



Delineating the Life of Professor Qudsia Tahseen: A Scientist of Nematology

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Abstract: Science is an activity progressing with human intellect and involvement. Within this activity, both men and women have important contributions. However, as an extension of patriarchal societies, men are prominent like many other fields and their contributions are mentioned more. Why women do not exist in the science world as they should is still controversial. Even women who have contributed to science have been neglected in science education as well for a long time. As far as the Muslim world is concerned, it made remarkable contributions to science. The Muslims introduced new methods of experiment, observation, and measurement. Yet today, the number of original research papers published by scientists in Muslim countries is 0.1% of the number published by scientists in Europe and the USA. The condition of Muslim Women Scientists is even grave. In many Muslim countries, gender-based discrimination, coupled with social and cultural barriers, limits access and participation of women in higher education. Some people attribute these barriers to the teachings of Islam but this is false. Therefore, highlighting the contribution and participation of Muslim Women Scientist is the main objective of this paper. The study is based on the life of a Muslim Women Scientist of Nematology working as a Professor in Aligarh Muslim University, Aligarh. The discussion reflects the Muslim women's struggles and hard ships. In addition, how it brought up an influential change in the world with her contributions in the field of science. Lastly, the paper recognizes the glories and elegance of Muslim women's collaborations side by side with men.

Keywords: Women, Education, Science, Technology, Islam, Muslim.

1. Introduction

Professor Qudsia Tahseen is a prominent figure in the microscopic realm, where minuscule organisms have significant impacts on the overall biosphere. A distinguished nematologist at Aligarh Muslim University in India, her exploration of the complex existence of nematodes unveils a mosaic of commitment, intelligence, and unyielding enthusiasm for scientific inquiry. Professor Qudsia Tahseen is a Zoology Professor at Aligarh Muslim University. She instructs students in the master's program on Animal Ecology and Nematology. She conducts research in the fields of taxonomy and developmental biology, specifically focusing on terrestrial and aquatic nematodes. She specializes in the study of Biodiversity, Taxonomy, Ecology, and developmental biology of soil and freshwater nematodes. She is a member of two prestigious national science academies in India.

2. Early Life and Education

Professor Qudsia is from Azamgarh district in Uttar Pradesh and was born on December 15, 1964. She received her education in Azamgarh. During that period, there was a prevailing societal expectation that girls would not actively pursue their goals. She explicitly stated, "In the location of my birth, it was not customary for girls to pursue professional occupations." They were expected to have a minimum education level of a Bachelor's degree in order to fulfill the role of competent homemakers. I was fortunate to have parents who were enlightened and regarded education as of utmost significance. She consistently ranked among the highest achieving pupils in school. She possessed a keen interest in the field of science. Recognizing her exceptional ability, her father enrolled her at Government Girl's College where she was awarded a scholarship based on her academic achievements. That marked the initial milestone in her scientific journey. Her passion for biology flourished at a young age, and her inquisitiveness about the complex mechanisms of life developed, prompting her to enroll in Aligarh Muslim University to obtain a Bachelor's degree in Zoology. Her remarkable aptitude was evident, resulting in her attainment of a Gold Medal in her Master's degree and sparking a keen interest in exploring the microscopic domain further. In addition, she obtained a Diploma in Statistics. She became a member of the research team in the Department of Zoology and successfully obtained her M.Phil degree in 1987, followed by her Ph.D degree in 1989.

Under the guidance of eminent nematologist Dr. S.H. Rasul, Tahseen's research progressed in a manner reminiscent of a captivating detective novel. Equipped with microscopes and precise dissection techniques, she methodically revealed the mysteries of nematode anatomy, identifying new species and updating existing ones with an unmatched level of study. Her study went beyond simple categorization; it encompassed a comprehensive approach, incorporating development, ecology, and functional variety in her taxonomy investigations.

3. Career and Appointment

Professor Qudsia Tahseen was appointed as a faculty member in 1989 at Women's College AMU, even before obtaining her PhD degree. In 1997, she was relocated to the Department of Zoology at Aligarh Muslim University, initially holding the position of Reader and then being promoted to Professor.

4. Research Area

She has conducted extensive research on the classification, variety, and biology of soil and aquatic nematodes, leading to the identification and documentation of multiple previously unknown species of nematodes found in India. Recently, her team made a significant finding by identifying an intermediate species that bridges the gap between two distinct genera of Nematodes. Due to the limited availability of information on these groups in India, she took on the difficult task of investigating Indian habitats and made important discoveries on the structure and appearance of nematodes that live freely using LM and SEM. She has extensively documented and refined numerous nematode species and has approached taxonomic identification from multiple angles, aiming to adopt a comprehensive methodology that integrates morphological, developmental, and ecological characteristics to enhance scientific rigor, rather than relying solely on superficial morphological analysis. Her clear and insightful evaluations of different species, supported by detailed Scanning Electron Microscopic information, were praised by her colleagues. Her extensive knowledge of taxonomy has been recognized worldwide, since she is now the only Asian to have received the ONTA Special Award for consistent achievement in Nematology.

Additionally, she has undertaken groundbreaking research in India on the evolution of nematodes, and her ecological discoveries have contributed to our knowledge of changes in the underground food chain. Her

skills and expertise have earned her invitations to laboratories in Europe and America through fellowships from prestigious organizations such as the Royal Society, Rothamsted International, INSA, DBT, TWAS, TWOWS, Chinese Academy of Sciences, European Union Consortium, and Australian Academy of Science. These invitations are for collaborative research projects or to provide teaching and guidance to post-graduate students in programs such as Erasmus Mundus and EUMAINE.

5. Awards and Honors

Professor Qudsia Tahseen, in 2005, became the first Asian to be honored with the ONTA (Organization of Nematologists of Tropical America) Special Award for her consistent outstanding contributions to the field of Nematology. She has received numerous prestigious fellowships in recognition of her achievements in the profession, including:

- Indian Academy of Sciences, Bangalore
- Royal Society, Rothamsted International, U.K.
- Indian National Science Academy, Department of Biotechnology, India
- Third world of Academy of Science, Italy
- Rothamsted International Fellow (2003)
- ONTA (Organization of Nematologists of Tropical America) Special Award (2005) for worldwide expertise in taxonomy and sustained excellence in Nematology (First Asian to be honored).
- INSA visiting Scientist (2001)
- DBT Overseas Fellow (2006)
- Visiting Scholar, TWAS-CAS (2007-08)
- Erasmus Mundus Scholar (2010-11)
- Work has been regarded as 'exemplary contribution' by an eminent German Nematologist (Sudhaus, 2011) in the latest taxonomic revision on Rhabditidae.
- Selected under INSA-DFG Bilateral Exchange Programme to visit Germany (2018)
- Funded by Max Planck Institute of Developmental Biology, Tübingen, Germany to carry out collaborative research for three months (May-Aug, 2018).

Her taxonomic expertise has been recognized due to the scarcity of taxonomists, leading to invitations to prestigious laboratories in Europe and America.

Her biography has been featured in two publications: "**Lilawati's Daughters - Top Hundred Women Scientists of India**" published by the Indian Academy of Sciences, and "**The Girl's Guide to a Life in Science**" published by Young Zubaan Publishers. The latter publication includes twenty-three selected biographies of esteemed Indian women scientists, to inspire and motivate young girls to pursue careers in science. The editors of this publication are Ram Ramaswamy, Rohini Godbole, and Mandakini Dubey, and it was published in 2011.

She was also featured in the "Noted Women Scientists of India - An Attempt at Enumeration" in Scilog (Germany), which was done in collaboration with nature.com and Life, an e-newsletter on Biological Sciences.

6. Books And Publications

Professor Qudsia Tahseen has published many research papers in leading international journals of the field viz., Nematology, Journal of Nematology, Hydrobiologia etc. She has 15 papers published in various Seminar and Conference proceedings. In total she has 94 peer-reviewed publications in ISI indexed journals of repute. Also, she was on the cover page of many journals.

- Ather Hussain and Qudsia Tahseen (2015) Nematodes as Environmental Indicators of Keoladeo National Park. ISBN 978-3-659-67319-1
- Rehmat Jehan and Qudsia Tahseen (2018) Diversity of Order Rhabditida in an Indian State ISBN 978-613-7-03270-1

Through her groundbreaking research on nematode development, she revealed hitherto unexplored facets of their life cycle, bridging significant knowledge gaps in our comprehension of these omnipresent organisms. She explored the complex process of metamorphosis, uncovering the cellular and molecular systems that control their several life stages.

However, Professor Qudsia's enthusiasm went beyond the boundaries of her research laboratory. As a professor, she cultivated in her students a deep admiration for the complex existence of nematodes. Her lectures were straightforward and interesting, enhanced by personal anecdotes and first-hand research experiences, which effectively brought even the most intricate subjects to life.

Her dedication to guiding and supporting young individuals extended beyond the confines of the educational setting. She enthusiastically motivated her students to engage in research, offering advice and cultivating an atmosphere of intellectual inquisitiveness. Many Ph.D. scholars attribute their successful careers in nematology to her mentoring and encouragement.

7. Conclusion

For, Professor Qudsia, the greatest reward lies not in awards or accolades, but in the profound satisfaction of uncovering the secrets of a forgotten world. Her journey continues, driven by an insatiable curiosity and a deep respect for the delicate balance of nature. One can only imagine what discoveries await, born from the tireless work of this relentless champion of the microscopic marvels.

Dr. Qudsia Tahseen's story is not just about nematodes; it is a testament to the power of unwavering curiosity, tireless dedication, and a relentless pursuit of knowledge. In the vast universe of the infinitely small, she has etched her name as a pioneer, a mentor, and a passionate champion of life's unseen wonders. Despite all the responsibilities towards her family, her science career has not taken a back seat. The reason remains - she loves to do science. The question was asked to her that if she had to do it all over again what changes she might want to make. She replied: "if I had to do it all over again I would make the same choices, with the hope that the future would have more opportunities and better infrastructure for women in research".

8. References

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