



CASE STUDIES: SEED SPACING

CASE STUDY 1: Row planting for Systems of Rice Intensification



SRI Cambodia. Credit, CEDAC

The System of Rice Intensification (SRI) is an evolving set of practices, principles, and philosophies aimed at increasing the productivity of irrigated rice by improving the management of plants, soil, water and nutrients,¹ for example by increasing the space between rice plants. With SRI, the soil is kept alternately dry and wet, allowing the plants' roots to take oxygen from the ground surface. Seedlings are transplanted very young, in square patterns to allow enough spacing

between the rice plants. These measures enhance the roots' growth and increase yields. The Better U Foundation and Africare set up a project to assess the performance of SRI during the 2008-2009 growing season in 12 villages in the Dire and Goundam administrative circles of north central Mali.

At the time, 19,000ha of land were under rice cultivation across the 12 villages managed by 17,200 households. Africare supplied each village with 2 rotary weeders and 1 field agent for every 15 farmers for technical support. SRI seedlings were transplanted 10-12 days after germination. In the control plots, seedlings were transplanted on average 29 days after germination with 2 to 5 seedlings in each pocket.

Across all 12 villages, the results showed a yield improvement and cost benefit for adopting SRI. Seed usage decreased from 50kg per hectare to 6kg per hectare. Performance varied according to soil types, rice varieties, fertiliser regimes and weeding practices, but the average SRI yield for the 53 farmers who used the practices as recommended was 9.1 tonnes per hectare, 66% higher than the average for the control plots at 5.5 tonnes per hectare. The average yield on neighbouring rice fields where non-participating farmers used their own methods was 4.86 tonnes per hectare.



Rice roots in Mali. Credit, Cornell University

SRI also has limitations. For the participating farmers, labour increased from 161 to 251 person days and input costs were higher, increasing from CFA414,650 (\$714 US) in the control group to CFA476,580 (\$820 US) for SRI. On the other hand, the net revenue from SRI more than doubled: CFA1,024,920 (\$1765 US) per hectare for those that adopted SRI compared to CFA491,200 (\$846 US) per hectare for the control plots.²

CASE STUDY 2: Row planting in Rwanda

Everest and Joyce are a young farming couple living in Kagabiro village, Rwanda. They grow maize, beans, coffee, and bananas, but for years their efforts were unsuccessful. From 30kg of bean seed, they only harvested a meagre 40-50kg. To receive training, support and access to inputs, they decided to join the One Acre Fund.



In her first season with One Acre Fund, Joyce planted 2kg of beans, and harvested 100kg, one of her best harvests ever. She attributes the increase in her harvest to the quality bean seed and the training she received that taught her how to plant beans in rows, and how to space her seeds along those rows.

One Acre Fund provides a planting kit to farmers that costs a little over US\$0.50. By planting seeds correctly, farmers can improve their maize yields by 10%, representing a US\$30 increase in income. The kit contains a fertiliser scoop for microdosing, a planting string and a top dressing stick. The planting string is 40 metres long with spray-painted markings every 25cm to mark where each seed should be planted. The string is faceted at each end between two sticks. This solves a major problem with inappropriate spacing, whereby farmers typically just drop seeds as they walk along the row, more or less dropping one seed per stride, but rarely with any consistency.



Everest & Joyce. Credit, One Acre Fund



Top dresser stick. Credit, A4I

The top dressing stick is a 75cm long pipe with a large nail drilled through one end. The rod serves to measure the proper distance between rows (75cm), by placing the rod on the soil to mark where the next row should start. The nail is used to create a hole several centimetres from the stalk where the fertiliser is applied. Using the One Acre Fund planting method, Joyce was able to store the beans at home to feed her 3 children.

During the same season, Joyce and Everest also planted maize. They used the One Acre Fund planting method for spacing their maize seeds in the field, and they applied microdoses of fertiliser to each individual seed hole. They produced their largest harvest ever and sold their surplus maize for Rwf50,000 (US\$83).³

CASE STUDY 3: Seed spacing for efficient use of inputs

Row planting is one of the improved techniques that AGRA teaches in Rwanda. Nyiranikubwayo Illuminee is a farmer in the Mukama Sector of Nyagatare District who was trained in best agronomic practices alongside other farmers in her cooperative by the Rwanda Development Organisation (RDO). These approaches include how to properly space plants for optimum results, as well as how to rotate crops and use fertilisers in a targeted manner. The season following the training, she achieved her best maize crop and sold the 4 tonnes raised on her 2ha plot for CFA12 million (US\$1,628).⁴



Row planting cowpea, Mozambique. Credit: A4I



Aberto Pinto is a member of a group of 500 lead farmers in Mozambique selected by the International Fertilizer Development Centre (IFDC) and trained to grow a new improved cassava variety in Murupula. He has a 5ha farm and typically harvests 7 tonnes of cassava per season. Previously he would sell 2 tonnes of his harvest for US\$50 per tonne. Through an AGRA-supported programme, IFDC provided him with disease-resistant cassava cuttings free of charge, and trained him in proper plant spacing techniques amongst other practices such as land preparation, soil management and managing or caring for plant cuttings. In the first year he received 510 cuttings, which he planted on 0.6ha at a distribution equivalent to 10,140 seedlings per hectare. From these, he yielded 10 tonnes of tubers. He sold half of his harvest to a beer brewing company, through market linkages fostered by an AGRA-improved value chain, at a price of US\$250 per tonne.⁵

¹ International Rice Research Institute (IRRI) (no date). [Systems of Rice Intensification](#). [20 June 2015].

² Africare, Oxfam America & WWF-ICRISAT 2010, [More Rice for People, More Water for the Planet: System of Rice Intensification \(SRI\)](#), WWF-ICRISAT Project Report, Hyderabad, India [24 June 2015]

³ One Acre Fund 2012, [A Rwandan Farm Family Invests in the Future](#) 04 September 2012 *One Acre Fund: Insights Blog* [24 June 2015]

⁴ Alliance for a Green Revolution in Africa (AGRA) 2015, [Transformed livelihoods: AGRA's impact in Africa](#), AGRA Impact Report, Nairobi [24 June 2015].

⁵ Alliance for a Green Revolution in Africa (AGRA) 2015, [Transformed livelihoods: AGRA's impact in Africa](#), AGRA Impact Report, Nairobi [24 June 2015].

