



Seasonal Variations in Different Physico-Chemical Parameters in Gangapur Dam of Nashik District, Maharashtra

KEYWORDS

Gangapur dam, Physico-Chemical, Pisciculture.

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ABSTRACT Gangapur Dam is an earthen dam, constructed on the Godavari River. Its water is used for drinking purpose, for irrigation and also for pisciculture on lease basis. Monthly and Seasonal variation of different physico-chemical characteristics were studied from January 2004 to December 2005. The results clearly indicate that water quality parameters are within the permissible limits for drinking, irrigation and also suitable for pisciculture.

INTRODUCTION

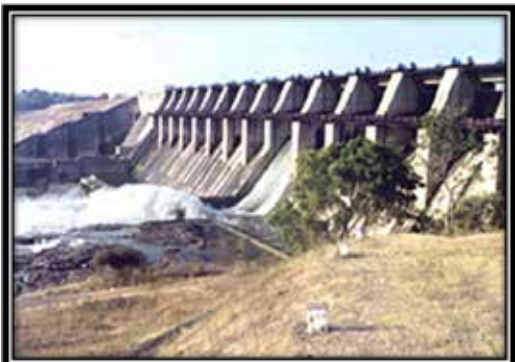
- The Gangapur Dam is a major earthen Dam constructed in the year 1954 on the Godavari river.
- The dam is situated in a village Gangavadi, the total catchment area of the dam is 3810 m.
- The water from the dam is utilized for irrigation and drinking purpose as well as for pisciculture.
- In the present investigation few of the physico-chemical parameters are studied to assess the quality of water.

MATERIALS AND METHODS

- In order to study the physico-chemical parameters of Gangapur dam three sampling stations were chosen as station 'A', station 'B' and station 'C' and samples were collected at an interval of one month for two years, i.e. from January 2004 to December 2005.
- Station 'A' and station 'B' are located in the dam, and station 'C' receives polluted water from various sources.
- Various physico-chemical parameters viz.
- Temperature, turbidity, pH, total dissolved solids, free carbon dioxide, dissolved oxygen, total alkalinity, chlorides, nitrates and phosphate were estimated following the standard methods as described by Trivedy and Goel (1986) and APHA (1989).



Photograph Showing Sampling Station " A " Of Gangapur Dam.



Photograph Showing Sampling Station " C " Of Gangapur Dam

RESULTS AND DISCUSSIONS

❖ Temperature :

In the present investigation the range of water temperature was 20.10 C – 31.20 C at Station 'A', 20.30 – 31.40 C at sta-

tion 'B' and 22.70 – 35.70 C at station 'C'. The maximum values were recorded in summer months and minimum in winter. Ashraf (1987), Ali et.al. (1994), Salam and Perveen (1996), Salam and Mahmood, and Salam et. al. (2000) reported similar results.

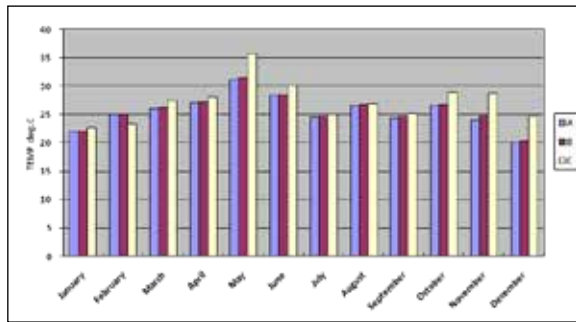


Fig : 1.1 Monthly Variation In Water Temperature (OC)

❖ Turbidity :

Turbidity in water is caused by suspended matter and it also varies with season. The turbidity of water at three stations was maximum in the month of July and minimum in the month of December.

In the present investigation lowest values of turbidity were recorded in pre-monsoon months and highest in monsoon months. Similar results were reported by Ajmal and Raziuddin, (1988). Fig 1.2 : Monthly Variation In Turbidity (NTU).

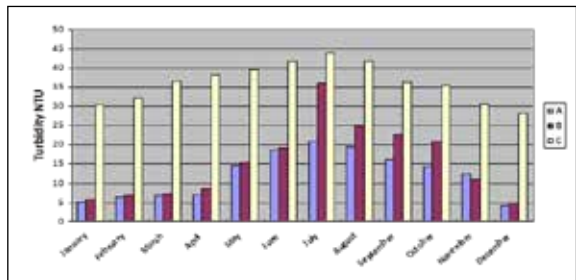


Fig 1.2 : Monthly Variation In Turbidity (NTU).

❖ Total Dissolved Solids :

Total dissolved solids were variable and ranged between 70-164 mg/lit. The minimum value was recorded during winter and maximum during summer. The results are coinciding with earlier work carried out by Verma et.al. (1978) and Salodia, (1996).

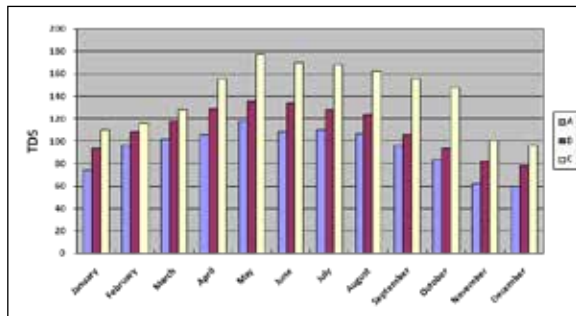


Fig 1.3 : Monthly Variation In TDS (mg/lit).

❖ pH :

The pH of Gangapur dam water remaining alkaline through out the study period. The pH value range from 7.2 to 8.8 mg/L. The maximum pH was recorded in summer and minimum in winter. Similar results were also observed by Vyas and Kumar, (1968) and Prapurna and Shashikant, (2002).

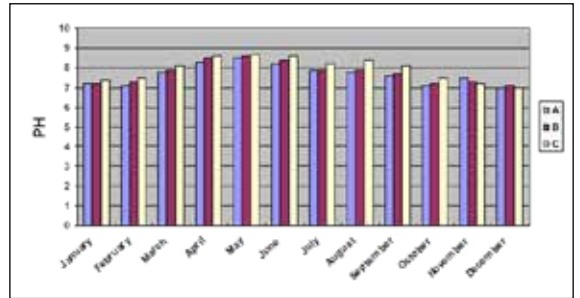


Fig 1.4 : Monthly Variation In pH.

❖ Co2 :

Free Co2 values varied considerably throughout the year. In the present investigation maximum carbon dioxide observed in summer and minimum during winter. Similar findings are also made by Subbamma et.al. (1992) and Saxena et.al. (1993).

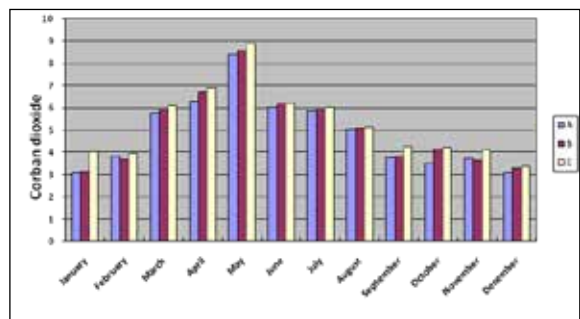


Fig 1.5 : Monthly Variation In Co2

❖ Dissolved oxygen :

Dissolved oxygen is one of the most important parameters in water quality assessment. In the present investigation the dissolved oxygen values ranged from 3.0 – 7.8 mg/L. The maximum dissolved oxygen found in winter may be due to low atmospheric temperature and minimum was recorded in summer may be due to high metallic rate of organisms. Similar observations are also made by Trivedy and Kulkarni, (1988) & More and Nandan, (2003).

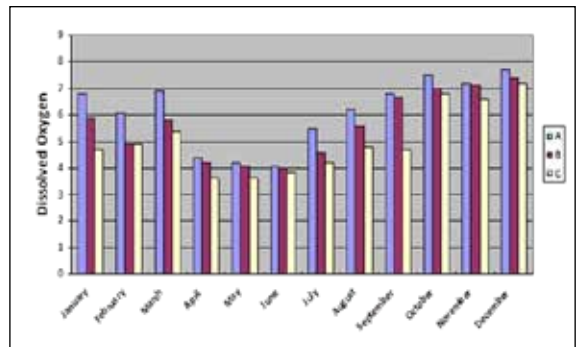


Fig 1.6 : Monthly Variation In D.O.

❖ Total alkalinity :

It is an important parameter in the detection of water pollution. In the present investigation total alkalinity ranged from 47-99.8 mg/lit. It was higher in winter, moderate in monsoon and lower in summer season. Similar findings were observed by Pandhe et.al. (1995), Singh D.N. (2000) and Ugale B.J. and Hiwale C.J. (2005).

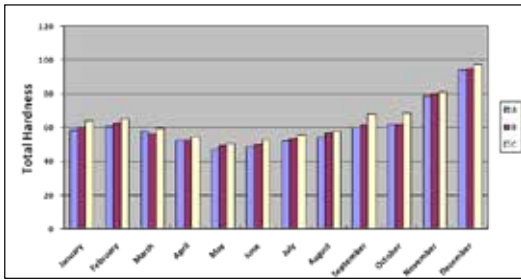


Fig 1.7 : Monthly Variation In Total Hardness (mg/lit).

❖ Chlorides :

In the present investigation, high chloride content was recorded in summer 28.4 – 42.2 mg/lit. whereas relatively lower values were recorded in winter 12 – 17.4 mg/lit. Similar observations are made by Mishra and Yadav, (1978), S.K. Dhamija and Yatish Jain, (1995).

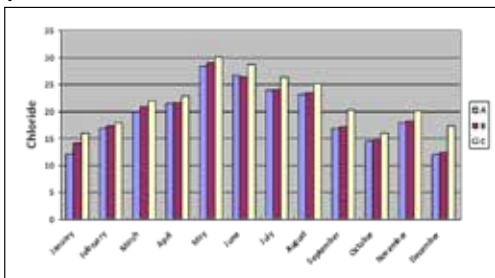


Fig 1.8 : Monthly Variation In Chloride (mg/lit).

❖ Nitrates :

The Nitrates ranged from 0.24 – 4.17 mg/lit. The nitrate values were maximum during winter and minimum during summer. At all the three sampling stations quite low concentration of nitrate is seen except in winter season. Results are in agreement with Nandan and More, (2000), Deore et.al. (2005).

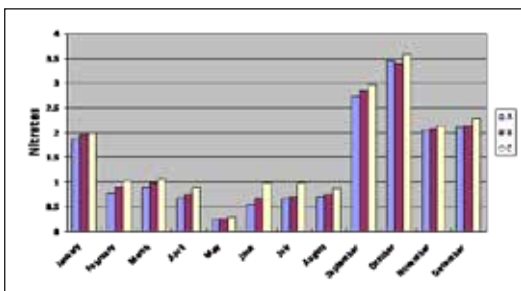


Fig 1.9 : Monthly Variation In Nitrates (mg/lit).

❖ Phosphates :

In the present investigation the phosphate concentration ranged from 0.06 – 0.38 mg/lit. Phosphates are usually present in low concentration in natural unpolluted water bodies. Phosphate is the key nutrient in the productivity of water in reservoirs, Unni et.al. (1998), Piska and Das (2000).

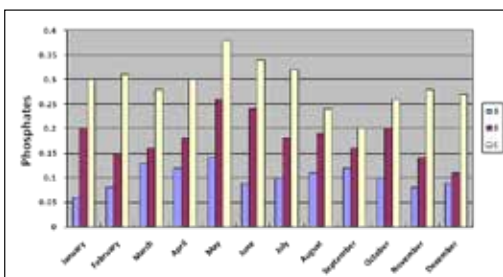


Fig 1.10: Monthly Variation In Phosphates (mg/lit).

CONCLUSION

Thus, present study concludes that the water quality of Gangapur Dam is in permissible limits and it can be used for drinking after filtration as well as for surface water irrigation and its ecosystem is suitable for aquaculture.

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