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Review Article on Prominent Women Botanists and Environment Conservationists from India

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Abstract: *In this review article we intend to investigate about prominent women scientists and environment conservationist from our country. Dr. Janaki Ammal E.K. was the first Indian woman who dedicated her entire life to botanical explorations in plant breeding, cytogenetics and phytogeography. Dr. Shipra Guha-Mukherjee; an Indian botanist who was behind the discovery of the technique of production of haploid plants through anther culture. Dr. Archana Sharma was another prominent scientist specialized in Cytogenetics, Human Genetics and Environmental Mutagenesis. Vidyavati was the botanists who explored the field of Hydrobiology, Phycology, Cytology and Ultrastructure Ecology. Rahibai Soma Popere is an Indian farmer and conservationist. She helps other farmers return to native varieties of crops, preparing hyacinth beans for self-help groups. She is popularly known as "Seed Mother". There are so many Indian women who conserve nature, animals and working on environmental issues in India. This article explores some of them so as to know their valuable work towards society and nature.*

Keywords: Indian Botanist, Conservationist, Hydrobiology, Phytogeography

I. INTRODUCTION

Women in India are achieving most important and prestigious positions in various research and academic institutes in the country as well as foreign. There were some days in the past when women were not active in the field of science and technology, but in spite of difficulties women have now etched their names in the history. From winning Noble prize to heading to NASA women are now a days involved in many important scientific activities. In India and world science and technology remains a male dominated field. But women scientists like Ritu Karidhal, Chandrima Saha and others have taken prestigious roles roles in organisations like ISRO and INSA, initiated new projects with far-reaching results. Women scientists whose scientific endeavours have broadened the horizons of science on earth and beyond. In this article we intend to explore valuable work of some of the notable Botanist and environment conservationist from our country.

II. DISCUSSION

Dr. Janaki Ammal Edavalath Kakkat : born on 4th November 1897 was an Indian botanist who worked on Plant Breeding, Cytogenetics and Phytogeography (C.V, Subramanyan). Janaki was the first woman to obtain a Ph.D. in Botany in the U.S. in 1931 and remains one of the few Asian women to be conferred a D.Sc. (honoris causa) by the University of Michigan (scribd). Her most important work was on studies on sugarcane and the eggplant . She also worked on the Cytogenetics of a range of plants and co-authored the *Chromosome Atlas of Cultivated Plants* (1945) with C.D. Darlington. She also studied Ethnobotany and plants of medicinal and economic value from the rain forests of Kerala, India. She was awarded a Padma Shri by the Indian Government in 1977. In 1999 two prestigious awards were instituted in her name.i.e. EK Janaki Ammal National Award on Plant Taxonomy and EK Janaki Ammal National Award on Animal Taxonomy. There is herbarium which contains over 25000 plant species in Jammutawi named after Janaki Ammal. The Royal Horticultural Society, Wisley, U.K.named a variety of *Magnolia* she created as *Magnolia Kobus* 'Janaki Ammal' to honour her work in Plant Breeding. In 2018, to celebrate her remarkable career and contribution to plant science, two rose breeders, Girija and Viru Viraraghavan bred a new rose variety which they named **E.K. Janaki Ammal**. (artsandculture.google.com).

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Shipra Guha-Mukherjee :- born on June 13, 1938 in Kolkata. Her prominent work was on Tissue culture, Plant Molecular Biology, Biotechnology and Cell Molecular Biology. She was the scientist who was behind the discovery of the technique of production of haploid plants through anther culture. She was fascinated by the work of Jagdish Chandra Bose during her school days. She completed her schooling in Bombay and Delhi and joined Jawaharlal Nehru University, Delhi where she did her B.Sc in Botany (Hons) in 1954 and M.Sc. She remained in Jawaharlal Nehru University, for more than 30 years, first as student and then as professor and researcher. She then also done her Ph.D under the guidance of Prof. B. M. Johri on the tissue culture of an onion (*Allium cepa*) in 1963. Shipra Guha-Mukherjee has received many awards and recognitions during her research career like the Senior National Bio-scientist Award, the Om Prakash Bhasin Foundation Award in Biotechnology and the Kanishka Award from the Lion's Club. She was elected as a Fellow of the Indian Academy of Science, Bangalore and also at the National Academy of Science, Allahabad. She died on 15 September 2007 due to brain cancer after completing the piece for Lilavati's Daughters.

Photo plate 1 A. Dr. Janaki Ammal (Wikimedia Commons) **B. Shipra Guha Mukherji** (artsandculture.google.com) **C. Prof. Vidyavati** (Facebook.com) **D. Rahibai Popere (**Facebook.com)

Vidyavati: born on 15 September 1939. She belongs to Goud community. In 1959, she passed her graduation, B.Sc. with Botany. She did post-graduation in Botany with Hydrobiology from Osmania University. She was awarded Ph.D. for her thesis titled 'Experimental and Cytological Studies on Certain Desmids' from Osmania University in the year 1967 under the guidance of Prof. Jafar Nizam and Prof. M.R. Saxena. Her area of specialization is Hydrobiology, Phycology, Cytology and Ultrastructure Ecology.

She is the president of Phycological Society of India (phykosindia)on the occasion of "International Women's Day" celebrations on 8 March 2017, she was honored by Telangana State Government as Eminent Women. Her research experience is of 36 years. She contributed more than 350 papers in National and International Journals, guided 25 Ph.D. students and two M. Phil student and published ten books. On 22 September 2007, she was given Lifetime Achievement Award in Chennai. She was honored with Best Women Scientist award in 2000 at Indian Institute of Chemical Technology, Hyderabad, Telangana and was awarded Gold Medal by Plant Science Association, Uttar Pradesh (Wikipedia)

Rahibai Soma Popere born in 1964, is an Indian farmer and traditional seed conservationist. She helps other farmers return to native varieties of crops, preparing hyacinth beans for self-help groups. She is among three Indians on

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the BBC list of "100 Women 2018" (Deo, Ashlesha2019). Rahibai Soma Popere farm land, where she grows 17 different crops. She was visited by the BAIF Development Research Foundation in 2017, who found the gardens she supported had enough produce to meet the dietary requirements of a family for a whole year.

She developed a series of hyacinth beans for self-help groups and families in nearby villages.[4] She was described by Raghunath Mashelkar, the erstwhile Director General of the Council of Scientific and Industrial Research as 'Seed Mother'(The better India). She is an active member of the self-help group Kalsubai Parisar Biyanee Savardhan Samiti translation: Committee for seed conservation in the Kalsubai region). She has created her own methods to harvest water on farms; turning wasteland into space she can use productively. She trains farmers and students on ways to select seeds, keep fertile soils and manage pests.(Wikipedia.org) She is skilled in four-step paddy cultivation.[7] She has learned to rear poultry in her yard with the support of the Maharashtra Institute of Technology Transfer for Rural Areas (MITTRA).

Archana Sharma: born on 16 February 1932 in Pune to a family of academicians. She has done her B.Sc. from Bikaner and pursued M.Sc. in the Department of Botany (University of Calcutta). In 1955, Sharma completed her Ph.D. and D.Sc. (1960), specializing in Cytogenetics, Human Genetics and Environmental Mutagenesis. She was the second woman to have been awarded a D.Sc. by the Calcutta. In 1967. She joined the University of Calcutta as faculty, later becoming a Professor of Genetics (1972) in the Centre of Advanced Studies in Cell and Chromosome Research at the same university. During her academic career, Dr. Archana Sharma supervised over 70 Ph.D students in the areas of Cytogenetics, Human Genetics, and Environmental Mutagenesis (Wikipedia). Among her notable findings are topics related to speciation in vegetatively reproducing plants, induction of cell division in adult nuclei, the cause of polyteny in differentiated tissues in plants, cytotaxonomy of flowering plants, and the effect of arsenic in water. Her research and findings on chromosomal study on flowering plants led to a new set of perceptions on their classification (Shah, Aditi 2018). Sharma also worked extensively in human genetics, specifically genetic polymorphism in normal human populations. (www.insaindia.res.in)

Sharma was a member of organizations such as the University Grants Commission, National Commission for Women, Science and Engineering Research Council, Department of Environment, Overseas Scientific Advisory Committee, among various others. Sharma also served as Chairperson on the Task Force on Integrated Manpower Development of the Department of Biotechnology (Wikipedia.org).

III. CONCLUSION

In spite of difficulties regarding career opportunities to women in India there are prominent women botanists and conservationists who marked their work in history. They have achieved everything in their respective careers. They have dedicated their entire life to scientific research. They have worked for the betterment of science and technology in our country. Future generations must be aware about such great personalities. So that students and budding researchers will get inspiration to work towards environment to nurture our nature.

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