


Conclusion & Suggestion

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Studies of Physicochemical Parameters to Assces the Water Quality of River Yerrala for Drinking Purposes in Palus and Khanapur Tehsil (Sangli Distra)

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Abstract:

A systematic study has been carried out to access the water quality of river Yerala in Sangli district. 11 water samples from three sampling stations were collected and analyzed for physicochemical parameters (pH, EC, TDS, Calcium, Magnesium, Sodium, Potassium, Carbonate, Bicarbonate, Chloride, Sulphate). Comparatively study three village interpoint distance is 5 to 8 km. Comparatively maximum value in Andhali . It was observed that the water in Balwadi and Wazar better quality than the Andhali. Suitabale suggestions were made to improve the water quality of Yerala River water.

Keywords- Drinking water, Yerala River, Sangli District, physico-chemical parameter.

Introduction

water is one of the most important of all natural resources known as earth it is important to all living organisms, human, health, food, production and economic development the safety of drinking water is important. for the safety of drinking water is affected by various contaminant which included chemical and microbiological such contaminants cause serious health problems.

Due to this contaminates quality of the drinking water become poor. sometimes such poor quality water causes many diseases in the humans so that quality of the water must be tested for both the chemical as well the water must be tested for both the chemical as well as for the maximum no of physical and chemical parameter were within the desirable limit as suggested by (WHO 1971) and BIS(1991)

The objective of the present is to provide information on the physicochemical characteristics of potable water in order to discuss its suitability for human consumption. physicochemical aspects of the water have been investigated to assess the quality of water .The variations of the physicochemical properties of water samples directly influence the biotic communities and primary Productivity of the water bodies of different areas of sangli district of Maharashtra .

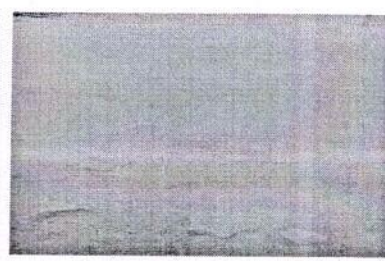
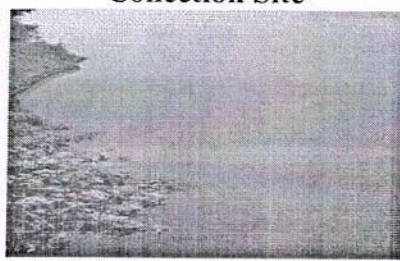
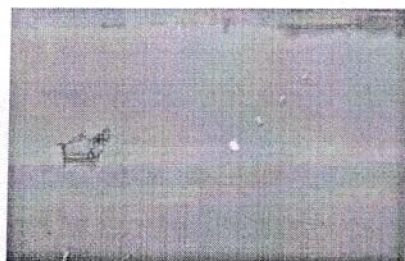
Material And Methods-

The water samples from three village Wazar, Balawadi and Andhali from Yerala river were collected in polythene bottles. The water sample were immediately brought into laboratory for the estimation of various physico-chemical parameter like Ph, EC, TDS, Calcium, Magnesium, Sodium, Potassium, Carbonate, Bicarbonate, Chloride, Sulphate. while other parameters like were estimated in the laboratory by using std methods is prescribed by (APHA 1998) & (trivenedy R.K.and Goel (1986).

Collection Site Map



Collection Site



Wazar

Balawadi

Andhali

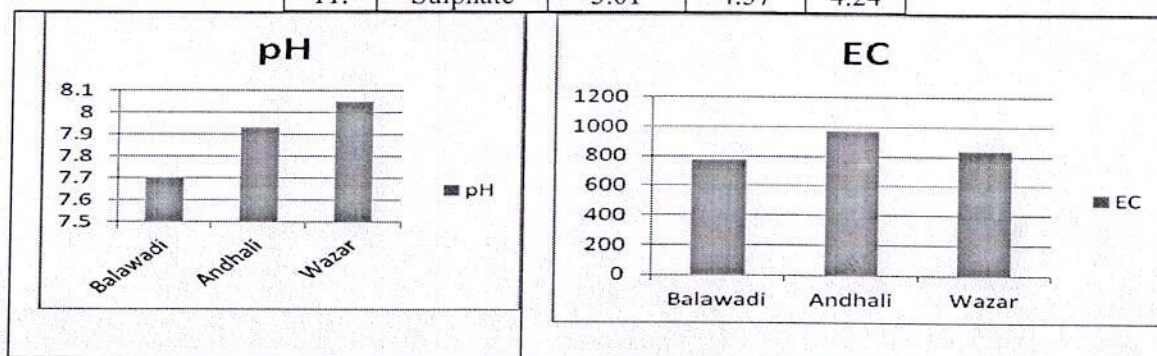
Results & Discussion

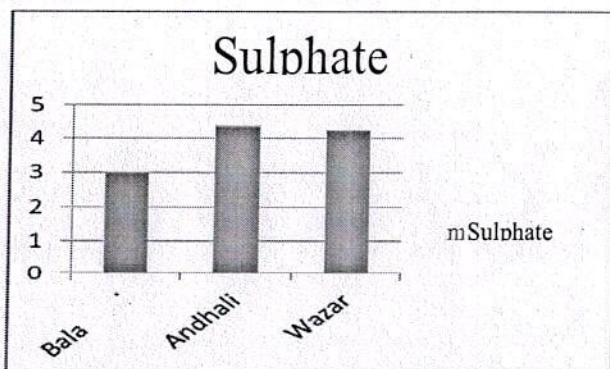
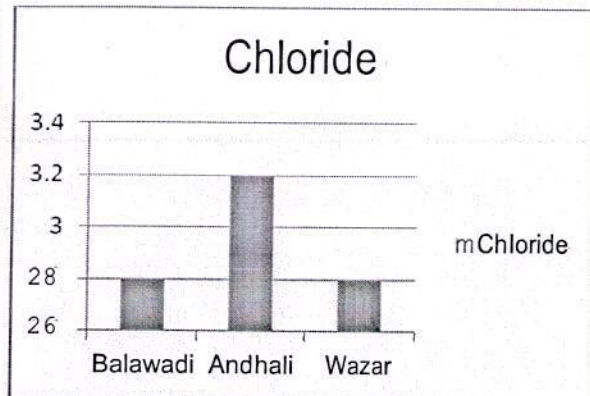
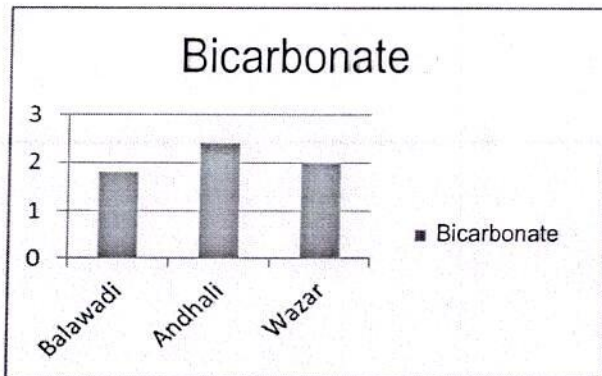
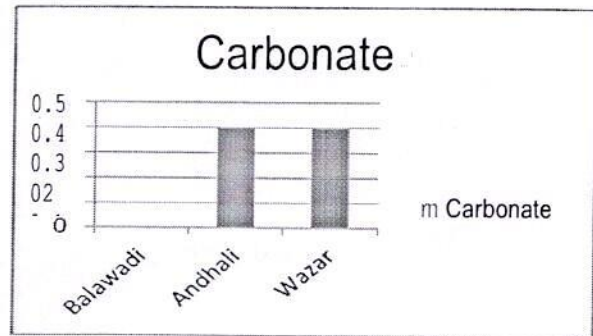
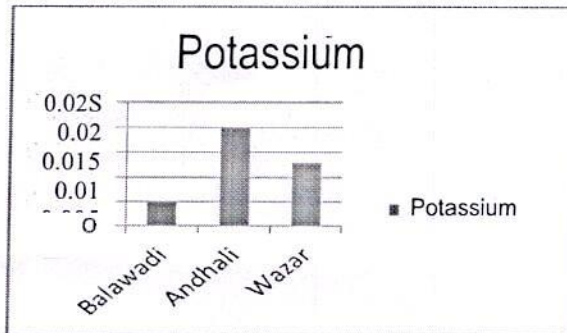
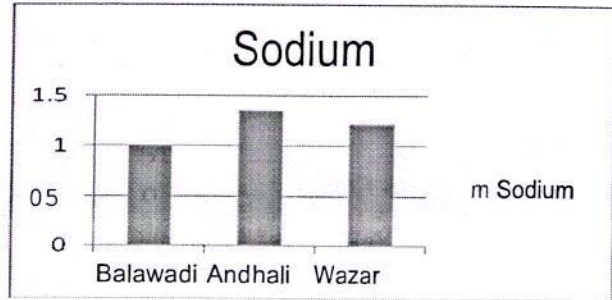
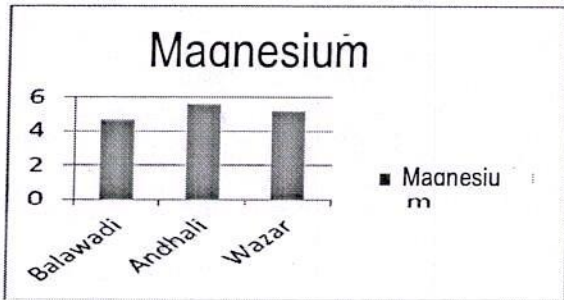
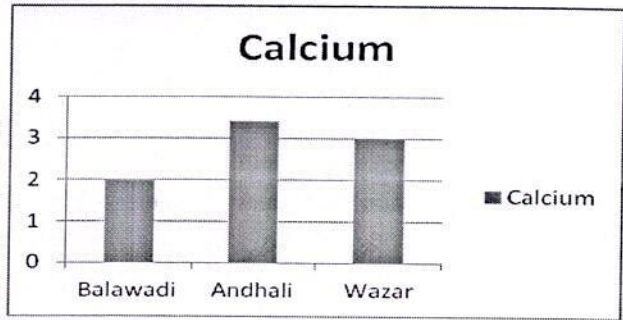
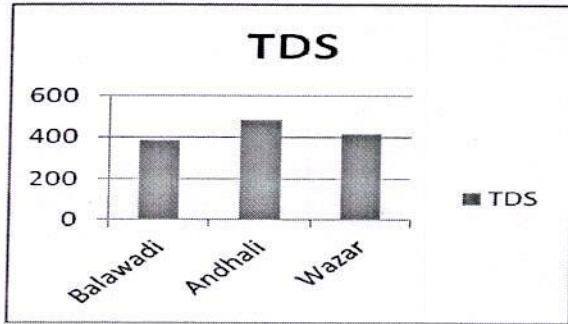
The results obtained from analysis of Yerala river are shown in table. The results indicate that the quality of water was differences occur location. In andhali maximum value of physicochemical parameter.

PH values of all the waters from three places are found to be near about same i.e. Average value of ph 7-8.50 is observed according to guidance maharashtra shasan. ph was alkaline in nature. Electrical conductivity values are found to be higher. The conductivity of water is affected by the suspended impurities & also depends upto the amount of ions in the water. The highest conductivity 970 of the Andhali river water is observed TDS values are found to the little higher than average value. So there values are not affected on human health. The hardness was higher in all three phase. here magnesium ions moles major contribution to the hardness of yerala river water. Na , K & carbonate ions are found to the same to not average value. Bicarbonate chloride & sulphate ions are same what larger values than average values.

Table no.1: Physicochemical analysis of water from collection sites.

Sr. no	Parameter	Balawadi	Andhali	Wazar
1.	pH	7.70	7.93	8.05
2.	EC	775	970	840
3.	TDS	384	484	417
4.	Calcium	2.0	3.4	3.0
5.	Magnesium	4.6	5.6	5.2
6.	Sodium	1.00	1.35	1.22
7.	Potassium	0.005	0.020	0.013
8.	Carbonate	0	0.4	0.4
9.	Bicarbonate	1.8	2.4	2.0
10.	Chloride	2.8	3.2	2.8
11.	Sulphate	3.01	4.37	4.24





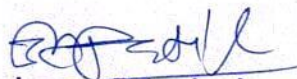
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A Brief Note on Molluscan Diversity from Krishna River in Sangli District, Maharashtra, India

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ABSTRACT

Molluscan are good bio-indicators of water quality or pollution on the basis of their tolerance power against extremes of physico-chemical components of water. Present study revealed, the diversity of molluscan fauna from Krishna River during June 2018 to December 2019. The collected 7 mollusks are belonging to 4 order and 5 families. The Simpson diversity index is 2.7. The dominant species *Tarebia lineate* with (45.73%) followed by *Parreysia (Radiatula) caerulea* and *Parreysia (parreysia) corrugate* (15.20%), *Melanoides tuberculata* (12.40%) *Bellamya bengalensis* (9.30%), *Lymnaea (Pseudosuccinea) acuminata* (1.55%), *Corbicula striatella* (0.7%) This study shows that the potential and importance of such habitats to diverse molluscan species and support many more species. It is a preliminary study on the molluscan diversity. Further studies are needed for detailed exploration of the molluscan fauna, its habitat and threats being experienced by these animals.

Key words: Krishna river, Molluscan, Maharashtra, Sangli

The Phylum Mollusca is a second largest phylum in invertebrate. Molluscan are soft bodied animals with or without calcareous shell adapted to almost all habitats with varied ecology. Molluscs are divided into freshwater, marine and terrestrial forms. It includes snails, slugs, clams, oysters, mussels, scallops, cuttlefish, squid and octopus. All the molluscan comprises in three groups, Gastropods, Bivalves and Cephalopods. Gastropoda is extremely diverse group in Mollusca and adapted to all habitats, includes snails and slugs. Bivalves as a group have no head and it characterized by a shell that is divided from front to back into left and right valves. They include clams, oysters, mussels and number of families that live in freshwater [1-3]. Benthic macro invertebrates are common inhabitants of fresh water bodies as they transfer energy through food webs [4]. Among invertebrate diversity a molluscan constitutes the second largest phylum next to arthropods. Many molluscan species are also good bio-indicators for water quality or pollution on the basis of their tolerance power against extremes of physico-chemical components of water [5]. Molluscan are found to be important economically, medicinally and ecologically [6]. Freshwater molluscan forms relationship between other

organisms and environment. They play an important role in aquatic ecosystems, providing food for many fish species and vertebrates. They may be used to understand the response, adaptation and recovery of an ecosystem and its inhabitants to both natural and anthropogenic disturbances. Molluscan fauna can be investigated from several perspectives, i.e. zoological diversity, biogeographical distribution, palaeontology, veterinary, agricultural plagues, invasive exotic species, conservation, as an alimentary resource (fishing and malacoculture), as bio-indicators of environmental quality and, last but not least, as a health hazard (as vectors or transmitters of human parasitic diseases). Molluscan are also found economically important as some of them are edible. The soft bodies of molluscan are used as a medium for fishing in the form of bait, hard shells are used for making various items such as buttons, decoration of door curtains, knife handles, ornaments etc. also used in the form of poultry food [7]. Molluscans showed appropriate position among local invertebrate biodiversity [8].

The Krishna River is one of the major perennial rivers, which originates at Mahabaleshwar Hills (17058'N & 73043'E) in the Western Ghats of Maharashtra, at about 1337m above sea level and flows as the Krishna River system across the whole width of the peninsula from west to east for a length of about 1400km through the states of Maharashtra, Karnataka and Andhra Pradesh. It is a boon for all these three states and has made possible remarkable agricultural and industrial development. Moreover, it provides food and shelter to a large number of aquatic fauna. In Maharashtra, the major tributaries of Krishna River are Koyna, Yerla, Urmodi, Warna, Panchaganga, and Dudhganga. The present study is undertaking the diversity and bio-indicator role of Molluscan in river Krishna. The available literature shows that diversity of

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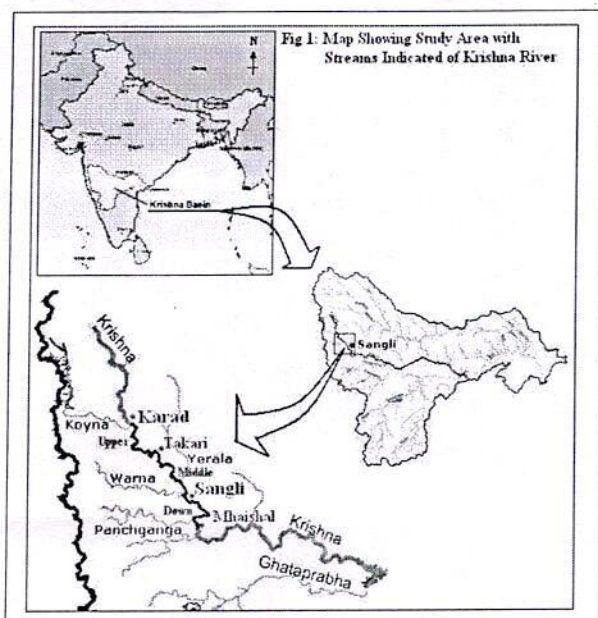
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Molluscan but no one study as bio-indicator role of Molluscan therefore present problem is undertaken.

MATERIALS AND METHODS

The Molluscans were collected at Krishna River from Bahe to Sangli approximately distance 85 km in length. The study area divided from three stream for convenience i.e. Upper, Middle, Downstream, and 8 collection sites i.e. Pundi, Bhilwadi, Audumber, Bahe, Borgoan, Bramnal, Digraj, Sangli. With interpoint distance 8 to 9 Km. Upper stream starts Bahe, Borgoan, Pundi followed by middle stream include Audumber, Bhilwadi then followed by downstream Bramnal, Digraj, Sangli.



Sampling of molluscan

Molluscs species were collected by simple hand-picking method, with the help of forceps and containers from all along the marginal area. Samplings were carried out up to depth of 1 to 2 meters from water level. Stratified random quadrat sampling method was applied for quantitative assessment of molluscan fauna at selected sampling stations [9]. However, five replicates at each sampling stations were performed to overcome the problem of random sampling. All the species were carried to laboratory, cleaned neatly and used for identification. Identification of animal was done by using standard keys of Zoological survey of India.

Statistical analysis

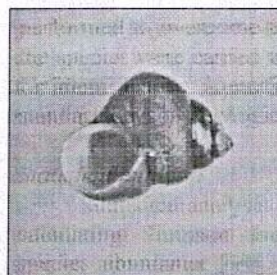
Statistical analysis of quantified data was carried out by calculating Simpson Index to interpret species richness, species abundance [10]. All the variables were statistically analyzed and graphically interpreted.

RESULTS AND DISCUSSION

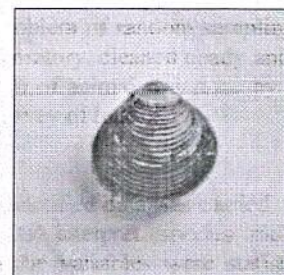
In the present study considerable changes in molluscan diversity was observed in the different sites of Sangli district. The impact of physicochemical parameters on the diversity was observed. Total Seven species of Molluscan belonging to class Gastropoda and Bivalve are recorded during the study period. The collected 7 molluscans are belonging to 4 order and 5 families (Table 1). Variations in abundance of various groups are given in (Table 2). Amongst the Gastropoda group

Tarebia lineate belonging to family Thiaridae was dominant 59 species followed by *Melanooides tuberculata* 16 species. one species i.e., *Corbicula striatella* belonging to family Corbiculidae, class bivalve was observed. Family Unioniidae found 2 species *Parreysia (Radiatula) caerulea*, *Parreysia (parreysia) corrugate*. Family Viviparidae 12 species *Bellamya bengalensis*, family Lymnaeidae found 2 species *Lymnaea (Pseudosuccinea) acuminata*. Molluscan diversity of Krishna river, selected 8 sites was noted Simpson index as 2.7 respectively. Percent composition of molluscan diversity throughout the study period showed that as dominant species *Tarebia lineate* with (45.73%) followed by *Parreysia (Radiatula) caerulea* and *Parreysia (parreysia) corrugate* (15.20%), *Melanooides tuberculata* (12.40%) *Bellamya bengalensis* (9.30%), *Lymnaea (Pseudosuccinea) acuminata* (1.55%), *Corbicula striatella* (0.7%) among the total molluscan population. The Molluscan populations are good indicators of localized condition, indicating water quality. A bio indicator can be defined as a species or group of species that readily reflects the abiotic or biotic state of an environment represents the impact of environmental change on a habit, community or ecosystem or is indicative of the diversity of subset of taxa. Bioindicator can tell us about the cumulative effects of different pollutants in the ecosystem.

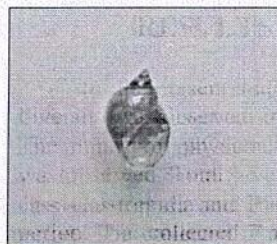
Fresh water macroinvertebrates, the most extensive (temporally and spatially) long-term data have been collected for mosquitoes (Culicidae) and black flies (Simuliidae) as part of pest and disease control programmes. Most of these data remain unpublished, but the published studies have contributed to our understanding of predator/prey interactions, local and regional impacts of weather on population dynamics and spatial variability in population dynamics [11-14]. Most freshwater macroinvertebrates are not economically or medically important and their distribution and abundance have not been commonly measured as part of fisheries or pest management programmes. In addition, because macroinvertebrate communities include many species that can experience rapid and dramatic changes in abundance, relative to longer lived species such as fish, it can be laborious to generate samples that are temporally representative for long-term analyses [15]. As a result, the temporal perspective in our understanding of freshwater macroinvertebrate ecology is often short [16].



Bellamya bengalensis



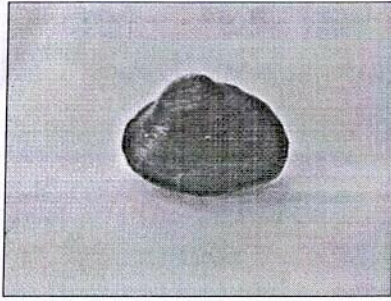
Corbicula striatella



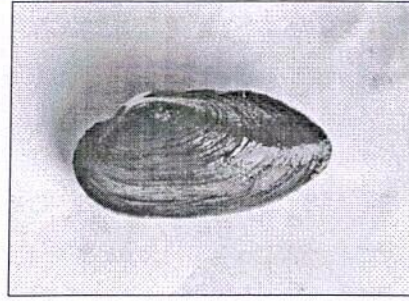
Lymnaea (Pseudosuccinea) acuminata



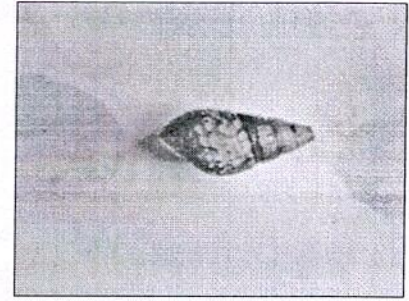
Melanooides tuberculata



Parreysia (Radiatula) caerulea



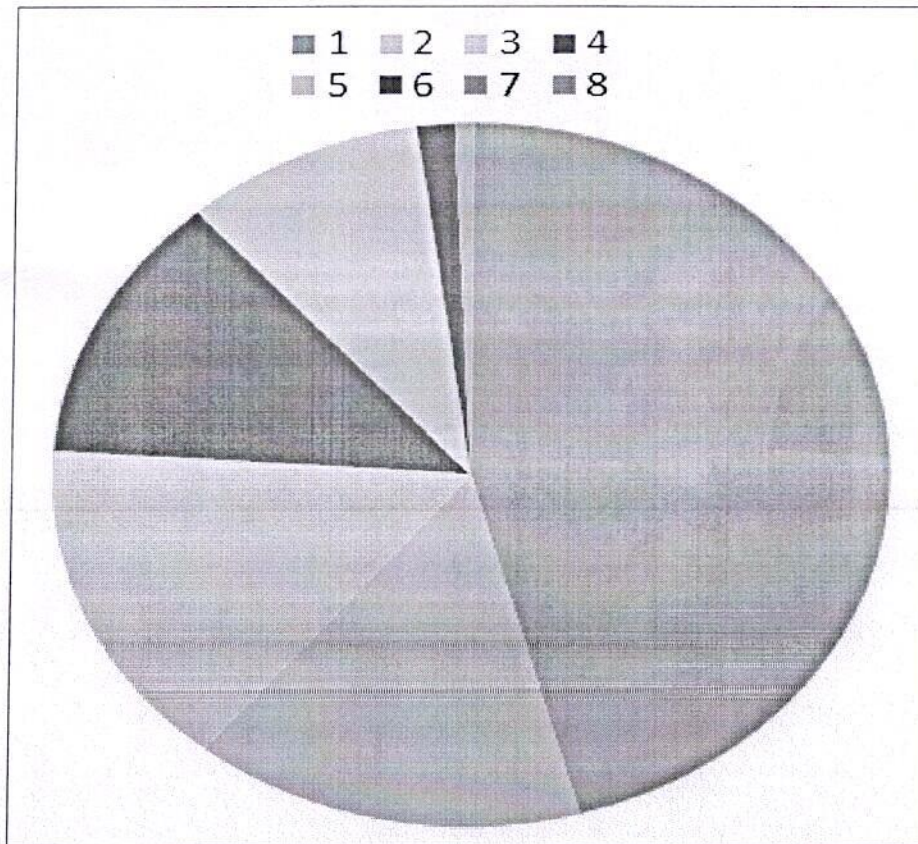
Parreysia (parreysia) corrugate (Mueller)



Tarebia lineate

The impounded estuary had the highest species richness probably due to hard waters. This factor most likely contributes to its high species richness because hard waters are ideal for the development of freshwater molluscs [17]. Aquatic macro invertebrates are an integral part of the food chain in lotic environments and they are sensitivity to changes in the environment through degrees of sensitivity differ among various groups. Aquatic macroinvertebrates are used to assess aquatic ecosystem condition, because of their great diversity

of form and habits [18]. The molluscan population is good indicator of localized condition, indicating water quality. They are important roles in the ecosystem structure and biodiversity [19]. A correlation between molluscan diversity with physicochemical parameter with effect of water from Ramsagar reservoir [20]. Gastropods usually play a dominant role in the ecology of fresh-waters by providing food for many animals and by grazing on vast amounts of algae and detritus [21].



1. *Parreysia (Radiatula) caerulea*, 2. *Parreysia (parreysia) corrugate* (15.20%), 3. *Tarebia lineate* (45.73%), 4. *Melanoides tuberculata* (12.40%), 5. *Bellamya bengalensis* (9.30%), 6. *Lymnaea (Pseudosuccinea) acuminata* (1.55%), 7. *Corbicula striatella* (0.7%)

Fig 2 Total percentage (%) and population density of molluscan species from Krishna river Sangli District during June 2018 to Dec 2019

Table 1 List of Mollusca species collected from the Krishna River, Sangli District during June 2018 to Dec. 2019.

Order	Family	Species	No. of Specimens
Trigoinoida	Unioniidae	<i>Parreysia (Radiatula) caerulea</i> (Lea)	20
Trigoinoida	Unioniidae	<i>Parreysia (parreysia) corrugate</i> (Mueller)	20
Mesogastropoda	Thiaridae	<i>Tarebia lineate</i> (Gray)	59
Mesogastropoda	Thiaridae	<i>Melanoides tuberculata</i> (Mueller)	16
Mesogastropoda	Viviparidae	<i>Bellamya bengalensis</i> (Lamarck)	12
Basommastophora	Lymnaeidae	<i>Lymnaea (Pseudosuccinea) acuminata</i> Lamarck	2
Veneroida	Corbiculidae	<i>Corbicula striatella</i> Deshayes	1

Table 2 Macroinvertebrate taxa collected at Eight sampling stations in the Krishna River in during June 2018 to Dec. 2019

Species	Bahe	Borgoan	Pundi	Audumber	Bhilwadi	Bramnal	Digraj	Sangli
<i>Parreysia (Radiatula) caerulea</i> (Lea)	+	+	-	+	-	-	-	-
<i>Parreysia (parreysia) corrugate</i> (Mueller)	-	+	-	+	-	-	-	+
<i>Tarebia lineate</i> (Gray)	+	+	+	+	+	+	+	+
<i>Melanoides tuberculata</i> (Mueller)	+	+	-	+	-	-	-	+
<i>Bellamya bengalensis</i> (Lamarck)	-	-	-	+	+	-	-	-
<i>Lymnaea (Pseudosuccinea) acuminata</i> Lamarck	-	-	-	-	-	+	+	-
<i>Corbicula striatella</i> Deshayes	-	-	-	-	-	-	-	+

+ Present; - absent

CONCLUSION


The Molluscan taxa are richness and abundance varied among sampling sites. *Tarebia lineate* species usually abundant in river found all collection sites. Molluscan good Bioindicators will be used for the detection of pollution into the Krishna river and its surroundings.

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We are thankful to Dr. Pankaj Bhatnagar, Officer-in-charge, and Dr. Sachin Patil, Zoological Survey of India, Western Regional Center, Pune for confirmation of identified Molluscan species and their suggestions for improving the manuscript. The author is thankful to Shivaji University, Kolhapur and Rayat Institute of Research and Development, Satara, for providing research laboratory facilities.

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Study of Biodiversity of Phytoplankton and Zooplankton of A Fish Culture Pond and Wild Village Pond of Bhilawadi in Sangli District MS

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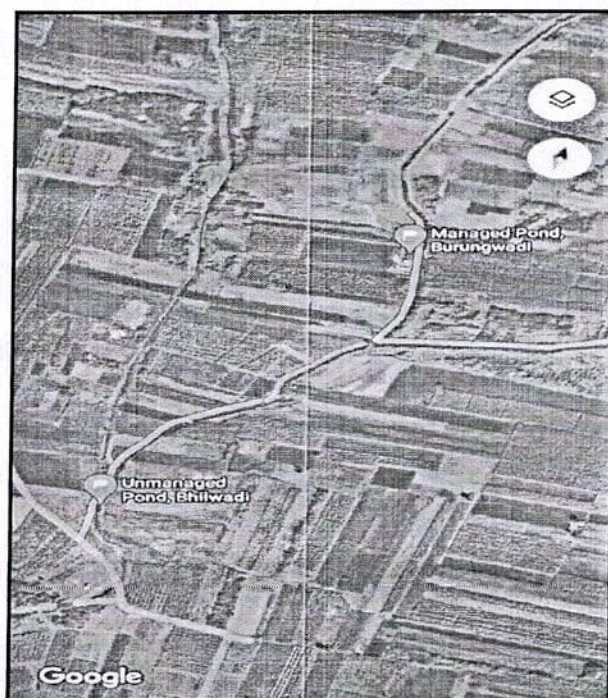
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Abstract:

Study of biodiversity of phytoplankton and zooplankton of a fish culture pond and wild village pond of Bhilawadi in Sangli District Maharashtra from (January to April 2021). were total of three classes of phytoplankton and three classes of zooplanktons were recorded which contain 06 phytoplankton and 11 zooplankton species from both P1 and P2. P1 richer in zooplankton and P2 was richer in phytoplankton. An inverse relationship was observed between Phytoplankton and zooplankton abundance.

Key words: diversity, phytoplankton, zooplankton, fish culture pond and wild village pond.

Introduction: The plankton community is composed of phytoplankton (primary producers) and zooplankton (secondary producers). The phytoplankton presents biological wealth of the water body and form the base of food chain in ponds (Pokorny et al 2005). Zooplankton is a principal component of food for omnivorous fish that are usually farmed in extensive aquaculture (Brummett and Noble, 1995). Ekelemu (2010) emphasized on the fact that zooplankton is very important in the food web of open water eco system. Damle and Chari (2011) observed that lack of zooplankton caused poor survival of spawn in



nursery ponds. The zooplankton is commonly divided to following groups Rotifers (Rotatoria), Cladocerans (Cladocera) and Copepods (Copepoda). Composition of zooplankton is in close relation to farmed fish and the presence of suitable zooplankton species is essential for successful farming (Kalous et al 2009). Abundance of planktons supported large population of fish species, Jhingran (1991) reported that organic manuring results higher zooplankton densities in the ponds. Hence, it can be concluded that zooplankton population improved with the application of the manure maintaining the water quality favourable for fish production. Poultry manures was found to release soluble salts continuously, resulting in high production of zooplankton (Gaur and Chari, 2007). Sasmal et al (2008) suggested that duck excreta was good source of nutrients, easily soluble in water and available for plankton production. In the present study provide information on study diversity of zooplankton and phytoplankton a fish culture pond and wild village pond of Bhilawadi in Sangli District Maharashtra.

Study Area Map

Material Method

The study was conducted during January 2021 to April 2021 on two ponds.

1. managed fish pond (P1)

2. Unmanaged fish pond (P2) In Bhilawadi Dist .Sangli .

Pond P1 = 3000 square foot was Rectangular in shape with an area was stocked with composite fish culture practice, Pond P2 = 4000 square foot Was near circular in outline with an area and was being used by village for multiple purposes. Plankton samples were collected once in every month between 8-10 cm. from 10 randomly selected points of the pond at depth of 20 cm. below the surface (Hossian et.al.,2007). Plankton samples for this study were collected with plankton net made of bolting silk cloth no.2S with mesh size 0.03 - 0.04 mm.(Apha 1995) phytoplankton samples were preserved in 0.3% lughole iodine .While ,zooplanktons samples were preserved in 4% buffered formalin solution and then transported to laboratory for planktons analysis (Lackey 1938)The identification of planktons species was done with aid of planktons identification key and monographs by Needhum (1962) Tonapic (1980) Battish (1992). And Bellinger (1992).

Result

Three Classes of phytoplankton (*Diatoms* ,*Myxophyceae* , *Chlorophyceae*) were recorded form P1 and

Two classes of zooplanktons (*Crustacea* ,*Rotifers*) were recorded from P2.

Total phytoplankton 6 species and 11 species zooplankton in both the ponds. Among all species were found to be common at both the ponds phytoplankton's 3 species and zooplanktons 6 species in P1. Phytoplankton 4 species and zooplankton 7 species recorded from P2.

Table:1 Phytoplankton diversity and distribution of managed fish culture pond (P1) and Unmanaged village pond (P2) at Bhilawadi dist of Sangli during Jan to april 2021.

Sr.No.	Class	Species	Distribution
1.	Diatoms	<i>a.Nitzschia b.Navicula.</i>	P1,P2
2.	Myxophyceae.	<i>a.Arthospira</i>	P2
3.	Chlorophyceae	<i>a.Nitella. b.Chara. c.Spirogyra.</i>	P1 P1,P2 P2

Table:2 Zooplankton diversity and distribution of managed fish culture pond (P1) and Unmanaged village pond (P2) at Bhilawadi dist of Sangli during Jan to april 2021.

Sr.no.	Class	Species	Distribution
1.	Crustacea	<i>a. Cladocera b.Nauplius</i> <i>c. Cyclostrenus</i> <i>d. Copepods</i> <i>e.Sida crystalina</i>	P1,P2 P1 P2 P1,P2 P2
2.	Rotifers	<i>a.Brachionus falcatus b.Brachionus</i> <i>Vulgaris c.Planaria d.Testudinella</i> <i>elliptica e.Miona mrococopa</i> <i>f.Diaptomus copepod.</i>	P1 P1P2 P1 P2 P1 P2

Discussion:

for any scientific utilization of water resources plankton study is of primary interest (Jhingran,1985). Phytoplankton forms the vital source of energy as primary producer and serves as direct source of food to the other aquatic plants and animal (Battish, 1992). Total phytoplankton 6 species and 11 species zooplankton in both the ponds. Among all species were found to be common at both the ponds phytoplankton's 3 species and zooplanktons 6 species in P1. Phytoplankton 4 species and zooplankton 7 species recorded from P2.

Zooplankton are one of the most important biotic components influencing all the functional aspects of an aquatic ecosystem, such as food chains, food webs, energy flow and cycling of matter (Battish, 1992). Total 11 zooplanktons had been found from P1 and P2. 5 species were common at both the ponds.

Conclusion:

An inverse relationship was observed between phytoplankton and zooplankton abundance. The managed fish culture pond which was periodically limed, manured and fertilised showed greater planktonic diversity, with zooplankton being the dominant group. Whereas the unmanaged village pond showed a less diverse and eutrophic condition, with phytoplankton being the dominant group. It implies that a large amount of ecological niches are remaining void and unutilised in village ponds. Whereas all the available ecological niches are being effectively utilised by the stocked fishes and periodically replenished by fertilisation in the managed fish culture pond. Therefore selective stocking with appropriate species at low densities and extensive fish culture practices in the village ponds has ample scope. Adoption and transformation of such village ponds by scientific management practices into semi-intensive fish culture ponds may prove to be an ecologically efficient, financially feasible and socially viable venture.

Acknowledgement

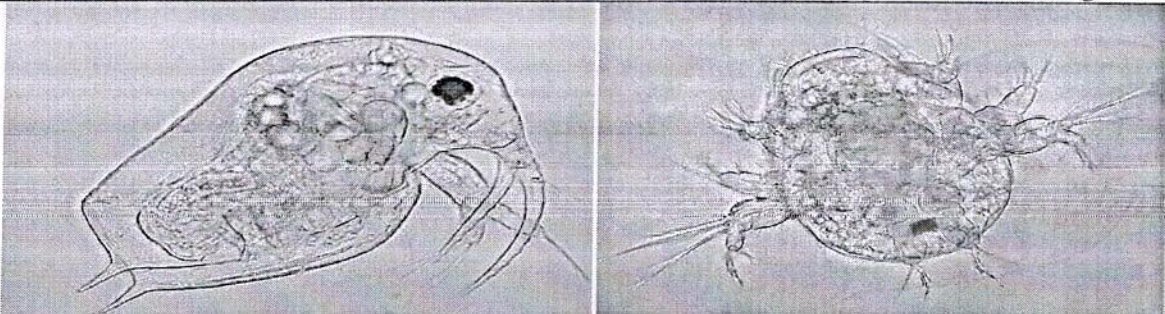
I express my heartiest gratitude to Prin. Dr. P. B. Lad sir, Krantiagrani G. D. Babu Lad Mahavidyalaya Kundal. Department of Zoology for providing lab facilities of this complete study work.

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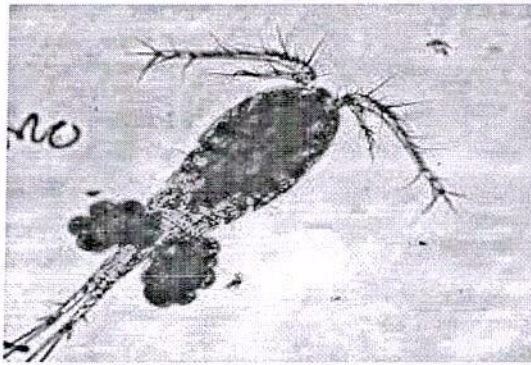
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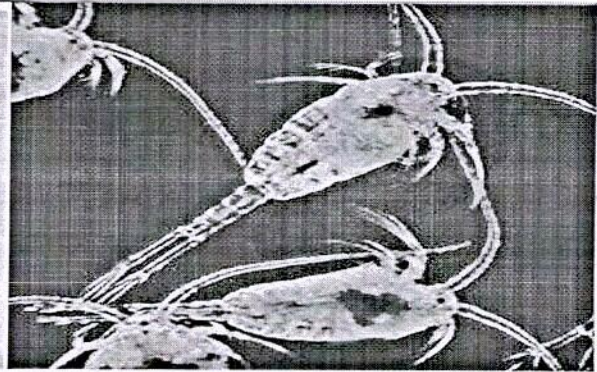


Study Of Biodiversity Zooplanktons And Phytoplankton's Of Farm Pond And Lakes In Bhilawadi, Sangli District, Maharashtra.

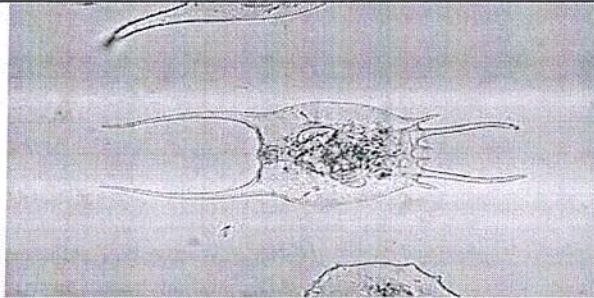
1.Crustacea: Cladocera	2.Crustacea: Nauplius
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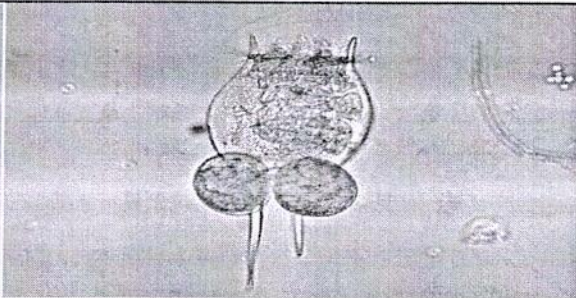
3. Crustacea: Cyclops strenuus



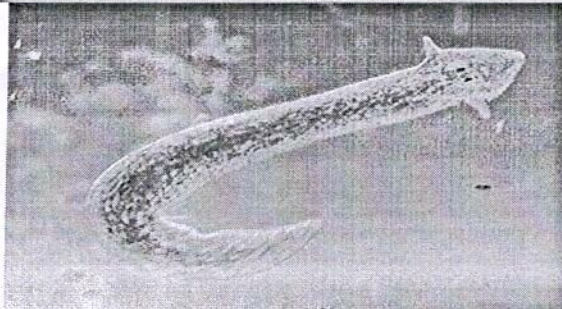
4. Crustacea: Copepods



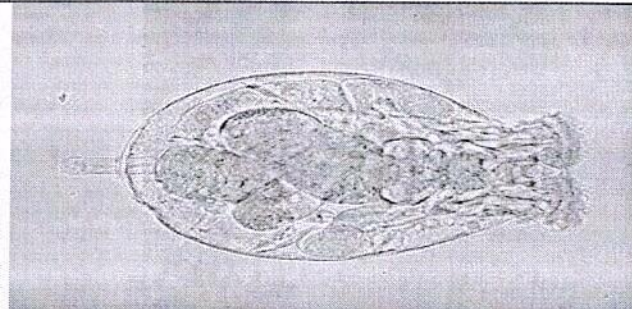
5. Rotifers: Brachionus Falcatus



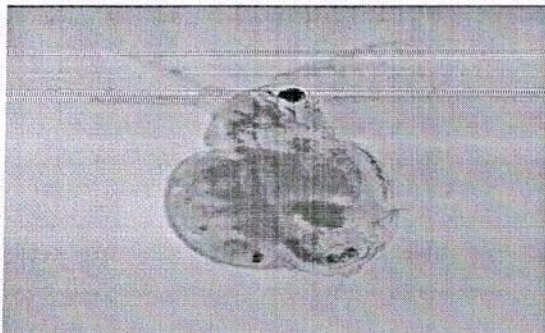
6. Rotifers: Brachionus Vulgaris



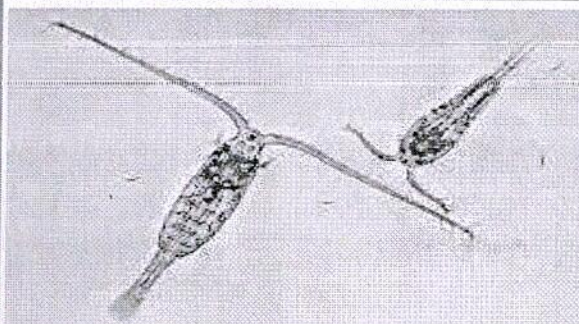
7. Planaria



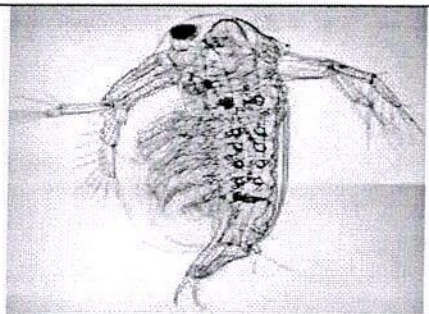
8. Rotifers: Testudinella elliptica



9. Miona Macrocopa

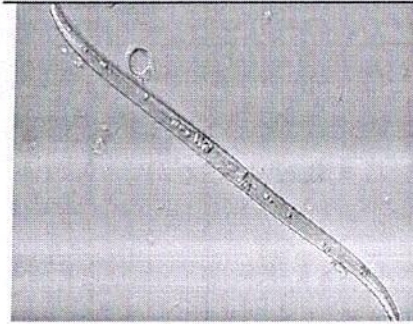


10. Diaptomus Copepod

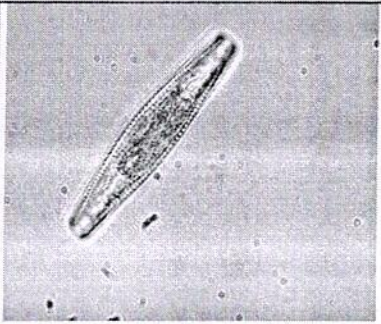


11. Crustacea: *Sida crystalina*

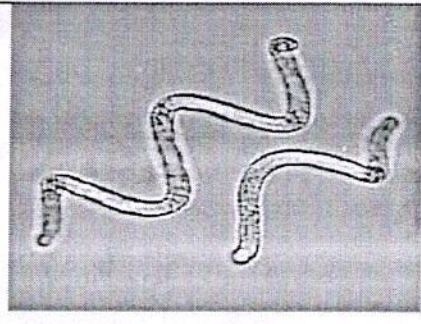
Study Of Biodiversity Phytoplanktons of Farm Tanks (Lakes) In Bhilawadi, Sangli District, Maharashtra.



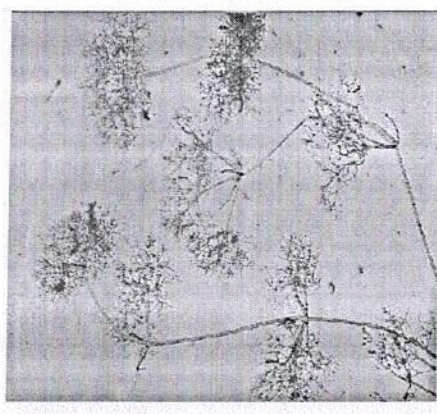
1. Diatoms: *Nitzschia*



2. Diatoms: *Navicula*



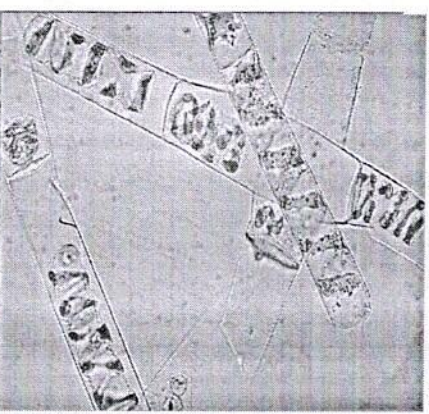
3. Myxophyceae: *Arthospira*



4. Chlorophyceae: *Nitella*



5. Chlorophyceae: *Chara*



6. Chlorophyceae: *Spirogyra*

Physico-Chemical Characterization of Farmland Soil in Some Villages of Palus Taluka, Dist. Sangli (Maharashtra)

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Abstract

The Physico-chemical study of soil is based on various parameters like, pH, Electrical conductivity (EC), Total Organic Compound (OC), Nitrogen (N), Phosphorus (P_{2O_5}) Potash (K_2O), calcium carbonate ($CaCO_3$) Sodium (Na), Iron (Fe) lead us to the conclusion of the nutrients Maharashtra state. Result shows that all the six selected places sample of Palus taluka have medium or high minerals content. This information will help farmers to solve the problems related to soil nutrients amount of which fertilizers to be used to increase the yield of crop.

Keywords: Chemical properties of soil, Physico-Chemical parameters

Introduction-

Soil sample is vital components step for any soil analysis the soil test based nutrients management has emerged as a key issue in efforts to increase agriculture productivity. Soil is important to everyone either directly or indirectly. It is basic life support component of biosphere. The Physico-Chemical parameter study is important agricultural chemist for plants growth and soil management. Soil samples are collected from six villages of Palus taluka which are S₁. Bambavade, S₂, Pundi, S₃. Dhayari, S₄. Palus, and S₅. Dudhandi. The Physico-Chemical properties such as moisture content, specific gravity, pH measurement and estimation of N, Ca, phosphorous, potassium of soil were well studied. The fertility of soil depends on the concentration of N, K, P, organic and inorganic materials and water. Nitrogen is the most critical element obtained by plant from the soil and is bottleneck in plant growth. About 80 per cent of the atmosphere is nitrogen gas. Nitrogen is required for plant growth. Phosphorous is a most important element present in every living cell it is important micronutrient essential for plant growth. Potassium plays important role in different physiological process of plants. Analysis of soil is carried out for the studies of various parameters like Organic Compound (OC) Nitrogen (N), Phosphorus (P_{2O_5}) and Potassium (K_2O). The pH conductivity and estimation of Ca, K of soil was studied. Present study is an attempt to find out the nutrients quantity in soil of Palus taluka. This information is useful to farmers to decide the amount of fertilizer to be used to soil to increase production and economic. The objective of this paper was to analyze in pH, OC, N, P, K state of soil of six village sample of Palus taluka of Maharashtra state.

Experimental:

The quality test survey of the soil was conducted in six villages from Palus taluka. A representative soil sample collected from six villages. Representative soil samples were collected following standard quadric procedure and taken in polythene bags. In laboratory these samples were analyzed for different chemical parameters following standard method AR grade reagent and double distilled water were used for soil analysis. Result compared with standard values to find out available Nitrogen, Phosphorus, Sodium, Potassium, pH and electrical Conductivity was measured to find low, medium or high nutrients content.

Physico-Chemical Analysis:

The physical and chemical soil quality parameters like pH, Electrical Conductivity, Organic Compound (OC), Nitrogen(N) organic carbon was determined by W and black method pH was measured using pH meter, EC was measured using a conductivity meter. Na and K was measured using flame photometer.

Result and Discussions: Physical chemical properties of soil samples were studied all the samples are black colour and have unpleasant smell.

Table: 1 Physico-chemical parameter of soil sample from villages of Palus

Sr.No	Sample No	Name of villages	pH	EC	OC	N	P	K	Ca
1	S ₁	Bambavade	8.30	0.120	0.39	200	55	376	6
2	S ₂	Pundi	8.10	0.250	0.87	213	61	336	5.5
3	S ₃	Dhayari	8.22	0.096	0.96	197	19	242	0.9
4	S ₄	Palus	8.46	0.110	0.50	185	51	376	12.5
5	S ₅	Ghogaon	8.90	0.130	0.98	174	62	242	8
6	S ₆	Dudhandi	8.01	0.090	0.91	155	48	309	14.1

(Source: Field Samples)

Linux: An Open Source Technology Tool

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Abstract –

The dynamic and responsive nature of 'open source' software and the existence of freely available documentation and online communities offers an opportunity for educators, network administrators and software developers to participate in the development of resources appropriate to local needs while developing their own skills.

In this paper we study the history of open source, learning using open source technology and digitization education tools through various sectors like courseware, smart class, education portals and virtual university. In this paper we can discuss the impact of open source system tools through services and problems on learning management in education as well as Use of various open source management tools to create and manage learning content on the web. In this paper we also move towards student centered learning in creating blogs and other interactive web applications to enhance peer communication in and outside the classroom.

Educational institutions have rushed to put their academic resources and services online, bringing the global community onto a common platform and awakening the interest of investors. Despite continuing technical challenges, online education shows great promise. Open source software offers one approach to addressing the technical problems in providing optimal delivery of online learning.

Keywords- Open Source, Technology, Education, Digitization, Learning Management tools.

I. Introduction

Many features distinguish open source software from closed or proprietary software. The Open Source Initiative (OSI) has set a standard—the “open source definition”—by which software qualifies for an open source license.[1]

The software must meet the following criteria:

- Unrestricted distribution. Users can distribute or sell the software without paying royalties.
- Source code distribution. The source code of the entire open source product must be easily modifiable. In the absence of the source code, the product must cite a low- cost resource where users can obtain it.
- Modifications. The license allows modifications, and its terms remain unchanged for distribution of improved versions.
- Author’s source code integrity. If the license allows patch file distribution along with the original source code, a user cannot modify the code and distribute it2 except by giving the new version a new name.
- No personal discrimination. No person or group shall be discriminated against during open source product distribution.
- No restriction on application. Open source software can be used in any field and for any purpose.
- License distribution. The privileges attached to the original program extend to all who receive the program, so recipients do not need to apply for a separate license.
- License must not be product-specific. The rights associated with a license extend to products extracted from larger software aggregate.
- No restriction on other software. No restrictions are allowed on distribution of

services to software development and application companies.

Courseware is used in both the academic and corporate sectors, with development often outsourced to companies that provide study material for both online and offline purposes. Many companies use sophisticated computerized courses in their employee training programs.

Coursera is an educational technology company which works with universities to make some of their courses available online. E-learning or computer-based training includes all forms of electronically supported learning and teaching. It also includes educational technology. Online education is a type of distance learning. There is no need to attend the college or university in person. [22]

Smartclass is basically a digital content library of mapped curriculum, multimedia and 3D content. It also facilitates lecturers to speedily judge how much of a certain lesson students have been able to adapt during the class. There is improved notebook need for students and educational institutions. Digital programme platforms in schools, colleges and universities are some of the new trends. Educomp Solutions' Take Smartclass is one of the first Indian companies in this space. [22]

Following a period of intense competition, the higher education software domain is dominated by a few major vendors, with the risk of monopolization in the future. [5] This leaves academic institutions with one obvious option: to develop in-house systems to fulfill their IT requirements. Unfortunately, such projects often are isolated endeavors riddled with flaws or prohibitively expensive—or both.

Another option is to adopt the collaborative model of open source software development, which enables educational institutions to pool their financial and technical resources. In addition, a huge user community provides a variety of testing environments for the new software.

Open source software products tend to be more reliable and benefit from continuous development. This is one reason to invest liberally in developing open source application software—to work out a more cost-effective way of meeting e-learning software challenges.

IV. Open Source and Its Impact on Learning

As college administrators strive to strike a balance between resources and requirements, open source e-learning software has emerged as a viable solution. Many universities have opted for open source learning management systems, in particular. [18]

Advantages that have tipped the balance toward open source include the following: [17]

1. **Stability:** If you have used other operating systems, once you have made the switch to Linux, you will notice that Linux has an edge over Windows here. I can remember rebooting Windows many times over the years, because an application crashed, and I couldn't continue working. Linux can crash also, but it is much harder to do. If an application crashes in Linux, it will usually not harm the kernel or other processes.
2. **Free Software:** Most software can be obtained without cost for Linux. Linux was one of the first open-source technologies, but many programmers have contributed and added software that's completely open-source for any user. This means that you can download the source code and change it any way you like. Some developers have restrictions on how you can distribute the code. For instance, some developers allow you to change the code, but you cannot distribute it for money.
3. **Runs on old hardware:** If you have an old 386 or 486 lying around collecting dust, you can use this to run Linux. I remember running Linux just fine on a Pentium 100 with a 1 GB disk drive, and 16 MB of memory. One use of an old machine like that could be a file server. Just go to your computer store, buy a large hard disk (as long as your old stuff can support it), and you can make a great storage server. With all the digital pictures and movies around today, this could be a great use for Linux. Look into using Samba, a server application for Linux that allows you to make your machine share the disk as a Windows share.
4. **Security:** Linux has the advantage of the code being in the public domain. This can be a double-edged sword; while you can look at the

Some manufacturers do write their own Linux drivers and distribute them with your purchase, making it very easy to integrate with your existing system.

Open source resources are available from the following initiatives: Curriki, the Global Education and Learning Community, is a nonprofit body dedicated to the creation of free, open source curricula for all users and one of the most popular OSC online resources. Curriki provides course materials for primary and secondary education, primarily focusing on the creation of complete curricula for courses distributed and used globally.

V. Open Source Learning Management System Tools

Another aspect of the impact of the open source movement on education is the rapid proliferation of open source learning management system (LMS) tools and other learning applications. LMS tools are used mostly to create and manage learning content on the web. Some of the most widely used LMS tools are briefly described in Table 1 and summarized next.

Moodle is an open source Learning Management System (LMS), also known as a Course Management System (CMS). The word Moodle was originally an acronym for Modular Object-Oriented Dynamic Learning Environment, which is mostly useful to programmers and education theorists. Moodle integrates pedagogical features missing in many LMS tools, allowing instructors to construct customizable, online courses or a wide range of course modules on a flexible platform. Moodle can be downloaded to any computer and used to support a single instructor site or a system of thousands of students. It is licensed by the Open Source Initiative under a general public license (GPL).

Many plug-ins are available to enhance existing features. MySQL and PostgreSQL databases can be used with Moodle, and developers are working to make the system compatible with Oracle, Microsoft SQL Servers, and other databases. Moodle is free web application that educators can use to create Internet-based courses and web sites for their students. It comes with, Flexible array of course activities - Such as Forums, Quizzes, Glossaries,

Resources, Choices, Surveys, Assignments, Chats, Workshops. You can install Moodle on any computer that can run PHP and use MYSQL for database.

Moodle emphasizes making students a contributing factor in learning; its features invite active participation from students. A growing community of over 200,000 registered users in more than 175 countries supports Moodle. In numerous forums and other interactive centers, developers from all over the world contribute to the software's overall development.

Bodington. This Java-based virtual learning environment was developed by the University of Leeds in the United Kingdom. Bodington aims to provide a flexible, durable learning environment for large, complex institutions with numerous departments. It allows quick upload and management of learning content, and the multilayered administrative model effectively meets varied administrative challenges.

Bodington conforms to World Wide Web Consortium (W3C) recommendations. It also complies with the Special Education Needs and Disability Act 2001, 13 allowing people with physical and visual impairments people to take part in digital courses supported by the Bodington VLE. A huge community supports Bodington, continually contributing to the software's sophistication. Some Bodington projects have received JISC funding. Bodington has been implemented at academic institutions including the University of Leeds and the University of Oxford, along with further education colleges. (Further education in the U.K. refers to education received after secondary school, similar to community colleges in the United States.)

Claroline. Built on free technologies such as PHP and MySQL, Claroline addresses the pedagogical needs of teachers and learners, emphasizing training technologies and well-structured online courses. Claroline developers focus on enhancing existing tools to give both instructors and students a refined learning environment.

Claroline is supported by a huge user and contributor community that continuously enriches the software. The nonprofit Claroline consortium, founded in May 2007, is dedicated to enhancing and promoting the software. It is licensed under the GNU GPL.

certifying software components as .LRN compatible. The software is licensed under the GNU GPL.

http://www.sakaiproject.org	commercial software like WebCT, Blackboard, ANGEL Learning and Desire2Learn.	reputable universities worldwide.
-----------------------------------------------------------------------	------------------------------------------------------------------------------	-----------------------------------

LMS Tool	Compatibility	Usage
Moodle http://www.moodle.org	Linux,UNIX, Windows, Mac OS X, FreeBSD, and any other system that supports PHP	Downloaded about 500 times a day. More than 28,000 registered sites, over a million courses, a learning community of 10 million.
Bodington http://www.bodington.org	Shibboleth, Linux, Microsoft, Mac OS X, or UNIX	Implemented at University of Leeds,UHl Millennium Institute,and University of Oxford. Provides services to 15,000 users with a single server.
Claroline http://www.claroline.net	Microsoft, Linux/GNU,Mac OS X; complies with SCORM and IMS/QTl.	Available in 35 languages and has users in more than 80 countries.

Dokeos http://www.dokeos.com	Supports SCORM import and LDAP. Data can be imported using CSV or XML files.	In 30 languages and more than a thousand organizations. Implemented at Ghent University and Vrije UniversiteitBr ussel. More than 28,000 users and 3,600 courses.
LRN http://www.dotlrn.com	LORS Central, Curriculum, LORS Management, LRN Ecommerce, Project Manager,Page Editor, Staff List, Syllabus, Expense Tracking	Almost half a million users in 18 countries.
ATutor http://www.atutor.ca	Complies with W3C WCAG 1.0 and W3C XHTML 1.0; supports content developed in IMS or SCORM.	More than 17,000 registered installations worldwide.

OLAT http://www.olat.org	MS Windows, Mac OS X, Linux, Solaris and UNIX. Conforms to SCORM, IMS QTI and IMS Content Packaging.	Popular within the European higher education community.
Sakai	Complements	Adopted by many

VI. Moving To Student-Centered Learning

“Teachers all over the world encourage their students to get more involved in creating blogs and other interactive web applications to enhance peer communication in and outside the classroom “

Student-centered instruction [SCI] is an instructional approach in which students influence the content, activities, materials, and pace of learning. This learning model places the student (learner) in the center of the learning process. The instructor provides students with opportunities to learn independently and from one another and coaches those in the skills they need to do so effectively. The SCI approach includes such techniques as substituting active learning experiences for lectures, assigning open-ended problems and problems requiring critical or creative thinking that cannot be solved by following text examples, involving students in simulations and role plays, and using self-paced and/or cooperative (team-based) learning. Properly implemented SCI can lead to increased motivation to learn, greater retention of knowledge, deeper understanding, and more positive attitudes towards the subject being taught (Collins & O'Brien, 2003).[19]

Student-centered learning can also be viewed from the perspective of an influential report from the National Research Council (1999) that synthesized research on learning and recommended organizing learning environments around four foci: knowledge-centered, learner-centered, assessment-centered, and community-centered. Knowledge-centered learning approaches grow out of the research on novices and experts that has revealed that experts have organized their knowledge very differently than novices. So knowledge-centered learning stresses learners developing their knowledge to facilitate transfer of their learning to new contexts and application of their learning to open-ended challenges such as problem-solving, critical thinking, and design. In a learner-centered learning environment, McCombs and Whistler (1997) state that —learners are treated as co-creators in the learning process, as individuals

access, and Creative Commons licensing. As Ian Davis wrote:

Web 2.0 is an attitude, not a technology. It's about enabling and encouraging participation through open applications and services. By open, we mean technically open with appropriate APIs but also, more importantly, socially open, with rights granted to use the content in new and exciting contexts. 18

VII. Common Web Tools

The Web 2.0 tools most commonly used in education are blogs and wikis, although podcasting and media-sharing sites are becoming more common. Teachers all over the world encourage their students to get more involved in creating blogs and other interactive web applications to enhance peer communication in and outside the classroom.

Blogs are the most extensively used Web 2.0 tools. Open source blogging platforms such as WordPress, LifeType, and Roller allow the free creation of blogs (as do many commercial services). Open online portals permit keeping content and feedback on the same platform. Teachers and students can collect, create, and share their own online knowledge resources.

Wiki technology allows site visitors to edit the site's content, accelerating content generation. The most common example is Wikipedia, the online free encyclopedia. Both closed and open source LMSs in corporate wikis, and much open source wiki software is available, including XWiki, TWiki, SWik, and Trac.

Podcasting has been adopted by many institutions to make content available to students in audio form. Stanford University, for example, joined forces with Apple to develop the podcast-based iTunes University. Other universities have followed, signing up for iTunes U. Some of the content available is freely available to the public; while others are restricted (to students). Podcasting technologies have encouraged an increase in learner-generated content, enhancing learner participation in digital education. Open source podcasting software such as Audacity and Juice is widely employed by the user community.

Media-sharing sites have emerged as powerful tools for the learning community. Many teachers use still images and video, especially those registered under Creative Commons licenses, for both offline and online courses. Media-sharing sites can also be used to publish student-generated video or photographs, shared with peers and teachers to receive critical feedback. Some photo-sharing sites allow the addition of annotations to an image, facilitating distance learning. Media-sharing and other social networking sites such as Elgg, Slashdot, and AROUNDMe can serve as important interactive learning tools. These social-networking tools were not created exclusively for educational purposes, however, and might contain objectionable materials, raising ethical concerns regarding students' exposure to and use of the sites.

One concern about the extensive use of Web 2.0 applications, especially wikis, is access. Developers can assign content development rights to limited users, and some have done so as Web 2.0 tools slowly gain the sophistication needed to provide much-needed security features. This trend goes against the fundamental Web 2.0 idea of liberating content, however, and rouses objections from many users.

It is highly likely that digital education will depart from current Web 2.0 practices and use Web 2.0 tools in entirely different ways. This movement—making information available to a larger section of the global learning community through the Internet and Web 2.0—has introduced greater democracy in the education system as a whole and is one of the strongest arguments for digitization of education.

VIII. Destructuring Education With Open Source

The use of open source has enabled universities to create courses easily available to the global education community. The concept of open access and the proliferation of academic blogs have broken down many barriers in the education sector. Pundits have propounded various theories of digital education in response to these changes.

Many people believe, for example, that digitization of education has loosened the bureaucratic framework of traditional learning. The administrative body is less involved—in the sense

with considerable commercial backing will survive after a few years.

Moreover, the development of open source software is largely dependent on the requirements of the e-learning industry, which itself has to endure the test of time. Nearly 20 percent of students who enroll for higher study in the United States opt for e-courses, and the e-learning growth rate exceeds that of the traditional education sector, but the emphasis is more on quantity than quality.²

5 Getting qualified instructors could prove difficult, for example. Sometimes existing instructors have to double or even triple their workload to manage online teaching. This can have an adverse effect on the quality of online courses. Also, e-learning has yet to gain the confidence of employers.

A study conducted by internet websites like Vault.com found that around 77 percent of employers prefer online degrees from accredited, established universities.¹⁵ The existence of multiple accreditation agencies (regional, national, and specialized) is a bit confusing, however.¹⁶ Centralized accreditation might more effectively convince prospective employers of the quality of an online program. Open source and digital education and learning, separately and together, aim to reach everyone. Although both movements have gained considerable maturity, a need for greater coordination exists. A cohesive plan must bring together open source principles and technologies, educational institutions, and economic factors so that each component's role is clearly defined. Both open source and digital education projects are taking their first tentative steps into the consumer world. They have a long way to go before they enter the mainstream, but together they have great potential to change forever the face of education.

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A Literature Review: Data Mining Techniques, Applications & Issues

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Abstract

Data mining is a process which finds useful patterns from large amount of data by turning collection of data into knowledge. The concept of data mining is center of attraction for the users because of many factors as high availability of data which needs to be converted from masses of data to useful information. Data mining as a tool was used to tackle the situation. Data mining is considered as stepping stone to procedure of knowledge discovery in databases; this is a procedure of extracting hidden information from enormous set of databases to excavate eloquent patterns and rules. This article provides an analysis of the available literature on data mining as well as some techniques, applications related to it have also been illustrated.

Keywords: Data Mining, Data mining techniques, Knowledge discovery in database, Knowledge base, Clustering.

1. Introduction

Data mining involves discovering novel, interesting, and potentially useful patterns from large data sets and applying algorithms to the extraction of hidden information. Many other terms are used for data mining, for example, knowledge discovery (mining) in databases (KDD), knowledge extraction, data/pattern analysis, data archeology, data dredging, and information harvesting [1]. The objective of any data mining process is to build an efficient predictive or descriptive model of a large amount of data that not only best fits or explains it, but is also able to generalize to new data [2]. Based on a broad view of data mining functionality, data mining is the process of discovering interesting knowledge from large amounts of data stored in either databases, data warehouses, or other information repositories.

The Knowledge Discovery in Databases process comprises of a few steps leading from raw data collections to some form of new knowledge. The iterative process consists of the following steps:

Data cleaning –In this step, the noise and inconsistent data is removed.

Data Integration – In this step, multiple data sources are combined.

Data Selection – In this step, data relevant to the analysis task are retrieved from the database.

Data Transformation – In this step, data is transformed or consolidated into forms appropriate for mining by performing summary or aggregation operations.

Data Mining – In this step, intelligent methods are applied in order to extract data patterns.

Pattern Evaluation – In this step, data patterns are evaluated.

Knowledge Presentation – In this step, knowledge is represented to the user. [3].

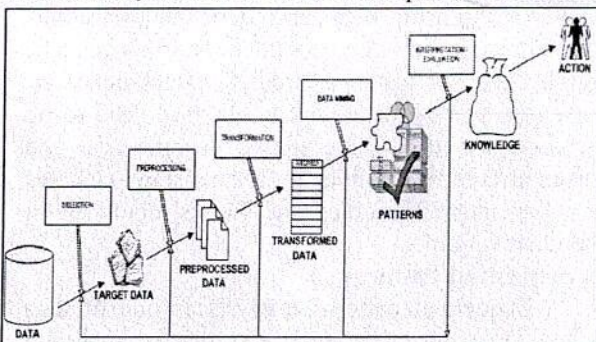


Figure 1. Knowledge Data Mining

2. Review of Literature

Swati N & Dr. R.V. Kulkarni(2015)[13] This paper is used to check relationship between the number of blood donors of a particular age and blood group as well as blood group of donors and disease. The purpose of this work is to analyze a data to extract knowledge of blood donor’s association to aid clinical decisions in blood bank center. This study utilized real world data collected from blood

3.6. Discrimination

Data discrimination produces what are called discriminant rules and is basically the comparison of the general features of objects between two classes referred to as the target class and the contrasting class. For example, one may want to compare the general characteristics of the customers who rented more than 30 movies in the last year with those whose rental account is lower than 5. The techniques used for data discrimination are very similar to the techniques used for data characterization with the exception that data discrimination results include comparative measures [3].

4. Applications of Data Mining

The data mining applications in sale/marketing, finance, health care and insurance, transportation and medicine and many other sectors of day today life are remarkable. But some other distinct applications of data mining are listed below:

4.1. In Computer Security

It concentrates heavily on the use of data mining in the area of intrusion detection. The reason for this is twofold. First, the volume of data dealing with both network and host activity is so large that it makes it an ideal candidate for using data mining techniques. Second, intrusion detection is an extremely critical activity. This book also addresses the application of data mining to computer forensics. This is a crucial area that seeks to address the needs of law enforcement in analyzing the digital evidence [6].

4.2. In Bioinformatics

Developments in genomics and proteomics have generated a large amount of biological data in the near past. Bioinformatics, or computational biology, is the interdisciplinary science of interpreting biological data using information technology and computer science [7]. The importance of this new field of inquiry will grow as we continue to generate and integrate large quantities of genomic, proteomic, and other data. Analyzing large biological data sets requires making sense of the data by inferring structure or generalizations from the data. Specific applications in this section of data mining are protein structure prediction, gene classification, cancer classification etc. Hence we can say that there is potential increase in the interaction between data mining and bioinformatics.

4.3. In Telecommunications Industry

The telecommunications industry was one of the first to adopt data mining technology. This is most likely because telecommunication companies routinely generate and store enormous amounts of high-quality data, have a very large customer base, and operate in a rapidly changing and highly competitive environment. Telecommunication companies utilize data mining to improve their marketing efforts, identify fraud, and better manage their telecommunication networks [8]. However, these companies also face a number of data mining challenges due to the enormous size of their data sets, the sequential and temporal aspects of their data, and the need to predict very rare events—such as customer fraud and network failures—in real-time.

4.4. In Customer Relationship Management

CRM can be defined as the process of predicting customer behavior and selecting actions to influence that behavior for the benefit of the company [9]. What marketers want is nothing but “Increasing customer revenue and customer profitability and keeping the customers for a longer period of time.” The solution is to apply data mining. Data mining techniques can be of immense help to the organization in solving business problems by: Finding patterns, associations and correlations which are hidden in the business information stored in the databases.

4.5. In Banking

Apart from execution of business processes, the creation of knowledge base and its utilization for the benefit of the organization is becoming a strategy tool to compete. The banking sector has started realizing the need of the techniques like data mining which can help them to compete in the market. Since 1990's the whole concept of banking has been shifted to centralized databases, online transaction sand ATM's all over the world, which has made banking system technically strong and more customer oriented. In the present day environment, the huge amount of electronic data is being maintained by banks around the globe. The huge size of these data bases makes it impossible for the organizations to analyze these data bases and to retrieve useful information as per the need of the decision makers [10, 11]. In today's global

presented a revision of literature vis-à-vis data mining, a technique used to ascertain hidden and useful patterns from vast amount of datasets. These discovered trends help originations to predict the future behaviour of customers or products. This study gives the idea about various data mining techniques, different methods, different processes and issues related to data mining.

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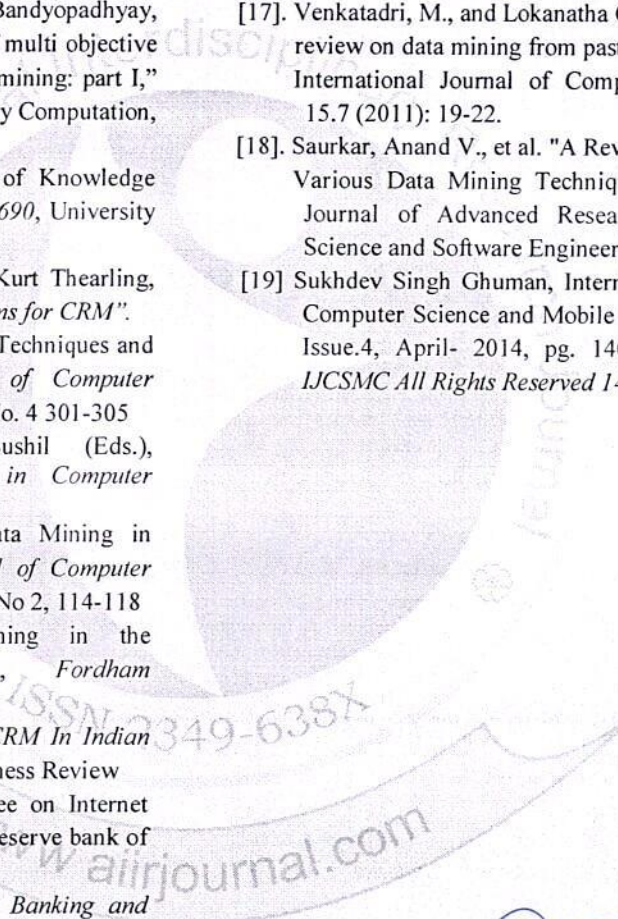
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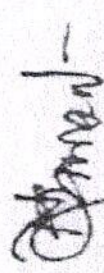
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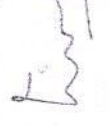
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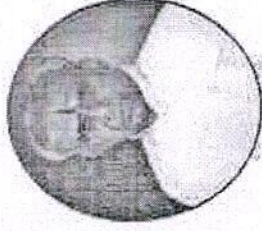

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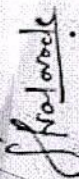
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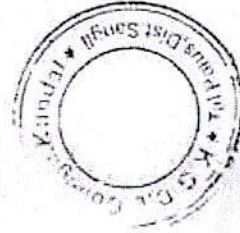


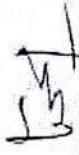
Certificate

This is to certify that Mr. / Mrs. / Ms. Pooja A.D. of _____ has successfully completed a short term course in "YouTube Lecture Awareness / Google from Handling Awareness / Zoom Lecture Awareness", organized by department of Bachelor Of Computer Application, the during the academic year 2020-21.

Date: 9/03/21


Mr. S. P. Nalawade
Program Coordinator




Dr. P. B. Lad
I/C Principal

Gandhi Education Society Kundal's

KRANTIAGRANI G. D. BAPU LAD MAHAVIDYALAYA, KUNDAL

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Certificate

This is to certify that Mr. / Mrs. / Ms. Salunke S.S. of _____
has successfully completed a Faculty Development Programme in "Research Methodology", organized by
Krantiagrani G.D. Bapu Lad Mahavidyalaya, Kundal, from 13.12.2021 to 18.12.2021, during the academic year
2021-22.

Date: 18/12/21

Mr. S.K. Gund

Course Coordinator



Dr. P. B. Lad

J/C Principal

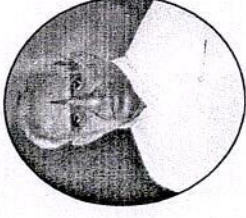
Incharge Principal

Krantiagrani Dr. G. D. Bapu Lad
Mahavidyalaya, Kundal.
Tal. Palus, Dist. Sangli.

Gandhi Education Society Kundal's

KRANTIAGRANI G. D. BAPU LAD MAHAVIDYALAYA, KUNDAL

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Certificate

This is to certify that Mr. / Mrs. / Ms. Suryewarshi P.T. of _____
has successfully completed a Faculty Development Programme in "Research Methodology", organized by
Krantiagrani G.D. Bapu Lad Mahavidyalaya, Kundal, from 13.12.2021 to 18.12.2021, during the academic year
2021-22.

Date: 18/12/21

Mr. N. K. Gund

Course Coordinator



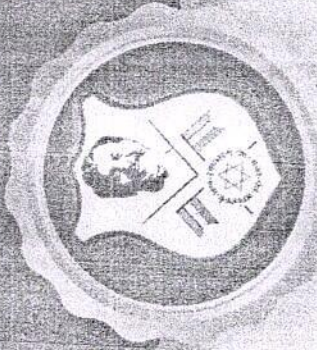

Dr. P. B. Lad

I/C Principal

Incharge Principal

Krantiagrani Dr. G. D. Bapu Lad
Mahavidyalaya, Kundal.
Tal. Palus, Dist. Sangli.

ANIRUDDHA'S ACADEMY OF DISASTER MANAGEMENT



DATE: 27-06-2021

Certificate of Participation



THIS IS TO CERTIFY THAT ANURADHA PAWAR

HAS PARTICIPATED IN THE BASIC COURSE IN DISASTER MANAGEMENT
CONDUCTED BY ANIRUDDHA'S ACADEMY OF DISASTER MANAGEMENT

FROM 21-06-2021 TO 27-06-2021

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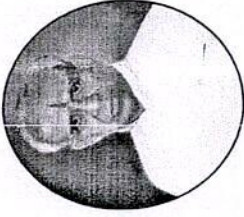
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Authorized Signatory

Gandhi Education Society Kundal's

KRANTIAGRANI G. D. BAPU LAD MAHAVIDYALAYA, KUNDAL

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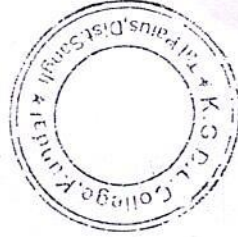
Certificate

This is to certify that Mr. / Mrs. / Ms. PAVAY A.D of _____
has successfully completed a Faculty Development Programme in "Research Methodology", organized by
Krantiagrani G.D. Bapu Lad Mahavidyalaya, Kundal, from 13.12.2021 to 18.12.2021, during the academic year
2021-22.

Date: 18/12/21

Mr. N. K. Gund

Course Coordinator



Dr. P. B. Lad

VC Principal

Incharge Principal

Krantiagrani Dr. G. D. Bapu Lad
Mahavidyalaya, Kundal.
Tal.Palus, Dist.Sangli.

Gandhi Education Society Kundal's

KRANTIAGRANI G. D. BAPU LAD MAHAVIDYALAYA, KUNDAL

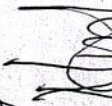
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Certificate

This is to certify that **Mr. / Mrs. / Ms. Jadhav T.s.** of _____
has successfully completed a Faculty Development Programme in "Research Methodology", organized by
Krantiagrani G.D. Bapu Lad Mahavidyalaya, Kundal, from 13.12.2021 to 18.12.2021, during the academic year
2021-22.

Date: 18/12/21


Mr. N. K. Gund

Course Coordinator




Dr. P. B. Lad

VC Principal
Incharge Principal
Krantiagrani Dr. G. D. Bapu Lad
Mahavidyalaya, Kundal.
Tal. Palus, Dist. Sangli.