



(RESEARCH ARTICLE)



Study of Physicochemical Parameters of Pimpri Dam Tq. Udgir Dist. Latur

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Abstract

Physicochemical parameters of Pimpri Dam, water were analysed during June 2020 to January 2022. The parameters analysed were temp., PH, Turbidity, Dissolved oxygen, free CO₂, total alkalinity, chlorides etc. The results of parameters revealed that, there was seasonal variation in physicochemical parameters and most of the parameters were in the normal range and indicated better quality of Dam water.

Keywords: Physicochemical parameters; DO; TA; Pimpri Dam

1. Introduction

Life originated in water. It covers up to 91% of Earth's surface and represents the most extensive medium for animal life. Water is one of the most important compounds of the ecosystem. Good quality of water described by its physicochemical and microbial characteristics.

Water is the most important abiotic and fundamental elements of the life. Water requires for various purposes like domestic, industrial and agricultural in our life. Increase in population has resulted in large amount of consumption of water. But unfortunately water does not remain pure, it get polluted by rapid industrialization, increases in human population and use of chemical fertilizers in agriculture. In addition to this infective agents, plant nutrients, exotic organic chemicals, inorganic material and compound sediment and heat spoils the quality of water and depletion of aquatic flora and fauna.

It is therefore necessary that the quality of drinking water should be checked at regular time interval because due to use of contaminated water the population suffers from a variety of water born diseases like typhoid, cholera, dysentery etc.

2. Material and Methods

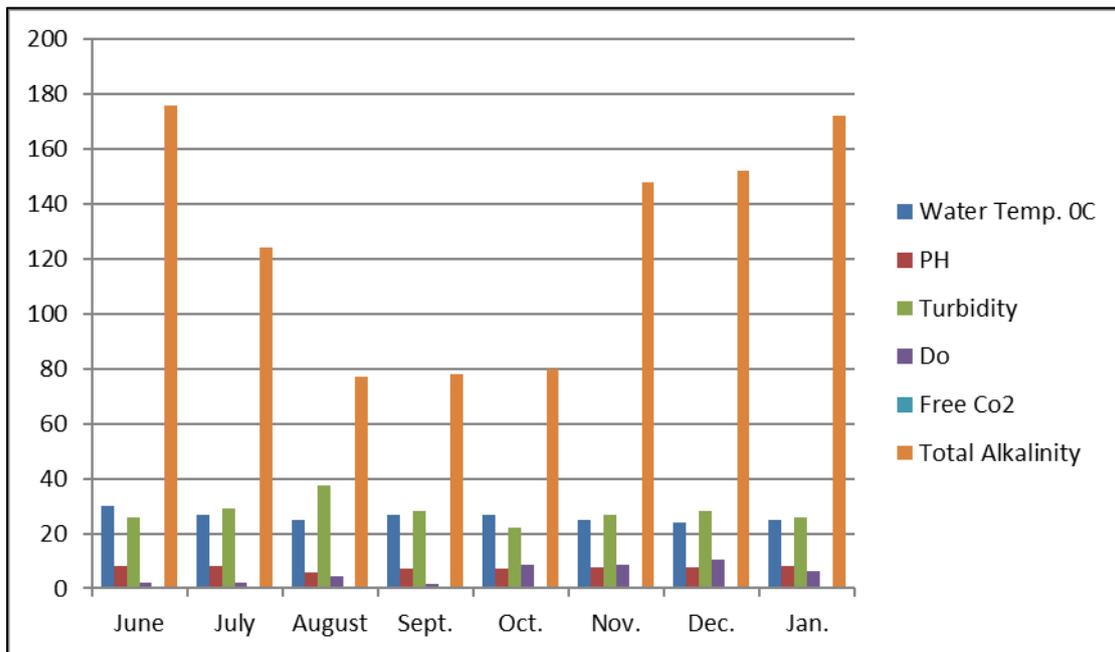
The water samples from Pimpri Dam were collected from two sampling stations in the morning hours at 10.00 am to 12.00 pm regularly for every months in plastic cans and immediately transported to the laboratory for estimation of various chemical parameters. Physical parameters like temp., PH and turbidity were recorded at the sampling stations by using thermometer, PH meter and Sacchi Disc. Other parameters estimated by using standard methods as prescribed by Trivedy and Goel (1986), Sarsena (1990), APHA (1992), Kodarkar (1998) and P.K.Gupta (2007).

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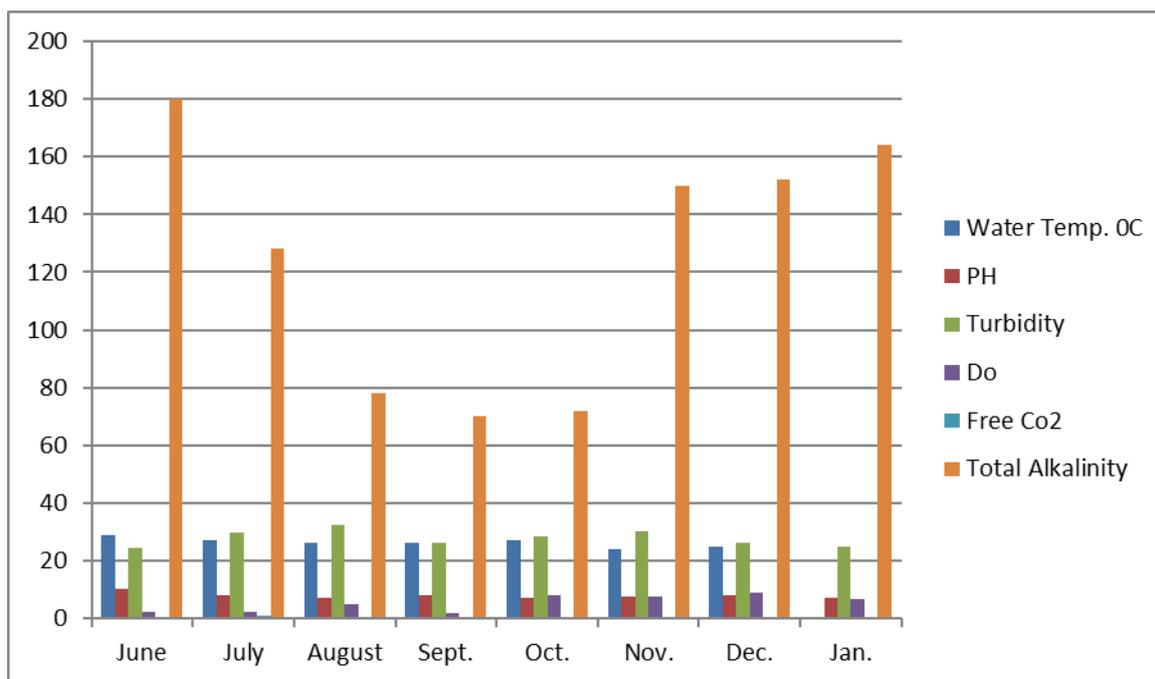
3. Result and Discussion

Table 1 Physicochemical parameters analysis of water samples at Pimpri Dam from June 2020 to January 2021

Months	Spots	Water Temp. °C	PH	Turbidity	Do	Free Co ₂	Total Alkalinity
June	A	30	8	26	2.0	0.15	176
	B	29	10	24.5	2.3	0.12	180
July	A	27	8	28.9	2.1	0.095	124
	B	27	8	29.9	2.3	0.75	128
August	A	25	6	37.5	4.5	Nil	77
	B	26	7	32.5	5.0	Nil	78
Sept.	A	27	7	28	1.4	0.06	78
	B	26	8	26	1.6	0.05	70
Oct.	A	27	7	22	8.6	0.04	80
	B	27	7	28.5	7.9	0.07	72
Nov.	A	25	7.5	27	8.5	0.12	148
	B	24	7.5	30	7.5	0.10	150
Dec.	A	24	7.5	28	10.4	0.01	152
	B	25	8	26	8.8	0.02	152
Jan.	A	25	8	26	6.2	Nil	172
	B	26 °C	7	25	6.5	Nil	164



Spot A



Spot B

Figure 1 Yearly analysis of physico-chemical parameters at spot A and B

The monthly variation in Physicochemical parameters is shown in table indicates that. The water temperature varies from 24^o C to 30^o C. It is observed maximum in the month of June at spot A and minimum in the month of November and December at spot B and A respectively. Water temperature is the most important factor which influences the chemical, biochemical and biological characteristics of the water body.

PH value varies from 6 to 10. Maximum PH value observed in the month of June at spot B while minimum in the month of August of spot A. These variations of PH value shows that the water is alkaline in nature. The factor air temperature brings about changes in the PH of water. The reduced rate of photosynthetic activities reduces the assimilation of carbon dioxide and Bicarbonates which is ultimately responsible for increases in PH.

The turbidity variation shows minimum in the month of January of spot B while maximum in the month of August at spot B. Turbidity ranges between 25 to 37.5. Generally in Monsoon season water is more turbid than winter and summer.

The dissolved oxygen ranges between 1.4 to 10.4 mg/lit. It is observed maximum in the month of December at spot A while minimum in the month of September at spot A. The main source of DO is dissolution of oxygen from atmosphere and the photosynthesis.

Free carbon dioxide values were ranges from 0.0 to 0.15 mg/lit. It is observed minimum of Nil in the month of August and January at both the spots. While it is maximum in the month of June at spot A. The concentration of free carbon dioxide may be depends upon number of plants and animals present in water body as well as alkalinity and hardness of water. The high values of Co₂ may result from breakdown of organic matter.

Total alkalinity values varies from 70 to 180 mg/lit. It is observed maximum in the month of June at spot A while minimum in the month of September at spot B. High PH of water and photosynthetic activity of aquatic plants reduces alkalinity, while the addition of waste from organic matter increases alkalinity.

4. Conclusion

Above research study on physico-chemical parameters of Pimpri Dam is beneficiary for fishery, agricultural area and human purposes. All the parameters are within permissible limit. Hence the dam water is useful for different purposes to human, irrigation, cattle and even for fishery activities.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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