

MY DESTINY MY PROFESSION

You may not believe it now, but will accept that my professional life has been driven by destiny when you finish reading this autobiography.



Born in a rice growing family and in a typical deltaic rice area and becoming a rice scientist was never planned and dreamt. Starting a career as a soil surveyor in 1969 and ending (?) up as a SRI (System of Rice Intensification) scientist is a forty year journey driven by turning points directing me to the stage at which I am writing this autobiography.

I was born in 1948 in a village, Thiruppayathangudi (Thiruppayatroot in the early days) located in the tail end area of river Cauvery in Tamil Nadu. In Tamil culture there is an adage that you should not live in a place where there is no temple. For such a small village there was a big Siva temple at the centre as is the case with every other temple towns. The name of the reigning deity Thiruppayathanadhar (Thiruppayatrootanar) and the village name has a background story¹.

I was named after the God 'Thiyagaraja', reigning deity of the temple in Thiruvarur, a town 14 km south west of my village. In our culture, many people carry the names of gods / goddesses that we worship. Thiruvarur, incidentally, is a historical place² whose historical foot prints go back to 2500 BC.

My father, Shri.T.D. Muthukumarasamy, who was studying 10th class (age 15) had to take up the responsibility of the family after the sudden demise of his father Shri. Dhandapani and became a rice farmer for sixty years until the age of 93, when he lost his eyesight and had to leave the village and stay with me. The village was a heaven for him and anyone coming to the village cannot leave it without tasting the food my mother was cooking. He was also the village Munsif for some time. His daily routine included 2 hours of pooja at home and visiting the rice fields.

Our house was just in front of the temple and there is a huge banyan tree at the back. At the border of our backyard the river 'Valappar' a small river branch of the Cauvery system runs and used to be our bathing / swimming place whenever there was water (monsoon season) and in summer used to be our play area.

The entire village probably belonged to our undivided forefather family. Partition saw three big families (*Pannais*) evolving: *Keela Pannai* (eastern farm), *Periya Pannai* (big farm) and *Kovil Pannai* (temple farm). My father broke out from Periya Pannai and commenced '*Chinna Pannai*' (small farm). All our families controlled the agriculture and lived in the southern side of the temple. The managerial and artisan group lived in all the other three sides. The labourers lived in a separate area.

I was the fourth son to my parents (five sons and two daughters). It is an irony that I still remember the childhood time when the temple priest initiated me into education by holding my right index finger and writing the Tamil alphabet 'ah' on paddy grains spread over a plate. (This is a custom many parts of India). I studied in the village school (a small thatched roof building with mud walls) up to third class. By that time, father had set up a house in Thiruvarur for all the children to stay and study there with our grandmother who used to cook for all of us. My education shifted to Thiruvarur

from the 4th class to 6th class. We had a cow for milk, and taking it for bath in a nearby canal was one of the hobbies for us. Bullock cart was the mode of transport for us to travel back and forth to the village.

We had a herd of about 40 animals (cows, buffaloes and bullocks). Farmyard manure was heaped at the backyard and in summer it was transported to the rice fields using the bullock cart. Riding the bullock cart in summer was another hobby.

We had a rice-rice-pulse cropping system depending upon water availability in the canal. Father used to commence the first rice season with a ceremonial nursery sowing at the northeast corner (considered auspicious) in a field close to the house. I remember keeping watch on harvested produce drying in the thrashing floor during holidays. The harvest of first crop facilitated celebrating Deepavali festival in a grand manner when all the family members (even after our marriage) used to assemble without fail. The 'Pongal festival' in January is also celebrated in a grand manner. One day is for thanksgiving to Sun God and the next day is thanksgiving to all the animals.

When my elder brothers moved for college education we shifted to Chidambaram and I spent my time there from 7th standard until graduation. Grandmother continued to cook for all of us. Chidambaram was also a historic place³ with the famous Nataraja temple at the centre of the town. During examination time I used to study in a calm place in the temple.

My father was keen that I should become a medical doctor. Just before the results of PUC examination was out, he had managed to ensure (with the help of one of our relative who was in Government service) a seat in MBBS course in Madras (now Chennai). My destiny was different. I missed scoring the minimum mark in biology (my favourite subject!) for admission to MBBS course and could not apply even. With the help of my maternal uncle, who was an auditor at that time in Annamalai University, father put me in B.Sc.(Agriculture) course. I was a small boy at that time and I remember the Dean of the Agriculture College, Dr.G. Rangaswami, (who later became of the Vice Chancellor of Tamil Nadu Agricultural University that was established in 1971, where I started working from 1974) asking me during the interview for admission, how will I handle the huge 'Kangeyam' bullocks for ploughing practice.

I wanted to be with my father doing agriculture in the village after my graduation in agriculture but my father did not want that. In those days all agricultural graduates were offered Govt. job in the state department of agriculture in 1969. At that time the agricultural education was also under the department. My relative who was in the Government as IAS officer helped me to get posted in the Chemistry section (it was a much sought after position) of the department. I joined in the Soil Survey and Landuse Organization on 23rd October 1969 in Coimbatore as Deputy Agricultural Officer. This unit, though under the control of the Additional Director of Agriculture & Dean of Agricultural College & Research Institute, was enjoying independent administration in the campus. I was undergoing a sort of training in soil survey and laboratory work initially.

Accidentally I saw an advertisement calling for Agricultural Extension Officers in a nationalized bank and applied for it while many others did not think it was a good opportunity. I took a written test in Bangalore. I would have become a banker had the letter from the bank calling for an interview for appointment (I was later told only

four people from Tamil Nadu were selected after the written test) reached me properly in time (I was on a tour in Virudhunagar area and the redirected letter reached me on the date of interview) so I could not make it. What a miss?

I began working as a soil surveyor doing reconnaissance and detailed soil surveys in different parts of Tamil Nadu. It was a strenuous job doing the survey work traveling in a jeep and mapping soil boundaries but I enjoyed the work as studying the soil profiles was very fascinating to me. I was deputed for a six-month training in soil survey at Soil Survey Training Centre (ICAR) at Nagpur in 1973.

I would have remained as a graduate only had I not opted to move to the newly formed Tamil Nadu Agricultural University in 1974. This was yet another turning point in my career. I joined as a Research Assistant in the Department of Soil Science and Agricultural Chemistry of the Agricultural College & Research Institute. I worked in the ICAR scheme on soil physical conditions which gave me chance to continue studying soil profiles. I did PG (1977) and Ph.D (1985) as part time. In the meanwhile I underwent a one year training course on Aerial Photo-interpretation at Indian Photo-interpretation Institute (now Indian Remote Sensing Institute) at Dehradun.

My passion to study soil profiles continued in my dissertation works for both M.Sc.(Ag) and Ph.D degrees. I studied the soils in Coimbatore district of Tamil Nadu with detailed soil analysis. The interest I developed in the black soils while doing the soil survey work lead to take up the work on genesis of these soils in Tamil Nadu for my Ph.D. Years later, I had the opportunity of meeting Dr. Hari Eswaran of USDA (he was visiting Tamil Nadu), an authority on soil taxonomy and showing my dissertation work on black soils.

While I was doing the PG Studies and research related to soil physical conditions I was also asked to be the farm manager of the farm attached to the Department of Soil Science and also take care of the PG laboratory maintenance. Both I enjoyed though it was taxing my family life.

I was moved to the office of the Dean (PG Studies) to assist in post-graduate education in 1983 and I was there until 1985 when a promotion to the post of Associate Professor got me transferred to Soil Salinity Research Centre, Trichirapalli. Soil profile study continued in saline soils of Tamil Nadu. This was the time I started working on rice in a limited way.

I would have continued as a soil scientist had I not been sent for a two-month training on 'Simulation and Systems Analysis for Rice Production (SARP) in IRRI in February, 1988. This was a major turning point in my career as it brought a new knowledge and dimension in my research standard and perspectives, new friendships and collaborations. I met Dr. Frits Penning de Vries, Dr. Hein ten Berge, and Dr. Bas Bouman of the Centre for Agrobiological Research and Soil Fertility (CABO), with whom I continued my association even after the end of the project. After the training at IRRI I was transferred to Tamil Nadu Rice Research Institute, Aduthurai, in November 1988, and I conducted several interesting experiments on rice. Rice has been my only interest since then. I also acted as Deputy Director in the Institute (assisting the Director in administration) for about three years under the Director, Dr. Abdul Kareem.

By this time my father had to leave the village and had to come and stay with me as he lost his eyesight due to glaucoma. Since I was living close to the native village (about 30 km) I looked after the farming until I left for Wageningen in October 2004. I was able to maximize the rice yield to 6 t /ha!

Working in the SARP project gave a lot of opportunity to understand the physiology of rice crop. Dr. ten Berge was the leader for the group on Crop and Soil Management in the project and we were working on nitrogen management for rice through systems approach. There were opportunities to visit some countries where workshops were conducted in the project. I became the coordinator for the theme 'Crop and Soil Management' during the last two years of the project – 1994 & 1995 and during this time had the opportunity to stay in Wageningen and Los Banos along with my wife. Dr. ten Berge and I made some interesting research and publications on systems approach on nitrogen management in rice.

After my return from IRRI by the end of 1995, I was transferred to the academic campus in Coimbatore upon my request and I was back in the Department of Soil Science and Agricultural Chemistry which now was under the Directorate of Soil and Crop Management. The new alignment with Dr. V. Balasubramanian, Coordinator of the CREMNET project of IRRI brought me to the research areas of Leaf Colour Chart for nitrogen management in rice, controlled release nitrogen fertilizers for rice involving PG students. I was also offering courses for Ph.D students. In 1998, the Director of Soil and Crop Management, Dr. C. Ramasamy, wanted to make me Head of the Department of SS & AC and tried his best with the then Vice Chancellor, Dr. Abdul Kareem. But the Vice Chancellor had to decline this move as there was opposition from some of the staff in the department saying I was junior to many other Professors in the department.

By the end of 1999, I had an opportunity to work in IRRI (with Dr. Balasubramanian) and I was preparing to leave the country to take up that assignment. But destiny made me apply for the position of University Officer and without any influence of sorts (thanks to Dr. Kannaiyan who was the Vice-Chancellor of TNAU for the confidence imposed on me), I was selected for the position of Director for the Centre for Soil and Crop Management. I held this position for three years from 11 March 2000 to 11 March 2003. The Directorate was the biggest in the University with 7 component departments: Agronomy, Agricultural Microbiology, Animal Husbandry, Crop Physiology, Environmental Sciences, Seed Science and Technology and Soil Science and Agricultural Chemistry which comprised about 1000 staff (including labourers and about 250 PG students). I can confidently state that I made significant contributions to the development of all the departments. I was able to introduce the multidisciplinary projects. The network experiments (conducted throughout Tamil Nadu) concept introduced by me brought significant results within two years time.

What follows is my journey with SRI which appears to be never ending.

My destiny with System of Rice Intensification (which is still continuing) started like this. In the middle of 2000, my good Dutch friend Dr. Hein ten Berge forwarded the message of Dr. Norman Uphoff on SRI. The unflashed water management in SRI attracted me (the state was facing severe water crisis) and started an experiment in the wetlands of the Directorate (being the Director enabled good control over the experiment). Dr. Uphoff had mentioned that water had to be irrigated in the evening and drained the next morning. This was strictly followed. The experiment included

two methods of crop establishment (wet seeding of sprouted seeds and placement of 10 day old seedlings) and five plant densities. When this experiment was ongoing, there was a call from Wageningen to join the water-less rice project. In the planning workshop held at Nanjing, PR China, during the first week of April 2001, I presented the results of the initial experiment on SRI which showed that flooding was not required and the plant population could be drastically reduced. This is where I met Dr. Uphoff for the first time and Dr. ten Berge was also there. I wanted to include the SRI principles in the experiments in the proposed project. Dr. Prem Bindraban (who was earlier coordinator of the Crop and Management theme of SARP project for a brief period) and Dr. Huib Hengsdick were the project leaders.

I designed the project in such a way that agronomy, soil science, crop physiology and soil microbiology aspects under SRI are studied by involving MSc(Ag) students in the respective disciplines. The Chair Persons were from the concerned departments. The first experiment started in September 2001 and I was watching the treatment effects almost daily. When the yields were estimated, the result from one particular treatment combination from all three replications caught my attention. This was the moment I concluded that the SRI principle of intercultivation with weeder had greater effect on the growth of plants. Though there was no significant effect on yield water saving by about 46 % was the interesting result from SRI.

In TNAU, we have rice scientists meet every year. During the meeting in 2001 I presented the results of our first experiment which generally enthused the participants. I later came to know, that one of the Deans who listened to me had asked his relative to try SRI in his farm and so the results of the first experiment itself kicked off SRI in farmer's field in the first season of 2001-2002. The second experiment had visitors like Tony Fischer of ACIAR of Australia saw the experiments in October 2002. (*Tony Fischer: I enjoyed the visit also, especially that to your SRI research*).

After completing the second experiment, the results were presented in the SRI Conference in Sanya, PR China and also at the workshop at IRRI in April 2002. Based on the experience a package of practice involving SRI principles was tested in the following season. Some other experiments evaluating SRI principles by a Ph.D student was also initiated. I took the Vice Chancellor of TNAU, Dr. C. Ramasamy (an economist by profession) to the field experiment on a Saturday (a holiday) in my car and showed him the difference in growth of rice plants due to SRI. It was fortunate moment that at the same venue he remarked that SRI should be taken to the farmers of Tamil Nadu. But it took four years from that time for the state to be fully aware of SRI.

Learning from Dr. Uphoff, Dr.J.S. Samra, Deputy Director General (NRM), ICAR, wanted to know the potential of SRI (May, 2002) and also Mr.Srivastava, Additional Commissioner of Agriculture, Ministry of Agriculture, Govt. of India requested for results of SRI (September, 2002).

The trip to Srilanka in October 2002 facilitated by Dr. Uphoff gave an opportunity to see SRI fields and farmers and meet the early SRI farmer Premaratna and Dr. Gamini Batuvidage, Additional Secretary (Export Agriculture Enterprise), Ministry of Agriculture and Livestock. Govt. of Sri Lanka, who was a great supporter of SRI.

Dr. R. Kannan, Commissioner of Agriculture, Govt.of Tamil Nadu visited the SRI experiments on 30.12.2002 and was keen in promoting the technology. Immediately, a policy note was sent to him on the need to adopt SRI in Tamil Nadu was sent to

him. Similar policy note also sent to the Ministry of Agriculture, Govt. of India for adopting SRI in the country. The Ministry had forwarded the letter to ICAR and nothing happened after that.

I had the opportunity to present SRI experience in a workshop on 'Bright Spots' organized by IWMI at Bangkok in February 2003. Dr. Penning de Vries was impressed and expressed his interest in modeling SRI process.

Following the termination of the tenure as Director (SCMS), I had applied for the position again. It was a pleasant surprise for me that the State Agricultural Production Commissioner, Mr. Sridhar, who was a member of the Selection Committee, told me that he had received the Policy Note sent by me to the Commissioner of Agriculture had reached him and asked me whether we can recommend SRI to the farmers of Tamil Nadu. When I confidently affirmed it should be done he asked to submit a proposal to the Govt. for test verifying SRI in farmers' fields (March, 2003).

We sent a proposal to Govt. for taking up adaptive research trials on SRI (April, 2003). By this time I was posted as Dean of Agricultural College and Research Institute, Killikulam (southernmost campus of TNAU) and hence I included the Tamiraparani basin for the trials.

With the support from the Water-less Rice Project of Plant Research International, Wageningen, and IWMI, an International Symposium on 'Transitions in Agriculture for Enhancing Water Productivity' was held September 23 – 25, 2003, in which SRI was discussed in one session. Dr. Uphoff, Dr. Bas Bouman, Dr. V. Balasubramanian also participated. One of the invitees, the Joint Director of Agriculture, Thanjavur, challenged that SRI will not be suitable for Cauvery Delta of Tamil Nadu (The same Officer had invited me to visit 2000 SRI demonstration fields in the next season!).

One M.Sc (Ag) and two Ph.D students started SRI research in the new campus. In an unbelievable fast process, the State Govt. sanctioned Rs. 2,500,000 for conducting ARTs in 100 farmers' fields in each of Cauvery and Tamiraparani basins. A team of scientists of the College and research fellows were assigned the evaluation (comparing SRI with conventional cultivation) in which all the 100 farmers were given hands-on training in SRI and given field support to conduct the ART trials. Care was taken to estimate the grain yield in a systematic way.

Based on the results of the ARTs, SRI was formally recommended for adoption in the state in the annual event 'Scientific Workers Conference' of 2004 which is the forum to discuss and adopt technologies for the state. There was lukewarm response for SRI in the State Agricultural Extension side.

A World Bank funded pilot project (for the currently on-going IAMWARM project) to improve water use efficiency was implemented in the Adavinayinar river sub-basin. When our College was included as one of the participating organization in the project, we took the opportunity to demonstrate SRI in the basin. World Bank officials who visited the demos were keen in the results of SRI in water saving.

Between October – December, 2004, I had the opportunity to present the results of SRI experience in Hangzhou, Tsukuba (Dr. Uphoff provided me an opportunity to Chair the parallel session on SRI in the WRRC), and Los Banos, Philippines. Dr. Bouman supported a project to promote SRI in the state through IRRC and I travelled to some research stations and spoke to many farmers in the Cauvery Delta.

When there was about 2 ½ years of service was left (superannuation at 60 years of age), I opted to move to the Rice Research Station at Tirur, Chennai, as my son had a job in Chennai by that time. I continued with SRI research at this station also. By this time the World Bank had sanctioned the IAMWARM project in the state. I made a presentation on SRI before the planning of TNAU component of the project and it was decided to include SRI as the major thrust area in the project. It was a fortunate coincidence that Dr. Pandian, Professor of Agronomy, who was involved in SRI in the pilot project (operated from Killikulam) was now in-charge of the IAMWARM project and his direct experience in SRI helped him to take SRI seriously in the project.

SRI became a major attraction not only to rice farmers of different river basins but also to the state agricultural department from 2006. I was also involved in monitoring the implementation of SRI project in all basins during 2007-08 and 2008-09 and it was quite an experience.

By this time WWF-ICRISAT project had taken a lead in promoting SRI in the country and had organized National SRI Symposia at Hyderabad (2006) and Agartala (2007) and I was invited to both the events.

When I retired from TNAU service on 31 July 2008 and was not sure of my post-retired activity, I received a call from Dr. Biksham Gujja and Dr. Vinod Goud asking me to join the WWF-ICRISAT project to work on SRI. I never thought I would continue my destiny with SRI after retirement. I started as a consultant for the project, working from home most of the time. We organized a successful 3rd SRI Symposium at TNAU campus Coimbatore in December, 2008.

Dr. Gujja and I tumbled upon a statement about ‘Single Seedling Planting’ promoted in the erstwhile Madras Presidency of British India in 1920! Dr.Gujja was very curious about this news as it reminded SRI of today. We began a search for more information in the libraries in Chennai and were informed about three publications made in Tamil in the year 1911 about the single seedling planting (accidentally found by a Professor in the TNAU library). Further research and the search for the details of the farmer-authors of the articles in their native places brought us to write an interesting story of the SRI-like rice cultivation method discovered by farmers of Tamil Nadu, 100 years ago (read the story in SRI Newsletter VI published by WWF-ICRISAT project).

Working in the WWF-ICRISAT project brought new opportunities to visit SRI farmers, workshops and seminars in different parts of the country and also new associations with SRI activists like Dr.Shambu Prasad, Xavier Institute of Management, Bhubaneshwar.

SRI renewed my association with Wageningen when Dr.Dominic / Dr.Ezra / Dr. Herman van Keulen (Wageningen Agricultural University) who had taken up a study on SRI. Dr.Prasad and I had the opportunity to visit Madagascar to attend a workshop organized by WUR.

The SRI association with Dr. Uphoff which started a decade ago is still continuing. The rice farmers of Tamil Nadu and the Government of Tamil Nadu owe him a lot as SRI is a major agricultural activity in the state.

The journey with SRI is still continuing. Do you agree with me that my professional life has been driven by my destiny?

I thank my good friend Dr. Shambu Prasad, who had instigated me to write this story after reading the autobiography of Dr. Willem Stoop (though I don't have such a background as that of Dr. Stoop). It is a strange coincidence that Dr. Stoop also started as a soil scientist and ended up as SRI scientist!

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Chennai, India
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¹ It was a time when imports and exports were brisk in Chola Kingdom through the ports of Kaviripoompattinam (now known as Poompuhar) and Nagapaatinam. Horses were imported from Arab countries through ships and traded with pepper brought from Chera Kingdom (Kerala). A merchant was transporting pepper by bullock carts and when he came to this village found that there was a toll gate and pepper attracted toll charges but not greengram. Fearing that the toll charges for pepper would deprive his income, he prayed to the reigning deity of the village to convert the pepper into greengram (payaru) when he passes the toll gate. He kept praying and slept. Lord Siva had conceded to his prayers and appearing in the dreams of the merchant the Lord conveyed to him that pepper had been transformed into greengram. The merchant passed through the toll gate and the greengram escaped toll charges. After passing the gate, the greengram transformed back to pepper. Thus Lord Siva of the village was called as "Thirupayatanathar" incorporating the word 'payaru' and the villages named as 'Thiruppayathroor'.

² The ancient Sri Tyagaraja temple at Thiruvarur covers an area of over 20 acres (81,000 m²). The 'Kamalalayam' temple tank covers around 25 acres (100,000 m²), is one of the largest in the country. The temple chariot is the largest of its kind in Tamil Nadu. Thiruvarur is also associated with another legendary king, Manuneechi Cholan, who was a legendary Chola king believed to have killed his own son to provide justice to a Cow, following Manu Needhi or Manu's law. Legend has it that the king hung a giant bell in front of his courtroom for anyone needing justice to ring. One day, he came out on hearing the ringing of the bell by a Cow. On enquiry he found that the Calf of that Cow was killed under the wheels of his chariot. In order to provide justice to the cow, he killed his own son under the chariot as a punishment to himself i.e. make himself suffer as much as the cow. His name has since then been used as a metaphor for fairness and justice in Tamil literature. His capital was Thiruvarur. Thiruvarur also happens to be the birth place of Tyagaraja, Muthuswami Dikshitar and Syama Sastri, popularly known as the 'Trinity of Carnatic music'

³ Chidambaram is an ancient and renowned shrine in India. It is spiritual as well as historic. It is noted for cultural significance. Chidambaram is associated with Nataraja or Lord Shiva in his Ananda Tandava (the Cosmic Dance of bliss) in the cosmic golden hall. Devotees of both, saivites as well as vaishnavites visit Chidambaram as a pilgrimage spot.