

Study of seasonal variations of some physico-chemical characteristics of sina kolegoan dam at Osmanabad district (M.S.)

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Abstract

The present study designed to demonstrate the seasonal variations in Physico-chemical parameters of Sina kolegoan Dam from June 2009 to May 2010. Water samples were collected monthly basis and analyzed for estimation of water temperature, pH, Dissolved oxygen, free CO₂, total alkalinity. The overall water quality of the study sites remained within the safe limits throughout the study period. An attempt has been made to explain the effect of seasonal changes on Physico-chemical characteristics of Sina kolegoan Dam.

Keywords: Physico-chemical characteristics, seasonal variations, Sina kolegoan Dam.

INTRODUCTION

Water being a universal solvent has been and is being utilized by mankind time and now of the total amount of global water, only 2.4% is distributed on the main land, of which only a small portion can be utilized as fresh water. Contamination of these fresh bodies might lead to change in their tropic status and render them unsuitable for aquaculture and drinking purposes. Several physico-chemical or biological factors could act as stressors and adversely affect fish growth and reproduction. Hence regular ministering of physico-chemical parameters is essential to determine the status of drinking purpose. The Sina kolegoan Dam serves as a rich source of water supply for agriculture, fish culture and industrial purpose. Sina kolegoan Project is an irrigation project with storage on Sina River near village Rosa Ta. Paranda, Dist. Osmanabad. It has a 10200 Ha irrigation area side of area like Paranda, Karmala and Anala .Dam has catchment area 5565.00 sq.km. Having average annual Rainfall

24.30 Inches. It has Grass annual utilization is 104.93. It has capacity of living storage 66.697 Mm³. For the my study I select the five sites of Dam Site A, Site B, Site C, Site D, Site E.

MATERIALS AND METHODS

The water samples were collected from Sina kolegoan Dam from five different sites for the year June 2009 to May 2010. The selected sampling site is denoted by Site A, Site B, Site C, Site D, Site E respectively, the physical parameter such as temperature was recorded by using mercury thermometer. The PH of water was determined by using Hanna made pen PH meter. The chemical parameters of water such as dissolved oxygen, free carbondioxide, total alkalinity, were determined by standards methods described by American Public Health Association (APHA,1980) [1], Trivedy et.al (1998) [8].

Table 1. Average values of seasonal variation in water quality parameters (physico-chemical) at Different Sites of Sina Kolegoan Dam

Parameters	Season	St.A	St.B	St. C	St. D	St.E	Min.	Max.
Temperature	Rainy	27.7	27.5	27.0	26.7	27	26.7	27.7
	Winter	23.5	25.7	23.2	24.2	24.5	23.2	25.7
	Summer	30.7	30.5	30.2	30.2	30.5	30.2	30.7
pH	Rainy	7.5	7.4	7.4	7.3	7.4	7.3	7.7
	Winter	7.7	7.6	7.6	7.6	7.6	7.6	7.7
	Summer	7.7	7.6	7.7	8.1	8.1	7.7	8.1
Dissolved Oxygen	Rainy	3.7	3.7	3.5	3.6	2.0.	2.0	3.7
	Winter	4.8	4.9	6.9	5.1	2.4	2.4	6.9
	Summer	4.3	4.0	4.9	4.5	4.5	4.0	4.9
Free Co ₂	Rainy	5.1	6.9	5.0	4.9	6.4	5.0	6.9
	Winter	3.7	4.0	4.1	3.9	5.2	3.7	4.1
	Summer	3.6	3.4	3.9	3.8	4.2	3.4	4.2
Total Alkalinity	Rainy	2.3	2.2	2.1	2.2	2.1	2.1	2.3
	Winter	1.8	1.7	1.7	1.8	1.7	1.7	1.8
	Summer	2.6	2.5	1.5	2.0	3.6	1.5	3.6

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RESULT AND DISCUSSION

The results of analysis summarized in table no. 1. Water temperature varied from 20°C to 35°C. Maximum temperature recorded in summer season & minimum in winter season at all sites of Dam. pH is measure of hydrogen ion concentration in water and

indicates how much water is acidic or basic. However PH values were maximum during summer & minimum in monsoon in all sites. In the present study, Dissolved oxygen content was found highest in winter due to low temperature. Dutta (1978), Vashist (1980), Sharma et.al. (1990) [6], Joshi (1998), Koushik (1999), Pande et.al (1999) [6], Datta (2001) [4]. Dissolved oxygen was varied from 2.0 to 7.5 mg/liter In present study maximum value recorded in winter season at all sites except Site E .

The carbon dioxide shares moderate degree of negative correlation with PH at all sites. In present study the carbon dioxide was very high during rainy months and it was low during winter and summer months at all Sites.

In present investigation total alkalinity value was ranged between 1.4 to 3.9 Mg/l. In present water body alkalinity values are lower than 100 Mg/l. Which indicates water is nutritionally poor. Alkalinity in it itself is not harmful to human beings (Pande and Sharma, 1999) [6]. The low alkalinity was recorded in summer season at all sites except Site E shows higher alkalinity.

CONCLUSION

Finally from above studies it can be concluded that the environmental factors and season are responsible for the variation of physico-chemical parameters of Sina Kolegoan Dam. It can be well concluded that the maximum temperature, alkalinity was more in summer season while dissolved oxygen was less. PH was generally alkaline in all the five sites of dam, while Co₂ was more in monsoon season, the study reveals that water of the Sina kolegoan dam is suitable and useful for irrigation and fish production, drinking purpose as all the hydro biological parameters of water where within the permissible limits.

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