SYSTEM OF RICE INTENSIFICATION (SRI): GROWING MORE WITH LESS WATER
Latest update on SRI in Kenya

SRI Farmers Now Turned into Trainers in Kenya!

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This article was written in February 2012 focusing on capacity building for SRI activities in Kenya. However, some background is provided for readers new to SRI in Kenya. Promoting SRI in Kenya is considered a successful model of technology transfer, having grown in strength and numbers, as well as enthusiasm of adopters, all within a relatively short period of time.

Background: Collaborative beginnings

Drawing from the encouragement of Prof. Norman Uphoff to start SRI in Kenya, the first meeting to plan and introduce SRI was held at the Mwea Irrigation Scheme in July 2009, organized by Prof. Bancy Mati of JKUAT and Markus Moeller (then the Irrigation Specialist at the World Bank office in Kenya). The two drew together some like-minded individuals to form a collaborative team comprised of staff of Jomo Kenyatta University of Agriculture and Technology (JKUAT), the National Irrigation Board (NIB) through its Mwea Irrigation Scheme and the Mwea Irrigation Agricultural Development Centre (MIAD), the African Institute for Capacity and Development (AICAD), IMAWESA (then a network of ICRISAT funded by IFAD), the Ministry of Water and Irrigation (MWI),the Ministry of Agriculture (MoA), private consultants, the World Bank office in Nairobi, the World Bank Institute (WBI) in Washington DC, the Central Kenya Dry Areas Project, Cornell University in USA, and farmers from the Mwea Irrigation Scheme.

The SRI initiative started as a three-pronged approach combining: (i) scientific research on SRI, (ii) concurrent trials implemented by volunteer farmers within the Mwea Irrigation scheme, which would give farmer-level results, and (iii) capacity-building and outreach activities for farmers through targeted activities such as video conferencing, field days, posters, fliers, cross-learning with SRI experts, exchange visits, workshops and broadcasts in the mass media.

Early adopters

In the first six months, August-December 2009, there were just two pioneer farmer-adopters, Moses Kareithi and Mathew Kamanu. These early adopters remember a time they were laughed at by fellow farmers, especially after transplanting. There was also scientific research started, using one MSC researcher with on-station trials of SRI to determine if indeed, SRI works. Within the same period, aggressive awareness creation was done to non-adopter farmers through classroom training, video conferences, field visits to the two adopter farms, and even a ladies-only training session on SRI.

Impressed by the promise of SRI being able to improve food security while using less water, JKUAT supported the continuation of SRI research and outreach activities in Mwea, through some modest seed funding for three years, beginning March 2010.

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Rice blast derails progress in 2010

The improved yields from the SRI pioneer adopters provided encouragement to other farmers to try SRI and by May of 2010, over 30 farmers had planted part of their paddies using the practice. However, this was a bad year for growing rice as rice blast (a disease) struck, affecting the entire Mwea Irrigation Scheme. This destroyed the precious yields expected from the early farmer trials of SRI. Mr. Johnson Muthii, the third farmer to adopt SRI in Mwea at the time (and also the Secretary of the Mwea Water Users Association), remembers harvesting only 10 bags of paddy per acre (normally, they get 25 bags). But the 10 bags were still better than the 4 or nothing obtained from plots managed under conventional practice. SRI farmers did not give up, and some, like Mr. Njoroge-Kahunduma, increased the area under SRI even after losing nearly all their harvest to blast. It is instructive to note that to date, not a single farmer who has adopted SRI has gone back to the old ways. Even with these problems, SRI gave higher yields.

Scientific research on SRI

Scientific research has been carried out on SRI at Mwea, and other trials are on-going in Ahero, West Kano and Bunyala irrigation schemes. The first SRI research project in 2009 was basically assessing whether SRI would work in Mwea. Conducted by Mr. Matolo Nyamai, it involved on-station research comparing SRI with non-SRI management, and was supported through a small fund by AICAD. This project is now complete and the thesis submitted. It determined that SRI increases yields, and that high-yielding varieties responded best.

In 2010, the JKUAT Innovation fund provided seed funding for three years for research and outreach activities to promote adoption of SRI by farmers in Mwea, working in collaboration with NIB and AICAD. The funding has supported two post-graduate research projects. The first is PhD research, assessing the merits of SRI for out-scaling in Mwea. This research utilizes on-station trials and the AQUACROP model to predict scheme-level grain yields, water savings, and cost/benefit analysis. This researcher, Jackline Ndiiri, is supervised by four experts who include Prof. Bancy Mati and Dr. Patrick Home of JKUAT, Prof. Norman Uphoff of Cornell University, and Dr. Benson Odongo of AICAD. She has collected data from the field and is currently running the modeling component.

Parallel MS research has assessed the effects on mosquito survival rates in both SRI and conventional paddies. Data gathering has been concluded, but the thesis is not yet completed. Conducted by Mr. Kepha Omwenga, and with the collaboration of JKUAT, MIAD and ICIPE, the results show that SRI water management breaks the mosquito breeding cycle! Mosquito larvae die within two days after the paddy field is dried, showing a win-win prospect for malaria control.

Currently, another MSC student, Mr. Wycliffe Nyangau, is working in all four irrigation schemes (Mwea, Ahero, Bunyala, and West Kano), to assess the bio-physical and agronomic characteristics of the schemes in relation to their adaptability for SRI. There has also been other research on SRI by staff of MIAD, JKUAT and recently Moi University. Other researchers are planting their rice by SRI practices as they investigate various variables, some of which are un-related to SRI. Meanwhile, there are some proposals for other collaborative SRI research projects with new partners under discussion. One emerging area of interest is the connection between SRI and climate change adaptation/mitigation.

SRI Documentation Center

To facilitate proper documentation of project progress and to provide a focal point for SRI researchers, an SRI Resource Centre was opened at MIAD within the Mwea scheme. Its facilities provide the database set up on SRI that can serve all partners. This center is open every working day and helps to link researchers to farmers. It is a liaison office where farmers can go for information or call for SRI staff to visit them. It also maintains a database of all SRI activities in the country.

SRI goes national in 2011

The training and awareness creation campaigns through radio broadcasts, field days, press outings and SRI open days have started to bear fruit as more people heard the good news. In response, NIB provided seed funding for a six-month capacity building and awareness raising project on SRI to four irrigation schemes, i.e. Ahero, Bunyala, West Kano, and Mwea itself. This project enabled actual training and dissemination of SRI beyond Mwea and cross-fertilization of ideas, further boosting the adoption of SRI farmers in other schemes.

SRI adoption and yields improve in 2011

In the recent 2011-2012 crop season (July-January), the yields have improved as farmers have learnt how to practice SRI more correctly. They had planted much younger seedlings (8-14 days old) and at wider spacing. A few farmers had access to rotary weeders, and other started using organic manures. Overall, there were more adopters, numbering about 2,000 in the four schemes.

This crop season has given good results as the yields of SRI rice have improved, reaching up to 9t/ha for the lower-yielding Basmati variety which compares with 5 t/ha with conventional management. Also, the high-yielding IR variety about 17 t/ha compared to 9 t/ha without SRI practice. Water savings as determined through research have ranged from 25% in dry weather to 33% in wet weather.

The Kenyan farmers and rice stakeholders are excited with SRI. A bag of SRI paddy weighs 10-20 kg more than that of conventional rice, mostly because of greater grain filling (fewer unfilled grains). When milled, SRI rice has more whole grains (less breakage) so it sells faster, sometimes earning KSh.2/kg more than conventional rice. It is interesting to see farmers who have not openly adopted SRI changing their behavior too. They have reduced flooding of their paddies with water, others are planting one or two seedlings instead to the conventional bunch of five or more, while others are planting in lines.

One event in November 2011 convinced many farmers that SRI is superior to conventional practice. There was heavy rain accompanied by a lot of wind. This was at the panicle initiation/ grain-filling stages of the rice in the main crop season. All the conventional rice was badly affected, with plants falling to the ground (lodging).

However, the SRI rice plants were resilient, remaining standing up while conventional plants fell down in the paddies and remained down for weeks, losing much of their crop. It was possible to tell which crop had been planted with SRI methods and which was not. As a result, SRI practice is set to become the way to grow more rice for greater food security.

Capacity building for farmers

The project has implemented many training activities. The most effective has been field days implemented at farmers' fields. Normally, the venue for the field day is rotated to ensure all the blocks have hosted an event. Other methods have been classroom training of trainers followed by field visits. This has been done across all four schemes. In addition, there have been exchange visits between the farmers in the four schemes, and distribution of (well illustrated) training manuals at all training events.

There have been two video conferences, both financed by the World Bank Institute, and Prof. Norman Uphoff participated at the first video conference. In 2010, the World Bank Institute also financed two trainers, one from India and the other from Japan, each of whom spent one month at Mwea training staff and farmers on SRI. They also conducted training at Ahero and Bunyala Irrigation Schemes, respectively.

Meanwhile other capacity-building initiatives have been implemented with support from JKUAT and NIB. These include open days and various media events, particularly radio broadcasts in Kiswahili on national radio and paid adverts in local languages (Kikuyu, Luhya and Dholuo) in the vernacular radio stations.

Meanwhile, to spread the message further, beyond outreach to adopter and non-adopter rice farmers, paid adverts were made in local vernacular radio stations and in the Swahili national radio urging farmers to plant their rice by SRI method. SRI was also exhibited at provincial and the Nairobi International Shows.

Going by the records of participants to various SRI training and awareness creation activities, over 3,000 people have been trained on SRI while about 2,000 farmers have planted their rice by SRI practices. However, we suppose that the SRI message has reached tens of thousands of people in the country through the various mass media outlets such as radio broadcasts, newspaper articles, exhibitions at agricultural shows, JKUAT open days as these are difficult to quantify.

Farmers trained to be SRI Trainers

One specific event was a Training of Trainer (ToT) program drawing together adopter farmers from all the 4 schemes, at which they were trained together and issued with certificates. A second ToT program was conducted for the Mwea farmers separately, since the scheme has more farmers and has a larger number of SRI practitioners and prospective adopters. In all, 115 farmers have been trained as TOT, the majority being from Mwea.

In 2012, SRI is now taught by farmers

On 30th January 2012, an SRI Field Day was held in Mwea, as part of our regular training to reach the unreached. We were graced with visitors from the World Bank Institute and from Princeton University. Before the training event commenced, the visitors toured part of the Mwea irrigation scheme where some rice was in the field (January is an off-season month).They were able to see SRI paddies across various stages of growth, and to meet farmers busy in their fields. It is evident that SRI is being accepted now, just 2 1/2 years since the practice was introduced in Mwea.

This particular SRI Field Day training was held at Wamumu, a block with a number onion-adopters, but even here, over 100 farmers attended. Unlike in previous training events where

Prof. Mati and other staff taught about SRI, on this day she just introduced the topic and then asked ToT farmers present to volunteer and each to teach one of the seven components of SRI (so as to have inclusivity and variety). The farmer ToTs also answered all the questions, and it was a truly interactive training session.

The training was done in the local language so that the message was clear and without distortion. Since a majority of the farmers who have undergone SRI ToT are themselves educated and can speak/write English well, it is fair to say that the next generation of SRI trainers has been born, prepared and tested (through their own experiences).They are inspired speakers. If anyone doubts this, they are invited visit Mwea. Anyone out there who needs an SRI trainer? We are ready! Welcome.

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