

## THE SYSTEM OF RICE INTENSIFICATION: MEMOIRES OF AN INNOVATION

### **Preface: A CONTEMPORARY QUEST**

The title of this preface, *A Contemporary Quest*, could have been the subtitle for this book. However, *Memoires of an Innovation* is a more descriptive subtitle for this account of how SRI after taking shape in Madagascar became an international phenomenon that has already improved the conditions of life for tens of millions of people while protecting the quality of our natural environment.

The pictures below of women in a hill-district village in the Indian state of Assam, sitting beside a sheaf of SRI rice or holding up SRI plants harvested from their field, convey a sense of both the agronomic and the social aspects of this innovation if I note that these are *adivasi* women, former tea-plantation workers having the lowest social status. The article in which these pictures appeared in February 2021 was titled: “Paddy Farmers Reap Rich Harvest through SRI Cultivation.” Its subtitle was: “Growing paddy the traditional way pushed farmers into poverty as the yields were low. Switching to SRI methods has helped them harvest more than twice the regular yield.”<sup>1</sup>



The story of SRI is of a rather unusual quest, first joined in by a few, then dozens, then hundreds, and then thousands of persons, people almost as diverse as the assemblage of persons whom J.R.R. Tolkien brought together in his ‘Lord of the Rings’ trilogy.<sup>2</sup> However, there is nothing in this memoir as heroic or as fantastic as what Tolkien conjured up in his mythical tales.

Some of the detractors of SRI have referred to the SRI innovation as a fantasy or as based on miracles, relegating it to the realm of myth. But those who were involved in the SRI quest have rejected such characterizations, being fully cognizant of the hard work and endless

slogging that have been characteristic of this venture, no fantasy and no miracles. This has been a real quest, not fiction, an initiative with real and substantial consequences for millions of people's lives. However, a telling of this story can be entertaining and informative as the facts and episodes taken together are themselves quite remarkable.

The quest-like elements of this story occurred to me fairly early when I started reading Tolkien's massive trilogy some 20 plus years ago, before I knew much about SRI. This was during one of my semi-annual visits to Madagascar on behalf of Cornell University to participate in the implementation of an integrated conservation and development project that was funded by USAID, the U.S. Agency for International Development.

I stayed in a guest room that our Cornell team leaders Glenn and Torie Lines provided me in their bungalow on the outskirts of Ranomafana town, which subsisted torpidly on the edge of a large rainforest that the Madagascar government, USAID, and conservation NGOs wanted to protect from degradation. Glenn and Torie were our resident advisors supporting a multi-disciplinary effort to preserve the magnificent rainforest around Ranomafana while also helping to improve the circumstances of the thousands of Malagasy households who lived outside and around the forest. Glenn and Torie's small personal library in their bungalow included Tolkien's trilogy.

The System of Rice Intensification (SRI) that was introduced and evaluated with farmers around Ranomafana between 1994 and 1997 was in some ways like the ring in Tolkien's epic books, the so-called 'ring of power.' But SRI was more like a ring of productivity than of power. The productivity enhancement that SRI methods elicited was not created by anybody. It came from and had long existed in nature.

Somewhat like Bilbo Baggins, Tolkien's hero who found and protected the ring of power, Father Henri de Laulanié after coming to Madagascar from France in 1961 learned how to magnify the yields of irrigated rice just by making certain changes in the way that the crop was cultivated. The potential that these alternative methods tapped into was not something that he invented. It was pre-existing and could be made available to anyone who learned how to use and capitalize upon these methods.

The changes that Fr. Laulanié assembled over several decades in Madagascar into what he called *Système de Riziculture Intensive*, SRI, were some of them quite counterintuitive, like raising rice crop yields by drastically reducing the number of plants per square meter, and by stopping the continuous flooding of rice paddy fields. But the methods that Fr. Laulanié combined into the System of Rice Intensification were all quite simple and sound, and all can be explained and justified with scientific knowledge.

My role was to become somewhat like that Bilbo's nephew in the Tolkien trilogy, Frodo Baggins. Frodo was called upon to carry 'the ring of power' past multitudinous obstacles and

antagonists with the help of many brave and diverse friends. I was in effect entrusted with the SRI ‘ring of productivity,’ expected to carry it with the help of a growing and diverse troupe of academics, activists, farmers, and many others to fulfill its destiny.

I never met Fr. Laulanié before he died in Madagascar’s capital, Antananarivo, in 1995, although I could easily have gotten to know him through mutual friends if I had tried. While he was still alive, I had not yet understood and accepted the merits of SRI. My acceptance of his innovation as something real and important did not come until two years after his death.

The Frodo-like role fell to me after it became clear to me and a few colleagues that SRI was something of great value, not just for the farmers living around the Ranomafana rain forest, but possibly for farmers all around the world.

Glenn and Torie Lines were the first to join the band of SRI protagonists. We were all initially skeptical; but as evidence and experience accumulated, we became increasingly confident that it had potential to improve the lives of farmers and their families, and to benefit consumers who want and deserve to have abundant, healthy food, and to make the natural environment more sustainable and its soil and water resources more productive and unpolluted.

The band of SRI compatriots has grown steadily over the past two decades. Twenty years ago, this innovation was known and utilized only in Madagascar. By 2020, the number of countries where SRI’s productive power had been demonstrated had grown to over 60.<sup>3</sup> We know now that there are many benefits which derive from SRI knowledge and practices, not just raising crop yields, saving water, and reducing the costs of production, but also resisting and abating the effect of climate change, for example. We have also learned that these benefits can be extrapolated to many other crops beyond rice, such as wheat, millet and sugar cane.

So, this story, which is still unfolding, has the elements of an epic. And by coincidence this story is also best told as a kind of trilogy in which three concurrent quests are considered. First, it was important for us and others to be certain that the incredible claims being made by SRI proponents in Madagascar were in fact true, and then, if true, to understand how and why they are correct.

How could SRI methods double, triple, even quadruple the rice yields of poor, resource-limited farmers without requiring them to plant ‘improved’ seeds, and without applying chemical fertilizers and other purchased inputs? And by using less water rather than more? Gaining an understanding of SRI, of its causes and effects, and then elaborating its insights into more comprehensive approaches to sustainable agricultural development was the first challenge, covered in Part I.

As the benefits of SRI were being initially demonstrated and documented, many criticisms and objections were raised. Over the years, a growing number of scientists and institutions have come to support SRI based on their own evaluations and experience. However, at first

there was active and outspoken opposition to SRI, indeed enough resistance so that by 2004, reference was made on-line to ‘the rice wars’ that surrounded SRI.<sup>4</sup> The process of gaining institutional and professional acceptance for SRI is the focus for Part II. Some will be most interested in the discoveries and expansion of knowledge reported in Part I, while others will find the conflicts and contention of this second part most engaging.

This story was not one of simple dispute where civil-society organizations and actors on one side are opposed by more powerful established interests on the other. SRI had both proponents and detractors in all sectors, with some persons in government agencies and the private sector joining the SRI band along the way, making it ever more diverse and ever larger. For example, in 2002, a vice-president of Syngenta’s branch company in Bangladesh became a founding member of the national SRI committee set up in that country. This was unexpected, but very much appreciated.

The saga of how SRI came to gain fairly broad acceptance, overcoming resistance of many sorts, is informative and sometimes surprising, and not always edifying. It reveals a lot about why so many of our contemporary institutions are unfortunately less able and willing to serve public interests than we expect them to be. The tug-of-war over SRI runs throughout Part II, and these first two parts are practically books in themselves.

The first two quests -- gaining an understanding of SRI and gaining acceptance for it -- were concurrent with dozens and eventually hundreds of local and national initiatives. Various individuals and organizations who saw the opportunities that the knowledge and practice of SRI were opening up undertook to make these possibilities more widely known and more available. This is the focus of Part III.

These SRI compatriots in dozens of countries made many adaptations and further innovations that are a part of the larger story. Writing about the many and diverse sagas that propelled the spread of SRI, country by country, was the initial impetus for putting this book together. These stories collectively constitute the third part of these memoirs. They are supplemented by mini-memoirs that were solicited and contributed by dozens of colleagues living all around the world, put into a special Annex.

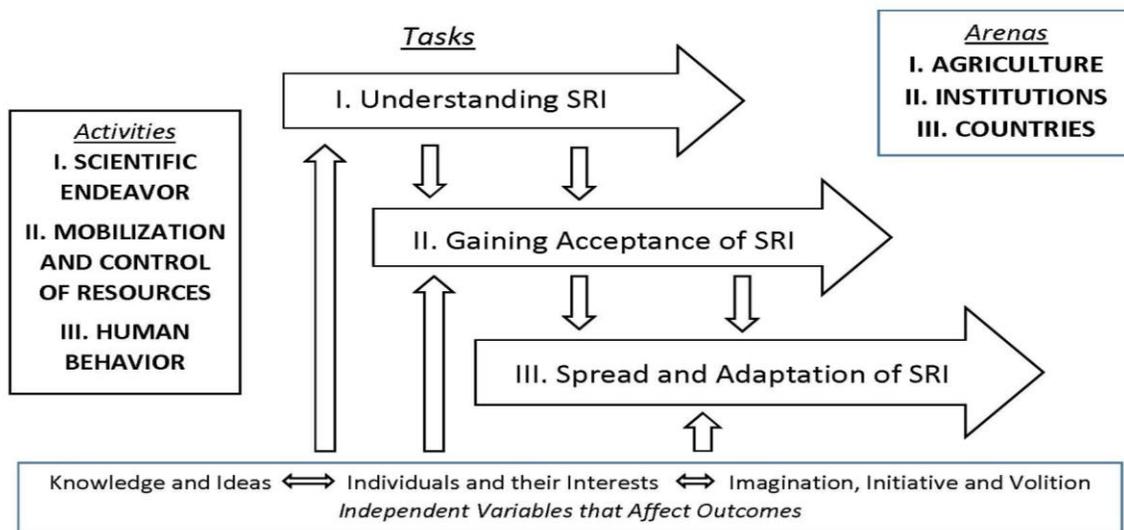
I wanted to document and memorialize the efforts of these and other colleagues who had taken up the challenge of bringing the productivity windfalls of SRI to as many of their fellow men and women as possible. All needed and displayed some courage to think outside the boxes of conventional practice. Some demonstrated personal valor in the face of physical danger when spreading SRI knowledge, for example, during armed conflicts in Afghanistan, Nepal and Sri Lanka as recounted in Chapter 16. Also elsewhere there was satisfaction from seeing SRI bring benefits in post-conflict zones or other areas of disrupted agriculture. There were innovative responses to the spread of the ebola virus and Covid-19 that are part of the SRI story.

All who engaged in the spread of SRI showed an altruism and dedication that it is gratifying to know about. One subtitle considered for the book was: *Altruism Is Alive and Well!* In an era when so much self-serving and exploitative behavior is evident all around us, it is good to know that fellow-feeling and the brighter side of human nature have not been extinguished by struggles, scarcity, and selfishness.

Part III cannot encompass all of the efforts that have been undertaken to disseminate SRI. Despite my best efforts, I do not know all of the persons who have contributed to the spread of SRI or all of the initiatives that have been taken. This limitation on my part should not, however, keep me from sharing through this book what I do know. If this were not written down, there would not be recognition of the many admirable efforts made by those with whom I am acquainted, members not of a fellowship of any ring but partners in the innovation.

Those whose work is recounted in Part III would be the first to insist that many others, both known and unknown, deserve credit and acknowledgement for their contributions. Such is the generous nature of these colleagues. Knowing that I cannot do justice to the worldwide effort to midwife SRI, I will tell this third part of the story as best I can, inviting others to add their accounts to this saga as endnotes in chapters or as mini-memoires that are included as part of the book.

This book is thus a multi-vocal composite of three related but distinguishable quests: first, to *understand SRI*, then to *get it accepted*, and further, to *spread its opportunities* to those who could benefit from the ideas and insights of SRI. The book's plan is shown schematically below. But this diagram suggests sequentiality when in fact the story is more like a Rubik's cube, with continuous interaction among the three dimensions.



It should be underscored that none of the three quests is completed. This story is an account of the first two decades since SRI as an innovation was first taken beyond the land of its origin, Madagascar.

As mentioned above, it became evident to farmers fairly quickly that the ideas and insights of SRI were relevant to more than just their irrigated production of rice. These ideas and insights were extended first to upland, unirrigated rice production (Chapter 13), and then to raising the productivity of other crops such as wheat, millet, sugarcane, mustard and various vegetables (Chapter 14). This extension of SRI ideas and insights could reshape or at least redirect the evolution of our agriculture over the next several decades of this century.

Agricultural sectors around the world will need to respond quickly and effectively to many demands and constraints in the coming decades. Some of these challenges are foreseeable, but many others are not. Climate change accompanied by further degradation of the natural resource base on which agriculture and human life rest means that adopting new thinking and better practices is becoming more imperative for agriculture than for most other sectors.

If we persist for the next 20 years with the same practices and thinking that have prevailed in recent decades, even following certain practices and thinking that have served us well in the past, our conditions of life will surely become less and less benign. This book is thus a story not of a quest completed, as was Tolkien's epic tale, but of one that is ongoing.

## NOTES AND REFERENCES

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- <sup>1</sup> [Village Square](#), February 17, 2021. This on-line [e-zine](#) reports on developmental experiences across rural India.
- <sup>2</sup> I apologize to readers who are not acquainted with this [modern classic](#), one of the most widely read books of all time. Over 150 million copies of the books have been sold since the mid-1950s, and the story has been widely popularized through three epic [movies](#) released in 2001, 2002 and 2003, which grossed almost \$3 billion worldwide. The trilogy's many analogies with the SRI saga are too apt and evocative to ignore. But one need not have read these novels to appreciate the SRI story that follows.
- <sup>3</sup> See a [listing](#) of countries where the productivity of SRI methods has been demonstrated on the SRI-Rice website.
- <sup>3</sup> Mae-wan Ho, '[Rice wars](#),' *Synthesis/Regeneration* 36 (Winter 2005). See also a review of the controversy by Chris Surridge in the journal *Nature*, '[Rice cultivation: Feast or famine?](#)' 428: 360-361 (April 2004).

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The first critique of SRI that came from the International Rice Research Institute (IRRI) in the Philippines, published in IRRI's magazine *Rice Today*, started with these two sentences: "Discussion of the system of rice intensification (SRI) is unfortunate because it implies [that] SRI merits serious consideration. SRI does not deserve such attention. ..."

Thomas R. Sinclair, '[Agronomic UFOs waste valuable scientific resources](#),' p. 43, July-September (2004). Such opposition is discussed in Chapter 22.