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# Seasonal Variation in Dissolved Oxygen of Pond Water in Antargam Village., Jagtial Mdl., Jagtial Dist., Telangana State

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## ABSTRACT

Dissolved oxygen (DO) is a measure of how much oxygen dissolved in the water- the amount of oxygen available to living Aquatic organisms.the amount of dissolved oxygen of Pond can tell us about the water quality. Healthy water should generally have dissolved oxygen concentration above 6.5-8 mg/L and between about 80 to 120/. During the investigation, The dissolved oxygen level was changed from 3.2 to 11.5 mg/L. It is a method of estimating the concentration of DO in water. DO is required for the metabolic activity of all aquatic organisms with aerobic metabolism.it is necessary of many forms of life including fish, invertibrates, bacteria and plants, these organisms use oxygen in respiration, similar to organisms of land. The Dissolved oxygen was determined using the APHA titrimetric technique (1998) for twelve months and found that **Dissolved oxygen was highest in the month of January and less in May.**

**Key words** - Monthly variations of Dissolved oxygen of Pond water.

## INTRODUCTION

Dissolved oxygen in the water is obtained through diffusion from air into water, mechanical aeration by wind or and via photosynthesis by aquatic plants. Dissolved oxygen is essential for the metabolism of all aerobic aquatic organisms. Oxygen distribution is important for the direct need of all most all organisms and effect the solubility and availability of many nutrients and the productivity of aquatic ecosystem (Wetzel 1983). The pond productivity also plays an important role and the balance between primary production and respiration influences the oxygen level.

Our Research we observed at low temperature more oxygen diffuses into water because the partial pressure is reduced, while at high temperature when the partial pressure is high oxygen diffuses out of the water. The solubility of water controlled by some major factors such as temperature, salinity pressure and turbelence in the water caused by wind current and waves.

## MATERIALS AND METHODS

Surface water samples were collected the pond water during the period of study from Jun 2021 to May 2022, Sampling Stations viz. Station-A, Station-B, Station-C and Station D were selected. Four plastic both measuring one thousand milliliters, each were used to collect water samples for station A,B,C and D. The bottles was immersed to about 6cm below the water surface and filled to capacity, brought out of the water and properly closed. Each bottle was flushed to ensure that no air bubble existed and transported to the laboratory for further analysis.

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**Estimation of Dissolved Oxygen**

Dissolved oxygen was measured by winklers method. Collected the water sample without bubbling in 200ml glass bottle. Added 2 ml of manganous sulfate ($MnSO_4.H_2O$) solution inserting the tip of pipette tip into the sample because the drops of solution can allow inserting the oxygen into the solution. Added 2 ml of the alkali-iodide-azide reagent by above method. Allowed reacting the solutions with the oxygen present in the sample. When precipitates are settled down at the bottom added 2 ml of concentrated sulfuric acid by placing the pipette tip very near to sample surface. Mixed well to dissolve the precipitates. Taken 50 ml of sample from in a flask. Titrated immediately with sodium thiosulfate solution using starch indicator until blue color disappears and note down the burette reading. Determined the burette reading for blank in the same manner.

**Calculations:**

Dissolved oxygen in mg/L= 0.1 x 100 x N/V x v

Where, V = Volume of sample taken (ml); v= Volume of used titrant (ml); N = Normality of titrant; 0.1 is the contant since 1 ml of 0.025N Sodium thiosulphate solution is equivalent to 0.2mg oxygen.

## RESULTS AND DISCUSSION

Dissolved oxygen was measured by winklers.

**Table-1. Monthly variation of Dissolved oxygen (mg/L) during 2021 to 2022.**

| Month | Station A | Station B | Station C | Station D |
|---|---|---|---|---|
| Jun | 5.6 | 5.5 | 5.2 | 5.0 |
| Jul | 5.2 | 5.0 | 5.0 | 5.2 |
| Aug | 6.5 | 6.4 | 6.3 | 6.3 |
| Sept | 6.8 | 6.9 | 7.0 | 7.0 |
| Oct. | 7.2 | 7.5 | 7.5 | 7.4 |
| Nov | 7.4 | 7.2 | 7.4 | 7.5 |
| Dec | 8.5 | 8.4 | 8.2 | 8.0 |
| Jan | 10.4 | 10.61 | 10.41 | 10.41 |
| Feb | 7.2 | 7.1 | 7.2 | 7.0 |
| Mar | 6.0 | 6.1 | 6.0 | 6.2 |
| Apr | 5.4 | 5.0 | 5.1 | 5.1 |
| May | 7.0 | 7.5 | 7.6 | 6.1 |

Yogesh Shastri (2000) studied physico-chemical characteristics of river Mosam, North Maharashtra and showed alkalinity minimum 40 mg/L and maximum 125 mg/L. Though alkalinity was not suitable for good productivity, in highly productive water which has alkalinity over 100 mg/L (Jhingran 1982; Gurrapu et al, 2016). In this study, in the month of January, the dissolved oxygen levels was high when compared to other months. Very low dissolved oxygen levels were observed in the month of July.

Sharma and Jain (2000), Narasimha Rao and Jaya Raju (2001) found the alkalinity values varied from 90 to 265 mg/L in sewage fed fish culture pond at Nambur. Sakhare and Joshi (2003) found the alkalinity values varied from 672 to 1023 mg/L in papnas a minor wetland in Tuljapur Town Maharashtra.

## Conflicts of Interest

Authors declare that there is no conflict of interests regarding the publication of this paper.

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