

# System of Rice Intensification Regional Training

11-13 September, 2012 – Kakanitchoé (Ouémé), Rep. of Benin



Summary Report  
January 2013





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Photos: Devon Jenkins

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## Introduction and Background

This report covers a three-day West Africa regional training of trainers on the System of Rice Intensification (SRI). Funding for the training was provided by the West Africa Food Security Partnership (WAFSP), a 4-year regional partnership between Peace Corps and USAID/West Africa to support synergistic food security programming opportunities between four West African Feed the Future Focus countries: Ghana, Liberia, Mali and Senegal; and non-Food the Future Focus countries in West Africa with Peace Corps programs: Benin, Burkina Faso, Gambia, Guinea, Sierra Leone and Togo.

Jointly organized by the West Africa Food Security Partnership, the SRI International Network and Resources Center (SRI-Rice), and the West African Rice Farmers Network - a three-day training on the System of Rice Intensification was conducted outside of Porto Novo, Benin, from September 11<sup>th</sup> to 13<sup>th</sup>, 2012. Peace Corps Volunteers (PCVs), their counterparts, and Peace Corps staff from Benin, Togo, and Guinea participated, as well as a Peace Corps staff member and PCV counterparts from Senegal (PCVs from Senegal will be invited to an English language SRI training in 2013, as they learn local languages during their service instead of French).

SRI-Rice, based at Cornell University in Ithaca, NY, was the technical partner for the training, providing consulting guidance throughout, and was instrumental in the creation of the training from its inception. The training was hosted at the farm school Solidarité Agricole Intégrée (SAIN). Songhaï Center, an integrated agricultural development center based in Porto Novo, Benin, participated in the training as a partner organization of Peace Corps Benin, and as the host organization for one of the Peace Corps organizers for the training. Three staff members from Songhaï were trained with the intent of setting up SRI trials at Songhaï sites.

## Objective and Rationale

This project seeks to increase the adoption of the SRI technique across West Africa as a means of contributing to food security throughout the region. SRI is a rice production methodology that focuses on natural means of enhancing soil health and providing more space and better conditions for each individual rice plant, allowing each to produce more. Instead of dense planting, inundated fields and relying on chemical inputs to control weeds and boost fertility, SRI uses wide spacing, applications of compost, early transplanting, and manual weeding which serves to aerate the soil as well. The result is better soil health, better plant health, and typically higher yields, with up to 90% reduction in seed use, significantly lower water use, reduced cost for inputs, and much less exposure for farmers and the environment to potentially toxic chemical inputs. Furthermore, SRI is a methodology that allows farmers to increase yields while still using whatever local varieties of rice they already have. Developed in Madagascar in the 1980's, since the late 1990's SRI has been adopted and adapted by farmers in over 50 countries<sup>1</sup> throughout the world, notably in Vietnam, India, China, Mali and the Philippines.

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<sup>1</sup> Source: SRI-Rice – [sri.ciifad.cornell.edu](http://sri.ciifad.cornell.edu)



## Training Format

The training was conceived as a training of trainers, for staff, Peace Corps Volunteers and their counterparts. Peace Corps staff from each country were invited to ensure sustainability and facilitate the incorporation of SRI into the technical training programs in participating countries. This training was intended to serve as the first of a series of similar trainings involving different countries throughout the West Africa Food Security Partnership intervention area. To facilitate communication, participation was limited to francophone countries/participants, and to strengthen impact and post-training collaboration, Volunteers were selected from clustered regions.

Sessions combined hands-on field work with classroom instruction and group exercises. Core SRI principles were introduced first, and reintroduced at subsequent stages of the training in greater detail to enhance retention and understanding. Field work demonstrated positive and negative applications to prompt problem solving by participants. The first day focused on a broad sketch of SRI basics, followed by country breakout group sessions to sketch out regional rice production systems and what adaptations would be required for implementing SRI. Day two followed up with detailed technical instruction in SRI, hands-on field work in nursery establishment, field preparation and transplanting, and group work to create a technical plan of action for each region. Day three saw the conclusion of the group action plans, sessions on conducting relay trainings, monitoring and evaluation, and network building. Lastly organizational visits on the return to Cotonou brought participants to CAFROP, a local rice processing/packaging NGO aimed at making locally produced rice more competitive in urban markets, and Songhai Center, a regional agricultural/manufacturing NGO and UN-designated Center of Excellence. See the agenda in Appendix II for a more detailed description of the training's structure.







## Training Conception, Organizers and Trainers

The idea for a series of West Africa training of trainers was originally conceived by Erika Styger (Director, SRI-Rice, Cornell), Stephanie Tack (West Africa Food Security Coordinator), and Pascal Gbenou (President of the West African Rice Farmers Network) during a visit of Erika's to Benin in early 2012. Discussions between the WAFSP and SRI-Rice continued throughout the spring, and an initial training was chosen for late summer 2012, with a potential secondary training to be held in March or April, 2013. In May 2012 SAIN was selected as the training site and Pascal Gbenou and Jean Apedoh as the trainers. Devon Jenkins (formerly of SRI-Rice but currently a Peace Corps Response Volunteer in Benin working with Songhai Center) played a key role in the organization of the training, acting as logistical and technical support alongside Suzie Ahn (PC Benin Food Security Volunteer) who provided logistical support.

**Pascal Gbenou** is the president of the West African Rice Farmers Network. Currently in his fourth season using and evaluating SRI methods in Benin, he received his original SRI training in Madagascar. He holds a BSc and an MSc in agronomy—specifically rice cultivation—and is completing his dissertation on the potential for SRI to address Benin's food security challenges.

**Jean Apedoh** is a resident of Togo, coordinator of GRAPHE, a Togolese NGO, and currently involved in his third season of SRI trials at four sites in southern Togo. Mr. Apedoh is a trained agronomist and received his SRI training at a regional training conducted in Mali.

**SAIN**, the host site for the training, is an integrated farm school located in the village of Kakanitchoé, about one hour north of Porto Novo, Benin. Eleven students spend 18 months at the school, rotating out to affiliated sites in the region. Students receive theoretical instruction alongside running farm activities, which includes rice, banana, plantain, papaya and vegetable production, and raising rabbits, chickens, ducks, turkey, guinea fowl, snails, quail and an aquaculture operation. The site uses an integrated production model, with wastes from one system being incorporated into other parts of the farm.

A special thank you is due to the staff at SAIN for their dedicated support, and to the participants for their active and enthusiastic engagement in the course!

## Monitoring and Evaluation

As part of the Feed the Future initiative, the West Africa Food Security Partnership utilizes a series of indicators to determine the impact and efficacy of each intervention. The three key objectives of the West Africa Food Security Partnership are the following:

1. Increase the **availability** of healthy foods, especially for women and children
2. Increase the **accessibility** of healthy foods by decreasing poverty and increasing incomes
3. Improve the **utilization** of available food stuffs to improve the nutritional status of women and children



The SRI training directly or indirectly addresses all three of these objectives, with a specific focus on the first two. While rice is generally not considered to be a highly nutritious food stuff, it is the caloric backbone of many diets, and the livelihood of many farmers throughout the region. West Africa is the largest rice producing and consuming region in Africa, and for countries like Guinea or Senegal, rice is more than just a staple, it's a way of life and is central to the national identity. Increasingly urban population growth has undermined national food security for countries across the region, as the farmer to urbanite ratio has decreased, and changing demographics favor rice that is cleaner and more professionally processed. The result is that rice imports are increasingly a major contributor to trade imbalances, straining national development goals and making families more susceptible to fluctuations in international rice prices.<sup>2</sup>

SRI addresses this by allowing farmers to increase their production without increasing the land under cultivation (thus the *intensification*, as opposed to *extensification*—increasing production through increased land area under cultivation, having to purchase additional inputs, or relying heavily on a limited number of professionally-bred rice varieties which may or may not be well suited to their specific conditions). On a national level, SRI doesn't require additional demands on water resources, and can increase rice production without requiring construction of extensive irrigation schemes. In short it allows farmers and countries to produce more with what currently exists, or to more efficiently utilize investments that are made.

These same qualities also allow SRI to address objective number two, as farmers can increase their rice production without borrowing money to purchase or lease more land to do so. This increases available income for other purposes. Furthermore, SRI has been shown in other regions to be more economically efficient per unit of rice produced, thanks both to increased productivity and decreased input and seed use.<sup>3</sup> In regions where rice production is carried out primarily by women, this means more income directly available to women and children, which has been shown to have a greater positive impact on family nutritional security than when earnings are kept by male family members.

The SRI training addressed the second objective as well through a site visit to CAFROP, the rice processing organization which buys paddy rice from farmers in the surrounding Ouémé Valley region of Benin and processes it into both polished white rice and parboiled rice, for sale to urban markets. While not as nutritionally healthy as brown rice, parboiled rice represents something of an in-between, as the process transfers some of the nutrients from the bran to the starch, so that after polishing the white rice retains some of the nutrient value lost from removal of the bran, but still possesses the storage, cooking

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<sup>2</sup> CARD—the Coalition for Africa Rice Development—has published a series of programmatic documents compiled by the respective ministries in charge of agricultural production, referred to as National Rice Development Strategy reports (NRDS). Each country is charged with attaining rice self-sufficiency by 2018. The NRDS reports document the background of rice production in each country, and detail a strategic plan for achieving self-sufficiency. For more on this [www.riceforafrica.org/downloads/NRDS](http://www.riceforafrica.org/downloads/NRDS).

<sup>3</sup> For more see: Uphoff, Norman. 2006. How to help rice plants grow better and produce more: teach yourself and others. Madagascar: Association Tefy Saina and CIIFAD.



and marketability benefits of white rice. This indirectly addresses the third objective—increasing utilization of healthy food stuffs.

As a training of trainers, this activity is aimed at impacting producers through the enabling of subsequent trainings. To this extent a good portion of the training was spent on developing networks and a resource base to facilitate follow-up with participants. Participants from each country were selected from clustered regions, which was designed to enable follow-up planning and trainings to be done collaboratively, thereby increasing their odds of successfully carrying out trainings and evaluations. Counterparts were included for the same reason, but also to help ensure the sustainability of the initiative (the knowledge of SRI won't be leaving with the PCVs at the end of their service), and to bring a greater understanding of local conditions to the training to enable more detailed planning on local adaptation. Peace Corps staff were involved for sustainability reasons as well, and to ensure that participating countries could include SRI into their technical training programs for new Peace Corps Volunteers in the future, and thus contribute to the multiplier effect of the training of trainers. Follow-up support to participants will be essential to ensure their compliance with training objectives and expectations, and proper monitoring and evaluation once their projects get under way.

When follow-up trainings and SRI demonstrations are conducted, the resulting data will be compiled and transmitted to Stephanie Tack, the WAFSP Coordinator. The two most quantitatively relevant indicators for this will be 4.5.2-5 and 4.5.2-7, both of which follow under WAFSP objective number one:

- **Indicator 4.5.2-5:** Number of farmers and others who have applied new technologies or management practices as a result of USG (US Government) assistance
- **Indicator 4.5.2-7:** Number of individuals who have received USG supported short-term agricultural sector productivity or food security training

The first is an outcome indicator and isn't applicable until SRI demonstrations begin, and farmer adoption can be measured in each country. The second is an output indicator and can easily be measured as a result of this training, and can be expected to increase significantly with subsequent trainings conducted by participants in each country.

Nine Peace Corps Volunteers participated in the training as well, alongside one host country national (HCN) Peace Corps staff member from Senegal, and one from Guinea. HCN Peace Corps staff from the other countries were invited to come as well, but did not participate due to schedule conflicts.

## Participant Feedback

Participants were asked to fill out evaluation forms before leaving the training; 24 out of 25 did so. Below is a summary of their qualitative responses, followed by a chart showing the averages of their quantitative responses.

- Overall very positive, especially on developing a technical proficiency, the length of the training, materials covered and location



- Emphasis on the value of practical sessions in the field
- Emphasis on the value of the videos
- The trainers received generally very high marks
- Good balance of theory and practice
- Communication with organizers was consistently rated very high
- Most participants said they feel comfortable and able to train others on SRI, especially given the breadth of materials given on the USB flash drives
- Trainers need to do a better job of limiting excessive/tangential questioning
- Time management was a weak point. This can be addressed in the future by limiting the speaking time of participants' interventions
- The location was a positive feature, but the lodging was listed as being less satisfactory (though generally no lower than a neutral score (3/5))
- The program changed too much
- Group reporting sessions were gratuitous, tedious and often unnecessarily long/detailed
- Participants do not know how/where to get weeders made
- Almost everyone came in with very little (2/5) to no (1/5) knowledge of SRI, and left with a moderate (3/5) to well-established (5/5) knowledge of SRI
- One comment to better take into account the level of each participant (profess. v. non-profess.)
- Training material was too focused on irrigated rice conditions, which are not those experienced by trainees in their communities—as a result, many seemed to leave with the impression that SRI could only be used well under conditions with ideal water control, or at least that not having this would be a huge constraint to their adoption of SRI. Guidance on adaptation of SRI to the different production systems and water conditions is absolutely necessary. Besides, too little time was spent on adaptation during the training
- One comment suggested putting more emphasis on how to address possible problems/difficulties that may come up in the actual implementation of SRI
- Group work: instead of only working in country groups, it would be useful to also grant some time for Counterpart-Volunteer or organization-specific targeted work

#### Organizer observations:

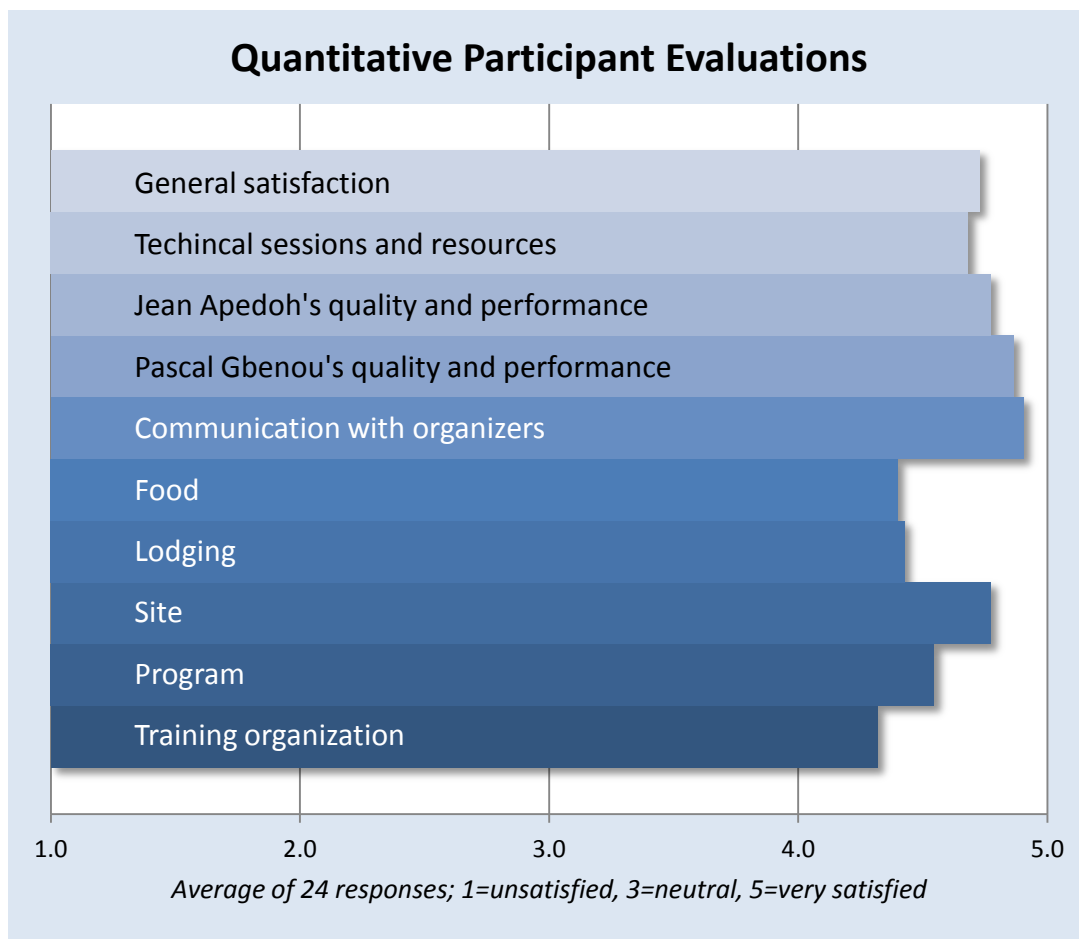
- The evaluation question asking participants to list the six practices of SRI confused many people, so instead they listed the technical steps (soil preparation, seed preparation, nursery preparation, etc.)
- PCVs repeatedly expressed satisfaction about being able to participate alongside PCVs from other countries, as it facilitated exchange of ideas/experience
- PCVs seemed more frustrated than Host Country Nationals (HCNs) at long-winded group presentations, however time management was almost universally listed as an issue
- Even though most participants said on their evaluations that they would feel comfortable leading SRI trainings, it wasn't entirely clear that they had understood the material well enough; this





could reflect awkward phrasing of the six components of SRI, but may also reflect unrealistic confidence levels

- Counterparts showed differing levels of literacy in completing the evaluations; for some it was difficult to determine how well they had understood the material given their partial or confusing responses
- Different levels of participants (professional versus non-professional) seemed to be a strength, as opposed to one participant observation, and it created a helpful dynamic of discussion and debate
- While idea sharing and discussion was high among PCVs, they tended to spend a lot of time talking amongst themselves outside of sessions; this situation was better during actual sessions, but greater integration during non-programmed activities would have been good
- Programmatic and technical components seemed strong, and well received
- Future trainings would benefit by soliciting a volunteer to manage time
- While people greatly enjoyed the site, logistics were subpar in certain respects, including restroom facilities and food options
- Good demonstration field preparation





## Next Steps

Stephanie Tack and Devon Jenkins are engaged in on-going communication with each country point of contact to assess their ability to implement their respective action plans and to determine what additional support/resources are needed for each group. Planning for the second (Anglophone) training is underway.

## Participant Updates

While at the time of this writing most regions in West Africa are in the dry period between growing seasons, many of the participants have reported training and planning activities since the September training occurred. As these results come in, we will compile them for measuring our indicators. Some highlights, as of December 2012:

- **Guinea:** PCV Drew and counterpart Condé Mamadi Kensa report that while most rice farming is waiting on the next rainy season's arrival, their network is up, and work has started: one PCV and counterpart have put together a trial plot, and presented at a local agricultural school/research center where five students were chosen to start/run a 200m<sup>2</sup> demo plot; a second PCV and counterpart held a (one-day) training as well at a local agricultural school, with 68 participants, and will start a demo plot at the school in May. Peace Corps Guinea is incorporating SRI into In-Service Training for the agroforestry PCVs in May, and training participants in their Master Farmer program, with a nationwide training scheduled for March or April. PCVs report skepticism from farmers about wide plant spacing, saying that it will take too much time to transplant, but have also seen excitement about the amount of tillering happening on demo plots that are already established. The first demo plots reported problems with rodents eating the nurseries; these problems were avoided by using fencing for the second attempt.
- **Senegal:** Program and Training Assistant Arfang reports that the Master Farmers who attended the training will be presenting at a national Master Farmer training that is coming up soon. Most Master Farmers plant rice in the rainy season, which should start around June, and regional trainings are being planned for May and June 2013. Peace Corps staff has been following up with Master Farmers. PCVs from Senegal were not able to attend the September training, due to their learning local languages and not French, but they will be part of the April Anglophone SRI training.
- **Benin:** PCV David and counterpart Léandre have started a trial plot of lowland, rainfed rice with irrigation, and reported mid-way some challenges and success—the SRI plot was slower to grow, as the non-SRI plot was direct-seeded. A homemade wood measuring rake seemed like a great improvisation for speeding up transplanting, except that the soil was too heavy and clayey for it to work in their conditions. In the Ouémé Valley region (the area surrounding September's training site), David Dansou reported that his organization, URIZOP, is in the process of creating an initiative called '*Un Casier de SRI*', with at least 20 people currently involved, and plans to train/involve many more. At Songhaï staff have harvested their first SRI trial, and will begin on a second trial/demonstration plot in early January, with plans to incorporate it into their training curriculum and tours, and to scale it up to other Songhaï sites in Benin and Nigeria.
- **Togo:** We are eagerly awaiting updates from our Togo group!



## Conclusions

Overall the training was a success, and participants were very vocal in expressing this to the organizers. The subject matter was widely embraced, and a clear majority of the participants expressed enthusiasm at attempting SRI in their communities, and felt that they had the necessary knowledge and support to enable them to do so. Participant evaluations at the end of the course were positive; on a scale of 1 to 5 (1 being satisfied, 3 being neutral, and 5 being very satisfied), the average of all scores for all questions was 4.64. The trainers scored high grades for their qualitative comments were largely very positive, with a few recurring suggestions, and a handful of isolated outliers.

Participant feedback after the training has showed that many of the participants remain motivated to carry out trials, demonstrations, and trainings at their own at site, supported by a high degree of collaboration between PCVs and counterparts. Small-scale demonstrations and trials have begun for a number of participants, but the bulk of trials, trainings and demonstrations will commence from April on, when most regions enter into the primary rice growing season due to the return of the primary rainy season.

As already noted, the overall sentiment was very positive, and while critiques/suggestions were rather minimal, they are worth pointing out to help improve future trainings. Firstly, the organizers and trainers could have followed the program more clearly and directly. Much of the variance was due to long Q&A sessions, which could have been better contained by the trainers. Similarly, group presentations were deemed by many to be gratuitous. The trainers picked up on this the second day, and were able to more successfully limit sessions to the designated length, and were able to effectively use participant volunteers to help control time, record activities/notes, etc. Secondly, while a considerable amount of time—both in country-specific breakout sessions and whole group sessions—was spent addressing regional adaptation, many participants left the training with the sentiment that adapting SRI to their regions would be difficult or perhaps unlikely due to issues with water control. A large part of this is likely due to the fact that the videos and technical guide each showed SRI being implemented in areas with near perfect water control. This doesn't reflect the broad diversity of SRI applications—particularly the conditions faced by training participants—and while this was addressed several times at length, future trainings should develop materials that more accurately reflect the wide array of conditions trainees face in implementing SRI after the training, and support trainers in effectively conveying this message. Third, evaluation forms showed that some counterparts may have left with a poorly developed understanding of SRI, which would suggest that their criticism was either left un verbalized, or that they did not fully understand the evaluation form. Technical, hands-on training components seemed to be universally well received, and helped to generate a more comprehensive understanding of SRI for participants across the board. Lastly, while the site was excellent in many respects—in particular regarding technical facilities, location, and isolation (a positive in that it limited distractions)—site preparations could be improved to accommodate the relatively large number of participants, especially toilet facilities. Again, this should in no way reflect on the site in a negative manner, as participants were eager to learn about the various operations at the site, and the tour was one of the highlights of the training.





The staff of SAIN needs to be commended for handling a group of unprecedented size for their farm school. Visits to local organizations CAFROP and Songhaï were well received, and seemed to add depth and perspective for rice transformation and integrated agriculture, giving participants a more well rounded training.





## Appendix 1: Resources

### Resources

The **SRI International Network and Resources Center (SRI-Rice)** at Cornell University (Ithaca, NY) maintains a comprehensive list of resources for the adoption and understanding of SRI, including academic and practical research databases, up-to-date information on SRI adoption in over 40 countries around the world, links to SRI producer groups/networks in Asia, Africa, the Middle East and Latin America, and training materials. All of this can be found on their website at [sri.ciifad.cornell.edu](http://sri.ciifad.cornell.edu). SRI-Rice also manages a Ning social networking site dedicated to facilitating dialog and exchange for SRI practitioners and promoters in West Africa: [sriwestafrica.ning.com](http://sriwestafrica.ning.com). The full academic research portal can be found at <http://www.mendeley.com/groups/1178631>.

Contact Erika Styger at [eds8@cornell.edu](mailto:eds8@cornell.edu), or by phone at +001 607 255 8087 for more information.





Appendix II: Training program

**AGENDA – WEST AFRICA SYSTEM OF RICE INTENSIFICATION TRAINING OF TRAINERS  
ADJOHOUN, BENIN, 11-13 SEPTEMBER, 2012**

**PRE-TRAINING – SEPTEMBER 10<sup>TH</sup>** – Tour for early arrivals

- 17h Farm/school tour (*optional—for those who arrive early*)
- 18h30 *Dinner*
- 19h30 Video – World Bank video

**DAY ONE – SEPTEMBER 11<sup>TH</sup>** – Intro to SRI; rice production systems; nursery

- 07h30 *Breakfast*
- 08h Intro of participants/intro to training
- 08h30 Intro to SRI: Why SRI; history and context
- 09h Primary components of SRI
- 09h45 Adapting SRI to different conditions
  - Synergy and variability
  - West Africa context: What’s been done, AEZ variability, etc.
- 10h30 *Pause – 15 min.*
- 10h45 **Field visit:** Compare SRI and conventional plots; uproot plants
- 11h00 **Field activity:** Seed soaking
- 12h00 Assign group presentations: PCVs must bring completed questionnaires, and work in groups from their (sub-) national clusters (*see handout*)
- 12h30 *Lunch* – Use lunch to prepare group presentations on rice systems
- 13h30 Presentations on rice production systems
- 14h30 Questions/Discussion/Guidelines to prepare for group work
- 15h00 *Pause – 15 min.*
- 15h15 Group work
  - Step by step: Propose technical adaptation of the current system in order to integrate SRI practices (by identifying how SRI differs w/ current practices)
  - Identify constraints and bottlenecks with SRI in their context
  - Pose the problem: How are you going to solve this?!
- 16h15 Present back to group
- 17h **Field activity:** Prepare the nursery bed
- 17h45 **Field activity:** Preparing the field for planting
- 18h30 *Dinner*





**DAY TWO – SEPTEMBER 12<sup>TH</sup>** – Nursery sowing; field preparation; transplanting; weeding; setting up a trial

07h30	<b>Field activity:</b> Preparing the field for planting ( <i>cont.</i> )
08h30	<i>Breakfast</i>
9h	Step-by-step technical presentation on SRI: Interactive, including discussion on adaptation started the day before
10h30	<i>Pause</i> – 15 min.
10h45	<b>Field activity:</b> Nursery sowing
11h30	Setting up a comparison trial/data collection
12h30	<i>Lunch</i> – Discussion: how did the sowing and field preparation go?
13h30	Farmer stories/exchange
14h15	Developing a technical plan I: The basics of a technical plan
14h45	Developing a technical plan II: Work session to develop village-level tech. plans
15h30	<i>Pause</i> – 15 min.
15h45	<b>Field activity:</b> Transplanting
17h	<b>Field activity:</b> Weeding
18h30	<i>Dinner</i> – Discussion: How did the transplanting and weeding go?

**DAY THREE – SEPTEMBER 13<sup>TH</sup>** – Technical plans; conducting trainings; M&E; plenary

07h30	Developing a technical plan III: From village to regional level
08h30	<i>Breakfast</i>
09h	Training of Trainers (ToT) principles: Training and follow-up with farmers
10h	Following up I: Reporting, documenting
11h	<i>Pause</i> – 15 min.
11h15	Following up II: Group process to develop a knowledge-sharing platform, designating regional/country leads, blogs, etc.
12h30	<i>Lunch</i> – <b>30 min.</b> – Pack up belongings and bring bags to vehicles
13h	Plenary discussion: Sharing a framework to move forward
14h30	Evaluation
15h	<b>Organization Visit:</b> Meet with CAFROP (Cooperative d'Amélioration de la Filières Riz dans l'Ouémé Plateau) rice cooperative in Adjohoun to talk about processing, branding and marketing rice (30 minute drive)
16h	<i>Pause/light dinner</i> (Adjohoun) – 30 min. – Discussion with cooperative members
16h30	Leave for Cotonou
17h15	Arrive in Cotonou



## Appendix III: Country rice background presentations

# Summary of Group Work on Current Rice Systems

## BENIN

Benin has three agroecological regions: the south, center and north. Planting techniques differ between regions, and are presented below.

### I. Southern Region

Planting season in the Ouémé Valley: Nov to May

Planting season for the south in general: May to Sep

#### a. Nursery or direct sowing

- Nursery in a bed with a seed density of 60 kg /ha.
- Direct planting with a density of 80 kg/ha
- Duration of nursery: 3 to 4 weeks
- Rice varieties commonly cultivated: NERICA L-20, NERICA 14 et IR841
- Vegetative cycle: 3 to 4 months

#### b. Soil preparation

- Plowing, leveling, mudding/puddling
- Fertilizers: compost and other organic matter, NPK, urea

#### c. Transplanting

- Uprooting, dividing young plants
- Number of plants per pocket: 2 to 4

#### d. Field management

- Manual or chemical weeding (*Garil, Caliherbe*)
- Irrigation (rainfed, motor pumps and by gravity-fed artesian wells)

#### e. Preventing bird damage

- Length of bird predation: 40 days
- Method for controlling birds predation: guarding and using bird nets

#### f. Harvest and post-harvest

- Cutting with a sickle or with a machete
- Post Harvest: Collecting/bundling, threshing, winnowing, drying, storage
- Selling paddy or sending it to be processed

#### g. Yields

- Yields of inundated rice: 3 to 4 t/ha
- Yields of rainfed rice: 2 to 2.5 t /ha



## II. The Other Regions

Planting season in the Center (Zou, Collines): May to Nov

Planting season in the North (Atacora, Donga, Borgou, Alibori): Jun to Nov

### 1. Techniques

- Direct planting in the Center and the North
- Co-planting with yam and maize
- This planting is done more extensively in the lowland areas

### 2. Yields

- Yield of inundated rice in the Center: 2 to 4 t/ha
- Yield of rainfed rice in the Center: 1 to 3 t/ha
- Yield of inundated rice in the North: 2 to 4 t/ha
- Yield of rainfed rice in the North: 2 to 2.5 t/ha

## III. Rice Farming Constraints and Solutions

REGION	CONSTRAINTS	POSSIBLE SOLUTIONS
South	<ul style="list-style-type: none"> <li>• High weed competition</li> <li>• Water control</li> </ul>	<ul style="list-style-type: none"> <li>• Manual and chemical weeding</li> <li>• Availability of irrigation systems</li> </ul>
Center	<ul style="list-style-type: none"> <li>• High weed competition</li> <li>• Lack of irrigation, total dependence on rainfall</li> </ul>	<ul style="list-style-type: none"> <li>• Manual and chemical weedings</li> <li>• Installing wells</li> </ul>
North	<ul style="list-style-type: none"> <li>• Irregular rainfall</li> <li>• Lack of storage warehouses</li> </ul>	<ul style="list-style-type: none"> <li>• Increasing the number of wells and irrigation systems</li> <li>• Construction of storage warehouses and purchase of mini- huskers.</li> </ul>

## IV. Constraints to the Adoption of SRI in Each Location, and Possible Solutions

REGIONS	CONSTRAINTS	POSSIBLE SOLUTIONS
South	<ul style="list-style-type: none"> <li>• Availability of organic matter for fertilization</li> <li>• Lack of means for site planning/development</li> <li>• Lack of fertilizers specifically for rice</li> </ul>	<ul style="list-style-type: none"> <li>• Having each producer compost for themselves</li> <li>• Necessity of planning/site development</li> <li>• Ask manufacturers to produce some</li> </ul>
Center	<i>Same as above</i>	<i>Same as above</i>
North	<i>Same as above</i>	<i>Same as above</i>

**NB:** The constraints and possible solutions will become better known through conducting SRI trials in each region.





## TOGO

### I. Anie Region

**Period:** Jun to Dec

**Rice system:** Rainfed

**Access to organic matter:** Availability of rice straw, husk, and animal manure but compost is not used in rice production

**Water control:** Exclusively rainfed

### II. Zio Valley Region (Kovié, Ziowounou, Assomé, Mission–Tovè)

**Period:** Mar to Aug, and Oct to Feb

**Rice system:** Transplanting after nursery

**Access to organic matter:** Availability of rice straw and other herbs, and rice husk but very little access to animal manures; compost is not especially well used in rice production

**Water control:** Easy due to a gravity-fed irrigation system associated with a dam on the Zio

REGIONS	CONSTRAINTS	POSSIBLE SOLUTIONS
<b>Anie Region</b>	<ul style="list-style-type: none"> <li>• Lack of water control</li> <li>• Lack of quality seeds</li> <li>• Planting in line (a grid)</li> </ul>	<ul style="list-style-type: none"> <li>• Putting in place an effective irrigation system</li> <li>• Training of seed producers</li> <li>• Introduction of seeders/planters</li> </ul>
<b>Zio Valley Region</b>	<ul style="list-style-type: none"> <li>• Number of plants per pocket</li> <li>• Distance between plants</li> </ul>	<ul style="list-style-type: none"> <li>• Training workshops, demonstration fields</li> </ul>
<b>Commune</b>	<ul style="list-style-type: none"> <li>• Having to introduce rotary weeders in place of chemical herbicides</li> <li>• Compost application</li> </ul>	<ul style="list-style-type: none"> <li>• Training through demonstration</li> <li>• Producing and using compost</li> <li>• Valuation of agricultural waste as an incentive for composting (fungal cultures)</li> </ul>



## GUINEA

### I. The Low Coast (Basse Côte)

**Rice systems:** Inundated plains, lowlands, hills/slopes and mangrove swamps

**Period:** July to December

**Challenges:**

1. Water control
2. Soil evaluation

**Access to organic matter:** reusing straw/stubble

**Access to and control of water:** Water control exists, but on a small-scale and on a parcel-by-parcel basis; no industrial-scale water control

### II. Upper Guinea

**Rice systems:** Slopes (slopes, lowland)

**Season:** April to October

**Challenges:**

1. Predators (pests, agoutis, birds and mice)
2. Weeds

**Access to organic matter:** Not currently used (burned instead)

**Water control:** Rainfall only

### III. Adapting SRI in Guinea

REGIONS	CONSTRAINTS	POSSIBLE SOLUTIONS
<b>The Low Coast</b>	<ul style="list-style-type: none"> <li>• Decreasing water applications</li> <li>• Transplanting at a young age</li> <li>• Using a weeder</li> </ul>	<ul style="list-style-type: none"> <li>• Site development</li> <li>• Sensitizations/trainings</li> <li>• Ordering (fabricating) rotary weeders</li> </ul>
<b>Upper Guinea</b>	<ul style="list-style-type: none"> <li>• Using a rotary weeder</li> <li>• Water control</li> <li>• Using rice straw, organic matter</li> </ul>	<ul style="list-style-type: none"> <li>• For slopes, create terracing</li> <li>• For flat areas, make accommodations</li> <li>• Trainings</li> </ul>



## SENEGAL

### Current Systems

**Rainfall:** 600 to 800 mm in Fatick

800 to 1200 mm in Kedougou

**Season:** Planting occurs with the start of the rainy season

June to October in Fatick

May to October in Kedougou

**Rice systems:** lowland and upland

**Cultivated varieties:** Nerica 1 and 6

**Length of cycle:** 90 to 100 days

**Field preparation:** June to July

**Nursery and direct sowing:** July

**Transplantation:** beginning of August

**Thinning:** beginning of August

**Weeding:**

- 1<sup>st</sup> weeding: beginning of August
- 2<sup>nd</sup> weeding: end of August

**Fertilizer:** at the time of planting and urea at the time of the first weeding

### SRI

**Two types of measuring rakes for SRI spacing:**

- 25cm by 25cm
- 30cm by 35cm

**Soil preparation:** June to July

Spreading manure and compost plus NPK

Use of a measuring rake for spacing, then planting (5 seeds)

Thinning to 1 plant 12 days

Weeding

**Fertilization:**

- 1<sup>st</sup> urea application: 12 to 15 days
- 2<sup>nd</sup> urea application: 30<sup>th</sup> day

REGION	CONSTRAINTS	POSSIBLE SOLUTIONS
	<ul style="list-style-type: none"> <li>• Irregular rainfall</li> <li>• Access to fertilizers</li> <li>• Lack of labor power</li> <li>• Lack of organic matter</li> </ul>	<ul style="list-style-type: none"> <li>• Solicit a group of people for communal work</li> <li>• Collect organic matter during the dry season</li> </ul>



Appendix IV: Country action plans

## Country Action Plans

### ACTION PLAN / BENIN

ACTIVITIES	DEADLINES/ PERIODS	ACTORS		METHODS	OBSERVATIONS
		RESPONSIBLE PARTIES	TARGETS		
<b>Summation of the training</b>	17-22 September 2012	Participants	Producers	Group sessions	
<b>Site inventories/ diagnosis</b>	October 2012	Support structures	The whole community		
<b>Information/ sensitization</b>	Oct -Nov2012	Support structures	Producers		
<b>Setting up a farmer field school</b>	Nov 2012 – Feb 2013	Support structures and producers	Producers	Fields, materials, inputs and human resources	
<b>Training</b>	Nov 2012 – Feb 2013	Support structures and producers	Producers	Fields, materials, inputs and human resources	
<b>Exchange visits</b>	Nov 2012 – Feb 2013	Support structures and producers	Producers	Fields, materials, inputs and human resources	
<b>Follow-up/evaluation</b>	Nov 2012 – Feb 2013	Trainers and technicians	Producers		





## ACTION PLAN / GUINEA

ACTIVITIES	DEADLINES/ PERIODS	ACTORS		METHODS	OBSERVATIONS
		RESPONSIBLE PARTIES	TARGETS		
<b>VILLAGE LEVEL</b>					
<b>Diagnostic</b>	October	PCV and counterparts	Community	Survey	Constraints and interests of farmers
<b>Trainings/awareness campaigns</b>	Starting in October, after the diagnostic	PCV, counterparts and partners	Farmers organizations, partners	Radio, demonstration, door-to-door, presentation	
<b>Putting in place demonstration plots</b>	June – July	PCV, counterparts and partners	Farmers organizations	Labor, machetes, parcels, seeds	
<b>Training</b>	June – July	PCV, counterparts and partners	Farmers organizations	ENAE. Showing demonstration plots	
<b>Site visits</b>	June – July	PCV, counterparts and partners	Farmers organizations	Plots	
<b>Follow-up/evaluation</b>	March - August		Farmers organizations	Observations and results	
<b>REGIONAL LEVEL</b>					
<b>Information – awareness campaigns</b>	October	PCV, counterparts and partners	Authorities	Mail	
<b>Formation</b>	September	PCV, counterparts	Regional farmer organizations	Peace Corps, TBD	



## ACTION PLAN / SENEGAL

ACTIVITIES	DEADLINES/ PERIODS	ACTORS		METHODS	OBSERV.
		RESPONSIBLE PARTIES	TARGETS		
<b>VILLAGE LEVEL</b>					
<b>Information Sensitization</b>	May-June	Masters farmers	Other master farmers	Chair and tent rental, communication costs, travel costs	
<b>Formation</b>	July	Masters farmers, PCV, counterparts and staff	Producers organizations, other Master Farmers	Chair and tent rental, communication costs, transportation costs, meals, training support	Transportation costs for those coming from outside of the village
<b>'Open-door' days</b>	July	Masters farmers, PCV, counterparts	Other Masters Farmers, producers, project technicians, NGOs, gov't	Chair and tent rental, communication costs, transportation costs, meals, training support	Transportation costs for those coming from outside of the village
<b>Follow-up</b>	July-Nov	Masters farmers, PCV, counterparts	Producers	Communication costs, travel costs	
<b>Radio broadcasts</b>	May-Nov	Masters farmers, PCV, counterparts	Producers, technicians	Communication costs, travel costs	
<b>Evaluation</b>	End of Nov	Masters farmers PCV, counterparts	Producers, other Master Farmers, technicians	Chair and tent rental, communication costs, transportation costs, meals	Transportation costs for those travelling far
<b>REGIONAL LEVEL</b>					
<b>Information – sensitizations</b>	Oct	PCV, counterparts and partners	Authorities	Mail	
<b>Training</b>	Sep	PCV, counterparts	Regional farmers organizations	Peace Corps, TBD	



## ACTION PLAN / TOGO

ACTIVITIES	DEADLINES/ PERIODS	ACTORS		METHODS	OBSERVATIONS
		RESPONSIBLE PARTIES	TARGETS		
<b>Diagnostic</b>	September- October 2012	PCV and counterparts	Producers organizations, OA, farmers	Meetings, questionnaires	
<b>Sensitizations (using media)</b>	October 2012-January 2013	PCV, counter- parts, resource people	Producers organizations, OA, farmers	Video, Causeries	
<b>Setting up demonstration plots</b>	October 2012 – March 2013	PCV, counter- parts, resource people	Producers organizations, OA, farmers	Demonstration plots, various tools, farmer SRI plots	
<b>Formation des OP, OA et P</b>	January 2012- February 2013	PCV, counterparts, resource people/trainers	Producers organizations, OA, farmers		
<b>‘Open door’ days</b>	January – February 2013	PCV, counterparts, resource people/trainers	Producers organizations, OA, farmers	Expositions, demonstration plots, video, sampling	
<b>Follow-up and evaluation</b>	March – August 2013	PCV, counterparts, resource people/trainers	Producers organizations, OA, farmers	Site visits and measuring results	Short-, long- and medium-term evaluations

### NETWORK BUILDING

#### **Advantages:**

- Strength in numbers
- The larger, the more visible
- Allow us to share results on a regional West Africa level
- Exchange our experiences to help us better resolve problems

#### **Country leads/contact points:**

Benin – David DANSOU  
Togo – Kokou AOKANOU  
Senegal –Arfang SADIO  
Guinea – PCV Drew

Appendix V: Indicators

**West Africa Food Security Partnership Indicators - data collection tool for SRI activities**

Goal of the WAF SP	Key Objectives of the WAFSP	Indicator Title	Disaggregation of the indicator		Indicator value (number) FY13 Q1	Indicator value (number) FY13 Q2	Indicator value (number) FY13 Q3	Indicator value (number) FY13 Q4	TOTAL indicator value FY13	Narrative (keep track of some background information)
INCREASE FOOD SECURITY IN THE COMMUNITIES WHERE PCVs WORK IN WEST AFRICA	1. Increase availability of healthy foods, especially for women and children	Number of farmers and others who have applied new technologies or management practices as a result of USG assistance  <b>Read: Number of farmers and others who have applied SRI</b>	New	M					0	
				F					0	
			Continuing	M					0	
				F					0	
		Number of individuals who have received USG supported short-term agricultural sector productivity or food security training  <b>Read: Number of individuals who have received training on SRI</b>	Producers	M					0	
				F					0	
			People in Government	M					0	
				F					0	
			People in Firms	M					0	
				F					0	
	People in Civil Society	M					0			
		F					0			
	2. Increase accessibility of healthy foods by decreasing poverty and increasing incomes	Number of MSMEs receiving USG assistance to access bank loans  <i>[MSMEs include producers (farmers) If a producer doesn't hire any permanent or seasonal labor, s/he should be considered a micro-enterprise.]</i>  <b>Read: Number of rice farmers receiving P. Corps assistance to access bank loans</b>	Micro Enterprise	Male owner					0	(1. provide the names of enterprises assisted 2. specify the types of assistance provided 3. define whether the loan is formal or informal, and cash or in-kind)
				Female owner					0	
				Joint					0	
			Small Enterprise	Male owner					0	
				Female owner					0	
				Joint					0	
Medium Enterprise			Male owner					0		
			Female owner					0		
			Joint					0		
Number of food security private enterprises (for profit), producers organizations, water users associations, women's groups, trade		Private Enterprises	New					0	(1. provide the names of enterprises assisted 2. specify the types of	
			Continuing					0		
		Producer	New					0		





	<p>and business associations, and community-based organizations (CBOs) receiving USG assistance</p> <p><b>Read: Number of rice farmer organizations receiving Peace Corps assistance</b></p> <p><i>[Assistance includes support that aims at organization functions, such as member services, storage, processing and other downstream techniques, and management, marketing and accounting.]</i></p>	Organizations	Continuing					0	assistance provided)
		Water Users Associations	New					0	
			Continuing					0	
		Women's Groups	New					0	
			Continuing					0	
		Trade & Business Associations	New					0	
			Continuing					0	
		CBOS	New					0	
Continuing						0			

FY = Fiscal Year, FY2013 runs from October 2012 until September 2013

Q1 = Quarter one, October-December 2012

Q2 = Quarter two, January-March 2013

Q3 = Quarter three, April-June 2013

Q4 = Quarter four, July-September 2013