

Hydrochemical Study of Agricultural Ponds Near Sangamner in Ahmednagar District of Maharashtra State India

Shrihari Ashok Pingle, Priyanka Pawar, Seema Borgave , Rupendra Bhagde*

Department of Zoology, S. N. Arts, D. J. M. Commerce and B. N. S. Science College, Sangamner District
Ahmednager, Maharashtra, India

ABSTRACT

Hydrochemical study is very necessary to know the water quality of any water resource. Agricultural ponds are very useful for agricultural practices and livestock rearing. Sangamner and nearby area is having less average rain fall. Several farmers are preparing agricultural ponds with government help for agricultural and other agro based practices. These ponds are also useful for the Pisciculture activities. Therefore the present work was undertaken. The water samples were collected from the agricultural ponds from various villages near by Sangamner. Temperature was recorded by using thermometer; pH and TDS were measured using digital pH and TDS meters, dissolved oxygen was estimated by using Winkler's method. Acidity, Alkalinity, dissolved Carbon dioxide, electrical conductivity and hardness was measured by using standard methods. The acidity was found in the range of 25 mg/L to 153 mg/L. The alkalinity was found in the range of 140 mg/L to 546 mg/L, dissolved CO₂ was in the range of 10.12 mg/L to 27.72mg/L, dissolved oxygen was in the range of 4.2 to 7.24 mg/L, pH was in the range 7.2 to 9.1., TDS was in the range of 130 to 560, Electrical conductivity was in the range of 0.22 to 1.37mS, Hardness was in the range of 82.6 to 99.6mg/L.

Keywords: pH, TDS, Agricultural Ponds

I. INTRODUCTION

Agricultural ponds are very useful as source of water to the farmers. These are guaranteed source of water throughout the year to carry out agricultural practices along with livestock rearing and aquaculture practices.. In Ahmednager district of Maharashtra state several farmers have agricultural ponds with the help of government subsidies. Water is siphoned out from near by river or canals during rotation and sometimes by using water tankers also. This water stored was useful during scarcity of water or whenever it is needed. It is observed that much literature is not available regarding hydrochemistry of such ponds therefore it was need to do the present work. Some researchers have done work on

physicochemical parameters in India and in some other countries. Among them Elina et al (2014) has carried out work on pond water of fish seed farm in Bangladesh. Anyanwa and Soloman (2015) have done the work on physicochemical parameters of fish pond. Physicochemical characteristics of Bhamka pond in Rewa district of Madhya Pradesh was assessed by Mishra et al (2013) Evaluation of physicochemical parameters of fish culture pond water at Hoshangabad was done by Sheikh et al (2017) Assessment of seasonal water quality and fish pond conservation was studied by Dinesh Kumar et al (2017). In Nigeria physicochemical parameters of water from artificial concrete fish ponds in Abraka was done by Agbaire et al (2015). Kiran (2010) has also done work on physicochemical characteristics.

II. METHODS AND MATERIAL

Water samples were collected from agricultural ponds in Sangamner and Akole talukas of Ahmednagar district. Temperature, pH and TDS were recorded on the spot by using thermometer, digital pH meter and

TDS meter respectively. Acidity, alkalinity, hardness, dissolved carbon dioxide were estimated by using methods given by Maiti 2011. Dissolved oxygen was fixed in DO bottles and it was estimated by using Winkler's method.

III. RESULTS AND DISCUSSION

Table 1

Sr. No.		Rajapur	Ganore	Maldad	Ghulewaqdi	Vadgaonpan
1	Acidity	76.5	72	153	28	25
2	Alkalinity	433	420	140	513	546
3	Dissolved carbon oxide	27.72	14.52	10.12	24.64	22
4	Dissolved oxygen	5.16	4.2	5.11	7.24	6.84
5	pH	7.2	7.5	7.5	8.0	9.1
6	TDS	130	140	200	560	210
7	Electrical conductivity	0.22	1.37	0.33	0.81	0.43
8	Hardness	82.6	104.6	996	322.6	183.2

Acidity : The acidity was found in the range of 25 mg/L to 153 mg/L. At Rajapur it was found to be 76.5 mg/L at Ganore 72 mg/L at Maldad 153 mg/L and at Ghulewadi 28 mg/L and at Vadgaonpan 25 mg/L.

Alkalinity : The alkalinity was found in the range of 140 mg/L to 546 mg/L. It was 433 mg/L at Rajapur , at Ganore 420 mg/L, at Maldad 140 mg/L and at Ghulewadi 513 mg/L and 546 mg/L at Vadgaonpan.

Dissolved CO₂ : It was in the range of 10.12 mg/L to 27.72 mg/L at Rajapur 27.72 mg/L, at Ganore 14.52 mg/L, at Maldad 10.12 mg/L and at Ghulewadi 24.64 mg/L and 22 mg/L at Vadgaonpan.

Dissolved Oxygen : It was in the range of 4.2 to 7.24 mg/L at Rajapur 5.16 mg/L, at Ganore 4.2 mg/L, at Maldad 5.11 mg/L and at Ghulewadi 7.24 mg/L and 6.84 mg/L at Vadgaonpan.

pH: It was in the range 7.2 to 9.1. At Rajapur 7.2 , at Ganore 7.5, at Maldad 7.5 and at Ghulewadi 8.0 and 9.1 at Vadgaonpan.

TDS: It was in the range of 130 to 560 ppm. It was 130 at Rajapur , at Ganore 140 ppm, at Maldad 200 ppm and at Ghulewadi 560 and 210 ppm at Vadgaonpan.

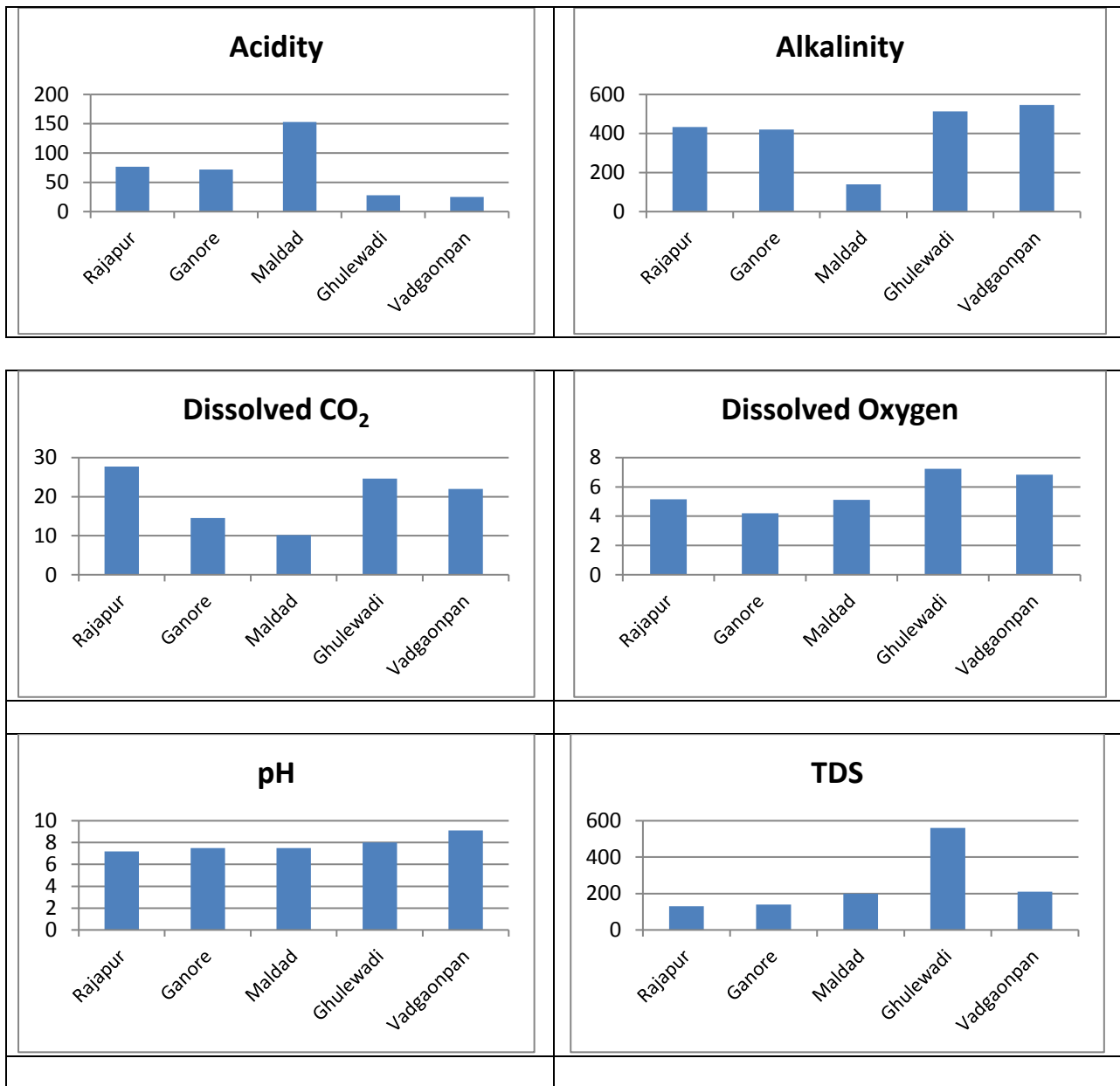
Electrical conductivity: It was in the range of 0.22 mS to 1.37 mS. It was 0.22 mS Rajapur, at Ganore 1.37 mS, at Maldad 0.33 mS and at Ghulewadi 0.81 mS and 0.43 mS at Vadgaonpan.

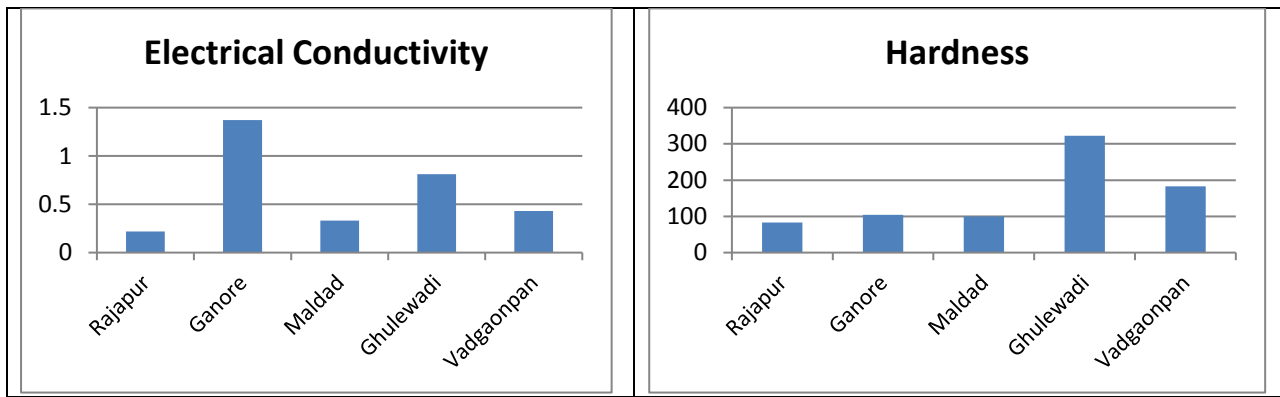
Hardness : It was in the range of 82.6 to 996. It was 82.6 at Rajapur , at Ganore 104.2, at Maldad 99.6 and at Ghulewadi 322.6 and 183.2 at Vadgaonpan.

Acidity was minimum at Vadgaonpan and maximum at Maldad. Alkalinity was minimum at Maldad and

maximum at Vadgaonpan. Dissolved Carbon di oxide was minimum at Maldad and maximum at Ghulewadi. Dissolved Oxygen was minimum at Ganore and maximum at Ghulewadi. pH was minimum at Rajapur and maximum at Vadgaonpan. TDS was minimum at rajapur and maximum at Ghulewadi. Electrical conductivity was minimum at Rahapur and

maximum at Ganore. Hardness was minimum at Rajapur and maximum at Maldad. It is observed that there is variation in the values of Hydrochemical parameters of different agricultural ponds. It is may due to the original source from where water was broght are different.





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V. REFERENCES

- [1]. Agbaire Patience Odafevejiri, Akporido, Samuel Omorovie and Emoyan Onoriode Onos 2015. Determination of some physicochemical parameters of water from Artificial concrete fish ponds in Abraka and its Environs, Delta state Nigeria. *International Journal of Plant, Animal and Environmental Sciences* Vol.5 issue 3 pp 70-76.
- [2]. Anyanwa L T and JR Solomon 2015 : Physicochemical parameters of fish pond used for Dutch Clarias hybrid fed coconut Chaff and Bambara nuts .*Afr. J. Environ. Pollut. Health* 11,pp1-10.
- [3]. Dinesh kumar G, Kartik M and Rajkumar R.2017: Study of seasonal water quality Assessment and fish pond conservation in Thanjavur Tamil Nadu India. *Journal of Entomology and Zoology Studies* 2017,5(4) 1232-1238.
- [4]. Elina Aziz, Towhida Latif, Rezuana Afrin and Md. Yonus Mia. 2014.: Differences in physicochemical parameters of pond water of Demo and fallow ponds of a fish seed farm at Ashekpur, Tangail Bangladesh. *Univ. J. Zool. Rajshahi Univ.* Vol.33 pp 01-06.
- [5]. Kiran B. R. 2010 : Physicochemical characteristics of fish ponds of Bhadra Project Karnataka *Rasayan J. Chem* Vol.3 No.4 671-676.
- [6]. Maiti S. K. (2011). *Handbook of Methods in Environmental Studies: Water and wastewater Analysis*, Oxford Book Company. Vol.1 pp 1:307.
- [7]. Mishra Mahesh K., Neeta Mishra and Devendra N. Pandey 2013: An Assessment of the physicochemical characteristics of Bhamka pond, Hanumana Rewa District, India. *International journal of Innovative Research in Science, Engineering and Technology* 7 Vol.2 issue 5 pp 1781-1788.
- [8]. Nakhate A. B. and Kale M.K. 2018 : Studies on physicochemical parameters in Kankaleshwar Lake, Dist. Beed (M.S.) India. *International journal of Universal Print* Vol.No.04(06) pp 347-352.
- [9]. Prajapati Balmahendra, Dr. Umesh Pandey and Pramod Prajapati 2018 : Analysis of physicochemical parameters of water and soil in relation to fish culture of Barina pond Chargavan Tal. Rithi, Dist. Katni Madhya Pradesh, India *International Journal of*

Zoological studies Vol.3 Issue 1 January 2018
pages no. 347-351.

- [10]. Sheikh Razda, Suchitra Banerjee, Rajendra Chauhan and Ravi Prasad 2017: Evaluation of physicochemical parameters of fish culture pond water in Shri Ganeshan fish farm at Hoshangabad Madhya Pradesh, India. Trends in Fisheries Research Vol.6 issue 3 pp 7-10.

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