

# Importance of Electronic Facilities For The Better Management of Poultry Farming.

S. T. Naphade<sup>1</sup>, S. G. Badhe<sup>2</sup> and S. R. Naphade<sup>3</sup>

<sup>1</sup>Dept. of Zoology, Yeshwantrao Chavan College, Sillod, Dist. Aurangabad, M.S. (India)

<sup>2</sup>Dept. of Physics, R. B. Attal College, Georai, Dist. Beed, M.S. (India)

<sup>3</sup>Dept. of Zoology, D. D. College, Bajaj Nagar, Waluj, Aurangabad, M.S. (India)

[drsudhirn11@gmail.com](mailto:drsudhirn11@gmail.com)

## Abstract

The present paper deals with the study of importance of electronic facilities for the proper management of poultry farming. The study was conducted to analyze the importance and benefit of these electronic facilities in three different poultry farms according to the bird rearing capacity. The work is carried out from the three different poultry farms ranges from small to large size poultry farms situated in Aurangabad district. During the study period it was recorded that major benefit found in large poultry farm followed by medium and small poultry farms. It also showed that the major obstacles faced by the poultry birds in the small poultry farm because of improper electronic facilities. It is concluded that the major beneficial aspects regarding the health performance of poultry birds occurred in the large poultry farm due to the automation of electronic facilities as compare to the medium and small poultry farms in the study area. So it is necessary to use the proper electronic facilities within the poultry farms for the overall health performance of poultry birds and it also helpful to increase the productivity as well as economic status of the poultry farmers. Other related aspects will discuss in the text.

**Keywords:** Importance, Electronic facilities, Poultry birds, Management, Poultry farms

## Introduction

Poultry farming is an important agricultural based business industry. Poultry farming is becoming increasingly organized, specialized and shaping in to an industry of national economic importance. In many developing countries small-scale poultry farmers are the main producers of the poultry farming. The growth rate of poultry production in India is nearly higher than other sectors like crop husbandry, livestock production, gross domestic products etc. In this allied agricultural industry annual output of eggs was eight times more in the 1995 than early seventies. Poultry raised for meat production is called broiler. Broiler industry had started before three decades in India. Its negligible output of 4 million in 1971 reached to 190 million in 1990 and there is tremendous growth as well as have high potential to develop to higher extent as there is full scope and prospectus to the industry. Poultry farming provides employment to the educated unemployed people at the rural area and additional income source to the farmers. Poultry birds are the domesticated birds reared for the purpose of meat and egg production. It provides protein rich food for the growing poor population. Particularly in the Marathwada region which is reeling under repeated drought spell, the poultry farming can provide an alternate source to the farmers.

Electronic facilities required for the automation of poultry farming, automation of poultry farms help to reduce the labour cost, increase farm efficiency, improve the productivity, and production rate of meat and egg (Cajethan Uche Ugwuoke et. al. 2017). Poultry birds are generally reared in the litter system so it requires adequate space and related equipment facilities for the proper management of the flock. Modern poultry houses are fully automated with fans linked to sensors to maintain the required environment (Glatz and Pym, 2006). Availability and access of poultry meat and eggs can be promoted by the management of poultry farms through the application of electronic facilities, computerization of operation in poultry industry ensure higher quantity and quality of poultry products (Cajethan Uche Ugwuoke et. al. 2017). Electronic feeding system is capable of dispensing more feed inside the feeder by sensing the food level as the level reduces and this allow for reduced manual labour expended in the poultry farms with corresponding increase in cost benefit and high profit yield (Olaniyi et. al. 2014). Hence it is necessary to study the application of electronic facilities in the management of poultry farming for overall health performance of birds. Therefore, the present study was conducted to analyze the importance of utilization and application of electronic facilities in the management of poultry farming, benefits of the application of electronic facilities in the management of poultry farming and obstacles occurred due to the limitations in the application of electronic facilities in the management of poultry farming in three different poultry farming in Aurangabad district of Marathwada region.

## Materials and Methods

To study the beneficial aspects of poultry birds reared under electronic facilities from three different selected poultry farms. The poultry farms in district Aurangabad were selected and categorized as small, medium and large poultry farms depending on the bird rearing capacity. The three poultry farms were randomly selected as sample for this study. The present study was conducted during rearing period of the poultry birds. The data of electronic facilities used in poultry farming and its beneficial effect and obstacles is collected from all the selected farms during the study period by personal visit and by observing the electronic facilities used at the farm sites during the study period at different intervals. Information and data was obtained about use of electronic facilities, to evaluate the beneficial effect of electronic facilities and obstacles due to limitations in use of electronic facilities among the selected poultry farming. The detailed studies were undertaken with a view to find out the beneficial effect of use of electronic facilities and obstacles in these farms during the rearing period in the study area.

## Results and Discussion

For the study of beneficial effect of application and utilization of electronic facilities in three different categories of poultry farms according to the rearing capacity of birds were selected in this study area. Those were small, medium and large poultry farms. The work is carried out from the three different poultry farms ranges from small to large size poultry farms situated in Aurangabad district. During the study period it was recorded that major beneficial effect was found in large poultry farm followed by medium and small poultry farms. It also showed that the major obstacles faced by the poultry birds in the small poultry farm because the birds are reared under improper electronic facilities. The major beneficial aspects regarding the health performance of poultry birds occurred in the large poultry farm due to the automation of electronic facilities as compare to the medium and small poultry farms in the study area.

The poultry birds and farmer of the small poultry farms shows major obstacles due to the limitations in use of electronic facilities in the management of poultry farming, while poultry birds and farmer of medium poultry farms shows moderate obstacles as compare to small poultry farm. The poultry birds and farmer of large poultry farms shows beneficial effect regarding the overall health performance of the birds like uniform health status of birds, minimize the disease occurrence and also shows that minimize the wastage of food material, water, minimize the labour cost etc. and increase the production of meat and eggs.

**Table: Application and utilization of electronic facilities in different poultry farms.**

| Sr. No. | Electronic Facilities   | Use of electronic facilities in |             |            |
|---------|-------------------------|---------------------------------|-------------|------------|
|         |                         | Small farm                      | Medium farm | Large farm |
| 1       | Feeders                 | Manual                          | Manual      | Auto       |
| 2       | Drinker                 | Manual                          | Manual      | Auto       |
| 3       | Manure system           | Manual                          | Manual      | Auto       |
| 4       | Weighing machine        | Manual                          | Auto        | Auto       |
| 5       | Egg Collection system   | Manual                          | Manual      | Auto       |
| 6       | Climatic control system | Manual                          | Auto        | Auto       |
| 7       | Heat Exchanger          | --                              | Auto        | Auto       |
| 8       | Ventilation system      | Manual                          | Manual      | Manual     |
| 9       | Cooling system          | --                              | Auto        | Auto       |
| 10      | Egg counter             | Manual                          | Manual      | Auto       |
| 11      | Egg candlers            | --                              | --          | Auto       |
| 12      | Incubators              | Manual                          | Auto        | Auto       |
| 13      | Circulation fans        | --                              | Auto        | Auto       |
| 14      | Refrigerators           | --                              | Auto        | Auto       |
| 15      | Lighting system         | Manual                          | Auto        | Auto       |

In the small poultry farm did not use any proper electronic facilities and thus the poultry birds and farmers shows major obstacles, (Cajethan et. al. 2017) reported that most of the electronic facilities required for the automation of poultry farms were not available in majority of the poultry farms in Enugu State, Nigeria. While in the medium and large poultry farms they prefer proper electronic facilities according to the number of poultry birds reared in the respective farms as compare with small poultry farm, due to that the birds of these farms shows beneficial effects as compare to small poultry farm.

The major obstacles due to the limitations in use of electronic facilities in the management of small poultry farm shows poor health performance of the birds, poor disease control and also shows that wastage of food material, water, maximum labour cost etc. and poor production of meat and



eggs.(Uchendu et. al. 2015) reported that backyard, small, and medium scale poultry farms accounted for over 80% of poultry farms in Enugu state, which do not integrate electronic facilities in the management of their farms. (Masuku et. al. 2013) reported that lack of credit to buy capital equipment, poor chicken housing, lack of electronic facilities, poor infrastructure affect the commercialization of indigenous chickens in Swaziland.

For proper beneficial effect to the poultry birds and the farmers of poultry farming management of the poultry farms requires necessary electronic or automated facilities within the poultry farms. It is directly benefited for the overall health of the poultry birds and farmers of the poultry farming. During this study it was observed that the proper necessary electronic facilities is found in the large poultry farms and shows beneficial effect regarding the overall health performance of the birds like uniform health status of birds, minimize the disease occurrence and also shows that minimize the wastage of food material, water, minimize the labour cost etc. and increase the production of meat and eggs, these findings are correlated to the findings of (Cajethan et. al. 2017) who reported that automation of poultry farms increases production of meat and eggs, reduces wastage of feeds, provides feeds and water at appropriate quantity and time of the birds, reduces labour in the farm, accurate operations, reduces eggs breakages, reduces stress from heat, reduces noise in the farm. These findings also agree with the findings of (Sinduja et. al. 2016) who reported that automated system is labour saving for the farmer as it reports environmental changes immediately, thereby enabling the farmer to forestall adverse damage in the farm.

In the medium poultry farm shows moderate obstacles as compare to small poultry farm, According to the report of (Oyeyinka et al 2011) poor automation of poultry in Nigeria, found that the Nigerian poultry is less capitalized and it is based on smallholdings owned by many peasant farmers, also reported that birds usually performs at low level due to the application of unimproved facilities where microclimate of the farms was not regulated.

## Conclusion

From the above study and observations, it can be concluded that the insufficient electronic facilities found in the small poultry farm due to that birds and farmer of this farm have faced major obstacles as compare to the medium and large poultry farms. While the major beneficial aspects regarding the health performance of poultry birds occurred in the large poultry farm due to the automation of electronic facilities as compare to the medium and small poultry farms in the study area. For the proper beneficial of poultry farming it is necessary to implement the proper and sufficient electronic facilities within the poultry farming. Therefore it is necessary to manage the sufficient electronic facilities and to reduce or to minimize the obstacles in poultry farming. Further detail studies about the beneficial aspects of poultry farming need to design for improvement of electronic facilities in the poultry farming in the study area. It is ultimately helpful to improve the health performance of poultry birds and to increase the production rate also increase the economic status of the farmers.

## Acknowledgements

Authors are thankful to the Principal, Yeshwantrao Chavan Arts, Commerce and Science College, Sillod, Dist. Aurangabad (M.S.) India, for providing laboratory and library facilities also thankful to the poultry farmers for their cooperation and help during the study period.

## References

1. Cajethan Uche Ugwuoke, Felicia Ngozi Ezebuiro, Chinyere Roseline Okwo and Augustine Chukwuma (2017). Management of poultry farms through use of electronic facilities for enhanced food security in Enugu state, Nigeria. G. J. B. A. H. S., Vol. 6, (4): 1-7.
2. Glatz, P. and Pym, R. (2006) Poultry housing and management in developing countries. In poultry development review of food and Agricultural organization of United Nations. From <http://www.fao.org/3/a-al734e.pdf>.
3. Olaniyi, O. M., Salami, A. F., Adewumi, O. O. and Ajibola, O. S. (2014) Design of an intelligent poultry feed and water dispensing system using fuzzy logic control technique. Control theory and informatics, 4 (9) 61-72.
4. Uchendu, G. G., Ihedioha, J. L., Ogbu, C. and Onyeaka, E. C. (2015) Distribution and characteristic of poultry farms in Enugu State, Nigeria after 2007 outbreak of highly pathogenic avian influenza. International Journal of Livestock Production, 6 (3) 41-46.
5. Masuku, M. B., and Siyaya, B. J., (2013) Factors affecting commercialization of indigenous chickens in Swaziland. Journal of Agricultural Studies, 1 (2) 86-101.

6. Sinduja, K., Jenifer, S. S., Sri Abishek, M. and Sivasankanri, B. (2016) Automated control system for poultry farm based on embedded system. International Research Journal of Engineering and Technology, 3 (3) 620-624.
7. Oyeyinka, R. A., Raheem, W. K., Ayanda, I. F., and Abiona, B. G. (2011) Poultry farmer's awareness and knowledge of improved production practices in Afijio local government area, Oyo State, Nigeria. E3 Journal of Agricultural Research and Development, 1 (1) 001-008.

  
**PRINCIPAL**  
Yeshwantrao Chavan College of  
Arts, Commerce & Science, Sillod  
Dist. Aurangabad.



## Prevalence of Ascariidiosis in desi chickens by examining faecal samples.

Y.K. Gawai & Z. H. Khan

Dept. of Biochemistry, Shri. Shivaji Science College, Akola, Dist. Akola (M.S.), India.

S.T. Naphade

Dept. of Zoology, Yeshwantrao Chavan College, Sillod, Dist. Aurangabad (M.S.), (India)

### ABSTRACT:

The present study was conducted for the record of the prevalence of the disease Ascariidiosis caused by *Ascardia galli*. infection in desi chickens during the annual cycle June 2015 to May 2016. Faecal samples was collected from 599 desi chickens in the study area. After examine the fecal samples in the laboratory for finding the infection of *Ascardia galli*. in desi chickens. It was observed and found that the highest prevalence of Ascariidiosis was recorded in summer season (18.57%) and lowest was in winter season (10.76%) and it was (10.82%) found in the monsoon season. The overall percentage of *Ascardia galli*. infection was recorded as 13.52%. From the above observations the prevalence of the disease Ascariidiosis in desi chickens in the study area was highest in summer season followed by monsoon and winter season. Other related aspects discuss in the text.

**KEY WORDS:** Prevalence, Ascariidiosis, Faecal sample, Desi Chickens.

### INTRODUCTION:

In recent years poultry farming has tremendously developed and has become one of the most intensive forms of animal husbandry activities. A lot of losses in poultry have been linked to disease causing agents such as viruses, bacteria and parasites (Sonaiya, 1990). Desi chickens are often neglected for their parasitic infestations (Pandey and Jiang, 1992) even though their significant losses in terms of reduced growth rate and increased mortality. Studies on chickens have demonstrated that due to worm infections may cause significant damage and great economic loss to the poultry industry due to malnutrition, decreased feed conversion ratio, weight loss, lowered egg production and death in young birds. (Soulsby, 1982)

The desi chicken feeds on a wide range of food substances. This ranged from grains, fruits to insects which may harbour infective stages of parasites so predisposing them to parasites infection particularly gastro-intestinal parasites (Oniye, *et al.*, 2001; Frantovo, 2000). In different region of the world helminth parasites of chickens are prevalent (Hodasi, 1978). Helminth parasites are commonly found in desi bird and they are divided into three main groups; nematodes, cestodes and trematodes. Nematodes are the most commonly group of helminth parasites of poultry both in number of species and the extent of damage they cause; the main genera include *Capillaria*, *Heterakis*, and *Ascardia* (Jordan and Pattison, 1996). The most common and most important parasite (Nematode) that found in desi birds is *Ascardia galli*. (Hodasi, 1978; Pam, *et al.*, 2006; Luka and Ndama, 2007).

*Ascardia galli*. is a parasitic roundworm belonging to the phylum nematode. *Ascardia galli*. is the most prevalent and pathogenic species, especially in domestic village chickens (*Gallus domesticus*). It causes ascariidiosis, a disease of desi bird due to heavy *ascardia spp* infection. (Acacio Cardoso Amara *et al.*, 2016). The possibility for parasite infection is very high in the prevailing smallholder production system. (A. Abdelqader *et al.*, 2007) Although, somewhat reduction in bird's parasitic infection has been achieved in commercial production system mostly due to improved housing, hygiene and management practices the prevalence of gastrointestinal parasites is still very rampant (Pandey, *et al.*, 1992). The objective of this study is to measure the prevalence of this parasite in desi chickens from faecal examination. There are different methods for faecal examination like Faecal examination methods, Direct smear method, Flotation method, Sedimentation method etc.

### MATERIALS AND METHODS:

The data for the finding the disease Ascariidiosis, caused by the *Ascardia galli*. infection. For the investigation of the disease prevalence the faecal samples of the desi chickens are collected from the different regions of the Vidarbha and Marathwada (M.S.) India. The study was conducted during period June

2015 to May 2016. These samples were collected during each season to estimate the disease infection of ascaridiosis. Total 599 fecal samples were collected from the villages of the Vidarbha and Marathwada region. The samples were collected randomly from the desi chickens farming. Faecal samples of desi chicken collected in morning time in plastic bottles (5 ml). Each sample were placed in an individually labeled plastic bottles with some drops of formalin for preserving purpose. They were examined by using Direct Smear Method (Charles and Robinson, 2006) for finding the eggs of *Ascaridia galli*. The following formula is used to analyze the overall and seasonal prevalence of the disease Ascaridiosis. Prevalence = (No. of desi chickens Infected / No. of desi chickens examined) x 100

## RESULTS AND DISCUSSION:

The overall and seasonal percentage of prevalence of *Ascaridia galli*. infection in desi chickens from Vidarbha and Marathwada region during the annual cycle June 2015 to May 2016 is shown in Table 1. During the study period total 599 faecal samples were collected from desi chickens. Fecal samples of the desi birds were collected from different part of Vidarbha and Marathwada region (M.S.) India. Desi chickens are free ranging birds grows in natural condition. These birds feeds on wide range of substances that are from grains, fruits and insects also which may harbour infective stages. We examined total 599 fecal samples of desi birds, 81 (13.52%) were positive for *Ascaridia galli*. infection, showing the presence of *Ascaridia galli* parasites in the fecal sample. Figure 1. Shows month wise infection of the disease Ascaridiosis in desi chickens during the period June 2015 to May 2016. Considering only the *Ascaridia galli* infected desi birds (81), A considerable difference was found in the prevalence of *Ascaridia galli* infection among different season, with the highest value found in summer season (18.57%) followed by monsoon (10.82%), and lowest during winter season (10.76%). According to the present study the survey conducted only on the prevalence of the disease Ascaridiosis. The overall and seasonal prevalence percentage of identified *Ascaridia galli* parasites found desi chickens during the study period is presented in Table 2. Figure 2. Shows graphical representation of seasonwise percentage of the disease Ascaridiosis. *Ascaridia galli* infection occurs worldwide and it is very commonly found in domestic chickens (Lalchandama, 2010). In traditional farming system chicken lives under open range system without any proper feeding. So Ascaridia infection is more common in desi chickens.

The ascaridia eggs may be introduced by infected wild or domestic birds, people or equipment acting as mechanical vectors for the parasite eggs. Likewise, vehicles transporting birds, feed and equipment can also carry the infection (Jonhson D.S .et al. 2010). The age of birds was considered as a major factor in the prevalence of A.galli infection. During the present study, the infection rate was 13.52% in the desi chickens, similar results were obtained by Deepali Chaddha et al (2004) reported 17.64% in India. Irungu, et al. (2004) who reported incidence of A.galli in local poultry birds 10.3% in Kenya. Other than these studies some authors found higher Ascaridia infection in desi chickens. Mushi, et al (2000), recorded 50% in Oodi, Kgatleng District Botswana A.galli infection in layers. Eshetu, et al (2001) 35.58% in Ethiopia, Chadfield et al.( 2001) reported 64% in Denmark. Naem and Skandari (2004) reported 32.38% in Iran. Islam, et al. (2004) reported 77.2% in Bangladesh. Soomro F. et al. (2010) they reported *Ascaridia galli* infection in desi chickens 46.36%.

**Table 1.**Month wise prevalence of the disease *Ascaridiosis* in desi chickens during the period June 2015 to May 2016.

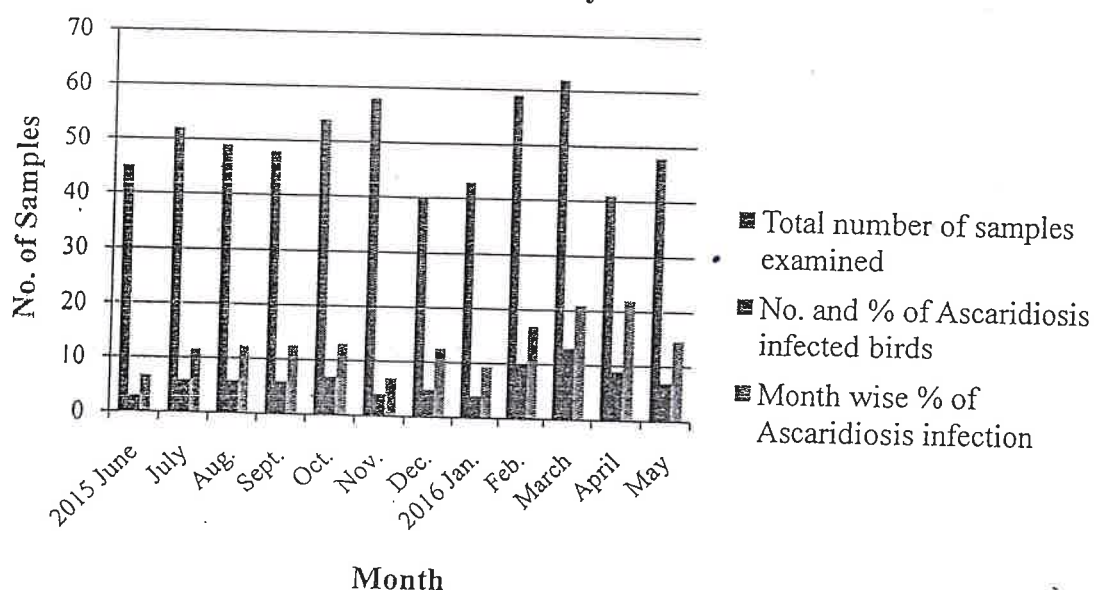
| Season  | Month and Year | Total number of samples examined | No. and % of <i>Ascaridiosis</i> Infected chickens | Month wise % of Ascaridiosis infection |
|---------|----------------|----------------------------------|----------------------------------------------------|----------------------------------------|
| Monsoon | 2015 June      | 45                               | 3                                                  | 6.67                                   |
|         | July           | 52                               | 6                                                  | 11.54                                  |
|         | Aug.           | 49                               | 6                                                  | 12.24                                  |
|         | Sept.          | 48                               | 6                                                  | 12.5                                   |
| Winter  | Oct.           | 54                               | 7                                                  | 12.96                                  |





|        |           |     |    |       |
|--------|-----------|-----|----|-------|
| Summer | Nov.      | 58  | 4  | 6.90  |
|        | Dec.      | 40  | 5  | 12.5  |
|        | 2016 Jan. | 43  | 4  | 9.30  |
|        | Feb.      | 59  | 10 | 16.95 |
|        | March     | 62  | 13 | 20.96 |
|        | April     | 41  | 9  | 21.95 |
|        | May       | 48  | 7  | 14.58 |
| Total  |           | 599 | 81 | 13.52 |

**Figure:1. Month wise infection of the disease  
Ascariidiosis in desi chickens during the period June  
2015 to May 2016.**

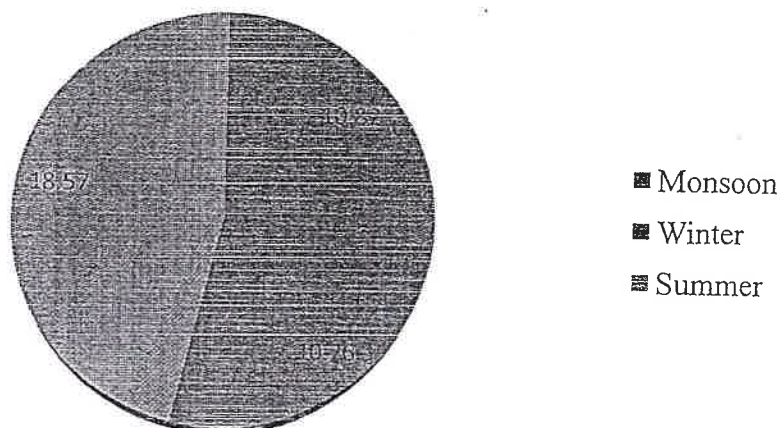


**Table 2. Seasonwise prevalence percentage of Ascariidiosis infection in Desi chickens.**

| Season  | Total number of samples examined | No. and % of Ascariidiosis infected chickens | Seasonal % of Ascariidiosis infection |
|---------|----------------------------------|----------------------------------------------|---------------------------------------|
| Monsoon | 194                              | 21                                           | 10.82                                 |
| Winter  | 195                              | 21                                           | 10.76                                 |
| Summer  | 210                              | 39                                           | 18.57                                 |
| Total   | 599                              | 81                                           | 13.52                                 |



Figure: 2. Seasonwise Percentage of Ascariidiosis infection among desi chickens.



#### CONCLUSION:

From the above observations it can be concluded that there is high percentage of prevalence of the disease *Ascariidiosis* during summer season and it is due to the consumption of ova contaminated food by the free ranging desi chickens which lead to establishment of *Ascaridia* infection. There may be second possibility of availability of an intermediate host and their consumption by the desi chickens and also the impact of certain phenological factors in the different region of study area leads to establishment and carrying the infection of the disease *Ascariidiosis* in desi chickens. The data will be helpful to promote the methods for minimizing the disease prevalence of *Ascariidiosis* and to minimize the loss of farmers.

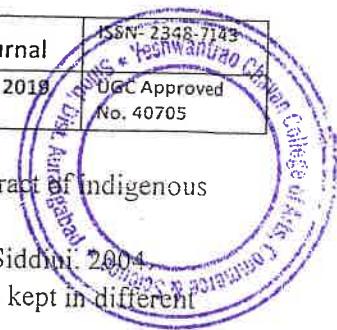
#### ACKNOWLEDGMENT:

Authors are thankful to the Head Department of Zoology, and Principal, Y. C. College, Sillod, Dist. Aurangabad and Head Department of Biochemistry and Principal, Shri. Shivaji Science College, Akola (M.S.) India, for providing necessary laboratory and library facilities.

#### REFERENCES:

- Acacio Cardoso Amaral, Alberto Agostinho Pereira da Costa João (2016 ),Prevalence of *Ascaridia Galli* In Village Chickens In Timor Leste. Rivista Cietifica ISSN 2313-4054.
- A. Abdelqader , M. Gauly , C.B.A. Wollny (2007) Response of two breeds of chickens to *Ascaridia galli* infections from two geographic sources, Veterinary Parasitology 145 (2007) 176-180.
- Chadfield, M., A.Permin, P.Nansen and M. Bisgaard. 2001. Investigation of the parasitic nematode *Ascaridia galli* (Shrank 1788) as a potential vector for Salmonella nteric dissemination in poultry. J. Vet. Par. 87 (31): 7-25.
- Deepali Chadda, R.K. Agnihotri and Rajesh Katoch. 2004. Incidence of *Ascaridia galli* in Palam Vally of Himachal Pradesh. J. India. Anim. sci. 74 (10): 1032-1034.
- Eshetu, Y.E. Mulaulem, H. Ibrahim, A.Berhunu and K. Aberra. 2001. Study of gastrointesyinal helminths of scavenging chickens in four rural Districts of Amhara region, Ethiopia. J. Vet. 20 (5): 791-6.
- Frantovo, D. (2000): Some parasitic nematodes (Nematoda) of birds (Aves) in the Czech Republic. Acta Societatis Zoological Bohemicae.
- Hodasi, J.K.M. (1969): Comparative studies on the helminth fauna of Native and introduced domestic fowls in Ghana. Journal of Helminthological, 43:35-52.





- Irungu, L.W., R.N. Kimani, and S.M. Kisia. 2004. Helminth parasites in the intestinal tract of indigenous poultry in parts of Kenya. J. Vet. Sci: (9):75-58.
- Islam, M. S., N. S. Lucky, M.R. Islam, A. Ahad, B.R. Das, M. M. Rahman and M.S.I. Siddiqui. 2004.
- Jansson, D. S., Nyman, A., Vagsholm, I., et al. (2010) Ascarid infections in laying hens kept in different housing systems. Avian Pathology 39, 525-532.
- Jordan, F.T.M., and Pattison, M. (1996): Poultry diseases, 4th edition, Pp 283-286.
- Lalchhandama, K. (2010). On the structure of Ascaridia galli, the roundworm of domestic fowl. Sci Vis 10 (1), 20-30.
- Luka, S.A., and Ndams, I.S. (2007): Gastrointestinal parasites of domestic chickens Gallus gallus domesticus Linnaeus 1785 in Samaru Zaria, Nigeria Science World Journal, 2(1): 27.
- Mushi, E.Z., M.G. Binta, R.G. Chabo, R. Ndebele and T. Thibanyane. 2000. Helminth parasites of indigenous chickens in Oodi, Kgatleng District, Botswana. J. Vet. 71 (8): 247.
- Naem, S. E., and S. Skandari. 2002. Prevalence of intestinal helminths of native chickens in Urmia, Iran. J. Iranian. Vet. Research. 3 (2):200-203.
- Oniye, S.J., Audu P.A., Adebote, D.A., Kwaghe, B.B., Ajanusi, O.J. and Nfor, M.B. (2001): Survey of Helminth Parasites of Laughing Dove (*Streptopelia senegalensis*) in Zaria, Nigeria. African Journal of Natural Sciences, 4: 65-66.

  
**PRINCIPAL**  
 Yeshwantrao Chavan College of  
 Arts, Commerce & Science, Sillod  
 Dist. Aurangabad.



**Study of Behavioral Aspects of Broiler Chicks Reared Under Light Sources in Different Poultry Farming.**

<sup>1</sup>S. T. Naphade, <sup>2</sup>S. G. Badhe, <sup>3</sup>S. R. Naphade

<sup>1</sup>Dept. of Zoology, Yeshwantrao Chavan College, Sillod, Dist. Aurangabad, M.S. (India)

<sup>2</sup>Dept. of Physics, R. B. Attal College, Georai, Dist. Beed, M.S. (India)

<sup>3</sup>Dept. of Zoology, D. D. College, Bajaj Nagar, Waluj, Aurangabad, M.S. (India)

drsudhirn11@gmail.com

**Abstract**

*The present paper deals with the study of behavioral aspects of broiler chicks reared under light sources. The study was conducted to analyze the behavioral aspects of broiler chicks reared under light sources in three different poultry farms according to the bird rearing capacity. The work is carried out from the three different poultry farms ranges from small to large size poultry farms situated in Aurangabad district during winter season from the period of October 2015 to January 2017. During the study period it was recorded that major behavioral changes of broiler chicks found in small poultry farm followed by medium and large poultry farms. It also showed that the major behavioral changes of broiler chicks faced by the farmers those are insufficient light sources in their farming. It is concluded that the major behavioral changes of broiler chicks occurred due to the light sources and its management by the farmers in the study area is improper, and use of light sources in various intensities during the rearing of broiler chicks in winter season. So it is necessary to manage the behavioral changes of broiler chicks with proper lightening sources in the poultry farms. Other related aspects will discuss in the text.*

**Keywords:** Behavioral aspects, Light sources, Broiler Chicks, Poultry farms, Aurangabad.

**Introduction**

Broiler poultry production is becoming increasingly organized, specialized and shaping in to an industry of national economic importance. In many developing countries small-scale poultry farmers are the main producers of the poultry farming. Poultry farming provides employment at the rural area, it is highly labour intensive having high employment potential, the industry help to increase the income and also to minimize the need for migration to overcrowded cities. It provides protein rich food for deadly growing poor population. Particularly in the Marathwada region which is reeling under repeated drought spell, the poultry farming can provide an alternate source to the farmers.

Light is one of the important environmental factors in determining animal behavior, influence animals life cycles and control their behavior to a great extent Kristensen et al<sup>[1]</sup>. Light is a tiny portion of the total electromagnetic spectrum, which includes radio waves, microwaves, x-rays and gamma rays. Light exhibits characteristics of both an electromagnetic wave and a particle. However light in the environment is usually made up of a mixture of wavelength, which complicates the calculation of the energy emitted by a light source. The light environment can be classified in three ways, wavelength, intensity and duration, [www.uconn.edu/poultry/NE-127](http://www.uconn.edu/poultry/NE-127)<sup>[2]</sup>. Light is an important source for broiler chicks during the rearing process. It is very important for various body activities of the broiler chicks. Light is one of the powerful factors for controlling various body processes. It influences the growth and development of the broiler chicks. It has been recently reported that the intensity, wavelength and light source influence the behavioral and physiological responses of birds Kristensen et al<sup>[1]</sup>. Light is an environmental factor it consist of three different aspects





like intensity, duration and wavelength. Light intensity, color and photoperiodic regime can affect the physical activity of broiler chickens Lewis and Morris <sup>[3]</sup>. Several studies have been demonstrated that light is an important factor for the management of poultry health and behavior, it may affect them through interaction between physiological and behavioral responses Tavares et al <sup>[4]</sup>.

Light sources, distribution and duration of the lightning period affect the broiler behavior, Kristenses et al <sup>[1]</sup>. Lightning sources of different intensities according to the rearing management normally used in poultry farming as a result broiler chicks shows normal behavior during the rearing period in the poultry farming. Light intensity and their interaction with the broiler chicks affect the various behavioral aspects. To establish normal and proper behavior of broiler chicks are the important concern of poultry farming for the overall performance of the birds. Therefore, the present study was conducted to analyze the behavioral aspects of broiler chicks reared under light sources in three different poultry farming in Aurangabad district of Marathwada region.

#### Materials and Methods

To study the behavioral aspects of broiler chicks reared under light sources from three different selected poultry farms. The poultry farms in district Aurangabad were selected and categorized as small, medium and large poultry farms depending on the bird rearing capacity. The three poultry farms were randomly selected as sample for this study. The present study was conducted during the winter season from the month of October 2016 to January 2017. The data of lightening pattern in poultry farming and its effect on the behavioral aspects of broiler chicks is collected from all the selected farms during the study period by personal visit and by observing the lightening pattern and interaction with the broiler chicks with various behavioral aspects at the farm sites during the study period at different intervals. Information and data was obtained about lightening pattern and intensity of light, to evaluate the effect of light of various intensities on the behavioral aspects of broiler chicks. The detailed studies were undertaken with a view to find out the behavioral aspects of broiler chicks reared under light sources in the study area.

#### Results and Discussion

For the study of behavioral aspects of broiler chicks reared under light sources three different categories of poultry farms according to the rearing capacity of birds were selected in this study area. Those were small, medium and large poultry farms. The broiler chicks of small poultry farming shows that they faced major behavioral changes, because they are usually reared by the farmers under low management practices.

The broiler chicks of the small poultry farms shows major behavioral changes like inactive behavior (sleeping, resting and standing), locomotive behavior (walking, running and jumping), consummative behavior (feeding and drinking), explorative behavior (with feet and beak), aggressive behavior etc. so these birds are showing very less comfort behavior. In the small poultry farm did not use any proper lightning pattern and thus the broiler chicks shows major behavioral changes. While in the medium and large poultry farms they prefer proper lightning patterns according to the number of broiler chicks reared in the respective farms as compare with small poultry farm, due to that the chicks of these farms shows comfort behavior as compare to small poultry farm. Alvino et al <sup>[5]</sup> reported that the broiler chickens under high intensity light period tended to increase behavioral types. Tasaduk Khaliq et al <sup>[6]</sup> reported that the rearing of birds under different colours of light found to be fruitful in exploitation the expression of behavior and welfare of birds.

**Table: Observation about behavioral aspects of broiler chicks reared under light sources in different poultry farms.**

| Sr. No. | Behavioral Patterns and activities of broiler chicks | Behavioral changes in Small farm | Behavioral changes in Medium farm | Behavioral changes in Large farm |
|---------|------------------------------------------------------|----------------------------------|-----------------------------------|----------------------------------|
| 1       | Inactive Behavior (Sleeping, Resting and Standing)   | +++                              | ++                                | +                                |
| 2       | Locomotive Behavior (Walking, Running and Jumping)   | +++                              | ++                                | +                                |
| 3       | Consummative Behavior (Feeding and Drinking)         | +++                              | ++                                | +                                |
| 4       | Explorative Behavior (With feet and beak)            | +++                              | ++                                | +                                |
| 5       | Aggressive Behavior                                  | +++                              | ++                                | +                                |
| 6       | Comfort Behavior                                     | +                                | ++                                | +++                              |

(+++ More, ++ Moderate, + Normal or Less)

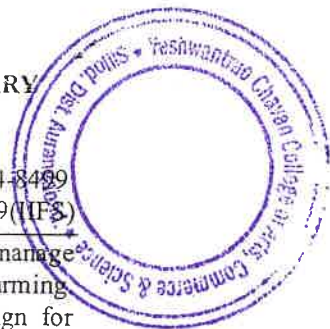
The major behavioral changes of broiler chicks particularly inactive behavior, locomotive behavior, consummative behavior, explorative behavior, aggressive behavior etc. faced by the farmers of small poultry farm followed by medium and large poultry farms. The lightning pattern type use in the poultry farm is directly related to the number of birds reared in the poultry farms. Mohammed et al <sup>[7]</sup> reported that pecking and aggressive behavior were significantly higher in high light intensity, while Araujo et al <sup>[8]</sup> there was no effect of the light source on any of the evaluated behavior found in their study.

For proper behavior of the broiler chicks management of lightning pattern of the poultry farms requires necessary automated facilities within the poultry farms. It is directly benefited for the overall behavior of the broiler chicks. During this study it was observed that the proper necessary facilities of lightning pattern is found in the large poultry farms followed by medium and small poultry farms. According to the report of Senaratna et al <sup>[9]</sup> rearing color of light affected bird behavior than growth and the performance of poultry have been assessed for different light intensities suggested by Davis et al <sup>[10]</sup>. During this study it was found that the lightning pattern in the large poultry farm is proper or sufficient light source due to that the behavioral pattern of broiler chicks become mostly comfort behavior as compare to medium and small poultry farm. The broiler chicks of small poultry farms faced major behavioral changes due to the improper lighting pattern with in the farming. Therefore more behavioral problems of broiler chicks faced by the birds of small poultry farm followed by medium and large poultry farm in the form of different behavioral aspects or change. Nara Kimet al <sup>[11]</sup> reported that the behavior of broiler chickens were found to be strongly affected by the presence of light while there was no discernible difference in the behavior of broiler chickens exposed to the different lights.

### Conclusion

From the above study and observations, it can be concluded that the insufficient lightening pattern found in the small poultry farm due to that broiler chicks of this farm have faced major behavioral changes as compare to the medium and large poultry farms. For the proper or comfort behavior of the broiler chicks it is necessary to implement the proper and





sufficient lightening patterns with in the poultry farming. Therefore it is necessary to manage the sufficient lightening patterns and to reduce the behavioral changes in poultry farming. Further detail studies about the behavioral aspects of broiler chicks need to design for improvement of lightening patterns in the poultry farming in the study area. It is ultimately helpful to improve the lightening patterns in the poultry farming as well as behavioral patterns of broiler chicks.

#### Acknowledgements

Authors are thankful to the Principal, Yeshwantrao Chavan Arts, Commerce and Science College, Sillod, Dist. Aurangabad (M.S.) India, for providing laboratory and library facilities also thankful to the poultry farmers for their cooperation and help during the study period.

#### References

1. I. Kristenses, H. H., Prescott, N. B., Perry, G. C., Ladewig, J., Ersboll, A. K., Overad, K. C., and Wathes, C. M. (2007) The behavior of broiler chickens in different light sources and illuminances. *Appl. Anim. Behav. Sci.* 103: 75-89.
2. [www.uconn.edu/poultry/NE-127](http://www.uconn.edu/poultry/NE-127) : Biomeasurements and experimental techniques for avian species. *Biophysical models for poultry production systems.*
3. Lewis P. D. and Morris T. R. (1998), Response of domestic poultry to various light sources. *Worlds Poult. Sci. J.*, 54: 72-75.
4. Tavares, B. O., Pereira, D. F., Bueno, L. G., Silva, G. F., (2015) Behavior of layers under different light sources. *Braz. Joun. Of Polt. Sci.* 17, 4: 511-516.
5. Alvino, G. M., Archer, G. S. and Mench, J. A. (2009) Behavioral time budgets of broiler chickens reared in varying light intensities. *Appl. Anim. Behav. Sci.* 118:54-61.
6. TasadukKhaliq, A. A. Khan, Parwaiz Ahmad Dar, TahirNazir, InshaAfzal, Mir Bilal and P. Tarique (2018) Behavioral study of broilers reared under different colours of light in the evening hours. *Journal of Entomology and Zoology Studies*, 6 (4), 1624-1627.
7. Mohammed, H. H., Grashorn, M. A. and Bessei, W. (2010) The effect of lighting conditions on behavior of laying hens. *European poultry Sci.* 74 (3).S. 197-202.
8. Araujo, F. E., Garcia, R. G., Naas, I. A., Lima, N. D. S., Silva, R. B. T. R., and Caldara, F. R. (2015) Broiler surface temperature and behavioral response under two different light sources. *Braz. Jour. Of Polt. Sci.* 17, (2): 219-226.
9. Senaratna, D., Samarakone, T. S., Madusanka, A. A. P., and Gunawardane, W. W. D. A. (2011) Performance, behavior and welfare aspects of broilers as affected by different colours of artificial light. *Trop. Agri. Res. And Ext.* 14 (2): 38-44.
10. Davis N. J., Prescot, N. B., Savory, C. J. and Wathes, C. M. (1999) Performance of growing fowls for different light intensities in relation to age, strain and behavior. *Anim. Welf*, 8: 193-203.
11. Nuru Kim, Sung-rak Lee, and Sung-Jin Lee (2014) Effect of light color on energy expenditure and behavior in broiler chickens. *Asian Australas. J. Anim. Sci.* 27, (7): 1044-1049.



S. A. Kadam &amp; S. T. Naphade

Department of Zoology, Yeshwantrao Chavan College of Arts, Commerce and Science, Sillod, Dist. Aurangabad (M.S.) India. 431112

**Abstract**

The present communication deals with the assessment of physicochemical parameters of rural ground water sources to classify and evaluate its suitability for domestic appliances and even for irrigation purpose. For the analysis of physicochemical parameters of drinking water the water samples were collected from some part of rural area near Sillod town in the district Aurangabad. The analysis were carried out by standard method as described by National Rural Drinking Water Quality Monitoring and Surveillance Program-India (NRDWP) in Manual for Drinking Water Quality Monitoring. The results were compared with standards level of samples with the data from manual of Draft Indian Standard Drinking Water Specification (Second Revision of IS 10500). Various physicochemical parameters including pH, alkalinity, turbidity, amount of chloride, fluoride, iron, nitrate TDS and TH were determined in the present study. The results indicate that most of the samples shows good quality and are suitable for drinking and irrigation purpose in the rural area, while some of the water samples are shows outside the acceptable limit and are not suitable for any purpose because of pollution from different sources nearby the collection site in this area and the consumption of such type of water might be causes various waterborne diseases among the people.

**Keywords:** Water samples, physicochemical parameters, rural area, Sillod.

**INTRODUCTION:** The rural population depending upon groundwater for their drinking water needs. All Indian people have right to adequate supply of safe and hygienic drinking water. In fact H<sub>2</sub>O doesn't provide calories and organic nutrients drinking water supply is a state responsibility under the Indian constitution. In India under NRDWP so many agencies and water testing laboratories are provided to test whether ground water is safe cum hygienic for its utilization. Water testing is carried out by district health laboratories functioning under the public health department. But India is second largest country in world followed by China. So public water supply and its quality management is critical problem for India as well as developing nations. Hence water assessment at student level play supplementary role in state responsibility however ground water sources are not easily contaminated yet once this occurs it is difficult to treat. Increased industrialization and urbanization in Maharashtra has exacerbated the problem of water pollution in various places and contamination of surface as well as ground water has been on rise.[1] (Report Government of Maharashtra planning Department cot-2013) Contamination and pollution of ground water in rural areas always associated with disposal of domestic waste, agricultural wastes, types of soil, rocks. The quality of water in wells near the industrial area of M.I.D.C. Jalgaon adversely effected due to percolation seepage effluent,[2]. The main aim of the present study was to investigate pollution level of drinking water sources at Panwadod block in regards to physicochemical characteristics. This comprehensive work provides database for future development and also management.

**Background of Study Area:** For the present study samples were collected from the rural freshwater drinking resources in rural area near Sillod town, district Aurangabad. Sillod is a tehsil place in the Aurangabad District of the Indian state of Maharashtra with an average elevation of 612 meters.

**Latitude and Longitude of the Sillod city of India in other units:**

| Unit                                              | Latitude        | Longitude       |
|---------------------------------------------------|-----------------|-----------------|
| Latitude and Longitude to decimals                | 20.0            | 77.0            |
| Latitude and Longitude to degrees minutes seconds | 20° 18' 0"<br>N | 75° 39' 0"<br>E |

Sillod tehsil has got four major districts near to it. In North there is Jalgaon 94 km far, in South West it has Aurangabad 65 km far, in South East there is a Jalna 67 km far in North East it has Buldana 80 km far. As it has three main districts near to it the wholesale market in ginning and oil mills. The



tehsil(administrative district) ranks number one in the production of maize. Corn and maize cultivated in this area demand a special premium in the market [3] ([www.wikipedia.org](http://www.wikipedia.org)). Sillod is also a leading producer of corn,maize,chilli,cotton and ginger. The cultivation of major crops has changed over the last decade due to changes in the water landscape of the area. Prior to these changes the major crops were sugercane, jowar, bajara (green millet) and cotton with very little cultivation of ginger.

### MATERIALS AND METHODS:

**Sampling:** Water samples are collected from various places at Panwadod block of Sillod tehsil in two separate season. The samples were collected from tube well (Bore water), Hand Pump, and well drinking water sources in the period of October 2014 and July 2015. The collected water samples are investigated by Public Health laboratory. The physical and chemical parameters are pH, Alkalinity, Turbidity, Total Dissolved Solids (TDS), Total Hardness (TH), amount of Fluoride (Fl), Nitrate (NO<sub>3</sub>), Chloride (CL), and Iron. These parameters were analyzed in Public Health Laboratory Sillod by following standard methods as described in NRDWP [4] and BIS-Bureau of Indian Standards (IS-10500:2009).

**Statistical methods:** Arithmetic mean values of each parameter are calculated and statistically calculated by manually more readable and formula,  $(A = S/N)$  Where A= Average (Arithmetic mean), S=Sum of all the numbers in list, N=Total numbers of atoms in list.(6 samples were analyze for 9 parameters. Minimum and maximum values of each parameter has been calculated manually.)

**RESULTS AND DISCUSSION:** Season wise in the month of October 2014 and July 2015 the values of each parameters and its comparison with BIS: 10500:2009 is presented in Table: 01.

**Table 1: Comparison of ground water quality with drinking water standards BIS (IS: 10500:2009).**

| Sr.No. | Parameters      | Statistical parameters Oct-2014 |        |        | Statistical Parameters July-2015 |       |        | Standards of BIS: 10500:2009 |                                                    |
|--------|-----------------|---------------------------------|--------|--------|----------------------------------|-------|--------|------------------------------|----------------------------------------------------|
|        |                 | Min                             | Max    | Mean   | Min                              | Max   | Mean   | Required (acceptable limit)  | Permissible Limit (in the absence of other source) |
| 1      | pH              | 7.3                             | 7.5    | 7.4    | 7.5                              | 7.7   | 7.58   | 6.5 – 8.5                    | No Relaxation                                      |
| 2      | Alkalinity mg/l | 110                             | 260    | 176.66 | 100                              | 150   | 121.66 | 200                          | 600                                                |
| 3      | Turbidity mg/l  | 0.09                            | 0.96   | 0.28   | 0.01                             | 0.87  | 0.35   | 1                            | 5                                                  |
| 4      | Chloride mg/l   | 30                              | 115    | 74.16  | 45                               | 75    | 63.33  | 250                          | 1000                                               |
| 5      | Fluoride mg/l   | 0.262                           | 0.354  | 0.29   | 0.34                             | 0.506 | 0.409  | 1.0                          | 1.5                                                |
| 6      | Iron mg/l       | 0.026                           | 0.042  | 0.034  | 0.016                            | 0.042 | 0.029  | 0.3                          | No Relaxation                                      |
| 7      | Nitrate mg/l    | 341.94                          | 342.62 | 342.20 | 13.00                            | 14.30 | 13.10  | 45                           | No Relaxation                                      |
| 8      | TDS mg/l        | 1168                            | 1320   | 1260   | 730                              | 849   | 804    | 500                          | 2000                                               |
| 9      | TH mg/l         | 320                             | 460    | 396    | 300                              | 400   | 338.33 | 200                          | 600                                                |

pH is a term used to express the intensity of acid or alkaline condition of solution. pH values of all the water samples are found to be within the permissible limit of BIS: 10500:2009 (6.5-8.5). pH values are ranges between 7.3-7.7. (Tabel:1) pH of drinking water beyond the 8.5 range the water will affect the mucous membrane or water supply system, [5]. 8.5 pH value is reported by the workers, [6], dug well

water sample at Shendra MIDC having 8.6 pH has been reported [7], these findings are higher than our findings.

**Alkalinity** is amount of carbonate, bicarbonate and hydroxide in the solution. Silicates, borates, humates, phosphates are also contributed to cause alkalinity. In fact alkalinity in water gives an idea about salts in water. In present study alkalinity were found to be in ranges from 110-260mg/l(Oct-2014) and 100-150 mg/l(July-2015) respectively, (Table: 1). Amount of salts in water samples collected at Panwadod block found to be within permissible limit (600 mg/l) prescribed in BIS: 10500:2009. In current analysis we found out alkalinity of water samples was associated with pH of same water samples. The maximum alkalinity is noted at village Pangaon, Taluka Barshi, from Solapur district as 1000 mg/l [8]. Report January-2007 Status Report on Water Quality of Water Bodies and Ground Water in Maharashtra 2004-2009. Newly installed cement materials will leach lime, with consequent increases in pH, alkalinity and hardness of water, [9].

**Turbidity** might be caused by silts, organic, inorganic matter, sand, plants residue and microorganism. Water samples having 4.0 NTU can be noticed by naked eye. Microorganism (bacteria, viruses and protozoa) are typically attached to particulates, hence high level of turbidity can protect microorganism from effects of disinfection. In the present study found that out values of turbidity (NTU) fluctuate between 0.09-0.096 (Oct-2014) and 0.01-0.87 (July-2015), our findings were not only within permissible limits but also the acceptable limits prescribed in standards of BIS: 10500:2009.

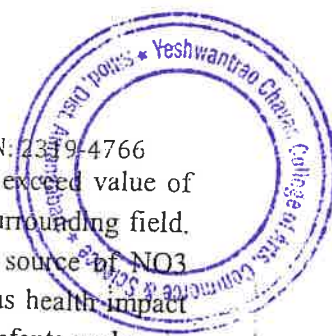
**Chloride** usually present in all drinking water sources that originates from natural as well as human activities. Salty taste of water is depend on level chloride in it. Water containing chloride beyond 250 mg/l water gives salty taste, however, it is needed salt in daily diet. A dietary intake of chloride for adults of 9 mg/kg of body weight has been recommended (WHO) beyond recommends level in body hypertension might be arise. Our findings regards to amount of chloride, showed minimum value 30 mg/l and maximum value 115 mg/l in Oct-2014. These findings are within the acceptable limits (250 mg/l) prescribed in standards of BIS: 10500:2009. Acceptable limit of chloride in ground water sources from present study area has been reported [10], balanced level of chloride in present study area might be due to adequate rainfall and low temperature. Over chloride value 379 mg/l in ground water samples at Nanded city [11]. Maximum 1231.5 mg/l chloride value found out in municipal groundwater wells in Gaza Strip, Palestine [12].

**Fluoride** is a vital parameter to analyses its limit in drinking water. Sedimentary and igneous rocks are major sources of fluoride. Excess concentration of fluoride (more than 1 mg/l) in drinking water it would be result in dental and skeletal fluorosis, however needed amount of fluoride in diet protects from dental caries especially in children. In present investigations fluoride in drinking water sources was found in ranges of maximum 0.354 mg/l in Oct-2014 and 0.506 mg/l in July-2015. All the fluoride values are within the desirable limits of BIS: 10500(1mg/l). The fluoride values are high in basaltic as compared with granitic aquifers [13]. Fluoride concentrations in the groundwater of some villages in China were greater than 8 mg/liter [14].

**Iron** is metal that naturally found in soil, rocks and water bodies. Iron is trace and essential element in human nutrition basically for Erythropoiesis especially in period of gestation. In current analysis maximum iron found out 0.042 mg/l in both season (Table: 1). these values are not crossed the desirable limits prescribed in BIS and WHO. Samples collected in both seasons were colorless and is one of the indicator of excellent quality of water regards to iron in water. Maximum value of iron 1.0 mg/l found in bore well water, [15].

**Nitrate** contamination is becoming serious problem in rural drinking water sources because it formed due to aerobic N cycle in nature. Nitrate values in water samples investigated in Oct-2014 ranged between 341.94-342.26 mg/l these findings are beyond the desirable limits prescribed in IS: 10500 as well as





WHO guidelines, those samples investigated in July-2015 are found in desirable limits except value of NO<sub>3</sub> in Oct-2014 (Table: 1) might be due to over and careless dose of N fertilizers in surrounding field. Fragmentation of bed rock with explosive for construction and mining is a potential source of NO<sub>3</sub> contamination of ground water. [16] Nitrate pollution in drinking water can have serious health impact like "Methanoglobinemia" or "Blue Baby Syndrome", a condition especially found in infants under six months. The ground water sources is not suitable for drinking due to high nitrate concentration [10] NO<sub>3</sub> content in well waters changed from 2.46-164.91 mg/L [17].

**The total dissolved solids (TDS)** reflects the pollution of organic and inorganic salts that are dissolved in water. TDS of the studied drinking water samples ranges of 1168-1320 mg/l (Oct-2014) and 730-849 mg/l (July-2015). Results obtained for TDS in both the season was beyond the desirable limits (500 mg/l) but within the permissible limits (2000 mg/l) prescribed in BIS: 10500:2009, these results showed the intermediate level of minerals in water samples (500-1500 mg/l). Similar results (1389 mg/l) was reported at ground water in Helwan area [18], whereas, lowest TDS 0.4 mg/l has been reported in bore well water at Latur district [19], Prolong intake of water with TDS level beyond the standard limit can cause the renal disorders.

**Total Hardness (TH)** TH values in present investigation ranges of 320-460 mg/l (Oct-2014) and 300-400 mg/l (July-2015) all the assessed groundwater samples were found to exhibit TH value exceeding the desirable limit prescribed in BIS: 10500. Minimum TH 300 mg/l found in well water sample from Panwadod block (July-2015) and maximum TH 460 mg/l found in bore well water sample (Oct-2014). The groundwater in the chandrapur area was moderately hard to very hard [20].

**CONCLUSION:** All the physico-chemical parameters are within the permissible limits prescribed in BIS: 10500:2009 except the nitrate. Six water samples collected from drinking water sources from Panwadod block found higher level of NO<sub>3</sub> than the desirable limits (45 mg/l). As a result in this research vital concludes can be drawn that is Sillod tehsil is leading producer of cropping corn, maize, chilli and cotton. All these cropping pattern required regular and more appliances of fertilizer and pesticides that can easily percolates water bodies. The nature and soil content should be identified and most appropriate types of fertilizers, pesticides should applied. Fertilizers and pesticides practices should not be done in heavy rainfall.

**ACKNOWLEDGEMENT:** The authors are thankful to Principal and Head of Department of Zoology, Yeshwantrao Chavan College, Sillod. We also thankful to Mr. Jadhav and Public Health Laboratory for providing necessary data for research.

#### REFERENCES:

- Report Government of Maharashtra planning Department Oct: 2013
- Landge M.G, Badade S.S. and Kendre B. V. (2016) Ground water pollution near the Industrial area at Jalgaon District, Maharashtra State. *Int. J. of Adv. Res. In Chem. Sci.* Vol. 3 (1), 46-49.
- [www.wikipedia.org](http://www.wikipedia.org)
- National Rural Drinking Water Quality Monitoring & Surveillance Program-India (NRDWP) in Manual for Drinking Water Quality Monitoring.
- Draft Indian Standard Drinking water -Specification (Second Revision of IS 10500:2009)
- Priynka G. Dube, Shailendra D. Shelar and Satish S. Mokashe (2016) Correlation between *Brachionus calyciflorus* and *Brachionus falcatus* with Physico-chemical parameters of upper Dudhana Dam. *Int. J. of Rec. Sci. Res.* Vol 7, (2), 8915-8919.
- Ashok Teajankar and Rohan Pathrikar (2016) Groundwater Quality Assessment & its Suitability by using Remote Sensing & GIS for Domestic & Industrial Use: A Case Study in Shendra MIDC area of Aurangabad (M. S.), India. *Int J. of Trends in Res. & Dev.* Vol 3 (5).
- Report January-2007 Status Report on Water Quality Of Water Bodies and Ground Water In Maharashtra 2004-2005.
- Guidelines for Drinking-Water Quality Fourth Edition WHO - 2011.
- Rahul Sagar (2015) Quality of Ground water in Aurangabad District (MS, India) using Geostatistical Method. *Int. J. of Inno. Sci., Engg., & Tech.* Vol 2 (2) 17-25.



ISSN: 2319-4766

SCHOLARLY RESEARCH JOURNAL FOR INTERDISCIPLINARY STUDIES

- Sayyed Juned A. and Bhosle Arjun B. (2011) Analysis of Chloride, Sodium and Potassium in ground water Samples of Nanded City in Maharashtra, India. *Eur. J. Exp. Bio.* 1 (1), 74-82.
- Adnan M. Aish (2013) Drinking water quality assessment of the middle Governorate in the Gaza Strip, Palestine. *Water Resources and Industry*, Vol 4, 13-20.
- Shivshankar Sangole, Balasaheb Deshmukh and Panaskar D. B. (2012) Comparative Study Of Basaltic and Granatic Aquifers of Dharmabad Taluka of Nanded District, MS from Ground water Quality Perspective. *Int. J. of Sci. & Res. Pub.* Vol 2 (11), 1-9.
- Fuhong R. and Shuqin J (1988) Distribution and formation of high-fluoride groundwater in China. *Env. Geology & Water Sciences*, 12 (1), 3-10.
- B. Nirmala, P. A. Suchetan, D. Darshan, A. G. Sudha (2013) Physico-chemical Analysis Of selected Groundwater Samples of Tumkur District, Karnataka. *Int. J. of Chem. Tech. Res.* Vol. 5 (1), 288-292.
- James R. Degnan, J. K. Bohlke, Krystle Pelham, David M. Langlais and Gregory J. Walsh (2016) Identification of Groundwater Nitrate contamination from Explosive Used in Road construction : Isotopic, Chemical and Hydrologic Evidence. *Env. Sci. Technol.*, 50 (2), 593-603.
- Serpil Savci (2012) Investigation of effect of Chemical fertilizers on environment. *APCBEE Procedia* (1), 287-292.
- W. M. Salem and Mona El-Sayed (2015) Hydro-geochemical and isotopic composition of ground water in Helwan area, Egy. *J. of Petroleum*, Vol 24 (4), 411-421.
- Bondage S. D. and Phadke S. V. (2015) Physico-chemical status of various Borewell from Latur District, MS, India. *Int. J. of Sci. & Res.* Vol 5 (11), 935-937.
- Kodate J., Marganwar R., Dhurvey V., Dhwas S. and Urkude R. (2016) Assessment of groundwater quality with special emphasis fluoride contamination in some villages of Chandrapur district of MS, India. *IOSR-JESTFT*, Vol. 10, (3), 1, 15-26.

  
**PRINCIPAL**  
Yeshwantrao Chavan College of  
Arts, Commerce & Science, Sillio  
Dist. Aurangabad.



## Studies on occurrence and seasonal variation of the disease Ascaridiosis among desi poultry birds from Marathwada and Vidarbha region (MS) India.

Y.K. Gawai<sup>1</sup> (\*), S.T. Naphade<sup>2</sup> and Z. H. Khan<sup>3</sup>

<sup>1,3</sup>Dept. of Biochemistry, Shri. Shivaji Science College, Akola, Dist. Akola (MS), India.

<sup>2</sup>Dept. of Zoology, Yeshwantrao Chavan College, Sillod, Dist. Aurangabad MS, (India)

<sup>1</sup>gawaiyog358@gmail.com, <sup>2</sup>drsudhirn11@gmail.com, <sup>3</sup>ziakhan7862@rediffmail.com

**Abstract:** The present communication deals with the comparative studies on occurrence and seasonal variation of the disease Ascaridiosis caused due to *Ascaridia galli* infection in desi poultry birds from some part of Marathwada and Vidarbha region. The study was conducted during the annual cycle June 2013 to May 2014. The month wise data of occurrence of the disease was recorded during the study period from different sampling station. The highest percentage of incidence of infection was found in summer followed by rainy and lowest during winter season and values were found to be highest during summer season in the month of May 2014 (74.31%) followed by rainy season in the month of September 2013 (60.52%) and lowest found during winter season in the month of December 2013 (41.66%).

**Keywords:** *Ascaridiosis, incidence of infection, desi poultry birds, Marathwada, Vidarbha.*

### 1. Introduction

Desi poultry birds are the birds reared by poor families in the villages. Intensive rising of poultry in commercial farms inevitably exposes flock to the numerous diseases that causes increases mortality and loss of farmers. Sometime human health is also affected to contact with diseased birds; there may be possibilities of damage to the human body due to intake of diseased birds. In India, farmer are unaware to poultry disease and management related problems, so due to unawareness huge loss of birds. Poultry carry different heavy infection of types of parasites, i.e. helminths, protozoan's, viruses, and arthropods etc. Intestinal parasitic (helminths) infection has a serious impact on poultry health, productivity, quality and quantity of meat. The infection of helminth parasites is found in poultry, Desi birds locally known as Gavran. The nematodes, *Ascaridia* species causes Ascaridiosis, which reduces the food value of poultry and increase the mortality. Hence considering the economic importance of the diseases caused by *Ascaridia galli*. infection in desi poultry birds which interns affect on total production causing high economic loss to the farmers as well as Nation too. Keeping in view the severity of the disease a systematic work has been undertaken on occurrence and seasonal variation of the disease Ascaridiosis in the poultry, desi birds (gavran) from some part of Marathwada and Vidarbha region M. S., India



## 2. Materials and methods



Figure 1. Map of the study area

The data of occurrence and seasonal variation of the disease Ascariidiosis is collected from desi poultry birds procured from different parts of Marathwada and Vidarbha region (M.S.) India, during the annual cycle June 2013 to May 2014, which are not grown up under managed condition, but naturally they are reared and have chance to exposure to the nematode parasite *Ascaridia galli*, which causes the disease Ascariidiosis. Collection of data in all months with more or less periodicity from different sampling station. The intestinal samples were collected during each season of the annual cycle to estimate the seasonal variation of the disease Ascariidiosis. These samples were obtained from small household poultry farms and market of poultry. For the present study 1158 intestinal samples of desi poultry birds were randomly selected. These intestinal samples of the desi poultry birds were brought to the laboratory for examination. The intestines were cut opened and carefully examined for infection of nematode parasites. The nematode parasites were collected, fixed in fixatives further processed for taxonomic study and their identification is carried out with the help of helminthological key, *Systema Helminthum* Vol. III by Yamaguti S. The data obtained from the study period is tabulated and analysed to show the incidence of infection of the disease Ascariidiosis in different months and season from different part of study area. The detailed studies were undertaken with a view to find out the data of incidence of infection of Ascariidiosis in desi poultry birds. The following formula is used to analyze the overall occurrence and seasonal variation of the disease Ascariidiosis.

Incidence of infection = (No. of samples Infected / No. of samples examined) x 100.

## 3. Results and Discussion

The month-wise percentage of incidence of infection of the disease Ascariidiosis, based on data collection is shown in (Table.1 and Fig.2). For the present study total 1158 number of intestinal samples of desi birds procured from different parts of Marathwada and Vidarbha region during June 2013 to May 2014 period, These birds which are not grown up under managed condition, but naturally they are reared and have chance to exposure to the nematode parasite *Ascaridia galli* which causes the disease Ascariidiosis and showing percentage incidence of Ascariidiosis during different months as shown in Table 1 and Fig. 2. The incidence of Ascariidiosis percentage from the study area (60.90, 52.94, 50.00, 60.52, 38.46, 40.00, 41.66, 41.05, 57.14, 61.00, 67.90, 74.31 %) in the month during the period of June 2013 to May 2014 respectively.



Table 1. Showing month wise occurrence of the disease Ascaridiosis in desi poultry birds during the period July 2013 to June 2014.

| Month and Year | Total number of samples examined | Total number of samples infected with Ascaridiosis. | Incidence % of Ascaridiosis |
|----------------|----------------------------------|-----------------------------------------------------|-----------------------------|
| 2013 June      | 110                              | 67                                                  | 60.90                       |
| July           | 85                               | 45                                                  | 52.94                       |
| Aug.           | 94                               | 47                                                  | 50.00                       |
| Sept.          | 114                              | 69                                                  | 60.52                       |
| Oct.           | 91                               | 35                                                  | 38.46                       |
| Nov.           | 80                               | 32                                                  | 40.00                       |
| Dec.           | 108                              | 45                                                  | 41.66                       |
| 2014 Jan.      | 95                               | 39                                                  | 41.05                       |
| Feb.           | 91                               | 52                                                  | 57.14                       |
| March          | 100                              | 61                                                  | 61.00                       |
| April          | 81                               | 55                                                  | 67.90                       |
| May            | 109                              | 81                                                  | 74.31                       |
| Total/Mean     | 1158                             | 628                                                 | 54.23                       |

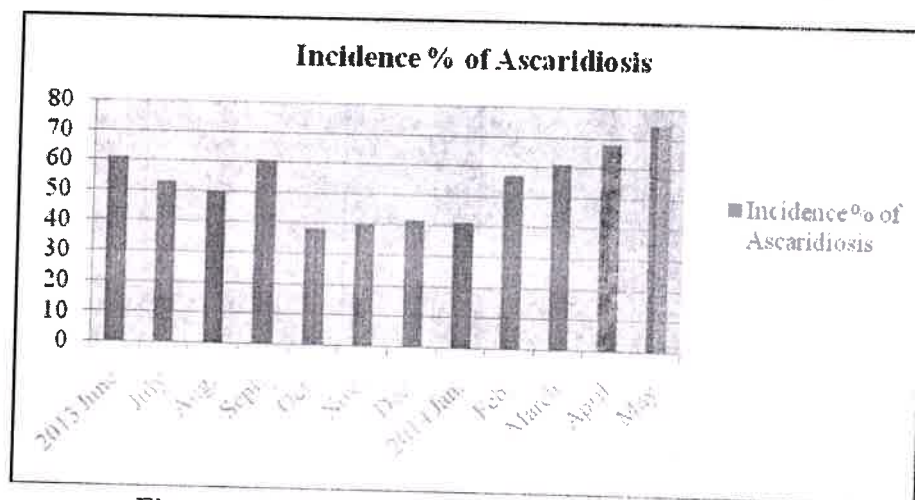
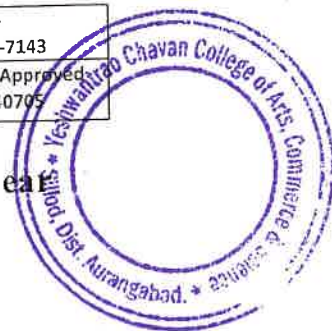


Figure 2. Incidence Percentage (%) of Ascaridiosis



## Study of haemoglobin level among school students from rural area near Sillodtown district Aurangabad.

S. T. Naphade, P.S. Patil and M. K. Shaikh

Dept. of Zoology, Yeshwantrao Chavan Arts, Commerce and Science College, Sillod, Dist. Aurangabad  
(M.S.), (India)

### ABSTRACT:

Blood is the prominent and most important fluid in the body of animals as well as human being that delivers necessary substances to the body of every living organisms. The main content of blood is the haemoglobin. Haemoglobin (Hb) plays an important role in transport of oxygen in the blood to various parts of the body. So it is necessary to maintain the normal haemoglobin level for daily physiological activity of the body. Abnormal or decrease level of haemoglobin causes various disorders in the life of living organisms. The haemoglobin level varies according to the sex and age. Some environmental and nutritional factors are also responsible for the level of haemoglobin. Decrease level of haemoglobin creates disease like anaemia in the school childrens. In the present study haemoglobin was estimated by Sahli's methods and sample collected by finger prick. This method use for the practical work in undergraduate level. During the study it was observed and found that the haemoglobin level in the school children is variable according to the observed value and collected data in the rural area near Sillod town district Aurangabad.

**KEYWORDS:** Haemoglobin level, School students, Sillod, Aurangabad.

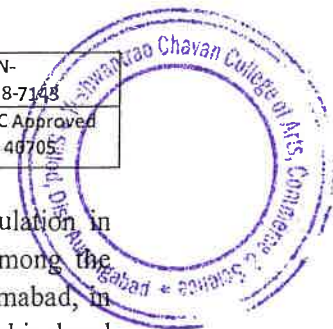
### INTRODUCTION:

Haemoglobin is an iron rich proteins present in the red blood cells which helps red blood cells to supply oxygen from lungs to other parts of the body tissues. Hence reduced iron content from the blood creates various disorder like headache, fatigue etc. (WHO, 2011 and Kassebaum et. al. 2014). Blood is essential fluid derived from mesoderm germinal layer and made up of connective tissue, which carry vital function such as delivery of nutrients, hormones and oxygen as well returned waste and carbon dioxide from cells, tissues of the organs. Hemoglobin are the most essential respiratory pigment to carry oxygen as well as carbon dioxide through plasma fluid. With the help of carbon dioxide it maintain the acid base balance inside the body fluid. The red blood cells consist hemoglobin, it is conjugated protein containing oxygen transport metalloprotein (Matronet. al.1993). Hemoglobin having tendency to bind with oxygen between 1.36 and 1.37 ml oxygen per gram of hemoglobin, (Domniguez De Villota ED et. al.1981). In human being hemoglobin molecule can bind four oxygen molecule with the help of four polypeptide chain, (Costanzo, Linda S. 2007). Hematological parameters fluctuates by different factors such as population health status which is sex, age, ethnic as well as social and environmental factors (KarazawaEH, et. al.1989). The aim of the study was to estimate the range of hemoglobin level among school children of 11-14 year age and investigation of their haemoglobin values.

### MATERIALS AND METHOD:

The present work is carried out on the field level with the help of undergraduate 15 trained students in the Z. P. School at Rahimabad near Sillod town, Dist. Aurangabad. For the analysis of haemoglobin 114 students were selected from the school and collect the blood samples by finger prick technique. We use Sahli's method for the determination of hemoglobin. For this method 0.1 N HCL solution freshly prepared before the analysis of haemoglobin. As per sahlis method blood sample is mixed with 0.1N dilute HCL, this creates broken down plasma membrane of red blood cells and release of hemoglobin and it turns into brown colour hematin. Now this colour is matched with standard tube by added single drop of distilled water and stirring the sample. This procedure is continues till sample matched with standard tube and record the obtained value of haemoglobin.





**RESULT AND DISCUSSION:** For the study 114 school students according to the rural population in which the school located in the rural area was selected for study of haemoglobin level among the students. The work is carried out in the Z. P. School on site situated in the small village Rahimabad, in tehsil Sillod, district Aurangabad. During the study period it was recorded that the haemoglobin level among the school students was found in variable ranges Table 1. It also showed that the some obstacles related to the health faced by the students those are insufficient range of haemoglobin level.

Table: 1. Number and percentage of students according to Haemoglobin range.

| Total Sample Assessed | Range of Hb            | No. & % of students According to Hb range |
|-----------------------|------------------------|-------------------------------------------|
| 114                   | Normal (> 11.5 g/dl)   | 54 (47.36)                                |
|                       | Mild (11-11.4 g/dl)    | 20 (17.54)                                |
|                       | Moderate (8-10.9 g/dl) | 24 (21.05)                                |
|                       | Lower (< 8 g/dl)       | 16 (14.03)                                |

During the study period it was observed that 16 number of the students of this school shows more or less obstacles in their health due to the lower haemoglobin level, while 44 number of the students shows moderate obstacles in their health because they are having moderate and mild level of haemoglobin. The student's shows beneficial effect regarding the overall health performance, like uniform health status, minimize the health obstacles because the range of haemoglobin was recorded nearby normal level in 54 number of students. During the study period it was observed that those students are having lower range of haemoglobin level shows obstacles related to the health, while the students of sufficient or nearby normal range of haemoglobin level shows beneficial effects regarding the health as compare to the students those are having insufficient or lower range of haemoglobin level.

For proper beneficial effect related to the health of students requires necessary or normal range of haemoglobin level. During this study it was observed that the proper or nearby normal range of haemoglobin level is found in 54 (47.36%) of students i.e. more than 11.5 g/dl. out of 114 students and shows beneficial effect regarding the overall health performance of the students, like uniform health status, minimize the disorder, while 20 (17.54%) of students shows mild range of haemoglobin level i.e. 11-11.4 g/dl., 24 (21.05%) of students shows moderate range of haemoglobin level i.e. 8-10.9 g/dl. And 16 (14.03%) of students shows lower range of haemoglobin level i.e. less than 8.0 g/dl, these findings are more or less correlated to the findings of (Jhansi Rani et. al. 2017) reported that childhood anemia still continues to be a significant public health problem in school children between 6-12 years, (Gupta et. al. 2014) reported anemia was highest among 11-25 years of age group, (Bekele et. al. 2014) who reported that the prevalence of anemia due to low level of haemoglobin among the school aged children was 23.66%, (Mahmud et. al. 2013) who reported 11% anemia from northern part of Ethiopia, (Amitava et. al. 2014) reported that variation among haemoglobin values found in adult rural population of west Bengal. More or less similar results are also reported by (Priyanka et. al. 2016) and (Hawkins et. al. 1950) reported 11.2 and above range of haemoglobin value in the children among 7- 14 years old in Sakatoon, Canada this value also correlated to the haemoglobin value of 54 students those are having more than 11.5 g/dl range of haemoglobin level in the present study. Experts investigation shows hemoglobin level in girls age 1-5 year is 10.9-15.0, 5-11 years is 11.9-15.0 and 11-18 years is 11.9-15.0, while this range in boys were 1-5 years is 10.9-15.0, 5-11 years is 11.9-15.0 and 11-18 years is 12.7-17.7 (Deborah Weatherspoon, 2018) these investigations also more or less correlated to the results of present study.

## CONCLUSION:

From the above study and observations, it can be concluded that the insufficient or lower range of haemoglobin level in those students they have faced obstacles in their health as compare to the students those are mild, moderate range of haemoglobin level. While the beneficial effects regarding the overall



health status of the school students is due to the normal range of haemoglobin level compare to those students are having lower, mild and moderate range of haemoglobin level in the study area. For the beneficial effects regarding the health of students it is necessary to maintain the normal or sufficient range of haemoglobin level. Therefore it is necessary to maintain the normal range of haemoglobin level among the school students and to reduce or to minimize the obstacles in the health. The variation in the range of haemoglobin value it may be due to the regional and geographical variations. It may be also due to the family background and life style in the study area. Further detail studies need to design for improvement of the range of haemoglobin level among the school students in the study area. It is ultimately helpful to improve the health performance of the students and to increase the range of haemoglobin.

#### ACKNOWLEDGEMENTS:

Authors are thankful to the Principal, Yeshwantrao Chavan Arts, Commerce and Science College, Sillod, Dist. Aurangabad (M.S.) India, for providing laboratory and library facilities also thankful to the Staff members and students of the Z. P. School, Rahimabad, Dist. Aurangabad for their support and help during the study.

#### REFERENCES:

- WHO. (2011). The global prevalence of anaemia in 2011.
- Kassebaum NJ, Jasrasaria R, Naghavi M, Wulf SK, Johns N, Lozano R (2014). A systematic analysis of global anemia burden from 1990 to 2010. *Blood*;123(5):615-24.
- Maton, Anthea; Jean Hopkins, Charles William Mc Laughlin, Susan Jojnson, Maryanna Quon Warner, David LaHart, Jill D. Wright (1993). *Human Biology and Health*. Englewood Cliffs, New Jersey, USA: Prentice Hall. ISBN 0-13-981176-1.
- Domniguez De Villota ED, Ruiz Carmona MT, Rubio JJ, de Andres S (1981). Equality of the in vivo and in vitro oxygen-binding capacity of hemoglobin in patients with severe respiratory disease. *Br J Anaesth* 53(12): 13258. Doi:10.1093/bja/53.12.1325. ISSN 0007-0912.
- Costanzo, Linda S. (2007). *Physiology*. Hagerstown, MD: Lippincott Williams & Wilkins. ISBN 0-7817-731-3.
- Karazawa EH, Jamra M. (1989). Parametroshematroshematologicos normal. *Rev Saude Publica* 1989;23:58-66.
- Jhansi Rani and Elizabeth Bandrapali (2017). Study of prevalence of anemia in school children and factor associated with it. *Int. Jour. of Contemporary Medical Research*, 4 (9): 1902-1905.
- Gupta S. K., Agrawal S. S., Kaushal R., Jain A., Gupta V. K. and Khare N. (2014). Prevalence of anemia among the rural population living in and around of rural health and training centre, Ratua village of Madhya Pradesh. *Muller J. Med. Sci. Res.* 5, 15-18.
- Bekele Gutema, Wondimagegn Adissu, Yaregal Asress and Lealem Gedefaw (2014). Anemia and associated factors among school aged children in Filtu town, Somali region, Southeast Ethiopia, *BMC Hematology* 14:13.
- Mahmud M. A., Spigt M, Mulugeta B. A., Lopez P. I. Dinant G. J. and Blanco V. R. (2013). Risk factor for intestinal parasitosis, anemia and malnutrition among school children in Ethiopia *Pathog glob Health*, 107, (2): 58-65.
- Amitaya Pal, Sujaya DE, Piyali Sengupta, Payel Maity and Prakash C Dhara (2014). An investigation on prevalence of anemia in relation to BMI and nutrient intake among adult rural population of West Bengal, India, *Epidemiology, Biostatistics and Public Health*, Vol. 11, No. 2, e8915-1-10.
- Priyanka Gupta Bansal, Gurudayal Singh Toteja, Neena Bhatia, Sanjeev Gupta, Manpreet Kaur, Tuls Adhikari and Ashok Kumar Garg (2016). Comparison of haemoglobin estimates using direct and indirect cyanmethaemoglobin methods, *Indian J. Med. Res.* 144, pp 566-571.
- Hawkins W. W. and Dhorothy K. Kline (1950). Haemoglobin level among seven to fourteen year old children in Saskatoon, Canada. *Blood*- 5: 278-285, [www.bloodjournal.org](http://www.bloodjournal.org)