

# Implication of Some BGA Biofertilizers on growth and yield of *Oryza sativa* L. (var. Shriram)

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**ABSTRACT:** BGA is considered to be one of the most important components of the nitrogen fixing biomass in paddy fields. The agricultural significance of BGA in rice cultivation is directly related with their nitrogen fixability and other optimistic effects for plants and soil. After water, nitrogen is the second limiting factor for plant growth in many fields and deficiency of these elements is met by fertilizers (Malik et al 2001). An excessive use of chemical fertilizers has generated several environmental problems including the greenhouse effect, ozone layer depletion and acidification of water these problems can be tackled by use of biofertilizers (Choudhury and Kennedy 2005, Rai 2006). BGA plays a potential role in crop protection as herbicides, algacides, nematicides, fungicides and insecticides (Deviram et. al 2011). In present investigation attempts were made to inoculate the locally identified strains of cyanobacteria (BGA) as biofertilizers and to examine its effects along with chemical fertilizers (NPK) upon growth and yield of *Oryza sativa* L. (var. Shriram), Experiments determined that combined inoculation of BGA with chemical fertilizers (NPK) proved better results in almost all growth parameters and yield.

**Keywords:** BGA, Paddy, Cyanobacteria, Biofertilizers

## I. INTRODUCTION

With the day to day rise in population in the developing countries including India, agriculture is undergoing immense stress continuously. Even with all the advancements, land area under farming is not increasing but progressively depleting which has caused an overall increased burden on agriculture. Therefore, the land available for agriculture should be economically managed so as to obtain maximum results from the utilized land. Most of our agriculturally available land is deprived in minerals necessary for proper plant growth and development. Repeated use of land for farming

leads to progressive deprivation of fertility as a result of depletion of nutrients from the land. One such very essential plant nutrient is Nitrogen. It is an important element required for proper plant growth and development. It is supplemented in the form of chemical fertilizers which could pose a serious health hazard or can produce threatening levels of pollution in the soil and taking a toll on soil health. Apart from being expensive, it also highly increases production costs. This is the mainspring reason for higher recommendations towards using of biofertilizers instead of chemical fertilizers. Biofertilizers are living microbial formulations which fix the available atmospheric nitrogen while living symbiotically with the plants or free living in the soil. The use of bio fertilizers lead to improved nutrients and water uptake, plant growth and plant tolerance to abiotic and biotic factors (Itelima et. al 2018)

The paddy field proves to be a suitable ecosystem for cyanobacterial habitation with considering their requirements for light, water, high temperature and nutrient availability. This could be the reason for more abundant cyanobacteria growth in paddy soils than in upland soil (Roger and Reynaud 1982, Kondo and Yasuda 2003). The abundance of cyanobacteria in rice fields has been reported by number of researchers since Fritsch' accounts (Fritsch 1907 a,b). Culture studies were introduced by Bannerji (1935) and the importance of blue - green algal nitrogen fixation in helping to maintain fertility of rice fields was first recognized by De (1939). Thereafter, Watanabe and Konishi (1951), Venkataraman (1972) and Roger and Reynaud (1982) studied further on this basis. The inoculation of BGA is an alternative and sustainable source of nitrogen to increase the rice productivity (Paudel et. al 2012). Beneficial effects of cyanobacterial inoculation on rice were also reported by Subhashini et. al 2007, Khairnar and Thakur 2011, Thakare et. al 2011, Malakar et. al 2012, Satsangi and Yadav 2013, Sao and Samuel 2015, Singh et. al 2016, Sinha 2017, Mahto and



# Seasonal variation and diversity of Chlorophyceae Algae in paddy field area of Nagbhid Tehsil, Chandrapur district, Maharashtra, India

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**ABSTRACT:** The diversity of Chlorophyceae in relation to seasonal variation of paddy fields of Nagbhid Tehsil, District Chandrapur, Maharashtra has been undertaken for the first time in this area. The continuous seasonal collections have been made during regular field visits in the year 2017 to 2019. Total 22 Chlorophyceae taxa could be identified in the present investigation belonging to various orders i.e., Zygnematales, Chlorellales, Ulotrichales, Sphaeropleales, Oedogoniales, Chaetophorales, etc. Rice fields provide a very comfortable habitation to different kinds of algae occurring in the stagnant water, prevalent high temperature and high humidity in the rice fields. The present investigation reveals that the comparatively maximum number of Chlorophyceae members is growing in the rainy season in comparison to winter and summer seasons.

**KEYWORDS:** Paddy, Chlorophyceae, Nagbhid Tehsil, Diversity.

## I. INTRODUCTION

Chlorophyceae flora from a different region of India has been studied by various authors like Prescott 1931; Tipparan and Yuwadee 2012; Hosmani 2013, Satpati 2013; Das and Adhikary 2014; Patil and Deore 2017; Farishta Yasmin et.al 2015, and Rajeshwari and Krishnamurthy 2015.

The Chlorophyceae is a large and unique group of freshwater green algae which are important both economically and scientifically. The green algae play an important role acting as a primary producer and also increase the fertility of the soil in paddy fields. (Amit Kumar and Radha Sahu 2012). Algalization seems to have little effect on the physical properties of the soil, however, it may improve soil aggregation (Sankarama.1917). algae are also used as biological indicators of water pollution (Subramanian, 1996, Handa and Jadhav,2015). Chlorophyceae members form the base

of the food chain, are directly or indirectly a good source of food for various animal groups (Rao,1975). In recent years it is used as an alternative source for food, fodder medicine, and also an important tool for researchers in nanotechnology, space biology, Genetics, and other fields of applied sciences (Shrestha et.al. 2013).

Thus it is essential to study the diversity of green algae in fluctuating physico-chemical parameter of paddy fields area 06 Nagbhid Tehsil to conserve and to maintain the ecosystem

## II. MATERIAL AND METHODS

### Area of Study:

In present investigation four study areas, of Nagbhid Tehsil namely Mohadi area, Talodhi area, Navegaon area and Nagbhid area were selected for the sampling of water, soil, and algal flora pertaining to the respective study area in different seasons. Mohadi Area which is located 10 km from Nagbhid towards north (Longitude 79°40'0" E and Latitude 20°35'0" N). Talodhi Area is located 15 km from Nagbhid Towards south (Longitude 79°40'0" E and Latitude 20°35'0" N), Navegaon Pandav area is located 0.9 km from Nagbhid Towards East (Longitude 79°40'0" E and Latitude 20°35'0" N). Nagbhid area is located 0.2 km from Nagbhid city Towards West (Longitude 79°40'0" E and Latitude 20°35'0" N) of Nagbhid Tehsil Dist. Chandrapur, Maharashtra.

### Method of sampling and identification

Collections of samples were done during the morning period in clean sample bottles and polythene bags. A small amount of sample was used for the taxonomical identification and the remaining sampling were preserved in 4% formalin for a long time. The collected algal samples were observed



## Diversity of blue green algae in rice fields of nagbhid tehsil,dist. chandrapur, maharashtra, india

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**ABSTRACT:** Blue Green Algae (Cyanobacteria) are mostly present in paddy fields and are valuable to maintain soil fertility in them through nitrogen fixation therefore blue green algae are considered to be very useful in agriculture. The role of Blue green algae is considered very useful in Agriculture. The role of blue green algae in nitrogen fixation and enhancement in soil fertility has been extensively studied worldwide; Rice is the principal crop of Nagbhid Tehsil, District Chandrapur, Maharashtra. Cultivated on 25803 hectares out of 51900 hectares of total area under cultivation of crop. This study is aimed to characterize the abundance of blue green algae in paddy field areas of Nagbhid Tehsil. In present investigation, 45 species of Blue green Algae were identified. Both Heterocystous and non Heterocystous forms were observed. Maximum number of species represented the genera Nostoc, Anabeana, Oscillatoria, Microcystis, Lyngbya.

**KEYWORDS:** Cyanobacteria, diversity, paddy fields, Nagbhid Tehsil

### I. INTRODUCTION

Cyanobacteria also known as blue green algae is a large group of structurally complex and ecologically significant gram-negative prokaryotes which are abundantly present in rice fields and also maintain the fertility of this ecosystem. The paddy field ecosystem provides a suitable habitat for the growth of blue green algae with respect to their requirements for light, water, High temperature and nutrient availability. This could be the reason for more abundant growth of Cyanobacteria in paddy soils than in upland soils (Roger and Reynaud, 1982 and Konda and Yasuda 2003).

Cyanobacteria play an important role in maintenance and buildup of soil fertility (Board, 2004), consequently, increasing rice growth and act as a natural biofertilizer (Song et. al, 2005). Species of Nostoc, Anabeana, Scytonema, Oscillatoria, Lyngbya and many more other genera are

widespread in the soils of Indian rice fields and are responsible to contribute significantly to increase the fertility of that soil. Various Workers have studied the cyanobacterial flora of rice fields of our country (Rao et. al 2008; Nayak and Prasanna 2007; Chaudhari. al 2011; Dasgupta and Ahmed, 2013; Singh et. al, 2014;Thajamanbi et. al, 2016; Basavaraja. and Naik., 2019) and few attempts have also been carried out to explore their diversity in the state of Maharashtra (Gonzalves and Gangla, 1949; Patil and Satav, 1986; Madane and Shinde, 1993; Patil and Chougule, 2009; Kamble, 2017; Ghadge and Karande, 2019) however, Information of Systematic study on blue green algae from Nagbid Tehsil is inadequate. The agro-climatic conditions of the rice fields of Nagbhid tehsil favors the growth of Cynobacterial population. Hence, the current study has been aimed at doing a thorough study of Diversity of blue green algae from these areas.

### II. MATERIALS AND METHODS

**Study Area:** Mohadi Area which is located 10 km from Nagbhid towards north (Longitude 79°40'0" E and Latitude 20°35'0" N). Talodhi Area is located 15 km from Nagbhid Towards south (Longitude 79°40'0" E and Latitude 20°35'0" N). Navegaon Pandav area is located 0.9 km from Nagbhid Towards East (Longitude 79°40'0" E and Latitude 20°35'0" N). Nagbhid area is located 0.2 km from Nagbhid city Towards West (Longitude 79°40'0" E and Latitude 20°35'0" N) of Nagbhid Tehsil Dist. Chandrapur, Maharashtra

**Collection, Preservation and identification of samples:** Samples were collected in Rainy season from 4 different sites of Nagbhid Tehsil, Dist. Chandrapur, Maharashtra. The sampling was done randomly from both soil and water of the paddy fields. The algal samples were preserved in 4% formalin and slides were prepared by staining with methylene blue and mounted in glycerin. Detail





**Composition And Diversity Of Algal Blooms In Paddy Fields Of Nagbhid  
Taluka, District Chandrapur, Maharashtra, India**

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**Abstract:**

In present investigation algal diversity from Nagbhid taluka has been studied for the period of two years from February 2017 to February 2019. Nagbhid taluka has an area of 1100 Sq. Km. The area under cultivation is around 51900 hectares. Nagbhid taluka has rice cultivation area of 25803 hectares. Soil sample were collected from Mohadi, Kotgaon, Mousi, Govindpur, Nanded and Talodi. In present study 58 algal taxa have been identified, out of which 35 belongs to Cyanophyta, 15 to Chlorophyta, 03 to Euglenophyta and 05 to Bacillariophyta.

**Keywords:** Algal diversity, Nagbhid Taluka, Paddy Field, Cyanophyta

**Article Classification:** Research article

**Introduction:**

Rice is the World's most important food crop. More than 40 percent of the world population depend on the rice as the major source of calories. Most of the rice in tropical countries is produced in low land areas. To feed the increasing demand of global population, the world's annual rice production would have to increase from the present 528 million to 760 million by the year 2020. Nitrogen is a key input limiting rice production worldwide. To produce a tons of grain, the rice crop takes up an average of 20 Kg. Nitrogen/ hectore from the soil over 3-5 months to sustain rice productivity at present level, the nitrogen removed in harvested produced or lost from the system must be replace by nitrogen fertilizers or through biological Nitrogen fixation (BNF).

Most of the world's rice production is in Asia where, for Centuries, farmers have practice a cultural system that insure modest but stable yields, yet maintained a degree of nitrogen fertility in the soil. Additions of nitrogen through BNF balance the losses of nitrogen through crop harvest and other mechanisms, creating a dynamic equilibrium (Laddha, 1997). This equilibrium was disturb by the need to increase rice production and high yielding rice varieties (HYVs) which can use additional Nitrogen in comparison with traditional varieties, the HYVs needs larger amounts of nitrogen from soil.

Fritsch and John (1942) found a correlation between the composition of the algal flora and soil characteristics. Lund (1947), observed that the number of algae in these soils varied with the weather conditions. The development of soil algae in sodium padzolic soils and their relation to the cultivated plants where studied by Shtina (1957), Granhall (1970), reported that Nostoc and Anabaena where the commonest nitrogen fixing algae in Swedish soil and had greatest, H tolerance. Intensified to two and even three crops per year. Another trend detrimental to soil N fertility is the increase in area being crop only to cereals.



## Biodiversity of Macrophyte in Naleshwar( mohadi) Dam of Sindewahi Tehsil in Chandrapur District (M.S.), India

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### Abstract

The present research was carried out to find the diversity of aquatic weeds in Naleshwar Dam of Sindewahi tehsil of Chandrapur district of Maharashtra state (India) in the year 2020-2021. In all total 09 different species of aquatic macrophyte were found to be present Naleswhwar(Mohadi) Dam. The aquatic macrophyte were represented by different types as, submerged floating, rooted submerged, rooted emergent and marginal weeds. In present study rich biodiversity of aquatic weeds indicate its enriched status on which a lot of migratory birds are visitors in winter season.

**KEYWORDS:** Macrophyte, biodiversity, Naleshwar Dam, Sindewahi, Chandrapur district.

### INTRODUCTION

Aquatic weeds referred to as macrophytes are a part of aquatic vegetation including macroalgae and angiosperms resident of aquatic habitats. Aquatic weeds are present in places of marshy land and water logged areas in the whole world. The weeds are disturbing to production of fish fauna in any sort of water body. Macrophytes of freshwater ecosystems play important roles in the structure and functioning of ecosystems. Different forms of macrophytes present seasonal and variable growth patterns. The aquatic macrophytes are classified as free floating , rooted floating, submerged and emergent hydrophytes based on their characteristics. Proper identification of aquatic weeds is of utmost importance for their proper control. They are classified according to various habitats which form their living environment.

Macrophyte are essential in natural aquatic systems and form the basis of a water body's health and productivity other organisms. Species of macrophytes are of great importance today for natural food supply to fish species is concerned. Macrophytes of different water bodies in India are studied by different researchers like Arya, M. et. al.(2018), Chambhare et. al. (2008), Chudamani and Siddhi (2004), Deka and Sarma (2014), Parvenn, M et al(2014), Shashikumar and Chelak Prasad (2015), Murkute and Chavhan (2016), Sharma and Singh.(2017), Shende et al (2016), Maitreya (2015), Chunne and Nasre (2018), Arya, et al, (2018), Singh et al (2018), Sharma and Dwivedi (2016), Shende et al (2016), Sitre (2013), Wahane, et. al. (2017), Mahajan and Harney (2018). The freshwater ecosystems of Naleshwar Dam in





## AN ANALYSIS OF ZOOPLANKTON IN A MAMA LAKE, NEAR WANI TEHSIL, DISTRICT -YAVATMAL (M.S)

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**ABSTRACT:** Planktons are important components of Aquatic ecosystem. Quantitative and qualitative abundance of plankton in a water body are of great importance in imposing sustainable management policies as they vary from location to location and aquatic systems within the same location. Seasonal changes in the pattern of zooplankton community have been driven by a combination of abiotic and biotic factors. Zooplanktons are heterotrophic planktonic animals floating in water. They serve as good indicators of changes in water quality. Hence the present study was undertaken to assess the zooplankton diversity in a Mama lake situated nearby Wani, District-Yavatmal, (M.S). Results indicate that 40 species belonging to five different groups were recorded during the period of study. Out of these 40 species, two each belonged to Protozoa and Ostracoda, 27 to Rotifera, 5 to Cladocera, 3 to Copepoda and 1 to Anostraca. A percentage composition reveals that rotifera represented 66.03%, cladocerans 12.23%, protozoans 9.56%, copepodans 7.11% and ostracods, 3.51% respectively.

**Key words:** - Mama Lake, Zooplankton, Protozoans, Rotifers, Copepods, Cladocerans, Ostracods.

### INTRODUCTION:

Plankton is the most sensitive floating community which is being the first target of water pollution, thus any undesirable change in aquatic ecosystem affects diversity as well as biomass of this community. Human demands on freshwater ecosystems have risen steeply over the past century leading to large and growing threats to biodiversity around the world (Dudgeon et al., 2006). As a result of this global crisis, documenting losses of biodiversity, diagnosing their causes and finding solutions have become a major part of contemporary freshwater ecology (Strayer and Dudgeon, 2010). Further, the qualitative and quantitative abundance of plankton in a water body are of great importance for imposing sustainable management policies as they vary from location to location and aquatic systems within the same location with similar ecological conditions (Boyd, 1982). In addition, in many lakes and reservoirs zooplankton community have been reported to show changes in abundance of specific taxa during the late

spring through summer especially in the tropics (Sivakamiet al., 2015). Seasonal patterns in zooplankton communities of lakes and reservoirs are recognized as being driven by a combination of abiotic factors (Moore and Folt, 1993; Benndorfet al., 2001), nutrients (Urabe et al., 1997) as well as biotic factors like competition (Gliwicz and Pijanowska, 1989). Hence the present study was undertaken to study the zooplankton community in a Mama lake situated nearby Wani Tehsil, Dist- Yavatmal (M.S.).

### MATERIALS AND METHODS:

The aquatic system chosen for the present investigation is a lake situated in Yavatmal District and referred to as Mama Lake. The zooplankton net used in the present study was of 270 mesh sieve (pore diameter 20-30 $\mu$ ). The zooplankton were fixed immediately with 4% formalin for further microscopic analyses. Identification of planktons was done after Clegg (1956), Edmondson(1959), Hutchinson(1967),



## Current Study of Physicochemical parameters and Plankton Biodiversity with respect to Fish Production in Nawargaon Lake, Th. Maregaon, Dist. Yavatmal, (M.S.). India

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### ABSTRACT

Nawargaon Lake has rich number of species and biodiversity of aquatic animals. The Nawargaon Lake is principal fresh water body located within Maregaon tahsil in Yavatmal District of Maharashtra. Now a day lake is degraded by both natural and anthropogenic activities, which deteriorate their quality of lake water. Due to increased human population, industrialization, use of fertilizers and man-made activity water is highly polluted with different harmful contaminants. It is necessary that the quality of drinking water should be checked at regular time interval. Limnological parameter and plankton diversity are important criterion for determining the suitability of water for irrigation and drinking purpose. The water remained moderately alkaline (pH 7.6) while electrical conductance (0.2846ms/cm), TDS (224.5mg/l), chloride (145mg/l), hardness(137.25mg/l) and alkalinity(205.19mg/l) showed low mean values. Average dissolved oxygen levels were at 4.56mg/l while average nitrate and phosphate levels were 2.50mg/l and 3.48mg/l respectively. On the basis of water quality parameters in general, Nawargaon Lake was not found to be eutrophic. A high rate of primary production (405.044mgc/m<sup>2</sup>/hr), diversity of phytoplankton(42forms), zooplankton(98forms) and fish (15species) were also observed during the study period. Nawargaon Lake has greatest importance for humankind. The specific status of limnological characteristics and diversity of plankton in Nawargaon Lake have been studied through seasonal survey in two annual cycles(2018-19 and 2019-20) and annual survey of fishes in two annual cycles.

**Keywords:** Phytoplankton, Limnological characteristics, Biodiversity, Nawargaon Lake, Eutrophic, zooplankton.



## Comparative study on biodiversity of phytoplankton and zooplankton of Navargaon Lake in Maregaon Taluka, district-Yavatmal (Maharashtra) India

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### Abstract

Present work was carried out at Nawargaon Lake, Maregaon Taluka, District-Yavatmal, Maharashtra, India on phytoplankton and zooplankton. During study period phytoplankton community was represented by four group's viz., *Cyanophyceae*, *Bacillariophyceae*, *Chlorophyceae* and *Euglenophyceae*. Among the four, *Cyanophyceae* was the most dominant group. The phytoplankton abundance was evident during monsoon season. The zooplanktons were represented by four group's viz., *Rotifera*, *Cladocera*, *Copepoda* and *Ostracoda*. Among these *Rotifera* exhibited numerical dominance. The aquatic weeds found in the lake included species of *Eichornia*, *Hydrilla*, *Marsilia*, *Meriophyllum*, *Chara*, *Ipomea*, *Najas* and *Vallisneria*.

**Keywords:** community, monsoon, phytoplankton, zooplankton, dominance

### Introduction

In India water reservoirs have a rich and varied spectrum exceeding about 400 species. These wet lands are very important as they are good and useful sources to mankind in different ways. Some are used for irrigation, some for potable water supply, raw water supply, recreation and washing etc. With rapid urbanization, constant disturbance in demographic structure especially during second half of last century, all these water bodies have been subjected to various environmental problems.

The physico-chemical properties of water determined the quality and quantity of plankton. The plankton community consists of organisms ranging from minute plants to small animals. Other two categories of life in an ecosystem are benthos and nekton. Benthos is the life at the bottom, like aquatic earthworms, insect larvae and certain fishes. Plankton is most essential for many fishes as food. The plankton is further divided into two main categories such as phytoplankton and zooplankton. Phytoplankton includes algae, diatoms etc. They occupy the base of the food chain and produce the food material on which other organisms in the ecosystem sustain. The phytoplankton drifts about at the mercy of the wind and water movements. Algae consist of three major classes as *chlorophyceae*, *cyanophyceae* and *bacillariophyceae*. In natural water, algae are small and numerous, usually at a level of 102-106 cells/ml. Phytoplankton seems as a very good indicator of pollution of the fresh water. Blue-green algae form the main stay of phytoplankton community in the majority of the man-made reservoirs. In late summer, the number of plankton's declines as a thermocline develops and nutrients in surface are depleted by phytoplankton. This is called as summer minimum.

Zooplanktons are abundantly found in the shallow areas of a water body. The zooplankton unlike phytoplankton are particularly distributed horizontally and vertically in an ecosystem. The zooplankton forms an important group as it occupies an intermediate position in the food web.

Many of them feeding on algae and bacteria and in turn being fed upon by fishes. The most commonly found zooplanktons are protozoans, crustaceans like *cladocerans*, copepods, ostracods and rotifers.

### Materials and Methods

The present study was conducted in a minor reservoir Nawargaon Lake in the (Latitude:20.0763283N and Longitude:78.7675095E), constructed as a part of irrigation project by Government of Maharashtra and situated in the periphery of 6 to 8 km of Maregaon Taluka. The reservoir is located in Nawargaon village with a well-built tank bund. During this period study were conducted on biological organisms such as phytoplankton and zooplankton.

### Sampling procedure

The water samples were collected in five stations of the reservoir and one litre of water was collected in a wide mouth polythene bottle and tightly stoppered filled with surface water for biological analysis.

Plankton net (mesh size 65  $\mu$ m) was used to filter 50 litre of surface water to obtain 100 ml of the net plankton concentration.

All the samples were packed in a cane basket, protected them from intense sunlight and contamination and were transported to the laboratory without any delay.

### Biological analysis

Enumeration of Plankton: Sedgwick-Rafter cell of 1.0 ml capacity was used for counting microalgal forms, rotifers and micro crustaceans from net plankton samples. Depending on the population density the number of organisms in three SR cells was counted.

### Quantitative analysis

50 litres water was collected and poured through plankton net and collected planktons are measured with measuring jar.



# Acoustic behavior of aqueous lithium Hydroxide with dimethyl foramide at different temperatures using Pulse Echo technique

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## Abstract

The variation of volume ratio (v/v) and temperature of the liquid mixture dependence of thermo-acoustic properties are important parameters for the verification of intermolecular interactions. The thermo-acoustic parameters such as density ( $\rho$ ), velocity (U) & viscosity ( $\eta$ ) are determined for a ternary mixture (n=3) mixture of aqueous lithium hydroxide and Dimethylforamide system at 0.0% to 100% (v/v) and at different temperatures. Using the experimental data, adiabatic compressibility ( $\beta_a$ ), free length (Lf), free volume (Vf), internal pressure ( $\pi$ ), and Gibb's free energy ( $\Delta G$ ) are evaluated at different temperatures. The present paper shows the nonlinear characteristics of velocity and the thermodynamic properties that lead to dipole- ion interaction between dimethylforamide and 1N aqueous lithium hydroxide which is shown to be stronger than dipole- ion interaction between water and aqueous lithium hydroxide. These thermodynamic characteristics with volume ratio (v/v) of the mixture are explained in terms of weak force solutions.

**Keywords:** Ultrasonic velocity, acoustical parameters, molecular interactions, normality (1N), aqueous lithium hydroxide (aq. LiOH.H<sub>2</sub>O) and dimethylforamide (DMF).

## Introduction

The ultrasonic studies of liquid are used to understand the behavior and strength of molecular interactions [1-5]. The studies on the physio-chemical properties of organic liquid such as: Dimethylforamide in aqueous solution of lithium hydroxide provides useful information, which is used to assess the information of molecular interaction [6].



# Thermodynamical studies on ternary mixture of sodium hydroxide in aqueous medium & 1, 4 dioxane using Ultrasonic interferometer techniques at different temperature

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## Abstract

As a primary goal, the abstract should render the general significance and conceptual advance of the work clearly accessible to a broad readership. References should not be cited in the abstract. Leave the Abstract empty if your article does not require one, please see the Summary Table for full details. The thermo-acoustic parameters such as density ( $\rho$ ), ultrasonic velocity (U) and viscosity ( $\eta$ ) are determined for the ternary mixture of aqueous Sodium hydroxide and 1,4 dioxane system at 0.0% to 100% (v/v) and at different temperature. These experimental data have been used to estimate the acoustical parameters such as, adiabatic compressibility ( $\beta_a$ ), free length ( $L_f$ ), free volume ( $V_f$ ), internal pressure ( $\pi_i$ ), and Gibb's free energy ( $\Delta G$ ). The behaviors of these parameters were explained on the basis of intermolecular interaction present in the mixture.

**Keywords:** Ultrasonic velocity, molecular interactions, normality (1N); aqueous sodium hydroxide (aq. NaOH) and 1, 4 dioxane.

## Introduction

The ultrasonic studies of liquid mixture provide important information about the behavior and strength of molecular interactions [1-6]. The measurement of ultrasonic velocity in the organic liquid mixture is a useful tool to study the physicochemical properties of the liquids and also explain the mechanism of molecular interaction [7-9].



## COULD THIS BE OUR POSTHUMAN FUTURE? THE THEME OF CRYONIC CONTROL OVER DEATH IN DON DELILLO'S 'ZERO K'

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### **Abstract**

*The American novelist Don DeLillo, in his novel 'Zero K' (2016), presents a rather unusual theme of a human attempt of having technological control over death through a cryogenic experiment called cryonics. But this experiment creates a disjointed persona of the subject – the mind and body separated from the unified 'self'. In the present era of biomedical advances and the proliferation of wearable technology devices, machines and organisms found themselves increasingly assimilating into each other, and hence one may feel that we humans are on the verge of being posthuman. But, Posthuman does not mean to completely disown the biological body as a changeable container that could be replaced with any other artificial material, and associate 'self' only with the mind. Undertaking such an experiment to circumvent death, and hope for immortality, shows a distorted view of technology and a misinterpretation of the term 'posthuman'.*

**Keywords:** *Don DeLillo, Zero K, technology, cryonics, posthuman, ecocriticism.*

Don DeLillo (1936 - ), one of the major contemporary American novelists, dramatist and a short story writer, is widely considered, by modern critics, to be one of the central figures of literary postmodernism. In his novels, he explores such post-modern themes as rampant consumerism and the resultant issue of waste and garbage, underground conspiracies, promise of rebirth through violence, the role of mass media in forming simulacra, the psychology of crowds etc. However, while dealing with these issues, he often engages himself with the overpowering forms of technology with which our postmodern lives have become so embedded, and its varied repercussions on nature, environment and society.

But, in his latest novel 'Zero K' (2016), DeLillo comes up with an intriguing subject, the ostensible similarity of which to the popular and mainstream science fiction, may deceive us into considering it as merely fantastic sensational. But, it is not the case. Because the issues this novel raises are of crucial importance to the technological age in which we live. The novel projects an ultra-rich elite class's now-seeming-to-be-realizable dream of, suspending death and renewing the aging/dying human body through the technology of cryopreservation and cryonics. In this connection, a website review of the novel, quoting a novelist Sam Lipsyte, observes "deep-freezing humans has been a staple of science fiction for decades" but the difference for DeLillo is that he confronts the subject at a time when cryogenics-for-the-rich is no longer the stuff of fiction, but a distinct reality" (conversations.e-flux.com).

The novel 'Zero K' presents the story of Jeffrey Lockhart, the son of a billionaire Ross Lockhart, who is summoned by his father to visit and bid farewell to his weakened stepmother Artis, who has agreed to surrender her frail dying body to the Convergence – a cryogenic lab



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GLOBALIZATION AND FARMER SUICIDES IN INDIA

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**ABSTRACT**

Economic Impact While the economic aspect of globalization is not known, it can be said that a large part of the ongoing debate about globalization and the direction of this debate is related to this aspect. One aspect of this problem is how to define economic globalization. As economic globalization is mentioned, our focus is on international institutions like the International Monetary Fund and the World Trade Organization and the role played by them in determining economic policies around the world. However, globalization should not be viewed from such a narrow perspective. Apart from these international institutions, many players are also involved in economic globalization. To understand economic globalization from a more comprehensive view, we should think in terms of sharing the economic benefits from it, in terms of who benefited most from globalization and who did the least. It also needs to see who has suffered due to globalization.

Due to liberalization and globalization, the import of food grains has already started at cheaper prices and on the other hand, farmers in our country are forced to burn their finished crops in the fields. The reason they are doing this is that they are not able to get a good price for their crops and sometimes the overall value they get after selling their crop is compared to the total amount they invested in farming Decreases a lot. The amount of loan taken by him for poverty,



## लोकतंत्र में मिडीया की भूमिका

डॉ. नरेंद्र केशव पाटील

अर्थशास्त्र विभाग प्रमुख आनंद निकेतन कला, वाणिज्य व विज्ञान महाविद्यालय,

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प्रारूप- लोकतांत्रिक देश में मिडीया बहुत महत्वपूर्ण होता है। वह जनता का प्रबोधन करता है। शांती और सद्भाव का माहौल बनाकर बरकरार रख सकता है। वह जनता की आवाज बनकर सत्ता से सवाल पुछता है। सरकार की नितीओ को जनता तक पहुंचाता है तथा सरकार की जन विरोधी नितीओ की आलोचना भी करता है। लोकतांत्रिक देश में सत्ता के विभिन्न अंगो पर नजर रखने का काम मिडीया करता है। इसलिए उसे लोकतंत्र का चौथा स्तंभ कहा जाता है। लोगो को समय-समयपर जाणकारी देकर जागृत रखने कार्य भी मिडीया ही करता है। और मिडीया चाहे तो क्रांती का आगाज भी करता है। जैसा की अमरिका और युरोप के देशो में हमने देखा है वर्तमान में मिडीया की उपयोगिता बढ रही है। इससे कोई भी नागरिक मुखर नहीं सकता। मिडीया ने अपना उत्तरदायित्व पूरी ईमानदारी से जब भी निभाया है तब पदों के पिछे का सच सामने लाया है। इसलिए हर स्तर का व्यक्ति एवं संघटन मिडीया से डरता है। लेकिन इसका काला चेहरा भी है। चटपटी खबरो को चलाना, खबरो को तोड मरोडकर पेश करना दंगे भडकाने वाली खबरे चलाना, बेवजह किसी का महिमामंडन तो किसी की निर्मम आलोचना करना यह सब वर्तमान में मिडीया करते हुए दिखाई देता है। लालच भय द्वेष स्पर्धा दुर्भावना एवं राजनैतिक कुचक्र में फसकर अपनी महत्वपूर्ण भूमिका को कलंकीत करता है इससे समाज और देश का बहुत बडा नुकसान होता है। मिडीया अगर पुरी ईमानदारी के साथ अपने उत्तरदायित्व का निर्वाह करता है, तो समाज और देश को नयी राह दिखा सकता है लेकिन वर्तमान कुछ और ही है।

**बीज शब्द** -लोकतंत्र, मिडीया, संस्था, भ्रष्टाचार, काला चेहरा, जनता, शिक्षा, साक्षरता, लोकतंत्र चुनौती  
लोकतंत्र में मिडीया स्वतंत्र एवं निष्पक्ष हो ऐसी अपेक्षा की जाती है। ऐसी अपेक्षा यथार्थ भी है। क्योंकि भारत के संविधान द्वारा भाषण स्वतंत्रता का मौलिक अधिकार दिया गया है। मिडीया को चाहे तो विपक्ष की भूमिका निभाए लेकिन किसी भी रूप में सत्ता से हात ना मिलाए। सरकार की नितीयों की आलोचना करे या ना करे पर सत्ता के सूर में सूर ना मिलाए। किसी भी

लोकतंत्र में आलोचना को जगह मिलनी चाहिए। वह विचार विकास एवं लोकतंत्र की बुनियाद है। लेकिन वर्तमान में भारत जैसे लोकतांत्रिक देश में कुछ अलगही नजर आने लगा है। न जाने क्या वजह है की करीब करीब समुचा मिडीया सत्तापक्ष के साथ दिखाई देना लगा है। सत्ता पक्ष के सूर में सूर मिलाने लगा है। समाचार पत्र चॅनल अॅकर सत्ता पक्ष के प्रबक्ता के रूप बयानबाजी करने लगे है। सत्ताधारियों के गुनगान गाने लगे है। सरकार के नितीयो की आलोचना करने की बजाय विपक्ष की आलोचना करने लगे है। सरकार से सवाल पुछने की बजाय विपक्ष से सवाल पुछ रहे है। सरकार से काम का हिसाब मांगने की बजाय विपक्ष से हिसाब मांगा जा रहा है। मिडीया के इस रवैये से परेशान एवं खफा होकर विपक्षने चॅनलोकी चर्चाओ में शामिल होने से मना कर दिया है बहिष्कार किया हुआ है।





## COVID-19 and Emergency e-Learning in Higher Education: Implications and Response

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### Abstract

The World Health Organisation (WHO) has confirmed Covid-19 as a pandemic that has posed a current threat to humanity. This pandemic has successfully affected global shutdown of several activities. The unexpected and unprecedented outcomes of the present crisis have exposed many inequities and inadequacies in our social system including educational system. In the formal learning process, newly emerged challenges with regard to online education from primary to higher education is overtly visible particularly in Odisha. Multiple challenges to the online education include student's limited access to broadband and the disproportionate level of teacher's digital literacy along with institutional inadequacies in creating a favourable environment for teaching-learning process. It has raised serious questions whether to rely on technology as an alternative method to classroom teaching or to make necessary structural arrangements to address the issues of misalignment between resources and needs.

**Key Words: COVID-19, Pandemic, Online class, e-Learning, internet connectivity**

### Introduction

Since last eight and more months people worldwide are going through a bizarre and unprecedented situation due to COVID-19 pandemic with new set of social norms and frequently changing regulations over the time. Nothing in this world which is unaffected due to ongoing pandemic though, the degree and intensity of the impact varies from region to region. Major institutions such as economy, health, education, religion and kinship are severely affected. Largest disruption in the history of educational system has been created by the COVID-19 pandemic, affecting nearly 1.6 billion learners in more than 190 countries and all continents (UN report, 2020). Shut down of schools and colleges during and post-lockdown period have impacted 94 per cent of the world's student population and, up to 99 per cent in low and lower-middle income countries (UN report, 2020).

The rapid, unexpected and 'forced' transition from face-to-face to remote teaching has entailed a number of challenges and constraints but also opportunities that need to be examined. Existing literature points to an 'emergency remote teaching' (Bozkurt and Sharma 2020) or 'emergency e-Learning' (Murphy, 2020) and to difficulties associated with poor online teaching infrastructure, digital inexperience of teachers, the information gap (i.e., limited information and resources to all students) and the complex environment at home (Zhang et al. 2020).

As far as teacher education is concerned, descriptions of how institutions and stakeholders adapted to the new scenario created by COVID-19 pandemic (Bao 2020; Flores and Gago 2020; Quezada, Talbot, and Quezada-Parker 2020; Zhang et al. 2020) as well as training strategies and experiences of innovation (Ferdig et al. 2020) have been reported. While accounts of how higher education institutions and teacher educators responded to the transition from face-to-face to online teaching are relevant, more needs to be done in this regard

The present pandemic situation has uncovered underlying inequalities particularly in educational sectors. The crisis has further aggravated the existing educational disparities by reducing



## बाजारवाद व उदारीकरण

डॉ. नरेंद्र केशव पाटील

अर्थशास्त्र विभाग प्रमुख, आनंद निकेतन कला, वाणिज्य व विज्ञान महाविद्यालय, आनंदवन-वरोरा जि. चंद्रपूर

**प्रारूप -** बीसवीं सदी के आधुनिक भारत का इतिहास जब लिखा जाएगा, तो उसमें दो तारीखें महत्वपूर्ण मानी जाएगी। पहली है 15 अगस्त 1947, जब लंबे संघर्ष के बाद भारत अंग्रेजों की गुलामी से आजाद हुआ। दूसरी है मई 1991, जब आजाद भारत की सरकारों ने वापस देश को गुलाम और परावलंबी बनाने की नीतियों को अख्तियार करना शुरू किया। कहने को तो राजनीतिक रूप से देश आजाद रहा, किंतु उसकी नीतियां, योजनाएं और कार्यक्रम विदेशी निर्देशों पर, विदेशी हितों के लिए संचालित होने लगे। बहुत तेजी से भारत की नीतियों, आर्थिक प्रशासनिक ढांचे और नियम कानूनों में बदलाव होने लगे। बाजारवाद और उदारीकरण इन दो शब्दों ने भारतीय समाज और मीडिया, दोनों को प्रभावित किया है। 1991 के बाद सिर्फ मीडिया ही नहीं पूरा समाज बदला है, उसके मूल्य, सिद्धांत, जीवनशैली में क्रांतिकारी परिवर्तन परिलक्षित हुए हैं। 1991 के संकट के समय भारत का विदेशी मुद्रा भंडार खाली हो गया था और भारत का सोना लंदन में गिरवी रखना पड़ा था। यह संकट दूर हुआ और भारत के विदेशी मुद्रा भंडार में काफी बढ़ोतरी हुई। भारत के निर्यात भी काफी बढ़े हैं। यदि विदेशी पूंजी निवेश को उपलब्धि माने, तो इस अवधि में वह भी काफी बढ़ा है। भारतीय कंपनियं अब दुनिया के अन्य देशों में जा रही हैं और वहां की कंपनियों को खरीद रही हैं, यानी वे भी बहुराष्ट्रीय बन रही हैं। दुनिया के चोटी के अमीरों की सूची में भारतीय नाम भी दिखाई देते हैं।

**बीज शब्द -** बाजारवाद, उदारीकरण, महंगाई, गरीबी, भूखमरी, खेती, शिक्षा, सेवाओं की लूट

**बाजारवाद -** 1991 के बाद सिर्फ मीडिया ही नहीं पूरा समाज बदला है। उस समय के प्रधानमंत्री श्री पीवी नरसिंह राव और तत्कालीन वित्तमंत्री श्री मनमोहन सिंह ने इसकी शुरुआत की तबसे हर सरकार ने कमोबेश इन्हीं मूल्यों को पोषित किया। एक समय तो ऐसा भी आया जब श्री अटल बिहारी वाजपेयी के प्रधानमंत्रित्व काल में उदारीकरण का दूसरा दौर शुरू हुआ तो स्वयं नरसिंह राव जी ने टिप्पणी की "हमने तो खिड़कियां खोली थीं, आपने तो दरवाजे भी उखाड़ दिए।" यानी उदारीकरण- मुक्त बाजार व्यवस्था को लेकर हमारे समाज में हिचकिचाहटें हर तरफ थीं। एक तरफ वामपंथी, समाजवादी, पारंपरिक गांधीवादी इसके विरुद्ध लिख और बोल रहे थे, तो राष्ट्रीय स्वयंसेवक संघ भी अपने भारतीय मजदूर संघ एवं स्वदेशी जागरण मंच जैसे संगठनों के माध्यम से इस पूरी प्रक्रिया को प्रश्नांकित कर रहा था। 1991 से 2019 तक गंगा में बहुत पानी बह चुका है और सरकारें, समाज व मीडिया तीनों 'मुक्त बाजार' के साथ रहना सीख गए हैं। यानी पीछे लौटने का रास्ता बंद है। बावजूद इसके यह बहस अपनी जगह कायम है कि हमारे मीडिया को ज्यादा सरोकारी, ज्यादा जनधर्मी, ज्यादा मानवीय और ज्यादा संवेदनशील कैसे बनाया जाए। व्यवसाय की नैतिकता को किस तरह से सिद्धांतों और आदर्शों के साथ जोड़ा जा सके। यह साधारण नहीं है कि अनेक संगठन आज भी मूल्य आधारित मीडिया की बहस से जुड़े हुए हैं।

**उदारीकरण -** देश के जागरूक लोग, संगठन और जनआंदोलन का विरोध करते रहे और इनके खतरनाक परिणामों की चेतावनी देते रहे। दूसरी ओर इन नीतियों के समर्थक कहते रहे कि देश की प्रगति और विकास के लिए यही एक रास्ता है। प्रगति के फायदे नीचे तक रिस कर जाएंगे और गरीब जनता की भी गरीबी दूर होगी। उनकी दलील यह भी है कि वैश्वीकरण के जमाने में हम दुनिया से अलग नहीं रह सकते और इसका





## Gorewada: A Journey to Diverseness

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### Opinion

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### Opinion

Nagpur! The sub-capital of Maharashtra is not only famous for its class oranges but also possesses a heritage of a nature-friendly environment, prosperous forest lands, and mesmerizing wildlife. Nagpur is also known as the Tiger Capital of India. A few years ago, the Forest Department conserved a barren land in the Gorewada constituency of Nagpur with the objective of converting it into a naturally grown forest ere resulted in the Gorewada Forest Conservancy. Signs of Human Civilization in the form of stone circles from at least two thousand years ago were found in this region.

Gorewada Reserve Forest has located 10 km from Zero Milestone of Nagpur city which is also referred to as the geographical center of India. With the area of about 1914 Ha. of Reserve land, it is home to more than 250 species of birds, 90 species of butterflies, and other fauna including Mammals and Reptiles. Gorewada reserve forest is a dry scrubland dominated by the teak tree (*Tectona grandis*). Gorewada In the heart of the Gorewada Reserve Forest, there is one Water body that is connected to few small stream rivers that provide shelter, food, and other essential factors to the fauna. Gorewada Lake acts of Lungs of Gorewada Reserve Forest and for the Nagpur city as it provides drinking water to the citizens.

Gorewada Reserve Forest shows seasonal diversity of flora and fauna due to its diverse vegetation and habitat. In monsoon, we get to see the emerging life of flora and flora where everything blooms. Monsoon becomes home for many species of Mammals, Birds, Reptiles, and Insects as they are all connected and maintain ecological balance. Faunal species like Leopard, Jungle cat, Blue bull, Sambar deer, Oriental honey buzzard, Black-winged kite, Butterflies like Common nawab, Tawny Rajah, Crimson rose, reptiles like

Russell's viper, Indian cobra, Python everyone is linked with each other to maintain the ecological health and biodiversity of the forest.

In the months of winter, Gorewada Lake becomes homes to more than 55 species of Migratory birds such as Bar-headed goose, Red-crested pochard, Common Pochard, Eurasian wigeon, etc. they stay for few months at Gorewada Lake complete their needs and also helps citizens science to create awareness among the citizens of Nagpur city. Some of these migratory birds travel around more than 5000 km of distance from the North-eastern side some eastern side and some out of the country. They come, stay and fly away by the end of the winter season (Figures 1-12).

Apart from the migratory birds, Gorewada Reserve Forest is also touched by few local birds too such as a Silverbill, Black-winged kite, Indian Robin, Jungle babbler, Green Bee-eater, etc. All these birds are so diverse that it helps to maintain its health of forests throughout the year. As the seasonal patterns of vegetation get change with this diversity of avian fauna also gets change indicating the health of the forest.

Butterflies, Honey bees, and some other creatures like birds play a crucial role in maintaining the health of flowering plants & trees by pollinations. Near about more than 90 species of Butterflies and 216 species of birds among them almost all species of birds help in pollination due to which diversity of plants is maintained. Butterflies pollinate flowers by visiting flowers along with birds do pollinate by dispersing pollen grains. Birds also help plants by dispersing their seeds through their poop.

Year and year, Gorewada reserve Forest Showing some natural diversification through its art by adding some faunal and floral species in its home and making it more Diverse



**"BULK *CRYSTAL* GROWTH:  
TECHNIQUES AND TECHNOLOGIES"**



***Editors***

***Dr. Shruti Patle***

***Dr. Nilesh Ugemuge***

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**"BOOK CRYSTAL GROWTH: TECHNIQUES AND TECHNOLOGIES"**

**Editors**  
**Dr. Shruti Patil**  
**Dr. Mitesh Dhanu**



**Dr. Shruti K. Patil** is presently working as an Assistant Professor in Priyadarshini JI College of Engineering, Nagpur. She has very rich experience of teaching in her 11 years of tenure. She has pursued her Master's and Doctorate degree from IIT Nagpur University. Also she has obtained her Bachelor's degree in Education from SNDT University Mumbai and M. Phil degree in physics from Global Open University, Nagaland. She has research papers in various national and international journals as well as conferences to her credit. Her research interest includes non-linear optical materials, single crystals and semi-organic optical materials. She has published Four Books on different areas. She is associated with various professional bodies such as Indian Association of Crystal Growth (IACG), Indian Association of Physics Teacher (IAPT) and International Association of Engineers (IAE). She is a reviewer

for International Journal of Engineering Research & Technology and International journal of Emerging Trends in Engineering and Basic Sciences.

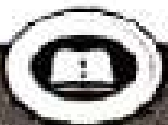


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He has been worked as a University Paper setter, Moderator, Officer incharge for University Examinations for several times. Also he was appointed as Scrutinee officer by IIT Nagpur University, Nagpur. Also evaluated Ph.D. Thesis and conducted open defence for physics.

He has published 20 books and edited 104 Books for Berhampur University, Utkal University, Bharati Vidyapeeth and Uttarakhand Open University with KPH and DNA Publication. Also published monographs with IGI Global, USA. He has published several research Papers in various referred International journals and conferences. He is involved in teaching since last 13 years. He is reviewer for various international journals namely Springer, Elsevier, John Wiley, SAGE open, etc. He is member of Editorial board with DNA publication. He is associated as a resource person with MSME, NEED, MITECON and UGC-HRDC, Nagpur for Entrepreneurship Development Program and other program and delivered more than 100 sessions as a resource person. He is associated with various professional bodies namely Indian Society for Technical Education (ISTE), Luminescence Society of India(LSI) International Association of Engineers (IAEng), Shiksha Sanstha Utthan Nyas (SSUN), Indian Science Congress and Indian Society for Training & Development (ISTD) etc.



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# An Overview of Non Linear Optical Single Crystals

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**BULK CRYSTAL GROWTH: TECHNIQUES AND TECHNOLOGIES**



TEACHING ENGLISH LANGUAGE AND LITERATURE



S. N. Shende  
S. M. Warkad

# Teaching English Language and Literature: Challenges and Solutions

A Critical Investigation on ELT

Shende, Warkad

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## **Skills of Acquisition of New Words and Strategies for Enrichment of Vocabulary**

**Avinash L. Pandhare**

Assistant Professor, Dept. of English  
Anand Niketan College, Anandwan-Warora  
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### **Abstract:**

*Vocabulary is a crucial and decisive factor in the process of learning any language. In case of learning foreign language this cognitive process of vocabulary acquisition plays a pivotal role. Vocabulary is an essential part of language related to words learnt or acquired by language learners. It also signifies the relationship of all language forms – full words, words that are not full words, compound words, fixed phrases and idiomatic expressions (Tickoo 190). As life without communication is life in seclusion, communication, especially verbal communication, without vocabulary is nothing to naught. Enrichment of English vocabulary has now gained tremendous importance. In the scenario of globalized world and increasing job opportunities globally, good English vocabulary is a necessity nowadays. It is a significant factor for the aspirants of many competitive exams. The significance of vocabulary can be evident from the fact that even the expertise in grammar rules is futile unless accompanied by enhanced vocabulary. Indian learners face certain difficulties while learning English language and acquiring English vocabulary as well. This article makes a humble attempt to suggest some strategies for vocabulary enrichment.*

**Keywords:** *English vocabulary, vocabulary enrichment, essential vocabulary, Indian learners*

### **Introduction:**

Language is a medium of communication and every grown-up person knows at least one language. When we learn any language we learn to speak it, read it and write it. We learn a language through four basic language skill viz. listening, speaking, reading and writing (LSRW). While listening and reading we swallow language and when we write and speak, we produce it. Vocabulary is a very crucial factor in the process of learning any language, because we grasp the words by listening carefully, understand them and imitate them or use them when required. Vocabulary learning is a cognitive process. While learning a foreign language, this cognitive process of vocabulary learning plays a pivotal role. However, this paramount area of language learning records very low ratio of research. Many articles support this view point. Limited number of articles proves that this field is receiving research attention only now (Asmayanti 2015).



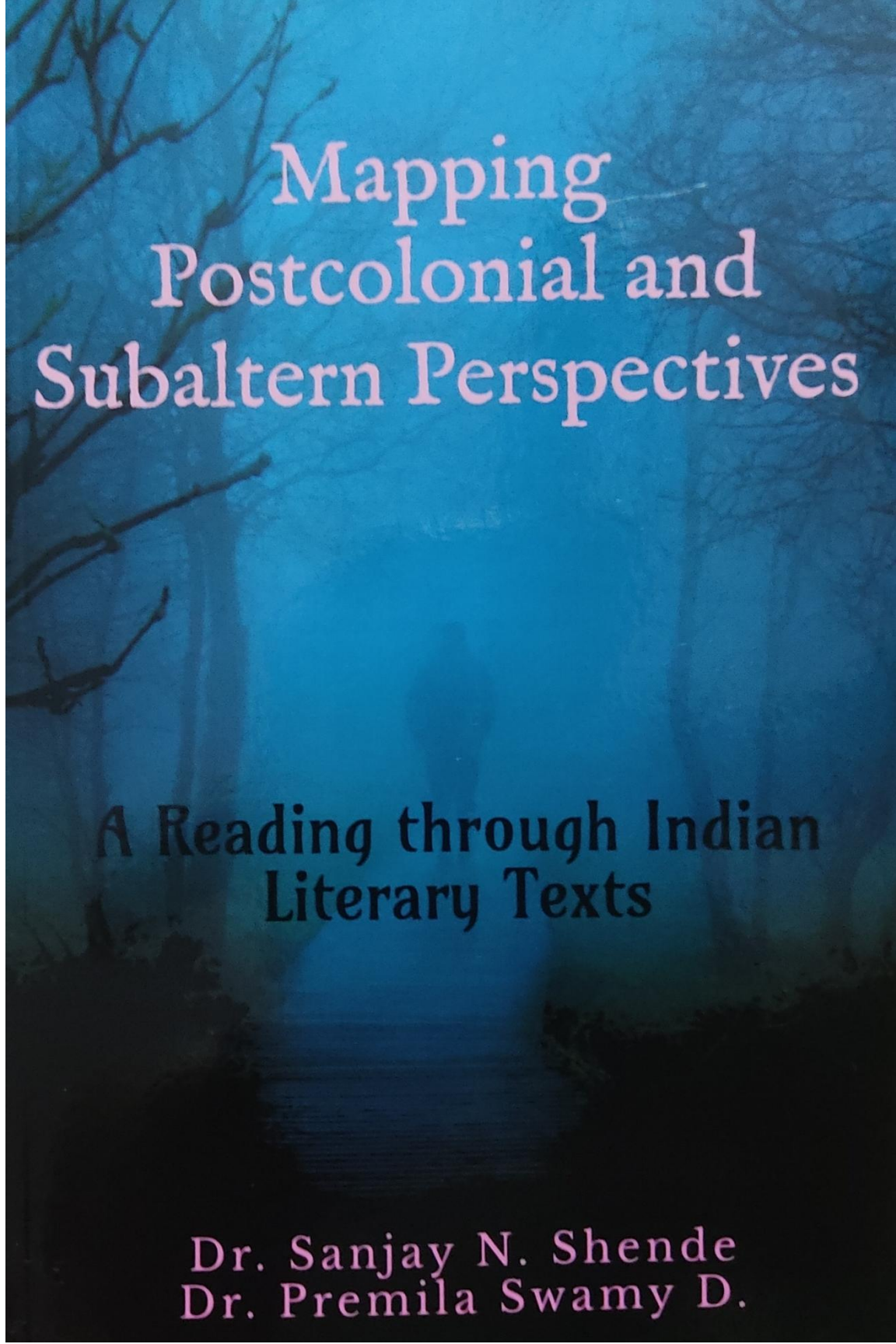
The main objective of this book is to review various dimensions of teaching English language and literature and to investigate the problems faced by ESL teachers and learners and to discuss possible solutions for the improvement of teaching-learning process. The book explores the topics like Integration of Technology for teaching, Paradigm Shifts in the Educational System, Impact of Socio-Economic and Geographical Background on Teaching Learning Process, Teaching language through literature, Role of Curriculum, Strategies for Enrichment of Vocabulary, Innovative Strategies and Approaches of teaching and the challenges faced by ESL teachers and learners during ELT. All the topics are discussed from researchers' perspective and provide constructive arguments with in-depth analysis. The book traces the trajectory of ELT from traditional methodology used for teaching to the innovations in the pedagogy with the advent ICT, LMS, CALL and MALL etc. The strength of this book lies in the papers written on problems faced by ESL teachers and possible solutions provided by teachers and researchers on the basis of their experimentation and long experience of classroom teaching.



Mr S. N. Shende has 20 years experience of teaching (UG & PG) and research. He has to his credit a Minor Research Project, 12 research papers in Int. Journals and a book on ELT. Dr S M Warkad is Principal in a Govt. aided college in India. He is a research supervisor in English and PhD thesis valuer. He has authored many books and research papers.



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# Mapping Postcolonial and Subaltern Perspectives

A Reading through Indian  
Literary Texts

Dr. Sanjay N. Shende  
Dr. Premila Swamy D.



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## 4. Oppression and Subjugation of Subalterns: Silent Subversion in Mulk Raj Anand's *Untouchable* and Rohinton Mistry's *A Fine Balance*

Dr. Avinash L. Pandhare

**Abstract:** Marginalization and oppression are meted out on the basis of religion, culture, caste and even gender. Subaltern literature voices the cries of suppressed group of society like women, dalits, etc., and encompasses themes related to subaltern people. Such kind of literary creations talk about marginalization and subjugation of downtrodden, and reject all kinds of oppression, endorsing restoration of rights of suppressed masses. The parameters of caste, gender, religion are highly criticized when used for discrimination and oppression. In my article, my focus is on the two great works of two well-known writers who depicted the agonies of subaltern people in their works: Mulk Raj Anand's *Untouchable* (1935) and Rohinton Mistry's *A Fine Balance* (1995). Anand's *Untouchable* is an important and a very powerful novel that depicts the wrongs and stigmas of Indian society. The downtrodden class of untouchables had been forced to lead life in isolation – cut-off from society, life of utter poverty full of miseries. On the basis of caste they were considered inferior, impure and were made to face social discrimination. *A Fine Balance* also has the undercurrent of issues



## **ABOUT THE BOOK**

The book analyses various dimensions of subalterns and subalternity as reflected in the writings of Indian English writers and critically investigates subordination, oppression, hegemony, cultural domination, assimilation and resistance as manifested in the literary discourses. The book explores the phenomenon of subalternity with broad perspective. The articles in this collected volume carefully attend to the diverse critical, historical, geographical and definitional parameters of subaltern thought. The in-depth analysis of literary texts makes it valuable for all readers.

## **ABOUT EDITORS**

Dr Sanjay Shende has been working as Assistant Professor in English since year 2000. He has to his credit four books and numerous research papers.

Dr Premila Swamy D. is working as Head, Dept. of Humanities in M.S. Ramaiah Institute of Technology in Bangalore. She has 14 years experience of teaching and has authored two books.

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डॉ. नरेंद्र केशव पाटील

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एम.ए., एम.फिल्., पीएच.डी.  
अर्थशास्त्र विभाग प्रमुख

डॉ. बाबासाहेब आंबेडकर कला, वाणिज्य व विज्ञान महाविद्यालय, ब्रम्हपुरी जि. चंद्रपूर येथे सहाय्येगी प्राध्यापक म्हणून कार्यरत आहेत. आचार्य पदवीचे मार्गदर्शक. त्यांच्या मार्गदर्शनात तीन विद्यार्थ्यांचे संशोधन कार्य पूर्ण झाले, व तीन विद्यार्थ्यांचे संशोधन कार्य सुरु आहे.

राष्ट्रीय आंतरराष्ट्रीय, राज्यस्तरीय, कार्यशाळा, परिषद, परिसंवादात्मक सहभाग, विविध जर्नल्समध्ये १७ पेक्षा जास्त शोधनिबंध प्रकाशित झालेले आहेत. २००१ पासून U.G. व P.G. अध्यापनाचे कार्य सुरु आहे. गोंडवना विद्यापीठ, गडचिरोलीच्या अर्थशास्त्र अभ्यास मंडळाचे सदस्य आहेत.



### डॉ. नरेंद्र केशव पाटील

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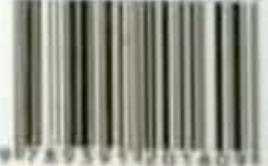
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# Monografia delle sottoclassi Arecidae e Lilidae

*Riferimento speciale alle relazioni dello Stato  
indiano del Maharashtra*

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Prashant Wagh

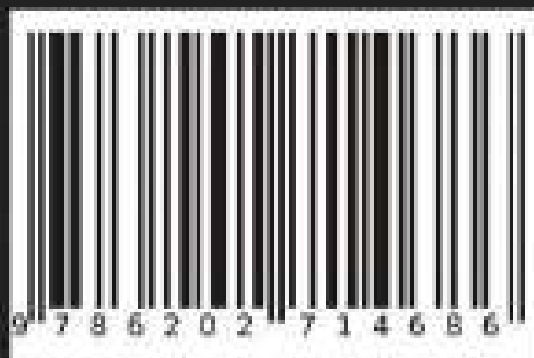


# Monografia delle sottoclassi Arecidae e Lilidae

La diversità è l'essenza della vita. Le angiosperme sono tra le forme di vita più diverse del pianeta. Lo studio della diversità è molto importante per comprendere e progettare le strategie future per lo sviluppo umano mantenendo l'armonia ambientale. La presente monografia è il primo passo verso la comprensione della diversità di due grandi gruppi di Angiosperme, Arecidae e Lilidae, che si trovano nell'India centrale. In tutto il mondo sono state aggiornate 06 famiglie, 40 generi e 5600 specie della sottoclasse Arecidae e 19 famiglie, 127 generi e 25000 specie della sottoclasse Lilidae. 36 generi appartenenti a 06 famiglie della sottoclasse Arecidae e 61 generi appartenenti a 19 famiglie della sottoclasse Lilidae sono riportati nello stato del Maharashtra in India.



Prashant Wagh è Ph. D. in Botanica con specializzazione in Biologia Molecolare e Biotecnologia Vegetale. Attualmente è assistente professore all'Anand Niketan College, Anandwan, Maharashtra (India). Le sue aree di interesse sono la diversità vegetale, la fisiologia e la biotecnologia.



  
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La diversità è l'essenza della vita. Le angiosperme sono tra le forme di vita più diverse del pianeta. Lo studio della diversità è molto importante per comprenderla e progettare la strategia futura per lo sviluppo umano mantenendo l'armonia ambientale. La presente monografia è il primo passo verso la comprensione della diversità di due grandi gruppi di Angiosperme, *Ancistas* e *Libidas*, che si trovano nell'India centrale. In tutto il mondo sono state aggiornate 06 famiglie, 40 generi e 5600 specie della sottoclasse *Ancistas* e 19 famiglie, 127 generi e 25000 specie della sottoclasse *Libidas* 36 generi appartenenti a 06 famiglie della sottoclasse *Ancistas* e 61 generi appartenenti a 19 famiglie della sottoclasse *Libidas* sono riportati nello stato del Maharashtra in India.

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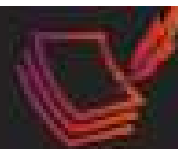
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# Monografia podklas Arecidae i Lilidae

*Specjalne odniesienie do sprawozdań stanu  
Maharasztra w Indiach*

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**Prashant Wagh**

# Monografia podklas Arecidae i Lilidae

Różnorodność jest istotą życia. Okrytozalążkowe są jedną z najbardziej zróżnicowanych form życia na planecie. Badania nad różnorodnością są najważniejsze w zrozumieniu i projektowaniu przyszłych strategii rozwoju człowieka przy zachowaniu harmonii środowiska. Niniejsza monografia jest podstawowym krokiem w kierunku zrozumienia różnorodności dwóch głównych grup okrytozalążkowych, Arecidae i Lilidae, występujących w środkowych Indiach. Na całym świecie aktualizowane jest łącznie 06 rodzajów, 40 rodzajów i 5600 gatunków podklasy Arecidae oraz łącznie 19 rodzajów, 127 rodzajów i 25000 gatunków podklasy Lilidae.

W stanie Maharashtra w Indiach odnotowano 36 rodzajów należących do 06 rodzajów podklasy Arecidae oraz 61 rodzajów należących do 19 rodzajów podklasy Lilidae.



Prashant Wagh jest doktorem botaniki o specjalności Biologia Molekularna i Biotechnologia Roślin, obecnie jest adiunktem w Anand Niketan College, Anandwan, Maharashtra (Indie). Obszary jego zainteresowań to różnorodność roślin, fizjologia i biotechnologia.



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Różnorodność lasi biologicznych. Okrytozastępkowe są jedną z najbardziej zróżnicowanych form życia na planecie. Badania nad różnorodnością są najważniejsze w zrozumieniu i przewidywaniu przyszłych strategii rozwoju cywilizacji przy zachowaniu harmonii Brodowskiego. Niniejsza monografia lasi podstawowym krokiem w kierunku zrozumienia różnorodności dwóch głównych grup okrytozastępkowych, Arecidae i Ulidiae, występujących w brodkowych Indiach. Na całym świecie aktualizowane lasi łącznie 06 rodzin, 40 rodzajów i 5500 gatunków podklasy Arecidae oraz łącznie 19 rodzin, 127 rodzajów i 25000 gatunków podklasy Ulidiae. W stanie Maharashtra w Indiach odnotowano 36 rodzajów należących do 06 rodzin podklasy Arecidae oraz 51 rodzajów należących do 19 rodzin podklasy Ulidiae.

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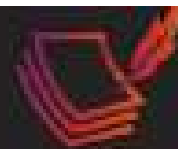
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# Monografia podklas Arecidae i Lilidae

*Specjalne odniesienie do sprawozdań stanu  
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Prashant Wagh jest doktorem botaniki o specjalności Biologia Molekularna i Biotechnologia Roślin, obecnie jest adiunktem w Anand Niketan College, Anandwan, Maharashtra (Indie). Obszary jego zainteresowań to różnorodność roślin, fizjologia i biotechnologia.



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# Monographie des sous-classes Arecidae et Lilidae

*Référence spéciale aux rapports de l'État indien du  
Maharashtra*

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Prashant Wagh

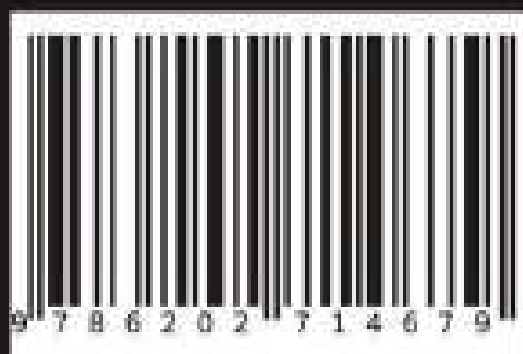
# Monographie des sous-classes Arecidae et Lilidae

La diversité est l'essence même de la vie. Les angiospermes sont parmi les formes de vie les plus diverses de la planète. L'étude de la diversité est très importante pour comprendre et concevoir les stratégies futures de développement humain en préservant l'harmonie de l'environnement. La présente monographie est la première étape vers la compréhension de la diversité des deux principaux groupes d'angiospermes, les Arecidae et les Lilidae, présents dans le centre de l'Inde. 06 familles, 40 genres et 5600 espèces de la sous-classe des Arecidae sont répertoriés dans le monde entier et 19 familles, 127 genres et 25000 espèces de la sous-classe des Lilidae sont mis à jour.

36 genres appartenant à 06 familles de la sous-classe Arecidae et 61 genres appartenant à 19 familles de la sous-classe Lilidae sont signalés dans l'État de Maharashtra en Inde.



Prashant Wagh est docteur en botanique avec une spécialisation en biologie moléculaire et biotechnologie végétale. Il est actuellement professeur assistant au Collège Anand Niketan, Anandwan, Maharashtra (Inde). Ses domaines d'intérêt sont la diversité des plantes, la physiologie et la biotechnologie.



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# Monographie des sous-classes Arecidae et Lilidae

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La diversité est l'essence même de la vie. Les angiospermes sont parmi les formes de vie les plus diverses de la planète. L'étude de la diversité est très importante pour comprendre et concevoir les stratégies futures de développement humain en préservant l'harmonie de l'environnement. La présente monographie est la première étape vers la compréhension de la diversité des deux principaux groupes d'angiospermes, les Arecidae et les Lilidae, présents dans le centre de l'Inde. 06 familles, 40 genres et 5600 espèces de la sous-classe des Arecidae sont répertoriés dans le monde entier et 19 familles, 127 genres et 24000 espèces de la sous-classe des Lilidae sont mis à jour. 36 genres appartenant à 06 familles de la sous-classe Arecidae et 61 genres appartenant à 19 familles de la sous-classe Lilidae sont signalés dans l'État de Maharashtra en Inde.

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# Monographie der Unterklassen Arecidae und Lilidae

*Besondere Bezugnahme auf Berichte aus dem indischen  
Bundesstaat Maharashtra*

# Monographie der Unterklassen Arecidae und Lilidae

Vielfalt ist die Essenz des Lebens. Angiospermen gehören zu den vielfältigsten Lebensformen auf dem Planeten. Das Studium der Vielfalt ist von größter Bedeutung für das Verständnis und die Gestaltung zukünftiger Strategien für die menschliche Entwicklung unter Wahrung der Harmonie der Umwelt. Die vorliegende Monographie ist der erste Schritt zum Verständnis der Diversität von zwei Hauptgruppen von Angiospermen, Arecidae und Lilidae, die in Zentralindien vorkommen. 06 Familien, 40 Gattungen und 5600 Arten der Unterklasse der Arecidae und 19 Familien, 127 Gattungen und 25000 Arten der Unterklasse der Lilidae werden weltweit aktualisiert.

Im indischen Bundesstaat Maharashtra werden 36 Gattungen, die zu 06 Familien der Unterklasse Arecidae gehören, und 61 Gattungen, die zu 19 Familien der Unterklasse Lilidae gehören, gemeldet.



Prashant Wagh ist Doktor der Botanik mit Spezialisierung in Molekularbiologie und Pflanzenbiotechnologie. Zurzeit ist er Assistenzprofessor am Anand Niketan College, Anandwan, Maharashtra (Indien). Seine Interessengebiete sind Pflanzenvielfalt, Physiologie und Biotechnologie.





# Monographie der Unterklassen Arecidae und Lilidae

## Besondere Bezugnahme auf Berichte aus dem indischen Bundesstaat Maharashtra

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Viehbäll ist die Essenz des Lebens. Angiospermen gehören zu den vielfältigsten Lebensformen auf dem Planeten. Das Studium der Viehbäll ist von großer Bedeutung für das Verständnis und die Gestaltung zukünftiger Strategien für die menschliche Entwicklung unter Wahrung der Harmonie der Umwelt. Die vorliegende Monographie ist der erste Schritt zum Verständnis der Diversität und zweier Hauptgruppen von Angiospermen, Arecidae und Lilidae, die in Zentralindien vorkommen. 06 Familien, 40 Gattungen und 5600 Arten der Unterklasse der Arecidae und 19 Familien, 127 Gattungen und 25000 Arten der Unterklasse der Lilidae werden weltweit aktualisiert. Im indischen Bundesstaat Maharashtra werden 36 Gattungen, die zu 06 Familien der Unterklasse Arecidae gehören, und 61 Gattungen, die zu 19 Familien der Unterklasse Lilidae gehören, gemeldet.

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# Monografia das Subclasses Arecidae e Lilidae

*Referência especial aos relatórios do Estado de  
Maharashtra, na Índia*

Prashant Wagh

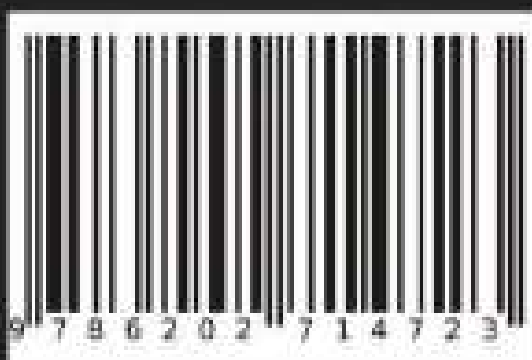
# Monografia das Subclasses Arecidae e Lilidae

A diversidade é a essência da vida. As angiospermas estão entre as mais diversas formas de vida do planeta. O estudo da diversidade é mais importante na compreensão e concepção de estratégias futuras para o desenvolvimento humano mantendo a harmonia ambiental. A presente monografia é o principal passo para a compreensão da diversidade de dois grandes grupos de Angiosperms, Arecidae e Lilidae que ocorrem na Índia central. Em todo o mundo são actualizadas 06 famílias, 40 géneros e 5600 espécies da subclasse Arecidae e um total de 19 famílias, 127 géneros e 25000 espécies da subclasse Lilidae.

36 géneros pertencentes a 06 famílias da subclasse Arecidae e 61 géneros pertencentes a 19 famílias da subclasse Lilidae são relatados no estado de Maharashtra, na Índia.



Prashant Vagh é doutorado em Botânica com especialização em Biologia Molecular e Biotecnologia Vegetal, actualmente é Professor Assistente no Anand Niketan College, Anandwan, Maharashtra (Índia). As suas áreas de interesse são Diversidade Vegetal, Fisiologia e Biotecnologia.



Edições

NOSSO CONHECIMENTO



# Monografia das Subclasses Arecidae e Liliidae

## Referência especial aos relatórios do Estado de Maharashtra, na Índia

ISBN-13: 978-820-2-71472-2

ISBN-10: 6202714727

EAN: 9785202714723

Book language: Portuguese

Book/Bibliotext:

A diversidade é a essência da vida. As angiospermas estão entre as mais diversas formas de vida do planeta. O estudo da diversidade é mais importante na compreensão e concepção de estratégias futuras para o desenvolvimento humano mantendo a harmonia ambiental. A presente monografia é o principal passo para a compreensão da diversidade de dois grandes grupos de Angiospermas, Arecidae e Liliidae que ocorrem na Índia central. Em todo o mundo são actualizadas 05 famílias, 40 gêneros e 9600 espécies da subclasse Arecidae e um total de 19 famílias, 127 gêneros e 25000 espécies da subclasse Liliidae. 36 gêneros pertencentes a 05 famílias da subclasse Arecidae e 61 gêneros pertencentes a 19 famílias da subclasse Liliidae são relatados no estado de Maharashtra, na Índia.

Publishing house: [Editoras Nosso Conhecimento](#)

Website: <https://editoras-nosso-conhecimento.com>

Author: [Prachant Wagh](#)

Number of pages: 60

Published on: 2020-08-25

Book: Available

Category: [Biology](#)

Price: 2690 €

Keywords: [Arecidae](#), [Liliidae](#), [Maharashtra](#), [Flora](#)

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# Monografía de las subclases Arecidae y Lilidae

*Referencia especial a los informes del Estado de  
Maharashtra de la India*

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Prashant Wagh

# Monografía de las subclases Arecidae y Lilidae

La diversidad es la esencia de la vida. Las angiospermas están entre las formas de vida más diversas del planeta. El estudio de la diversidad es muy importante para comprender y diseñar futuras estrategias para el desarrollo humano manteniendo la armonía ambiental. La presente monografía es el principal paso para comprender la diversidad de los dos principales grupos de angiospermas, Arecidae y Lilidae que se dan en la India central. En todo el mundo hay un total de 06 familias, 40 géneros y 5600 especies de la subclase Arecidae y se han actualizado 19 familias, 127 géneros y 25000 especies de la subclase Lilidae. En el estado de Maharashtra de la India se han notificado 36 géneros pertenecientes a 06 familias de la subclase Arecidae y 61 géneros pertenecientes a 19 familias de la subclase Lilidae.



Prashant Wagh es doctor en botánica con especialización en biología molecular y biotecnología vegetal. Actualmente es profesor adjunto en el Anand Niketan College, Anandwan, Maharashtra (India). Sus esferas de interés son la diversidad vegetal, la fisiología y la biotecnología.



EDICIONES  
NUESTRO CONOCIMIENTO





# Monografía de las subclases Arecidae y Lilidae

Referencia especial a los informes del Estado de Maharashtra de la India

ISBN-13: 978-620-2-71496-2

ISBN-10: 6202714962

EAN: 9786202714962

Book language: Spanish

Book/Book text

La diversidad es la esencia de la vida. Las angiospermas exhiben las formas de vida más diversas del planeta. El estudio de la diversidad es muy importante para comprender y diseñar futuras estrategias para el desarrollo humano manteniendo la armonía ambiental. La presente monografía es el principal paso para comprender la diversidad de los dos principales grupos de angiospermas, Arecidae y Lilidae que se dan en la India central. En todo el mundo hay un total de 05 familias, 40 géneros y 5600 especies de la subclase Arecidae y se han actualizado 19 familias, 127 géneros y 29000 especies de la subclase Lilidae. En el estado de Maharashtra de la India se han notificado 36 géneros pertenecientes a 05 familias de la subclase Arecidae y 61 géneros pertenecientes a 19 familias de la subclase Lilidae.

Publishing house: Editores Nueva Concordancia

Web site: <https://denda-scipis.com>

By (author) : Prashant Wagh

Number of pages: 60

Published on : 2020-08-25

Book: Available

Category : Biology

Price : 26.90 €

Keywords: Arecidae, Lilidae, Maharashtra, Flora

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**Studi di bioinformatica in  
*Terminalia arjuna* (Roxb.)  
Wight & Arn**

*Una recensione*

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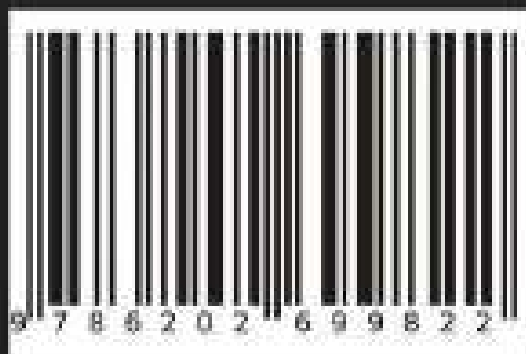
**Prashant Wagh**

## Studi di bioinformatica in *Terminalia arjuna* (Roxb.) Wight & Arn

La presente revisione è un tentativo di compilare le basi del sistema bioinformatico, gli strumenti e i protocolli per estrarre le informazioni memorizzate nei database da prospettive di studio botanico. Per questo scopo ampiamente esplorato pianta medicinale nativa *Terminalia arjuna* (Roxb.) Wight & Arn ha selezionato come esempio. Il lavoro di bioinformatica come le sequenze nucleotidiche, i profili di espressione genica, le sequenze proteiche e i brevetti ottenuti su *T. arjuna* (Roxb.) Wight & Arn è stato estratto dai siti di bioinformatica e presentato nel lavoro di revisione.



Il Dr. Prashant J. Vagh è professore assistente di botanica all'Anand Niketan College Anandwan, Maharashtra State (India) e le sue aree di interesse sono la diversità vegetale, la fisiologia e la biotecnologia. Ha pubblicato 07 articoli di ricerca e 15 abstract in diverse riviste di fama nazionale e internazionale. Deve anche crediti per la pubblicazione di 03 libri.



  
EDIZIONI  
**SAPIENZA**



ISBN-13: 978-020-3-09983-2

ISBN-10: 0203099835

EAN: 9780203099832

Book language: Italian

Book title:

La pratica clinica è un volume di compilarie le basi del processo terapeutico, gli strumenti e i protocolli per curare le informazioni cliniche ed elaborare da prospettive di studio clinico. Per questo scopo vengono esplicitate alcune procedure cliniche come l'analisi di caso (Robt) Wight & Airo ha selezionato come esempio il lavoro di clinica con le seguenti procedure: i profili di espressione genica, le sequenze proteiche e i livelli di espressione (Robt) Wight & Airo è una rivista di studio di bioinformatica e pratica ed lavoro di clinica.

Publishing house: Edizioni Scipione

Website: <http://www.edizioni-scipione.com>

By (author) : Prabha Wight

Number of pages: 56

Publication date: 2020-08-21

Book Available

Category: Science

Price: 20.90 €

Keywords: Termination of pregnancy, Bioinformatics, Science, MCS1

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- VERLAG -  
Unser Wissen



Prashant Wagh

# Bioinformatik-Studium in *Terminalia arjuna* (Roxb.) Wight & Arn

*Ein Rückblick*

# Bioinformatik-Studium in *Terminalia arjuna* (Roxb.) Wight & Arn

Die vorliegende Rezension ist ein Versuch, Grundlagen des bioinformatischen Systems, Werkzeuge und schrittweise Protokolle für den Abbau der in den Datenbanken gespeicherten Informationen aus der Perspektive botanischer Studien zusammenzustellen. Zu diesem Zweck hat Wight & Arn die weit verbreitete einheimische Heilpflanze *Terminalia arjuna* (Roxb.) als Beispiel ausgewählt. Bioinformatik-Arbeiten wie Nukleotidsequenzen, Genexpressionsprofile, Proteinsequenzen und Patente, die auf *T. arjuna* (Roxb.) Wight & Arn erhalten wurden, wurden aus den Bioinformatik-Seiten extrahiert und in der Übersichtsarbeit vorgestellt.



Dr. Prashant J. Wagh ist Assistenzprofessor für Botanik am Anand Niketan College Anandwan, Maharashtra State (Indien), und seine Interessengebiete sind Pflanzenvielfalt, Physiologie und Biotechnologie. Er hat 07 Forschungsarbeiten und 15 Abstracts in verschiedenen Fachzeitschriften von nationalem und internationalem Ruf veröffentlicht. Er schuldet auch Kredite für die Veröffentlichung von 03 Büchern.



— VERLAG —  
**Unser Wissen**



ISBN-12: 978-620-2-66679-2

ISBN-10: 6202666795

EAN : 9786202666792

Book language: German

Subj/Bhardt:

Die vorliegende Rezension ist ein Versuch, Grundlagen des bioinformatischen Systems, Werkzeuge und schrittweise Protokolle für den Abbau der in den Datenbanken gespeicherten Informationen aus der Perspektive botanischer Studien zusammenzustellen. Zu diesem Zweck hat Wagh & Am die weitverbreitete einheimische Heilpflanze *Terminalia arjuna* (Roxb.) als Beispiel ausgewählt. Bioinformatik-Arbeiten wie Nukleotidsequenzen, Genexpressionsprofile, Proteinsequenzen und Patente, die auf *T. arjuna* (Roxb.) Wagh & Am erhalten wurden, wurden aus den Bioinformatik-Seiten extrahiert und in der Übersichtstabelle vorgestellt.

Publishing house: Verlag Unter Wissen

Website: <https://www.under-wissen.com>

Author: Prashant Wagh

Number of pages: 56

Published on: 2020-08-21

Book: Available

Category: Botany

Price: 26.50 €

Keywords: Terminalia arjuna, Bioinformatik, Datenbank, NCBI

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EDICIONES  
NUESTRO CONOCIMIENTO



# Estudios bioinformáticos en *Terminalia arjuna* (Roxb.) Wight & Arn

*Una revisión*

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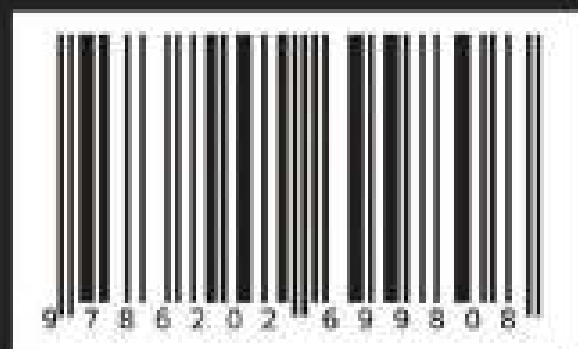
Prashant Wagh

# Estudios bioinformáticos en *Terminalia arjuna* (Roxb.) Wight & Arn

El presente examen es un intento de compilar los fundamentos del sistema bioinformático, los instrumentos y los protocolos escalonados para extraer la información almacenada en las bases de datos de la perspectiva de estudio botánico. Con este fin se ha explorado ampliamente la planta medicinal nativa *Terminalia arjuna* (Roxb.) que Wight & Arn ha seleccionado como ejemplo. Se han extraído de los sitios de bioinformática trabajos de bioinformática como secuencias de nucleótidos, perfiles de expresión de genes, secuencias de proteínas y patentes obtenidas sobre *T. arjuna* (Roxb.) Wight & Arn y se han presentado en el trabajo de revisión.



El Dr. Prashant J. Vagh es Profesor Adjunto de Botánica en el Anand Niketan College Anandwan, en el estado de Maharashtra (India) y sus áreas de interés son la diversidad vegetal, la fisiología y la biotecnología. Ha publicado 07 trabajos de investigación y 15 resúmenes en diferentes revistas de reputación nacional e internacional. También debe créditos para publicar 03 libros.



EDICIONES  
NUESTRO CONOCIMIENTO





ISBN-13: 978-620-2-65660-8

ISBN-10: 6202656608

EAN : 9786202656608

Book language: Spanish

Subt/Short title:

El presente examen es un intento de compilar los fundamentos del sistema bioinformático, los instrumentos y los protocolos escalonados para extraer la información almacenada en las bases de datos de la perspectiva de estudio botánico. Con este fin se ha explorado ampliamente la planta medicinal nativa *Terminalia arjuna* (Roxb.) que Wighi & Am ha seleccionado como ejemplo. Se han extraído de los sitios de bioinformática trabajos de bioinformática como secuencias de nucleótidos, perfiles de expresión de genes, secuencias de proteínas y patentes obtenidas sobre *T. arjuna* (Roxb.) Wighi & Am y se han presentado en el trabajo de revisión.

Publishing house: Ediciones Nuestro Conocimiento

Web site: <https://edendias-omni.com>

Author: Prashant Wagh

Number of pages: 56

Published on: 2020-08-21

Book: Available

Category: Botany

Price: 26.90 €

Keyword(s): Terminalia arjuna, Bioinformática, Base de datos, NCBI

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EDITIONS NOTRE **SAVOIR**



# Études de bioinformatique à *Terminalia arjuna* (Roxb.) Wight & Arn

*Un bilan*

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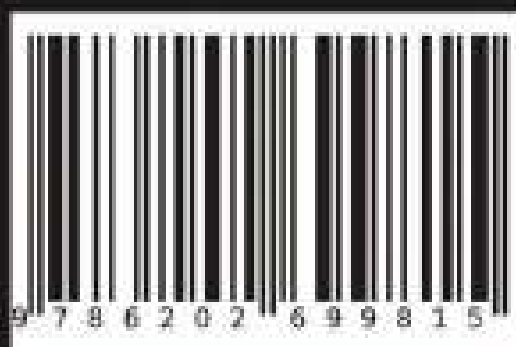
Prashant Wagh

# Études de bioinformatique à *Terminalia arjuna* (Roxb.) Wight & Arn

La présente revue est une tentative de compiler les bases du système bioinformatique, les outils et les protocoles d'extraction des informations stockées dans les bases de données des études botaniques. A cette fin, la plante médicinale indigène *Terminalia arjuna* (Roxb.), largement explorée, a été choisie comme exemple par Wight & Arn. Les travaux de bioinformatique tels que les séquences de nucléotides, les profils d'expression des gènes, les séquences de protéines et les brevets obtenus sur *T. arjuna* (Roxb.) Wight & Arn ont été extraits des sites de bioinformatique et présentés dans le travail de revue.



Prashant J. Wagh est professeur adjoint de botanique au collège Anand Niketan d'Anandwan, dans l'État du Maharashtra (Inde) et ses domaines d'intérêt sont la diversité végétale, la physiologie et la biotechnologie. Il a publié 07 articles de recherche et 15 résumés dans différentes revues de réputation nationale et internationale. Il doit également des crédits pour la publication de 03 livres.



EDITIONS NOTRE **SAVOIR**

ISBN-13 978-0-20-3-09921-5

ISBN-10 0203099211

EAN 9780203099215

Book language: French

Blurb/Shorttext:

La présente revue est une tentative de compiler les bases du système bioinformatique, les outils et les protocoles d'intégration des informations biochimiques dans les bases de données des études biomédicales. À cette fin, la plante médicinale indigène *Ferula ajuona* (Roxb.), largement exploitée, a été choisie comme exemple par Nighi & An. Les travaux de bioinformatique tels que les séquences de nucléotides, les profils d'expression des gènes, les séquences de protéines et les brevets obtenus sur *F. ajuona* (Roxb.) Nighi & An ont été extraits des sites de bioinformatique et présentés dans le travail de revue.

Publishing house: Editions Nova Science

Website: <http://www.nova-science.com>

Author: Prashant Nighi

Number of pages: 80

Published on: 2020-03-21

Stock: Available

Category: Botany

Price: 20.00 €

Keywords: Ferula ajuona, Bioinformatique, Bases de données, NCBI

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UITGEBERIJ  
**ONZE KENNIS**



# **Bio-informatica studies in *Terminalia arjuna* (Roxb.) Wight & Arn**

*Een overzicht*

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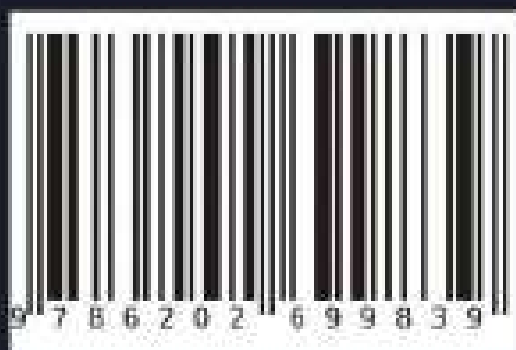
**Prashant Wagh**

# Bio-informatica studies in *Terminalia arjuna* (Roxb.) Wight & Arn

Huidige herziening is een poging om de basisprincipes van bio-informatica systeem, tools en stapsgewijze protocollen voor de mijnbouw opgeslagen informatie in de databases van botanische studie prospectie te compileren. Voor dit doel breed onderzocht inheemse medicinale plant *Terminalia arjuna* (Roxb.) Wight & Arn heeft geselecteerd als voorbeeld. Bio-Informatica werk zoals nucleotide sequenties, genexpressie profielen, eiwitsequenties en octrooien verkregen op *T. arjuna* (Roxb.) Wight & Arn is geëxtraheerd uit de bio-informatica sites en gepresenteerd in de review werk.



Dr. Prashant J. Vagh is assistent-professor plantkunde in Anand Niketan College Anandwan, Maharashtra State (India) en zijn interessegebieden zijn Plant Diversity, Fysiologie en Biotechnologie. Hij heeft 07 onderzoekspapers en 15 samenvattingen gepubliceerd in verschillende nationale en internationale tijdschriften. Hij heeft ook credits te danken aan het publiceren van 03 Boeken.



UITGEVERIJ  
**ONZE KENNIS**

ISBN-13 : 978-620-2-69963-9

ISBN-10 : 6202699633

EAN : 9785202699639

Book language: Dutch

Sub/Shorttitel:

Huidige versie is een poging om de basisprincipes van bio-informatica systeem, tool en stapsgewijze protocollen voor de milibotw opgeslagen informatie in de databases van botanische studie prospectie te compileren. Voor dit doel bleef onderzoek in een medische plant *Terminalia arjuna* (Roxb.) Wight & Arn. te gebruiken als voorbeeld. Bio-informatica werk zoals nucleotide sequenties, de expressie profielen, de Wightsequenties en octrooi verkiegen op *T. arjuna* (Roxb.) Wight & Arn. te extraheren uit de bio-informatica sites en gepresenteerd in de huidige werk.

Publishing house: Uitgeverij Onze Kennis

Website : <https://olevela-scripta.com>

By (author): Prashant Vagh

Number of pages: 64

Published on: 2020-12-24

Stock: Available

Category : Botany

Price : 25.90 €

Keyword : Terminalia arjuna, Bio-informatica, Database, NCBI

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WYDAWNICTWO  
NASZA WIEDZA



# Badania bioinformatyczne w *Terminalia arjuna* (Roxb.) Wight & Arn

*A Przegląd*

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Prashant Wagh

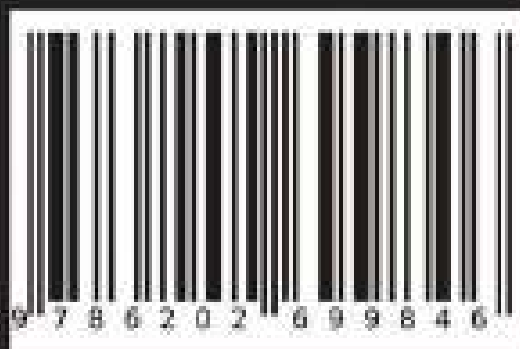


# Badania bioinformatyczne w *Terminalia arjuna* (Roxb.) Wight & Arn

Niniejszy przegląd jest próbą opracowania podstaw systemu bioinformatycznego, narzędzi i stopniowych protokołów eksploracji przechowywanych w bazach danych informacji z perspektywy badań botanicznych. W tym celu jako przykład wybrano szeroko badaną rodzimą roślinę leczniczą *Terminalia arjuna* (Roxb.) Wight & Arn. Prace bioinformatyczne, takie jak sekwencje nukleotydów, profile ekspresji genów, sekwencje białek i patenty uzyskane na *T. arjuna* (Roxb.) Wight & Arn, zostały wyodrębnione ze stanowisk bioinformatycznych i przedstawione w pracy przeglądowej.



Dr Prashant J. Wagh jest adiunktem w Anand Niketan College Anandwan w stanie Maharashtra (Indie), a jego zainteresowania obejmują różnorodność roślin, fizjologię i biotechnologię. Opublikował 07 prac badawczych i 15 abstraktów w różnych czasopiśmiech o zasięgu krajowym i międzynarodowym. Jest również winien punkty kredytowe za publikację 03 książek.



WYDAWNICTWO  
NASZA WIEDZA

ISBN-13: 978-620-2-69964-6

ISBN-10: 6202699641

EAN : 9786202699646

Book language: Polish

Script/Bharti text

Ministry przegląd i próbą opracowania podzaw systemu bioinformatycznego, narzędzi i składowych protokołów eksploracji przechowywanych w bazach danych informacji z perspektywy badań botanicznych. W tym celu jako przykład wybrano szeroko badaną rodzimą roślinę leśniczą *Terminalia arjuna* (Roxb.) Wight & Arn. Prace bioinformatyczne, takie jak sekwencje nukleotydów, profile ekspresji genów, sekwencje białek i polimery uzyskane na *T. arjuna* (Roxb.) Wight & Arn, zostały wydodrębnione ze zbiorów bioinformatycznych i przedstawione w pracy przeglądowej.

Publishing house: Wydawnictwo Nauka Wiedza

Web site: <https://bendandscriptis.com>

Author: Prashant Wagh

Number of pages: 56

Published on: 2020-08-21

Block: Available

Category: Botany

Price: 26.50 €

Keywords: Terminalia arjuna, bioinformatyka, baza danych, KBC I

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EDIÇÕES  
NOSSO CONHECIMENTO



# Estudos de bioinformática em *Terminalia arjuna* (Roxb.)

## Wight & Arn

*Uma revisão*

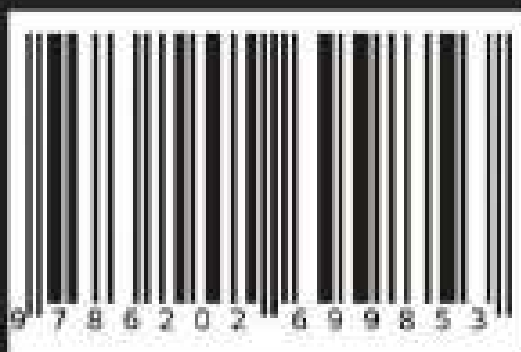
Prashant Wagh

# Estudos de bioinformática em *Terminalia arjuna* (Roxb.) Wight & Arn

A revisão atual é uma tentativa de compilar fundamentos do sistema de bioinformática, ferramentas e protocolos de passos sábios para mineração de informações armazenadas nas bases de dados de prospecção de estudo botânico. Para este propósito, a planta medicinal nativa *Terminalia arjuna* (Roxb.) Wight & Arn selecionou como exemplo. O trabalho de bioinformática como seqüências de nucleotídeos, perfis de expressão gênica, seqüências de proteínas e patentes obtidas sobre *T. arjuna* (Roxb.) Wight & Arn foi extraído dos sites de bioinformática e apresentado no trabalho de revisão.



O Dr. Prashant J. Wagh é professor assistente de Botânica no Anand Niketan College Anandwan, Estado de Maharashtra (Índia) e suas áreas de interesse são Diversidade Vegetal, Fisiologia e Biotecnologia. Ele publicou 07 artigos de pesquisa e 15 resumos em diferentes revistas de reputação nacionais e internacionais. Ele também deve créditos para a publicação de 03 Livros.



EDIÇÕES  
NOSSO CONHECIMENTO



ISBN-13: 978-82-02-46203-5

ISBN-10: 8202462035

EAN: 9780202462035

Book language: Portuguese

Blurb/Short text:

A revolução atual é uma tentativa de construir fundamentos do sistema de informação, ferramentas e protocolos de acesso à informação para recuperação de informações armazenadas nos bases de dados de uma coleção de dados locais. Para esse propósito, a ciência médica utiliza *Informática Médica (Text)* Wight & Ait selecionou como exemplo. O trabalho de informática como conceitos de nucleotídeos, níveis de expressão gênica, scores para de proteínas e suas respectivas séries. *Informática Médica (Text)* Wight & Ait fornece uma visão dos usos de informática e a abordagem no trabalho de revolução.

Publishing house: Edições Nova Conhecimento

Website: [www.edicoesnova.com](http://www.edicoesnova.com)

Author: Prashant Wagh

Number of pages: 36

Published on: 2020-09-21

Stock: Available

Category: Biology

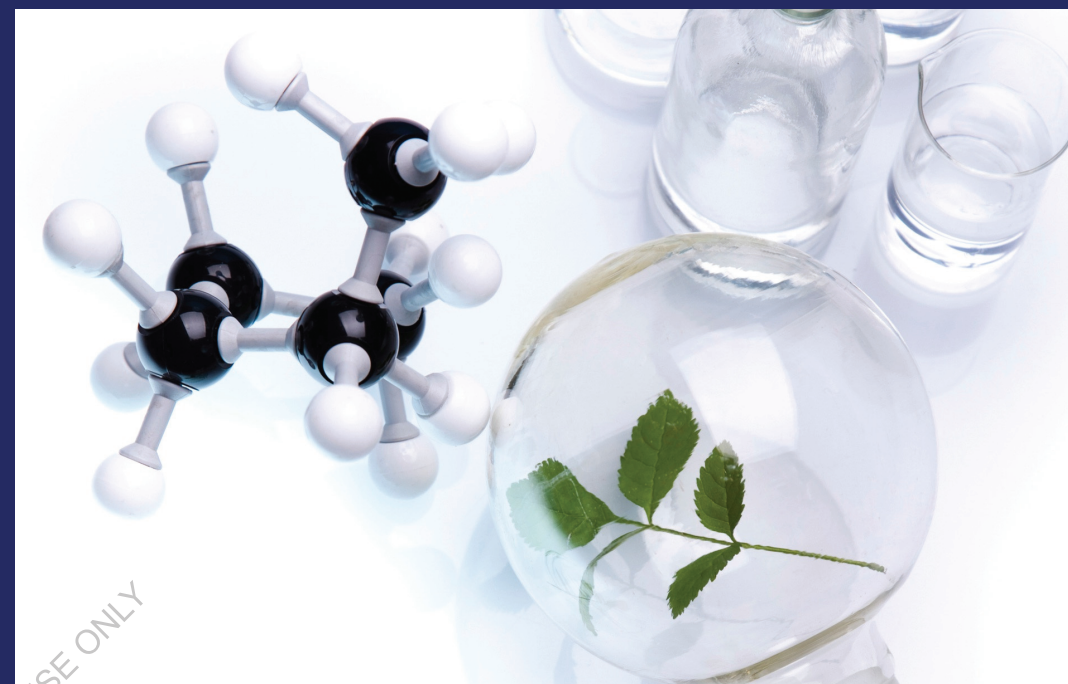
Price: 26,50 €

Keywords: Informática Médica, Base de Dados, HCI

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This workbook has been designed to meet the needs of students for Plant Biotechnology course at various levels of Undergraduate and Graduate studies in different Universities in India and abroad. This workbook covers all the important aspects of Plant Biotechnology from tissue culture techniques to transgenic crop production methods. Workbook comprizes laboratory plan, basic instrumentations and facilities required in tissue culture room, media composition and preparation, sterilization techniques and plant tissue culture techniques like micropropagation, callus cultures, androgenesis, protoplast isolation and suspension culture for secondary metabolite production. To understand applications of Recombinant DNA technology, methods for direct and indirect gene transfer are demonstrated in the workbook. Transgenic crop production protocols for Bt Cotton, Golden Rice, Edible Vaccines and Bioplastic production are illustrated in lucid manner. Principle and theory behind each experiment is explained in easy language. This workbook will definitely help students to acquire basic knowledge of Plant Biotechnology in real time.



Prashant Wagh

# PLANT BIOTECHNOLOGY

A Workbook for Undergraduate and Graduate Students



Dr. Prashant J. Wagh is Ph. D. in Botany with Molecular Biology and Plant Biotechnology specialization. Presently he is Assistant Professor of Botany at Anand Niketan College, Anandwan, Maharashtra (India). His area of interest is Plant Diversity, Physiology and Biotechnology studies.



**Prashant Wagh**

# **PLANT BIOTECHNOLOGY**

**A Workbook for Undergraduate and Graduate  
Students**

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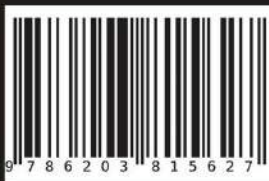
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## BIOTECHNOLOGIE VÉGÉTALE

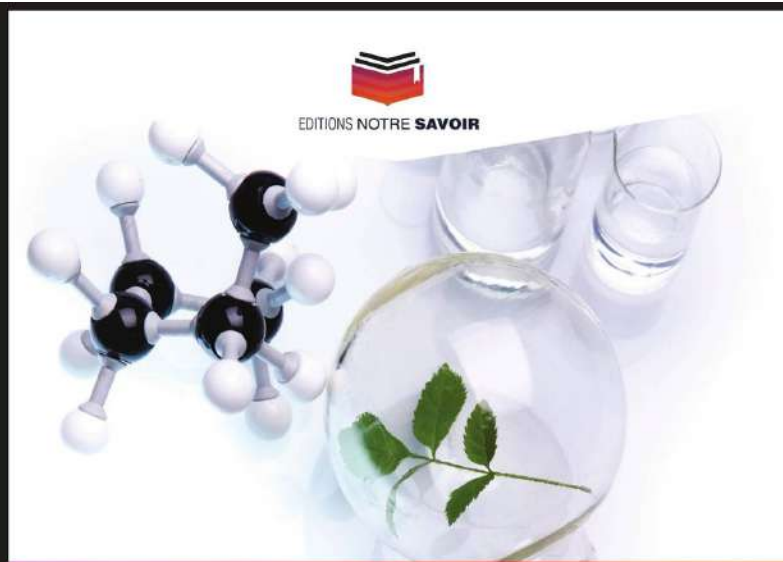
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Le Dr Prashant J. Wagh est titulaire d'un doctorat en botanique avec une spécialisation en biologie moléculaire et en biotechnologie végétale. Il est actuellement professeur adjoint de botanique à l'Anand Niketan College, Anandwan, Maharashtra (Inde). Son domaine d'intérêt est la diversité des plantes, la physiologie et les études de biotechnologie.



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## BIOTECHNOLOGIE VÉGÉTALE

*Un manuel pour les étudiants de premier et deuxième cycles*

**Prashant Wagh**

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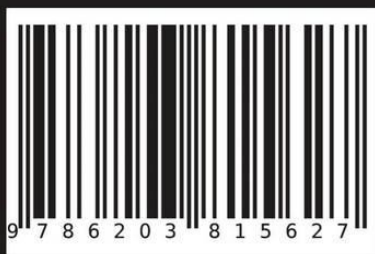
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## PFLANZLICHE BIOTECHNOLOGIE

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Dr. Prashant J. Wagh hat einen Dokortitel in Botanik mit Spezialisierung auf Molekularbiologie und Pflanzenbiotechnologie. Zurzeit ist er Assistenzprofessor für Botanik am Anand Niketan College, Anandwan, Maharashtra (Indien). Sein Interessengebiet ist die Pflanzenvielfalt, Physiologie und Biotechnologie-Studien.



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## BIOTECNOLOGIA VEGETALE

Questo workbook è stato progettato per soddisfare le esigenze degli studenti del corso di biotecnologia vegetale a vari livelli di studi universitari e di laurea in diverse università in India e all'estero. Questo workbook copre tutti gli aspetti importanti della Biotecnologia Vegetale, dalle tecniche di coltura dei tessuti ai metodi di produzione delle colture transgeniche. Il libro di lavoro comprende il piano di laboratorio, gli strumenti di base e le strutture necessarie nella sala di coltura dei tessuti, la composizione e la preparazione dei media, le tecniche di sterilizzazione e le tecniche di coltura dei tessuti vegetali come la micropropagazione, le colture di callo, l'androgenesi, l'isolamento dei protoplasti e la coltura in sospensione per la produzione di metaboliti secondari. Per comprendere le applicazioni della tecnologia del DNA ricombinante, i metodi per il trasferimento genico diretto e indiretto sono dimostrati nel workbook. I protocolli di produzione di colture transgeniche per il cotone Bt, il riso dorato, i vaccini commestibili e la produzione di bioplastica sono illustrati in modo lucido. Il principio e la teoria dietro ogni esperimento sono spiegati in un linguaggio semplice. Questo workbook aiuterà sicuramente gli studenti ad acquisire le conoscenze di base della biotecnologia vegetale in tempo reale.



Il Dr. Prashant J. Wagh è dottore in Botanica con specializzazione in Biologia Molecolare e Biotecnologia Vegetale. Attualmente è assistente professore di botanica presso l'Anand Niketan College, Anandwan, Maharashtra (India). La sua area di interesse è la diversità delle piante, la fisiologia e gli studi di biotecnologia.



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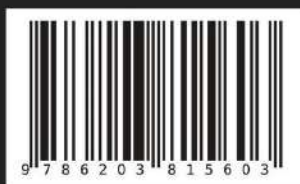


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El Dr. Prashant J. Wagh es doctor en Botánica con especialización en Biología Molecular y Biotecnología Vegetal. Actualmente es profesor asistente de Botánica en el Anand Niketan College, Anandwan, Maharashtra (India). Su área de interés es la diversidad vegetal, la fisiología y los estudios de biotecnología.



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## BIOTECNOLOGÍA VEGETAL

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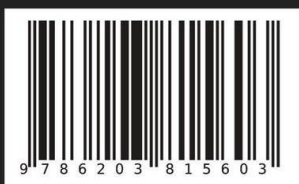
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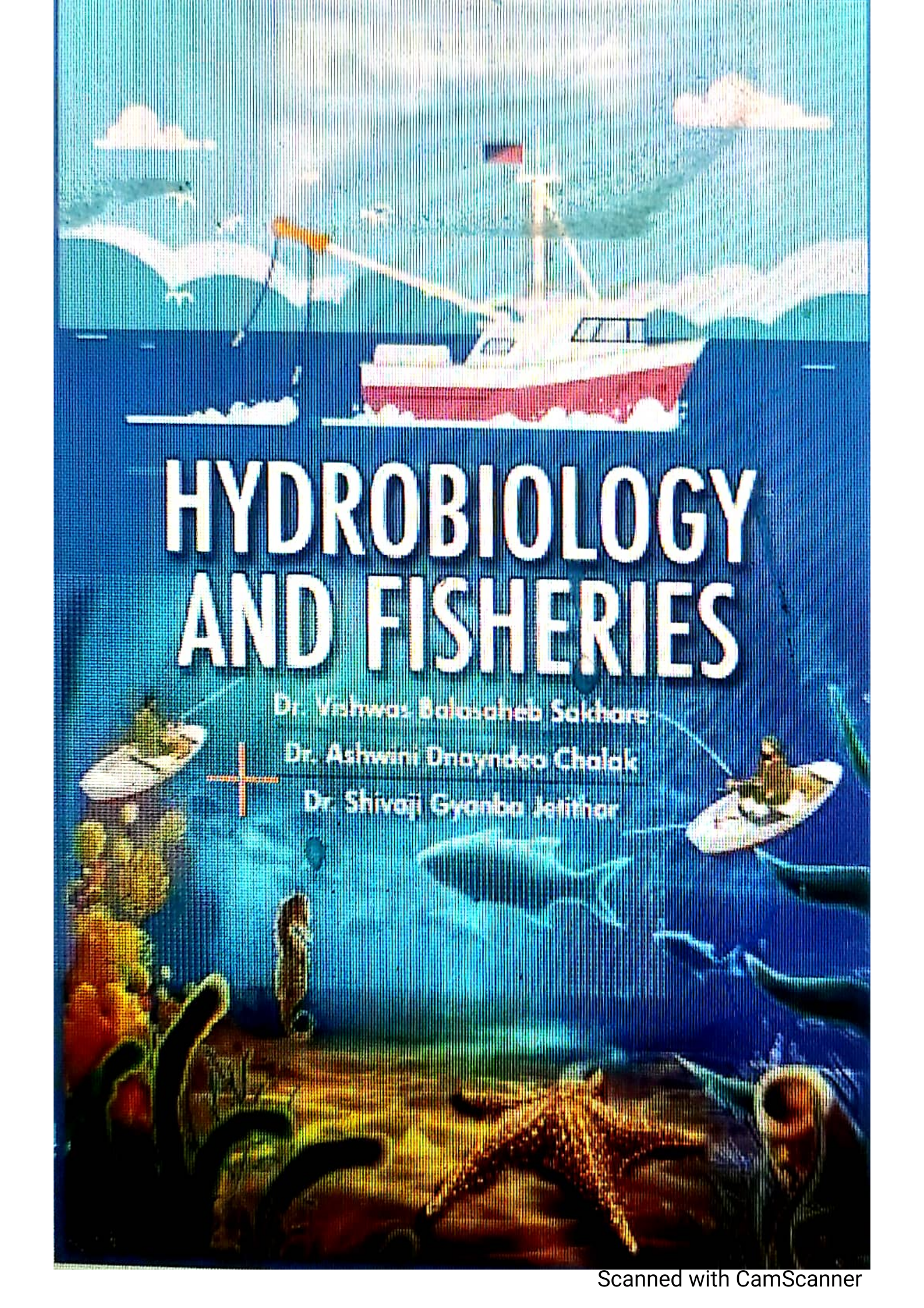
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Dr. Vishwas Balasahab Saldore

Dr. Ashwini Dnyandeo Chalk

Dr. Shivoji Gyomba Jetthor



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## **Status, Problems and Sustainable Development of Prawn and Shrimp Culture Fishery in India**

Sanyogita Verma  
Pramod R. Chaudhari

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### **ABSTRACT**

Both freshwater and brackish water shrimp (prawn) culture fishery is in vogue in India. Traditionally, it has been commonly cultured in confined brackish water bodies in the coastal districts of India. Now it is a commercially activity in India. Brackish water shrimp farming started in seventies in other countries and in a big way in India during 1991-94 especially in the coastal districts of Andhra Pradesh and Tamil Nadu.

Shrimp farming has now been developed in large number of countries throughout the world to compliment the natural marine and freshwater shrimp fishery which is increasingly falling short to meet the enormous demand for shrimps. Another reason for its introduction in tropical and sub-tropical countries is the export potential of shrimps and large margin of profit in this industry. It is exported to EEC countries and USA. The world market for shrimp is expanding with attractive prices.

Shrimp aquaculture increased rapidly in different countries, with unplanned and unregulated development; and mostly in mangrove and estuarine systems, and agricultural soils leading to environmental degradation with multiple impacts that led to conflict with public. Shrimp culturing has experienced many ups and downs due to many issues including oppose from the environmentalists and public. However, scientifically managed shrimp

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## 5

# UNIQUE ECOSYSTEM OF COLD WATER FISHES AND COLDWATER FISHERY STATUS IN INDIA

**Sanyogita Verma<sup>1</sup>, and Pramod R. Chaudhari<sup>2</sup>**

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### Abstract

The coldwaterfishes in cold hilly areas of India are the part of unique ecosystem of coldwater fishery, which is important to conserve the important gene pool, and to support local socio-economic development. Therefore, it is important for sustainable development of hilly regions of India. Coldwater fishes occur in North-West and North-East Himalayas as well as in Nilgiri District in Western Ghat. Coldwater fishes occupy an important place amongst the freshwater fishes of India, from the view point of genetic resources and economy of hilly region. The water bodies in coldwater ecosystem have temperature of water ranging from 5 to 25°C and contain rich oxygen (7.8 to 10.2 mg/L) and low carbon di-oxide. Coldwater fishes are well adapted structurally and physiologically for their extreme environment. Coldwater fishery is very important for developing domestic market, food security, aquaculture and open avenues for employment and business opportunities in aquaculture, ornamental fish, and ecotourism including angling, sport fishing etc. Coldwater fish resource and fishery is now affected by many intrinsic constraints, absence of infrastructural facilities, environmental and anthropogenic impacts and suitable legal provisions for the