

PROFESSOR SHRISH CHANDRA AGARWALA

(1919-95)

On Monday, the July 24, 1995 at about 7.15 AM, Professor Shrish Chandra Agarwala FNA, former Head of the Department of Botany, Lucknow University and an eminent Plant Physiologist of National and International repute, had his sudden and extremely sad demise after a brilliant scientific academic career of nearly 60 years. Prof. Agarwala was born on May 11, 1919 at Lucknow, U.P. He was the second of his illustrious parents, late Shri Krishna Chandra and late Smt. Bhagwan Devi. After his early schooling at the Govt. Jubilee College, Lucknow, he graduated in 1938 from Canning College, Lucknow University. As an illustrious pupil of Revered Professors Birbal Sahni FRS and S.N. Das Gupta FNA, he did his M.Sc. in Botany from Lucknow University in 1940. Under the able guidance of Prof. S.N. Das Gupta he obtained his first Ph.D. in Botany from Lucknow University in 1947 on his dissertation entitled "**Chemical Studies in the Physiology of Mangoes**". For tackling the problem of 'Mango Necrosis', Prof. Das Gupta sent him to the Long Ashton Research Station affiliated to the University of Bristol, U.K. in 1949 for undertaking specialised training in Plant Nutrition under the eminent Plant-Nutrition Scientist of International repute Dr. E.J. Hewitt, now FRS and under whose guidance he obtained his second Ph.D. of the University of Bristol, U.K. in 1952 on his dissertation entitled "**Molybdenum Nutrition in Cauliflower**".

The contributions Professor Agarwala made between 1950 and 1952 are summarised in a book entitled 'Science and Fruit', edited by Prof. T. Wallace, FRS and R.W. Marsh, as : Perhaps the most important recent achievement in this work has been the production, mainly by Agarwala, of clear evidence of essential roles of Mo in cauliflower other than that involved in nitrate reduction. Thus the conditions necessary for production of 'whiptail' effects have been determined. The effects, together with significant depression in growth, have been produced with nitrogen supplied as nitrate, nitrite, ammonium compounds, urea and glutamic acid or as a combination of these. Biochemical studies on material grown in these and other experiments have shown that



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Mo deficiency causes a marked decrease in ascorbic acid, sugars and glutamic acid in leaves irrespective of nitrogen source. Reducing activity of leaf tissues, as shown by triphenyl-tetrazolium chloride test was found to depend on molybdenum status and its distribution, again independently of nitrogen source. Chlorophyll production is not affected except in the presence of nitrate".

After his return to India, Prof. Agarwala established a school of Plant-Nutrition at the Botany Department, Lucknow University in 1955 and got actively engaged in studying various facets of Plant-Nutrition. His research activity in India mainly centred around Plant-nutritional aspects related to, (i) Production of deficiency and toxicity symptoms and working out nutritional requirement of essential nutrient elements in different genotypes of agriculturally and horticulturally important crop plants and economic fruit trees, (ii) Discovering the still obscure physiological roles of essential nutrient elements, specially for various facets of vegetative and reproductive growth of plants, (iii) Effect of nutrient interactions on plant growth, metabolism and productivity specially involving pollutant elements, (iv) Fungal mineral nutrition and (v) Soil fertility and Plant-Soil relationship, particularly of nutrient-stressed and

other problem soils including arid saline-sodic and calcareous soils of Uttar Pradesh. In this, he received active cooperation and support from his research students and later colleagues in the department- Profs. C.P. Sharma, N.K. Mehrotra, C. Chatterjee, S.S. Bisht, P.N. Sharma and S.C. Mehrotra and Drs. B.D. Nautiyal, P.K. Tandon and Mrs. N. Nautiyal and other students.

Under his able guidance, more than a dozen students obtained their Ph.D. degrees in Botany. Some of his students have occupied/ are occupying illustrious academic chairs at the Departments of Botany in the Universities of Lucknow (Profs. C.P. Sharma and N.K. Mehrotra) and J & K Srinagar (Prof. S. Farooq). He, alongwith his research students and colleagues, had published more than 150 research papers in various reputed National and International Scientific Journals. In collaboration with Prof. C.P. Sharma, he published two landmark books related to Plant nutrition entitled 'Recognising Micronutrient Disorders of Crop Plants on the Basis of Visible Symptoms and Plant Analysis' and 'Micronutrients in Agriculture'.

Professor Agarwala served the Department of Botany, Lucknow University with great distinction from 1946 to 1979 and thereafter upto 1988 as Senior Plant Physiologist in the Lucknow University Centre of the ICAR All India Coordinated Project on Micro-Secondary and Pollutant Elements in Soils and Plants. Even after his superannuation from the University service and of the ICAR project, Prof. Agarwala maintained deep interest in researches on Plant- Nutrition and Plant-Soil Relationship being carried out in the department. In fact, till the last working day of his eventful and illustrious life, he spent long hours in the department discussing and providing helpful suggestions and his mature guidance for furthering research progress in Plant-Nutrition and Plant-Soil Relationships, the areas in which he was deeply involved, which he whole heartedly cherished, nurtured and for which he devoted all his life. It was mainly his and his research team's effort that made the Department known internationally in the field of Plant-Nutrition. During the pivotal tenure of his headship of the department (1964-1979), the department was selected as the UGC Department of Special Assistance in 1978, a status which it continues to enjoy till date. Professor Agarwala's inter-

est was not confined only to Plant Nutrition. It was only through his efforts and encouragement that the department diversified its interest in different newer frontline areas viz. Cytogenetics and Breeding, Virology, Bryology, Lichenology, Mycology and Plant Pathology and Tissue Culture.

For his significant contributions to Plant-Nutrition and Plant-Soil Relationship, Professor Agarwala was elected Fellow of the Indian National Science Academy and honoured with the Prestigious Hari Om Ashram Award of the ICAR and the Birbal Sahni Gold Medal of the Indian Botanical Society. He was closely associated with several learned societies. Besides Fellowships of several Scientific/Academic Societies, he was elected Presidents of the Indian Botanical Society, the Indian Society of Plant Physiology, the Indian Society of Plant Physiology and Biochemistry and the Palaeobotanical Society of India. At the fag end of his illustrious life he was chosen to be honoured as The Governor of the prestigious New-York Academy of Sciences, U.S.A. of which he was an active member. Even after his sad death, several international organisations selected him for the nominations to their various list of coveted awards/honours viz., the American Bibliographical Institute (ABI), U.S.A. for the Institute's Most Admired Men and Women of the Year for 1994-95 and ABI's Gold Record of Achievements for 1995; the International Biographical Centre (IBC) Cambridge, U.K. for its The International Who's Who of Intellectuals; The Order of International Fellowship, 20th Century Award for Achievement, Directors General's Honour's List, World Who's Who Hall of Fame and International Man of the Year 1995-96.

In Professor Agarwala's death, there has been a great void in the Botanical fraternity of the country and the world as a whole, a void, which is difficult to fill. The department shall be ever grateful to Professor Agarwala and make every possible effort to keep up the high traditions and aspirations set by him.

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