Improving and Scaling up the System of Rice Intensification in West Africa

CORAF/WECARD • INSTITUT D'ÉCONOMIE RURALE (Mali) • SRI-RICE (Cornell University, USA)

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What is the System of Rice Intensification, or SRI?

SRI is an agroecological approach to growing rice, which allows farmers to increase yields, while at the same time decreasing inputs such as water, chemical fertilizers, herbicides and pesticides. SRI can be applied to all varieties of rice, from farmers' existing varieties to improved varieties.

How does SRI work?

Let's take a look at what makes SRI different from standard practices. The series of images below demonstrates how farmers adopt and adapt SRI, and how this changes their rice cultivation practices *and* the morphology of the rice plant itself.

Group A - Experienced countries

Benin, Burkina Faso, Mali

These three countries have several years of experience with SRI, in multiple regions, with training structures in place. Our objective is to scale up SRI with a harmonized approach, and with a well-designed monitoring system in place.

Group B - Intermediate countries, moderately experienced

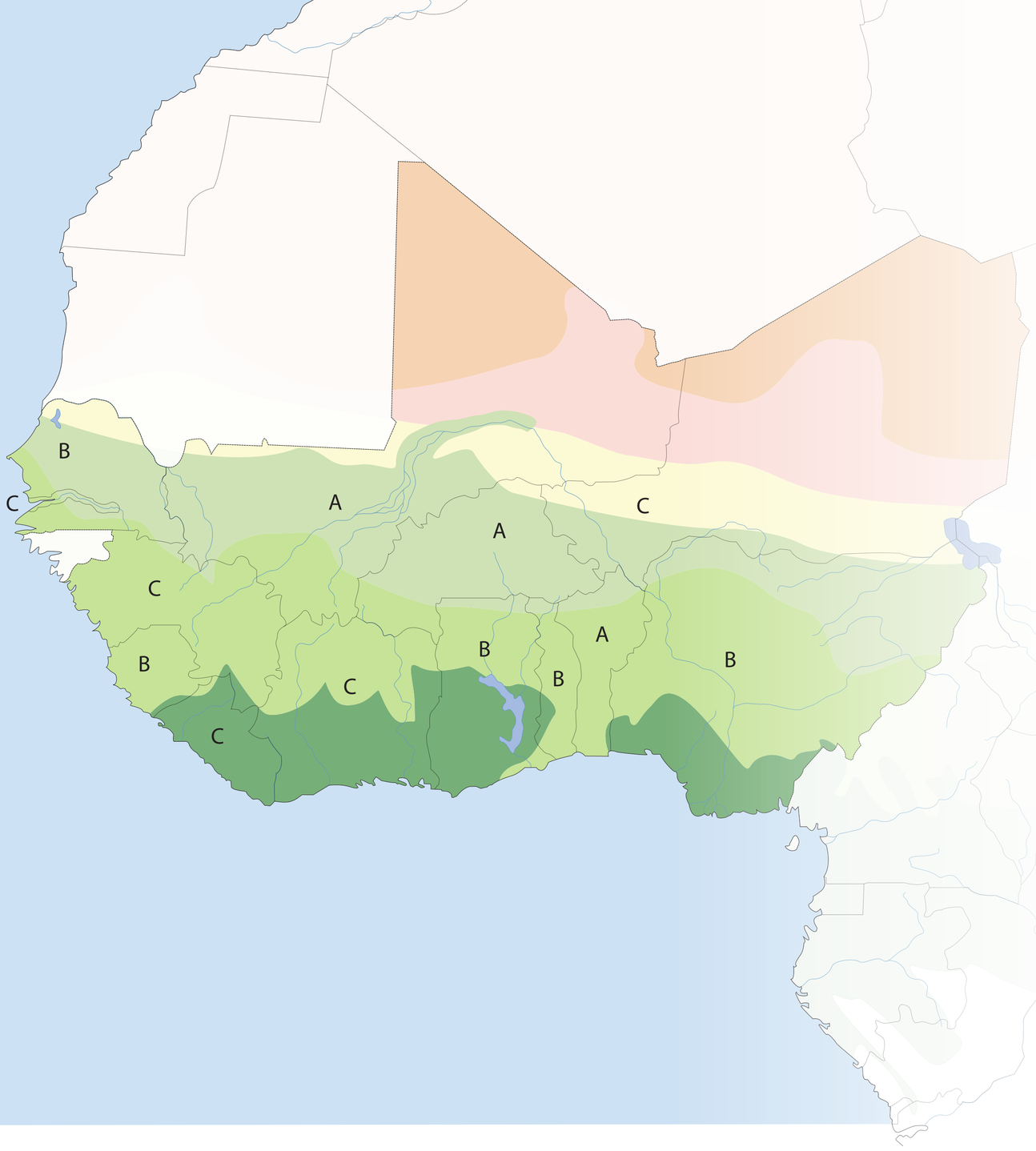
Ghana, Nigeria, Togo, Senegal, Sierra Leone

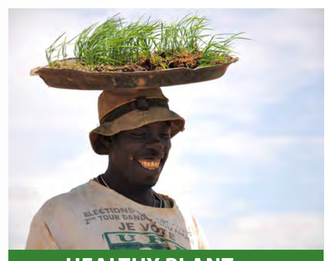
With basic SRI experience, these five countries have a good base to build from. Our objective is to reinforce their capacity for training and implementing SRI, and to expand trials to new locations and to different rice cropping systems.

Group C - Countries with interest but little experience

Niger, Guinea, Liberia, Côte d'Ivoire, The Gambia

These five countries have limited existing SRI trials underway, and little if any training capacity in place. Our objective then is to organize initial trainings on SRI, and to set up pilot tests in different locations around each country.





1 HEALTHY PLANT ESTABLISHMENT
Early and careful transplanting, at around 8-12 days

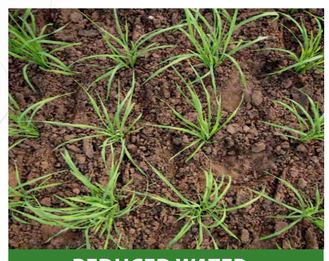
Preparing plants for transplanting early allows maximum time for each plant to develop its optimum tillering potential. In contrast to normal farmer practices of transplanting at several weeks of age, SRI advises transplanting from a nursery when individual plants have only 2 leaves apiece, and to carefully handle each plant so as not to damage their growth potential.

2 LOW PLANT DENSITY
1 plant per hill, with a wider spacing between hills–typically 25cm or more

In SRI, unlike in conventional practice, plants are transplanted singly, with wide spacing between hills. This results in an 80-95% reduction in seed use, and provides each plant with ample space, light and nutrients. Plants respond by producing more tillers and deeper and fuller root systems, which translates into better plant health, and increased panicle length and grain size. Yields often improve by 50% or more, as seen in many parts of West Africa and the world.

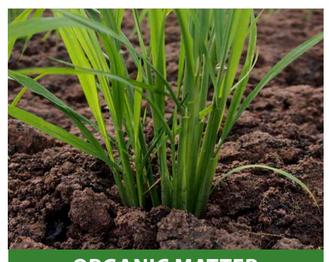
3 ACTIVE SOIL AERATION
Mechanical weeding aerates the soil, and reincorporates weeds to add organic matter

When farmers adopt and adapt SRI in their fields, traditional methods of weed control often need to be changed. Instead of relying on herbicides and flooding, SRI calls for mechanical weeding as much as is possible. Different weeder models are used for irrigated rice (like the one at left) than for upland conditions. Farmer adaptation and experimentation is key to developing locally appropriate systems.



4 REDUCED WATER
Practice alternate wetting and drying where possible, allowing aerobic conditions

Rice is often flooded as a means of weed control, but anaerobic soil impedes root growth, plant health, and mineralization of nutrients, and limits the diversity, abundance and effectiveness of soil flora. One of the keys to SRI is having an aerobic soil environment, which necessitates other changes like adoption of mechanical weed control, and addition of organic matter instead of heavy reliance on synthetic fertilizers.



5 ORGANIC MATTER
Preference organic matter over synthetic fertilizers, when possible

SRI works as a synergistic approach, meaning that all the steps above produce an effect that is greater than the sum of their parts. Additions of organic matter to an aerobic soil provide a complex and rich soil habitat for rice plants. By transplanting young, vigorous plants with wide spacing, each plant grows healthy and strong, resulting in high yields and better soil health, using fewer inputs, and increasing farmer incomes.

What is the project?

'***Improving and Scaling up SRI in West Africa***' is the 3-year first phase of a regional World Bank-financed project to increase rice productivity throughout a 13-country ECOWAS project area (Benin, Burkina Faso, Côte d'Ivoire, the Gambia, Ghana, Guinea, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo), seen in the map above. As part of the larger West Africa Agricultural Productivity Program (WAAPP), steered by CORAF/WECARD, regional coordination for the implementation of the project is provided by the Institut d'Économie Rurale's National Center of Specialization on Rice (CNS-RIZ), based in Mali, with a mandate to evaluate, select and scale up an approach for sustainably increasing rice production throughout the region.

In 2012 and 2013 stakeholders met, and through a participatory process decided to launch the first phase of the SRI project. Each of the 13 participating countries will implement SRI according to their own level of preparedness, using country-level WAAPP focal points to coordinate national efforts including active participation from NGOs, farmers' groups and associations, commercial rice farmers, training centers, government agencies and research institutes. See the list of countries and their current status above. The SRI International Network and Resources Center (SRI-Rice), based at Cornell University (NY, USA), is the principal technical partner.

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