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PHYSICO CHEMICAL ENVIRONMENT OF GOSAVI (KANADI) RESERVOIR

Akshay Saikar

ABSTRACT :

Water is a fundamental element of life. On the surface of this earth, it covers as much as fresh percent water as fresh water or salt water. Water is needed for drinking, bathing, industrial and agricultural purposes. India is one of the agri based countries and the agriculture sector alone contributes 14.6 percent and employment is 55 percent in the national GDP. For agriculture purposes in India, they consume more than 1 percent of surface area and about 60 percent of water. Pollution has now become the most pressing problem due to population growth. India always faces water problems in agriculture; to overcome this, India took water conservation measures on rivers and built reservoirs and dams across the country. Increased pollution also affects the water in the reservoir. And in agriculture, nutrients play a vital role in fresh water institutions. Therefore, it is important to examine the quality of water in terms of physicochemical parameters and in biological ones.

KEYWORDS : *fundamental element , agriculture, nutrients play.*

INTRODUCTION

River water flows from its origin to the sea. Access to sea water is unused water. Due to the construction of dams, unused river water is reduced. Thus, the reservoir created by the construction of the dam determines the sustainable strategy for managing the water shed.

Understanding the dynamics of water and water quality is an important way to develop strategies for conservation and management as well as dynamic changes in the water quality of this valuable water resource in our country. This seems to be the need of the hour. Available water quality is related to food production through agriculture and aquaculture. This area of newly emerged study is called hydro-informatics. Indian agriculture is mainly dependent on the west monsoon and northeast monsoon, resulting in less rainfall which requires maximum utilization of the country's surface and groundwater resources. This has created a large number of tanks and small reservoirs as part of the conservation strategy. The construction of large multipurpose dams helps to create reservoirs that provide tremendous potential for the fisheries sector through improved fisheries technology.

It seems that the reservoir will contribute significantly to the country's inland fish production if managed scientifically. In the reservoir ecosystem, changing environmental changes increase primary

productivity through a steady mix of water and nutrient cycling. However, there is a potential for adaptation to the biological component, which has the advantage of increasing fish reserves, and through scientific management, production costs and sustainable policies benefit financially and maximize productivity in an economic way. The invention of the biotic community ensures the optimum percentage of primary energy produced by the manufacturer. The reservoirs are in different locations and unfortunately it makes it difficult to develop a universally applicable general management package. Because environmental variables are dynamic and therefore general evaluation of reservoir productivity cannot be done. The specificity of the reservoir product has to be determined separately for different localities or for reservoir families showing similar environmental conditions.

Table 1.1 Monthly Transparency Value of Gosavi (Kanadi) Reservoir

Year 2017-18				**Year 2018-19**			
Month	1st Site	2nd Site	3rd Site	Month	1st Site	2nd Site	3rd Site
February	121	119	121	February	125	127	131
March	95	98	101	March	90	93	95
April	42	44	46	April	36	38	38
May	48	51	53	May	45	49	53
June	62	64	66	June	56	57	59
July	81	82	85	July	73	75	79
August	103	105	108	August	105	105	108
September	119	122	124	September	112	113	117
October	149	153	159	October	136	138	141
November	172	176	179	November	160	161	164
December	164	167	171	December	145	148	151
January	160	168	172	January	155	155	159

Source: Fieldwork

Seasonal changes in transparency of the Gosavi (Kanadi) reservoir during the study period. Transparency in the years 2017-18 was between 43 and 148; while in 2018-2019 it was between 38 to 120 summers transparency was reported in 2017-18 recorded 72, 73 and 81 in 1st, 2nd and 3rd. In summer, its minimum value was at the site of I (43) in April, while the maximum of places I and III was (109) in February. The corresponding original values in 2018-2019 were 72, 73 and 81 at sites 1st, 2nd and 3rd respectively. It was reported at least (40) on the 1st and 2nd sites in April, and the maximum value (117) was found at Site 3rd in February.

The average transparency values in the monsoon during the years 2017-2018 were 103 at 1st, 2nd and 3rd sites. During this period, the site recorded at least (63) in June, and maximum (107) at 3rd site in September. The corresponding average values of 79 were on sites 1st and 2nd, while 86 on 3rd site. In June, it had a minimum (61) on sites I and II and maximum values on sites III in September (117).

Seasonal changes in chloride in the van reservoir during the study period. Chlorides were between 36.6 and 55.6 during 2017-2018, and during 2018-2019 they were between 42.4 and 55.9.

The average values of chloride at the first site were 49.5 during the summer of 2017-2018 and 43.8 on the second and third sites. The third highest value for summer in February was (42.6), while the maximum was (54.2) on site in May. The corresponding original values in 2018-19 were 48.5, 48.1 and 48.7 respectively in the first, second and third respectively. Its minimum (42.8) was reported on the second site in February, and the maximum value (49.5) was found on the first site in April.

The average values of chloride in the monsoon in the year 2017-2018 were 39.8 at the first site and 43.5 at the second and third, during the period in September to the maximum (33.9) at the 1st site were reported. The corresponding average values of 2018-19 were 44.4, 44 and 42.8 and at the second

and third sites, respectively. It had the lowest (39.2) at the third site in July and the maximum value at the 1st site in June (48.4).

The average chloride during the winter, 2017-2018, was 38.5, 38.9 and 41.3, respectively. In January 2019 minimum (37.6) was recorded at the third station, while the maximum (41.3) was found at the first site in October. The corresponding values are were 42.3, 41.9 and 41.7 respectively in 2018-19 at the first second and third station respectively. Its minimum value was recorded as third (41.6) in December 2010, while the maximum value (43.6) was at the first site in October.

Table 2.2 Monthly Total Hardness at Gosavi (Kanadi) Reservoir

Year 2017-18				**Year 2018-19**			
Month	**1st Site**	**2nd Site**	**3rd Site**	**Month**	**1st Site**	**2nd Site**	**3rd Site**
February	41	39	39	February	42	41	42
March	49	47	48	March	54	54	52
April	56	56	55	April	55	56	56
May	58	59	58	May	58	58	59
June	53	52	51	June	55	55	54
July	50	49	48	July	50	49	49
August	48	47	46	August	48	47	47
September	42	41	43	September	45	44	44
October	40	39	38	October	40	41	41
November	38	36	35	November	36	37	37
December	35	34	33	December	40	41	41
January	33	32	31	January	38	38	39
Avg.	**45.25**	**44.25**	**43.75**		**46.75**	**46.75**	**46.75**

Source: Fieldwork

The seasonal difference in hardness of Gosavi (Kanadi) reservoir has shown in table 4.2 during the study period of 2017-18 and 2018-19. In the year 2017-18 the total hardness of the water is between 31 to 59, and in the year 2018-19 it was between 38-59.

During the summer period of 2017-18 the average hardness value was recorded at three station was 45.25, 44.25 and 43.75 respectively, whereas in the year 2018-19 the average hardness was recorded at 46.75 simultaneously in all three station respectively. While the minimum value was recorded 31 in the month of January at station three and the maximum value was recorded at 56 at first and second station in April month in the year 2017-18, similarly minimum value was recorded at 36 at first station in the month of November and the maximum value was recorded at 59 at third station in the month of May during the period of 2018-19.

During the monsoon period of 2017-18 the average hardness value was recorded at the station was 39.6, 38.1 and 38.5 respectively, whereas in the year 2018-19 the average hardness was recorded at 40.1, 40.5 and 39.4 at three station respectively. While the minimum value was recorded 34 at station one in the month of September and the maximum value was recorded 54 at station three in the month of June in the year 2017-18, similarly minimum value was recorded at 33 at second station in the month of October and the maximum value was recorded at 56 in the month of July at station three.

During the winter period of 2017-18 the average hardness value was recorded at the all three station was 41.2, 42.1 and 40.6 respectively, whereas in the year 2018-19 the average hardness value was recorded 39.5, 39.8 and 40.8 respectively at all three station. While the maximum value was recorded 35 at station two in the month of November and at station three in February month, and the maximum value was recorded 53 at station one and station two respectively in the year 2017-18, similarly minimum value was recorded at 31 at first station in June month and maximum value 55 was recorded at station three in the month of August at station three.

Table 1.3 Monthly Value of Total Alkalinity of Gosavi (Kanadi) Reservoir

Year 2017-18				Year 2018-19			
Month	**1st Site**	**2nd Site**	**3rd Site**	**Month**	**1st Site**	**2nd Site**	**3rd Site**
February	144	145	145	February	132	132	133
March	148	148	149	March	140	142	142
April	152	151	151	April	142	143	143
May	154	154	156	May	145	146	146
June	140	140	142	June	130	130	132
July	125	125	124	July	150	150	152
August	159	159	158	August	149	148	148
September	155	155	156	September	144	145	145
October	161	162	162	October	152	152	153
November	177	177	178	November	160	161	161
December	142	143	143	December	138	138	139
January	138	139	139	January	136	136	137
Avg.	**149.58**	**149.80**	**150.25**	**Avg.**	**143.17**	**143.58**	**144.25**

Source: Fieldwork

The seasonal difference in hardness of Gosavi (Kanadi) reservoir has shown in table 4.3 during the study period of 2017-18 and 2018-19. In the year 2017-18 the total hardness of the water are 124 to 178 between, and in the year 2018-19 it was 130-16159 between.

During the summer period of 2017-18 the average total alkalinity value was recorded at three station was 149.58, 149.80 and 150.25 respectively, whereas in the year 2018-19 the average total alkalinity was recorded at 143.17, 143.58 and 144.25 simultaneously in all three station respectively. While the minimum value was recorded 124 in the month of July at station three and the maximum value was recorded at 178 at first and second station in November month in the year 2017-18, similarly minimum value was recorded at 132 at first station and second station in the month of January and the maximum value was recorded at 161 at second and third station simultaneously in the month of November during the period of 2018-19.

During the monsoon period of 2017-18 the average total alkalinity value was recorded at the station was 146.21, 146.59 and 148.72 respectively, whereas in the year 2018-19 the average total alkalinity was recorded at 143.24, 144.21 and 145.21 at three station respectively. While the minimum value was recorded 144 at station three in the month of October and the maximum value was recorded 175 at station two in the month of July in the year 2017-18, similarly minimum value was recorded at 148 at third station in the month of November and the maximum value was recorded at 176 in the month of July at station three.

During the winter period of 2017-18 the average total alkalinity value was recorded at the all three station was 155.62, 159.73 and 168.69 respectively, whereas in the year 2018-19 the average total alkalinity value was recorded 154.57, 159.7 and 167.51 respectively at all three station. While the maximum value was recorded 151 at station three in the month of January, and the maximum value was recorded 171 at station one and station two respectively in the month of November in year 2017-18, similarly minimum value was recorded at 149 at second station in January month and maximum value 172 was recorded at station three in the month of November.

CONCLUSION:

The total hardness is the sum of the concentrations of calcium and magnesium in the water. Total hardness is an absolute property and cannot be precisely interpreted in relation to the management of the health or culture of an animal in a burn until the concentration of substances contributing to its total hardness is known. There are two types of water hardness: temporary hardness and permanent hardness. Temporary stiffness, which is caused by the presence of dissolved

bicarbonates of calcium, magnesium and other ions. Boiling can temporarily relieve stiffness. Permanent hardening due to the presence of chlorides, sulphates, calcium, magnesium, iron and other heavy metals.

Alkalinity of water is the ability to neutralize a strong acid and is characterized by the presence of hydroxyl ions capable of combining with hydrogen ions. The dissolution of CO2 in water creates most of the alkalinity of natural water. The alkalinity of any water is mainly due to carbonates, bicarbonates and hydroxides. However, most of the water is rich in carbonates and bicarbonates, which are given by other alkaline materials Trivedi and Goyal (1984). According to Lagler (1988), the total alkalinity of water depends on the geology of the region. It is an index of nutrient status in the body of water. Total alkalinity is an important environmental change in aquaculture as it interacts with other changes affecting the health of aquatic animals or the fertility of the ecosystem, Boyd & Tucker, (2009). The total alkaline water content of 40 mg / L or higher is considered to be more productive than the water with a small amount of corrosive. High salts may not be more than 5 mg / L, as low salinity is not conducive to good productivity. In the present investigation, the total alkalinity was more than 90 mg / L. So reservoirs are extremely productive.

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