

## **Project Summary and Research Findings**

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The project involved studying the economics of pineapple production and marketing in Ghana. This was undertaken as part of two studies: “The Farmapine Model: A Cooperative Marketing Strategy and Market Based Development Approach.” and “Profitability and Risk Analysis: The Case of Ghana’s Pineapple Exports.” The project falls under SAGA’s general objectives and in particular under the thematic area of ‘risks, vulnerability and poverty dynamics’. The study also has policy implications especially in terms of poverty alleviation and sustainable economic development.

This study supports Ghana efforts to diversify its export base and overall economy from an over dependence on gold and cocoa that has contributed more than 80% of foreign exchange. This study will be of great importance to potential investors, governmental and non-governmental agencies, financial institutions and international agencies supporting the production and export of horticultural products in Ghana. The World Bank, donor organization and aid agencies that are supporting Ghana’s agricultural diversification program and also working to improve the livelihood of rural dwellers will gain a lot of insight from this study, especially in the move toward market based development assistance.

The first paper in the series “The Farmapine Model: A Cooperative Marketing Strategy and Market Based Development Approach,” examined a cooperative marketing arrangement between small-scale producers also know as outgrowers and two exporters. Members of five pineapple farmers’ cooperatives together with two former exporters own a marketing concern, Farmapine Ghana Limited (FGL) that processes and exports their

produce. The Farmapine arrangement is similar in structure to the New Generation Cooperative (NGC) and can serve as a model for developing rural economies and improving the livelihood of rural dwellers in developing countries. Specifically, this study examined the institutional arrangement behind the establishment of Farmapine, the risk structures in this arrangement and how the model deals with them, and the inherent efficiencies in the Farmapine model over existing arrangements. The study also examined the feasibility of duplicating the model by other producers in Ghana and the possibility of extending the model to other developing countries.

To achieve the objectives of the study, seventy-two producers were surveyed and information on their production and marketing activities collected via questionnaires. Sixty of the producers interviewed were small-scale farmers with the remaining twelve being large-scale exporters. The exporters were selected from among 22 shippers who are either members or affiliated with the Sea-Freight Pineapple Exporters of Ghana (SPEG), an umbrella organization grouping all exporters and responsible for over 90% of all pineapple exports (GEPC). Export data for the top five exporters for 2000 and 2001 are compared to help assess the performance of Farmapine. Of the 60 farmers surveyed, 30 were members of cooperatives affiliated with Farmapine while the rest were not affiliated with any cooperative. Questionnaires were administered to three of the five farmer cooperative groups. A satisfaction index generated from the survey by ranking outgrowers response to production and marketing constraints, is used to assess the performance of both sets of outgrowers. The management of FGL was also interviewed for this study.

Based on the study results, the Farmapine model holds a lot of promise for pineapple farmers and other producers in Ghana, and in the developing world as a whole. In the Farmapine arrangement, risks are considerably lower for the farmer and profits are rather high. On average, the FGL farmers earn about \$1,000 per acre of pineapple cultivated. Each farmer cultivates about five acres on average and, thus, can earn in excess of \$5,000 per growing season. Viewed against the background that the per capita Gross National Income in Ghana is \$290 (World Bank, 2002a), the Farmapine outgrowers can be seen to be doing very well. From the satisfaction index computed, the FGL farmers face fewer constraints and are also much more satisfied in their farming operations than non-cooperative members. They also contribute to rural employment, poverty alleviation and help in stemming the rural-urban drift plaguing most developing countries.

The result of the study indicates that a Farmapine/NGC-type arrangement can be implemented in Ghana and other developing countries. The approach can provide keys to developing rural communities. The main constraint to successfully implementing any such arrangement is the needed financing and organization of the cooperatives. In the case of Farmapine, the cooperatives had been working with Technoserve for years and had realized some of the benefits of working together as a cooperative. The World Bank in providing the funding took care of the financing and with the cooperatives active and already working with Technoserve, FGL had a relatively smooth take off. The World Bank and other donor agencies can channel aid to developing countries through such market-oriented programs like Farmapine. As evidence from the Asian countries of Thailand, Indonesia, Malaysia, and a few African countries (such as Botswana and

Mauritius) show, development based on markets with governments playing only a facilitating role augur well for development than when governments play a dominant role (World Bank, 1998). Governments, through extension services, can play a role by organizing the farmers into active cooperatives.

The second paper in the series: “Profitability and Risk Analysis: The Case of Ghana’s Pineapple Exports,” examined the profitability of pineapple production and exports and how profitability is impacted by risks using quadratic programming. The study also assessed the potential in pineapple exports as a means to diversifying government revenue and foreign exchange earnings. The main objectives of this study were to discuss the risks associated with pineapple production and marketing, determine profitability and factors that most influence profitability, and finally examine how risk influences profitability of a representative exporter.

The results of this study indicate that production and export of pineapple is a profitable business. For the representative exporter, the results indicate that the levels of profits are not severely affected by increasing risk aversion. The reduced impact of risk may be masked by the use of unit values averaged across exporters. Averaging across years and producers reduces variations in the price. In this model only price risk was considered. However, the options available to farmers in managing risk were restricted to production and buying of fruits from outgrowers. Buying from outgrowers, though more expensive than production, requires less capital and labor as compared to production on one’s farm. Thus, as risk aversion increased buying of fruits increased since it was considered less risky. However, as the exportable yield of the farmer

increased, less fruits were bought for export. There are very little opportunities for price risk management in general. There are no crop insurance programs nor futures and options markets available for exporters to hedge their exposure. In the absence of any such risk management programs, exporters could form marketing cooperatives or strengthen SPEG to present a unified front to importers. They can negotiate or enter into contracts with importers or explore agricultural insurance options. To encourage agricultural diversification in general and also to boost pineapple exports, government should provide some form of insurance for exporters to minimize their exposure to especially low prices on the European market.

The results of the study indicate that buying from outgrowers should be kept to a minimum. Exporters buy from outgrowers to make up export volumes instead of cultivating all their available land. In this study, and as pertains to the industry, the land available constraint was rarely binding. The challenge is and has always been the needed capital to finance the procurement of plastic mulch or irrigation equipment to effectively farm the land. Previous studies and survey results both indicated that capital was the most limiting input to production. Unfortunately, access to loans, grants and other sources of financing continue to elude exporters. The government and SPEG should liaise with the banks and financial institutions to establish some form of export finance scheme similar to EXIM in the U.S. to help exporters. Governmental agencies like the Business Assistance Fund (BAF) and Export Development and Investment Fund (EDIF) should include pineapple and other horticultural products in their programs.

The common export strategy has been to enter the export market with 100% of fruits from outgrowers while developing a production base. As fruits from one's own

farm mature and as the producer gains more experience in production, fruits from outgrowers are reduced. As the results from this study indicate, buying from outgrowers is not as profitable as producing from one's own farm. An alternate investment strategy would be to start producing as an outgrower (albeit a large one). The initial outputs can be sold to an exporter for export. As planted acreage and exportable yield increases, the producer can then enter the export market with majority of the exports coming from his own farm. The exporter can then supplement his or her exports with fruits from outgrowers when necessary. This reduces the risk an exporter assumes in buying from outgrowers (quality, timeliness and reliability). All this, however, will be contingent upon obtaining the necessary financing.

The results of the study did indicate that exportable yield is very important in pineapple exports and profitability. Even in cases where capital was limited, prices were low, and variable cost high, pineapple production was profitable at the higher exportable yields. Moreover, the impact of riskiness and variability in profits decreased significantly as yield levels increased. Potential exporters should be encouraged to invest in the managerial and technical skills that can result in higher exportable yields from their own farms. As the results of the paper indicate, the profits at the higher yields were quite high and could pay for any such investments.

Finally, more studies into the economics of pineapple production and marketing are recommended. Studies on export processing and demand will help exporters and producers alike understand the dynamics of the export market to be able to maximize export earnings.

## **Related Research**

As part of the project, two additional research papers are being developed to complement the two described above:

1. Export Demand and Promotion Evaluation

This study estimates export demand for Ghana's pineapple exports and evaluate the impact of Ghana Export Promotion Council (GEPC) promotion activities on pineapple demand in Europe. This is in preliminary stages of development.

Farmer's ownership models: new challenges for producers, extension and development specialist. This paper examines the Farmapine model as a farmer's ownership model and discusses the challenges that extension and community development specialist face in the ownership model.

## **Publication Update**

The Farmapine Model: A Cooperative Marketing Strategy and Market Based Development Approach. This is in review at *Choice*.

Profitability and Risk Analysis: The Case of Ghana's Pineapple Exports. This was submitted and rejected by the *Journal of African Economics*

Farmer's Ownership Models: New Challenges for Producers, Extension and Development Specialists. This is in review by *Journal of Agricultural Education and Extension*.