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Smallholders fulfil their households' needs with a new way of farming rice

MAIN SOURCE:

Rappocciolo, F. (2012). *Spreading the System of Rice Intensification across East and Southern Africa* (case study)

COUNTRIES:

Burundi, Madagascar, Rwanda

INNOVATION:

The System of Rice Intensification across projects in East and Southern Africa

TARGET:

Smallholder farmers

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The System of Rice Intensification is an innovative set of best practices for rice farming that is affordable to smallholders.

In Burundi, Madagascar and Rwanda local farmers are reaping the benefits of increased yields after adopting the system in their fields.

In many countries of East and Southern Africa, rice is a staple food for rural households. In the 1980s a Jesuit priest living in Madagascar, Fr. Henri de Laulanié, discovered a new way of farming rice that significantly increases production. The new set of practices, the System of Rice Intensification (SRI), is a way of producing more with less, by using fewer inputs – particularly less water, seed and chemical fertilizer. Traditional practices keep rice fields constantly flooded and do not require much water management. Seedlings are generally transplanted from

the nursery to the field after three or four weeks, and in groups of three or four seedlings. With SRI instead, the soil is kept alternately dry and wet, allowing the plants' roots to take oxygen from the ground surface. Seedlings are transplanted very young, one by one, in square patterns to allow spacing between rice plants. These measures enhance the roots' growth and increase yields.

SRI is a continually evolving innovation and can be easily adapted to fit different needs and environments. Years of application of SRI have shown that yields in most cases double, or even quadruple. In Madagascar the remarkable results that farmers obtained triggered a spontaneous replication in neighbouring fields. IFAD has been promoting SRI in its programmes and projects in Madagascar since 1997 and has successfully promoted its use in Rwanda and subsequently in Burundi.



Women sift rice in Tsiyory Village, Madagascar. Upper Mandraré Basin Development Project (PHBM). November 2007



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Rwandan farmer Celestin Nyecumi received training on SRI and benefited from significant increase in yields. Support Project for the Strategic Plan for the Transformation of Agriculture

Results

- Household nutrition needs are better fulfilled because yields double at minimum. For example in some provinces of Rwanda, production per hectare rose from 3-4 tonnes to around 7.5 tonnes between 2005 and 2009.¹
- The number of seeds used per hectare decreases significantly. In Rwanda for example it was reduced from 80 kg to 10 kg after SRI practices were adopted.²
- The increase in incomes due to greater rice production brings additional benefits to farmers: they can build new and solid houses and move out of grass huts and tents; they can send their children to school; and they can buy bicycles to transport their produce to markets.
- At the beginning of 2012, 18,000 farmers were already practicing SRI within IFAD's projects in Burundi,³ the country where SRI has been introduced more recently (in 2009).
- As farmers can produce the same quantity of rice on a smaller portion of land, they are able to diversify their production and fulfil more household nutrition needs.

Main lessons

- Disseminating SRI is not the same as teaching a standard technique. The principles of SRI are not fixed. Practices need to be adapted to needs, experience and contexts.
- Farmer Field Schools, local water users associations and cooperatives need to be solid to ensure that farming inputs are supplied regularly and hydro-agricultural infrastructures are managed properly.
- In order to ensure that SRI practices are disseminated effectively, a monitoring system needs to be set up to determine whether the trainings are accurate, the SRI guidelines are being respected and the innovative practices are fully understood.

Main challenges addressed

CHALLENGES	SOLUTIONS	BENEFITS
1) There is a perception that adopting SRI means greater labour requirements.	Often this barrier can be overcome by raising awareness that it may be only a perception. One solution has been to strengthen farmers' cooperatives and Farmer Field Schools and encourage farmers to work in groups, especially for the heaviest and most delicate tasks.	Strengthening farmer groups reinforces cooperation and the capacity of individual members, which in turn leads to mutual capacity development.
2) Weeds grow much faster when rice fields are not flooded. Frequent weeding requires more labour for smallholders.	The introduction of mechanical tools, such as a rotating hoe for weeding, has significantly reduced the time and physical effort required for weeding.	When the rotating hoe is used, weeding takes place more regularly and respects SRI requirements. In some cases farmers cannot afford this technology; however often this tool is group-owned.
3) Sometimes farmers cannot or do not want to use the full set of practices.	SRI can be adapted and does not require all specific conditions to be in place. Indeed, some elements of the SRI set are more crucial than others in order to achieve significant results.	Trials have shown that farmers can benefit even by using just some of the practices that are adaptable to their context. However the combination of all SRI practices can give better results. ⁴

Background

Rice fulfils 20 per cent of the world's food needs. In some countries of East and Southern Africa it has been the main crop for a long time, as in Madagascar. In other countries rice cultivation has been introduced and disseminated more recently, and its importance is rapidly growing. With the aim of helping poor Malagasy people out of hunger, a French Jesuit priest living in Madagascar started working with local farmers to find more productive ways of farming rice. The outcome was the development of a set of best practices called the System of Rice Intensification. This innovative method questioned traditional knowledge of rice farming techniques and gave much better results in terms of quantity and quality of the produce.

The six principles of SRI include:

- 1) Transplant very young seedlings
- 2) Transplant carefully and quickly to avoid trauma to the roots
- 3) Allow wide spacing among the plants
- 4) Alternate wet and dry soil conditions
- 5) Weed often and regularly
- 6) Enhance the nutrients of the soil by using compost.

In the 1990s, during the food crisis in Madagascar, Fr. Henri de Laulanié founded the non-governmental organization *Tefy Saina* to promote SRI and improve rural livelihoods. As a result of SRI's successes, in 1997 IFAD started promoting SRI in its programmes and projects in the country, starting with the *Projet de Mise en Valeur du Haut Bassin du Mandraré* (PHBM, Upper Mandraré Basin Development Project). The remarkable results led IFAD to promote SRI in other countries of the region – first in Rwanda and then in Burundi.

A number of constraints still challenge the broader use of SRI. For example, inadequate irrigation infrastructures prevent water from being managed carefully (as recommended by SRI). Farmers can still embrace their traditional practices and be resistant to change. Infrastructure to store the surplus produced can be insufficient. And some households cannot afford the external labour force required to accomplish the greater workload when the household's labour force is not enough. IFAD has tried to address some of these barriers by rehabilitating in-land valley bottoms, improving rural infrastructure and strengthening local farmers associations and cooperatives.

USEFUL LINKS

IFAD operations in ESA:
<http://www.ifad.org/operations/projects/regions/pf/index.htm>

IFAD operations in Burundi:
<http://operations.ifad.org/web/ifad/operations/country/home/tags/burundi>

IFAD operations in Madagascar:
<http://operations.ifad.org/web/ifad/operations/country/home/tags/madagascar>

IFAD operations in Rwanda:
<http://operations.ifad.org/web/ifad/operations/country/home/tags/rwanda>

Rappocciolo, F. (2012). *Spreading the System of Rice Intensification across East and Southern Africa* (case study).

<http://www.ifad.org/operations/projects/regions/pf/pub/SRI%20case%20study.pdf>

IFAD, Video. SRI in East and Southern Africa. Available at:
http://www.youtube.com/watch?v=AbU7_i9vW_w&feature=youtu.be

NGO *Tefy Saina* website:
<http://www.tefysaina.org/>

SRI-RICE, SRI International Network and Resources Center:
<http://sri.ciifad.cornell.edu/index.html>

However some challenges, particularly farmers' access to markets, are still open. In addition, it will be important to understand the reasons why some farmers resist adopting SRI in spite of the positive results obtained. This is especially the case in Madagascar.

Fostering ownership and sustainability

The real protagonists of dissemination are farmers. Organizations only act as facilitators, particularly for cross-border knowledge-sharing. The role of local farmers is essential because SRI spreads primarily from one person or a small group of people to another. The best way to pass on the knowledge is through farmer-to-farmer demonstration, which is often spontaneous between neighbouring farmers. Knowledge dissemination is even more effective when demonstration plots in Farmer Field Schools are used. However, fostering ownership over the new SRI practices sometimes has been a major challenge. For example, farmers in Madagascar often do not want to be taught how to cultivate rice, since they have been growing rice with traditional methods for generations.

Local groups are key players in ensuring the new system is sustainable. Reinforcing the capacity of the local users associations to manage hydro-agricultural infrastructures is one way for IFAD to foster the sustainability of its measures to rehabilitate in-land valley bottoms after the project closes. The organization of producers into cooperatives is a way to establish a viable system for sustainable commercialization and the provision of farming inputs such as seeds and fertilizers.

Replication and scaling up

Dissemination of SRI occurs mainly from farmer to farmer. Replication is often a natural process, when neighbouring farmers see with their eyes the results in an SRI-cultivated field. In East and Southern Africa IFAD has helped replicate and scale up the SRI experience through demonstrations and field training visits across borders, often organized in collaboration with *Tefy Saina*.



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References

- 1 Ministry of Agriculture and Animal Resources (2010). *Promoting innovations in the agricultural sector. Knowledge and best practices on SRI (Système de Riziculture Intensif)*. PAPSTA, KWAMP. Rwanda. p. 24.
- 2 Ibid.
- 3 Rappocciolo, F. (2012). *Spreading the System of Rice Intensification across East and Southern Africa* (case study).
- 4 Uphoff N., Kassam A., Harwood R. (2011). *SRI as a methodology for raising crop and water productivity: productive adaptations in rice agronomy and irrigation water management*. Paddy Water Environ.