higher education and career development may also be key stone in carrier of girl and their higher education.

SCREENING OF *AGERATUM CONYZOIDES* LEAF EXTRACTS AS WOUND HEALING AGENT

Amrita Veen and Prabhat*

Department of Biotechnology, Bhagwant University, Ajmer, Rajasthan

*Department of Microbiology, Chaman Lal Mahavidyalya Landhaura Haridwar

Corresponding Author Email Id: amritaveen@gmail.com

ABSTRACT

*Several bacteria have now become antibiotic-resistant. This increases the demands for new and effective antibacterial agents with broad spectrum activities from natural sources. The petroleum ether, chloroform, methanol and aqueous extracts of the leaves of *Ageratum conyzoides* Linn. (Asteraceae) were evaluated for their wound healing activity in rats using excision (normal and infected) wound models respectively. The wound healing effect of the *Ageratum conyzoides* methanolic gauze soaked by the extracts and were determined histologically after 10 days. The *Ageratum* sections showed fewer inflammatory cells and more fibrosis than controls.*

Key words: Antibacterial-agent, wound healing activity, *Ageratum conyzoides*, methanolic extract

INTRODUCTION

Wounds arise from injury by various agents and Healing of wounds is an important part of the reparative process, Oladejo et al 2003. *Ageratum conyzoides* Linn is an annual herbaceous plant with a long history of traditional medicinal uses in several countries of the world. Its commonly known as bull goat weed plant and belongs to family *Asteraceae*, Agrawal 1981, Wagner et al, 1999, Chopra et al 2002. Overuse of antibiotics has become the major factor for the emergence and dissemination of multi-drug resistant strains of several groups of microorganisms, Prabhat et al 2005. Thus, in the light of the evidence of rapid global spread of resistant clinical isolates, the need to find new antimicrobial agents will of paramount importance, Chah et al 2006 and Onuoha et al 2013. Wound healing is the process of repair that follows injury to the skin and other soft tissues. Following injury, an inflammatory response occurs and the cells below the dermis (the deepest skin layer) begin to increase collagen (connective tissue) production. Later, the epithelial tissue (the outer skin) is regenerated. There are three stages to the process of wound healing: inflammation, proliferation, and remodeling, Almagboul, et al 1985, Abo et al 1996, Garg and Paliwal 2011. The present study was conducted to evaluate the wound healing activity of petroleum ether, chloroform and methanol extracts of leaves of plants of *A. conyzoides* collected from Mansa (Punjab) and Mandi (H.P.)

MATERIALS AND METHODS

Fresh leaves were collected from young matured trees and authenticated by the taxonomists of the Botanical Survey of India, Dehradun . After authentication, the plant materials were collected in bulk, washed under running tap water to remove adhering dirt followed by rinsing with distilled water. The plant material was dried under shadow and crushed to small pieces using pestle and mortar and then powdered in an electric grinder. The extracts were prepared by immersing 500 gm of dried powdered material in 1500 ml of solvents i.e. petroleum ether, chloroform, methanol and water using the Soxhlet apparatus. Crude extracts were obtained by removing the solvent in vacuum evaporator at 30°C and stored in sterile bottles at 4°C until further use Prabhat *et al* 2005. Animals were anesthetized prior to and during creation of the wounds with 1 ml of intravenous ketamine hydrochloride (10 mg/kg). The rats were inflicted with excision wounds as described by Morton and Malone 1972 and Kulkarni1993. An impression was made on the dorsal thoracic region 1 cm away from vertebral column and 5 cm away from ear on the anaesthetized rat. The dorsal fur of the animals was shaved with an electric clipper and the anticipated area of the wound to be created was outlined on the back of the animals with methylene blue using a circular stainless steel stencil. A full thickness of the excision wound of circular area of 500 mm² and 2 mm depth was created along the markings using toothed forceps, scalpel and pointed scissors. Haemostasis was achieved by blotting the wound with cotton swab soaked in normal saline. The entire wound was left open 30. All surgical procedures were performed under aseptic conditions. *(The Institutional Animal Ethics Committee approved the use of animals for the present study the clearance no 1025/c/07/CPCSEA).

The control group animals (Group I) were treated with the vehicle (Simple ointment I. P.), the positive control (Group II) was applied with 0.2% w/w nitrofurazone in Simple ointment I. P. Other groups of animals were treated with the following: petroleum ether, chloroform, methanol or aqueous extracts of *A. conyzoides* at a concentration of 10% w/w in Simple ointment I. P. in a similar manner. The wound closure rate was assessed by tracing the wound on days 1, 4, 6, 8, 11, 14 and 16 post wounding days using transparent paper and a permanent marker. The wound areas recorded were measured using graph paper. The percentage of wound healing was calculated of original wound size for each animal of group on predetermined days i.e. 1, 4, 6, 8, 11, 14 and 16 days post-wounding for final analysis of results. Changes in wound area were calculated, giving an indication of the rate of wound contraction. The period of epithelialisation was calculated as the number of days required for falling of the dead tissue remnants without any residual raw wound, Oladejo et al 2003 and Onuoha et al 2013 and Amrita Veen 2018.

RESULTS AND DISCUSSION

The petroleum ether, chloroform, methanol and aqueous extracts of the leaves of *Ageratum conyzoides* were evaluated for their wound healing activity in rats using excision (normal and infected) wound models. The effects of test samples on the rate of wound healing were assessed by the rate of wound closure, period of epithelialisation, wound breaking strength, weights of the granulation tissue, determination of hydroxyproline, super oxide dismutase (SOD), catalase and histopathology of the granulation tissues. Nitrofurazone (0.2% w/w) in Simple ointment I. P. was used as reference standard for the activity comparison, Bhattarai NK 1997, Amrita Veen 2018.

Group	Treatment	Concentration	Percentage (%) wound closure.						Period of epithelialization (No. of days)
			4th days	6th days	8th days	11th days	14th days	16th days	
I	Control	-	23.52±1.21	37.72±1.58	51.92±1.71	71.28±2.23	79.24±1.18	83.56±1.03	23.16±0.71
II	Nitrofurazone	0.2% w/w	48.53±2.87*	74.23±3.32*	84.8±1.26**	96.54±1.29**	100±00**	-	23.16±0.71
III	Pet ether extract	10% w/w	28.36±1.65	44.45±2.88	84.8±1.26**	72.56±1.23	81.79±1.36	83.25±1.4	21.16±0.99
IV	Chloroform extract	10% w/w	26.12±1.64	46.47±2.64	60.54±2.57	78.93±2.77*	88±1.77**	90.13±1.83	9.5±1.25*
V	Methanol extract	10% w/w	29.88±1.66	55.29±1.82*	82.08±1.6**	92.96±1.14**	97.59±1.39	100±00**	16.5±0.86**
VI	Aqueous Extract	10% w/w	29.16±2.66	48.48±3.35*	65.12±3.96*	82.35±2.22**	92.35±1.4**	94.9±1.09**	15.83±1.02*

Values are expressed as mean ± S.E. (n = 6). All columns are significant using ANOVA.

* P<0.05, ** P<0.01 when compared to control; Dunnet's t-test.

Table 1: Effect of various extracts of *A. conyzoides* leaves on percentage (%) wound closure (Excision Wound Model)

The results of the study revealed that the animals treated with methanol and aqueous extracts of *A. conyzoides* showed faster rate of wound healing compared to other extracts under study. The chloroform extract of the selected plants also produced promising results but the effects are seen to be of lesser extent than the corresponding methanol and aqueous extracts. The petroleum ether extract did not produce significant results. The present work justifies the use of the leaves of *A. conyzoides* for wound healing activity as claimed in the folklore literature.

The results of the present study revealed that, animals treated with methanol and aqueous extracts of *A. conyzoides* showed faster rate of epithelialization in excision wound model compared to other extracts under study. More than 90% wound healing was recorded in the extract, whereas 72% healing was observed in the distilled water-treated group (. Reddy *et al*

2002.,Almagboul et al., 1985). Methanolic extract was found to have wound healing property (Chah et al., 2006). The chloroform extract of the selected plants also produced promising results but the effects are seen to be of lesser extent than the corresponding methanol and aqueous extracts. The petroleum ether extract of the plant materials did not produce significant results. The wound healing effects of the chloroform, methanol and aqueous extracts may be attributed to the presence of phytoconstituents like alkaloids, triterpenoids, tannins and flavonoids in the extracts which are known to promote the wound healing process mainly due to their antimicrobial property. Flavonoids and triterpenoids are also known to promote wound-healing process mainly due to their astringent and antimicrobial property, which seems to be responsible for wound contraction and increased rate of epithelialisation Durodola et al 1977.

CONCLUSION

The extracts of leaves of *A. conyzoides* have high potential as wound healing agent. The wound- healing property of the methanol and aqueous extracts may be attributed to the phytoconstituents they contain, which may be either due to their individual or additive effect that fastens the process of wound healing. The methanol extracts of each selected plant materials were found to possess better wound-healing property over other extracts. At this stage, it is difficult to say which component(s) of the extracts are responsible for the wound healing activity. However, further phytochemical studies are needed to isolate the active compound(s) responsible for these pharmacological activities.

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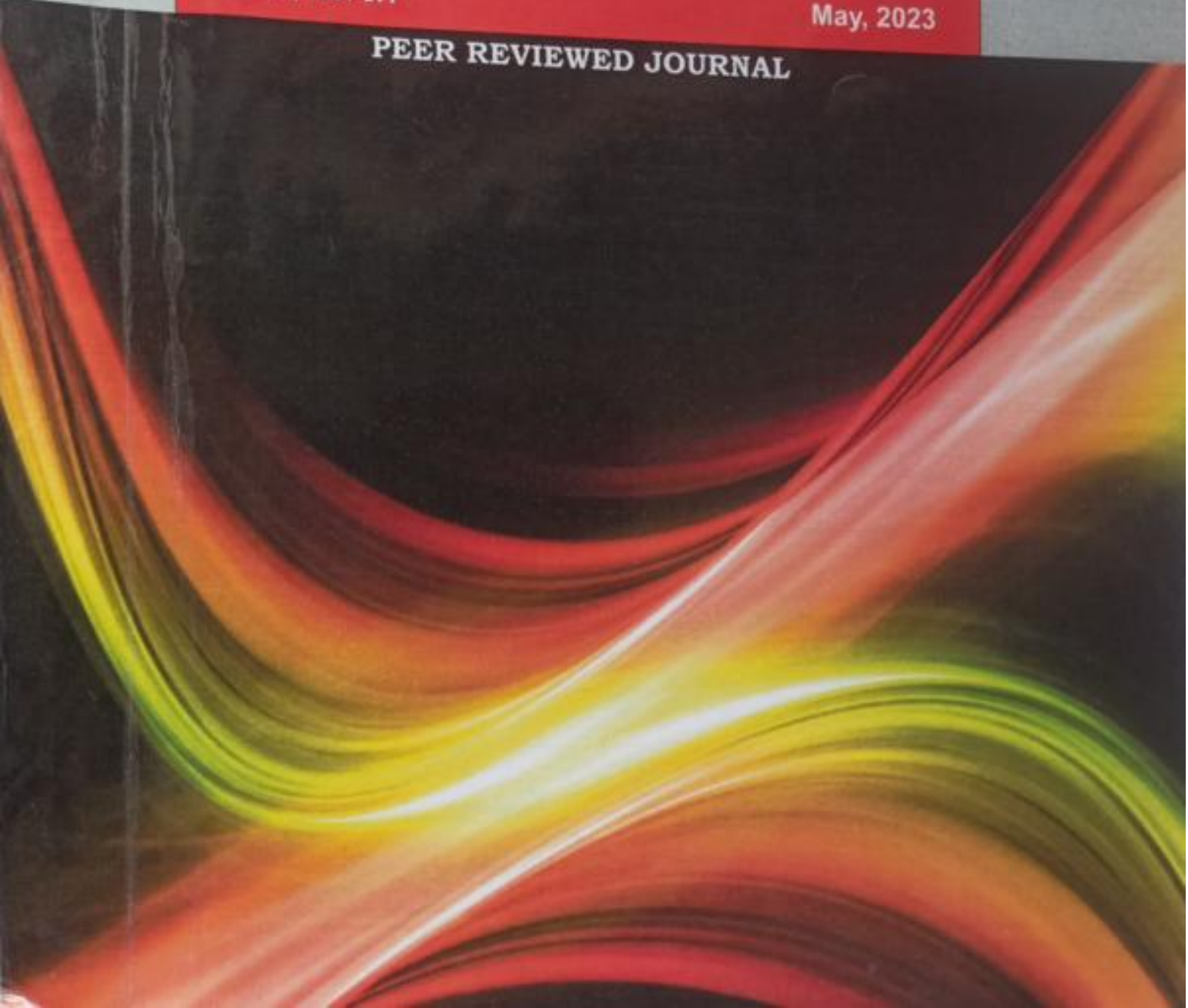
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Biological Diversity and Traditional Knowledge

Dr. Richa Chauhan

Assistant Professor, Deptt. of Botany, Chaman Lal Mahavidhyalaya, Landhora, Haridwar Distt.

Abstract

The recent decade has witnessed many landmark observations, which have added to the scientific credentials of Ayurveda. It is however believed that instead of a retrospective approach of looking into Ayurveda through scientific reappraisals, a prospective approach through a primary understanding of Ayurveda followed by a search into scientific linkage would be more appealing. This article brings the simplified yet scientific decoding of the core concepts of Ayurveda that form the framework of this ancient science of health.

Keywords: Ayurveda, Science, Biodiversity.

Introduction

India with a total geographical area of 329 million hectares is the second-largest nation in Asia and seventh in the world. The great diversity of habitats due to varied climates and altitudes certified India's rich and diverse flora. India is fortunately endowed with a wide range of agro-climatic conditions that support the growth of an equally diverse range of plant and animal species. But the loss of Biodiversity is a very serious problem for the country. Several species of a living organisms are disappearing and biodiversity is more threatened now than at any time in the past. It is generally believed that deforestation is the main cause behind the current crisis and along with this global climatic change, shifting cultivation, soil erosion, unchecked expansion of urban areas, etc are the other main causes of this problem. The current rate of extinction demands immediate concerted efforts for the conservation of biodiversity for future generations. Conservation of biodiversity could be accomplished using both in-situ and ex-situ methods. It has been well-recognized that valuable and productive biological resources are crucial for sustainable economic development. Rural populations always believe that biodiversity is important for their livelihood and survival. Protecting and conserving biodiversity is our interest and industries such as pharmaceuticals, cosmetics, pulp and paper, construction, Agriculture and agro-industries, Horticulture and waste treatment are dependent on biological resources. Between 70-80% of the population in developing countries relies on plants as the only source of medicine.

Heritage and Traditional Knowledge

Heritage is everything that defines the distinct identities of our people. This is bestowed on us by our ancestors and endowed to us by nature. It includes our social, political, cultural, and economic systems and institutions as well as our belief systems, principles and moral values, and our customary laws and norms. Heritage includes traditional knowledge which is the creative production of human thought and craftsmanship, language and cultural expressions which are created, acquired, and inspired such as songs, dances, stories, ceremonies, symbols and designs, pottery, artworks, scientific, agricultural, technical and ecological knowledge and skills required to implement this knowledge and technologies. Heritage also includes what we inherited from nature such as the natural features in our territories and landscapes, biodiversity which consists of plants and animals and microorganisms, and the various diverse ecosystems which we have nurtured and sustained.

Traditional Knowledge and Communities

Biological resources and related traditional knowledge are often of great commercial value to business corporations in developing commercial products. Corporations often want to

acquire IPRs related to biological resources and traditional knowledge as a way of maximizing their income generation. Traditional communities are a broad term that refers to communities whose way of life is largely shaped by generations of their ancestors. They are distinct from urban or fast-changing societies and lifestyles, maintaining a shared body of cultural, environmental, economic, and family customs that are based on traditional occupations, knowledge, values, and social hierarchies. Traditional community livelihoods are usually based on natural resources. Traditional communities could include farming or fishing communities, forest-dwelling communities, indigenous people, nomadic communities, etc.

Importance of Traditional Knowledge

Traditional knowledge plays an important role in the conservation of biodiversity and its traditional uses:

- Indian Systems of Medicine (Ayurveda, Siddha, Unani) are part of the official healthcare system in India and depend on a diversity of biological resources and traditional knowledge.
- Farmers and livestock keepers have improved and nurtured diverse varieties of crops and domesticated animals over generations. This has been invaluable for food security and in providing clothing, healthcare and shelter.
- All over India local communities have independently conserved wild areas, including natural ecosystems, sometimes deemed to be sacred e.g. 'sacred groves', some thousands of years old, dedicated to a local deity. Traditional knowledge is therefore very valuable in a range of sectors. Industries have often freely used traditional knowledge for developing commercial products, usually without the consent of, or without acknowledging, the original holders of the knowledge. The conflict arises when such knowledge is commercially used without consent, or when IPRs and exclusive rights are claimed over such resources/knowledge.

CBD and Traditional Knowledge

The convention on Biological Diversity (CBD) is the principal international instrument that explicitly acknowledges the role of traditional knowledge, innovations and practices of indigenous and local communities tangible and visible traditional lifestyles in biodiversity conservation and its sustainable development. The scope of the traditional knowledge covered by the convention, however, is confined to genetic materials. It is a framework convention, setting out general principles that the parties agree to be guided by the work towards a long-term process.

Biopiracy

Biopiracy is a violation of the rights of traditional communities over their biological resources and related knowledge. The implications of biopiracy are economic as well as ethical: Obtaining IPRs usually patents or Plant Breeders' Rights to gain monopoly control over biological resources, related traditional knowledge, or commercial products based on these resources or knowledge, without the consent of, or any benefits going to, the original holders of the resources/knowledge. The original holders of biological resources and related traditional knowledge do not get any share in the profits made from commercializing the products based on their resources/ knowledge. They also do not get any recognition for nurturing and developing the resources/knowledge in the first place. Once an IPR is acquired by the biopirate, the original holders of a biological resource or related traditional knowledge are barred from making any commercial use of the IPR-protected knowledge or resource. This could lead to a situation where, for example, a community is not allowed to sell an indigenous product that is covered by an IPR. The IPR-holder dictates the terms of use of the IPR-protected resource/knowledge, which could mean that traditional communities who are the original holder could lose access to, or control over, their resource/knowledge. 5 The investigation of biological resources for new commercial uses has been an inherent part of global economic and

social development. The problem arises when bioprospecting leads to biopiracy or environmentally unsustainable practices such as collecting huge quantities of samples from an area. The term 'bioprospecting' has acquired strong negative connotations and is often used in a sense that implies that bioprospecting necessarily leads to biopiracy. Some traditional communities may also find bioprospecting offensive because it seeks to commercially exploit biological resources and related traditional knowledge which are sacred, or which support their livelihoods.

Traditional Communities and Vulnerability to Biopiracy

Traditional communities are especially vulnerable to biopiracy because Traditional communities do not consider their seed, crop and livestock varieties forest and marine resources and related knowledge as private property, but as communal property, Godgiven, or passed down by generations of their ancestors who have nurtured and developed the natural resources and related knowledge. For most traditional communities the concept of private ownership of a resource like a seed variety is completely alien, thus hindering a full appreciation of the threats and implications of an IPR regime. Traditional communities are vulnerable because of social hierarchies and low levels of awareness and literacy. The law and existing IPR regime are ignorant and even if the law is known, traditional community members are usually powerless to demand its enforcement to prevent biopiracy or get some form of benefit-sharing agreement, due to factors such as illiteracy, low social status and lack of financial resources. The norms and principles of international IPR regimes have developed in a way that has enhanced the vulnerability of traditional communities to biopiracy.

Traditional Knowledge and Agriculture

Traditional knowledge transforms Biodiversity into Bioresources. Biodiversity and associated traditional knowledge are an integral strength of today's developing countries, particularly in the areas of agriculture and Horticulture. It holds great potential all over the world that is increasingly being sensitized to Traditional knowledge. Indigenous men and women over generations have bred races of food, cash crops and Horticultural crops out of wild plants of the forests called landraces or local or indigenous varieties and these are the basic foundations of modern plant breeding and global food security. Indigenous farming communities have also identified and managed a series of genes through selection and cross-breeding. These genes have potential traits of pest(s) and disease(s) resistance, drought tolerance, high salt tolerance, cold tolerance, tolerance to waterlogging etc. To develop a crop that can withstand global warming and climate changes across agricultural zones, International scientists visit tropical regions for crop varieties that are drought tolerant/resistant and for this purpose they depend largely on traditional knowledge and local farmers. Breeding and selection process with local varieties, they will be able to develop a potential and high-yielding crop variety with combinations of traits for tolerance to drought or salinity or resistance to pest(s) and disease (s).

Traditional Knowledge and Health Care

Traditional knowledge is a valuable system continuously developed over generations by tribal and rural communities in different parts of the world and transmitted from one generation to the next generation in oral form. The knowledge covers primarily human and animal health besides the traditional knowledge pertaining to the building of houses, food and agriculture, textiles, handicrafts, soil conservation, moisture conservation and other natural resources management. 7 In India a well-developed system using plants for health flourished in the Vedic period around 3000 BC. Due to its strong cultural roots, the Indian system of medicine is still vibrant and dynamic and central core for providing the health, security and livelihood needs of the bulk of India's people, particularly the rural and tribal communities.

Accordingly to World Health Organization (WHO) estimated around 80% of the world's population have used indigenous systems of healthcare at one time or the other. In recent years herbal or alternative medicines based on Traditional Knowledge have gained acceptance across the world. Indian systems of Medicine are the traditional systems of health care practiced in India for over several centuries and are still a viable living tradition of our people. Ayurveda, Unani, Siddha, Yoga, and Naturopathy are the main traditional systems but it will not be surprising to find the roots of other alternative therapies like Aroma, music, photo, leech etc in traditional healthcare systems practiced in India.

International Trade of Medicinal Plants

- Annual International trade in Medicinal and aromatic plant material is 400,000 to valued at 1.1 to 1.3 billion US dollars in 1997. This figure is an increase of one-third compared to 1995. Now, this would have increased considerably.
- China is the leading country with an export of botanical drugs of around 140,000 t/year. India ranks second in export in terms of volume around 35,700 t/year but only in sixth position in terms of the value of around 5,16,110,000 US dollars. INTERNATIONAL MARKET FOR HERBAL MEDICINES Annual global sales of medicinal products derived from genetic resources is around 700 billion US dollars the global market for herbal medicine alone has reached 43.8 billion US dollars with an annual growth rate between 5 and 15%. It is expected to reach 5 trillion US dollars by 2002. China, the leader in the field generated an income of about 5 billion US dollars in 1999 from the International market and the global exports are around 10 billion US dollars which means China could snatch 50% of global exports. Accordingly to WHO estimates, the European market in 1999 was calculated to be 11.9 billion US dollars with which Germany accounts for 38%, France for 21% and the UK for 12%. The Worldwide Fund for Nature statistics has shown that the European Union imported over 100,000 tonnes of plant material in 1990, of which 12% were from India.

Biodiversity and Bioprospecting

Bioprospecting is the exploration of biodiversity for commercially valuable biological and genetic resources. The term specifically refers to the investigation of biological resources for new commercial uses. A range of commercial sectors bases their activities on bioprospecting, such as the pharmaceutical, biotechnology, seed and crop, horticulture, cosmetics and food sectors. Bioprospectors source their material in two ways: In addition to biological resources, related traditional knowledge can also be commercially lucrative. In a major global study in 1985, a total of 122 plant-derived pure compounds were identified as being in use as drugs around the world. The medical use of 80% of these compounds correlated with traditional medical use. It was also discovered that these compounds were derived from only 94 species of plants. Given that approximately 250,000 higher plant species exist, it is likely that there are many more medical uses of plants remaining to be discovered. It is believed by many scientists that the most effective way to do so would be to screen plants based on traditional medical use. However, this remains a subject of debate, and it is also argued that a random approach to plant screening and drug discovery is as effective as an approach based on traditional knowledge. Traditional knowledge is used in different ways by different commercial sectors - it can be used to guide the initial discovery and identify new leads, or to guide subsequent research after a useful compound has been identified. Traditional knowledge is usually acquired through published academic research or other secondary sources, rather than directly through field studies.

Protection of Traditional Knowledge

The protection of traditional knowledge innovations and practices of indigenous and local communities has received increasing international attention since the adoption of the CBD

in 1992. It is now a well-documented fact that TK plays an important role in the global economy and is valuable not only to those who depend on it in their daily lives but also to modern industry and agriculture. Most traditional societies depend on this knowledge for their food and healthcare needs. There are no reliable estimates of the total contributions of TK associated with traditional crop varieties (landraces) to the global economy, but the contributions of TK in the development and growth of pharmaceuticals and biotechnology-based industries are widely reported. A recent study by the Organization for Economic Co-operation and Development (OECD) has outlined the relative importance of biotechnology patent activity by concluding that the absolute number of biotechnology patents issued by the United States Patent Office and the European Patent Office has grown substantially in comparison with the total number of patents. Traditional knowledge associated with a biological resource is an intangible component of the resource itself. TK has the potential of being translated into commercial benefits by providing valuable leads for the development of useful products and processes. The valuable leads provided by TK save time, money and investment of modern biotech firms into any research and product development. It is estimated that a hit rate of 80 percent or more can be achieved in developing medical drugs where the screening of plants is limited to species used by indigenous communities. 10 The issue of protection and preservation of TK at the international level has been brought to the forefront at the instance of developing countries because of different concerns and perspectives. A large number of countries rich in genetic resources and TK and folklore believe that the traditional communities have been deprived of the benefits from the use of their knowledge, innovations and practices which have been monopolized and used by others, mainly by major companies, without their authorization and without acknowledging or rewarding them for their knowledge. Consequently, there is a perceivable asymmetry between the benefits obtained by the companies that commercial exploitation of this knowledge and the lack of benefits for its true holders. Developed countries have a moral obligation to ensure that indigenous/local peoples receive a fair and equitable share of benefits arising out of the use of their TK and the commercialization of genetic resources. Moreover, if the knowledge assets of developed countries are to be protected through an international agreement such as the TRIPs Agreement, it is only fair and equitable that the knowledge assets of developing countries also be protected similarly. It is indeed the responsibility of the international community to create an egalitarian system for the availability, acquisition, maintenance and enforcement of intellectual property rights. An international regime would give holders of TK control over the use of their knowledge assets and the capacity to ensure that they are not exploited commercially. There has been an increasing number of reported cases of misappropriation and commercial exploitation of this knowledge under patents and other IPRs. In many of these cases, claims in the patents on plants and their genetic resources are not fundamentally different from the practices applied by the traditional communities in the utilization of these plants as food, cosmetics or traditional medicines. Some of these cases have been successfully challenged, such as in the cases of neem and turmeric. This raises an important issue of the legal protection of our TK. 11 The protection of TK is important for the conservation and sustainable development of the environment, as much of the world's crop diversity has been conserved and preserved by indigenous/local peoples, which has helped in the protection and conservation of biodiversity. Their knowledge is central to the conservation and preservation of GRs and other bio-resources. Most of these communities live in areas where the vast majority of the world's plant genetic resources (PGRs) are found. There is also the danger that the biological resources increasingly subjected to IPRs and patents are likely to be plucked to extinction, which raises concerns over their exhaustibility and loss of habitat beside the loss of lifestyles and livelihoods

to indigenous communities that have nurtured and used these resources for generations. This may also ultimately affect food security. International recognition and protection of TK would help in the protection/conservation of the environment and the management of biodiversity. The movement of traditional communities from their natural habitat and their increasing attraction to modern society has also raised concerns about the protection of TK, which will lead to its extinction as well will affect biodiversity. Lack of motivation in the younger generation to learn the traditions is another reason for the protection of TK. There is a fear that TK will suffer extinction with the death of the elders of the community. TK is generally viewed as being inferior since it does not conform to the accepted scientific methods of learning in the context of the modern approach to science. Only by concerted efforts to protect it and accord it due respect can this trend be stopped. There is also a need to enable these communities to harness TK for their economic uplift and growth.

TRADITIONAL KNOWLEDGE AND BENEFIT SHARING In India, there is an example of benefit-sharing in the case of Arogyapacha. During an ethnobotanical expedition in the tribal region of the Western Ghats in the state of Kerala, a team of scientists encountered the Kani practice of eating seeds of the wild plant *Trichopus zeylanicus*, and this gave them energy. The Kani tribe has used the plant, locally called 'Arogyapacha', for several years to help them through periods of physical exertion. Arogyapacha was investigated and finally, a standardized drug based on the Kani knowledge of Arogyapacha was developed. The drug called "Jeevani" was released for commercial production in 1995. While transferring the technology for the production of the drug to a pharmaceutical firm, the Tropical Botanic Garden and Research Institute (TBGRI) agreed to share the license fee on a 50:50 basis. In addition to this, 2 percent of the royalties from sales is to go to the tribal community. The Kani's have since then been helped to register a trust. This trust is fully owned and managed by the Kani tribe. About 60 percent of the 2,000 Kani families of Kerala are now members of this trust. According to the trust's rules, the license fee and royalties received on account of the drug "Jeevani" will be in the form of the fixed asset of the trust and only the interest accrued from this amount can be used by the Kanis for welfare activities. This model was developed over for about 12 years from 1987 to 1999 in consultation with the Kani tribe.

PROTECTION FOR IK IN INDIAN ACTS:

Some of India's new laws have implications for IK and bio-resources. The following are given below:

- The Geographical Indications of Goods - Registration and Protection Act, 1999.
 - The Protection of Plant Varieties and Farmer's Rights Act, 2001.
 - The Biological Diversity Act, 2002.
 - The Patent (Second Amendment) Act, 2002.
- 13 Traditional Knowledge Digital Library (TKDL) TKDL is a collaborative project between the National Institute of Science Communication and Information Resources (NISCAIR), Council of Scientific and Industrial Research, Ministry of Science & Technology and Department of AYUSH, Ministry of Health and Family Welfare, which is being implemented at NISCAIR. An interdisciplinary team of Traditional Medicine (Ayurveda, Unani, Siddha, Yoga) experts, patent examiners, IT experts, scientists and technical officers are involved in the creation of TKDL for Indian Systems of Medicine. The Project TKDL involves documentation of the knowledge available in the public domain on traditional knowledge from the existing literature related to Ayurveda, Unani and Siddha, in digitized format in five international languages which are English, German, French, Japanese and Spanish. Traditional knowledge Resource Classification (TKRC), an innovative structured classification system for systematic arrangement, dissemination and retrieval has been evolved for about 10,500 sub-groups against one group in International Patent Classification (IPC), i.e. AK61 K35/78 related to medicinal plants.

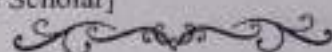
Indian Systems of Medicine, Ayurveda

TKDL integrates widely scattered and distributed references on the Traditional knowledge systems in Ayurveda of India in a retrievable form. TKDL acts as a bridge between the traditional and modern knowledge systems, a bridge between the knowledge contained in an old Sanskrit Sloka and the computer screen of a patent examiner thus breaking the language and format barrier of the prior art available in authoritative textbooks of Ayurveda in Hindi and Sanskrit. TKDL is not a prior art. 36,000 formulations are transcribed from 14 Ayurvedic texts and presented in the digital library based on well-tested Ayurvedic principles. Ayurveda and other Indian Systems of Medicine are formal systems of traditional 14 knowledge. There are 3,67,528 registered practitioners in Ayurveda, 41,221 in Unani, 12,915 in Siddha and 388 in Naturopathy and annually there are 7,070 graduates and 645 post-graduates in Ayurveda, 1280 graduates and 35 post-graduates in Unani, 150 graduates and 70 post-graduates in Siddha were trained professionally to take up the practice. CONCLUSION: The intrinsic value of Biological diversity and the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values and its components are to be taken care of properly for the better management of biological resources and biodiversity for the welfare of human beings for better, and healthier as well as peaceful living on earth. Besides law enforcement forces and regulations of the Governments, it is always better to involve the people in a "Participatory Mode" including Tribal people, farmers, ecologists, and illiterate villagers, for the conservation and protection of the Biodiversity wealth of our great Nation. Awareness creation among people, school children, students and teachers in colleges, Universities is very important to conserve biodiversity wealth. Participatory mode of involvement of the people at the ground level to acquire more knowledge about biodiversity conservation will help to maintain and sustain the bioresources and biodiversity. The involvement of local people and their willing participation alone could save the national wealth of biodiversity. It is difficult to solve and manage and conserve the biological diversity by the State Government or Central Government alone but the people of our great nation have to be aware of the natural biodiversity wealth of our country and they should take all measures to conserve and protect our rich biodiversity not only for better living of our present generation but also for our future generations.

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The Origin of the Word Algebra in Ancient India

Dr. Tarun Kumar Gupta

Department of Mathematics, Chaman Lal Mahavidyalaya Landhaura, Haridwar (U.K)

Dr. Ajay Kumar

Department of Mathematics, Shaheed Srimati Hansa Dhanai Government Degree College, Agrora (Dhamandal), Tehri Garhwal, Uttarakhand

Abstract

Ancient algebra plays an important role in modern education as it develops the thinking skills, imagination power and also sharpens brain. Ancient algebra is boon for computer programming and algorithm. It also helps to develop new facts in science and technology. It should be involved in modern education then only it will correct to say relevant.

Keywords: Vedic text, sutras, Colobrook text.

Introduction

The word algebra was adopted in the English language in the 16th century. It became accepted in 1663. According to dictionary of word origins: when it first entered the English language, it was used as a term for setting of broken bones and sometimes even for fracture. The original literal meaning of the Arabic term *al-jabr*, the re-uniting of broken bones from the verb *jabara*. The anatomical connotation was adopted when the word was borrowed as *Algebra* into Spanish, Italian and Medieval Latin from one of which English acquired it [2][3].

The Oxford Dictionary states algebra as *Arab'al-jabr* 'the reunion of broken parts'. In 1400 Lan Franc used the word *al-jabr* for surgical treatment of fractures, bone setting in his book science of surgery. According to Newman The word Algebra is the European corruption of an Arabic phrase which means restoration and reduction- the first word referring to the fact that some magnitude may be added to or subtracted from both sides of the equation and the last word the process of simplification. It is well known that Europeans got the first taste of Algebra from books by Arabian authors. The Arabs transmitted Hindu mathematics and astronomy to the West. Indian astronomy became known to Arab only through *Br'ahamsphu.tasiddh'anta* (c. 628). A scholar from Ujjain was invited at his initiative in 770 A.D. to explain Indian astronomy. Through the Khalif's orders Brahmagupta's work was translated into Arabic by Al Fazari and named *Sind Hind*. It is thus Arab became cognizant of Indian astronomy.

According to Dr. E. C. Saha ([502] p 92), Brahmagupta holds a very remarkable place in the history of Eastern civilization. It was he who taught the astronomy to Arabians before they became acquainted with Ptolemy; for the famous *Sind Hind* of Arabian literature, which though frequently mentioned, has yet not been brought to light is a translation of his *Khan. d. akh'adyaka* (c. 665 A.D.). Brahmagupta's book *Br'ahamsphu.tasiddh'anta* is the original and primary source of Algebra for Arabian authors. However, to explain the situation we have to start from the famous mathematician and astronomer Aryabhat.a (476-550), for the first time indeterminate equation of first degree [5]. Aryabhat.a introduced

Brahmagupta wrote *Br'ahamsphu.tasiddh'anta* in 628 A.D. At that time the Hindu term *B'ijagan.ita* had not been adopted nor had the word Algebra appeared in the English language. Brahmagupta wrote the Arithmetic portion under the title

Gan.ita'adhy'aya and he did not use the term *P'at'igan.ita* which became popular in later days. According to tradition of those times, *Gan.ita* includes matter pertaining to arithmetic problems on mixtures, plane figures, shadows, series piles and excavations. The word *ku.t.taka* fascinated him and he named the chapter *Ku.t.takadhya*. It is



बच्चों के व्यक्तित्व विकास में परिवार की भूमिका एक समाजशास्त्रीय अध्ययन

नवीन कुमार

सहायक प्रोफेसर, समाजशास्त्र विभाग, चमनलाल महाविद्यालय, लंदौरा, हरिद्वार।

सार :-

यह शोध पत्र भारतीय संदर्भ में बच्चे के व्यक्तित्व विकास को आकार देने में परिवार की महत्वपूर्ण भूमिका की पड़ताल करता है। यह पारिवारिक वातावरण के विभिन्न पहलुओं की जांच करता है, जिसमें माता-पिता की शैली, सांस्कृतिक मूल्य, समाजीकरण प्रथाओं और भाई-बहन के रिश्ते और बच्चे के व्यक्तित्व लक्षणों और व्यवहारों पर उनका प्रभाव शामिल है। यह पेपर बच्चों में सकारात्मक व्यक्तित्व विकास के पोषण में परिवारों द्वारा सामना की जाने वाली चुनौतियों और अवसरों पर प्रकाश डालते हुए, पारंपरिक भारतीय पारिवारिक संरचनाओं और समकालीन भारत में विकसित सामाजिक-सांस्कृतिक गतिशीलता के बीच परस्पर क्रिया पर प्रकाश डालता है। मौजूदा शोध का विश्लेषण करके और वास्तविक जीवन की केस स्टडी को शामिल करके, यह पेपर परिवार और बच्चे के व्यक्तित्व विकास के बीच के जटिल संबंधों में अंतर्दृष्टि प्रदान करता है, भारतीय संदर्भ में बच्चे के पालन-पोषण के लिए एक समग्र दृष्टिकोण की आवश्यकता पर बल देता है।

पृष्ठभूमि और महत्व :-

परिवार को व्यापक रूप से एक महत्वपूर्ण सामाजिक संस्था के रूप में मान्यता प्राप्त है जो बच्चे के व्यक्तित्व के विकास में महत्वपूर्ण भूमिका निभाता है (रिम्थ, 2010)। यह प्राथमिक संदर्भ के रूप में कार्य करता है जिसमें बच्चे अपने बारे में, दूसरों के बारे में और अपने आसपास की दुनिया के बारे में सीखते हैं (ब्रोकनब्रेनर, 1979)। भारतीय संदर्भ में, जहां परिवार के बंधन और मूल्य महत्वपूर्ण महत्व रखते हैं, व्यक्तित्व विकास में परिवार की भूमिका को समझना अत्यंत महत्वपूर्ण है (देसाई और दास, 2003)।

पारंपरिक भारतीय परिवार संरचना को संयुक्त या विस्तारित परिवारों की विशेषता है, जहां कई पीढ़ियां एक साथ रहती हैं और जिम्मेदारियां साझा करती हैं (काकर, 1981)। हालांकि, शहरीकरण, औद्योगिकरण और वैश्वीकरण की प्रक्रिया के साथ, हाल के दशकों में भारत में परिवारों की गतिशीलता में काफी बदलाव आया है (देशपांडे, 2009)। सांस्कृतिक और सामाजिक प्रभावों के साथ इन परिवर्तनों का बच्चे के व्यक्तित्व विकास पर प्रभाव पड़ता है (कपड़िया, 2012)।

अध्ययन का उद्देश्य :-

इस शोध पत्र का उद्देश्य भारत में बच्चे के व्यक्तित्व विकास को आकार देने में परिवार की भूमिका का पता लगाना और उसकी जांच करना है। यह एक बच्चे के व्यक्तित्व लक्षणों और व्यवहारों के निर्माण पर पारिवारिक संरचना, पालन-पोषण की शैलियों, सांस्कृतिक मूल्यों, समाजीकरण प्रथाओं और सहोदर संबंधों के प्रभाव की जांच करना चाहता है। इन गतिकों को समझकर, अध्ययन भारतीय संदर्भ में बाल मनोविज्ञान पर मौजूदा ज्ञान में योगदान करने का इरादा रखता है और नीति निर्माताओं, शिक्षकों और मानसिक स्वास्थ्य पेशेवरों के लिए अंतर्दृष्टि प्रदान करता है।

सैद्धांतिक ढांचा :-

व्यक्तित्व विकास में परिवार की भूमिका अनेक सैद्धांतिक दृष्टिकोण व्यक्तित्व विकास में परिवार की महत्वपूर्ण भूमिका पर जोर देते हैं। मनोगतिकी सिद्धांतों का प्रस्ताव है कि परिवार के भीतर शुरुआती अनुभव, विशेष रूप से प्रारंभिक चारों वर्षों के संबंधों, बच्चे के व्यक्तित्व को जमान और पारंपरिकरण (Freud, 1905) शैली



गीना देवी शोध संस्थान

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राष्ट्रीय शिक्षा नीति 2020 और भारतीय शैक्षणिक पुस्तकालय

डॉ. पुनीता शर्मा

असिस्टेंट प्रोफेसर, (पुस्तकालय विज्ञान विभाग), शमन हाल महाविद्यालय, लखीरा, हरिद्वार।

संक्षेप :-

शिक्षा प्रणाली एवं पुस्तकालय प्रणाली दोनों ही एक सिक्के के दो पहलू हैं। शिक्षा प्रणाली में आवश्यक सुधार लाने एवं उसकी स्वर्धकता को बढ़ाने के उद्देश्य से सरकार ने पिछले 100 वर्षों में अनेक शिक्षा आयोग गठित किए। 1988 में विश्वविद्यालय अनुदान आयोग ने INFILIBNET प्रोग्राम को विश्वविद्यालय, महाविद्यालय तथा अन्य हाई संस्थानों को सूचना।

नेटवर्क के रूप में विकसित किया जाँके भारतीय पुस्तकालयों का मूल आधार है।

21वीं शताब्दी के समय की आवश्यकताओं को ध्यान में रखते हुए भारतीय नयी पीढ़ी को भावी चुनौतियों का सामना करने के लिए तैयार करना होगा। इसी वस्तु स्थिति को ध्यान में रखकर नयी शिक्षा नीति का निर्माण किया गया है।

पूर्व की शिक्षा नीतियों (1986, 1992) में कहीं ना कहीं मौजूदगी की शिक्षा नीति की छाया दिखाई पड़ती है जिसमें केवल बाद करके (रट्टा मारना) डिग्री प्राप्त करना उसके आधार पर नीकरी प्राप्त करने तक सीमित है।

34 वर्षों के बाद लाई गई नई शिक्षा नीति 2020 पूरी तरह से विद्यार्थी केंद्रित है। इसका उद्देश्य ज्ञान केंद्रित विश्व मुक्त भारत को गौरव को पुनः प्राप्त करना है। अतः नई शिक्षा नीति अनुसंधान पर जोर देती है। और इसके तहत राष्ट्रीय अनुसंधान फाउंडेशन बनाया गया है जोकि डेक्टरेट एवं स्नातक की शिक्षा के मूल शिक्षा के साथ जोड़ता है नई नीति को अनुसंधान ब्राह्मणी एवं स्नातक की शिक्षा से जोड़ कर छात्र जागे विभिन्न क्षेत्रों की आवश्यकतानुसार नई खोज कर समाज के विकास में सहयोगी बनेगा।

किसी भी शिक्षा प्रणाली को सदैव एवं निरंतर चलाने के लिए अनीपचारिक शिक्षा के केंद्र होना बहुत ही आवश्यक है क्योंकि विद्यालय, महाविद्यालय एवं विश्वविद्यालय एक सीमित समय तक ज्ञान के केंद्र होते हैं लेकिन किसी व्यक्ति के समय विकास के लिए पुस्तकालयों का होना ज़रूरी आवश्यक है। अतः नयी शिक्षा नीति 2020 के द्वारा आधुनिक भारतीय पुस्तकालयों की व्यवस्था की गई है।

21वीं सदी का भारत केंद्र है इसके निर्यात में भारतीय शिक्षा नीति 2020 की सुविधा एवं भारतीय पुस्तकालयों की व्यवस्था का विवरण करने का प्रयास इस लेख में किया गया है।

नई शिक्षा के उद्देश्य :-

29. फुलाई 2020 को भारतीय शिक्षाविदों को विचार विमर्श और परामर्शों को आधार बनाकर पूर्ण रूप से



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हिन्दी विभाग, चमन लाल महाविद्यालय,

लंदौरा, रुड़की, उत्तराखण्ड।

सम्पादक :

डॉ. नरेश सिहाण 'बोहल', एडवोकेट

एम.ए. (समाजशास्त्र, लोक प्रशासन, हिन्दी, शिक्षा शास्त्र, पत्रकारिता),

एम.फिल (समाजशास्त्र, हिन्दी) एम. लिब., एल-एल.बी. (ऑनर्स),

डिप्लोमा पंचायती राज (रजत पदक विजेता), पी.एच.डी. (हिन्दी)

डी.लिट् (मानद उपाधि), काठमांडू, नेपाल

विभागाध्यक्ष हिन्दी एवं ग़ोष निर्देशक

टांटिया विश्वविद्यालय, श्रीगंगानगर-335001 (राज.)



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डॉ. मीरा चौरसिया

सहायक आचार्या, हिन्दी विभाग, चमन लाल महाविद्यालय, रुड़की, उत्तराखण्ड।

परिवेश का सामान्य अर्थ 'घेराव' या 'वातावरण' अर्थात् मनुष्य सामाजिक प्राणी होने के कारण जन्म से लेकर मृत्यु तक वह जिस घेराव या वातावरण से संबंध रखता है, वहीं परिवेश कहलाता है। मनुष्य के व्यक्तित्व के निर्माण में परिवेश का ही अगाध योगदान रहता है। क्योंकि समाज से विलग वह रह नहीं सकता। अरस्तू के मतानुसार 'समाज से मानव या तो पशु है या देवता'। जिस प्रकार मनुष्य से परिवेश का निर्माण होता है उसी प्रकार मनुष्य के निर्माण में समाज की भूमिका प्रमुख होती है।

डॉ. महीप सिंह परिवेश के बारे में बताते हुए कहते हैं कि 'अपने परिवेश में जो कुछ भी घटित होता है, उसके वे मात्र दर्शक या पीड़ित मजदूर भोक्ता ही नहीं हैं वे उसके सक्रिय सहभागी भी हैं। वे जीवन को ढोते नहीं जीते हैं।'

परिवेश से अभिप्राय है कि जिस वातावरण में आदमी, मानव की वास्तविकता को, व्यवहारों को, उसके रहन-सहन को, बनी बिगड़ी बातों को हर्ष-वेदना को सिर्फ आंखों से देखता ही नहीं बल्कि जिसमें रहकर स्वयं उसे भोक्ता भी है, अनुभव करता है वही परिवेश है।

व्यक्ति तथा उसके व्यक्तित्व का निर्माण भी उसका परिवेश ही करता है यहां तक कि व्यक्तित्व निर्माण विषयक कुछ महत्वपूर्ण प्रयोगों के परिणाम इस बात का संकेत करते हैं कि व्यक्ति में ईमानदारी और नेतृत्व के गुणों का निर्माण करने में भी उसके आस-पास के सामाजिक तत्व कार्यरत रहते हैं। यदि उसे विस्तार दिया जाए तो यह कहना होगा कि 'व्यक्ति के समस्त व्यक्तित्व का निर्माण में उसका समस्त परिवेश कार्यरत कहता है। यह क्रिया प्रत्यक्ष और परोक्ष दोनों रूपों में चलती है और व्यक्ति इन्हीं रूपों से अपने परिवेश से संबंध रखता है। इस प्रकार व्यक्ति और परिवेश एक समीकरण का निर्माण करते हैं :- "व्यक्ति: परिवेश=व्यक्तित्व"।'

आधुनिक युग में पाश्चात्य ज्ञान-विज्ञान के प्रचार एवं प्रसार से प्रभावित होकर समाज के सामाजिक, राजनीतिक, आर्थिक, धार्मिक और सांस्कृतिक सभी क्षेत्रों में प्राचीन रूढ़ियों और बंधनों के विरुद्ध ज्ञान की दुंदुभी बजने लगी है। इन परिस्थितियों से ही हर युग का बोध होता है। अतः परिवर्तनशील संवेदनाओं के इन पहलुओं का अध्ययन आवश्यक है।

समाज में ही व्यक्ति का विकास होता है। व्यक्ति के अंतः संबंधों के फलस्वरूप आर्थिक, सामाजिक, धार्मिक, सांस्कृतिक और राजनीतिक संगठनात्मक व्यवस्थाएं उत्पन्न होती हैं। इन व्यवस्थाओं और उपव्यवस्थाओं के योग से ही 'सामाजिक संगठन' निर्माण होता है। इस संगठन से पृथक समाज की कोई भी अवधारणा संभव नहीं और व्यक्ति भी एक इकाई के रूप में इन व्यवस्थाओं में क्रियाशील रहता है।

साहित्यकार और सामाजिक परिवेश में शरीर और आत्मा का संबंध होता है। एक के बिना दूसरे की कल्पना नहीं की जा सकती है। साहित्यकार सामाजिक प्राणी होने के कारण परिवेश अछूता नहीं रह सकता। वह अपने परिवेश के संस्कारों परंपराओं, रूढ़ियों आदि के साथ लिप्त होकर अपने समाज साहित्य में प्रतिबिंबित करता है। इसलिए तो साहित्य समाज का दर्पण कहलाता है। साहित्यकार ही एक ऐसा संवेदनशील व्यक्ति है जो युग विशेष की विशेषताओं को अपनी संवेदना द्वारा आत्मसात करके एक कुशल समाज की रचना करने का प्रयत्न करता है।

शैलेश मटियानी का रचना काल स्वातंत्र्योत्तर काल है। इन्होंने अपने समकालीन परिवेश को अंकित किया है। प्रत्येक साहित्यकार सामाजिक युगीन परिवेश और परिस्थितियों के प्रति प्रतिबद्ध होता है। विद्ववानुसार कहा जा सकता है कि 'एक तो अपनी उस प्रतिबद्धता की डोरी से बंधा रहने के कारण उसका कर्म तरह-तरह के

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एम.ए. (समाजशास्त्र, लोक प्रशासन, हिन्दी शिक्षा शास्त्र, पत्रकारिता),

एम.फिल (समाजशास्त्र, हिन्दी) एम. लि. एल-एल.बी. (ऑनर्स),

डिप्लोमा बंधायती राज (रजत पदक विजेता), पी.एच.डी. (हिन्दी)

डी.लिट (मानव उपाधि), काठमांडू, नेपाल

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सुमित्रानंदन पंत का छायावादी काव्य

डॉ. मीरा चौरसिया

सहायक आचार्या, हिन्दी विभाग, चमन लाल महाविद्यालय लंबीरा, रुड़की, उत्तराखण्ड।

द्विवेदी युग की इति वृत्तात्मकता और उपदेशात्मकता के विरोध में छायावाद का जन्म हुआ। डॉ नगेंद्र ने छायावाद को "स्थूल के प्रति सूक्ष्म का विद्रोह है।" छायावादी कवि जयशंकर प्रसाद छायावाद को व्यापक धरातल पर रखकर उसकी व्याख्या करते हुए कहते हैं— "बाह्य वर्णन से भिन्न जब वेदना के आधार पर स्वानुभूतिमयी अभिव्यक्ति होने लगी, तब हिन्दी में उसे छायावाद के नाम से अभिहित किया गया।"²

कहा जा सकता है कि छायावाद आत्मनिष्ठ, अंतर्मुखी मानव मन की अनुभूतिप्रवण, भंगिमामयी गेम अभिव्यक्ति होती है। जब अंतर्मुखी मानव मन प्रकृति में भी मानवीय चेतना के संचार की अनुभूति करता है तो उसे छायावादी अभिव्यंजना कहा जाता है।

सुमित्रानंदन पंत छायावाद के चारों स्तंभों में से एक है। छायावादी विशेषताओं से पंत काव्य ओत-प्रोत है। पंत के छायावादी काव्य में कल्पना की उड़ान है। उनकी कल्पना शक्ति इतनी विकसित है कि प्रत्येक रूप या व्यापार उनकी आंखों के सम्मुख मूर्त भावना बनकर आता है।

जैसाकि पहले भी कहा जा चुका है कि छायावादी कविता अन्तर्मुखी मानव मन से प्रसूत होती है। मानव मन की अंतर्मुखता को ही व्यक्ति निष्ठताया आत्मनिष्ठ मन का गठन वस्तुनिष्ठ मन से भिन्न होता है। वस्तुनिष्ठ मन व्यवहारिक होता है और लौकिक जीवन जीने में दक्ष होता है। वस्तुनिष्ठ व्यक्ति बाह्य जीवन की विषम परिस्थितियों के साथ भी समझौता कर लेता है। छायावादी युग में अंग्रेजी शासन की कूट दमन चक्र के कारण भारतीय जनमानस बाहरी जीवन की असफलता की प्रतिक्रिया से अत्यधिक आत्म केंद्रित हो गया था। इस आत्मनिष्ठता के कारण वह अति भावुक, अति कल्पनाशील और अति चिन्तनशीलता का सम्नवित उत्कर्ष देखने को मिलता है।

छायावादी कवि अति संवेदनशील और अंतर्मुखी होने के कारण हर जगह से समझौता नहीं कर पाते हैं। ऐसी स्थिति में या तो वह कुछ प्राकृतिक दृश्यों, महापुरुषों असाधारण प्रसंगों के प्रति अति क्षुब्ध रहता है। अति तोष की मनोदशा से सौन्दर्य के प्रति आकर्षक, प्रेमानुभूति तथा रहस्यानुभूति की प्रवृत्तियों का उदय होता था शेष की मानसिक था से पीड़ा और करुणा तथा असंतोष और विद्रोह की प्रवृत्तियों का उदय होता है। इस प्रकार छायावादी कविता की भाव गत प्रवृत्तियां इस प्रकार है :-

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2. प्रेम निरूपण
3. रहस्यानुभूति
4. पीड़ा और करुणा

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कुलपतिः

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सम्पादकीयम्

अयि सुरभारतीसुपासकाः । शोधप्रज्ञायाः अमुं ग्रन्थजातं भवतां पुरतः प्रस्तुवन् हर्षप्रकर्षमनुभवामि। जानन्त्येव भवन्तो यत् शिक्षाप्रक्रियायां शिक्षकाः, छात्रः, पाठ्यक्रमः, शिक्षणपद्धतिश्चेति सुतरां महत्त्वं भजन्ते । इयं च प्रक्रिया समाजस्य अभिन्नांगतया समाजस्यैव सर्वविधविकासाय प्रकल्पते। वस्तुतः अस्याः प्रक्रियाया उद्देश्यं समाजस्य प्रत्येकं व्यक्तौ अन्तर्निहितशक्त्या समप्रविकासो वर्तते। विकसितान्तःशक्तिवतां सामाजिकानां बहुलया संख्यया एव समाजस्य राष्ट्रस्य च विकासः सम्भवति। शिक्षाप्रक्रियायां चिन्तनमननयोर्महती भूमिका विद्यते। सम्प्रति शिक्षाव्यवस्थायां निरन्तरं परिवर्तनानि जायमानानि सन्ति। इमानि परिवर्तनानि क्वचित् सकारात्मकानि क्वचिच्च नकारात्मकान्यपि सन्ति, किन्तु सकारात्मकपरिवर्तनेः राष्ट्रस्यास्य अपेक्षितं विकासं कर्तुं नकारात्मकपरिवर्तनानां दुष्प्रभावं च न्यूनीकर्तुं शक्यते। शिक्षकाणाम् अनुसन्धानकर्तृणां चेदं दायित्वं वर्तते यत् स्वीयाध्ययनेन, अनुशीलनेन, अनुसन्धानेन चाभिनवविचारसरणिमाश्रयाभिनवं किञ्चन चिन्तयेयुः। वस्तुतो यथा यथा जगत्सामस्यां प्रविधिपरको विकासो जायमानोऽस्ति तथैव व्यावहारिके सामाजिके च जीवनेऽपि नैकविधसमस्याः प्रवर्धमानाः सन्ति। अस्यां स्थितौ एतासां समस्यानां परिहारोपायाः अनुसन्धानपुरस्सरे शिक्षकैः, शोधच्छात्रैश्चावश्यमन्वेषणीयाः ।

सम्प्रति शिक्षायाः क्षेत्रे बहुशास्त्रानुशीलनोपागमः विशेषेण चर्च्यते अनुसन्धानेऽनुष्ठीयते च। तदेतत्कार्यं विद्यायास्माभिरद्यावधिर्वर्तमानानां गृहसमस्यानां परिहाराय प्रयत्नः कार्यः। यतो हि विभिन्नानां शास्त्राणां मिथोऽध्ययनेन तेषां समन्वयेन च शोभगतानां समस्यानां बाधातथ्येन समाधानं विधातुं शक्यते। बहुशास्त्रानुशीलनोपागमे संस्कृतस्य स्थानं विशिष्टं वर्तते। प्राचीनकालादेव इयं भाषा विध्वक्त्व्याणाय मानवतायाः विकासाय च चिन्तनपरा वर्तते। संस्कृतभाषायां विद्यमानानि शास्त्राणि यद्यपि स्वरूपदृष्ट्या भिन्नानि प्रतीयन्ते किन्तु एतेषु सर्वेष्वपि शास्त्रेषु मानवजीवनस्य यो भावो निहितो विद्यते स एको भावः सर्वेषामुपकारकोऽस्ति। वेदेषूपनिषत्सु दर्शनशास्त्रेषु च मानवजीवनस्य गूढातिगूढेषु सर्वेषु पक्षेषु विचारः कृतो दृश्यते। व्याकरणादिशास्त्रेषु भाषातत्त्वस्य सूक्ष्मातिसूक्ष्मविचारः आचार्यैः कृतः। साहित्यादिशास्त्राणि मानवजीवनस्य मनोवैज्ञानिकविश्लेषणपुरस्सरं कर्तव्याकर्तव्यस्य सरलं, हृदयाङ्गादकं च विवेचनं प्रस्तुवन्ति। अन्येषु चापि शास्त्रेषु मानवजीवनस्य सर्वेऽपि पक्षाः सविस्तरं चर्चिताः। अतः संस्कृतवाङ्मये विद्यमानानां शास्त्राणां विमर्शेन अस्माभिः समाजपरिष्कारस्य स्वाभिलषितस्योद्देश्यस्य प्राप्तिः कर्तुं शक्यते। शोधप्रज्ञानाम्नीयं शोधपत्रिका इदमेवोद्देश्यं स्वीकृत्य प्रकाश्यं नीयमाना अस्ति। येन संस्कृतवाङ्मये प्रकाशितानामप्रकाशितानां च विभिन्नशास्त्राणां चिन्तनानि सामाजिकानां सर्वेषां कल्याणाय प्रवर्तन्। 2023तम-ईस्वीयवर्षे शोधप्रज्ञायाः जूनमासस्यायमङ्कः समाजं, संस्कृतिं, शिक्षाशास्त्रं, विज्ञानं, प्रविधिशास्त्रं, पारम्परिकसंस्कृतशास्त्राणि चादाय विद्युत्तरीयान् शोधलेखान् प्रकाश्य शिक्षाप्रक्रियायाः महत्त्वपूर्णगतया लम्बद्विशोधसहित्यस्य क्षेत्रेऽप्रतिगं स्थानं प्राप्नुयादित्यहं वृद्धं विश्वसिमि ।

सन्दर्भेऽस्मिन् स्वीवानुभवानुशीलनानुसन्धानैरुत्कृष्टानि शोधपत्राणि विरच्य प्रदत्तवद्भ्यः
आचार्यैर्भ्योऽनुसन्धानशीलेभ्यः शोधच्छात्रेभ्यः संरक्षकमण्डलसदस्येभ्यः परामर्शदातृमण्डलसदस्येभ्यः,
मूल्यांकनकर्तृभ्यः, सम्पादकमण्डलसदस्येभ्यश्च धन्यवादं विज्ञाप्य विरमामि इति।

विदुषां वशंवदः
प्रो. दिनेशचन्द्रशास्त्री
कुलपतिः

अनुक्रमणिका

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Yudhishtira's Encounter with Yaksh: A Message for Social Order

Dr. Deepa Agarwal
Asstt. Prof., English
Chaman Lal Mahavidyalaya,
Landhaura, Roorkee,
Haridwar Dist.
(U.K.) India

Abstract

Mahabharata is one of the greatest sources of wisdom that India has ever produced for the reason that "Whatever is found here may be found elsewhere also, what is not here will not be found anywhere else." Hence, it is called as the fifth Veda. One third of the text is about war and the remaining text is full of narratives about *raja-dharma* (*dharma* of the kings), *apad-dharma* (*dharma* adjusted to difficult to circumstances or practical applications of *dharma*), *moksa-dharma* (*dharma* leading to salvation), divided into two main *dharmas*—*svadharm* (individual *dharma*) and *sādhāraṇa dharma* (universal *dharma*), which are impregnated the secret wisdom of life. The present paper aims at analyzing the episode of encounter of Yudhishtira with Yaksha in chapter 312 and 313 of "Araneya Subparva" of the "Vana Parva" of Mahabharata in which there is a long session of questions and answers, takes place focusing on the secret message of life.

Introduction

At the end of the twelfth year of exile (*vanvasa*) of Pandavas, five brothers were roaming in the forest and looking for water to quench their thirst. Sahadeva, the youngest of the Pandavas climbed up a tree, and saw a lake nearby. When he reached there to get water from it, he heard a voice, "Don't touch the water before giving the answer to my questions." Without paying attention to Yaksha's warning, Sahadeva started taking water from the lake. Then the Yaksha made Sahadeva lifeless as soon as he touches the water. When Sahadeva did not return, Nakula was sent to search for him. But he too met the same thing as Sahadeva. Then Arjun and Bhima also did the same thing and became lifeless for disobeying Yaksha. Finally Yudhishtira himself reached the lake and he was shocked to see all his brothers and asked him to answer the questions. Yudhishtira gave him the logical answers of all the questions asked by Yaksha. Hearing which the Yaksha was pleased and gave life to all the brothers of Yudhishtira.

The first sloka of the Yaksha Prasna consists of four questions asked by the Yaksha. These questions are about the Sun and God.

Yaksha asked;

Who makes the sun rise?

Who walks with him?

Who leads him set down?

Where is he firmly established?

Yudhishtira answered;

*Brahmanas makes the sun rise.
The God walks around it.
Dharma sets him down.
He is firmly established in truth.*

If a person is able to understand the suggestive meaning of this encounter, he or she will be able to understand his/her life.

Next four questions of Yaksha are about the source of knowledge i.e. the Vedas which can impart the answer to the obstinate questions of life. The conversation suggests that Veda is the source of all wisdom, hence, every one should repose his/her faith in the Vedas for the better understanding of the world within and without.

Yaksha asked;

*How does one become learned?
How does one achieve greatness?
By what means one get strength?
By what means one become intelligent?*

Yudhishtira answered;

*One can become learned by Srutis.
One can achieve greatness by practice of austerities.
One can earn strength by patience.
One can become intelligent by serving elder people.*

It is irony that we do not know even the name our texts of wisdom. How beautifully Vyasji in a conversational style, equip us with the intellectual tradition of Bharat. In the following interaction, we are introduced to the do's and don'ts of Brahmanas which means that Brahmanas are so by their birth but their action, they do:

Yaksha asked;

*How does Brahmanas become well versed in Vedic lore?
What is the pious practice that they do?
What is the human-like trait of Brahmanas?
What is impious practice that they do?*

Yudhishtira answered;

Brahmanas becomes well versed in Vedic lore by the study of

Vedas.

*Their asceticism is the pious practice that they do.
Death is the human like traits of Brahmanas.
Insulting people is an impious activity that they do.*

By these answers, in fact, Yaksha wants to give us the message that the knowledge of the Veda and the control of the mind and senses are the essential attributes of a good Brahmana. In the next four questions and answers, he unfolds the virtues which characterize a Kshatriyas. Accordingly, he asks Yaksha:

Yaksha asked;

*What is the divinity of Kshatriyas?
What is the pious practice that they do?
What is the human-like trait of Kshatriyas?
What is impious practice that they do?*

Yudhishtira answered;

*Their arrows and their weapons are the divinity of Kshatriyas.
Celebration of sacrifice is the pious practice that they do.
Fear is the human like trait of Brahmanas.
Refusing those who seek protection is an impious activity that they*

do.

The answers of Yudhishtira underline the greatest virtue of a true warrior. The message is given here is that after imparting true knowledge of the Vedas to others, the next great virtue is to protect those who have sought refuge and this is the greatest duty of a warrior. At this juncture competitive egoism and aggressive nationalism do not have any space, rather the weak becomes the whole universe. Thereafter, yaksha takes up another important issue related to livelihood of people:

Yaksha asked;

*What is the best thing for a farmer?
What is the best thing for those who seek to sow?
What is the best thing for those who wish a stable life?
What is the best thing for those who give birth?*

Yudhishtira answered;

*Rain is the best thing for a farmer.
Seed is the best thing for those who seek to sow.
Preacher is the best thing for those who wish a stable life.
Offspring is the best thing for those who give birth.*

By answering these questions Yudhishtira shows how a person can lead a stable life, if he possesses knowledge and dedication. The answers, if followed in life, can lead us to the path God and an individual enters into supra-human state. Now there is turn to more sacred yet practical prescriptions of duties of life in the questions and answers:

Yaksha asked;

What is heavier than the earth?

*What is higher than the sky?
What is faster than the air?
What is more abundant than the grass?*

Yudhishtira answered;

*Mother is heavier than the earth.
Father is higher than the sky.
The mind is faster than the air.
Anxiety is more abundant than the grass.*

Hindu culture puts paramount value on the devotion to parents, which our great epic Ramayana exemplifies through Ram who says "I shall even fall into the fire if my father says so." The answer that status of Father is higher than the sky and the status of mother is heavier than Mother is the greatest unfolds the value of Indian society. Thereafter, the interaction unfolds how the self-control of the mind is key to happy life. In this regard, Yaksha asks another four questions ;

Yaksha asked;

*Who does not close its eyes while asleep?
Who does not move after birth?
Who is without heart?
Who swells with its own impetus?*

Yudhishtira answered;

*Fish does not close its eyes while sleeping.
An egg does not move after its birth.
A stone is without heart.
River swells with its own impetus.*

Thus these questions and answers teach humanity how decision making is important in life. Here the main idea is the problems of life become possibilities of life, if we take right decision at right time. The answers to Yaksha's questions are the key to success. Next questions asked by Yaksha are;

Yaksha asked;

*Who is the friend of a traveler?
Who is the friend of a householder?
Who is the companion of a sick person?
Who is the friend of the person who is about to die.*

Yudhishtira answered;

*Companion is the friend of a traveller.
The wife is the friend of a householder.
The doctor is the companion of a sick person.*

Charity is the friend of the person who is about to die.

These questions tell that leaving our selfish attitude aside, we should have an attitudinal shift in our character like that of a companion for a traveler, wife for a householder, doctor for a sick person and charity for who is about to die are the real friends. Then Yaksha asks another set of questions:

Yaksha asked;

What is that which moves alone?

Who is reborn so many times?

What is the solution against cold?

What is hugest field?

Yudhishtira answered;

The sun moves alone.

The moon reborn so many times.

Fire is the solution against cold.

Earth is the largest field.

The next four questions of the Yaksha are;

Yaksha asked;

What if renounced, makes a man popular?

What if renounced, makes a man invulnerable to grief?

What if renounced, makes a man rich?

What if renounced, makes a man happy?

Yudhishtira answered;

Absence of pride makes a man popular.

Absence of anger makes a man invulnerable to grief.

Absence of desire makes a man rich.

Absence of greed makes a man happy.

The person who renounce all desires and conducts himself without any kind of greed and selfishness attain peace. Because pride, anger, desire and greed make a person weak and as a result he fails to control his mind. Here one great lesson is for all that if we renounce all kinds of negative elements from our lives, we can lead a happy and healthy life. The next questions of the Yaksha are;

Yaksha asked;

What is poison?

What is suitable time for worship?

What is food?

Who is the man who possesses all kinds of wealth?

Yudhishtira answered;

Requesting someone is like poison for oneself.

There is no suitable time for worship, one can worship any time.

Cow is the source of all food. Cow gives milk, which produces butter and ghee, which is used in Yajna during worship, which brings rain and rain is necessary for producing all types of grain.

That man is very wealthy who has overcome the dualities of things like- friend/enemy, love/hate, anger/peace etc.

If we try to understand these questions deeply, we find that each question is filled with the epitome of philosophical and religious thinking. These questions are really impregnated with the prescription of dharma by following which a person can acquire wealth and fulfill his legitimate desires. Yudhishtira answers all the questions in a logical manner by which Yaksha becomes so much pleased and asks him to choose one of his brothers to be alive. Yudhishtira choose Nakula, his younger stepbrother, the son of Madri, by giving the reason that his father has two wives Kunti and Madri and as Kunti's son, he was alive, not it would be only right that Nakul, the son of Madri should alive. The Yaksha gets very pleased by how Yudhishtira follows Dharma in every little thing. So Yaksha brings back all the brothers alive. Therefore by standing for Dharma, Yudhishtira gets back the life of all his brothers.

Conclusion

Thus Yudhishtira's answers to Yaksh's questions are expressive of the secret of life. They are ready reference for a man to overcome ethical dilemmas. Through the encounter of Yudhishtira with Yaksha, Vyasa unfolds how a person can learn to maintain a balance in the social order by devoting to social Dharma which is impregnated with cosmic order. It is dharma that peels off one's selfish attitude and concealed hate, competitive egoism and aggressive nationalism. In a word, these answers unfold the deeper dimensions of life, from social, psychological and spiritual perspectives.

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Mathematical Achievements of Indian Mathematicians

Dr. Tarun Kumar Gupta

(Assistant Professor)

Department of Mathematics

Chaman Lal Mahavidyalaya Landhaura-247664,

Haridwar (U.K)

Abstract

Ancient Indian mathematics plays an important role in modern education as it develops the thinking skills, imagination power and also sharpens brain. Ancient Indian mathematics is a boon for computer programming and it also helps to develop new facts in science and technology. It should be involved in modern education then only it will be correct to say relevant.

Keywords: Indian algorithm, identity, Current mathematical symbols.

1. Introduction

Indians have a long history of using mathematics. Fire altars were constructed using Pythagoras theorem long before Pythagoras. A decimal system for weights and measures was used in the Indus Valley (2500 B.C.). Numbers in multiples of 2, 7, 10, 100 and even one million are found in several books, including "Narad Vishnu Purana" (1000 B.C.), "Anuyog Dwara Sutra" (100 B.C.), "Lalitvistara" (100 A.D.) and several Mahayana Buddhist books. "Anuyog Dwara Sutra" also gives multiplication of square roots. Basic use of logarithm appears in "Satkhandagama" (150 A.D.). The Bakhshali manuscript (200 A.D.) found near Peshawar in Pakistan includes fractions, square roots, quadratic equations, simultaneous equations, arithmetic and geometric progressions etc.[10]

Aryabhatta (499 A.D.), a great Indian astronomer, wrote 118 verses in "Aryabhattiya" which cover several areas including arithmetic, algebra, plane and spherical trigonometry. It includes continued fractions, square roots, cube roots, quadratic equations, sum of power series and a table of sines. He introduced the Kuttaka method (breaking down of original factors into smaller numbers). He gave the circumference of Earth as 4,967 yojanas (24,835 miles) and stated that Earth moves around the sun long before Copernicus. [5]

Brahmagupta (628 A.D.), another eminent Indian astronomer, wrote "*BrāhmaSphuṭaSiddhānta*", containing 25 chapters in which he gave several rules for arithmetical operations involving zero. He solved several quadratic equations and gave both positive and negative roots. In his book, he also solves several indeterminate problems. [3]

In addition, he worked on trigonometry and gave the area of cyclic quadrilaterals and the interpolation formula for computation of Sines. In Astronomy, he dealt with lunar eclipses, etc. He introduced some symbols in Algebra, but it was mostly syncopated.

Other Indians who made significant contributions to arithmetic/algebra include Varahamihir (505 A.D.), Bhāskara I (680 A.D.), Mahavira (800 A.D.), Madhva (850 A.D.) and Bhāskara II (1114 A.D.). Mahavira wrote solutions to several arithmetic operations, including fractions, permutations and combinations, and areas of ellipses.

The works of Bhāskara II include Beej ganita (algebraic root extraction), astronomy, the solution to Pell's equation, solutions to indeterminate problems by the Chakrawal method and Diophantine problems. He broached the fields of infinitesimal calculation and integration. He postulated the existence of Gurutava (Gravitational attraction). Destruction of several Universities by Muslim invaders around 724 A.D., 786 A.D. and 1200 A.D. brought an end to India's dominance in the field of mathematics. [1]

During the 8th century A.D., several Sanskrit works were translated into Arabic in Baghdad. (Baghdad means "gift of God" in Sanskrit.) During the 9th century A.D., Caliph al-Mamun established a "House of Wisdom" in Baghdad and invited scholars from many countries, including India, Persia, and Greece, etc., to translate mathematical and other works into Arabic. Persian scholar al-Khwarizmi wrote about half a dozen books on astronomy and mathematics.

His most famous work, "Hisab al-jabr wa'l muqabalah", was written around 830 A.D. It consists of six chapters, each dealing with a different formula. Muslims give him credit for the invention of Algebra. As per O'Connor and Robertson, researchers at the University of St. Andrews, Scotland, al-Khwarizmi visited India and took with him several mathematical works to Baghdad. His book on Algebra was based mostly on the works by Brahmagupta (628 A.D.). Most of his Algebra can be described as rhetorical.[5][8]

Muslim scholars never developed symbols, which were necessary for advancement. They also rejected negative roots of quadratic equations, although they had learned from Hindus, as per O'Connor and Robertson. However, they improved upon the Hindu number system and the positional notations. Other notable Muslim scholars include al-Karkhi (953 A.D.), Omar Khayyam (1050 A.D.), al-Tushi (1135 A.D.) and Jamshid al-Kashi (1380 A.D.). The work of al-Khwarizmi and other Muslim scholars reached Europe around 1200 A.D. and they mistakenly gave credit for the invention of zero and other numerals – and Algebra – to Muslims. On the whole, Muslims' contribution to the advancement in Algebra is very small. The real credit should go to Indians.

Here we describe some Theorems, Lemmas, formula and Algorithm given by Indian Mathematicians. They are very useful for modern mathematics.

2. Theorem (Brahmagupta's Bhāvanā)

If $x_k^2 = Ny_k^2 + m$, $k = 1, 2$, then $x = Ny_1y_2 + x_1x_2$, $y = x_1y_2 + x_2y_1$, $m = m_1m_2$ satisfy $x^2 = Ny^2 + m$.

Above theorem states that the solution space of the equation $Ny^2 + m = x^2$ admits the binary operations [2].

$$(x_1, y_1, m_1) * (x_2, y_2, m_2) = (x_1y_2 + x_2y_1, Ny_1y_2 + x_1x_2, m_1m_2)$$

3. Brahmagupta's identity and Bhāvanā

The equation $x^2 - Ny^2 = m$ was tackled by the Indian mathematician Brahmagupta (620 A.D.) in his treatise BrāhmaSphuṭaSiddhānta Brahmagupta considered the identity.

$$\begin{aligned} (x^2 - Ny^2)(p^2 - Nq^2) &= (xp + Nyq)^2 - N(xq + yp)^2 \\ (x^2 - Ny^2)(p^2 - Nq^2) &= (xp - Nyq)^2 - N(xq - yp)^2 \end{aligned} \quad (1)$$

From this two equations we see that if $x^2 - Ny^2 = 1$ and $p^2 - Nq^2 = 1$

$$\begin{aligned} (xp + Nyq)^2 - N(xq + yp)^2 &= 1 \\ (xp - Nyq)^2 - N(xq - yp)^2 &= 1 \end{aligned}$$

(2)

So if (y, x) and (q, p) are solutions to Pell's equation then $(qx + py, px + Nqy)$ and $(qx - py, px - Nqy)$ are also solutions. This is important fact generalizes easily to give Brahmagupta's identity. [2][4]

4. Generalization of Bakhshālī iterative formula

$$\text{Let } f(x) = x^2 - N = 0 = \begin{cases} A + \frac{b_i}{2A} - \frac{\left(\frac{b_i}{2A}\right)^2}{2\left(A + \frac{b_i}{2A}\right)} \\ b_i = i \text{ (i vary from 1 to 10)} \\ \text{where : } A^2 < N \text{ and as close as possible to } N \end{cases}$$

5. Comparative study of Bhāskara's Kuttaka method with European method for solving Diophantine equation

Linear indeterminate equations in two unknowns were solved for integral solutions by Lagrange (1736-1813 A.D.) using the theory of continued fractions.

By successive division a/b is represented by a continued fraction (C.f) and the convergents of the C.f are found.

$$\frac{a}{b} = a_1 + \frac{1}{a_2 + \frac{1}{a_3 + \frac{1}{a_4 + \dots + \frac{1}{a_{n-1} + \frac{1}{a_n}}}}} \quad \text{Where the rational numbers } a_1, a_2, a_3, \dots, a_n \text{ are the}$$

successive quotients of $\frac{a}{b}$.

It is known that any rational number is expressible as a finite simple continued fraction

where $\frac{p_1}{q_1} = a_1; \frac{p_2}{q_2} = \frac{a_1 a_2 + 1}{a_2}, \dots, \frac{p_n}{q_n} = \frac{a}{b}$ are called the k^{th} convergents, $k=1, 2, 3, \dots, n$. It can

be shown that $p_k q_{k-1} - q_k p_{k-1} = \pm 1$ according as k is even or odd. [11]

Now, we have $13x - 5 = 17y$ we find that $\frac{13}{17} = 0 + \frac{1}{1 + \frac{1}{3 + \frac{1}{4}}} = 0 + \frac{1}{1 + \frac{1}{3 + \frac{1}{3 + \frac{1}{1}}}}$ the convergents

of the continued fractions are $\frac{0}{1}, \frac{1}{1}, \frac{3}{4}, \frac{13}{17}; \frac{0}{1}, \frac{1}{1}, \frac{3}{4}, \frac{10}{13}, \frac{13}{17}$ and $13.4 - 17.3 = 1, 13.13 - 17.10 = -1$ Hence for the first equation a solution is $(20, 15)$. The general solution in

integers (given by $t=1$) is (3, 2) and the general solution in positive integers is $x=3+17t$, $y=2+13t$ ($t=0, 1, 2, 3, \dots$). [8][7]

6. Bhāskara I's Sine Approximation formula [6][9]

$$R \sin \phi = \frac{R\phi(180 - \phi)}{4\{40500 - \phi(180 - \phi)\}} \quad \text{Where } \phi \text{ is in degrees}$$

$$\sin \phi = \frac{\phi(180 - \phi)}{4\{40500 - \phi(180 - \phi)\}}$$

This formula is applicable over the interval $[0, 180]$

7. Father of Numerical Analysis

Brahmagupta (598-668.C.E) one of India's most famous Astronomers and mathematicians, made significant contributions to Astronomy Arithmetic Algebra Geometry and Numerical Analysis. His two classic works on astronomy and mathematics were widely used throughout India and were instrumental in spreading the Hindu number to the Arabic world. One of these books was the oldest known manuscript in which negative numbers and the number zero were used in arithmetic computations. He developed sophisticated algebraic techniques for solving indeterminate linear and quadratic equations. In Geometry, he produced theorems and formulas for estimating square roots and approximating the sines of angles established the field of numerical analysis. First time interpolation formula in the history of mathematics gave the Brahmagupta. Details has been shown [5]

That is Indians were the first to develop the interpolation theory in the history of mathematics.

In india, work on higher order interpolation started around the same time as in china. In his work Dhyangrah the astronomer mathematician Brahmagupta included a passage in which he proposed a method for second order interpolation of the sine and versed sine functions. Modified the original Sanskrit verse given by R.C.Gupta [3] arrived at the following formula.

$$f(x_0 + \xi T) = f(x_0) + \frac{\xi}{2} \{\Delta f(x_0 - T) + \Delta f(x_0)\} + \frac{\xi^2}{2} \{\Delta f(x_0) - \Delta f(x_0 - T)\} \quad \text{with}$$

$\Delta f(x_0) = \Delta f(x_0 + T) - f(x_0)$. In a later work, Khandakhadyaka(665 A.D) Brahmagupta also described a more general method that allowed for interpolation of unequal interval data.

Concluding Remarks

- Terminologies of Indian scholars are just a fundamental part of a complete system of Number theory (In regarding to indeterminate analysis) which is far more systematic than the 'Modern system'. It is also seen that ancient Indian mathematics techniques are complementary, direct and easy. It is therefore seen

that the above algorithm formula, methods are much faster and easy than the European methods.

- The concept of Bakhshālī square root algorithm can be used as an important tool worldwide in Numerical Analysis if this concept is introduced.
- The Indian achievements on Pell's equation tend to overshadow the fact that ancient Indian algebraists had produced a large bulk of work involving ingenious solutions of quadratic indeterminate equations.
- Indeed, Brahmagupta's Bhāvanā is of paramount significance in Modern algebra and Number Theory. The Bhāvanā influenced, directly and indirectly, subsequent research on indeterminate equations by Indian Algebraists.

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हिंदी भाषा का प्रारंभिक स्वरूप और महर्षि दयानंद

डॉ. सुशील उपाध्याय¹

डॉ. सुभाष चंद अग्रवाल²

हिंदी भाषा संस्कृत, प्राकृत और अपभ्रंश से विकसित होकर आज एक जनभाषा के रूप में विश्वभर में लगभग ६० करोड़ से अधिक लोगों द्वारा बोली और समझी जाती है। हिंदी एक वैज्ञानिक और तार्किक भाषा है जिसमें उच्चारण शुद्धता और सटीकता से किया जा सकता है। ५०० वर्ष ईसापूर्व में बोली जाने वाली क्षेत्रीय प्राकृत यथा मागधी, अर्ध-मागधी, हिमालयी प्राकृत और शौरसेनी, इंडो-आर्यन भाषाओं की स्रोत रही हैं, हिंदी भी उसी परिवार की भाषा है। लेकिन सत्ताजनित प्रभावों के कारण हिंदी पर अरबी और फारसी का प्रभाव बढ़ता गया।

“हिंदी भाषा को स्थिरता, प्रमाणिकता और उच्च स्तरीय लेखन के योग्य बनाने के लिए महर्षि ने हिंदी भाषा के शब्दकोश को संस्कृत के तत्सम शब्दों से धनवान किया और उसे अरबी और फारसी की दासता से मुक्त कराया। आज उसी संस्कृतनिष्ठ हिंदी को अपनाकर हिंदी साहित्य के अनेक लेखक अमर हो गए, लेकिन जिसने देश को हिंदी में मौलिक गद्य लेखन और हिंदी में दर्शन और अध्यात्म जैसे विषयों पर लिखकर हिंदी का भाल ऊँचा किया उसी महर्षि दयानंद सरस्वती को हिंदी भाषा और साहित्य के इतिहासकारों ने अनदेखा कर दिया।”³

हिंदी भाषा का शब्दकोश मुख्यतः ‘संस्कृत’ से आया है जो महर्षि दयानंद का हिंदी को महानतम योगदान है। आर्य विद्वान पं. भगवदत्त रिसर्च स्कॉलर लिखते हैं, “वर्तमान हिंदी में ९५ प्रतिशत शब्द साक्षात् संस्कृत अथवा अपभ्रंश के विकार हैं।”⁴

जब महर्षि दयानंद ने हिंदी भाषा में लिखना प्रारम्भ किया था तब उनके लेखन में कुछ दोष पाए जाते थे। सत्यार्थप्रकाश के प्रथम संस्करण में क्रिया और कारकों का उपयोग आज की परिष्कृत भाषा के पढ़ने वालों को कुछ अटपटा प्रतीत होता। कुछ आंचलिक शब्दों का ज्यों का त्यों उपयोग भी यदा-कदा उनकी भाषा को अटपटा बनाता था। इसका मुख्य कारण उनका हिंदी लिखने और बोलने का अभ्यास उस समय तक पर्याप्त नहीं था और न ही तब तक हिंदी की वर्तनी स्थिर हुई थी। उनकी भाषा में में ब्रज सहित अनेक आंचलिक भाषाओं के शब्द देखने को मिलते हैं, क्योंकि यह खड़ीबोली के विकास का आरम्भिक सोपान था जो उस समय तक ब्रजभाषा से प्रभावित थी।

डॉ. चन्द्रभानु सोनावणे महर्षि कि भाषा के विषय में लिखते हैं, “उस काल में हिंदी लेखकों की वर्तनी स्थिर नहीं हो पाई थी ...वर्तनी की दृष्टि से स्वामी दयानंद की वर्तनी अधिक शुद्ध व स्थिर है। उन्होंने दूसरों की अपेक्षा संस्कृत शब्दों का अधिक प्रयोग किया है।”⁵

बाद में महर्षि दयानंद की हिंदी निरंतर परिष्कृत और प्रांजल होती गयी जिससे उनका गद्य लेखन प्रभावशाली बन गया। महर्षि दयानंद सरस्वती के लेखन की एक और विशिष्टता है, और वह है उनके द्वारा लिखी गयी अपनी प्रत्येक पुस्तक की भूमिका। यह एक प्रकार से उनकी शैली ही बन गयी है। अपने कई ग्रंथों जैसे सत्यार्थप्रकाश में तो महर्षि ने प्रायः प्रत्येक अध्याय की भूमिका लिखी है और दोनों भागों की अलग-अलग भूमिका लिखी है। इन भूमिकाओं को लिखने का उद्देश्य यही था कि कोई पाठक उनके लिखे हुए का वो अर्थ ग्रहण न करे जो अभिप्रेत नहीं है।

¹ उत्तराखंड संस्कृत विश्वविद्यालय, हरिद्वार, ईमेल – gurujisushil@gmail.com, मो.नं. - 9997998050

² स्वतन्त्र लेखक, फिल्मकार, रुड़की/मुंबई

³ सुभाष चंद अग्रवाल, भूमिका, हिंदी भाषा एवं पत्रकारिता को महर्षि दयानंद का योगदान, प्रगतिशील प्रकाशन, नई दिल्ली

⁴ भाषा का इतिहास, पं.भगवदत्त रिसर्च स्कॉलर, २०१२, विजयकुमार गोविन्दराम हासानंद, दिल्ली, पृष्ठ २५९

⁵ हिंदी गद्य साहित्य, डॉ. चन्द्रभानु सोनावणे, पृष्ठ ९९

“केशवचन्द्र सेन तथा ईश्वरचंद्र विद्यासागर सरीखे सुधार आन्दोलन के प्रणेताओं के आग्रह पर महर्षि दयानंद ने सं. १८७३-७४ ई. में संस्कृत के स्थान पर हिंदी को अपने प्रवचनों एवं लेखन की भाषा बनाया। हिंदी के विकास में वह महर्षि दयानंद का पहला योगदान था।”⁶

महर्षि दयानंद के समय में भाषा के स्तर के दो उदाहरणों को देखिये-

देश के पहले हिंदी पत्र ‘उदन्त मार्तण्ड’ की भाषा का एक नमूना भी तत्कालीन हिंदी शब्दावली के स्वरूप को स्पष्ट करने में सहायक होगा, “१९ नवम्बर को अवधबिहारी बादशाह के आवने की तोपें छूटी। उस दिन तीसरे फेर को पर्तालिंग साहिब ओ हेल साहिब ओ मेजर फिडल लार्ड साहिब की ओर से अवधबिहारी की छावनी में जा करके बड़े साहिब का सलाम कहा और भोर होके लार्ड साहिब के साथ हाजिरी करने का नेवता किया...।”⁷

और

राजा शिवप्रसाद यद्यपि हिंदी के पक्षधर थे, परन्तु हिंदी के नाम पर वह अरबी-फारसी ही परोसना चाहते थे। उनके समाचार पत्र ‘बनारस अखबार’ में लिखी जाने वाली हिंदी का एक उदाहरण देखने योग्य है, “...लोग उस पाठशाले के कित्ते के मकानों की खूबियाँ अक्सर ब्यान करते हैं और उनके बनाने के खर्च की तजबीज करते हैं कि जमा से जियादा लगा होगा और हर तरह से लायक तारीफ़ के हैं। सो यह सब दानाई साहिब ममदूह की है।”⁸

महर्षि दयानंद ने अपने ग्रन्थों को संस्कृत के साथ-साथ ‘आर्यभाषा’ अर्थात् हिंदी में भी लिखा जिससे वे देश की अधिक से अधिक जनता तक पहुँच सकें। दस अप्रैल, १८७५ ई. को महर्षि दयानंद ने अपने समाज-सुधार एवं पुनर्जागरण आन्दोलन को औपचारिक रूप से आर्यसमाज के रूप में स्थापित किया। इस समाज के संचालन के लिए उन्होंने एक नियमावली बनाई। उस नियमावली के उपनियम ३५ के अनुसार आर्यसमाज के प्रत्येक सदस्य को आर्यभाषा का ज्ञान होना आवश्यक ठहराया। इस नियम का आत्मिक (Letter and Spirit) स्तर पर आज भी विश्व के पाँच हजार से अधिक आर्यसमाज केन्द्र अनुपालन करते आ रहे हैं। यह महर्षि दयानंद का हिंदी के विकास में अति महत्वपूर्ण दूसरा योगदान था। लाला लाजपत राय अपनी पुस्तक ‘आर्यसमाज’ में लिखते हैं, “It was the boldest art of his life to have issued a translation of the Vedas in Hindi, since the translation had never been attempted before. (हिंदी में वेदों का अनुवाद उनके जीवन का सबसे साहसिक कार्य था जो कि इससे पहले किसी ने नहीं किया था।)”⁹

१८८३ ई. में उदयपुर में महर्षि ने अपने प्रवचनों में हिंदी को देश की संपर्क भाषा बनाने पर जोर दिया और देशभर में राष्ट्रभावना पैदा करने के लिए देवनागरी लिपि में हिंदी को अपनाने पर जोर दिया। उनके अनुसार सारे भारतवर्ष में एक भाषा का प्रचार होना चाहिए, क्योंकि ऐसा हुए बिना ना तो धर्मप्रचार का कार्य ही सुगमता से हो सकता है और ना ही देशवासियों में भारतीयता का संचार हो सकता है। महर्षि ने हिंदी को भारत की राष्ट्र भाषा बनने के लिए सर्वथा सुयोग्य माना। ये हिंदी भाषा को महर्षि का पाँचवाँ योगदान था।

महर्षि के आह्वान पर उनके अनुयायियों के द्वारा एक छोटे से कालखण्ड में हजारों ग्रन्थ हिंदी में रचे गये और हिंदी पत्र-पत्रिकाओं की स्थापना की गयी। साथ ही उनके अनुयायियों द्वारा सम्पादित और प्रकाशित उर्दू पत्र-पत्रिकाओं की भाषा भी धीरे-धीरे हिंदी हो गयी। स्वामी श्रद्धानन्द द्वारा सम्पादित और प्रकाशित पत्र ‘सद्धर्म-प्रचारक’ व महात्मा आनन्द स्वामी द्वारा प्रकाशित ‘मुहर्षिक’ इसके महत्वपूर्ण उदाहरण हैं। हिंदी भाषा के विकास को महर्षि दयानंद का यह छठा महत्वपूर्ण

⁶ सुभाष चंद्र अग्रवाल, भूमिका, हिंदी भाषा एवं पत्रकारिता को महर्षि दयानंद का योगदान, प्रगतिशील प्रकाशन, नई दिल्ली

⁷ हिंदी साहित्य का इतिहास, आचार्य रामचन्द्र शुक्ल, २०११, कौशल पब्लिशिंग हाउस, फैजाबाद, पृष्ठ ३३४

⁸ हिंदी साहित्य का इतिहास, आचार्य रामचन्द्र शुक्ल, २०११, कौशल पब्लिशिंग हाउस, फैजाबाद, पृष्ठ ३३६

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योगदान था। इसका परिणाम यह हुआ कि पंजाब जैसे प्रदेश में, जहाँ पहले हिंदी में पता लिखे पत्र को डैड-लैटरबॉक्स में डाल दिया जाता था, आज वहाँ बड़ी संख्या में हिंदी पत्र और पुस्तकें प्रकाशित हो रही हैं।

गिनते जाएँ तो हिंदी भाषा को महर्षि दयानंद के अनेक योगदान हैं, इनमें एक और बहुत ही महत्वपूर्ण योगदान था- राजपूताना की कई रियासतों में सरकारी कामकाज में, विशेष रूप से अदालतों के कामकाज में हिन्दी-देवनागरी का अपनाया जाना है। सं. १८८२ ई. में ब्रिटिश सरकार ने हंटर कमीशन की स्थापना इस उद्देश्य से की थी कि उत्तर-भारत में कार्यालयों और विद्यालयों की भाषा किस भाषा को बनाया जाये ? महर्षि दयानंद के आदेश पर देशभर से अनेक आर्यसमाजों और आर्य विद्वानों ने हंटर कमीशन के समक्ष मेमोरेण्डम भेजे जिनमें सशक्त रूप में हिंदी भाषा (देवनागरी लिपि में) को सरकारी दफ्तरों में कामकाज की भाषा बनाने की तर्क सहित वकालत की गयी। देश की विभिन्न आर्यसमाजों को लिखा गया उनका यह पत्र उनकी इस लगन को प्रदर्शित करता है, “यह बात उत्तम है क्योंकि अभी कलकत्ते में इस विषय (उत्तर भारत के विद्यालयों और कार्यालयों में भाषा का निर्णय) की सभा हो रही है। इसलिए जहाँ तक बने वहाँ शीघ्र संस्कृत और मध्यदेश की भाषा (हिन्दी) के प्रचार के वास्ते, बहुत प्रधान पुरुषों की सही (हस्ताक्षर) कराके कलकत्ते की सभा (हंटर कमीशन) में भेज दीजिये।¹⁰

जब महर्षि दयानंद का भारत के सामाजिक और आध्यात्मिक क्षितिज पर प्रादुर्भाव हुआ, ये वो समय था जब भारत में शिक्षित होने का एकमात्र अर्थ था अंग्रेजी या फारसी का ज्ञाता होना। कोई हिंदी को ‘गंवारूभाषा’ कहता था तो कोई उसे लघु-पत्रिका की भाषा क्योंकि वह मात्र उसी उद्देश्य को पूरा करने की योग्यता रखती थी। खड़ीबोली को अपूर्ण योग्यता की भाषा माना जाता था, “ब्रजभाषा प्रेमी खड़ीबोली को ‘चूरनवालों की भाषा’ या ‘बाजारू भाषा’ समझते थे। वे खड़ीबोली को काव्योपयुक्त नहीं समझते थे।¹¹

महर्षि भाषा की एकता को राष्ट्रीय एकता का आधार मानते थे। जब कभी भी उनके सामने उनके ग्रंथों को दूसरी भाषा में अनुवाद करने का प्रस्ताव रखा गया तो उन्होंने इसका विरोध ही किया। सत्यकेतु आर्यसमाज के इतिहास में लिखते हैं, “एक बार एक पंजाबी भक्त ने स्वामीजी से उनके समस्त ग्रंथों का उर्दू भाषा में अनुवाद करने की अनुमति मांगी। स्वामी जी ने बड़े प्रेम से इस भक्त को उत्तर देते हुए कहा, “भाई मेरी आँखें तो उस दिन का देखने के लिए तरस रहीं हैं जब कश्मीर से कन्याकुमारी तक सब भारतीय एक भाषा को समझने और बोलने लग जायेंगे। जिन्हें सचमुच मेरे ग्रंथों को जानने की इच्छा होगी वे आर्यभाषा का सीखना अपना कर्तव्य समझेंगे। अनुवाद तो विदेशियों के लिए हुआ करते हैं।¹²

महर्षि दयानंद की परम्परा में पोषित आर्य पत्रकारिता ने हिंदी भाषा को योगदान दिया। इसका अनुमान इस उदाहरण से लगता है, “उर्दू के मध्य में हिंदी पत्रकारिता को दृढ़ता के साथ स्थापित करने वाली शक्ति आर्यसमाज ही थी।¹³

महर्षि दयानंद की परम्परा के पत्र-पत्रिकाओं के हिंदी भाषा को दिए गए योगदान के विषय में आचार्य क्षेमचंद्र ‘सुमन’ लिखते हैं, “आर्यसमाज ने अपने पक्ष और विपक्ष में जो लेखकीय जागरण पैदा किया उसने खड़ी बोली गद्य को प्रचारित करने में अभूतपूर्व योगदान दिया।¹⁴

महर्षि दयानंद की भाषा:

¹⁰ महर्षि दयानंद के पत्र और विज्ञापन द्वितीय भाग, पं. भगवदत्त, रामलाल कपूर ट्रस्ट, बहालगाढ़, सोनीपत हरयाणा पृष्ठ ५४७

¹¹ ब्रजभाषा बनाम खड़ीबोली, डा. कपिलदेव सिंह, पृष्ठ ३७६

¹² आर्यसमाज का इतिहास भाग ४, सत्यकेतु वेदालंकार, पृष्ठ ७९

¹³ आर्यसमाज के पत्र और पत्रकार, डॉ. भवानीलाल भारतीय, वैदिक पुस्तकालय, अजमेर, पृष्ठ ८

¹⁴ दयानंद और हिंदी पत्रकारिता, व्याख्यान, गुरुकुल कांगड़ी विश्वविद्यालय, १९८५, पृष्ठ ४

भाषा की दृष्टि से महर्षि दयानंद सरस्वती के लेखन में तर्क की प्रधानता है। विचारों की स्पष्ट अभिव्यक्ति है। इसके अतिरिक्त इतिवृत्तात्मक वर्णन भी है। व्यंग्य और विनोद के लिए महर्षि की भाषा में मुहावरों और कहावतों का भरपूर उपयोग मिलता है। उनकी भाषा भावानुरूप, सुगम, ओजपूर्ण, विषय के अनुरूप ही गम्भीर या हल्की-फुल्की है। प्रसंगवश जो उचित लगा वहाँ उसी प्रकार की भाषा का इस्तेमाल किया। कई बार की एक ही पृष्ठ पर अभिव्यक्ति में इतना अंतर होता है जिससे लगता है कि ये दोनों गद्यांश दो अलग-अलग लोगों के लिखे हुए हैं। अन्य भाषाओं जैसे गुजराती, मराठी, ब्रज, पंजाबी, राजस्थानी, संस्कृत, उर्दू, अंग्रेजी, अरबी, फारसी और आंचलिक शब्दों को भी उन्होंने अपनाया। महर्षि ब्रज क्षेत्र में तीन वर्ष रहे और उसके बाद भी उस क्षेत्र में काफी भ्रमण किया इसीलिए उनकी भाषा में ब्रजभाषा के अनेक शब्द मिलते हैं। रहें, चाहें, वा, ठाडे, और बनानेहारा, करनेहारा, देनेहारा आदि शब्दों में हारा प्रत्यय का उन्होंने बहुतायत से प्रयोग किया है।

महर्षि की भाषा में मराठी, मारवाड़ी, हरयाणवी, पंजाबी आदि भाषाओं के शब्द भी मिलते हैं। उर्दू फारसी के शब्द भी यदा-कदा देखने को मिलते हैं। उनकी हिंदी में सबसे ज्यादा शब्द संस्कृत के मिलते हैं जो उनके प्रभाव से हिंदी के शब्द ही मान लिए गए हैं। यथा- पुनरपि, पुनश्च, संयोग, परिच्छिन्न आदि। प्रायः नपुंसक लिंग को महर्षि ने पुल्लिंग संज्ञाओं की तरह इस्तेमाल किया है जिससे कि भाषा में मानकीकरण हो जैसे, 'सत्य विद्याओं का पुस्तक'। क्योंकि महर्षि का जोर अभिव्यक्ति पर था, इस उद्देश्य की प्राप्ति के लिए उन्होंने लोक प्रचलन के शब्द और पात्रानुकूल शब्दों का खुलकर प्रयोग किया।

इसके साथ ही उन्होंने कहावतों और मुहावरों का भी बहुत सहज प्रकार से उपयोग किया जैसे 'ऊखड़-सूखड़'। 'आँख का अँधा गाँठ का पूरा' इस मुहावरे का सत्यार्थप्रकाश में अनेक जगह पर इस्तेमाल हुआ। धुरें उड़ाना, अंधों में काना राजा, कहीं की ईंट कहीं का रोड़ा भानमती ने कुंनबा जोड़ा, 'मीठा-मीठा गप्प कडुआ-कडुआ थू', 'दिल्ली के बादशाहों की बीवियों की सेना', 'जिसका विवाह उसके गीत', 'कोई जीवो वा मरो पोपजी का पेट पूरा भरो', 'उलटि चोर कोतवाल को दण्डे' आदि अनेक कहावतों का भी यथास्थान प्रयोग देखने को मिलता है। हिंदी के प्रचलित मुहावरों और कहावतों के अतिरिक्त महर्षि ने संस्कृत के मुहावरों सूक्तियों और सुभाषितों का भी हिंदी में बहुत ही अलंकारिक रूप से उपयोग करके आर्यभाषा को आकर्षक तथा अभिव्यक्तिपरक बनाया, 'विनाश काले विपरीत बुद्धि, नष्टे मूले नैव पत्रम न पुष्पम, मूर्खानाम बलं मौनम, 'ब्रह्मवाक्यं जनार्दनः' 'ब्रह्मद्रोही विनश्यति'। उन्होंने अनेक ग्रामीण मुहावरों और कहावतों का भी सदुपयोग किया है। यथा आवश्यकता उन्होंने प्रत्येक प्रकार का साहित्यिक रस अपने श्रोताओं और पाठकों को दिया।

उनकी भाषा में उनकी मातृभाषा का भी प्रभाव परिलक्षित होता है और अनेक गुजराती शब्द भी सत्यार्थ प्रकाश में मिलते हैं यथा ऊन्दर (चूहा), ससा, (खरगोश) पाकल (खोखला) तपास आदि। महर्षि की भाषा में गुजराती और मराठी में अनेक शब्द भी सामान अर्थों में प्रयोग किए जाते हैं जैसे – शक्य, शिक्षा आदि। मराठी में शिक्षा दण्ड (सजा) देने को कहते हैं। कुछ शब्द पात्रानुकूल परिस्थिति और संदर्भानुकूल भी उनकी भाषा में प्रयोग हुए हैं, यथा- खोडिया, खाखी, छोकरे, प्रागराज, भेंट-भड़क्का, माफक, भाट, खंड-बंड आदि। फारसी के शब्द खुशामद, जिल्द, मकानात, सवारी- शिकारी, नौकर-चाकर, सरजाम, ज़ियाफत, खबरदारी, खातरी, वास्ते, कैद, फारिग, बमुकाम, कयामपजीर, अर्जी, कदर आदि का भी अभिव्यक्ति की आवश्यकता के अनुसार प्रयोग हुआ है। पड़दा, करावें, जावें, सिखावें, लड़के-बाले, कूँजडी आदि क्षेत्रीय अभिव्यक्ति के शब्द उनके लेखन और पत्रों में प्रायः मिलते हैं। महर्षि की पत्रों की भाषा पर्याप्त उदारता लिए हुए है। महर्षि दयानंद सरस्वती का हिंदी भाषा के विकास के ऐतिहासिक परिप्रेक्ष्य में एक विशिष्ट योगदान है क्योंकि:

- उनका लेखन मौलिक और उनके चिन्तन का क्षेत्र विस्तृत था। संन्यासी होते हुए भी उनका लेखन मात्र धार्मिक या आध्यात्मिक विषयों तक सीमित नहीं रहा, अपितु शायद ही कोई विषय हो जो मानवजीवन से जुड़ा हो और जिस पर उन्होंने लिखा न हो।
- वेदों का पुनरोद्धार भारत में उन्नीसवीं शताब्दी की सबसे बड़ी धार्मिक, आध्यात्मिक और ऐतिहासिक घटना थी। इससे पहले निहित स्वार्थों ने यह प्रचार कर रखा था कि वेद तो भस्मासुर ले गया और जो वे कहते हैं वही वेद वाक्य है। प्रत्येक पाखंड और प्रत्येक अच्छे-बुरे कर्मकांड का स्रोत वेदों को बता कर देश की अनपढ़, अज्ञानी,

धर्मभीरु जनता को ठगा जा रहा था। महर्षि दयानंद ने वेदों को हिंदी यानि जनभाषा में उपलब्ध कराया और हिंदी भाषा के माध्यम से एक बड़ी धार्मिक क्रांति का सूत्रपात किया।

- चूँकि आर्यसमाज की आधिकारिक भाषा हिंदी थी तो उनके शिष्य जहाँ भी थे, उन्होंने वहीं हिंदी का प्रचार और प्रसार किया और धर्म, राजनीति, समाजशास्त्र, राजनीतिशास्त्र, विज्ञान आदि विषय भी जन सामान्य की पहुँच में ला दिये। अहिन्दीभाषी राज्यों में जो आज हिंदी की उपस्थिति दिखती है, उसका बड़ा श्रेय महर्षि दयानंद सरस्वती और उनके अनुयायियों को है।
- विशालता और विषय विविधता के सन्दर्भ में कोई भी तत्कालीन मौलिक लेखक महर्षि दयानंद के समकक्ष नहीं है।
- महर्षि दयानंद के लेखन कार्य में सभी रसों और शैलियों यथा हास्य-व्यंग्य, गंभीरी, तर्क, ओज, इतिवृत्तात्मक आदि का प्रयोग हुआ है जिसने हिंदी को एक सामर्थ्यशाली भाषा के रूप में स्थापित किया।

अनेक विद्वान मानते हैं कि यदि उन्होंने मात्र वेद भाष्य भी किया होता तो भी हिंदी संसार उनका ऋणी रहता। महर्षि दयानंद सरस्वती के लेखन से भावी हिंदी लेखकों में हिंदी भाषा में अब तक असम्भव समझे जाने विषयों यथा दर्शन, अध्यात्म एवं अन्य आधुनिक विषयों पर लिखने का आत्मविश्वास पैदा हुआ। ये उन्हीं के हिंदी लेखन का परिणाम था कि आगे चलकर उनके शिष्यों ने विज्ञान जैसे विषयों पर भी हिंदी में सफलता से लिखा। हिंदी अर्थात् आर्यभाषा में महर्षि दयानंद सरस्वती भारत राष्ट्र की कल्पना करते थे। वे भारत को 'आर्यवर्त' लिखते थे और उसी के अनुरूप उन्होंने हिंदी को भी आर्यभाषा अर्थात् एक महान राष्ट्र के श्रेष्ठ नागरिकों की भाषा माना। इस बात का श्रेय निश्चित ही महर्षि दयानंद सरस्वती को जाता है कि आज अच्छी हिंदी बोलने का अर्थ है अधिक से अधिक संस्कृत तत्सम शब्दों से परिपूर्ण हिन्दी। इसे पहले हिंदी में तद्भव शब्दों की भरमार होती थी जो क्षेत्र और समय के अनुसार बदलते रहते थे। महर्षि दयानंद सरस्वती ने हिंदी को एक प्रामाणिक रूप दिया।

हिंदी भाषा को शब्द सम्पदा का योगदान:

यह एक निर्विवाद तथ्य है कि महर्षि दयानंद के हिंदी गद्य साहित्य की वेदी पर पदार्पण करने तक हिंदी गद्य का स्वरूप स्थिरता को प्राप्त नहीं हुआ था। वह समय था जब हिंदी अपने अस्तित्व और अस्मिता की लड़ाई लड़ रही थी और इस लड़ाई में राजा शिवप्रसाद जैसे लोग देवनागरी में लिखी फारसी को ही हिंदी के रूप में स्थापित कर अपने सरकारी आकाओं को खुश करने में लगे थे। दूसरी ओर भारतेंदु जैसे विद्वान भी हिंदी में तद्भव शब्दों के प्रचलन के पक्ष में थे। तद्भव शब्दों के प्रयोग का सबसे बड़ा दोष यह था कि स्थान बदलने से तद्भव शब्दों का अर्थ भिन्न होने का डर रहता था। इसका उपचार महर्षि ने सभी भाषाओं के स्रोत संस्कृत में से निकाला। उन्होंने संस्कृत के धातु आधारित शब्दों के तत्सम रूपों का हिंदी में प्रयोग किया। आज उनके दिए सहस्रों संस्कृत तत्सम शब्दों का हम शुद्ध हिंदी के शब्द मानकर प्रयोग करते हैं। वर्तनी की अस्थिरता के कारण जो दोष उस समय के अनेक बड़े साहित्यकारों के कार्यों में मिलते हैं, एक सीमा तक वे दोष प्रारम्भिक काल में महर्षि दयानंद सरस्वती के लेखन में भी मिलते थे। लेकिन जल्दी ही वे दोष समाप्त हो गये। हिंदी भाषा की वर्तनी को स्थायित्व देने में महर्षि का अनन्य योगदान है।

महर्षि दयानंद ने संस्कृत शब्दों को हिंदी में सर्वमान्यरूप से प्रचलित किया। "ऋषि दयानंद ने परमात्मा को इतने विशेषण शब्दों से सम्बोधित किया है जितना किसी भक्तकवि या साहित्यकार ने भी नहीं किया। उनकी शब्द-सम्पदा में तत्सम और तद्भव दोनों प्रकार के शब्द हैं। हिंदी भाषा को उन्होंने पोप, गर्वगंड, गुरुकुल, दानाध्यक्ष, दानाभक्ष, शतघ्नी, भुशुण्डी, आश्रम, स्नातक, कुलपति, आर्य, आर्यावर्त, आर्यभाषा, नमस्ते, शर्करावत (शरबत) आदि सहस्रों नये शब्द दिए हैं। सभी मुख्य धर्मों के अनुयायियों को उन्होंने जैनी, किरानी, पुराणी और कुरानी शब्दों से पुकारा। पाखण्डी पुरोहितों के लिये पोप, अन्यायी राजा के लिये 'गर्वगंड', बलाध्यक्ष जैसे शब्द दिए।

उनकी व्यंग्य बुद्धि ने पुजारी के स्थान पर पूजारि अर्थात पूजा का दुश्मन शब्द दिया। अनेक नये शब्द जैसे पेठार्थी, गपोड़शंख, गड़बड़ाध्याय, पाताल, त्रिविष्टप (क्रमशः अमेरिका और तिब्बत), निरक्षर भट्टाचार्य आदि शब्द भी महर्षि दयानंद की देन हैं।¹⁵

महर्षि दयानंद सरस्वती ने सत्यार्थप्रकाश में एक प्रभु भक्त की तरह परमेश्वर के शताधिक नामों की गुण, कर्म, स्वाभाव के आधार पर व्याख्या की। उन्होंने सामान्य जन को यह समझाने का प्रयत्न किया कि प्रभु के अनेक नाम उनके गुण कर्म और स्वाभाव के कारण हैं न कि ये पृथक्-पृथक् मनुष्यरूपी देवताओं के नाम हैं। महर्षि लिखते हैं, “रुदिर अश्रु विमोचने” इस धातु से ‘णिच’ प्रत्यय होने से रूद्र शब्द सिद्ध होता है। रोदयत्यन्यायकारिणो जनान स रूद्र’ जो दुष्ट कर्म करनेहारों को रुलाता है इससे उस परमात्मा का नाम रूद्र है।¹⁶

गणेश और शंकर शब्दों की व्याख्या में लिखते हैं, “गण संख्याने” इस धातु से गण शब्द सिद्ध होता है। इसके आगे ईश वा पति शब्द रखने से गणेश और गणपति शब्द सिद्ध होते हैं... जो प्रकृतित्यादि जड़ और सब जीव प्रख्यात पदार्थों का स्वामी वा पालन करनेहारा है, इससे उस ईश्वर का नाम गणेश वा गणपति है ...यः शंकल्याणम करोति स शंकरः’ जो कल्याण अर्थात सुख का करनेहारा है इससे उस ईश्वर का नाम शंकर है। ...यो महतां देवः स महादेवः जो महान देवों का देव अर्थात विद्वानों का भी विद्वान, सूर्यादि पदार्थों का प्रकाशक है इसलिए उस परमात्मा का नाम महादेव है।¹⁷

निष्कर्ष :

महर्षि दयानंद सरस्वती ने और उनकी प्रेरणा से उनके अनुयायियों ने हिंदी भाषा के स्वरूप को स्थिर करने में, हिंदी को हर तरह की साहित्य रचना के योग्य बनाने में और देश ही में नहीं अपितु विदेशों तक में उसका प्रसार करने में एक विशिष्ट भूमिका निभाई। जितने विविध विषयों पर परिष्कृत हिंदी भाषा में महर्षि दयानंद सरस्वती ने लिखा, वह तब तक सामान्य बात नहीं थी। महर्षि दयानंद सरस्वती ने हिंदी साहित्य को ओज और सरलता दोनों दीं जिससे हिंदी भाषा बुद्धिजीवियों एवं सामान्य जन दोनों में समान रूप से लोकप्रिय हुई। सत्यार्थप्रकाश इसका ज्वलंत उदाहरण है। भारत के तत्कालीन अचेतन प्रायः समाज में नवचेतना के प्राण फूंकने का जो कार्य सत्यार्थप्रकाश ने किया वैसा दूसरा उदाहरण तत्कालीन हिंदी साहित्य में नहीं मिलता।

¹⁵ सत्यार्थप्रकाश, दयानंद सरस्वती, सार्वदेशिक आर्यप्रतिनिधि सभा, दिल्ली

¹⁶ सत्यार्थप्रकाश, दयानंद सरस्वती, सार्वदेशिक आर्यप्रतिनिधि सभा, दिल्ली, पृष्ठ २५

¹⁷ सत्यार्थप्रकाश, दयानंद सरस्वती, सार्वदेशिक आर्यप्रतिनिधि सभा, दिल्ली, पृष्ठ २८, ३१