ABSTRACT

The Zirpurwadi lake (situated 25 Km. away from Digras, Yavatmal Dist. of Maharashtra) serves as a source of water for fishing, irrigation and drinking. The lake is auctioned every year by Irrigation Department for fish cultivation. The Physico-chemical parameters like pH, temperature, transparency, turbidity, dissolved oxygen, free CO$_2$, total alkalinity, total hardness, chlorides, sulphates, phosphates, silicates were analysed every month. In summer month water temperature was highest along with increase in transparency, alkalinity & hardness while in winter there was low temperature with the decrease in transparency alkalinity & hardness. Dissolved oxygen content was recorded higher in winter when there is full growth of phytoplanktons. The present studies were undertaken to monitor the baseline data on biodiversity of Zirpurwadi lake, so that changes if any in the future could be evaluated, correlated with the fish production. These studies will be of use in fish farming in future in the Zirpurwadi lake.

INTRODUCTION

The water quality of the lake varies from time to time due to interaction of local factors. The lake water has been used for drinking, agriculture and fishing. In the absence of any in depth knowledge about the water quality and ill effects the inhabitants are prone to disease and health problems. In India many scientist concentrated there studies on this field (Gautam, 1990) Deshmukh (1964) studied the physico-chemical characteristics of Ambazari lake, Nagpur Maharashtra, while Dr. Kodarkar (1995) studied water quality and conservation aspect of five water bodies in and around Hyderabad (AP). Now the seasonal changes in physico-chemical characteristics of water in Zirpurwadi lake near Digras in Yavatmal district of Maharashtra. The Zirpurwadi lake is located at a distance of about 25 Km. North-East of Digras in Yavatmal district of Maharashtra.

The lake under study has been in use for fish farming since long period. This baseline data of seasonal changes in physico-chemical characteristics will be help to monitor biodiversity of Zirpurwadi lake and fish cultivation.

MATERIAL AND METHODS

The sampling of reservoir is carried out every month in the morning between 6.00 to 8.00 am from different sampling stations. pH, temperature and dissolved oxygen were analysed immediately and remaining parameters like carbon dioxide, alkalinity, chlorides, total hardness, sulphate and nitrate were analysed in the laboratory, APHA (1985).

RESULTS AND DISCUSSION

The study of physico-chemical characteristics indicate that the magnitude of various parameters is partially or whole associated with the seasons and level of water in the lake.

Temperature

From the table it is clear that the water temperature in lake varies with the season of year. The water temperature of Zirpurwadi lake was higher during summer months and lower in water season. It was observed lower in winter season. It was observed that period of high temp nearly coincides with low oxygen content. Similar observation made by Rao (1955) singh (1960).
**Transparency**

Suspended particles in the water of lake gives an idea about transparency which affect the penetration of light. Transparency value is maximum during winter season and less in rainy season similarly maximum value of transparency seen by Adoni (1975).

**pH :-**

pH of reservoir is in alkaline range through out the study period. pH mainly depends on concentration of carbonates, bicarbonates and free CO₂. The alkaline pH of Zirpurwadi lake is found to be favourable for growth of planktons, aquatic plants and fishes. Cole (1973) considered pH as a factor important for metabolic activity. pH value is low in winter & high in summer month. This in accordance with the view of Welch (1935).

**Dissolve Oxygen**

During winter low temperature, high aeration rate and high photosynthetic activity might have been increased the amount of dissolved oxygen, this is in accordance with the view of Ganpati (1964), Shardendu and Ambasht (1988).

**Free CO₂**

It was recorded in the lake water throughout the study period. The total alkalinity was observed high in summer followed by winter and monsoon.

Total hardness of water is governed by the calcium and magnesium. The high hardness was observed in summer & low in monsoon. In summer hardness is more as water quantity of lake decreases.

Chlorides occur in most fresh water as the salt of Na⁺Ca⁺⁺Mg⁺ chloride shows high concentration during summer and minimum during winter. The present observation are similar to that of Munawar (1970) and Hazarika (1994).

**Sulphates :**

Concentration of sulphates is more in rainy season and less in winter season.

The turbidity of water is mainly attributed to the total solids (suspended and dissolved) present in the reservoir which also includes microscopic organisms. The turbidity is significantly increased in monsoon season than winter & summer.

The conductivity of water in the lake is a characteristics which is mainly associated with the dissolved material or solute concentration of reservoir water. In present study the recorded electro conductivity value is higher in monsoon and winter followed by summer season. It shows an inverse relation ship with water discharge, that could be explained by the dilution of solute rich base flow due to run-off in monsoon.

* The values of Ca⁺⁺, Mg⁺, Na⁺, K⁺ are more in summer month.

Values of phosphate appears increased in rainy season or heavy rains since water comes from agricultural and around lake.

The studies indicate that there are variation in physico-chemical parameter in water of lake under study in different seasons. These studies will help in future in fish cultivation in the Zirpurwadi lake of Yavatmal district.

**REFERENCES**


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