

## SURVEY OF SCIENTIFIC GARDENS IN DEGREE COLLEGES OF KASHMIR REGION OF JAMMU & KASHMIR, INDIA

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### ABSTRACT

*The purpose of this work was to investigate the status of scientific garden in degree Colleges in Kashmir valley by analyzing the feedback collected from teachers and students from different colleges in the study area. Since this was an empirical study, the data was gathered by giving respondents a carefully designed validated questionnaire. Data collected was analyzed using SPSS software. The results of the research showed that 76% institutions have Botanical Garden whereas only 12.5% institutions have Zoological Garden. The institution which has scientific garden, but the plants and animals' species in the garden were insufficient. There was however a handful of plants and animals for teaching purposes. The study revealed that 48.5% respondents were not satisfied on the availability of scientific gardens and live education gardens. The authors of the study recommended that the authorities should upgrade the existing scientific garden in their institution through acquisition and introduction of more plants and animals' species into the garden and setup scientific gardens in those institutions which are devoid of it to ease teaching and learning process. These measures will go a long way to revive and restore the glory of scientific garden as well as promoting outdoor laboratory activities as it is important to develop scientific temperament.*

**KEYWORDS:** Scientific Garden, Outdoor laboratories, Teaching, Learning, Phylum, Scientific temperament, Plants, Animals.

### INTRODUCTION:

Scientific gardens are an important educational resource that can provide students with hands-on experience in various aspects of science and nature. These gardens can be used to teach a range of subjects, from biology and

environmental science to horticulture and agriculture. In the context of degree colleges in Kashmir, scientific gardens can play a crucial role in promoting a deeper understanding of scientific concepts among students and fostering an appreciation for the natural world. Gardens play a central role in the *ex situ* conservation and exploration of global plant biodiversity (Mounce *et al.*, 2017). Gardens also have an important role in the preservation of species necessary for human use and well-being (Waylen, 2006, Dunn, 2017), and this role is likely to become increasingly important as climate change becomes more severe (Donaldson, 2009; Primack and Miller-Rushing, 2009, Ren and Duan, 2017). The range of scientific activities conducted by gardens often includes conservation, propagation, horticulture, seed science, taxonomy, systematics, genetics, biotechnology, education, restoration ecology, public education, and much more (Maunder *et al.*, 2001, Donaldson, 2009). Upgrading and reviving scientific gardens in colleges is an important step towards promoting scientific knowledge and environmental conservation. Scientific gardens provide an opportunity for students, faculty members, and the wider community to engage with the natural world, learn about plant and animal species, and study environmental processes. However, many colleges scientific gardens may have fallen into disrepair or may not have been adequately maintained in recent years. To upgrade and revive scientific gardens in colleges, it is important to first assess the current state of the gardens and identify areas that require improvement. This may involve conducting a survey of assessing the availability of garden and the existing plant and animal species, evaluating the garden's infrastructure and equipment. Surveying the status of scientific gardens in degree colleges is an important step towards understanding the current state of these important educational resources. Conducting a survey can help colleges identify areas of the garden that require improvement, such as damaged infrastructure or areas that need more attention in terms of maintenance. This can help guide future investments and improvements in the garden. Overall, surveying the status of scientific gardens in degree colleges is an important step towards promoting scientific education, environmental conservation, and community engagement. By investing in these valuable resources, colleges can create a vibrant and dynamic learning environment that benefits students, faculty, and the wider community. The purpose of this survey was to gather data on the availability of scientific gardens in college and effectiveness of scientific gardens in degree colleges in Kashmir. Specifically, the survey will seek to understand the perceptions and experiences of students about the gardens.

### RESEARCH METHODOLOGY:

Primary and secondary sources of information were used to collect the data for this investigation.

**Primary Data:** Since this was an empirical study, the main data was gathered by giving respondents a carefully designed questionnaire. In this study, we chose 200 respondents at random from different higher educational institutions of Kashmir valley.

**Secondary Data:** Secondary information was collected from a variety of published and unpublished sources,

including journals, books from different libraries, and websites.

**Research Gap:** After examining the literature, it appears that the Kashmir valley has not been the subject of such a study. In light of this, the current study's goal was to close the research gap.

**Research Tool:** The statistical tool like descriptive statistics, graphs were used to examine this work.

## RESULTS AND DISCUSSION:

The results obtained on the basis of data collected are presented below:

**Table 1: Demography of the Respondents**

S.No.	Variable	Type	Frequency	Percentage (%)
1.	Division	Kashmir	200	100.00
2	Department	Zoology	58	29.00
		Botany	142	71.00
3	Gender	Females	140	70.00
		Males	60	30.00
4	Occupation	Teacher	06	03.00
		Student	194	97.00

Following an analysis of the demographic section responses, it was discovered that Srinagar, Bandipora, Anantnag, Baramulla, Ganderbal, Kulgam, Budgam, Pulwama, Shopian, and Kupwara were the 10 districts of Kashmir from which the responses came. The majority of responders were from the urban region of Srinagar. 29.00% of replies were from Zoology students while as 71.00% from Botany. Women made up 70.00% of the respondents, while men made up 30.00%. The survey was given to a wide range of organizations, including teachers and students of Zoology and Botany subject. According to the data in Table 1, around 97.00 % of the population was students and only 03.00% were from teachers.

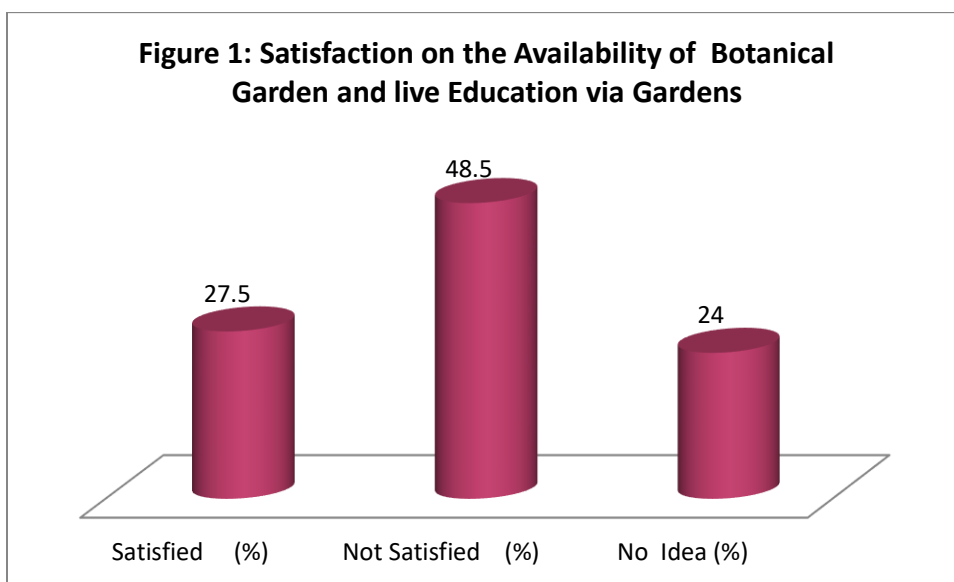
The data collected from the research work was analyzed and the result are presented below and interpreted alongside the research questions in Table 2

**Table 2: Responses received from Respondent's understudy**

S.NO	Statements	Category	Frequency	Percentage (%)
1.	Do you have Botanical Garden in your college?	YES	152	76.00
		NO	48	24.00
2.	Do you have Zoological Garden in your college?	YES	25	12.50
		NO	175	87.50
3.	Is scientific garden in your college updated?	YES	84	42.00
		NO	116	58.00
4.	Do you think Scientific Gardens are necessary for the study of biological sciences?	YES	194	97.00
		NO	06	03.00
5	Are plants species in the botanical garden of your college enough?	YES	80	40.00
		NO	120	60.00
6	Does the botanical garden of your college contain plants from different geographical areas?	YES	142	71.00
		NO	58	29.00
7	Does botanical garden of your college have medicinal plant species?	YES	146	73.00
		NO	54	27.00
8	Does the botanical garden of your college contain plants of different phylum?	YES	149	74.50
		NO	51	25.50
9	Does the botanical garden of your college suffice your syllabus?	YES	137	68.50
		NO	63	31.50
10	Does the botanical garden of your college contain plants used for teaching purposes?	YES	160	80.00
		NO	40	20.00
11	Are the animal species in the zoological garden of your college enough?	YES	28	14.00
		NO	172	86.00
12	Does the zoological garden of your college contain animal from different geographical areas?	YES	35	17.50
		NO	165	82.50
13	Does the zoological garden of your college contain animals from different phylum.	YES	39	19.50
		NO	161	80.50
14	Does the zoological garden of your college contain animals	YES	40	20.00

	of zoological importance?	NO	160	80.00
15	Does the zoological garden of your college contain animal that are used for Teaching purposes?	YES	49	24.50
		NO	151	75.50
16	Does the zoological garden of your college suffice your syllabus?	YES	38	19.00
		NO	162	81.00
17	Have you ever visited scientific gardens?	YES	113	56.50
		NO	87	43.50
18	Did it add to your knowledge of botany & zoology?	YES	166	83.00
		NO	34	17.00
19	Distance of scientific gardens from your college?	0 to 10 kms	84	42.00
		10 to 20 kms	19	09.50
		20 to 30 kms	18	09.00
		More than 30 Kms	79	39.50
20	If you don't have scientific grades in your college, do you wish to have it?	YES	193	96.50
		NO	07	03.50

The data presented in Figure 1, revealed that majority of respondents were not satisfied on the role played by scientific gardens if available in their institution. In group discussion respondents reported that space and plant collections for display was not sufficient which we need for research and advance education.



## FINDINGS OF THE STUDY:

In this study, a questionnaire was given to a variety of respondents, including teachers, and students. Table 2 shows the results of the questionnaire, which reveals that 76.00% of the respondents have botanical garden in college campus. In light of the Zoological Garden only 12.50% were having such facility. In light of whether scientific garden in colleges is updated, the study reveals that 58.00% of respondents said no, while as 42.00% agreed with the statement. In response to statement does the respondent think Scientific Gardens are necessary for the study of biological sciences, 97.00% supported that the scientific gardens are needed. When asked whether plant species are enough, 60.00% of respondents replied no, when asked for animals, 86.00% of respondents said no to presence of adequate species of animals. Thus there is need to intensify effort to collect more plant and animal species for the garden. In response to the question does the scientific garden of college contain plants and animals from different geographical areas, 71.00% respondents said yes for plants and 82.50% said insufficient animals. In response to presence of medicinal plants in botanical garden, 73.00% respondents said yes and when asked about presence of zoological important animals 82.50% disagreed. The study revealed same for the presence of plants and animals from different phylum 74% respondents said that they have plants from different phylum while study reveal different for animals of different phylum with 82.50% no. According to the respondents' opinions botanical gardens have the plants which suffice syllabus of botany with 68.50% yes but for Zoology it was no with 81.00%. In light of visiting to scientific gardens, 56.50% had visited before but 43.50% were never taken to scientific gardens. 96.50% of respondents eagerly want scientific gardens as they feel it is necessary for biological studies. The results of the research showed that very few institutions have scientific garden. The institution which have scientific garden, but the plants and animals species in the garden are insufficient. There is however a handful of plants and animals for teaching purposes.

## DISCUSSION:

The study reported a lack of enough scientific gardens and the facilities in Degree Colleges. The lack of investment and resources dedicated to these facilities represents a significant challenge for higher education institutions to develop scientific gardens. It is important for decision-makers to recognize the value of scientific gardens and to invest in the resources and expertise necessary to develop and maintain these facilities. The study also found the lack of enough plants and animals in scientific gardens which is a significant concern as scientific gardens play a crucial role in providing researchers and students with a diverse and rich collection of plants and animals for study and research. Without a diverse collection of specimens, scientific gardens may not be able to provide the educational and research opportunities that they were designed to offer. The majority of students are not satisfied with availability of scientific garden and live education garden. The dissatisfaction of the majority of students with

the availability of scientific gardens and live education gardens is a significant concern for higher education institutions. Scientific gardens and live education gardens play a crucial role in providing students with hands-on learning experiences and opportunities to explore and study the natural world. Without these facilities, students may miss out on valuable educational experiences and opportunities. One reason why students may be dissatisfied with the availability of scientific gardens and live education gardens is a lack of resources and funding dedicated to these facilities. In many cases, scientific gardens and live education gardens require significant investments in facilities, staff, and resources to establish and maintain, which may be difficult to secure in a time of limited funding and resources.

### **SUGGESTIONS:**

After analyzing the data in survey, it is suggested that the institutions should establish scientific gardens for effective teaching learning process. It is also suggested that separate and specialized gardens for Zoology and Botany should be established. Collaborative efforts should be made by teachers and students to acquire and maintain different species of plants and animals to get thorough knowledge related to the subject. Adequate arrangements like accommodation, feeding and security should be made well in advance before acquiring plants and animals. The assistance of animal specialist should also be taken while handling the animals. The emphasis should be on those animals which attract tourists also to generated revenue to make the garden self-financed and sustainable.

### **CONCLUSION:**

The study revealed that 76% respondents reported that they have Botanical gardens in their institutions whereas only 12.5% respondents reported they have Zoological Garden in their institution. It was found that 48.5% respondents were not satisfied on the availability of scientific gardens and live education gardens. The study concluded that the authorities that the existing scientific garden require upgradation in their institution through acquisition and introduction of more plants and animals' species into the garden and setup scientific gardens in those institutions which are devoid of it to ease teaching and learning process.

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### **REFERENCES:**

- [1].Donaldson, J. S. (2009). Botanic gardens science for conservation and global change. Trends in plant science, 14(11), 608-613.
- [2].Dunn, C. P. (2017). Biological and cultural diversity in the context of botanic garden conservation strategies. Plant diversity, 39(6), 396-401.
- [3].Maunder, M. N. (2001). A general framework for integrating the standardization of catch per unit of effort into stock assessment models. Canadian Journal of Fisheries and Aquatic Sciences, 58(4), 795-803.

- [4]. Mounce, R., Smith, P., & Brockington, S. (2017). Ex situ conservation of plant diversity in the world's botanic gardens. *Nature Plants*, 3(10), 795-802.
- [5]. Primack, R. B., & Miller-Rushing, A. J. (2009). The role of botanical gardens in climate change research. *New Phytologist*, 182(2), 303-313.
- [6]. Ren, H., & Duan, Z. Y. (2017). The theory and practice on construction of classic botanical garden.
- [7]. Waylen, K. (2006). Botanic gardens: using biodiversity to improve human wellbeing. *Medicinal Plant Conservation*, 12, 4-8.

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