



The author (first from right) with V Subrahmanyam (second from right), C Subramanian (fourth from right, who, as the Minister of Agriculture played a crucial role in starting the Green Revolution in India) and researchers at CFTRI who moved there from IISc



Photo courtesy: Arun Chandrashekar

My Grandfather at IISc

V Subrahmanyam made important contributions to wastewater treatment, food science and technology in pre- and post-independent India, highlighted in recollections below by his grandson, Arun Chandrashekar, who also chose to become a biochemist.

When I was five, I had an opportunity to stay with my grandfather, V Subrahmanyam, for three years in Mysore, where he was working at the Central Food Technological Research Institute (CFTRI). I have several memories of him from this phase of my life: reading detective novels during long train journeys, taking the family to the movies on Sundays, nursing his brandy in the evenings. At that time, he was a larger-than-life figure for me, but my relationship with him slowly evolved into one where I felt I could discuss anything with him.

Years later, when I was in my teens and would visit him in Thiruvapur in Tamil Nadu, we mostly discussed science: What is the role of salt in pickles? Why does rice need so much water to grow? Why can't we use lunar light for electricity? These interactions kindled in me a lifelong passion for science and its methods, and I too became a biochemist like my illustrious grandfather.

Subrahmanyan was born in 1902 in the town of Sirgazhi in the Kaveri delta in Tamil Nadu to Bagirathi Ammal and MR Vaidyanathan Iyer. The family struggled financially because his father, a Revenue Inspector, was reckless with money. According to family legend, Bagirathi once fell in front of the District Collector's horse and asked the Collector to support her son's education, who, according to her, was "brilliant" in his studies. After an investigation, the Collector found Bagirathi's claim to be true and gave Subrahmanyan a scholarship. The boy did not disappoint – he finished school and went on to do his intermediate and BA degrees from St Joseph's College in Tiruchirapally (he passed with distinction and scored the highest in Chemistry in all of Madras Presidency).

Subrahmanyan, now married to Saraswathi Ammal, moved to the Department of Biochemistry at IISc, which had been established in 1921. He began his scientific career working on fermentation studies with Gilbert Fowler. In 1925, on a JN Tata Endowment scholarship, he went to the Rothamsted Experimental Station in the UK, among the most reputed agricultural research centres in the world, for his DSc, which was on the nutritional content of crops in waterlogged soils.

When Subrahmanyan came back to IISc in 1927, he was appointed as a lecturer in his old Department, and he became the head in 1930, still shy of his 28th birthday. He and his team continued his work on crops growing in waterlogged conditions, initiated research on the use of sewage and human waste in crop production, and carried Fowler's work on the activated sludge process forward. During this phase, he also wrote a paper on parboiling of rice that foreshadowed his later interest in food science.

CR Krishna Murti, Subrahmanyan's student, wrote a memoir published in the mid-1980s by the Indian National Academy of Sciences (INSA) about his mentor, in which he reveals the importance of Subrahmanyan's work in the 1920s and 1930s on revitalising agricultural soil. "These problems have today assumed vital significance to us with mounting evidence for what appears to be an irreversible degradation of our soils by intensive cultivation and indiscriminate application of chemical fertilizers," he writes. He also

claims that Subrahmanyan's work in composting and recycling of nutrients was dismissed by many as dreams of "Gandhian utopians".

Subrahmanyan went to the UK again in 1939 on a two-year sabbatical. When he returned, the Second World War was in full swing and the priorities of the Department suddenly changed. IISc was asked to conduct applied research in several areas, including biochemistry, to help the war effort. "Transforming a laboratory designed basically for academic research into one which could tackle problems of production and quality control was itself a challenge," writes Murti. Several new products were synthesised or processed: pituitary glands were obtained from slaughterhouses to make powdered pituitary. Cheese was made from calf stomach rennet. Another milk-clotting enzyme to make cheese was obtained from the sap of fig trees. Projects on the production of adrenalin, insulin and thyroxin were undertaken. Enzymes such as pancreatin, trypsin and pepsin were prepared from animal glands.

It was during this period that another set of projects that Subrahmanyan was involved in changed the trajectory of his research career: the use of soybean as food, and for grain preservation, and the safety of hydrogenated oils. It was also the time of the Bengal famine when millions of people died from starvation. According to Murti, it became clear to Subrahmanyan that it was not sufficient to just increase crop production, scientists also had to find ways to improve the nutritional quality of food. This realisation triggered his interest in food processing and kickstarted the second phase of his scientific life.

In 1948, immediately after India's independence, Subrahmanyan was chosen as the Planning Officer of the proposed CFTRI in Mysore by the Council of Scientific and Industrial Research (CSIR). After two years of groundwork, including acquiring the Cheluvamba Palace belonging to Mysore's royal family, CFTRI was established, and Subrahmanyan was appointed as its Director. He retired after 13 eventful years as head of the Institute. But his work did not stop.

Subrahmanyan then spent three years in the Philippines working for



Photo courtesy: Arun Chandrashekar

the Food and Agricultural Organisation (FAO) of the UN (I remember reading a newspaper article based on his work with the headline “Painted Coconuts Do Not Rot!”). After he moved back, he became Emeritus Professor of CSIR and advised the Indian government on its malnutrition programme. He was then invited by the Chairman of the Thanjavur Rice Mills Federation, Vadapathi Mangalam Mudaliar, to set up a lab at their mill at Thiruvarur in 1967. The lab eventually evolved into the Paddy Processing Research Centre in 1972 with funding from the Tamil Nadu Government and the Food Corporation of India.

Subrahmanyam died in harness in 1979.

V Subrahmanyam receiving the Padma Shri in 1960 from President Rajendra Prasad