Sustainable in Senegal: Profiles in Senegalese Regenerative Agriculture

Diabou Balde, rice farmer, Manthiankaning, Kolda region

Intensive production pressure leaves little space for experiments, but improvements from increased spacing win respect for new method.

By Nathan C. McClintock

Diabou Balde (foreground) and Carrie Miner walk Diabou’s rice paddies. She was one of six women in her village to agree to try Carrie’s SRI experiments, spacing her rice transplants further apart. Results have been phenomenal so far.

Like most of the women in Manthiankaning, a Pulaar-speaking village of a few hundred an hour or so east of the regional capital Kolda, Balde works hard in the rice paddies throughout the rainy season. “The women are out here every single day, from morning until evening,” says Carrie Miner, the Peace Corps volunteer who has been living and working with these women for the last two years.

Rice production is central to the livelihoods of farmers in Manthiankaning and elsewhere in the fertile Kolda region southeast of Dakar, Senegal’s capital. The region is the eastern part of the Casamance, the thin wedge of land that forms Senegal’s southern border. It is crammed between English-speaking Gambia to the north—a tiny country surrounded on three sides by Senegal due to colonial-era geopolitics—and French-speaking Guinea and Portuguese-speaking Guinea-Bissau to the south.

Dozens of ethnic groups—Jola, Pulaar, Mandinka, Manjak, Balant, and Wolof, to name a few—populate this unique region. High annual rainfall here—often more than 47 inches—makes the area a verdant paradise of lush forests, mangroves, and wetlands, as diverse in flora and fauna as in languages and ethnicities. While one of the country’s most fertile areas, its geographic isolation often led to neglect of the local population by the national government. Until recently, the region was the scene of a 20-year battle between separatist rebels and government forces, further isolating the region’s population and threatening food security.

Fewer plants spurs greater rooting

During her two years of service, Miner has promoted the System of Rice Intensification (SRI) in Manthiankaning in order to boost food production, working with Diabou and five other women in the village. This innovative approach was first pioneered in the rainfed, or upland rice fields of Madagascar and the Philippines. Contrary to what its name implies, SRI actually decreases the planting density in a given area by increasing the distance between rice plants to eight inches or more. This means less seeding and transplanting than usual in the Casamance, where farmers traditionally broadcast rice by hand, leading to random and inconsistent stands, or they transplant rice at a distance of four inches between plants.

With a MS in env...
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SRI seems counterintuitive, but the extra space between plants actually allows the rice to produce more tillers, resulting in higher yields.

El-Hadji Hanne & Gora Ndiaye: regenerative ag extension & ornamental horticultural on the Petite Côte, Mbour

With university students in Dakar in the 80s, these two entrepreneurs became alarmed at the rate of pesticide use on the micro-farms. Today they work in a mix of endeavors to promote sustainable agriculture to interns from around the world.

Tapping into tillering

Miner laid out an experimental demonstration plot of her own this year, in which she compared three varieties of rice (a local variety and two varieties developed by ISRA, the national agronomic research institute) either broadcast planted, transplanted in the traditional manner after 35 days at four-inch spacing, or using SRI, transplanted at eight- and 12-inch spacing. She also wanted to evaluate the effect of amending the plots with decomposed cow manure, applied at a rate of four metric tons/ha. While she has not yet calculated final yield, she has already noticed the superior tillering in the SRI plots. “We had one plant with up to 42 tillers, while a lot of the plants in the traditional broadcast plots only had two or three.”

As elsewhere in the Casamance, rice farmers in Manthiankaning traditionally break up the soil with a short-handled hoe, a daba, and pile up the weed biomass prior to broadcasting their seeds. They then cover the seeds with a thin layer of soil. Because germination is low, they use an excessive amount of seed. Emergence is random. Some farmers transplant seedlings from crowded nursery beds into small ridgets at a spacing of four inches. The ridges are made by flipping soil from one row to the next each year in order to smother the previous year’s weeds. Tillering is low, in both of these traditional planting methods due to crowding, late transplanting, or competition by weeds. “You’re lucky if they get one weeding in,” Miner explains.

Fatou Kane, Ndeye Diop and Awa Mbaye: livestock fattening, Thiawene, Diourbel.

Village women’s group pioneers and teaches how “kept” sheep and goats can improve soil, boost yields and provide strong income in dry Diourbel region.

Milk and yogurt production, Ourossougui, Matam

Fulani women learn holistic cooperative development and enterprise skills to generate value-added revenue, and to inspire other small-scale farmers in the region – including their daughters – with options for economic development.

Khaddija Niakh: thriving with peppers, seeds and leaves in Kompentoum, Tambacounda region

Training in organic agriculture helps woman develop family enterprise that features...
Tillering is low in the traditional planting method and means harder weeding, but transplanting for SRI means adding an extra task to an already long list for Manthiankaning farmers. Final yield will determine whether or not the extra work is worth it.

When asked if she prefers SRI or the traditional methods, Diabou Balde doesn’t mention the increased tillering, but notes that the wider spacing allows for easier management:

“This way is better, quicker for weeding,” she says in Pulaar as Miner translates. “It’s easier than the traditional method because you don’t have to add a second layer of soil. It hurts my hands less.”

Many farmers don’t transplant simply because it adds an extra task to their already exhausting workload. Miner says, “In the end, it’s a trade-off between labor and seed costs.” Diabou recognizes this and is diplomatic in her final judgment. “Both ways have their advantages,” she says. “We’ll all wait to see our yields to see which is best.”

The cautious and slow adoption of SRI by rice farmers in Manthiankaning is typical of agricultural innovation throughout Senegal and the developing world. With a family’s survival so tied to the productivity of the land, adopting a new technique is risky. Nevertheless, some of the women of Manthiankaning are already convinced that it is a risk worth taking, that SRI is the way to increase their yields despite additional labor.

Further down the rice fields from Diabou plot, another farmer has expanded the number of rows in which she uses the new spacing. Next year, once her neighbors see the difference, they, too, will hopefully try out the new practice, little by little, one row at a time.

Nathan McClintock holds an M.S. in sustainable agriculture from North Carolina State University. He assisted a farmers’ group in Nepal in its transition to organic last summer before starting his PhD in agroecological geography at UC Berkeley.