Reducing Risk

Farm households, with new savings or other income options, are least equipped to cope with the volatility of input prices or to rebound when crops fail or livestock die. SRI methods and benefits give these farmers a suite of strategies to manage their risks and the capacity of their households and farming systems to recover from setbacks. This will be especially important as temperature and weather abnormalities become increasingly common in the future. Some of these benefits include:

- Higher yields per unit of land, labor and capital invested
- Lower production costs
- Reduced requirements for irrigation water
- Reduced reliance on chemical fertilizers, herbicides, and pesticides
- Increased resistance to pests
- Lightened workload, particularly for women
- Fewer seeds and accelerated transplanting
- Earlier harvest due to earlier transplanting
- Increased drought tolerance
- Resistance to storm damage (from lodging or falling over), possibly also to cold spells
- Increased production and marketing potential from traditional varieties conserves biodiversity
- Higher productivity allows farmers to convert some land to higher value fruits, vegetables, and small livestock, for better diets and more income

Benefits of adopting SRI

Benefits for Rural Households
- More rice to eat and sell from same area of land
- Higher incomes/lower costs
- Less use of water
- Reduced dependency on purchased inputs (seeds, fertilizer, pesticides)
- Enhanced natural resource base and genetic diversity for more robust farming
- Reduced risk and vulnerability

Improved farm family well-being

For more information about the farmers profiled in this handout and SRI activities supported by Africare, Oxfam America and WWF contact:

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Farmers Leading the Way from Crisis to Resilience

Global Farmer Perspectives on the System of Rice Intensification (SRI)

Farming Practices to Improve Family, Community and Environmental Well-being

“My children are now in good health. With my rice profits we eat not just more rice but more meat, fish, vegetables and beans.”

Improving Livelihoods

Moussa Ag Demba
President, Goundam District Cooperatives Federation, Douékirké, Mali

Moussa Ag Demba was born in 1960, in Bagadadji, district of Douékirké, Timbuktu Region, Mali. His family relied on subsistence farming, and it was a daily struggle to meet their basic needs. As a young man, in the face of prolonged drought, Moussa was forced to migrate to other parts of Mali and as far as Libya in search of more fertile lands and odd jobs to supplement the family income. With the death of his mother in 2000, Moussa returned permanently to his home village to take care of his family and try to re-establish a livelihood in farming. Moussa’s enthusiasm, leadership qualities and organizational skills have made him very popular within the community. He was elected president of the Agricultural Cooperative Society of his village, president of the Union of six Agricultural Cooperatives in the Keessou area, and most recently, president of the Goundam District Cooperatives Federation.

In 2005, with the help of Africare, villagers constructed an irrigation system with a perimeter of 30 hectares to produce rice, wheat and onions. When SRI was talked about first in 2007-2008, Moussa embraced the idea of testing it. Africare proposed that five farmers from 12 different villages, for diverse geographic coverage, participate in on-farm trials. Despite reluctance on the part of his fellow farmers, Moussa organized and led the implementation of SRI tests with 15 farmers in his area of Bagadadaj in 2009. He guaranteed that he would take all necessary steps to ensure that the test plots were installed properly, even covering any extra costs personally. Farmers grouped their SRI plots in one location, and helped each other in the technical steps.

Today, Moussa harvests 9 tons of rice per hectare compared to 4-5 tons before the introduction of SRI. According to Moussa, with these significant increases in yield, his household no longer experiences food insecurity. He is able to sell about 6 tons of his rice output, using the profit to meet the basic needs of his family, including a healthier and more diverse diet. His children are no longer the main cooks, responsible for women

Moussa now helps to organize and train his fellow farmers in SRI farming techniques. Moussa has also been elected the 1st Deputy Mayor of the rural district of Douékirké and is a member of the Regional Consular Office of Agriculture of Timbuktu.

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Sugunavva learned about SRI in November 2007, when representatives from the local NGO, CROPS, supported by the WWF-ICRISAT Project, met with farmers and called for a Panchayat (village level) meeting to introduce and discuss SRI methods. She was immediately intrigued but her husband refused to consider adopting the methods. However, after they both visited a CROPS demonstration of SRI in a neighboring village and observed the results for 10 farmers on 25 acres, they agreed to try the new method.

To begin, she only applied the techniques to five gunas or about one-tenth of an acre. But after harvesting six 70-kilo bags rather than the usual four bags from that area, she extended SRI to the entire two acres. Before, using conventional methods, she harvested 35 to 40 bags of rice from one acre (2.8 tons/acre), which is the same as the district average. With SRI practices, she now gets about 55 to 60 bags (4.2 tons/acre), and has reduced her costs by Rs. 5,000 (about US$110) per acre. While she needed a couple of seasons and some additional training to feel entirely comfortable with the methodology, she now finds it easy. With SRI methods Sugunavva uses 30 to 40 percent less water. Other benefits she cites are improved soil fertility, reduced pest problems, lower costs, and has reduced methane emissions. Reduced use of nitrogen fertilizers

Sugunavva now volunteers her time with CROPS to promote SRI and train other farmers.

**Sugunavva and Climate Change**

Changes in climate will affect rice production and thus have an impact on food security. Higher temperatures will increase crops’ water requirements, so shortages will become more serious. Irrigated rice already accounts for 24-30% of the world’s annual freshwater withdrawals. By 2025, 15-20 million of the world’s 79 million hectares of irrigated rice lowlands—which provide three-quarters of the world’s rice supply—are expected to suffer some degree of water scarcity. The International Food Policy Research Institute calculates a 12-14% decline in world rice production by 2050 due to the effects of climate change.

Beyond increasing yields, SRI offers three major benefits that have significant climate implications if applied on a large-scale:

**Reduced demand for water**

With SRI methods, water use for irrigated paddy cultivation is reduced by 25-50%, making more water available for other crops, domestic uses or natural systems. SRI’s lower water requirements mean that farmers can continue to grow rice in regions experiencing diminishing water availability. Moreover, the deeper root systems on plants grown using SRI methods make crops more drought-resistant.

**Reduced methane gas emissions**

Methane released from agricultural activities largely comes from inundated rice fields and ruminant animals, which together produce almost half of human-induced methane. Draining paddy soils periodically and maintaining them mostly aerobic, one of the main features of SRI methods, substantially reduces methane emissions.

**Reduced use of nitrogen fertilizers**

If current trends continue, the demand for synthetic nitrogen fertilizers (which are derived from petroleum products), is projected to increase by 65% by 2050, which would result in a doubling of nitrogen released into the atmosphere and waterways. High levels of nitrogen pollution drinking water sources with nitrate accumulations and can harm fish and marine ecosystems. With SRI methods, farmers can reduce the amount of nitrogen fertilizer they apply, as plants naturally develop stronger root systems that can better absorb nutrients in the soil. Organic manure can be applied to improve soil health and further improve nutrient use efficiency.

**As competition for water increases, SRI methods are a promising opportunity to reduce demand for water from agriculture so it can be used for other domestic and environmental purposes (SRI field left; conventionally flooded field right).**

For references see page 14 of the publication More Rice for People, More Water for the Planet at the Oxfam America website.