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India is a principal agricultural subcontinent with suitable climatic conditions for the production of various crops. Besides, it is very rich in aquatic resources i.e. rivers, lakes, ponds, tanks, reservoirs etc. which are very essential for the irrigation hence much production of the various crops is being done. The lentic aquatic bodies of various types cover an area viz. 2.09 million ha. of reservoirs; 2.25 million ha. of ponds and tanks and 1.46 million ha. of lakes and swamps. Hence about 73% of the earth is covered with marine and fresh water.

Further the total water resources of the world amounts to 26.6 trillion, approx. 94.7% of this huge volume of water occurs in the lithosphere. Its major part being bound to minerals which constitute the rockbed. This is known as bound water. These waters have been forming a part of the structure of minerals and get released only at high temperature.

The water has been one of the most important strategic natural resources for mankind throughout the history. However, the world’s water resources are under pressure and contamination risks due to overuse and misuse of these resources. People strive to sustain their lives under in appropriate environmental conditions. But the streams are the clean water resources among all water resources. As the clean water resources are more prone to pollution. In developing countries such as Turkey, 95% of the used water is not purified before they are released to surface water. As a result much water pollution occurs.

Since the quality of water affects our lives in many ways, water must be of good quality for healthy survival of organisms. As the water contains the dissolva
and suspended constituents in varying proportions, which affects its chemical and physical properties. For this chemical methods are applied to measure the concentration of pollutants. About 35,000 infants die in the world every day due to diseases caused by vitiated environment. The carrying capacity of the environment is unlimited and more important. Some areas or ecosystems are more susceptible to adverse environmental impacts than others.

Water is required in various domestic purposes, irrigation, shipping sanitation power generation, industries, fish production, prawn and pearl culture etc. out of the total global water only 3% is suitable fresh water for human life. Whenever water is put to beneficial uses, only a part it is consumed and the rest comes out as waste water. Man’s influence on the quality of waste water is quite apparent and is now a major economic and political concern.

Broadly limnology can be stated as a scientific study of physical chemical and biological conditions of a fresh water. How ever Wetzel (1975) defined the term limnology as “the study of functional realtionship and productivity of fresh water biotic environmental parameters”. Among the pioneers in the field of limnology, the earliest known work is that of F.A. forel (1841-1912). At present the limnology has become an important field in scientific in vestigations.

The perview of limnology the International association of theoretical and applied Limnology in 1922, included lotic and lentic water system. The lentic water system consists of ponds, tanks, lakes, dams and reservoirs.

However, the term pond has such universal use, and the general conception of a pond is so widely understood, that it seems best to employ the term pond for
that class of very small, shallow bodies of standing water in which relatively quiet water and extensive plant occupancy are common characteristics. Ponds are mainly of three general classes: (i) those which represent the pond stage in the extinct of previously existing lakes. (ii) those whose basins have never been large or deep (not preceded by a lake) but instead have been small of area from the start and, because of recent origin or for some special reason, have persisted in the pond stage; and (iii) Those whose basins are the results of men’s activities. Natural processes alone are constantly forming new pond basins (cut-offs from streams, solution basins, beach ponds, and many others), some of which are never more than temporary ponds from the beginning; others as permanent ponds at least for a period in their existence. With respect to seasonal duration, ponds are customarily divided into two general classes: (i) temporary-those in which the basin contains water at certain times or seasons (ii) Permanent-those which contain some water around the year.

The ponds, reservoirs, and lakes are the main fresh water sources in our country, and in order to avoid disasters in the form of eutrophication firmly steps should be taken. Hence it is important to study the physico-chemical characteristics of water. The most important physico-chemical characteristics of water are: temperature, turbidity, total dissolved solids, conductivity hardness, hydrogen-Ion-concentration, carbon-di-oxide, alkalinity, Dissolved oxygen, chloride, phosphate, nitrogen etc.

That the great diversity of lakes is also represented in ponds, goes without saying, since not only are the conditions of origin, distribution, and general status similar, but also ponds are of ten them selves the evolutionary successors of
previously existing lakes. In most respects, limnological knowledge of lakes is much more advanced than that of ponds; in fact, for ponds it is fragmentary, often altogether lacking in some aspects, and widely scattered in the literature. Much has been learned about fish ponds of various kinds; about open, water supply reservoirs. However is both instances, man’s influence is usually a potent modifying factor; and while many of the facts worked out in these more or less artificial situations are applicable in an understanding of pond life (nevertheless, these waters can not quality natural, unmodified ponds).

Reservoirs, the important fresh water resources have the potential to substantially augment the inland fish production of the country. The large potential of the resource for fish production remains underexploited due to paucity of data on ecology and fishery potential and improper management, measurement of primary production. Photosynthesis is helpful to understand the trophic status and to assess the fish production potential of aquatic ecosystem (melack, 1976; Mcconnel et al., 1988; Oglesby, 1977), productivity of a number of reservoirs have been determined (Sreernivasan, 1970; Pathak, 1979; Kannan and Job, 1980).

The literature available on reservoir fisheries mainly centered around production potentials. (Paul and Sagunan, 1990). The ecological changes in physico-chemical, phytoplankton and zooplankton aspects are due to the industrial and domestic discharges. Most Indian reservoirs exhibit low primary production attributable to high complex interaction of pollutants discharged into the reservoir (konar et al., 1991). Our knowledge of impact of harmful industrial and municipal effluents is grossly inadequate (Sugunan, 1995).
A low-lying part of the Earth's surface which contains rain water and its water flow out from river is called a lake. There are various kinds of lakes on Earth i.e. freshwater lakes and salt water lakes, ranging in size from small fish pond to vast water bodies such as superior lake of USA that is known as the largest freshwater lake of the world, on other hand there are two precious example of salt water lakes, the caspian in Europe and sambhar in Rajasthan. India also has numerous lakes spread all over the country from Kashmir to Kerala and Rajasthan to Assam. Dal lake in srinagar and the Nainital lake is popular. whether natural or manmade lakes are major sources of water. These lakes are homes to a large variety of aquatic life with some exception; As in Israel there is a salt water lake, which does not have any kind of life because it has too much salt in its water due to which life could not be sustained.

The changes in physical parameter of natural water are used as the direct and the indirect indices of water. But the physical parameters only are not absolute indices of water pollution as their normal values may very considerably depending on various chemical characteristics of the water due to the run-off. The biological inventory depends largely on the season, but it presents a vary reliable picture of the average situation since the community of organisms and plants can not adopt itself rapidly to sudden changes. e.g.a dairy released waste water and its biological investigation would show the level of pollution.

Sewage waste is the result of urbanisation and is mostly discharged into water bodies. which increases pollution. The sewage waste which include human-excreta, detergent, garbage, west paper, clothes, kitchen washings etc. The organic matter is the main cause of pollution of water bodies. Which promotes the growth of various micro-organisms especially various pathogenic bacteria and
viruses which occur in the water at the points of sewage disposal (Tiwari et. al. 1991). They multiply rapidly and contaminate the water which cause epidemic diseases like cholera, Typhoid, dysentery, etc. Besides, it contains amoeba, eggs and larvae of nematodes and worms which are gastrointestinal parasites in human beings and water contaminated with them causes jaundice amoebiasis and various other diseases. Further decom position of organic wastes by bacteria and fungi result in severe depletion in the level of dissolved oxygen in water which may be harmful to the aquatic plants and animals specially fishes. various gases are evolved as bye-products during the process of decomposition of organic matter eg, \( \text{H}_2\text{S}, \text{CH}_4 \) etc. Which give an unpleasant taste and odour to the water and making it unfit for use. The pollution of the sewage waste is measured in the terms of Biochemical oxygen demand (B.O.D.). Discharge of untreated sewage to the water bodies threatens the water sources and makes them unfit for human as well as cattles use either for drinking or bathing.

For the last two to three decades several investigators have studied the hydrobiological profiles of varied lentic bodies with the intent of assessing the quality of the water (Shastri and Pendse, 2001; Singh 2000; Azizul Islam, 2001). But in Comparision to reverine ecosystem lentic water bodies, particularary have not been explored enough and only sporadic account of their physico-chemical and biodiversity status is available so far (Hazarica and Datta. 1998). A persual of literature on the lentic water bodies in the Indian subcontinent indicates deterioration of water quality in general (Chandrasekhar and Jafar, 1998).

The important climatic factor that determines the productivity of the lakes and ponds is the latitudinal location, which determines the Quantum of solar energy available for photosynthetic activities. The prevailing atmospheric
temperature also plays an important role in the thermal and nutrient regimes. Wind is yet another important meteorological factor that helps in mixing up water and transportation of nutrients. However, very high wind velocity has an adverse effect on plankton and fish catching. In the present study, it was noticed that on the day when the wind velocity was very high, the catch was low. (Chaudhary, 1978) has also reported that a heavy wind flow made fishing difficult in Ranapratap Sagar.

The edaphic factors include the physico-chemical and biological factors which are mostly positivity co-related with the production. Among these conductivity or T.D.S. is the important factor which helps in the fish production. Since electrical conductivity reflects the total dissolved solids, it gives a reliable indication of the edaphic quality of water. Thus, the edaphic factors like total alkalinity (Ball, 1948, Cardander, 1955), total hardness (Barrelt, 1953) and total dissolved solids (Northcot and Larkin, 1956; Rawson, 1951) are co-related with fish production viz plankton, bottom biota etc.

Soil also plays an important role in determining the fertility of fish ponds. The basis criterion for selection of a site for construction of ponds is that the soil should not be porous. A knowledge of different types of soils of India is helpful in understanding the problems related to the retentivity of water by the soil and productivity of ponds, lakes and other water bodies located in different regions of the country.

The soils of India are classified under 8 major heads: (i) alluvial (ii) black (regur); (iii) red; (iv) laterite; (v) forest; (vi) desert; (vii) saline alkaline; and (viii) Peat.

Alluvial soil covers an area of about 1,500,000 Square km in the Indo-gangetic plain, Punjab, Gujarat, Orissa, Tamil Nadu, Kerla, etc., and is formed by silt
deposited by numerous river system. Black soil is found in Maharashtra, western part of Madhya Pradesh, parts of Tamilnadu, black soil is highly impenetrable to water and becomes sticky when wet. It possesses a high capacity of conservation of soil moisture. In Allregur areas, in general, and particularly in those derived from ferromagnesian schists, the soil contains a layer of kankar nodules formed by segregation of calcium carbonate at some depth below the surface and above the weathered rock. The soils contain a high quantity of montmorillonitic and beidellite group of minerals. The red soil area extends into santhal parganas, the Birbhum district of west Bengal, Mirzapur, and Bundelkhand region.

The fertility of water bodies soil refers to its nutrient releasing properties for the benefit of aquatic flora as well as fish productivity. Soil fertility relates to four stages: (i) The nutrient requirements by aquatic flora and their release from soil (ii) the status of silt as a store house of nutrients (iii) The way nutrients are leached from the soil (iv) The methods permitting to maintain or restore soil fertility. In the case of aquatic flora, the nutrients are directly required by micro and macro-vegetation and certain bacteria also that may grow in fishery waters. At present not much is known about the direct or indirect relationship of soil with fish production of various plant nutrients present in the soil, nitrogen, phosphate and potassium very often become deficient and are to be supplemented from outside. Ramamoorthy and Bajaj (1969) have prepared the soil fertility map of India. The map may also help in deciding suitable fertilizer mixtures for different regions taking into account the actual amounts of nitrogen, phosphorus and potassium available in the soil and in planning the production distribution and consumption of various fertilizers in different parts of the country.
The fertilizers used in fish ponds fall under two categories (i) inorganic, and (ii) organic. The inorganic fertilizer contains the major fertilizing elements which are nitrogen phosphorus, potassium and calcium. Minor elements having a manurial value are manganese, boron, sulphur, iron, copper, and zinc. Inorganic fertilizers can be prepared with precise amounts of desired elements as they have a definite and constant chemical composition of nutrient elements. The soluble inorganic fertilizers make their elements available to the water immediately which are applied. The inorganic fertilizers are customarily expressed as percentage of available nitrogen, phosphorus and potash. The different inorganic fertilizers used in fish ponds are grouped as: (a) limestone and lime containing fertilizers; (b) phosphate fertilizers; (c) nitrogenous fertilizers, (d) potassium fertilizers; (e) magnesium fertilizers; and trace element fertilizers. The organic manures, as a class, are composite and contain almost all the nutrient elements required in the metabolic cycle. They enrich the organic matter content of soil and water and, within the limits of manurial dose, release carbon-di-oxide and nutrients on decomposition, sustaining the fertility of water. Several kinds of useful bacteria may also get incidentally introduced along with the organic fertilizers into the ecosystem. The use of organic manures in a fishery water, already having thick organic sediment at the bottom, hastens the depletion of dissolved oxygen and enhances production of toxic gases. Therefore it is necessary to examine the pond for the application of optimum dose.

So the various fresh water bodies are managed for the fish production. The fishes are used as the substitute of the food in the form of proteinous diet. Hence, it fulfills the scarcity of the food. For the high production of fishes the different lentic water bodies are scientifically managed so that their physico-chemical characteristics of the water and soil conditions might be made suitable for the
high productivity of fishes. As regards this various measures are done. It was also suggested that in tropics special attention should be given to the ponds which could be used as fish farms. In the above concern the International Biological programmes (I.B.P. news No.1 and 2.1964 and 1965).

Having in View the utilisation of water bodies for much more production of fishes. The government has established various fisheries department. Besides, private agencies are also engaged in this field. They are managing scientifically some of the fresh water bodies in the forms of various fish farms. These fish farms mainly produce fry and fingerlings artifically by induced breeding and supply them as seed to different fish farms. Some of these agencies have hatcheries and others are doing production of fishes. Therefore a lot of efforts are to be made in this field of fish production. Though a very few fresh water bodies are being properly managed for the good production of fishes. Hence a lot of fresh water resources which are lying unmanaged they are still to be managed scientifically for much more production of fishes which might be used to meet out the food problem.

For the productivity of the fishes their habitat which are fresh water bodies their physico-chemical, biological and soil factors must be suitable for the fish biology.

Existence of a life is possible so long as the food is available in an ecosystem. Fishes and shrimps too depend on food from various niches within the water bodies, but all such food items are not inert. A wide spectrum of aquatic flora and fauna which are consumed by the fishes and shrimps for their growth and maintenance are worth to be studied in detail. According to location-distribution and size aquatic organisms are named differently eg:- plankton, Periphyton, benthos.
Always there is definite preference, selection or discarding of a specific organism as a food item for the fishes. Moreover, physico-chemical factors and environment also influence the food organisms a lot by way of encouraging proliferation of a kind by suppressing others. Thus the variations and the distributional patterns of these fish food organisms make the aquatic system either productive or unproductive from fisheries point of view, depending on the relative representation of beneficial and undesirable forms in the biotope. Therefore, the studies on fish food organisms also help in estimation of compatible and competitive ones for the manipulation of the biotic environment in favour of exploitation. However, a simple study about the scattering and abundance of fish food organisms in an aquatic system is incomplete unless the same is compared to the findings of food and feeding habit studies along with the knowledge about the index of preponderance for the fishes and shrimps.

The term ‘plankton’ was first of all used by Hensen in 1887, to designate the heterogenous assemblage of suspended microscopic materials, minute organisms and detritus in water (welch,1935). According to APHA (1985) the term ‘plankton’ refers to those microscopic aquatic organisms having little or no resistance to currents and live in a free floating and suspended state, in open waters. As regards this plankton are classified as phytoplankton and zooplankton. phytoplankton are capable of photosynthetic activities and zooplankton are dependent on the phytoplankton for their nourishment.

In fresh water, the plankton are generally small or microscopic in size, than salt water. Most of the organisms belonging to plankton community are small and vary in size. According to Barness (1982), no size based classification has been adopted universally but bacterial ultraplankton; 5-50 μ m , the largely algal
nannoplankton; 50-500 μm, the macro plankton of algae and animals; 500-2003 μm, the animal ‘megaplankton’. For the convenience of qualitative and quantitative study, plankters can be divided into: (i-) Nanno plankton (Those that can not be filtered by standard size plankton net). (ii-) Net plankton (those that remain in filtrate during filtration.

Plankton, specially phytoplankton have been used as indicator of water quality. Several Indian and foreign limnologists have reported that distribution and composition of plankton population varies from lake to lake and pond to pond due to variation in their physico-chemical characteristics. Remarkable studies conducted by Indians in this field are by Ganapat (1943), Alikunti et al, (1955), George (1966), Sreernivasan (1970), Moitra and Mukherji (1972), Verma et al. (1978), Zafar (1986), Verma and munshi (1987), etc.

The influence of physico-chemical factors on the growth and development of plankton has been reported by several researchers (Pearsall, 1923, 1932; Chandler, 1944; Patric, 1948; Rao, 1955; Datta et al. 1959. Reid 1961) on the basis of the enrichment bioassay experiment, Mahoney (1989) Suggested that nitrogen was the most important nutrient in the regulation of phytoplankton growth in north east united states coastal and shelf waters. According to him phosphorus was yet another essential nutrient which enhanced phytoplankton growth.

Photosynthesis is the fundamental process involved in primary production, mostly the organic matter of an aquatic ecosystem is produced within the water by phytoplankton which are utilized by the consumers. Extensive work has been done on the phytoplankton primary productivity of static water habitat of India (sreenivasan, 1963,64,76; vijayaraghvan 1971; Nasar and Dattamunshi, 1975; 1975;
Singh and Swarup, 1980; Datta et al. 1984; Ahmad and singh (1987) but for riverine systems it is fragmentary. Majority of workers have so far failed to make any comparative study between the pond and river ecosystem. The phytoplanktonic productivity varies from one water body to another one. Further the same water body may also show different production in different years (Singh, 1995).

Topographically keerat sagar is a very important historical site. It is established by 13th king Kirtiverman of Mahoba in 1060 B.C. It is situated on the west of Mahoba which is 55 km away from Banda. The kirat tiraha is on eastern side named on it. Adjoining to the embankment on the eastern side an monument of Alha memorial is situated. On this side there are Ghats on the embankment namely Mahila ghat, Purush ghat and Dhobi ghat. Besides the Sagar is used for various human activities. No. of trees are found on the embankment e.g. Ficus bengalensis, Delbergia sessoo, Ficus religosa, Mangigera indica etc.

Four sampling stations were selected for the study-station I-Inlet which is situated on the southern side. It is fed by Madan sagar, Mukandlal G.I.C. is situated near the inlet. Station II-situated on the eastern side. On this station cultivation of water nut is done. People take bath along with washing activites. station III and IV-located on the northern side. Near station III Dhumni hill is situated, where vehicles are being whashed, and station IV- is outlet from where two canals have been dug out for irrigation. Adjacent to it a polytechnic college and there by Railway station. Para Kajali-mela the local festival is organised on keerat sagar on next day of Rakshabandhan. It is celebrated in the memory of the victory of Alha-Udal and their warriers over the king Prithviraj Chauhan who attacked on Mahoba on the day of Rakshabandhan. Due to it this festival could not be celebrated on that very day.
Keerat Sagar is perennial which at present is not used for the fish production neither by the fisheries department nor by private agencies though it is a very large water body which can be managed for high fish production. On its study it was observed that various measures are to be done i.e.-to make embankment on the three remaining sides, so that there might be no wastage of water and the storage capacity will increase which is essential for fish habitat, proper manuring and liming which will provide optimum chemical characteristics of water. Besides, the soil will also receive, nutrients, to provide water productivity. Further removal of municipal wastes and check on it will provide the water safe. Hence, by doing the above measures this water body might be made for an ideal fish farm.

The aim of the proposed study of Keerat Sagar is to examine its hydrobiological factors and to suggest measures for much more fish production, so that it might be useful as an ideal fish farm, which might produce more protein rich food to solve the food problem. Besides, it will also provide a good revenue to the Government.