COMMUNITY DEVELOPMENT INITIATIVE

Developing Swamps for Rice Production in Sierre Leone

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Community Swamp Development Project: CSDP

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Introduction

Rice is the staple food of Sierra Leone. When asked whether he has eaten today, a rural Sierra Leonian will answer "yes" only if his diet has included rice. Despite the facts that 75% of Sierra Leone's population are farmers and that 80% of these farmers grow rice, for most of the past 30 years Sierra Leone has had to import rice. Figures from the 1970s (the most recent available) estimate the annual shortfall between local rice production and local need at 50,000 metric tons.

On the national level, rice importation exacerbates Sierra Leone's already poor balance of payments. Locally, the imbalance between consumption and production of rice is experienced as the "hungry season", a time just before the harvest when the rice stores are depleted and only expensive, imported rice can be purchased. Some instances of malnutrition have been reported.

Self-sufficiency in rice production is a goal of the government, which, if attained, would greatly benefit both the

national and local economies in Sierra Leone.

The technology required to increase rice production is generally available. The principal constraints to the utilization of this technology among Sierra Leone's small farmers have been the absence of suitable extension organizations, at both the village and the governmental levels.

Problems in Rice Production

The primary rice producers in Sierra Leone are small farmers who cultivate family plots which average 4.5 acres. These farmers usually cultivate an upland field; occasionally, this is supplemented by a smaller amount of swamp acreage. On the upland fields, the farmers practice slash and burn agriculture. Cultivation of these fields requires only a few days of labor each season, and no purchased inputs such as fertilizer are used. Because of the low fertility of the upland soil, these fields should be left fallow for at least eight to ten years to permit the soil to regain its lost nutrients. Recently, however, population pressure has led to decreased fallow periods, causing soil degradation and lower yields on upland rice farms. Approximately 80% (590,000 acres) of the available upland fields are already under cultivation.

Sierra Leone has more than 738,000 acres of cultivable swamp lands. Currently only 20% of this land is planted. The

cultivation techniques most commonly used in the swamps require minimal labor input. However, they result in very low productivity rates. By bringing more swamp land under cultivation and by using improved farming techniques, Sierra Leone could produce all the rice it needs for national consumption.

There are several reasons why the native Sierra Leonians are reluctant to cultivate the swamps. First they believe that the swamps are the resting place for evil spirits. The swamps are known to be breeding grounds for various diseases, including schistosomiasis. In economic terms, developing a swamp for rice production requires a larger amount of money and time than most farmers care to invest. And, the price the government pays for the rice is too low to encourage increased production. In addition, farmers have little knowledge about methods of preventing/minimizing insect and weed infestations, which attack swamp rice.

Traditional rice farming in the uplands involves scattering the seeds and harvesting a few months later. Very little preparatory work or crop maintenance is required. These cultivation techniques produce yields as low as 5 to 7 bushels per acre (one bushel=60 pounds). While the swamps have the potential to produce as much as 50 bushels per acre, 320 to 480 man/days of very arduous preparatory labor would be required during the first year (40 men working 8-12 days each). After the initial year, preparatory labor requirements drop to 80/100 man days a season (40 men working 2-3 days each) -- the same amount of time as for

the uplands.

Until recently, small farmers in Sierra Leone have concluded that the necessary investment of time, money, and learning will not be sufficiently rewarded by a substantial increase in swamp rice production and a resultant increase in income.

Community Swamps - A Possible Solution

A community swamp for rice production may encourage wetland rice production in Sierra Leone. Communal labor spreads out the work and risk. Initial subsidies circumvent the problem of low market prices which has destroyed necessary up-front investment. Study now suggests that proper water control in swamps will reduce the prevalence of shistosomiasis; schistosomiasis flukes cannot survive the relatively dry periods.

Peace Corps volunteers started working with farmers to build community swamps in the late 1970s in the Sowa chiefdom in Sierra Leone's Southern region. Several small grants from the US Embassy Self-Help Fund, Catholic Relief Services, and Canadian University Service Overseas provided funds for fertilizers, seed rice, and tools. The results from the initial community swamps were impressive. The profits which the farmers earned from selling this rice were used to buy cement and roofing materials for village building projects such as latrines, wells, and mosques.

Word of the benefits of these initial community swamp efforts spread quickly. The demand for technical and economic aid for isolated projects soon outstripped the resources available through the small funding mechanism. The Sierra Leone Ministry of Agriculture and Forestry (MAF) and the United States Peace Corps formulated a proposal for a more comprehensive Community Swamp Development Project (CSDP) and approached A.T. International for funding to complement a Government financial commitment to the effort.

The basic objective of the CSDP project was the development of community swamps for rice production in at least thirty-five villages. Funds were needed for tools, fertilizer, and seed rice; the "upfront" investment which the small farmers did not have. The seed rice and fertilizers were to be distributed through a revolving loan fund to be repaid in cash or with harvested rice. The value of the tools and construction materials would not have to be repaid by the farmers. However, once the swamps were established and productive, it was expected that farmers would be able to handle replacement or maintenance costs. Water control devices were designed to be constructed from cheap, easily available materials to assure their maintenance after the project ended.

While the project design noted the need for subsidized inputs to move the production activities over the perceived threshold of high risk, the request for funds from ATI also cited

the need to purchase bicycles for the Ministry's extension agents (known as Agricultural Instructors).

While the project centers on food production technology, there are three essential contextual goals. In order to strengthen village-level organizations (goal #1), the villagers were required to establish a self-help association to supervise the project. Although this association was to develop the swamp, it was also expected to undertake other activities where co-operation would benefit the community. A second, related goal was to improve village infrastructure, achieved by stressing (without requiring) that profits from swamp rice go to community-organized self-help projects, such as the construction of latrines or wells. A third goal was to strengthen the ability of the Ministry of Agriculture and Forestry to promote swamp development and to prepare the Ministry to continue the project when the grant ended.

In January 1981, ATI approved a grant of $60,600 for this program, to be supplemented by $40,050 from the Government of Sierra Leone. Through judicious budgeting, funds remained at the end of the grant period, and A.T. International agreed to extend the program for a third year, through 1983.

Summary of Project Results

Over a three year period, more than 50 communities have developed

swamps for rice production averaging 2.5 acres each. Seventeen hundred families, who have been involved in this work, are now beginning to benefit. As of early 1984, the communities involved had generated sufficient profit to permit 25% of them to begin constructing rice storage houses, wells, latrines, feeder roads, bridges, and mosques.

Additional villages are eager to initiate comparable community swamps projects and the CSDP approach is being adopted by other development support agencies. For example, the international development department of Barclay's Bank in London recently granted $40,000 to the Catholic Mission in the Southern region of Sierra Leone to expand community swamp work there. Fourteen villages have taken part in that project so far, and three have already made enough profit to enable them to build wells , feeder roads, and rice storage houses.

As a result of the CSDP program, the Sierra Leone Government has directed special attention to community swamp work. A special unit for support of community swamp development efforts has been established within the Ministry of Agriculture and Forestry. The national coordinator of the swamp development work, Mr. Sessay, has developed a plan to build "model" community swamps in selected regions of the country to demonstrate their potential. The Ministry believes that the CSDP approach concentrates the agriculture extension resources, reduces supervision costs, and still helps disseminate the technology

throughout the country.

As of mid-1984, the Ministry of Agriculture and Forestry had not been able to take over and carry on the program with its own resources as envisioned. High inflation continues to limit the Government's ability to provide all of the extension services and materials required to successfully establish community swamps.

Helped by the United States Peace Corp, the Ministry of Agriculture and Forestry is seeking additional funds from international donors to continue expanding the program until the Government can maintain it with its own resources.

Key Elements of the Program

Developing the Swamp

Communities contact the CSDP project unit in the Ministry in one of two ways. In some instances, when village members hear of the idea, perhaps from a visitor or seeing a developed swamp in a neighboring village, they take the initiative and approach an agricultural extension agent and ask for help. Alternatively, the extension agents or Peace Corp volunteers initiate the process by visiting villages in their surrounding area and holding meetings with the farmers to discuss the CSDP concepts.

Once the contact is made, the decision to participate in the CSDP is reached through village-level meetings of the elders. All

able-bodied men and women in the village are expected to participate at assigned phases in land preparation, crop cultivation and harvest. Failure to cooperate usually results in community imposed fines of varying severity. (It is a fact that in some villages, neither women nor youths have a voice in the decision to develop a swamp for production, but are nonetheless expected to work when called upon.)

Before being formally accepted into the CSDP, participating villages must first fufill certain requirements. First, the village must demonstrate that it can establish a functional self-help association characterized by regular meetings, officers, and a democratic decision-making process. Next, the community has to choose a swamp area which is technically suitable in terms of soil, water, size, slope, and visibility for irrigated rice production. (The Ministry assists in making these initial determinations.) The self-help association must obtain permission to use the swamp from the chief or whoever owns the land, and the land tenure agreements must extend for a minimum of five years.

The community initially clears the swamp using village implements; then, the area to be cultivated by CDSP, as well as drains and embankments, are delineated. CSDP makes hand tools available to the village self-help association, to actually prepare the area. Once the swamp is developed, planted, and harvested, the tools become the property of the association and

are used to expand and maintain the community swamp and in any work the committee undertakes to benefit the entire community.

The combined efforts of the group working through the self-help association have accomplished goals the individual farmers could and would not undertake. During the heavy work season, from May to August, communities usually spend one or two days a week working on their swamp. A crew of forty men, properly supplied with basic hand tools, can clear a three to five acre swamp in five days. Construction of a main embankment and peripheral gutter takes four to five days. Building the interior embankments and leveling and ploughing the plots takes another three to four days and transplanting the nursed rice can be accomplished in three days. Time required for this work depends, of course, on the swamp's size, the condition of the soils, the organization and experience of the workers, the availability and condition of the tools, and the weather. In the past, most communities, working together at least one day a week for two or three months, have been able to develop two to four acres in the first year. (Ideally the village works the same day each week so that the agricultural extension agent can plan to visit and help supervise the process.)

As noted, yields in these developed swamps are known to be as high as 50 bushels per acre.

Community Self-Help Projects

Villages use the profits in a variety of ways. First they repay the loans of seed rice and fertilizer. The remainder of the rice is stored until the dry season and sold to participating community members at prices below market value. Any remaining rice is then sold in nearby communities. The profits from these sales are held by a designated member of the community.

Some villages spend their profits immediately. Others wait until profits generated by several years of harvests have accumulated before spending them on self-help projects. One village, Bendu near Bo in the Southern region, had a series of successful harvests, built a rice house and is now saving for a health clinic. Meanwhile, they have lent the principal to several young men in the village who have started a small palm oil business. The loans (without interest) have been repaid on time.

Profits from swamp rice usually go to construct wells and rice storage houses. Carefully covered wells help prevent the spread of waterborne diseases prevalent in the region, and thus are instrumental in improving village health standards. Rice storage houses can reduce the current loss caused by rats and spoilage during the rainy season by as much as 30%.

Conditions for Success in CSDP

Villages are experiencing varying degrees of success within the CSDP. Some villages have maintained their swamps for four consecutive years, continuously increasing their acreage. in

these cases, the level of community involvement has remained high. Other communities, however, faltered early in the process.

Village leadership and the presence of extension agents are important factors in the success of the program. The more remote villages may be so far from the main road that an extension agent cannot realistically make a commitment to visit them weekly. In several cases, however, isolation benefited the program. For example, the far eastern tip of Sierra Leone, jutting into Liberia, is often cut off from markets and must rely almost entirely on its own rice production. This isolation has encouraged villages to participate in the CSDP program, and some of the largest, most successful projects are in this region.

A serious constraint to sustaining community participation in CSDP is the cost of replacement tools. When communities first join the project, they are given shovels, hoes, headpans, mattocks, felling axes, wheelbarrows, watering cans, rakes, and hand trowels. For the group to continue the work and to remain efficiently organized, tools must be available. But the work is difficult, especially during the first year when the production area is being prepared, and tools rapidly wear out. Inflation in Sierra Leone has tripled or quadrupled the replacement cost of some of the tools. In some cases even if the money were available the tools could not be purchased in the country.

Communities have dealt with the tool problem in a variety of ways. Blama, for instance, a small village in the Southern

Region, has used some of its swamp rice profits to purchase new tools. Bendu, a larger neighboring town, with one of the larger and longer running CSDP swamps, has tried to use grant funds to repair tools and has also asked individuals to volunteer the use of their own tools. Some villages rely on a local blacksmith to manufacture new tools at prices far below current market cost. A local blacksmith uses available scrap metal and is able to produce most of the tools needed, with the exception of shovels.

Conclusion

Developing a swamp is an arduous and technically complex process. Once established, the proper planting of a swamp can increase a community's rice harvest several times over. These swamps can be double and triple cropped, which further increases production. The greatest obstacle to swamp rice technology is the time and effort needed during the initial year to survey the land, clear it, construct the water control system, and introduce new planting techniques. Once established, however, the swamp is relatively easy to maintain and provides the community with an invaluable source of income to be spent on other community needs.