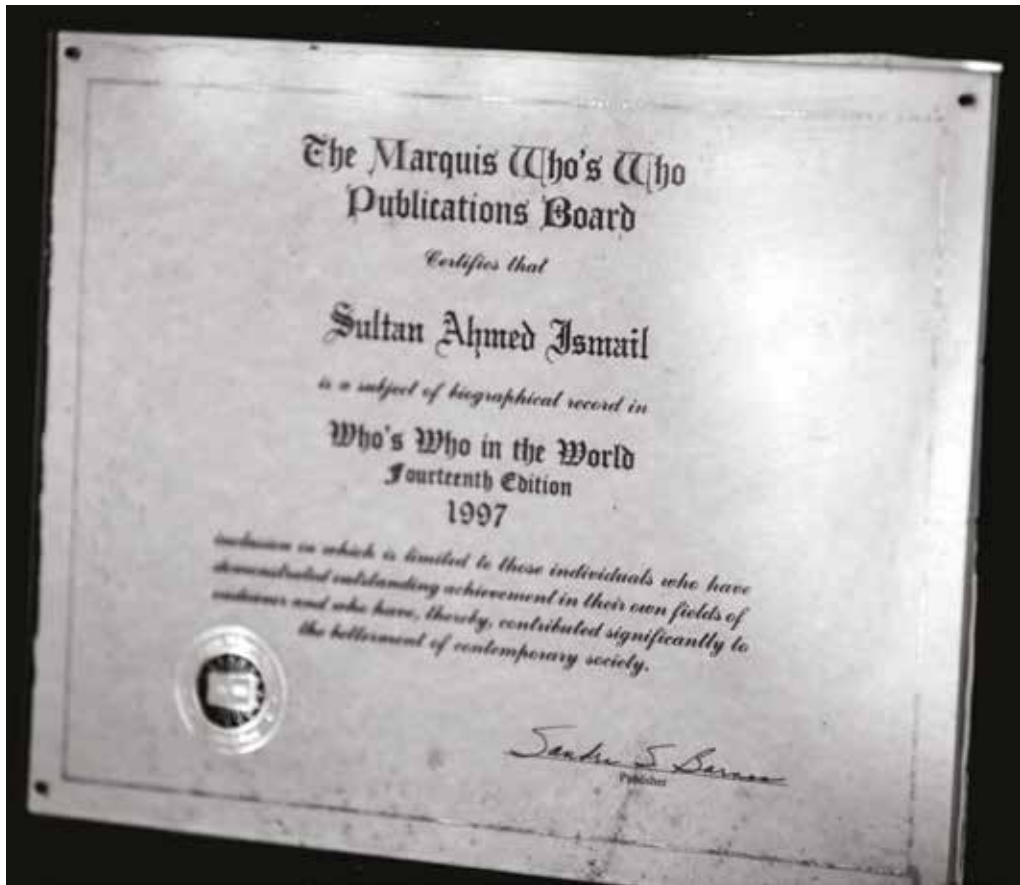




*Down to earth biologist*

DR. SULTAN ISMAIL



Serendipity is the word that comes to mind when hearing about Dr. Sultan Ismail's professional journey. But full credit to him, as he has seized these opportunities with both hands. If not, this world would have lost out on his expertise and knowledge of soil biology, vermicomposting and sustainability.

Dr. Ismail is an expert and pioneer on earthworms and has been in the field for almost 40 years. He is also an environmentalist and believes that biodiversity starts in the garden, and not necessarily out in the wild.

## EDUCATION

Born in Pondicherry, in 1951 to a barrister,

Mr. Mohammed Ismail, he began his schooling at St. Joseph of Cluny. Losing his father when he was very young, put his family in difficult circumstances. He was determined to better his lot, through education. In 1968, he came to Madras, and joined New College, to study science, and complete his PUC in 1969.

Though he was told that he had been selected for a professional course, his name did not appear on the list, so he decided to pursue a graduation program in Chemistry. But because of Professor Nandakumar, he ended up taking Zoology instead and graduated with a B.Sc. in Zoology in 1972. Serendipity!

As luck would have it, just as Dr. Ismail graduated, New College got a Master's program, which he joined with his professor's recommendation, and completed it in 1974.

As he was looking for employment after, he was offered a temporary position as a demonstrator in the Zoology department. He took it up, hoping to get an extension. As luck would have it, he went on to become a lecturer on a permanent basis, in 1975.

In 1978, he completed his M.Phil. in Marine Biology, under the newly introduced Faculty Improvement Program, at the Madras University.

In 1979, he wanted to do a Ph.D., but the department head did not support him. When he approached his M.Phil. guide, he said he would recommend him if he would come as a full time scholar. As Dr. Ismail was the sole breadwinner in his family, he could not commit to a fulltime Ph.D. study, and so he left.

He went back to New College, where he assisted as a guide to his Professor's students. One of the students whom he had guided, asked Dr. Ismail to help him with his research. Somewhere in the university corridors, he happened to see a paper, from the Ethological Society of India, inviting papers for a National seminar in January, 1980. He didn't think much about it at the time. However, when he realised that the student who had asked for help with research didn't have any specific field in mind, Dr. Ismail remembered the paper, and told him about the Ethological Societies' invitation. Ethology meant research on live animals. So Dr. Ismail asked a passing lab assistant what live animals they had in the lab. "Earthworms", he replied. Serendipity! Dr. Ismail pioneered the study on earthworms in Tamil Nadu!



Their first paper was presented in January 1980 for the Ethological Society. Then in 1981 they presented a paper to the Indian Society for Soil Biology Ecology.

Professor G.J. Fanwell of Madras Christian College happened to have attended both presentations. Prof. Fanwell pointed out that he'd only get recognition if he had a Ph.D. He then said "If you have no objection, you can register with me"! Serendipity!

The very next day, at Madras Christian College, he signed the form and enrolled for the program. Unfortunately Prof. Fanwell passed away in 1982. He then got transferred to Professor Murthy of Loyola College, who took him up immediately, and in the third year, they submitted their thesis and he received his Ph.D.

Dr. Ismail has since then published more papers, received international attention, did a lot of work with Tata Institute of Fundamental Research, Government agencies, and in 1983, he did his post-doctoral research with Lancaster University.

He furthered his education and went for a D.Sc. A Doctorate in Science, from Madras University, under Prof. T Subramaniam, a D.Sc., who told him that he would personally guide Dr. Ismail, as there was no one else who could guide



'Vermitech' was a term that Dr. Ismail coined in the process. This was the first term of its kind, included by FAO and the UN. They prepared a lot of leaflets, circulating them, popularising home composting. The only request he made while sending out pamphlets was that people send back the 1 rupee postal stamp, whenever time permitted. However, only one man did - a prisoner in Cuddalore jail, sent back five postage stamps! Slowly they moved into digital media, making videos.

Soon after the introduction of CDs, there was a debate at the MS Swaminathan Research Foundation, on organic farming. Dr. Ismail was speaking 'for', alongside Dr. A.P.J. Abdul Kalam. He presented Dr. Kalam a CD. A little less than a month later, he received a letter from the Principal Advisor for the President of India. They told him that they were taking multiple copies and sending it to all agriculture universities!

One of his learnings during this process, was that one must always keep their mind open. Right at the onset, they had conducted an experiment in behaviour to identify if earthworms responded to colour. They set up an apparatus with two alternate sources of light. They found that 0.2 volts

of electricity stimulated the worms to go into the apparatus. Unfortunately Dr. Ismail accidentally administered 2 volts, instead of 0.2 volts! When the worm went into the tunnel, the whole pipe was glowing green! They had discovered bioluminescence in the species!

### ON COMPOSTING

When talking about the basics of composting, he says we need to ensure that the organic matter decomposes, without rotting. To make it decompose, one can use cow dung diluted in water, or sour curd, or mix any overripe fruit with an equal quantity of jaggery, and put it in a plastic bottle with double the quantity of water and allow it to ferment, frequently letting out the gas that builds up. (Plastic bottle, not glass, as glass breaks). In 15-20 days, there will be an alcoholic smell, and it is ready to use.

You can use any kind of container to compost. The larger the container, the longer it takes, so everything needs to be cut up into small pieces.

However, composting is not possible in 24 hours, as organic matter needs enough time to decompose, ferment and become compost. Anything else is merely reducing volume. He says that the Government should insist



him in this field. He submitted his thesis, and got a D.Sc in the first attempt, in 2001.

### HIS PIONEERING RESEARCH

No one had standardised the process of local culture for worms. So Dr. Ismail conceptualised a model, by thinking of the layers of soil in the Earth, and then replicating them in a crate. Initially, the worms started multiplying. But then they started dying and rotting, making the soil putrid and anaerobic. He then put holes in the base, to drain the excess water. Success! This was standardised and he patented it in 1991, but did not intend to keep this knowledge to himself. Prof. Ananthkrishnan convinced him to publish the process, in The Hindu. They published it in October 1992. By November that year, it was in Panni Cheydi Malar in Tamil, and it was also published across India in the vernaculars.

In those days, there were only 4 centres working on Earthworm research. Zoological Survey of India, Sambalpur University, Bangalore University and this one, which was the only one that gave the research public access, popularising vermicomposting.

on segregation at source. Everyone can compost. Biodegradable waste should not come out of any house.

### FEEDBACK AND RECOGNITION

Farmers, self-help groups, women, households, a lot of people are now composting. His students have come across places in rural Gujarat, where people are vermicomposting, saying that they learnt it from Dr. Ismail in Chennai!

Although he is very self effacing and does not like to boast of his awards, he has received many, and is considered the foremost expert in the field. However he claims that the best reward he has received was near Belgaum, at Sangili, when an old man in a village, was so impressed with what he said, and the way he had spoken to the farmers, that he gave him one of the only two folding charkas he had left with him, from his time working with Gandhiji!

For Dr. Ismail, the reach was initially more quantitative than qualitative. As time went by, the Tamil Nadu Government began to include him in their textbooks. In fact he is now in the syllabus committee. He feels that the revised Samacheer textbooks from the Tamil Nadu Government are now among the best Government text books in India.

*Kaveri Bharath*