

Agriculture Sustainability Activity

Adoption of New Post-Harvest and Storage Practices Improve Rice Production

PROJECT LOCATION	Liberia
TIMEFRAME	2021-2022
COUNTRY PROJECT	Rice
HOST	Beteba Rice Farmers' Association

Like many farmers' associations in Lofa County, Beteba Rice Farmers' Association was losing 10-40% of rice produced, and at least 5-20% of this amount was at the field level. Beteba Rice Farmers' Association saw the need to increase its knowledge of rice post-harvest practices to improve their storage, handling during harvesting, and increasing quality. By improving and introducing quality-enhancing techniques, the farmers' association hopes to reduce wastages, allowing the organization to generate more income and increase its 15% contribution to Selma Agriculture Development Cooperative's (SADC) raw material supplies. It will also lead to food availability to the growing population.

Beteba Rice Farmers Association was founded in 2011 by the USAID-FED project in Beteba Town, Voinjama District, and has an active membership base of 50 local rice producers (24 female and 26 male farmers). Each member currently operates 1.30 hectares of lowland during farming season, a total of 65 hectares operated by the entire group.

In need of improved rice post-harvest and storage practices, the United States Agency for International Development (USAID) funded, Catholic Relief Services (CRS) implemented Agriculture Sustainability Activity (ASA) worked with Beteba Rice Farmers Association to design a post-harvest assignment. ASA uses the Farmer-to-Farmer (F2F) model to provide technical assistance to agriculture organizations through volunteer trainings to increase the availability of domestically produced and processed rice and cassava. During implementation, the Activity shifted to a Paired Remote Volunteer (PRV) model – a local volunteer paired with a U.S.-based volunteer to allow program implementation during COVID-related travel restrictions. ASA engaged local volunteer Oliver Musa Lavelah, an agronomist and community development practitioner from Bong County, and U.S.-based volunteer Dr. Herman (Hans) Kendal, a Professor of Agronomy at North Dakota State University. Both collaborated to strengthen the capacity and equip the host's members with practical knowledge in rice post-harvest handling practices and storage.

The volunteers worked together to train 50 participants (26 female, 24 male, 25 of whom were youth) from October 13-20, 2021. Together, they observed wastages at each rice production stage and worked together to create a plan to reduce Beteba Rice Farmers Association's losses.

"I communicated regularly with the Farmer-to-Farmer volunteer Oliver Musa Lavelah, and supplied him with a lesson outline, a PowerPoint with easy-to-understand teaching cartoons, and video clips on solar drying and moisture testing. Mr. Lavelah adapted the teaching materials and used several of the ideas in his teaching. Farmers were instructed on the use of moisture testing and solar drying." noted Dr. Kendal.



Figure 1. ASA F2F Volunteer Oliver Musa Lavelah (center) with training participants from Beteba Rice Farmers' Association.

Upon completion of the training, Mr. Lavelah and Dr. Kendal provided six recommendations to Beteba Rice Farmers Association: management and members harvest rice at the appropriate stage; use appropriate transportation and handling, specifically using empty 50kg bags; thresh rice immediately after harvesting; avoid field drying and stacking for several days as it affects grain quality; reduce stacked grains of high moisture content to prevent discoloration, yellowing, pests, and diseases; and, consistent monitoring for the achievement of the above-mentioned recommendations.

Beteba Rice Farmers Association adopted all recommendations; the recommendations helped farmers minimize losses at various stages and significantly improve the farmers' source of income. Additionally, each farmer purchased two tarpaulins and six knives. "It is encouraging to see how enthusiastic farmers were engaged in the learning process, and their subsequent adoption of some of the new techniques to improve the local rice production," said Dr. Kendal.

Post-harvest losses across all farmers reduced from 10-40% to 5-20%. A majority of the 5-20% losses occurred during the harvesting stage due to a lack of farming calendar and grains over maturing in the field. To prevent this from happening again, the volunteers worked with Beteba Rice Farmers' Association to create a detailed farming calendar that notes the appropriate times for breeding, nursery, transplanting, weeding, and harvesting.

Results were especially noticeable when comparing the 2020 and 2021 rice harvests. In 2020, Beteba Rice Farmers Association sold 28 bags per farmer, 1,400 bags in total, and lost 182 bags, resulting in losing 13% of the total rice produced. Their total sales in 2020 were USD \$14,924.00. Following ASA's technical assistance, farmers produced 36 bags each, 1,760 bags in total, and lost 158.40 bags, a post-harvest loss rate of 9%. Sales following the 2021 harvest, were USD \$18,761.60, a 20.45% increase in sales from 2020. Additional observations also include an increase of membership from 50 to 67 (29 female and 38 male farmers).

The host was especially pleased with the training and appreciated the results following the 2021 rice harvest. "We the Beteba Farmers' Association want to appreciate God first, and USAID-CRS/ASA Project for helping us discovered our unknown in post-harvest handling. Farming has been our major source of income since many years ago, the knowledge acquired from the USAID-CRS/ASA Project greatly impacted our production through a significant reduction in our post-harvest loss from 13% to 9%." Beteba Farmers' Association wants to continue increasing rice production and increasing its supply to SADC. In addition to this, they hope to become a cooperative and, thus far, they have completed 72% of the necessary paperwork. Their recent success coupled with their future goals will hopefully continue to increase food security and incomes for those the farmers association serves.

When reflecting on his experience, Mr. Lavelah concluded, "Synchronizing our messages to rice farmers from different key stakeholders including NGOs, CBOs, FBOs, INGOs, and Government to provide rice production and post-harvest oriented technologies sustainable and suitable for broad-based participation and adoption by the majority (women and youths) rice farmers will improve yields and enhance livelihoods."



Figure 2. Mr. Lavelah (standing center) trains participants on rice harvesting techniques.