



**INTER-AMERICAN INSTITUTE FOR COOPERATION IN
AGRICULTURE (IICA)**

**CENTER FOR KNOWLEDGE MANAGEMENT AND
HORIZONTAL COOPERATION**

**BEST
PRACTICES
BANK**

*Successful experiences in horizontal
cooperation*

THE SYSTEM OF RICE INTENSIFICATION (SRI)

*Contributing to food security, competitiveness, and resilience
by adapting SRI to local contexts*



CHALLENGE ADDRESSED

Rice is a staple food in most of Latin America and the Caribbean and a leading source of protein for the poorest 20 percent of the tropical population, supplying more per capita than beans, beef, or milk. Although 23 countries in the region produce 28 million tons of rice annually, demand still exceeds supply. Rice is cultivated on about 7.2 million ha throughout the Americas in diverse conditions. Most of the rice grown in Central America is for subsistence.

Productivity in Latin America and the Caribbean is generally low for the millions of people who make a living growing rice, and crop production tends to be high risk due to limited resources, climate variability, and climate change, which is causing more frequent droughts, higher temperatures, and reduced water availability. Solutions are needed to help improve rice systems' resilience to climate change, increase their productivity and competitiveness, and reduce greenhouse gas emissions.

TOWARDS A SOLUTION

The System of Rice Intensification (SRI) addresses several key challenges posed by current conventional production methods in Latin America and the Caribbean, including low productivity, high input use (seeds, water and agrochemicals) and climate vulnerability. SRI employs an integrated approach that changes the management of plants, soil, water and nutrients to enhance productivity and resilience, while reducing greenhouse gas emissions.

GENERAL INFORMATION

Project name: The System of Rice Intensification (SRI)

Countries involved: Chile, Colombia, Dominican Republic, Nicaragua, Panama, Suriname, Venezuela

Supported by: IICA

Implementing entities: IICA, FEDEARROZ (Colombia), Institute of Agricultural Research (Chile), Nestlé and DANAC Foundation (Venezuela), Ministry of Agriculture and the Agricultural Research Institute (Panama), Association for Communal Agriculture Diversification and Development (Nicaragua), Cornell University (Suriname)

Status: Finalized

Period: 2015 - 2020

This approach capitalizes on system innovations at the local level and helps to reduce rice producers' vulnerability to the biophysical and socioeconomic impacts of climate change.

Between 2015 and 2019, SRI was promoted throughout the Americas by the Inter-American Institute for Cooperation on Agriculture (IICA) and its partners, including the National Rice Growers' Association FEDEARROZ (Colombia), the Institute of Agricultural Research (Chile), Nestlé and DANAC Foundation (the Bolivarian Republic of Venezuela), the Ministry of Agriculture and the Agricultural Research Institute (Panama), la Asociación para la Diversificación y el Desarrollo Agrícola Comunal [Association for Communal Agriculture Diversification and Development] (Nicaragua) and Cornell University. The goal was to demonstrate the principles of SRI in the producers' own fields, working with them to adapt the relevant practices to their conditions. Capacity-building sessions with researchers, agricultural technicians and advisory service providers have also been carried out at different locations to test the variables that make SRI a local innovation, such as seed variety, plant spacing and the use of machinery. In addition, the project linked interested parties and institutions under the SRI Network of the Americas, which then connects to other regional networks and the global network established by the SRI International Network and Resources Center at Cornell University, with a view to accelerating action in the region by using the knowledge and experiences of others.

The agroecological methodology of SRI is based on four principles that focus on adapting crop, water, soil and nutrient management. These principles remain unchanged, regardless of the location or methods farmers use to grow rice; however, the practices used to implement them can be adjusted to local conditions and needs.

The four interacting principles are:

- Careful and early establishment of healthy plants
- Reduced competition between plants
- Improved soil fertility and enhancement of its biota by adding organic matter.
- Efficient water management through intermittent irrigation, avoiding water stress and promoting aerobic conditions in non-flooded soils.

IICA'S PROGRAM

Climate Action and
Agricultural Sustainability
Program



PRIMARY SUSTAINABLE DEVELOPMENT GOAL



URL of the [Initiative](#)

SRI is a work in progress for farmers and extension agents, as they develop and fine-tune the process for local conditions. Innovations are necessary to optimize the system in each local context.

Given the high cost and scarcity of farm labour in Latin America and the Caribbean, one of the key challenges is mechanizing SRI in a manner consistent with its principles. To overcome this challenge, the project imported small machinery from Asia and, with the help of farmers and technicians, adapted it to local conditions to support transplanting, weeding and soil aeration.

Unlike most agricultural technologies used today, SRI is not based on material inputs. Instead, it primarily involves sociocultural changes in crop management, an intensification of knowledge and a new mindset for this low-input system. As such, SRI requires farmers, technicians, and the scientific community to commit to working together to identify and refine the practices that generate the best results.

The system's sustainability has been ensured through the continuous training of producers, which is supported by IICA and various partner organizations. Over 30 trainings, bilateral exchanges, farmer field days and other events have been held to demonstrate the benefits and results of SRI. Two regional workshops were held, and a third was planned in 2020 to ensure the exchange of knowledge between actors working with SRI in the region. In addition, a series of webinars were held each year to reach a wider audience. These activities have strengthened the knowledge and skills of over 3,000 technicians, producers, and students. The project has also developed technical manuals, pamphlets for producers and tools to support data recording and analysis.

Using SRI, farmers have obtained increases of up to 40 percent in yields and 60 percent in profitability. They have seen savings of up to 90 percent in seed use and 40 percent in water. They have also reduced the use of agrochemicals. The system has shown additional benefits, such as reduced lodging during strong storms, greater resistance to drought from larger and longer root systems, and a lower concentration of heavy metals in the plants and grains. Biofortified rice varieties can be incorporated in SRI to address nutritional issues.

SRI practices are developed for application in a wide variety of rice and other crop systems and are being implemented in over 60 countries around the world. The primary means of transferring the methodology—through practice and the exchange of knowledge among producers—allows it to be replicated continuously. Although this tends to make advances slower in nature, IICA and its partners are committed to supporting the process.

RELATED RESOURCES

Resource	Title	Year	URL
Technical document	Fundamentals of the System of Rice Intensification	2015	Link
Document	System of Rice Intensification (SRI): Answers to frequently asked questions	2015	Link
Technical guide	Guide for the establishment and monitoring of rice cultivation under the SRI methodology	2017	Link

MATERIAL PRODUCED

