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CONCEPT PAPER AND ANALYSIS
REDIRECTION AND EXTENSION

COMMERCIAL AGRICULTURAL PRODUCTION AND MARKETING PROJECT

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PREFACE

This report contains a paper describing the concept for the redirection of CAPM and findings of the technical, social, financial, economic and organizational analyses conducted in preparation for a project amendment authorizing redirection and extension of project. These were prepared by a four person study team consisting of Mike Boyd-Clark, Robert E. Olson, Bart Sensenig and Mark Wood.

Many people from the USAID Mission, the Government of Swaziland, the private sector and the CAPM team contributed to the development of the concept presented in the paper. Lane Holdcroft, a consultant employed by the USAID Mission, prepared the final draft, refining the draft prepared by the study team leader, Mr. Boyd-Clark. Candace Conrad and Robert E. Olson contributed significantly to the articulation of the concept. The work was carried out under the guidance of Kimball Kennedy, CAPM Chief of Party.

Many Swazis contributed to the development of the technical and social analyses. Among them, Mr. T.N. Masuku and Mr. Victor Vilakati worked in the field with the study team. Mr. Doyle Grenoble and Mr. Don Brosz contributed valuable information on production and irrigation.

The detailed appendices referenced in the technical, financial and organizational analyses are available at the CAPM Central Office.

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COMPONENT I

CONCEPT PAPER FOR THE REDIRECTION AND EXTENSION
OF THE CAPM PROJECT

CONCEPT PAPER FOR THE REDIRECTION AND EXTENSION
OF THE CAPM PROJECT

JUNE 1991

I. INTRODUCTION

A. Background

This paper analyzes the implications of the concept and discusses the components for inclusion in a redirected and extended Commercial Agricultural Production and Marketing Project (CAPM) in Swaziland. Phase I of the CAPM project, a four year \$6 million project, became effective on August 31, 1988, and has a current project assistance completion date of June 30, 1993. The technical assistance contract, led by Chemonics International, began on June 30, 1989, and is currently mid-way through its three-year implementation. The proposed eighteen-month continuation of the project would extend the completion date to February 1994.

CAPM has generated a wealth of data and analyses over eighteen months of implementation that update original CAPM design assumptions. In light of this new information, and to address certain implementation difficulties, USAID/Swaziland and the Government of Swaziland have assessed progress to date, and propose a redirection and extension of the remaining time in CAPM Phase I.

The fundamental premise of the original project design was that if the policy and program environment in Swaziland is improved and agri-business development is facilitated, commercialization of agriculture will occur. Nearly two years of project implementation experience has shown that a more streamlined, action-oriented approach with direct interventions in field production and marketing of small farm agriculture is needed to stimulate commercialization.

Accordingly, it is proposed that of the four key components in the original project: 1) GOS policy and program analysis; 2) private sector development; 3) GOS/private sector capacity strengthening; and 4) strategy and plans, it is the second component, private sector development, that becomes the primary focus of future project implementation. Other project component activities will continue, but will be carefully targeted to support the main thrust.

The project paper amendment reconfirms the validity of the original project goal and purpose. But, it proposes changes in the definition of End of Project Status (EOPS), and in the implementation strategy, inputs, and outputs necessary to achieve the project purpose.

Building on the work of the Commercial Agricultural Production and Marketing (CAPM) Project, the concept for a redirection and extension of the project has evolved toward an action-oriented means of encouraging more rapid development of private sector marketing. The activities necessary to achieve this goal would facilitate the production and sale of horticultural produce by small-scale farmers in Swaziland. The key components of the redirected concept are the need for:

- o An emphasis on small-scale farmers
- o A private sector orientation
- o Action-oriented objectives
- o The development of horticultural products and markets
- o Visible, quantifiable results in the short-term

It is within the boundaries dictated by these components that the concept for redirection and extension is expanded below.

The need for the development of commercial horticultural production in the small-scale farming sector is recognized by the Government of Swaziland (GOS). The Prime Minister of Swaziland, Mr. Obed Dlamini, addressing a group of small-scale farmers, as recently reported in the Times of Swaziland, is quoted as saying: "...there is a need for the Swazi nation to adopt new methods and new strategies in their approach to farming...Swaziland is endowed with wonderful climatic conditions. With better organization and motivation, we can produce food, such as vegetables, all the year round..."

B. Horticultural Marketing

The central idea shaping the redirection of the project is that the most effective means for stimulating a profitable and growing horticultural industry is orienting Swazi production to meet the requirements of regional and overseas markets. Developments in Zimbabwe, Kenya, Lesotho and other countries have demonstrated that an export orientation is a powerful stimulus for the development of a horticulture industry and small-scale farmers. Horticultural industry that depends entirely on domestic marketing is hampered by seasonality of supply; glut alternating with deficit, and non-competitive quality of product and presentation. Moreover, the relatively small and constrained character of the domestic market alone, inhibits the development of a horticultural marketing chain.

Conversely, penetration of export markets with produce which a country can grow and offer at a competitive advantage, can lead to rapid development of the horticultural industry. Larger markets have overcome the periodic gluts, while exacting international standards have resulted in significant improvement in the quality of the product and its presentation. This, together with the introduction of new varieties, frequently leads to an increase in the demand for horticultural products on the domestic market. A strategy to penetrate new and bigger markets carries with it a motivation and vitality that is not found in the defensive strategies of import substitution and domestic market protection.

C. Potential

The technical analysis and the sociological analysis just completed show that Swaziland has strong potential for competitive advantage in regional and overseas horticultural export markets. Varied topography, plenty of water for irrigation, suitable soils and climates suggest that the country can produce a wide range of fruits and vegetables throughout the year. A potentially hard-working and profit-motivated community of small-scale Swazi irrigators indicates that Swaziland could supply produce at competitive prices. The fact that small-scale producers will be operating in an irrigation environment where there is relatively less capital cost, and that the opportunity cost of their labor is lower than that in the larger commercial sector, ensures that small-scale farmers will be able to produce some products more competitively than their larger-scale counterparts. This in turn, ensures that the proposed marketing operations will continue to find the small-scale irrigators an attractive source of supply.

The technical analysis has demonstrated that much is known about the productive capabilities of a wide range of crops that can be grown in Swaziland. In recent years a significant amount of horticultural research has been done which shows that while the country can provide marketing and, to a lesser extent, technical advice to farmers, these remain production-limiting factors.

The financial analysis just completed shows that there is scope for commercial marketing operations that would link the needs of the various regional and overseas markets with the productive capacity of the Swazi irrigators.

D. Development of Horticultural Marketing in Swaziland

Two major questions the CAPM redirection and extension concept is designed to respond to are: "Why hasn't Swaziland's business community responded to opportunities for involving small-scale farmers presented by horticultural marketing on the export markets?," and "Why hasn't there been spontaneous development of one or more such horticultural export marketing companies in the country?."

While Swaziland has a great deal of information on the kinds of horticultural crops that can be produced, there is a dearth of expertise and literature for regional and overseas horticultural marketing. There are few skilled horticultural export marketing personnel operating in Swaziland at present. While entrepreneurs do take risks, the risks to a business exporting highly perishable fresh fruit and vegetables from Swaziland would probably appear too great to the ordinary Swazi businessperson. The prospects of a campaign in unknown markets with products of dubious quality and irregular supply, must daunt the potential investor.

In the past, attempts to stimulate the development of the horticultural industry in Swaziland have focussed, in most cases, on improving the country's productive capacity. While marketing has been recognized as a constraint, little has been done to rectify the situation. The motivation, until now, has been "to sell what is produced" rather than adhere to the marketing approach of "producing what the target market wants." Several strategies have been tried; each with its own shortcomings. The establishment of a horticultural fresh wholesale market by NAMBoard has not overcome the marketing constraint. But the adoption of a marketing approach, where the productive potential of the country will be engaged in producing "what the markets want when they want it," will herald the development of a sophisticated horticultural industry in Swaziland.

II. PROPOSAL FOR CAPM

A. Intervention

While the horticultural industry in Swaziland may, in time, develop spontaneously, an intervention introduced now could speed up the process and substantially benefit the small-scale farmer in Swaziland, the business community in the country, and the final consumer of horticultural produce. Such an intervention should aim to:

- o Link the producer with the market
- o Contribute expertise in all facets of export horticultural marketing
- o Provide small-scale irrigators with a solid productive base in relation to the markets needs

It will be important that the benefits of an investment which support the Swaziland small-scale horticultural producer are sustained and perpetuated past the end of the project. Private sector business mechanisms are believed to be the most appropriate way to secure this outcome.

B. Proposal for CAPM Involvement

It is envisaged, therefore, that an amendment to redirect and extend USAID's Commercial Agricultural Production and Marketing Project in Swaziland will enable it to focus attention on stimulating and encouraging the development of an export-oriented horticultural marketing industry in Swaziland. This will be achieved by assisting a number of existing Swaziland companies gain skills and expertise in the marketing of vegetables and fruit for domestic, regional and overseas markets.

Assistance will be directed to ensure that links are forged between the Swaziland marketing companies and the small-scale irrigators. At the same time, technical assistance will be provided to the small-scale irrigators to enable them to respond to the needs of the markets. In addition, the project will continue to act to ensure that the environment of Swaziland's small-scale horticultural production and marketing sector remains conducive to development.

C. Competition

It is proposed that CAPM provide assistance to at least two existing Swazi companies to develop their capacity to compete in the export horticulture markets. Competition in the industry is healthy and will be of benefit to all concerned-in the long run; but in the early stages of the concept's implementation, competition in the same markets may prove to be difficult for some. A focus on different market niches is therefore desirable and suggested.

The technical analysis distinguishes the existence of two potential markets. One, the regional market, consists of the domestic and regional export markets, which needs supplies of traditional and bulk horticultural produce. Swaziland production will enter this market at the same time as other regional producers, but the analysis show that the volumes to be produced in Swaziland will not adversely effect the market, and that Swaziland can produce at a competitive price advantage. Secondly, there exists the overseas (mainly European) market, for which Swaziland could produce specialty, off-season and high-margin fresh produce.

It is thus proposed that CAPM would first select a company(s) that will target its efforts to penetrating the domestic and regional export markets, primarily South Africa and Mozambique. Thereafter, it will assist a Swaziland company(s) to develop skills in marketing to the overseas markets. As time progresses, other Swaziland operations may wish to enter the business; competition will be encouraged.

D. Commercial Orientation

It won't be easy for the Swaziland companies to enter the horticultural marketing business. Financial, technical and competitive risks will all be high. In order to succeed, the company(s) must be able to respond freely and rapidly to any eventuality. The high levels of risk combined with the expected need for exceptional levels of effort make it imperative that the company(s) are able to make sufficient profit. For these reasons, it is believed that the company(s) should be true commercial operations, free to operate commercially. The company(s) will need to be highly profit-motivated and able to act in legal ways to ensure their own survival.

E. CAPM's Focus

It is the project's objective to support the small-scale farmer and it will be incumbent on CAPM to direct the company(s) attention to the benefits of dealing with the small-scale irrigators. At the same time, it will be necessary for CAPM to assist in the development of the small-scale horticultural producers so that they remain attractive to the marketing company(s).

F. Company(s) Operational Focus

It is expected that the company(s) involved in the project's redirected activities will encourage small-scale horticultural producers by offering a range of benefits that will assist the farmers to overcome constraints they presently experience. The company(s) will offer programs for production in accordance with the needs of the market; in this way the farmers will benefit from less risk.

The company(s) will offer assured minimum prices for programmed production, and will, in many cases, be in a position to market surplus production. The company(s) will have available, and on time, crop inputs for initiating production programs, and will supply the farmers with the necessary packing materials.

The company(s) will purchase produce, for cash at the "farm gate"; giving the farmer an on-the-spot return for his efforts, and doing away with his need to arrange transport to market. The company(s) will offer technical assistance to the farmers, and will assist where possible, in ensuring the efficient operation of their irrigation activities.

It will probably not be commercially advisable for the company(s) to offer credit for crop inputs, but they could, perhaps, facilitate the provision of credit to the farmers from a third party.

For selected market niche production, the marketing operations will be able to offer consistent supply, consistent quality of produce and packing, regular, scheduled delivery, and information on Swaziland's production capabilities, in terms of varieties, quantities and competitive advantages.

G. Company Resources

In order to meet the needs of both the market and the producers, and to achieve their profit objectives, the company(s) will need to initially invest in transport and communication facilities. Later, as the business develops, there will be a need for investment in packing sheds and warehousing space, and cold chain facilities for specialized exporting.

H. Company Personnel

It is envisaged that in the first couple years, the general managers of the company(s) will perform the marketing function. He or she, will be assisted by an operations manager who will be responsible for all activities related to input supply, production programming, produce collection, packing, and dispatch. He will be aided by production facilitators, who will assist farmers in implementing production programs in the field, and will maintain contact between the farmers and the company.

The sustained viability of the small-scale farmers will be essential for the success of the company(s). For this reason, it will be in the company(s) interest to provide the farmers with technical assistance on a continuous and sustained basis. The company(s) will be expected to employ technically competent irrigation and horticulture specialists to fulfill this role.

I. Company Structure

Central to the reasoning regarding the character of the company(s) that will be targeted, is that they should, inter-alia:

- o Be owner-operated
- o Have sufficient financial resources
- o Have some involvement in horticultural marketing
- o Have the necessary enthusiasm, drive and commitment
- o Be an existing Swaziland enterprise

There are not many organizations in Swaziland that match the required criteria. However, they do exist. Two potential entrepreneurial clients have been interviewed, and both have expressed considerable interest. Others prospects are currently being examined.

J. Financing

There will, undoubtedly be the need for the company(s) involved to raise financing for equipment and working capital. There are several prospective financiers; four were interviewed. All who were interviewed expressed considerable interest in the concept, provided it's viability can be demonstrated. Potential investors include:

- o The Africa Enterprise Fund (IFC)
- o Swedfund
- o SIDC
- o Tibiyo Taka Ngwane
- o Swaziland Development and Saving Bank
- o Swaziland Commercial Banks
- o Commonwealth Development Components (CDC)

K. CAPM's Proposed Intervention Direction

It is proposed that CAPM orient and structure itself to provide technical assistance at all levels in the hierarchy of the fledgling horticultural industry in Swaziland. Activities will be directed at the market, at the development of the marketing company(s), and at the small-scale producers. Activities will focus on strengthening Swaziland's capacity to compete in horticultural marketing in domestic, regional and overseas markets.

Expertise in agribusiness administration, marketing, post-harvest handling, transporting, horticultural production, variety selection, agronomy, pest and disease control, and irrigation will be needed. A key objective will be the transfer of

knowledge, skills and experience; on the assumption that the business and technical skills training will help keep that information alive and in the industry after the termination of the project.

The project is being redirected and extended in order to work to create conditions conducive to the development of the horticultural industry as it relates to the small-scale producer on Swazi Nation Land.

It is expected that to achieve its objectives, the CAPM team will need to include specialists in agribusiness management, horticultural marketing, and horticultural production. It is proposed that CAPM employ several Swazi professionals to work with the expatriate specialists. In this way, direct and indirect training relating to the intricacies of horticultural production and marketing is possible; and at the completion of the project, the trained Swazi personnel can transfer their skills and knowledge to others in Swaziland's horticultural industry.

It is envisaged that one Swazi professional will be assigned to work with an expatriate marketing specialist, and another will work with the horticultural specialist. It is proposed that a third Swazi professional, the project coordinator, be assigned to work with the agribusiness specialist (and CAPM Chief of Party). Together, the COP and project coordinator will be responsible for liaison with all levels in the horticultural hierarchy; with Government and with the traditional leadership to create and maintain conditions in the project environment conducive to success. Also it is expected that four to six Swazi field assistants will provide direct field support for the small-scale farmers. It is the intention of the project team that, at the end of its term, the Swazi professionals will be absorbed into private sector horticultural endeavors in Swaziland.

L. Farmer Benefits and Expansion Potential

It is estimated that the individual participating farmer family will benefit with a net income of up to E 14,000 per annum, assuming production levels as indicated in the technical analysis. By the end on the CAPM project some 100 farmers are expected to be participating. In the financial analysis, a peak production of 270 ha farmed by 340 irrigators is assumed. This represents less than 25 percent of the land available for small-scale irrigation, hence the project has extensive expansion capabilities. The vertically integrated horticultural marketing companies envisaged could potentially benefit an estimated 1,760 small-scale irrigators in Swaziland. This represents approximately 15,000 individuals, 56 percent of whom are women. The proposed intervention should, therefore, have substantial benefits for women.

M. Outline for the Implementation Timetable

Seek company(s) and financing agencies	Immediate
Constitution of new CAPM team	Sep 1991
First summer crop production	Sep 1991
First winter crop	May 1992
Second summer crop	Sep 1992
Second winter crop	May 1993
Third summer crop	Sep 1993
Project ends	Feb 1994

Milestone events:

- o Expatriate Team formed
- o Swazi CAPM Team formed
- o Regional marketing company begins operation
- o Overseas marketing company begins operation
- o First regional sales mediated
- o First overseas sales mediated
- o Cargo flights reinstated from Matsapha
- o Direct supermarket sales of prepackaged product for local supermarkets
- o Direct supermarket sales of prepackaged product for regional supermarkets

Annual production targets:

- o Number of participating farmers
- o Tons of production sold
- o New crop introductions

COMPONENT II

TECHNICAL AND MARKETING ANALYSIS

EXECUTIVE SUMMARY

The technical analysis was undertaken to test the production and marketing aspects of a concept that was put forward for the redirection and extension of the Commercial Agricultural Production and Marketing Project (CAPM). In the concept, the project will focus attention on the development of horticultural production and marketing from small-scale farmers. The essence of the proposal is the stimulation and support for the development of vertically integrated, self sustaining, private sector systems that will market horticultural produce from small-scale Swazi farmers living on Swazi Nation Land (SNL).

The technical analysis established that at present, SNL farmers are not competitive in their horticultural production and marketing. This is due primarily to low yields, seasonal production and limited access to the markets. The SNL farmers have been unable to program their production in relation to market needs. It is concluded in the technical analysis, however, that vertically integrated support and assistance will result in efficient production and marketing. Given this, horticulture will become a major benefit to the small-scale farmer.

The analysis of the technical aspects of production, and an analysis of the gross margin potential of horticultural crops, shows that there is significant scope for expansion in Swaziland's horticultural production. With varied climate and topography, the country lends itself to the production of a diverse range of horticultural crops. There is potential for introducing new crops, and there is potential to increase production of present horticulture crops.

A study of the domestic, regional and overseas markets confirmed that, given reliable and regular supply, there is considerable demand for the crops that are suitable for immediate introduction to SNL producers. The production of these crops at medium to high levels of efficiency would result in attractive returns to the producer in terms of net income, and in terms of the returns to labor.

SECTION I
INTRODUCTION

A. The CAPM Redirection

The CAPM project has been redirected to focus on a narrower target group with the objective of:

- o Achieving visible results in the field in the near term
- o Targeting of small-scale farmers with potential on irrigable land

The overall strategy will retain the initial four components stated in the redirection document, "Proposed Components of Project Redirection and Extension" (Conrad and Olson, 1991), but concentrate on:

Interventions facilitating private sector development, accelerating progress toward commercial success by a discreet group of producers. The project will concentrate on development of horticultural and specialty crops.

B. Focus

The redirection seeks to demonstrate that vertical coordination for the output of small-scale growers producing primarily for the fresh market can be achieved through private-sector enterprise.

CAPM interventions will include:

- o Commercial entity support and structuring
- o Production and marketing advice
- o Commercial production and marketing programs

CAPM supports will include:

- o Analyzing target group capabilities and constraints
- o Analyzing possible commercial policy programs
- o Seeking market opportunities
- o Providing market information collection and dissemination
- o Skills training
- o Assisting in coordination of producers

To produce the outcome at the end of the project of:

A SELF SUSTAINING; PROFIT DRIVEN SYSTEM(S) INVOLVED IN MARKETING FOR AND COORDINATING THE PRODUCTION OF SMALL-SCALE SWAZI FARMERS.

SECTION II BACKGROUND

A. Present Production Situation

The present production base for Swaziland is made up of three distinct groups:

- o Title Deed Land (TDL) farmers
- o Swazi National Land (SNL) farmers
- o Producers in the Republic of South Africa

1. Title Deed Farms

TDL producers include individual farmers as well as large estates. Although some TDL farmers have relatively small holdings of land, they are not considered to be small-scale producers and are not a primary target for assistance.

2. Swazi Nation Land Farms

SNL farmers, of which there are approximately 58,000, produce under widely divergent environmental conditions. Only producers who have access to irrigation can be targeted for the objectives of this project. This means production centered around some 1,757 farmers/homesteads covering 1472 hectares, representing 2.6 percent of the total land currently under irrigation in Swaziland.

The inclusion of the Vuvulane Irrigation Schemes which grow estate crops in the main, but have significant potential for horticultural production, would increase the potential target area to 2,500 ha, or 6 percent of the irrigable land.

SNL irrigation farmers all live in traditional homestead environments where traditional crops are grown (maize, sorghum etc). They have access to irrigation through either MOAC irrigation schemes or through individually owned schemes. It is useful at this point to describe these variations.

Most schemes have at some time had some Government of Swaziland (GOS) involvement and can be divided into four categories:

- o Rural Development Area (RDA) schemes
- o Cooperative/association schemes
- o Individual/private schemes
- o Large-scale Swazi schemes

RDA schemes were Government initiated, the GOS providing all the funding, design, construction and extension services. For various reasons, these schemes have not been entirely successful.

Cooperative/association schemes are also found in RDA's. The significant difference being that these schemes were requested by the group or association of farmers in the area. The farmers also contributed to the scheme cost, in both cash and kind. These schemes have generally been more effective as they were initiated by the farmers on the schemes.

Individual farmer-owned schemes are schemes in which the farmer requested GOS assistance in design, but paid for and constructed the schemes themselves. There is little information regarding the distribution or success of this type of scheme, although statistically, this type of scheme makes up 35 percent of the total SNL irrigation (Myeni and Brosz, 1990).

Large-scale Swazi schemes have not been formed, with the exception of perhaps the Vuvulane project and the Malkerns Irrigation scheme, but it is proposed that the Komati river basin could provide a large area for SNL irrigation production, and there is a possibility of a significant development in the Lavumisa area (Brosz, 1990).

3. South African Producers

Producers in the RSA must be considered when assessing the productive base in Swaziland, since the country serves as a significant competitor, and if properly exploited, a significant market.

4. Seasonality of Production

Most vegetables in Swaziland are grown during the winter period, which traditionally leads to an oversupply situation, and corresponding low prices in the August to November selling season. It is estimated by various sources that between 50 to 80 percent of produce grown never reaches market at this time of year because of a combination of over supply and poor or non-existent marketing infrastructure. This has undoubtedly contributed to the farmers' lack of motivation with regard to increasing vegetable production is concerned.

The problem of seasonality of production is seen as the major factor limiting the development of the industry in Swaziland, given the markets' requirement for regularity of supply. When viewed against the background of regular, reliable and easily accessible supplies from South Africa, it is easy to see why the local producer is failing to compete with imported produce. Any intervention must address as many of the problems associated with this skewed production performance as possible.

B. Present Marketing Situation for Horticultural Commodities.

The present marketing situation is dominated by two main intermediaries, namely

- o Hawkers
- o NAMBoard

1. Hawkers

The 150-200 hawkers at present are estimated to participate in 80-90 percent of SNL producer sales (van den Burg, 1991). The advantages of hawker sales to the producer are that they:

- o Pay cash at farmgate
- o Provide transport
- o Operate with low overheads
- o Provide "packaging" in the form of bags or crates

From the sellers perspective, however, they have the disadvantages of:

- o Purchasing limited quantities
- o Being unreliable
- o Providing no field feedback
- o Preferring to buy from guaranteed suppliers in South Africa

The hawkers generally access the urban local and municipal markets with relatively small volumes of produce.

2. NAMBoard Fresh Produce Market

This organization was set up in 1988 to provide the marketing component specifically for small-scale horticultural producers. Advantages to the producer of selling through the agents of this organization are that the agents can:

- o Take large volumes
- o Provide transport for "critical mass volumes"
- o Consolidate product for the market
- o Provide some form of import protection
- o Provide feedback in the form of NAMBoard fieldsmen, who give some technical advice

The disadvantages of selling through NAMBoard's agents, from a producers point of view, are:

- o Sales on consignment offer no guarantee of sale or if sold at no set price
- o High overheads
- o Limited "marketing" capacity

The current market is almost entirely domestic, although some exports of tomatoes and limited produce exports to Mocambique have taken place. This means that most SNL producers feed into the urban and municipal markets as well as the rural market. This activity implies that all quality and presentation criteria revolve around local requirements which differ from the regional (RSA) demands, resulting in surplus produce not being salable on other lucrative markets.

C. Technical and Marketing Constraints

1. Technical Constraints to Expanding the SNL Horticultural Sector

Technical constraints to expanding the SNL horticultural sector include:

- o Labor competition with dominant summer crops, especially maize
- o An increase in pest and disease problems with summer production
- o A lack of suitable cultivars
- o An lack of extension workers trained in horticulture.
- o Low yields

2. Marketing Constraints to Expanding the SNL Horticultural Sector

Marketing constraints to expanding the SNL horticultural sector include:

- o Lack of market information and prices
- o Lack of transport
- o Cash/credit shortage
- o Uncertain market - high competition
- o Lack of knowledge about quality and presentation
- o Lack of "critical mass" to attract buyers
- o Poor communication links to the market components
- o Seasonality

The above mentioned factors are by no means a complete summary of all documented constraints, but are the major problems cited by farmers and experts alike.

D. Technical Constraints

1. Labor

A conflict with summer crops has been reiterated many times as a constraint to summer production. The apparent success of some irrigation schemes however, is seen as an indication that it is not universal, and that where the perceived risk of summer production is lowered, and financial returns become significant in terms of labor utilization, then summer production of horticultural crops will not be restricted by labor shortages.

2. Pests and Diseases

It is certainly true that summer production carries with it certain risks of increased pest and disease pressure. These problems are however, not insurmountable, given adequate research backing and continuous "in-field" assistance.

3. Cultivar Selections

Cultivar selection is a real problem with many crops, and is associated with both increased pest and disease pressure as well as high summer temperatures. Research work through the Cropping Systems Research Extension and Training Project (CSRETP) funded by USAID and MOAC's research efforts, has significantly improved the situation in Swaziland. However, a sustained research effort needs to be maintained so that cultivar availability continues to become a less significant constraint.

4. Absence of Extension Workers

Absence of extension workers cannot be quoted as a general constraint, as there are many very active MOAC extension workers. It is however, a significant factor in many areas and lack of continuous field support does pose a serious constraint to horticultural production; and it is an area that any intervention must consider seriously.

5. Low Yields

Low yields can be directly related to all the above mentioned technical considerations. In the absence of any improvement in these conditions, yields cannot increase, returns to labor and margins will not rise, and the crops will simply not be produced profitably.

E. Marketing Constraints

The technical restrictions discussed above are compounded by marketing problems - often quoted as the most significant constraint to expansion of the horticultural industry.

1. Lack of Relevant Market Information and Prices

Lack of relevant market information and market prices certainly reduces market awareness among potential producers, and gives them little ability to read the market and fix prices accordingly, but is not the most significant aspect of a poor marketing infrastructure.

2. Cost and Availability of Transport

The cost and availability of transport is another weakness of the system and is compounded by the other technical and marketing constraints. The factor of insufficient "critical mass" for example leads to problems in utilizing available transport efficiently.

3. Cash and Credit

Some SNL producers use credit; and given similar conditions of collateral and market, this would tend to indicate that lack of access to credit is not a serious constraint. It is felt that it is not so much lack of credit, but the perceived high risk associated with the production process that prevents the extensive use of credit (Gardner and Bielen, 1990).

4. Uncertain Markets

The first question asked by potential producers when questioned about the possibility of producing any vegetable crops is:

"Where are we going to sell the product?"

This tends to indicate that the lack of a reasonably secure market is one of the more serious factors preventing expansion of the summer vegetable hectareage. Lack of a definite, reliable market raises the risk of production considerably, and reduces the perceived advantage that might be gained from higher crop margins.

5. Lack of Knowledge about Quality and Presentation

This problem accentuates the element of competition, especially when hawkers (the main market link for small-scale producers) have access to imported produce which is generally of a higher standard than the domestically procured product. Poor presentation, when combined with unreliable seasonal supply, tends to make the SNL producer a "supplier of last resort." Any intervention or support must have as one of its objectives, to change the position of the SNL producer to one of a "supplier of first choice."

6. Lack of "Critical Mass"

Buyers are not generally prepared, given the ease of import sourcing, to travel long distances to purchase small volumes of product. This means that the producer who is hedging the risks by growing small hectarages, puts himself into an even more uneconomic position, by growing volumes unattractive to buyers.

7. Poor Communications

The lack of communication in most rural areas is a factor which accentuates all of the above mentioned marketing constraints, and ensures that the small-scale producer is never in a situation where he can take anything but a residual position in the market.

9. Seasonality

As has already been discussed under the section on SNL production patterns, seasonality of production is seen as the most serious result of the technical as well as some of the above marketing constraints. In a situation where the producer can not be relied upon to supply consistently or reliably, the market will always purchase from the more reliable source as a first option. Unfortunately, once these supply links have been made, it becomes very difficult for the competing SNL producer to break these linkages, even in periods of significant SNL supply. It is clear that for sustained penetration into the domestic market system, the SNL producer must be able to change the current trend of distinctly seasonal production. He must focus production to supply year round and at a quality standard which attracts buyers. This implies a refocusing of the target market. It is essential that the SNL producer perform at a level suitable for regional sales. Domestic sales will then follow naturally.

SECTION III
PRODUCTION SCOPE

A. Technical Analysis

1. Geographical Advantage

Successful marketing of horticultural products requires the following:

- o Regular supply volumes
- o Reliable supply volumes
- o Constant quality - to specification

One of the most significant factors affecting these attributes is climate or temperature, i.e., frost and hail risk and rainfall distribution. In order to have significant control over production, the marketing organization should have access to areas of divergent climate within a confined area. The geography of Swaziland provides all this.

In a country of approximately 120 km east to west and 150 km north to south, one finds significant areas of land in each of three general categories: low, middle and high veld. The low veld extends from 0-500 m above sea level (ASL). Middle veld is considered to extend from 500-1000 m ASL, and the high veld extends from 1000-2000 m ASL. Within the country, mean annual rainfall varies from less than 630 mm in the low veld areas to greater than 1200 mm in the high veld areas. There are areas which receive more than 1500 mm per annum, but these are generally more suited to forestry.

Temperatures tend to follow a pattern not dissimilar to rainfall, in that relief is the major control. Low temperatures and frost risks are higher in the high altitudes in the western areas of the country, and in the east, the frost risk is not significant (Gourdie and Williams, 1983).

These climatic characteristics, combined with a wide range of soil types, ensure that any vertically integrated approach to production and marketing of horticultural crops can produce an wide range of products (except temperate crops) all year round, thereby fulfilling the most important of marketing criteria: the production of regular, reliable volumes of product.

The fact that the MOAC has seen the advantage of irrigated agriculture and implemented irrigation schemes in all areas, means that horticultural production and marketing can be carried out at a significant advantage over other producing areas.

2. Cropping Options: Local and Regional Crops

The following is a list of crops grown in and around Swaziland and was the source of cropping options for incorporation into a technical analysis of crops for immediate promotion in SNL irrigation schemes.

Initial Crop Selections - SNL Producers

Bananas	Green Maize
Beetroot	Green Peppers
Brinjals	Guavas
Broccoli	Lettuce
Cabbage	Mango
Carrots	Okra
Cauliflower	Onions
Celery	Potatoes
Chillies	Pumpkin
Cucumber	Spinach
Garlic	Sweet Potatoes
Ginger	Tomatoes
Granadillas	Processing Tomatoes
Green Beans	

Initial Selection 27 crops

The list below shows the criteria under which crops were technically analyzed.

- o Research background
- o Production history
- o Technical feasibility
- o Suitability for immediate SNL production

a. Bananas

Bananas have been produced in the region for some time, with volume crops being grown mainly by large-scale estate farms. The research base has identified acceptable varieties as:

- o Williams
- o American Cavendish
- o Grand Nain
- o Dwarf Cavendish
- o Chinese Cavendish

Planting material is available. A major technical problem which may dominate certain areas is the presence of Vascular Wilt Disease (Fusarium oxysporium) and more importantly, Bacterial Wilt (Pseudomonas Solonacearum, race 3), which is already present in the northern parts of Swaziland around Ngonini. Because this is a relatively short term crop, it should be considered for commercial introductions in the near term, but is too long for immediate results, and was therefore eliminated from the selections into the current gross margin analysis.

Work with small-scale banana growers in the Vuvulane area should be encouraged in relation to the developments currently being contemplated by the banana growers, the African Development Bank, and NAMBoard.

b. Beetroot

Beetroot have been grown at an increasing rate over the past few years, and as such has a production history; albeit small. Research has developed cultivar guidelines and selected the following as important considerations:

- o Detroit Dark Red for summer & winter production
- o Early Wonder for summer & winter production

Both varieties show some tolerance to downy mildew (Perenospora parasitica) and the Early Wonder variety resists bolting. The latter cultivar is, however, no longer popular for commercial production in South Africa. No information is available about their susceptibility to common leaf spot (Cercospora beticola), which can be serious in hot, humid conditions. This will have to be confirmed.

Beetroot is well suited to SNL production and was therefore selected to go into the gross margin analysis.

c. Brinjals

Although brinjal has little production history in Swaziland, it is a member of the solanaceous group of plants, many of which grow well in the country. It has no research base in Swaziland, but significant regional work has been done in South Africa. Cultivars that are recommended include the open pollinated:

- o Black Beauty
- o Florida High Bush
- o Long Purple
- o Florida Market

The F1 hybrids include:

- o Black King
- o Blacknite
- o Black Bell
- o Imperial

The hybrids are significant in their tolerance to Tobacco Mosaic Virus (TMV). The major technical problem associated with this crop is Bacterial Wilt (Pseudomonas solanacearum, race 1). This disease is endemic to certain parts of the country, especially the northern RDA. Given that strict crop rotation will be employed to obviate the wilt diseases, this crop was selected for gross margin analysis.

c. Broccoli

Broccoli is a crop with some interesting, although small, recent production history in Swaziland. It is ideally suited to SNL production, having a high labor component during harvesting. Again, no significant research base exists in Swaziland, but regional production practice indicates its potential.

F1 Hybrids suitable for both the processing (a potential here) and fresh markets are as follows:

- o Crusader
- o Dandy Early
- o Emerald Corona
- o Late Corona

These three cultivars are significant in their tolerance of downy mildew (Perenospora parasitica) and black rot (Xanthomonas campestris). Broccoli is less heat sensitive than cauliflower, and as such would have a wide production possibility in both summer and winter. As such, broccoli was included as a potential for SNL production and subsequent gross margin analysis.

d. Cabbage

Cabbage is currently one of the main crops grown by SNL producers, and as such is included in the gross margin analysis.

It is useful to summarize the research results from Swaziland's production experience as far as varieties are concerned:

<u>F1 Hybrids</u>	<u>Production Period</u>	<u>Significant Tolerances</u>
Big Cropper	summer/winter	black rot/bolting/cold
Conquest	summer/winter	
Conquistador	summer/winter	black rot/bolting/cold
Grand Slam	winter	yellowings/downy mildew
Green Coronet	summer/winter	black rot/bolting/cold
Hercules	summer/winter	black rot/bolting
Tokyo Pride	summer/winter	black rot/bolting/cold
Topmost	summer/winter	black rot/mosaic/bolting
Transmark	winter	yellowings/stores well
Spitzo	summer/winter	bolting

Open Pollinated

Golden Acre summer/winter

e. Carrots

Many of the soil types on SNL irrigation schemes are ideally suited to carrot cultivation, being sandy loam. They require a high labor component at harvest as well as during weeding. (The weed intolerance and requirement for attention to detail at planting to obtain an even stand may be seen a disadvantage in this situation). There is a production history in Swaziland, again small, but sufficient to indicate potential. Research has selected the following varieties for cultivation in Swaziland:

- o Cape market
- o Keystone Danvers
- o Kuroda

The major technical problem, besides weed control, is Leaf Blight (Alternaria dauci), and the above varieties show either strong tolerance or resistance to this serious disease (especially in summer production). Accepting some limitations as far as management is concerned, carrots were included in the gross margin analysis.

f. Cauliflower

Although cauliflower is currently produced in small quantities, limited production experience and research have shown some cultivar selections to be suitable for local production:

- o Rami
- o Spring Snow
- o Snow Ball

Rami is a very early cultivar, having as its significant feature very good heat resistance. This quality allows it to be grown in summer—in middle and high altitudes. No mention is made of these cultivar tolerances to Downy Mildew (Peronospora parasitica), which may be important especially in early summer conditions. This will have to be confirmed. It is a crop well suited to intensive SNL production and was included in the gross margin analysis.

g. Celery

Celery is grown locally, but without any research background. Cultivars which could be tried in Swaziland include:

- o Golden Self Blanching
- o Utah

These two varieties have not been tested locally. Without research backing and extremely limited production history, this crop was not included in the gross margin analysis.

h. Chillies

Chillies are a crop with extensive local production history but without a research base in Swaziland. Cultivars grown locally are all open pollinated, have various levels of commercially required oleo resins, and are susceptible to virus. Since chillies are so widely grown, they require no introduction, and therefore carry little risk. This crop was included in the gross margin analysis. It will however, require significant research backing to establish true breeding cultivars with ideal commercial characteristics.

i. Cucumber

Cucumber is a crop with limited production history in Swaziland, only a small research base, and with extremely high management requirements for high quality production. It is a possible introduction in the medium term, but was considered unfit for the present intervention and withdrawn.

j. Garlic

Garlic is a crop with no research base in Swaziland, and little production history. Limited trial work shows there may be some technical problems as far as yield and corm size are concerned. This is a crop with tremendous potential from the marketing point of view and deserves some detailed development work. Because of the unknown nature of the production problems however, the crop was considered too risky at this stage in the intervention, and was withdrawn from the gross margin analysis.

k. Ginger

See Garlic for similar conclusions.

l. Green Beans

Green beans have had an insignificant production history in Swaziland, but a combination of regional performance and local research makes it an ideal crops for SNL production. High quality production requires intense labor management, an assumed competitive advantage under SNL conditions.

Initial cultivar selections have been carried out (during the spring season only) by D. Grenoble, a horticultural specialist from Pennsylvania State University on long-term contract with the Cropping System Project; with the following varieties as possible selections for local production:

- o Provider
- o Vitagreen
- o 75-091
- o Greengenes
- o Wintergreen
- o Seminole
- o AVX 664
- o Roma II

All the above mentioned varieties produce high yields (in excess of 10 ton per ha) of straight or slightly curved pods. Further testing is required, especially to determine varieties tolerant to bacterial blights (Xanthomonas phaseoli and Pseudomonas phaseolicola), as well as to Bean Mosaic Virus and Brown Rust (Uromyces appendiculatus), an important consideration for summer production. Regional experience indicates that there are also additional cultivars ideally suited to fresh production -especially for the overseas trade. This crop was considered suitable for gross margin analysis.

m. Green Maize

Green maize is an obvious choice to go through financial appraisal since maize is the staple crop of Swaziland. Cultivar selections are available from many sources with much production history to back up their growth characteristics.

n. Green Peppers

Green peppers have had limited research backing and the crop is described as able to grow extremely well in Swaziland (Grenoble, 1991 - personal communication). At this time, open pollinated varieties include:

- o California Wonder summer/winter TMV* tolerant
- o Green Giant
- o Keystone Resistant Giant summer/winter TMV* resistant

F1 Hybrids include:

- o Sharina summer/winter TMV* resistant

* TMV - Tobacco Mosaic virus

Given disease tolerances, this crop is an ideal component of SNL production and was considered suitable for gross margin analysis.

o. Guavas

Guavas are a product endemic in Swaziland, and therefore an obvious choice for inclusion in the gross margin analysis. No research base exists, but its indigenous presence in most middle veld areas suggest its inclusion in the financial assessment.

p. Lettuce

Lettuce is currently a crop of increasing importance for SNL producers, and one with some research support. Cultivars recommended include:

<u>Cultivar</u>	<u>Tolerates</u>	<u>Produced in</u>
Citation	heat/cold	winter/summer
Commander	heat/cold	winter/summer
Emporor	tipburn	summer
Excellence		winter
Queen crown		summer
Valtemp	tipburn	winter

For year round production, attention must be paid to heat tolerance. Tipburn resistance is therefore important in reducing the prevalence of physiological slime production and subsequent bacterial soft rot activity. An additional technical problem to be considered is that of post-harvest handling. The crop is very sensitive to post-harvest dehydration and some simple cooling systems (shade, evaporative cooling, etc.) need to be considered. Its combination of technical support and production history ensured that it was considered for gross margin analysis.

q. Mango

Mangos are a product ideally suited to sub-tropical climates with significant research backing from South Africa. It is a long-term crop, and not suited to the current intervention philosophy. It was not considered suitable for gross margin analysis at this time.

r. Okra

Okra is a crop of some significance in other African countries, but is not commonly marketed in Swaziland; although it is consumed in the rural areas. Its regional production history make it an obvious choice for gross margin analysis. Cultivars for local and regional consumption include:

- o Perkins Spineless
- o Clemson Spineless
- o Annie Oakley

Perkins Spineless would be the cultivar of choice because of its high yielding capability. Work needs to be done on tolerance to leaf blight (Alternaria spp.), as this can be a serious problem under humid summer conditions.

s. Onions

Onions, as a crop, are already a significant contributor to SNL production and as such must be considered financially in both summer and winter production schedules. Significant work has been done by Grenoble and Gama (as referenced in MOAC Research Study Series, No. 3, 1988) in cultivar selection for summer production.

Winter production cultivars are available as follows:

- | | |
|--------------------------------------|-------------------------|
| o Pyramid (de Wilt inbred selection) | good storage |
| o Bon Accord | good storage |
| o Hojem | travels well |
| o Early Texas Grano | poor storage/large bulb |

Production of summer onions involves the use of the following cultivars, selected from work carried out at the Malkerns Research station:

- o Pronto S
- o Rocket
- o Garnet
- o Taurus (a possible choice)

The above cultivars produce well under long day length conditions and produce an acceptably low proportion of thick necks, except Taurus (Grenoble et al. undated).

t. Potatoes

Potatoes are a crop which is grown primarily by estate farms in Swaziland, but its production history has shown it suitable for SNL producers. It was essential to consider this crop financially for both summer and winter production. Potato cultivars grown locally include:

- o Cedara
- o BP 1
- o Up to Date

The above are South African selections, but others are available and should be tested locally. (Small-scale producers in Kenya for example, grow significant areas of potato). One reason for the lack of production by SNL producers is the high degree of technical management required to control pests and diseases. The major diseases are:

- o Early Blight (Alternaria solani)
- o Late Blight (Phytopthera infestans)
- o Bacterial Wilt (Pseudomonas solonacearum)

The proposed intervention must assure that sufficient technical backup is given to growers to support yield targets. Support would also be required in sourcing high quality seed material. Given this support, the potato was considered for gross margin analysis.

u. Pumpkin

Pumpkin is a crop grown widely in many forms, and an obvious candidate for gross margin analysis. No significant research base exists in Swaziland but its production history both locally and regionally was sufficient to ensure that the crop was technically feasible.

v. Spinach

Spinach is a minor, but widely grown crop in Swaziland, but has some production history. There is no apparent local research base for the crop. It is suitable for SNL production and therefore acceptable for financial appraisal.

w. Sweet Potatoes

Sweet potatoes are a crop with local and regional production history but little research base. The crop is technically possible but will require some technical development, especially in the production of virus free planting material. It was considered for gross margin analysis.

x. Tomatoes: Fresh and Process

Tomatoes are one of the most significant crops currently produced by SNL growers, especially in the northern RDA. The major technical problems here are disease susceptibility, namely:

- o Bacterial Wilt (Pseudomonas solonacearum, race 1)
- o Early Blight (Alternaria solani)
- o Late Blight (Phytophthora infestans)
- o Verticillium wilt (Verticillium dahliae)
- o Fusarium wilt (Fusarium oxysporum)

Tomato cultivars selected from research at Malkerns research station are as follows:

<u>Open Pollinated</u>	<u>Tolerances/Resistances</u>	<u>Grown</u>
Floradade	verticillium/fusarium	S/W
Heinz 1370	fusarium	S/W
Rodade	bacterial wilt resistance	S
Sjampanje	verticillium/fusarium	S/W
Traffic Jam	unknown at this time	S/W

Hybrids

Casino Royal	verticillium/fusarium/TMV	S/W
Hot Stuff	verticillium/fusarium	S/W
Zest	vert/fusarium/bacterial wilt	S
UC 82 B	bact wilt resistant	prss*
Rhotum	bact wilt tolerant	prss/fresh*

*prss - process cultivar for summer or winter production

Some of the hybrid cultivars also exhibit strong tolerances to nematode (meloidogyne spp) attack, as does the open pollinated cultivar, Sjampanje. This is very important when considering short rotations. Despite the significant technical problems, the crop was passed on to the gross margin analysis.

3. Technical Criteria Summary

Table 1 lists the final selection for crops recommended for SNL producers:

TABLE 1: FINAL CROP SELECTION RECOMMENDED FOR SNL PRODUCERS

Beetroot	Green Maize
Brinjals	Green Peppers
Broccoli	Lettuce
Cabbage	Okra
Carrots	Onions
Cauliflower	Potatoes
Chillies	Spinach
Green Beans	Sweet Potatoes
Tomatoes	Processing Tomatoes
Guavas	
Crop total: 19	

The most serious technical consideration arising out of the above selection is that 25 percent of crops selected are solanaceous plants. They are all susceptible to similar pathogens. Therefore, rotation, cultivar selection, planting material source and land hygiene are all critical technical issues which must be addressed. If all crops were grown in equal quantities, the resulting rotation may be acceptable. This is unlikely to be the case. Marketing, research and extension elements must therefore concentrate on rotation practice as well as encouraging increased production and sale of non-solanaceous crops.

4. Technical Analysis: European Export Products

The following is a list of crops grown regionally for the European and other export markets and considered as initial selections for local production by SNL farmers for this market:

- | | |
|---------------|-----------------|
| o Baby Corn | Tumeric |
| o Sweet Corn | Chillies |
| o Mangetout | Mango |
| o Green Beans | Mini Vegetables |
| o Granadilla | Melons |
| o Okra | Strawberries |

The following points were considered in this analysis:

- o Production history
- o Technical feasibility
- o Suitability for immediate SNL production

a. Baby Corn

Baby corn is the ear of corn harvested at silking, producing a "cob" which weighs \pm 10 grams. Any maize variety can be used in general, but the yellow sweet corn varieties are preferable as they tend to give a cob which is slightly yellow and compares favorably with the Thai Competition. For maximum yields, a multi-cobbing variety should be used. Selections include the PANNAR variety MC2 from Israel. Disease problems are not significant, provided that the selection is Rust (Puccinia sorghi) and Leaf Stripe (Helminthosporium spp.) tolerant. This is especially important for summer production. As with all immature vegetable and fruit crops, this product has an extremely high respiration rate, and must be cooled as soon as possible after reaping to prevent deterioration. It must be assumed therefore, that local cooling facilities are available.

Given the above considerations, and its labor intensive requirement, baby corn was deemed technically feasible for SNL production.

b. Sweet Corn

Sweet corn is a crop which will grow well in Swaziland, and has a significant production history in the region. Cultivars are available from many seed houses and include:

- o All Super Sweet cultivars
- o Jubilee (new rust resistant release)

Sweet corn suffers similar disease problems to baby corn and cultivars must be selected accordingly. The crop is well suited to SNL production, but as with baby corn, cooling is essential very soon after harvest to maintain the sugar levels.

c. Mangetout

Mangetout are well suited to small-scale producers; in fact, initial suppliers to the U.S. and Europe were small-scale growers in Guatemala. The crop is becoming more technically difficult. As volumes traded increase on the European markets, quality standards are becoming higher as prices decline. A major technical problem with producing Mangetout is Powdery Mildew (Erysiphe polygoni), especially during dry/hot periods.

Based on regional production experience and its suitability to small-scale production, Mangetout was selected for gross margin analysis.

d. Green Beans

Green beans have been discussed in detail in Section III, A. Given its high labor component, especially for fine and extra fine production; it is an ideal product for SNL producers targeting European markets and was considered for gross margin analysis.

e. Granadilla

Granadilla is a product with significant regional production history, as well as a sound research base at Burgers Hall in South Africa. Regional production history has shown the crops sensitivity to poor drainage and soil borne diseases, especially Phytophthora spp. Yields can be exceptional, but the component of export fresh fruit is not greater than 20 percent at maximum. It is important therefore, to have some processing opportunity for the balance of the fruit. The process option requires additional study, but there is a known market for the concentrate, which is presently dominated by Brazil. The crop is a medium-term product and considered unsuitable for immediate introduction into the SNL system. It must however, have immediate demonstration areas established.

f. Okra

The okra crop has been covered technically under the local and regional discussion in Section III, A; however, different cultivar selections may be required for the European markets. An ideal choice would be the Pusa Swani cultivar from India. Okra has a high labor component at harvest and is ideally suited to SNL production. It was therefore considered appropriate for gross margin analysis.

g. Tumeric

Tumeric is a recent introduction to Swaziland, and currently grown by some commercial farmers in the Malkerns Valley. The product must be dehydrated before sale, requiring some specialized equipment. Cultivars are still under test for oleo resin content (related to pigment levels). Once the correct cultivar choice has been made, tumeric could easily become a significant crop for SNL producers; currently though, it is not in a stage that is suitable for gross margin analysis. Technical support for the current producers is required.

h. Chillies

Chillies and chillie production have been discussed in Section III, A. There is a demand for fresh chillies in the European ethnic market sector; but successful production will require the introduction of new cultivars, which must be tested and demonstrated before SNL producers can produce the crop for European export. It was not considered for immediate gross margin analysis, but will require immediate demonstration and testing.

i. Mango

Mangos have been previously discussed in this report, are not considered for current introduction, and are therefore not considered for gross margin analysis. There is significant scope for expansion in this crop, but research backing will be required for local introduction, especially with regard to post-harvest handling.

j. Mini Vegetables

Mini vegetables are a new product rage on the European market, and consist of almost any vegetable crop grown as a miniature. Production requires specific cultivars to ensure that the small size at harvest is in fact a mature fruit or vegetable. The popular types of mini vegetables include:

- o Leeks
- o Aubergines (Brinjal)
- o Cabbage
- o Carrots
- o Peppers
- o Tomatoes (small cherry cultivars)

Since this is a new market, cultivar selections are limited, and certainly, there is no local production history. Mini vegetables are ideally suited to SNL-type production because of their high labor component, but are not considered for gross margin analysis at this time. Research and demonstration work is essential before introduction.

k. Melons

Melons are a crop that are required in large quantities during the European winter season. Cultivar selections include:

- o Hoagen (ogen)
- o Charantais (French Market)
- o Yellow Honeydew
- o Tendral

Production is technically sound, but no local production history is available. Therefore, gross margin analysis at this time was not considered. It is recommended that trials and demonstrations be implemented as soon as possible.

l. Strawberries

Strawberries are a product continually in demand during the European winter. Technically, the production of strawberries is difficult because of the following:

- o Day length sensitivity and low yields with day neutral cultivars (December - March)
- o Disease, mainly Botrytis cinerea, as either a post-harvest or land problem
- o Heat intolerance

Strawberries are however, a high priced and high demand crop, and therefore deserve research backing. They were not considered for gross margin analysis.

m. Papaya

Papaya is a product that has significant research background in the region, but as far as exports are concerned, some significant problems have been experienced with physiological spotting. Cultivar selections are mainly from Hawaiian breeding, the ideal cultivar being Solo. It is essential that some research backing be given to this crop. It was not considered for gross margin analysis at this time.

5. Summary

The following crops were selected to go through gross margin analysis for European marketing options:

- o Baby Corn
- o Sweet Corn
- o Mangetout
- o Green Beans (fine/extra, fine production)
- o Okra

All the crops considered in this technical analysis should be able to be produced in Swaziland. It is essential however that priority be given to research backing of these crops before they are introduced to growers, particularly the small-scale producer.

B. Gross Margin Analysis

1. Regional and Local Market Objectives

A simulation model was developed using Lotus 123 to generate crop gross margin budgets, and other financial indicators. All the crops selected in Section III, A-5 above, were analyzed using the following inputs:

- o Yields
- o Price
- o Input costs
- o Return to labor
- o Transport charges
- o Marketing charges

Prior to detailed analysis, the following crops were withdrawn from the model because of low market volumes:

- o Celery
- o Pumpkin
- o Guavas
- o Okra

a. Yields

Target yields of the crops entering the gross margin analysis were set at those expected by producers at the medium to high level of management; the assumption being that crops producing at high margins may still be acceptable to producers at a lower level of management. It was also felt that any intervention would involve significant field assistance, and it would be reasonable to assume increasing levels of management. Table 2 lists assumed yields.

TABLE 2: ASSUMED YIELDS - TONS/HA

Crops	Summer		Winter	Possible Range
Potatoes	25	*	30	20 - 40 b
Onions	25	*	30	30 - 60 b
Carrots	15		24	15 - 35 b
Cabbage	30	*	30	30 - 75 b
Cauliflower	15		20	12 - 25 b
Lettuce	18		20	20 - 30 b
Green Beans	6		10	6 - 12 a/b
Tomatoes	20	*	30	30 - 75 b
Brinjals	15		20	20 - 30 b
Peppers	20		12	15 - 30 a
Chillies	2		N/A	2 - 6 c
Broccoli	5		12	12 - 25 b
Beetroot	13		18	16 - 22 b
Green Maize	12		12	10 - 17 c
Process Tomatoes	45		65	40 - 90 d

Key: * summer winter yields based on Grenoble (1988)
a yield range based on Grenoble (various sources)
b yield range based on Agritex (1987)
c regional experience
d yield range based on Eastern (personal communication)

b. Price

Regional product prices were based on an analysis of the Durban Wholesale Market conducted for CAPM. The market was analyzed for price fluctuations on a monthly basis, and average figures were used in the gross margin calculations. Where it was seen that one season's pricing was unusually high or low, the average was adjusted accordingly. Since the period under review was 1986 to 1988, and it is estimated that wholesale prices have increased by 10 percent per annum since then, the average prices used in the analysis are conservative in reflecting current market pricing. It is felt that the obviously low prices used, will also be relevant for the small producer in the learning period ahead.

c. The Durban Market

The Durban Wholesale market was chosen for three reasons:

- o Besides the wholesale market proper, there is scope for marketing through the supermarket system directly. A buyer for the Natal OK food store chain has contacted and is enthusiastic about sourcing produce from Swaziland. Initially, produce prices will be based on the wholesale market prices in Durban.

- o Given the range of commodities selected, the Durban wholesale system provides a higher-priced outlet for Swazi producers. Alternative markets suggested by Van den burg et al. (1991) are Springs and the Pretoria Witwatersrand Vereeniging (PWV) area.

Table 3 summarizes the price differences over the three year period, 1986-1988.

TABLE 3: MARKET PRICE DIFFERENCES OVER THE PERIOD 1986-1988

Market	Price Difference
Durban	0
Springs	-25%
Johannesburg	-22%
Pretoria	-61%
Overall	-28%

The difference in pricing in Table 3, is based on the produce considered in this analysis; but if considering all vegetable products, the Durban wholesale system is 6.3 percent higher priced than any other South African market and 8 percent higher than the Reef markets.

This analysis in no way implies that production will be grown solely for the Natal markets, but it is realistic to assume that a significant proportion of production will find its way into this system.

- o There is also speculation that a repercussion of the current sugar boom has been that land under horticultural production in Natal is now being allocated to sugar production. There appears, therefore, to be a possible supply deficit for this market, and produce brought in from the Reef supply is not always of a quality to interest the supermarket wholesale buyer.

Domestic market produce prices are based on three year averages at the Nokwane market (NAMBoard) for the 1988-1990 period. Although this market does not control total local distribution, its pricing should reflect the situation of the overall system.

As has been mentioned many times in previous assessments, there is a difference in price between local and regional markets. The local market/regional market differences are tabulated below for the more important crops.

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TABLE 4: LOCAL AND REGIONAL MARKET
PRICE DIFFERENTIALS 1988-1990

Product	Price/Ton (E)		Difference
	Local	Regional	
Potatoes	480	440	8 %
Onions	765	490	36 %
Carrots	1467	625	134 %
Cabbage	235	150	56 %
Cauliflower	575	375	53 %
Lettuce	1100	525	109 %
Green Beans	1980	1400	41 %
Tomatoes	1250	575	117 %
Brinjals	775	450	72 %
Peppers	2750	1750	57 %
Broccoli	1350	1600	- 15 %
Beetroot	1100	440	150 %
Green Maize	N/A	N/A	N/A
Process Tomato	N/A	200	N/A
Average Price Differential - Summer/Winter			68 %

Table 4 summarizes the summer/winter price fluctuations into a single figure. In calculating a "blend" price to be received for a unit of production, an estimate had to be made of percentage sold regionally and percentage sold locally, since it is assumed that both markets are to be exploited.

From Table 4 it can also be seen that 100 percent local market sales would be financially more rewarding, but in the context of this intervention, this isn't seen as a realistic objective. Therefore, the following distributions have been used in price calculations. They are by definition arbitrary, but possible, given the market size (See Section IV).

**TABLE 5: LOCAL AND REGIONAL SUPPLY RATIOS
USED IN INITIAL BUDGET COSTINGS-
ANNUAL PERCENTAGE DISTRIBUTION**

Product	Local	Regional
Potatoes	75	25
Onions	40	60
Carrots	26	74
Cabbage	80	20
Cauliflower	20	80
Lettuce	37	63
Green Beans	5	95
Tomatoes	60	40
Brinjals	10	90
Peppers	10	90
Broccoli	63	37
Beetroot	20	80
Green Maize	30	70
Process Tomatoes	0	100
Average Distribution	31	69

As with price calculations, in calculating a "blend" distribution for a unit of production, Table 5 has summarized both summer and winter supply periods. (See Section IV for full details of seasonal distribution.)

It is clear that for the major products currently grown, a high proportion is destined for the home consumption/import substitution market and because domestic markets for the other products are unclear, the regional market is being assumed as the primary consumer. Once production and marketing actually begins, these minor products may find a larger place in the higher-priced local market system and therefore the percentage distribution will change, as will the financial benefit of producing the crop.

c. Seasonality of Production and Sale

There is some confusion in the literature in referring to summer or winter crops, and this is compounded when viewing price data. In this analysis, the season specified refers to the production season. For example, summer onions designated as the code 1s in the Table 6 simulation model below, refer to onions produced in the summer period from November to April. This product is therefore sold in winter. For shorter season products, the definition remains the same although timing of sale may vary considerably during the 6 month arbitrary winter season from May to October.

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TABLE 6: SIMULATION MODEL CODING

MARKET CODE
This is the code number used by the South African Wholesale System - currently ranging from 1 to 175.
PRODUCTION PERIOD
This represents the season of production, either summer (S) or winter (W).
MARKET TARGET
This is defined as either regional (R) or local (L) sales.
NOTE: Therefore 1sl refers to local sales of summer produced onions, and 1wr refers to regional sales of winter produced onions.

e. Input Costs

(1) Crop Chemicals/Fertilizers

From the detailed budgets (Appendix A), it can be seen that a small range of crop chemicals and fertilizers is used. These have been recommended by Grenoble and Gama (n.d.) in various technical presentations. They are not the only products suitable for the various pest and disease controls required, and no analysis of alternatives has been carried out for either efficacy or price comparisons. Where an additional product has been specified, it is from experience outside Swaziland, and does not imply that it is registered for use at this time. It merely costs control products where deemed necessary.

Crop chemical and fertilizer prices have been determined from the least-cost option available from Farm Chemicals - Manzini, dated 18/03/91; ie. the largest practical pack size where applicable.

(2) Seed

For planting material inputs, the major source is MayFord's price list #112, Summer 1990, or the crop budgets of Grenoble and Gama 1988. The use of individual company pricing in no way implies that this is the only source of inputs and does not constitute a recommendation for purchase.

(3) Tractor Hire

It is assumed in these budget models that the

small-scale producer will have access to the MOAC tractor pool scheme, where a hire charge per hour is levied (See Appendix B).

(3) Packaging

Detailed packaging requirements per crop have not been investigated, and figures are based on a "units of packaging" figure originating out of the work by Grenoble (1988).

(4) Labor

This is a very variable component, and a difficult one to evaluate without extensive field consultations. Ministry of labor officials maintain that the minimum wage is currently E2.70 per day. (MOAC, personal communication), but individual extension officers quote figures from E7-E10 per day, depending on whether food is supplied. A further consideration is the proportion of labor that is the farmer's individual labor and the proportion that is hired. All labor is considered hired for the purposes of this analysis.

Labor has been divided into 3 arbitrary grades. Grade 1 labor is costed at the minimum wage; grade 2, at 13 percent over the basic wage and grade 3, is costed at 33 percent over the basic wage. In the budgets, different grades of labor are employed for different levels of work. For example, semi-skilled harvesting of lettuce is costed higher than cabbage harvesting.

(5) Transport Charges

There are at least three companies currently available for local and regional transport work. It would appear that a 30 cents cost per ton per kilometer for transport is realistic at current rates. This figure has been used for both local and regional transport costings.

Transport distances used in this analysis are:

- o Local transport charges for distances over 50 km
 - o Regional transport charges for distances over 500 Km
- (Both assume one way costing)

(6) Marketing Charges

Although there are many market channels that can be explored, this analysis considers only two direct marketing costs. Regional sales are charged at 10 percent of gross and local sales at 13 percent of gross to reflect the regional and local wholesale systems, respectively. Sales made directly into the retail chain would obviously not carry these charges and therefore overall costs of sale are higher than would be expected.

(7) Finance Charges

In order to cover the cost of financing the input supply at the establishment of the crop, a 7 percent charge would be levied on all input supplies. This assumes a crop cycle of 4 months, a base rate of 18 percent, and an administrative charge of 1 percent. The costs assume that all inputs will be financed. This is obviously not the case at present and the charging of a finance charge on all inputs therefore increases the costs unrealistically. The proposed company is assumed to make a margin of \pm 35 percent. This is costed and represented as company margin in the budgets. (See Appendix A for detailed individual crop budgets.)

(8) Returns To Labor

The return to labor is seen as an important concept in determining the attractiveness of producing horticultural crops. The returns must be analyzed in relation to an equivalent "off-farm" wage. This is the basis of an assessment by Low (1982) in which he states:

"Most homesteads will aim to produce maize at the level closest to subsistence requirements, then reallocate resources (labor) where it will have higher returns."
"... this has been viewed as being economically rational, given the comparative advantage between the maize price and off-farm wages." (Low, 1982)

The competitive nature of alternative wage opportunities is also demonstrated by Thwala (1990) in her conclusion:

"In the face of highly remunerative wage opportunities, agricultural production has not increased despite the introduction of modern technology, increased extension services, and improved market infrastructure."
(Thwala, 1990)

It is therefore felt that returns to labor must be competitive with annual incomes for skilled workers. If this figure is accepted as \pm E3,800 per annum (Gardner et al., 1990) then we can realistically expect horticultural production to be competitive at a return to labor of E15.80 per day. (This amount is calculated at 240 working days per year.)

In order to calculate the return to labor figure for each crop, the labor cost is removed from the total variables and the resultant net income is divided by the total labor day requirement for the crop. This varies from Gardner's (1990) approach, where all crops, except maize, were considered to have the same labor requirement.

Table 7 displays a summary of returns to labor returns.

TABLE 7: RETURNS TO LABOR

Crop	Returns to Labor E/Labor day
Onions, Summer	25.91
Onions Winter	23.91
Tomato Summer	38.73
Tomato Winter	55.17
Cabbage Summer	18.13
Cabbage Winter	-49.47
Cauliflower Summer	- 4.19
Cauliflower Winter	-12.18
Carrots Summer	49.03
Carrots Winter	15.48
Lettuce Summer	57.96
Lettuce Winter	32.08
Pepper Summer	125.55
Pepper Winter	86.94
Brinjal Winter	22.52
Brinjal Summer	-19.24
Green Beans Summer	- 5.06
Green Beans Winter	- 1.60
Potato Summer	15.98
Potato Winter	16.00
Chillies	3.29
Broccoli Summer	18.33
Broccoli Winter	104.55
Beetroot Summer	58.54
Beetroot Winter	38.96
Green Maize Winter	- 3.28
Green Maize Summer	- 4.04
Process Tomatoes Summer	24.79
Process Tomatoes Winter	51.10

Net farm income for selected crops are shown in Table 8.

TABLE 8: NET FARM INCOME

Crop	Net Farmer Income
Onions Summer	3505
Onions Winter	3521
Tomato Summer	5440
Tomato Winter	9550
Cabbage Summer	1080
Cabbage Winter	- 3919
Cauliflower Summer	- 517
Cauliflower Winter	- 1265
Carrots Summer	5606
Carrots Winter	1674
Lettuce Summer	4394
Lettuce Winter	2465
Pepper Summer	14865
Pepper Winter	11457
Brinjal Winter	1923
Brinjal Summer	- 1799
Green Beans Summer	- 1296
Green Beans Winter	- 1283
Potato Summer	1341
Potato Winter	1359
Chillies	125
Broccoli Summer	1251
Broccoli Winter	7639
Beetroot Summer	5081
Beetroot Winter	3662
Green Maize Winter	- 422
Green Maize Summer	- 405
Process Tomatoes Summer	3115
Process Tomatoes Winter	2904

f. Gross Margin Analysis Summary

Using the approach of returns to labor, and taking the technical analysis into account, Table 9 shows the crops that are suitable for promotion in the SNL irrigation schemes when using the highest level of margin considered for the proposed local/regional marketing company.

TABLE 9: CROPS SUITABLE FOR PROMOTION IN SNL SCHEMES

Crop	Production Season
Onions	summer and winter production
Tomato	summer and winter production
Carrots	summer and winter production
Lettuce	summer and winter production
Green Pepper	summer and winter production
Brinjal	winter production
Potatoes	summer and winter production
Broccoli	summer and winter production
Cabbage	summer production
Beetroot	summer and winter production
Process Tomatoes	summer and winter production

2. Overseas Market Analysis

Below, is an assessment based on the projected income and expenditure for the technically feasible European export crops.

TABLE 10: EUROPEAN EXPORT CROPS

INPUT	BABY CORN -----	SWEET CORN -----	MANGETOUT -----	GREEN BEANS -----	OKRA -----
Fertilizer	400	400	400	400	300
Crop Chemicals	177	177	250	330	200
Labor (land)	85	85	85	85	85
Seed	455	455	200	300	125
Land Preparation	270	270	270	270	270
Total Fixed Costs	2774	1387	1205	1385	980
Yield Tons/Ha	2.8	8	2	6	2
Harvesting	420	400	300	900	400
Sorting/Packing	1736	160	500	1200	400
Packaging	9324	5440	1360	4080	1360
Transport E/kg gross 3.71	13816	32648	7717	23150	7717
Finance Charge	194	97	84	97	69
Total Variable Costs	25490	38745	9961	29427	9945
Total Costs	28264	40132	11166	30812	10925
Income E/kg net CIF 11.15	31220	6 48000	7 14000	9 54000	10 20000
Company Margin 10.00%	3122	4800	1400	5400	2000
Farmer Net	-166	3068	1434	17788	7075

As there is no local production history to source information, all figures are based on regional production experience.

a. Variable Costs

All fertilizer and crop chemical costings are

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based on bulk prices for locally available formulations. The same price listings have been used throughout. Land labor is based on a nominal planting cost, since all products specified can be hand planted, plus a cost of field weeding and crop chemical application. The labor cost is based on grade 3 charges as stated in the local/regional analysis. Seed costs are based on imported cultivars, using cost insurance and freight costings from the source countries.

b. Harvesting, Packaging and Transport Costs

Cost of harvesting as well as sorting/packing is based on regional experience with a 25 percent discount, to account for realistic local wage levels. Packaging charges are based on assumed carton dimensions sourcing from South Africa. Although the local company-Neopac does produce cardboard packaging, it can only handle single flute products at this time. This would tend to result in an unacceptable carton quality. Detailed source and cost details will need to be carried out to confirm the given price projections.

The cost of transport is based on the current costs for charter aircraft, northbound, assuming a full southbound cargo. This is possible, and up until the end of January, Swazi Cargo was operating a 707 cargo flight to Schipol Airport in The Netherlands on a weekly basis. This was suspended because of low volumes northbound and conflict with the authorities at Jan Smuts Airport in Johannesburg when Swazi Cargo began taking northbound cargo out of that airport. Should production figures increase, Swazi Cargo could reopen their schedule out of Matsapha to Schipol.

In the early stages of the redirected project activities, the use of air service out of Jan Smuts is possible, with any carrier - major carriers being British Airways and UTA, with frequent capacity northbound. The rate would be similar, but additional road haulage costs would add to variables. This may force sweet corn and mangetout into a marginal position, initially leaving only beans and okra as viable crops.

The finance charge is calculated on a similar basis to that figured for local and regional crops.

A preliminary production selection based on technical and financial feasibility is as follows:

- o Sweet Corn
- o Mangetout
- o Green Beans
- o Okra

SECTION IV
MARKETING SCOPE

A. Domestic Market Size

1. Domestic Market for Horticultural Produce

"The total 1988 local market for fresh horticultural produce is estimated at 20,500 mt. Imports were 15,700 mt, and could, by the year 2000, amount to approximately 23,000 mt." (van den Burg et al. 1991)

The above estimate would appear to be an understatement of the local market for fresh produce. This is borne out by the data in the following:

TABLE 11: FRESH PRODUCE IMPORTS, 1989

<u>Product</u>	<u>Tons Imported</u>
Potatoes	14479
Cabbages	1454
Tomatoes	777
Onions	2095
Other Vegetables	1047
Apples	2416
Bananas	3220
Other Fruits	786
Total Declared Imports	26274

Source: MOAC Marketing Advisory Unit, 1990
personal communication

The value of these imports were declared for levy purposes as E9,094,075.

2. Exports of Fresh Produce

Using the 1990 export data with adjustments for the quoted percentage change between the two years, the following tonnages were exported from Swaziland in 1989 and reported in Table 12. The value of these exports is estimated at E1,756,300.

TABLE 12: EXPORTS FROM SWAZILAND, 1989

Product	Tons Exported
Potatoes	2176
Onions	310
Tomatoes	16
Cabbages	40
Other Vegetables	39
Apples	154
Grapes	11
Other Fruits	18
Total Declared Exports	2764

Source: MOAC Marketing Advisory Unit
Personal Communication

The domestic market therefore consumed at least 23,510 tons of fresh produce; 6,239 tons of which was fruit and the balance of 17,271 was vegetables. 1989 was an unusual year for potato consumption due to the glut position in South Africa. This may have affected the market by an additional 6,000-7,000 tons. The above calculations do not take into account any domestic production.

The only figures available for domestic production come from the NAMBoard market, where in 1989, 1,133 tons of produce originated locally; 80 percent from TDL farmers and 20 percent from SNL farmers.

An estimate of domestic production being sold through other marketing channels can be made from Cassam's (1980) report. At that time, domestic production was estimated as follows:

**TABLE 13: Domestic PRODUCTION, 1980
SOURCE/TONS PRODUCED**

Vegetable	SNL	VIF	TDL	Totals
Cabbages	633	385	2680	3598
Tomatoes	1405	240	2860	4505
Potatoes	164	588	2310	3062
Others	392		595	987
Total	2594	1213	8445	12152

Source: Cassam, 1980

Table 13 excludes the production of green maize, estimated to be in excess of 1500 tons per annum. On a basis of per capita consumption (assuming projected increases of 2 percent/annum over the 1985 projection) (FAO, as quoted by Cassam, 1980), the total domestic demand for vegetables could be in excess of 31,000 tons per annum. Bearing in mind that the Cassam report did not consider fruit consumption, and 1989 fruit consumption figures were 6,239 tons, the total consumption is likely to be in excess of 36,000 tons.

Domestic fresh produce production, based on the difference between projected consumption above and imports, can be estimated at 9726 tons. This would represent a decline in production of some 20 percent since the Cassam report.

Based on per capita consumption data Table 14 shows the following is the possible domestic market for the major products:

TABLE 14: POSSIBLE LOCAL MARKETS FOR MAJOR PRODUCTS

Product	Market	Percentage
Cabbage	6820	22 percent
Potato	8370	26 percent
Tomato	9610	31 percent
Onion	3100	11 percent
Gr. Maize	1860	6 percent
Other Veg	930	4 percent
Fruit	6300	
Total Market	36990	

In conclusion, without competing with present domestic producers, additional vegetable production to the level of + 17,000 tons is possible, simply by import substitution, but the total domestic market is significantly greater than this. Table 15 shows the NAMBoard throughput.

TABLE 15: NAMBOARD THROUGHPUT OF PRODUCT

Crop	Summer	Winter
Potatoes	4680	2520
Onions	432	1200
Tomatoes	96	62
Carrots	60	36
Lettuce	48	72
Cabbage	840	360
Peppers	12	9
Brinjals		no data
Broccoli		no data
Beetroot	42	24

Source: Jeebe, unpublished, 1990

Table 15 is based on average tonnages and is not an actual turnover figure. In calculating the possible tonnage salable at peak by the commercial entity, it was assumed that the NAMBoard figures were representative of the entire domestic market for all crops except tomatoes. For tomatoes, it was considered that the throughput was irrelevant in the domestic supply position. In calculating tomato throughput, the per capita consumption figures were used, and it was estimated that a supply position of 25 percent of total was possible. For all other crops it was assumed that a supply level at 100 percent NAMBoard throughput was possible.

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2. Mocambique

In 1990, Swaziland exported 2,909 tons of fresh produce to Mocambique. Seventy eight percent of this export was potatoes. The balance consisted of onions, apples and other fruit and vegetable crops. The size of the market is unknown, as little sustained effort has been made to establish contact with the Mocambique parastatal marketing organization, AGRICOM. The high volume of potatoes exported in 1989 was due undoubtedly to the glut position in the region, and the low price situation. If this market is exploited, the potential exists for in excess of 4,000 tons of produce per annum.

3. South African Tomato Processing Facility:
Langerberg and Malelane

The Malelane area is the largest factory tomato producing area in the Transvaal. Since 1986, there has been an increase in demand for tomato concentrates by ± 9 percent. It is the only area in South Africa where winter production of fresh and processing tomatoes is possible, during the period April-September. There are therefore, significant advantages to Swaziland producers who produce for this outlet in the winter period (ideally in the Northern RDA). The two depots in this area process approximately 20,000 tons per annum through three separate factories. There appears to be no doubt that they could process an additional 300 tons per month without contractual obligations. The company pays transport cost at 35 cents/ton km up to a maximum of 250 km. At present, the contract price is 20 cents/kg.

4. Durban Wholesale Market

In calculating possible sales into this market, it was assumed that up to 10 percent of the average quantity could be sold in the region without significantly affecting the market position.

TABLE 16: DURBAN WHOLESALE MARKET
A THREE YEAR AVERAGED ANALYSIS

		J	F	M	A	M	J	J	A	S	O	N	D	HI PRICE RANGE	AVERAGE PRICE	LOW PRICE	AV. MONTHLY VOL
Potatoes	LV							o	o	o	o			450 - 550	400	270	6663
	H\$							o	o	o	o						
	L\$	o	o	o													
Sweet Potatoes	LV	o	o								o	o	o	500 - 600	450	320	1900
	H\$	o	o							o	o	o	o				
	L\$					o	o										
Garlic	LV	o	o	o	o	o	o	o						2100 - 2500	1950	1300	63
	H\$				o	o	o	o	o								
	L\$									o	o	o					
Carrots	LV	o	o	o	o	o	o	o						550 - 650	480	220	240
	H\$	o	o	o	o	o											
	L\$									o	o	o					
Cabbage	LV	o	o	o										130 - 160	120	75	1680
	H\$	o	o	o	o	o	o	o									
	L\$									o	o	o	o				
Cauliflower	LV	o	o	o	o								o	375 - 510	340	210	180
	H\$	o	o	o													
	L\$					o	o	o	o								
Lettuce	LV					o	o	o	o	o				500 - 750	475	220	171
	H\$	o	o	o	o	o											
	L\$								o	o	o						
Spinach	LV	o	o	o	o	o								800 - 1000	750	500	6
	H\$	o	o	o	o	o											
	L\$					o	o	o	o	o	o						
Celery	LV	very small quantities - no seasonality												4000 - 5000	3500	2000	3
	H\$	o	o	o	o	o											
	L\$									o	o	o	o				

LV - Low volume supply periods
H\$ - High price period
L\$ - Low price period

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TABLE 17: DURBAN WHOLESALE MARKET
 A THREE YEAR AVERAGED ANALYSIS
 (Page 2)

		J	F	M	A	M	J	J	A	S	O	N	D	HI PRICE RANGE	AVERAGE PRICE	LOW PRICE	AV. MONTHLY VOL			
Green beans	LV	o	o				o	o	o				o	750 - 1000	620	450	78			
	H\$						o	o	o	o										
	L\$			o	o	o														
Pumpkin	LV	o										o	o	350 - 450	275	125	145			
	H\$								o	o	o	o								
	L\$	o	o	o	o															
Tomatoes	LV				o	o	o	o	o	o	o			600 - 700	575	375	2950			
	H\$				o	o	o	o	o	o	o									
	L\$	o	o	o																
Brinjals	LV	o										o	o	575 - 700	500	275	45			
	H\$									o	o	o	o							
	L\$	o	o	o																
Green peppers	LV				no seasonal trend in supply								1500 - 2000	1400	900	44				
	H\$											o					o	o	o	o
	L\$	o	o	o	o															
Chillies	LV	o	o	o	o	o							o	2250 - 3250	1900	1000	35			
	H\$	o	o	o	o	o	o					o	o							
	L\$	o	o	o	o	o							o							
Ginger	LV	o	o									o	o	1000 - 1300	925	700	32			
	H\$	o	o	o								o	o							
	L\$				o	o	o	o												
Broccoli	LV	o	o	o									o	1700 - 2100	1500	950	5			
	H\$	o	o	o	o							o	o							
	L\$				o	o	o	o												
Beetroot	LV				no significant supply seasonality								500 - 650	400	275	22				
	H\$											o					o			
	L\$	o										o					o	o		

LV - Low volume supply periods
 H\$ - High price period
 L\$ - Low price period

B. European Markets for Selected Products

Crops selected by the gross margin analysis for market analysis are as follows:

- o Sweet Corn
- o Mangetout
- o Green Beans (fine/extra fine)
- o Okra

1. Sweet Corn

Sweet corn is a popular crop in Europe, although small and not quoted in the statistics produced by COLEACP (European Community organization responsible for technical training to the Lome Convention countries of Africa, the Caribbean and the Pacific) or UNCTAD/GATT -ITC (International Trade Center). Export experience has shown that there is traditionally a small market window for the crop, between larger competitors, traditionally RSA and Israel. It is likely that this market season is too small to exploit in the startup period, and the risk of low sales prices is high. If small select markets are available, this crop could be viable.

2. Mangetout

The mangetout (sugar pea/snow pea) has been consumed in Europe for more than ten years. Originally, the product was viewed as an exotic specialty crop, and was paid for as such. Volumes imported into Europe in 1980 were less than 200 tons. The 1988 statistics show an import in excess of 600 tons. This figure is likely to have increased by 25 percent since then to an excess of 750 tons. 1990 was the first year of a price "crash" in the product since imports began. This occurred in July and August; a time of some limited European production (mainly Holland and France) coinciding with peak southern hemisphere production and low seasonal demand in Europe caused by summer temperatures and holidays. Mangetout will always be consumed, but is rapidly assuming "commodity status." Pricing is now marginal for bulk exporters, and only by adding value in the form of pre-packaging will the margins assume earlier levels.

Major competitors in the traditional southern hemisphere season are Zimbabwe and Zambia, both major exporters of mangetout, but with the establishment of the correct market linkages, this crop has possibilities.

3. French Bean (Fine and Extra Fine)

French beans are seen as the major crop for initial European production. These beans require intense labor input at harvest, and SNL producers are able to provide this. The major competitor in southern hemisphere production is Kenya, and this country has supplied the market to such a level that the product has become known as the Kenyan bean. Importers are genuinely interested in sourcing from another country, since there is inherent risk in having only one major source of supply.

Imports into the major markets in 1986, the most recent ITC market study, amounted to \pm 40,000 tons between October and April. France is the largest importer of this product, but Western Europe is generally self-sufficient in beans between the months of May and September. With the increase in labor costs in Europe, and especially the southern countries, the production of fine and extra-fine beans is decreasing. This has opened up a year round market for French beans of the fine extra-fine classification.

Table 18 illustrates the major countries supplying French beans, their season of production, and percentage contributed to the markets.

TABLE 18: MAJOR COUNTRIES SUPPLYING FRENCH BEANS, PRODUCTION, AND PERCENTAGE CONTRIBUTED TO THE MARKETS

Source	Period	Percent	\pm tonnage
Burkina Faso	Jan-March	<1	N/A
Egypt	Nov-Jan and Ap-May	<1	N/A
Kenya	All year round	65	9000
Morocco	May-September	<1	N/A
Senegal	December-April	30	4000

Source: International Trade Center, A Market Study, 1987

The figures in Table 18 represent the proportions supplied in the traditional off-season period and do not necessarily reflect only fine classes of beans. It does however indicate the magnitude of competition and volume of supply. To produce for 10 percent of the above market would require in excess of 200 ha of high production.

The price indicated in the economic analysis corresponds to those achievable for fine and extra fine beans in the Dutch, English, and German markets.

SECTION V
PROPOSED INTERVENTION

A. Basic Project Intervention

The basic philosophy behind this intervention is :

"The only way to make progress in the horticultural sector in Swaziland, is to utilize a vertically integrated structure, aimed at all levels in the production and marketing chain, which disregards the concepts of protectionism and domestic market orientation."

1. Company Goal

The goal of the proposed redirected and expanded project's company goal is to:

- o Become a leading company in the domestic horticultural market place by 1994; by encouraging production by small-scale producers
- o To produce to regional quality standards, and thereby enable effective competition at all levels.

2. The Target Farmer

The following technical criteria must be met by all participating farmers in the initial period:

- o Must have access to year round irrigation
- o Must be close enough in proximity to other growers or potential growers to facilitate effective field assistance
- o Must have soils which are suitable
- o Must show a willingness to engage in efficient commercial production

3. Company Objectives

In order to meet the goal outlined above, the company will provide or arrange:

- o Technical advice
- o Input sourcing on credit, if possible
- o Input deliveries and maintain stock at competitive rates
- o Purchase of produce for cash at farm gate
- o Competitive marketing of produce
- o Planting schedules by cultivar and location
- o Selected seed and nursery stock

An assessment of individual farmers meeting the above criteria has not been carried out, although it is known that such individuals exist. Farmer irrigation schemes and production targets are shown in Tables 19 and 20. Included are an estimate of potential individual irrigators, based on the percentage of active schemes in the region.

TABLE 19: FARMER IRRIGATION SCHEMES THAT MEET PROJECT CRITERIA

	Active Hectarage	Current Total	Potential Total
Hhohho Region			
Mgubudla*	12	24	24
Mavulandela	10	10	10
Mashobeni	24	42	42
Individual Farmers	18	18	18
Total	64	94	94
Manzini Region			
Mbekelweni*	12	12	12
Ntamakuphila	14	18	18
Mgolfelweni	7	12	24
Individual Farmers	86	86	86
Total	119	128	140
Shisilweni Region			
Mpatseni	20	24	28
Magagane	24	24	24
Individual Farmers	30	30	30
Total	74	78	160
Lubombo Region			
Kalanga	22	22	22
Individual Farmers	6	6	6
Total	28	28	28
Grand Total	285	328	422
*Indicates a scheme requiring urgent irrigation system rehabilitation to be effective.			

Source: Brosz, 1990

TABLE 20: PRODUCTION TARGET
TONS/HECTARE, BY CROP
AT PEAK PRODUCTION (YEAR 10)

		Ha	Local Sales	Regional Sales	Total Tonnage
Potatoes	S	187	4680	0	4680
	W	168	2520	2520	5040
Onions	S	75	425	1107	1532
	W	76	1200	1080	2280
Carrots	S	11	60	105	165
	W	12	44	220	264
Cabbage	S	35	840	210	1050
Lettuce	S	9	54	108	162
	W	7	75	100	175
Peppers	S	3	20	40	60
	W	3	20	40	60
Brinjals	S/W	1	0	15	15
Broccoli	S	1	5	0	5
	W	1	4	8	12
Beetroot	S	4	39	13	52
	W	2	20	16	36
P. Tomato	S	20	0	900	900
	W	30	0	1800	1800
Tomatoes	S	80	1200	400	1600
	W	86	1200	1380	2580
Total*	(270)	811	12406 55%	10062 45%	22468
*Assuming 3 crop cycles per annum					

B. Issues and Risks of Commercial Intervention of SNL Production

The following are assessed as the more pertinent technical and marketing issues associated with the proposed intervention:

- o Attaining yields
- o Pests and diseases
- o Irrigation scheme functionality
- o Competition from other buyers
- o Competitive advantage of SNL producers
- o Reaction of other intermediaries

The first three issues are concerned directly with technical assistance given either by CAPM to the companies or given by the companies to the producers. It is assumed that with the type of technical support given to an initially small group of producers, the problems of low yield levels, compounded by pest and disease problems and various levels of functionality in the irrigation schemes, can be overcome. It is essential also that the government and other financial institutions are continuously made aware of the needs of the producers as the volume of output increases, and less efficient schemes are targeted as producers.

Since the redirected and extended project is dealing with a free market intervention, competition from other buyers is certain, especially as the ground work is laid more effectively by the support team. It is assumed that the initial target companies will be more competitive because of the support given to them in their formative period. How competitive that entity remains is out of the control of the intervention team. It is assumed though, that while support is given, the company will be competitive in its sourcing ability.

There are other producers, TDL farmers for example, who would, given the present situation, be easier to deal with from the company's point of view. CAPM's intervention of supporting the small producer would put the SNL farmer in a competitive position and ensure that it would be to the company's advantage to continue buying from the SNL producer.

The SNL producer does not have to pay for land or water and is not therefore concerned with returns to "capital." He has very low overheads and labor charges and can therefore sell at very competitive prices. If he produces according to a pre-defined program, and is reacting to the market demand (a function of CAPM support, initially), he can be extremely competitive.

The reaction of other intermediaries presently within the system is important as they have significant influence on the supply position at present, and perform valuable roles in the industry. It is important that the projected intervention not be seen as an attempt to put these elements at a disadvantage. The assistance provided by the intervention to small-scale growers will, in fact, enable all intermediaries to operate at a higher level, and both NAMBoard and the hawker system will be an integral part of the market chain.

C. Summary and Conclusions

It was established that SNL producers are currently not competitive in the horticultural marketing sector, due primarily to their low individual volumes of production, produced seasonally, with little or no concept of the market potential and hence, without the ability to program production. There are significant constraints to stimulation of SNL horticultural production, but it is possible, given support at all levels, that this position can be reversed.

Analysis of climatic advantage and possible crops, concluded that there is significant scope for expansion of the present hectarage by encouraging crops already being grown as well as by introduction of other horticultural crops.

Analysis of domestic, regional and overseas markets confirmed that, given reliable production in sufficient volumes, there is a significant market for the crops considered suitable for immediate introduction to SNL producers.

Production of these crops would result in attractive returns to the producer both in direct net income as well as returns to his labor input.

Given the market opportunities, and yield levels used, the total hectarage required for the production of the projected outputs can be met by a combination of SNL irrigation schemes and SNL individual irrigators over the life of the project.

COMPONENT III

SOCIAL SOUNDNESS ANALYSIS

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EXECUTIVE SUMMARY

In the social soundness analysis the socio-cultural context is reviewed, the Swazi horticulture producers are described, the social equity in project redirection is considered, the factors influencing production and marketing are analyzed, a participative approach is outlined, and conclusions are drawn regarding the social feasibility of the CAPM project.

The proposed project redirection and extension is socially feasible. A field survey led to the conclusion that there are many commercially motivated farmers on irrigation schemes who recognize marketing as their primary constraint. Many noted that a large proportion of the produce currently rots in the fields. If marketing services are provided, they will be able to increase their saleable production.

However, horticultural constraints, such as pests and diseases, almost equal marketing in importance. The planned vertical integration, including facilitating the provision of inputs and intensive extension assistance, will be crucial to project success.

Water constraints also limit production; and long-term sustainability depends on scheme farmers accepting "ownership" of the irrigation system and the responsibility for its upkeep. This should be included as an element in training.

The proposed project redirection and extension will substantially increase incomes for the targeted small-scale horticulture producers.

Throughout Swaziland, there are a total of 1,757 small-scale horticulture producers who could ultimately benefit from this approach. In addition to its concrete income benefits for participants, the project is expected to provide a demonstration effect for other private-sector marketing companies which will take up this approach and, thus, benefit other small-scale producers.

The proposal implies clear equity benefits. It is directly designed to assist small-scale Swazi producers, and provides an excellent opportunity for women's development, since vegetable production has been traditionally a woman's role.

In sum, the proposal is socially feasible and equitable, and can be expected to result in a substantial positive social impact.

SECTION I INTRODUCTION

A. Objectives

This social soundness analysis will:

- o Review the socio-cultural context
- o Describe Swazi horticulture producers
- o Consider social equity in project redirection
- o Analyze factors influencing production and marketing
- o Outline a participative approach
- o Draw conclusions regarding social feasibility

B. Analysis Sources

The analysis is based on four data sources:

- o Documents
- o Background Interviews
- o MOAC Survey of SNL Irrigation Schemes
- o A Rapid Rural Appraisal of 25 Irrigation Schemes

Swaziland has a wealth of information from both public and USAID documents which are becoming easier to locate, thanks to the concerted efforts of projects like Cropping Systems and CAPM to develop organized libraries (See References). Background interviews with experienced Ministry, USAID, University and social science personnel expanded the knowledge obtained from written sources.

In March 1991, MOAC's Monitoring and Evaluation Unit drafted a report entitled "A Socio-Economic Survey of Smallholder Irrigation Schemes on Swazi Nation Land." It was based on intensive interviews with 307 respondents, representing about 80% of all such irrigators. The Unit graciously made their pertinent databases available for specialized analyses, which are included in Section II.

Finally, the primary data source for this analysis is a rapid rural appraisal of twenty-five small-holder irrigation schemes conducted over four and a half days at the end of March 1991, with the invaluable collaboration of Mr. Victor Vilakati, an irrigation technician from UNISWA/Luyengo. In addition to direct observation and background from informants, the survey included formal interviews with twenty-six respondents from eleven schemes. Results are summarized in Appendix B.

SECTION II
CHARACTERISTICS OF SMALL-SCALE HORTICULTURE PRODUCERS

A. Horticulture Producers Overview

For all of Swaziland, a total of about 1,472 ha. farmed by 1,757 households are or have been devoted to irrigated vegetables produced by small-scale farmers (Myeni and Brosz, 1990). These consist of three types:

TABLE 1: SMALL-SCALE HORTICULTURE PRODUCERS

TYPE	HECTARES	HOUSEHOLDS	AVE. HA
Schemes	711	616	1.15
Individuals	385	877	0.44
Vuvulane	376	264	1.42
Total	1,472	1,757	0.84

Irrigation schemes account for about half of this hectarage, and have the marketing advantage of being grouped. Individuals have smaller plots and account for about one-fourth of the total. Vuvulani Irrigated Farms (VIF), a sugar cane scheme, makes up the remainder.

B. Irrigation Schemes

Irrigator homesteads average 9.2 members, being largest in Shiselweni and Manzini. Of these, 5.6 members worked on the farm. Irrigation scheme plots are allocated to homestead heads, who are usually elderly men. The MOAC survey found 83 percent of plot owners were men and 32 percent were over age sixty. Women, however, constitute 51 percent of homestead residents who work on the farm, and may perform an even larger share of the actual vegetable cultivation (Table 2).

TABLE 2: GENDER AND AGE CHARACTERISTICS
OF HOMESTEAD RESIDENTS
FARMING ON IRRIGATION SCHEMES

		----- REGION -----				
		HHOHHO	MANZINI	SHISELWENI	LUBOMBO	TOTAL
A. HOMESTEAD HEADS						
Sex:	% Male	90%	71%	88%	87%	83%
	Base	(125)	(73)	(77)	(24)	(299)
Age:	60 & over	34%	38%	34%	25%	34%
	40 - 59	55	53	53	42	53
	Under 40	11	9	13	33	13
		---	---	---	---	---
		100%	100%	100%	100%	100%
		(119)	(69)	(67)	(24)	(279)
B. HOMESTEAD FARM WORKERS						
Workers/HS:		5.6	5.6	5.9	6.1	5.6
Sex:	% Male	48%	51%	46%	56%	49%
	Total	(667)	(383)	(397)	(147)	(1549)
C. HOMESTEAD RESIDENTS TOTAL						
Residents/HS:		8.7	9.5	10.2	8.4	9.2
Sex:	% Male	49%	52%	48%	55%	50%
	Total	(1035)	(657)	(682)	(201)	(2575)

A rapid rural reconnaissance was made of twenty-five irrigation schemes. Of the 25 schemes studied, there are a total of nine that CAPM can immediately begin working with. It would appear that three of these schemes would require financial assistance for repair of their irrigation systems. In addition, there are six schemes from which the proposed marketing company could purchase vegetables with relatively little technical assistance. Without extensive renovations, CAPM interventions are recommended for the ten remaining schemes. Most of these are defunct.

Half of the farmers interviewed had one acre irrigated plots, 13 percent less than one acre, and 39 percent over two acres. Most felt they "owned" these plots. In addition to vegetables, maize is planted in the scheme by 35 percent, rice by 17 percent, and sugar cane by 13 percent. All farmers also plant rainfed maize, averaging 2.05 acres each. Roughly three-fourths of the plots are managed by men and one-fourth by women.

C. Individual Producers

Individual small-holder horticulturalists have smaller plots. They are of two types; those with title deed land, and those farming Swazi Nation Land. The few who have title deed land are in an enviable position to invest freely without fear of loss. Individuals irrigating Swazi Nation Land take a greater risk. They stand to lose their entire capital investment if forced to move. These farmers can minimize risk by investing in movable capital such as portable pumps and pickup trucks ("bakkies").

Individuals are at a disadvantage with respect to scheme participants in other ways as well. They have less ready access to tractor services and are less secure against acts of vandalism. Because of this, an individual vegetable grower who has achieved a modicum of success has already demonstrated significant entrepreneurial skills and deserves consideration by the marketing company. Only a few individual producers were interviewed informally. Their situation requires further study.

D. Vuvulane Irrigated Farms

Vuvulane Irrigated Farms has a total of 376 hectares farmed by 264 homesteads (Myeni and Brosz, 1990). Vuvulane Irrigated Farms (VIF) is unique, and accounts for a large proportion of the land available for irrigated vegetables. It is not, however, an irrigation scheme like the others. Vuvulani was founded by the Commonwealth Development Corporation (CDC) on concessionary land in 1961. One hundred hectares was farmed commercially and additional plots were allocated to imported farm laborers on the condition that they plant 70 percent to sugar cane. The following discussion is based on CDC (1975) "CDC in the Swaziland Lowveld" and on an interview the VIF Farm Manager.

1. Vuvulane/CDC History

In 1959, CDC established the Mhlume Sugar Mill and experimented with establishing irrigated small holdings for Swazi farmers to grow sugarcane, cotton, maize and vegetables. CDC set aside three types of holdings for furrow irrigation: (1) ten farms of 100 acres each for people of all races, (2) five farms of 60 acres each for Swazis, and sixty Swazi small holdings of eight acres each with an additional eight acres in reserve for each farm. The proposed ten farms have been reduced to three and are no longer part of VIF. The five 60 acre farms have flourished and been sold to Swazi occupants.

In 1963, the first 30 Swazis were settled on eight-acre leasehold farms and five 60 acre farms were allocated to Swazis for purchase on a mortgage basis. The number of settlers rose to 135 in 1969, 163 in 1971, 202 in 1972, 238 in 1973, and 264 on 3,100 acres in 1974. It has stayed constant since that time. Laborers were settled on plots ranging from 8 to 16 ha. Eventually plot size was stabilized at 10 acres. Initially, the resettlement scheme did not appeal to local Swazis because there was no provision for cattle. Thus, many laborers were brought in from abroad.

Farmers were given 20-year leases with the assumption that they would return home and new laborers would follow, but this never came about. In 1988 CDC proposed that if a farmer failed to meet his sugar cane quota for two seasons in a row he could be evicted. But, the farmers complained to the king. The king objected to the idea that a sixty-year old might be evicted. He recognized that there was no longer any land for laborers to return to where they had come from. It is assumed that there is no way that a farmer can be removed from the land now that the king is involved. The farmers feel that they own the land and even talk of forming their own company to run it themselves. This has become a political issue. They want to show that "they have grown up."

In 1969, proposals were made to the Government for scheme expansion linked with transfer to statutory authority under the government. In 1972, the land and assets were transferred from the Swaziland Irrigation Scheme (SIS), making the project fully independent. In 1981, CDC was negotiating to hand over the project to the king, but he requested that CDC continue the management, and the king died the next year, so transfer was delayed. Now, VIF is owned by Tibiyo and CDC has nothing more to do with it.

A farmers' association was formed in 1966 and superseded by a registered cooperative in 1967. A series of labor-management problems have arisen over the years. The first dispute over leases began in 1966 and was settled in 1968. In 1969-70 disagreement arose over sugar production quotas which were then shifted to an individual basis. In 1973, farmers objected to increased rentals, water rates, and cane cutting and haulage charges. Government arbitration led to a settlement.

Squabbles started in earnest in 1983. VIF runs a store at which farmers can buy inputs on credit, but get a 10 percent discount for paying cash. The interest rate is only 1 percent above prime. However, farmers failed to repay their loans and VIF incurred a bank debt of E 2,000,000 by 1987, resulting in a cash flow crisis. Until 1988, farmers' bank accounts were joint with VIF and the company could withdraw sums owed. Farmers objected, and Swazi Development Bank agreed to give farmers private accounts, but withdraw amounts owed to the company. Disputed funds are held in escrow.

2. VIF Farm Manager

In 1987, the farmers were discouraged. They claimed they hadn't earned any income in five years. This is when a farm manager joined VIF. He decided to help the farmers with their management. He took laborers into their fields with herbicides. The result was that farmers have reached sugar cane yields of 110 T/ha. on their fields, which almost matches the company's 120 T/ha. The farmers had a debt of E60,000, which they managed to clear in two years; and the company met its quota for the first time. Next year the manager will leave them on their own. VIF originally had six field advisors with motorcycles. Now there are only three field advisors for 1,400 ha. of cane (excluding other crops). Thus the manager cannot help the farmers individually in their fields.

3. Sugar Cane vs Vegetables

This year, farmers made E 3000/ha. net on their sugar cane. However, they could make about three times that amount producing vegetables, since they could grow three crops per year. The problem is marketing. NAMBoard has not been an effective solution as the farmers cannot be sure of selling their vegetables; while the market for sugar cane is secure. Despite marketing problems, the farmers have been growing vegetables. The manager helped them with proper timing of their plantings to get the best price.

In sum, vegetables could offer a major source of income for Vuvulani farmers if production and marketing services were offered. No intensive extension efforts would be required since modern inputs are already available and in use. Vuvulani, thus should be targeted by the proposed marketing company as a place to buy vegetables. On the other hand, it should require less intensive production assistance from the CAPM project. These farmers have larger fields, more technical assistance, and higher incomes than others.

SECTION III EQUITY AND PROJECT REDIRECTION

A. Benefits to Small-Scale Farmers

A social soundness analysis must review equity considerations in the distribution of project benefits. Two such factors deserve special attention:

- o Benefits to small-scale farmers
- o Women in development benefits

This project begins with a unique perspective, because it recognizes the value of services performed for farmers by the "middle man" who has been so often maligned elsewhere. There are two major actors implementing the redirected project, CAPM staff and the proposed marketing company. The company must follow the economic dictates of making a profit. Without the CAPM component, they might turn to buying from large-scale South African producers, as the agents operating at NAMBoard's fresh produce market have done, or become just another hawker.

CAPM's role is to provide the impetus for "vertical integration" of production and marketing by helping small-scale vegetable growers to reach quantity and quality standards competitive with regional markets. It is this component which ensures the equity objective of benefitting small-scale producers. Projected benefits are substantial. Cooperating farmers are expected to earn about E14,000 net farm income per year from vegetable production and sales alone.

B. Benefits to Women-in-Development

Vegetable production is traditionally a women's occupation. As it became commercial, men joined in and have become the major vegetable producers. However, women still have the comparative advantage. It is difficult to be sure what proportion of small-scale irrigators are women, since they must utilize their husband's name in order to obtain access to Swazi Nation Land. However, it is reported that when wives manage the plots, they are the one's who decide what to plant and they keep the proceeds that they earn.

From the rapid rural appraisal, schemes seemed to work better when both men and women were eligible to join. Two "women-only" schemes supported by the EEC have not attained the success of the others. One simply has such small plots that it is not commercially viable. In the other, irrigation water was redirected to become a domestic water supply. It can be hypothesized that their husbands may not have seen the importance of the vegetable scheme, since they were not participating.

In sum, there are definite women-in-development benefits from the proposed project redirection. But, they are best fostered through irrigation schemes opened to both men and women.

SECTION IV
FACTORS INFLUENCING HORTICULTURAL PRODUCTION AND MARKETING

A. Marketing Considerations

There are three types of factors influencing horticultural production and marketing:

- o Marketing considerations
- o Production factors
- o Social influences

From 26 formal interviews conducted during the rapid rural appraisal, scheme farmers have a definite commercial orientation. All farmers felt earning opportunities were better from vegetable production than from other employment. Almost all farmers plant vegetables to sell rather than for domestic consumption. However, vegetable farmers are not currently doing well. Almost two-thirds (64%) say their profits are "marginal" or "not good." Farmers volunteer marketing (80%) and pests and diseases (72%), as the major problems, followed by water shortages and hail. Three-quarters of the farmers sell their produce to hawkers and one-quarter, to neighbors. NAMBoard is disdained because of experiences with consigned vegetables rotting. Major marketing problems are lack of transport, lack of buyers, and low prices offered by hawkers. Farmers plant mostly cabbages and tomatoes which can be consumed and sold to neighbors.

B. Production Factors

All, except four respondents, who experience water shortages, have attempted to grow vegetables in the summer season. One-third reported "most" scheme farmers plant vegetables, and one-third say less than half grow vegetables. Limitations include lack of water, the poor market, lack of land, and invasions by hippos and livestock. Farmers cited easier access to inputs for control of pests and diseases (71%), in particular input subsidies (38%), as the primary intervention that would make growing vegetables more attractive. Improved marketing (57%) was second.

One-third of the plots were over 90 percent irrigated, but almost two-thirds (64%) were less than half irrigated. Irrigation water was a constraint for about one-third (35%).

C. Social Influences

Five social influences deserve consideration:

- o The semi-commercial orientation
- o Land tenure
- o Jealousy and factionalism
- o The Chief
- o Irrigation scheme associations

1. Semi-Commercial Orientation

Small-scale vegetable growers have a "semi-commercial" orientation. They grow vegetables to sell, but have no marketing strategy. Thus, they grow primarily cabbages and tomatoes which they can sell to neighbors and consume themselves.

The farmer's commercial outlook is tempered by two other values, "risk avoidance" and "food self sufficiency". Risk avoidance makes many vegetable farmers hesitant to borrow capital or to try new vegetables for other markets. The "food self sufficiency" ethic leads all farmers to grow their own maize rather than to count on buying it with the proceeds from vegetables. Thus, vegetable production suffers from a labor constraint during the maize growing seasons.

2. Land Tenure

Land tenure on Swazi Nation Land is always problematic. Uncertain tenure makes a farmer hesitant to invest in infrastructure development such as irrigation systems. In addition, Flory (1987) found three tenure-related constraints on commercial farmers on Swazi Nation Land:

- o Threat of banishment
- o Late removal of cattle
- o Tribute labor

Banishment, first described by Hilda Kuper (1947) refers to the Chief's ability to take away the land that he has allocated. Reportedly, the successful farmer can become a target of community jealousy and a potential candidate for banishment. Success is often attributed to witchcraft rather than hard work. Thus, a farmer may feel pressure not to rise above the crowd. Banishment may be more likely if a farmer becomes the envy of the chief (Hughes, 1972).

Commercial farming has been seen as improper use of Swazi Nation Land which was intended to be allocated in family subsistence size plots. There are some signs that this attitude is becoming more relaxed, but both formal and informal social sanctions remain an effective constraint on success.

Several advanced farmers reported to Flory that they would have plowed earlier if it had not been for the chief setting the springtime date on which cattle were to be removed from the fields.

Flory also found that advanced farmers did not suffer land constraints (many attained additional land upon request), but did report labor constraints. These were aggravated by the necessity of providing tribute labor for the chief during the peak season, but respondents did not consider this a serious constraint.

On irrigation schemes, land tenure can be a two-edged sword. While uncertain tenure makes some farmers hesitate to invest, others allow their valuable plots to lie idle. Irrigated plots are not easily "borrowed" by other farmers because of their high value. In general, they can be borrowed by close relatives, but not by outsiders.

Two scheme associations, Mpatzeni and Mashobeni, have instituted rules under which a member can be ousted for not taking care of his plot. In Mpatzeni, fifteen farmers have actually be removed for this reason. Mpatzeni will be discussed further below. A strong scheme association appears to present one of the best solutions to land tenure constraints.

3. Jealousy and Factionalism

Jealousy and factionalism are natural outcomes of being raised in polygamous households where wives and children vie for the husband's favors. Jealousy results in at least three types of behavior aimed at obstructing the farmer whose progress is envied. First, the jealous party may go to the chief and talk against his opponent, asking the chief to take away his lands or enforce other sanctions. Second, witchcraft or black magic may be employed. Finally, the jealous party may resort to vandalism such as driving his cattle through the opponent's fields.

Vandalism has proven to be a significant constraint in irrigation schemes, where expensive equipment such as pumps and pipes remain exposed. The pump was stolen in one scheme and destroyed by stuffing it with a water melon in another. Pipes, also, have been damaged by jealous vandals.

Clan factionalism is another recurrent constraint. In a country where almost everyone belongs to the same tribe, clans have become the basis for "in-group" identification. One irrigation scheme, Magagane, offers some of the best irrigation facilities, but remains unused because of a feud between clans over who should farm it.

Many irrigation schemes cross chiefdom boundaries and require farmers with different allegiances to work together. Such situations are always difficult. Even within one chieftaincy, disputes arise over which chief to recognize. This results from the inevitable political infighting over succession when one chief dies. Mpatzeni Scheme has experienced this difficulty, but, as we shall see, managed to overcome it.

4. The Chief

Establishing and maintaining a close relationship with the chief is the most potent factor influencing the success of a social program such as an irrigation scheme. This is the way to ensure land tenure stability, to eliminate threats of banishment, and to guard against malicious slander. A progressive chief can accomplish much for the development of his people. Even schemes originally reported to have started "by the farmers" were often initiated by chiefs.

5. Irrigation Scheme Associations

As already indicated, irrigation scheme associations can also become powerful positive forces for development. The case of Mpatseni is most impressive. Their irrigation system was in disrepair and no external funding was available, so they collected funds and lined the canal from the dam to their scheme by themselves.

There were, of course problems. Two groups in the scheme recognize different chiefs and have always had trouble working together. One started construction from the field and the other from the dam. But, they came down opposite banks of the existing canal. The two halves are, thus, still waiting to be joined, and both factions blame the other. Another problem required a quick right turn in the canal when a farmer with fields between the dam and the scheme refused to let the canal pass, even though he would have had the use of the water. Despite such problems, the demonstrated ability of Mpatseni farmers to work together is impressive.

The Mpatseni Association enjoys excellent working relations with both their chief and their extension agent. The chief is a member of the scheme, but does not serve on the committee. He has other, more pressing business, and he might have undue influence within the committee. The extension agent visits the scheme several times a week, unlike others who live next to schemes but are rarely seen there.

The Association elected a woman chairperson, something unusual in African groups which combine men and women. They instituted rules calling for a E5.00 fine for not weeding and controlling pests, if a farmer reports himself. Or, a fine of E10.00 if he doesn't report it. For extended neglect of his fields, a farmer can be ousted from the association. This is no idle threat; fifteen farmers have already been removed. There is always a backlog of others waiting to join. The chairwoman reports that it is the extension officer who has final say as to who is kicked out. This removes the final onus from neighbors, although the consultant suspects that it is more of a group decision.

Mpatseni Association also has a future planning orientation. They have already applied for a telephone and for electricity for installing cold storage. In short, Mpatseni is a model association with much to teach other association leaders from their own practical experience.

SECTION V
FACILITATING PARTICIPATION

A. A "Trickle Up" Approach

Successful and sustainable farmer interventions start with the farmers and helps to develop a sense of "ownership". Only with their participation can constraints be properly analyzed and appropriate incentives developed. In this case, broad-based initial participation is necessary to deter feelings of jealousy and resultant vandalism. In so far as possible, membership should be open to all farmers who are willing to make concrete demonstrations of their commitment in terms of either donations of labor for cleaning and repairing the irrigation system, and/or financial contributions, as required. Naturally, geographic and water limitations will constrain participation.

The company's Production Facilitator (PF) would first approach a scheme through discussions with farmers working in the fields. He would begin with questions about their problems, gradually suggesting a marketing arrangement, input provision and extension advice in response to their stated needs. The discussion should begin with open-ended questions ("What are the major problems in producing vegetables?", "Which are the most important?"), and move to leading questions ("Did you know that..."), finally coming to the company's proposition. When sufficient group interest is expressed, the PF would ask whether an Irrigation Scheme Association exists and, if so, inquire how active it is. He would then ask the farmers for a meeting with the association committee and repeat the initial dialogue with them.

After the committee meeting, the PF would accompany the association committee to discuss the idea with the Chief's assistant. The committee members should lead the discussion, with the PF serving quietly as a backstopping resource person. They would repeat the original discussion, evolving from the farmers' problems using examples of what the company can do for them, expanding on the company's interests, and the commitments that the company requires.

At the end of this meeting, the chief's assistant should express his support for the development of a strong Irrigation Scheme Association with the power to select members, build infrastructure, collect fees, levy fines, and expel members from the association and their irrigated plots if the land is not used properly. The chief will be welcomed as a member of the association, but should not be directly involved in running it. His support is sought to guarantee land tenure for association members, to authorize the association's control of irrigation scheme land, and to publicly lend its authority to protecting the scheme from vandalism from jealous outsiders.

After agreement is reached with the Chief's assistant, an appointment can be set to take the proposal to the Chief. This should be several days later, to permit the chief's assistant to brief the Chief in advance. The PF should be careful NOT to approach the chief directly, to avoid labelling of the idea as "foreign".

B. Discouraging Vandalism

There are three major strategies for discouraging vandalism:

- o Inclusive initial participation by all interested parties and maintenance of an open membership policy
- o Developing and maintaining a strong relationship with the Chief or Chiefs involved
- o Physical security measures to protect expensive installations

To alleviate vandalism, initial discussions must include those in the group whose land is crossed between the dam and the scheme. They should be offered membership or water usage rights. Similarly, farmers adjacent to the scheme should be offered membership if physical irrigation is feasible.

There will, however, always be constraints on inclusiveness, and physical security must be considered. In particular, pumps must be protected in solid pump houses, even if they are portable pumps.

C. Strengthening Scheme Associations

To develop and maintain the strength of the Irrigation Scheme Association initiated in early dialogues, CAPM should provide training for association committee members. An early aspect of this should involve a visit to Mpatzeni and discussion with their association committee members. CAPM could prepare for this by developing a set of model association rules and strategies for dealing with conflicts based on the Mpatzeni case. In addition, more conventional training on leadership skills, accounting, etc. should be included.

In addition to meeting with scheme farmers in their fields, the PF should attend association meetings regularly. This is an efficient means of dealing with common problems in a group setting and will continually reinforce his close relationship with the association. If the chief is a member of the scheme, these meetings will also maintain the PF's relationship with the chief. If not, the PF should visit the chief regularly enough that he is not a stranger when he arrives. As vegetable production increases throughout the country, CAPM should encourage development of a Swazi Vegetable Growers' Association, with association committee members attending area-wide or nationwide meetings to exchange ideas among schemes.

The company's reception may not be positive from all Chiefs and Associations. If resistance is encountered, the PF should move on to the next scheme, while leaving the door open for later collaboration. Some groups are slower than others to accept new ideas. They will be more likely to join after seeing results in other schemes. It is important to leave the door open for later cooperation in order to avoid obstructionism based on jealousy.

SECTION VI
PROJECT TRAINING

A. Field Agent Training

To effectively benefit the small-scale producer, the proposed project redirection and extension should include a generous training component. The company would provide horticultural extension advice in the field, but their production facilitators will need some initial training. In addition, CAPM should provide training for Irrigation Scheme Association leaders and small-scale horticulturalists, as follows.

The first training program will include CAPM and company staff. It will begin with team building and orientation to the project, and then focus on the details of irrigation system management, horticultural production and marketing skills. It should last about five days and be held at a training center in a retreat atmosphere.

If funds are available, the above training in irrigation system management, horticultural production and marketing skills could be repeated for government extension agents serving districts with irrigation schemes. The training would also last five days, and would be held at a Farmer Training Center. Extension agents would have to make a commitment to utilize their new skills by assisting small-scale horticulture producers.

B. Irrigation Scheme Association Training

Three representatives from each of the ten Irrigation Scheme Associations will undergo a three-day leadership training course held at a farmer training center. The course will include general leadership skills, specific association management skills, conflict resolution skills, and scheme planning skills. Representatives to be trained should be selected by each committee and will usually include the chairperson, vice-chairman, and secretary.

Upon returning to their scheme, each group of three will conduct a one-day training session for the other committee members. Training in how to teach, audio-visual materials, and rehearsal for this training will be included in their three-day training course.

If vegetable production progresses as planned, the above training sequence will be repeated for a second ten irrigation schemes in the second year. This should be made known early to schemes not included in the first training, to avoid feelings of jealousy that might result in obstructionism.

C. Farmer Training

A similar pattern will be employed for farmer training. Three representatives from each of ten schemes will receive training at a Farmer Training Center for five days. The course will include irrigation and irrigation system maintenance, horticulture production, and marketing awareness skills. Representatives to be trained should be selected by each scheme association for their technical competence, as those they would like to have as their teachers afterwards. They may or may not be on the association committee.

As for committee trainees, each group will conduct a one-day training session for other scheme members after their return. Preparation and rehearsal for this training will be included in the five-day training course.

Again, if vegetable production progresses as planned, this training sequence will be repeated for a second group of ten irrigation schemes in the second year.

SECTION VII CONCLUSION

A. Social Feasibility

In conclusion, the proposed project redirection and extension is socially feasible. A field survey led to the conclusion that there are many commercially motivated farmers on irrigation schemes who recognize marketing as their primary constraint. If marketing services are provided, they will be able to increase their production. In fact, many noted that a large proportion of the produce currently rots in the fields.

Horticultural constraints, such as pests and diseases, almost equal marketing in importance. Thus, the planned vertical integration, including facilitating provision of inputs and intensive extension assistance, is crucial to project success.

Water constraints also limit production, and long-run sustainability depends on scheme farmers accepting "ownership" of the irrigation system and responsibility for its upkeep. This must be included as an element in training and irrigation association development.

B. Social Impact

The proposed project redirection and extension will substantially increase incomes for the targeted small-scale horticulture producers. Financial projections (component IV) indicate that each producer will earn approximately E14,000 net farm income per year. By the end of the CAPM project in 1993, approximately 100 farmer participants will have been affected. Over a ten-year period, the marketing companies are expected to be working with about 337 farmers. Throughout Swaziland, there are a total of 1,757 small-scale horticulture producers who could ultimately benefit from this approach. In addition to its concrete income benefits for participants, the project is expected to provide a demonstration effect for other private-sector marketing companies which will take up this approach and, thus, benefit other small-scale producers.

The proposal implies clear equity benefits. It is directly designed to assist small-scale Swazi producers, and provides an excellent opportunity for women's development, since vegetable production has traditionally been a woman's role and women have a comparative advantage.

In sum, the proposal is socially feasible and equitable, and can be expected to result in a substantial positive social impact.

COMPONENT IV

FINANCIAL ANALYSIS

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EXECUTIVE SUMMARY

A financial analysis which illustrates a private-sector company developed for marketing horticultural produce from small-scale irrigators is presented below.

It is assumed that the company is fully equipped with transport facilities, communication facilities and the personnel needed to link the productive capacity of the small-scale farmers with the needs of the domestic and regional markets for horticulture. It is assumed that the company has the resources and capacity to provide the small-scale farmers with their required inputs and technical support.

The analysis demonstrates that, within assumptions of production and market capacity, and within reasonable cost and price ranges established in the technical analysis, such an operation could be exceptionally profitable in the long term.

In the early stages, however, the lower levels of activity expected, depresses the return in relation to overhead. Depending on the gross margins achieved, the company is expected to show a deficit during the first two years.

The company is assumed to grow rapidly, and this will be necessary to satisfy the aspirations of the company, the irrigators, and the market. Because of these factors, annual increases in the levels of stocks and debtors will be needed. The company is expected to need substantial financial support for the first several years of its development, as much of the surplus cash generated will be consumed by its need for working capital.

A preliminary survey of potential funding agencies has indicated that it should be possible to raise the necessary loan funding and non-participating equity funding from a number of financing institutions, both local and international.

Preliminary interviews with several individuals representing Swazi companies were conducted to ascertain their interest and capability to undertake the project. The most positive interviews indicate that several local companies have the potential to undertake and operate a vertically integrated, market-driven horticultural marketing operation focusing on export, regional and domestic markets.

SECTION I
INTRODUCTION

A. Business Environment in Swaziland

Swaziland is recognized as a secure, reliable and congenial country in which to operate a business. The country is politically stable. It is richly endowed with development capital. The government is supportive of business development and imposes minimal bureaucratic control. The country has special relationships with a number of economic and political groupings giving it uninhibited and indeed, preferential, access to a number of markets and sources of finance.¹

B. Concept Development

The Technical Analysis (Component II) and Social Soundness Analysis (Component III), indicate that there is a production capacity, a market demand, and a willing population of small-scale irrigators to develop a horticultural marketing operation in Swaziland.

For this concept to be developed, it is necessary to test the financial viability of such an operation. Based on the findings of the Technical Analysis and the Social Soundness Analysis, the financial implications of the theoretical composition of such a company is presented below.

¹ USAID. "The Private Sector and the Economy of Swaziland." March, 1990

SECTION II
FEASIBILITY OF A HORTICULTURAL MARKETING COMPANY

A. Summary

A summary of the financial analysis is presented below. Project cost and financing are indicated as they are expected to be in the project's third year. Note that by this time, the company is expected to be over-financed, but surplus cash is absorbed by capital requirements in the following year.

1. Proposal

To supply the regional and domestic markets with a percentage of fresh horticultural produce, grown by the small-scale producer in Swaziland.

2. Project Costs

Capital Needs	Cost (E' 000)
Land	50
Buildings	180
Machinery and Equip	370
Vehicles	380
Working capital	728
Cash	73
Total	1,781
(Sept. 1991 - Aug. 1994)	

3. Project Financing

Financing	Cost (E' 000)
Equity subscribed	650
Retained earning	51
Loans	1080
Total	1,781

4. Profitability

An internal rate of return of 48 percent is expected. (See Appendix FA-1.)

5. Market

The project will provide approximately one third of the domestic market for fresh horticulture and a small proportion of the regional market.

B. Assumptions

1. Company Resources

a. Vehicles

In order for a company to undertake the collection of horticultural produce in the volumes expected, it is estimated that a fleet of vehicles, as shown in Appendix FA-9, will be required. The company will start with one 3-ton truck and three 1-ton "bakkies." The fleet will be expanded as needed according to realized increases in production, until a total of four 3-ton trucks, one 7-ton lorry, four bakkies and one passenger vehicle, for the use by the general manager.

b. Office Equipment

Communication will be of utmost importance for effective marketing and production programming. It is assumed that the company will need to invest E 100,000 in telephone and radio equipment. Office equipment, which will include a fax machine, telex, computer and furniture is estimated at E 120,000.

c. Buildings

It is assumed that the company will establish a horticultural nursery in the second year of operation. This facility is important for two reasons. Firstly, the provision of seedlings for the small-scale farmers will enable greater control of the production program. Secondly, in this way, the quality of seedling stock can be controlled. This is especially important in relation to disease prevention and variety selection. This is in addition to the basic assumption that the company will provide a packing facility and warehousing.

d. Land

It has been assumed that land for the nursery will be leased, and land for packing sheds will be purchased.

e. Personnel

Appendix FA-8 shows the expected staffing of the Company, in accordance with the Organization Analysis (Component V). Expected salaries and wages are also indicated. Benefits are assumed to equal the salaries for the higher-paid executives, while for the lower paid, an allowance of half the annual wage for benefits has been assumed.

Details of the expected organization and division of responsibilities of the proposed staff shown in Appendix OA-1 (Component V). It is expected that the Chief Executive Officer of the company will have a substantial equity share. As this will be a marketing company, and as there will be a need to keep costs low in the early years, and it is expected that the Chief Executive will fulfill the marketing function. The Chief Executive will be assisted by an operation manager and a technical advisor.

The operations manager will be responsible for the link between the market and the producers. He will negotiate contracts with the growers, organize inputs for the farmers, co-ordinate production schedules according to market needs, arrange for collection of produce, organize consolidation, grading and packing as well as dispatch and delivery to the respective buyers. Key people in the organization will be the production facilitators. They will provide the vital link between the market, the company and the farmer. Drivers will be employed to deliver inputs and collect produce from the farmers.

In time it is expected that the company will expand and more staff will be required. In particular, as the company increases its marketing operation, a marketing manager may be employed. It is expected that the company will operate a nursery to provide seedlings of the correct cultivars at the right time for optimum production. A nursery manager and labor for the nursery will be needed.

It is envisaged that support staff will be kept to a minimum. A secretary/office orderly and a book-keeper/clerk may be necessary.

g. Overhead Costs

Other overhead costs have been estimated in accordance with the expected levels of activity of the company. Provisions have been made for rent, for repair and maintenance, for offices and for office expenses (see Appendix FA-8).

3. Working Capital

Working capital costs are estimated on the basis of the expected levels of stock, debtors and creditors. It is

assumed in the calculations that stock in transit will amount to one month of purchases. Packing material stocks are assumed to be equivalent to one month's usage. Stocks of crop chemicals and pesticides are assumed to be at the level of one month's sales. The level of debts is assumed to be two month's sales for regional exports, and one month's sales for local sales. Creditors are estimated at one month of purchases (see Appendix FA-9).

4. Depreciation

Depreciation was calculated according to the practice in Swaziland: 20 percent per annum for vehicles, 15 percent per annum for plant and equipment, 15 percent for buildings (see Appendix FA-11).

5. Tax

The tax rate applied was 37.5%. The provisions for 50% initial allowances on purchase of vehicles, plant and equipment were applied in the calculations. But in the interest of conservatism, the Country's provisions for tax holidays, double deduction on training expenses and other investment incentives were not applied in the calculations.

6. Production Estimates

The basis of the sales of produce into the regional and local markets was derived from the findings of the Technical Analysis of production capability and market capacity, (Component II). Appendix FA-13 shows the expected area to be planted in horticultural crops by the small-scale farmers as the result of the stimulus provided by the project. Areas planted to the various crops chosen will increase to reach a maximum in the year 2000. The area cultivated annually is expected to increase from 54 hectares in the first year to 270 in the 10th year. The number of farmers participating in the project is expected to increase from 67 in the first year to 337 by the 10th year.

Appendix FA-14 shows the expected physical mass of horticulture in tons per year. Of this, the proportional amounts expected to be sold in the local and regional markets are shown in Appendix FA-15 and FA-16, respectively. Input cost assumptions are shown in Appendix FA-17, and price and yield assumptions are shown in Appendix FA-18.

7. Financial Assumptions

It is assumed in the Income Statement (Appendix FA-3), that the sale of crop inputs to small-scale farmers is accomplished with a markup of 10 percent. However, as the company will be able to buy fertilizer and crop chemical at a discount, the small-scale farmer will be able to buy his inputs more cheaply through the company than as an individual.

It is further assumed, that the company will, in its first year, sell produce at a margin of 30 percent. This is expected to decline from year to year to stabilize at 20 percent. The combined effect of the margin on produce sales and crop input sales is shown in the notes to the income statement.

C. Project Costs and Financing Plan

1. Costs

Based on the physical assumptions given above, an estimate of the cost of the business was developed (Appendix FA-9). As the company is envisaged to grow over time, there is expected to be capital expenditure in most years. In the first two years there will be substantial expenditure on capital items, in particular vehicles. In addition, there is expected to be an increase in investment needed for working capital of E 180,000 each year until the year 2000. This is because the sales are anticipated to rise steadily each year until that date. The company will be obliged to carry more stock, and more debtors as it grows.

A summary of the project cost data is given for the first, third, fifth and tenth years in Appendix FA-1. By the third year, the project will be expected to have cost some E1.6 million. A considerable proportion of this total will be for the company's need for working capital.

2. Project Funding

The actual method of funding will depend largely on the structure of equity and loan financing determined by the need of potential investors. An example of how this might be done is shown in Appendix FA-10 and summarized in Appendix FA-1. It is assumed that the owner or owners will subscribe E650,000 in three annual tranches. Three loans, totalling E1,2 million are assumed, taken out in the first three succeeding years. The loan conditions assumed are shown. These will clearly have to be modified in accordance with the potential financiers' conditions.

At the projected levels of profitability, the company should be in a position to finance its increasing working capital and reinvestment needs after the third year of operation. The company will be short of cash in the sixth and seventh years of operations, when there will be a need to replace vehicles and increase working capital.

D. Owner Equity

Ideally, an operation of this nature should be run by its owner. The long hours of hard work that will be necessary, especially during the startup period, will require the dedication and commitment that characterizes the entrepreneur. It would be desirable that the company be owned and operated

by Swazi Nationals who have some previous knowledge of the horticultural marketing business. The participating company should have sufficient financial resources to be able to subscribe sufficient equity to attract enough loan funding to meet the requirements of the operation. Most important, the owner and operator of the company should have the energy, drive and enthusiasm that will be essential for a horticultural marketing company to succeed.

There are not many companies in Swaziland who meet these criteria. However, four potential candidates were identified, two were interviewed.

The first potential entrepreneur to be interviewed was Mr Paul Davidson, who owns and operates Simbimbi Investments (Pty) Ltd. Mr Davidson is a Swazi citizen who operates a horticultural agency (Swazifresh Ltd, known as "Agent 3") out of the NAMBoard Horticultural Wholesale Market. Mr Davidson is a farmer in the Malkerns valley where he operates a 17 hectare irrigated farm. He has been wholesaling vegetables through the NAMBoard market for one and a half years. In that time, Swazifresh has increased its turnover from E1.5 million to E4.0 million.

Mr Davidson's holding company, Simbimbi Investments (Pty) Ltd, is a family business involved in farming and property development. Simbimbi Investment is able to raise up to E 700,000 to invest. Simbimbi owns 60 percent of Swazifresh (Pty) Ltd; the remaining 40 percent of Swazifresh is owned by a company called "WPK Marketing (Pty) Ltd" which is based in the Western Cape.

Mr Davidson expressed considerable interest in the idea of participating in a vertically integrated horticultural marketing company along the lines envisaged.

The second potential entrepreneur to be contacted was Ms. Jenny Martin. Ms Martin is a young (27) and exceptionally energetic Swazi citizen who has recently become involved in the overseas market for horticultural produce.

Ms. Martin left Africa for Sweden at the age of 11 on a athletics scholarship. On her return to Swaziland in 1980, she undertook a hairdressing course and shortly thereafter, she became involved as an agent for the marketing of an American hair care product "Soft Sheen". In 1987, she joined her mother in her business "Swaziland Business Bureau" where Ms. Martin became involved in the marketing of pineapples with a French company. She has recently been conducting limited marketing trials for fruit and flowers from Swaziland. She has access to numerous horticultural dealers in Sweden.

Ms. Martin lacks substantial resources; she could raise in the region of E50,000 to invest. However, she is not averse to establishing a partnership with other investors,

provided she has control of the operations of the business. Ms. Martin owns and operates a Swaziland registered company "JML Enterprises (Pty) Ltd. Ms. Martin made the consultant feel that her energy, drive and enthusiasm compensate for her lack of financial resources.

The Swaziland Development Agency, Tibiyo Taka Ngwane, was approached for an assessment of their interest in both equity and loan financing. The organization expressed considerable interest both in equity financing, provided the project can be shown to be commercially viable, but also as a vehicle by which they may be able to put under-utilized irrigation potential to work.

Other potential entrepreneurs identified, but not yet interviewed are:

- o Ms Florence Hlophe, owner of Philane Fruit and Vegetable (Pty) Ltd. Ms Hlophe operates as "Agent 4" at the NAMBoard Horticultural Wholesale Market. In addition she operates a 10 ha farm near Mbabane, where she grows vegetables and raises cattle and poultry.
- o Mr Wandi Shongwe was recommended as an entrepreneur who is potentially a client. He is a successful businessman, formerly the General Manager of Metro Wholesalers in Manzini, and has the reputation of being a capable manager.

E. Loan Funding

Loans in the region of E 1.2 million will be required to finance the company. While there is no specific need for foreign currency, both local and international funding agencies could be approached.

One of the possible international funding agencies is the newly constituted Africa Enterprise Fund (AEF). This is the small-scale private sector window of the International Finance Corporation (IFC). The AEF targets its activities toward operations with a total project cost of between US\$ 500,000 to US\$ 5 million. Interest rates and other conditions are negotiable for each project; rates and conditions are usually commercial and competitive. AEF will take equity depending on the circumstances. The AEF does not give soft loans; the organization expects a commercial return on its investments. The AEF has already been approached, and has expressed interest subject to receiving the details of the project.

The Swedish Fund for Industrial Development in Developing Countries "Swedfund" has also been approached. Swedfund provides equity and loan funding for operations in developing countries where there is scope for the participation of a Swedish technical partner.

Other potential International investors are the Commonwealth Development Corporation, the Dutch Foreign Monetary Organization, Finfund (The Finnish Development Bank) and NORSAD (The Nordic/ SADCC Fund for Regional Development).

The Swaziland Industrial Development Company (SIDC) was also approached. They expressed considerable interest in the project, even though it is somewhat different from projects they normally deal with. SIDC awaits details.

F. Profitability and Financial Conditions

At the projected levels of activity, the company will be profitable. The expected internal rate of return (IRR) of 48 percent (see Appendix FA-6) over ten years is high. While an IRR of between 25 percent and 30 percent is normally considered an indication of adequate profitability, it is felt that the level of profit for this high risk operation will need to be high. If sales revenues and costs are adjusted to produce a more modest IRR (29 percent), analysis shows that the operation will carry a net loss for five years and there will be a need for considerable funds to finance losses. The level of margins used in the projection are quite reasonable considering the nature of the business. The technical analysis shows that the prices to be offered to farmers for their produce will be attractive, while the produce will still be competitive in the markets.

With the expected lower levels of sales in the early years, the return on capital will be low until 1996. The continuing need for additional working capital is expected to strain the financial resources of the company at this stage, and the debt to service ratio early in the project life reflects the fact that the company will operate in a risky environment. The sensitivity analysis, (Appendix FA-7) highlights this risk. A 10 percent increase in the cost of sales with a concomitant decrease in the value of sales will reduce the profitability to unacceptable levels. While a 10 percent increase in costs or a 10 percent decrease in sales will result in the reduction of the IRR to levels that are still acceptable, a great deal of additional investment would be needed to finance losses and cash shortfalls.

G. Effects of the Company on the Small-Scale Farmers

Appendix FA-19 shows how the operations of the proposed company could improve the earnings of the small-scale farmer. Middle to good yields are assumed, and these can be achieved with the level of technical assistance proposed in the project. The average individual producer should benefit from a net profit per annum of E14,000.

In the first year it is expected that approximately 100 farmers will participate. By the end of 10 years, this will have grown to about 370 farmers, who at today's values, will receive some E4.7 million in total per annum in profit.

H. Issues and Risks

1. Financial Structure

The example horticultural marketing company developed and analyzed here is based on a specific set of assumptions. There are a myriad of options that could have been used. An attempt was made to match the example as closely as possible to what the situation may be in reality. How the companies are structured financially will depend, to a large extent, on the preferences of those who will be involved in the company. In the process of presenting the ideas for a horticultural marketing company or companies, the views and preferences of the various interested parties should first be assessed, and the financial modeling modified accordingly. Different institutions use different indexes of profitability and therefore attractiveness of a potential investment prospect. The feasibility study can be structured in terms of the potential investor's interests.

The financial structure presented in this model is made on the assumption that a lending agency will not wish to finance losses in the early years of operation. The company was thus structured to be profitable in the early years, but this was done within the limits of reasonable costs of produce and acceptable selling prices in the market.

2. Overseas Marketing Company

In this analysis, a company marketing produce on the domestic and regional markets has been assumed. A company that is geared to market on the overseas market would differ in several ways. Firstly, there would be less need for transport facilities for produce collection. However, there will be need for a sophisticated consolidation, grading and packing facility. There would be a need for cold storage and refrigerated transport facilities. The volume of sale will be less, but the margins on sale will be considerably more than that of a regional marketing company. The overseas marketing operation can therefore be expected to be smaller and more specialized. Penetration of these markets is likely to be difficult. Standards of product and packaging on overseas markets are exacting. For Swaziland to enter these markets, consistent high quality and supply will have to be assured. The CAPM approach, envisaged in the project concept, will be able to undertake the ground work and trials that will be vital to success in overseas markets.

SECTION III CONCLUSION

The financial analysis indicates that a horticultural marketing operation in Swaziland structured to exploit the regional and domestic markets will be profitable and financially sustainable. The levels of profitability can be high, as there is scope for a reasonably large margin between the producer of horticulture and the market. As costs of production on the small-scale irrigation systems are lower than their large-scale counterparts, due to lower capital and labor costs, the small-scale farmer will be able to produce competitively and make money.

The levels of profitability of the marketing operations and their financial performance will depend, to a large extent, on their mode of operation and type of financing. It will be necessary to test the viability of each specific proposal, structured according to the requirements of the potential investor.

COMPONENT V

ECONOMIC ANALYSIS

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EXECUTIVE SUMMARY

An economic analysis was conducted based on the plan proposed in the technical analysis for the project paper amendment (PPA). The analysis covered the costs and benefits of the project activities under redirection and extension. For purposes of the analysis, the effective date considered to be October 1, 1991 so as to correspond with the budget which was projected on a fiscal year basis.

The original PP design efforts were guided by an analysis of cost effectiveness which was determined to be suitable for evaluating a mix of institution building, policy development and program activities. This approach was appropriate until the redirection of the CAPM project. Under the redirection, implementation of production and marketing interventions will be accelerated. Some analytical activities will continue, although the focus will shift from macro-economic policies and programs affecting the agribusiness/marketing climate to analyses of sectoral policy and program issues directly related to attaining small farmer production response. The vertically integrated approaches to the development of commercial small-scale production of horticultural and specialty crops (which CAPM seeks to demonstrate through trials and pilot programs) are experimental at this stage. Nonetheless, increased production is projected to begin in 1992.

Therefore, an internal rate of return (IRR) analysis was conducted for the main project activities from October 1, 1991 until February 28, 1994. The IRR was found to be about 50 percent for the ten year future period.

The IRR analysis demonstrates a high rate of return to Swazi human and natural resources will be realized if, through vertically integrated marketing and production, significant improvement can be achieved in harvested yields/hectare, multiple cropping, timely scheduling of production and selection of crops suited for small scale growers aimed at higher value niches in the domestic and regional export markets.

Such a high rate of return is possible partly because of the large amount of "sunk" investment in the existing irrigation sites targeted initially. Future expansion of irrigation areas would require additional investments which would mean a somewhat lower IRR.

Sensitivity analysis showed that the project would be expected to produce a positive rate of return even if there were to be a shortfall in revenue by 50 percent.

The effect of CAPM on the GOS ministries recurrent costs will be less under the PPA than anticipated in the PP because the commercially oriented technical assistance and marketing activities initiated under CAPM are expected to be continued in the private sector.

The economic risks for the GOS in and for the CAPM project are low, as was pointed out in the original PP. The Swaziland economy, the political situation and the GOS budgetary situations are considered stable. The cautious approach of testing the private enterprise development interventions planned under CAPM before attempting to introduce them on a large scale means that no Swazi farmer, ministry, financial institution, input supplier or marketing enterprise will be exposed to unacceptably large financial risks which might adversely affect the economy of Swaziland or the GOS budget.

The conclusions of the analysis supplement those from the analysis reported in the project paper (PP). The PP analysis determined that the substantial widespread economic benefits would result from the project activities and that the means selected for implementing the project were cost effective.

SECTION I COST AND BENEFIT CONSIDERATIONS

A. Cost Effectiveness

Cost effectiveness considerations were a major factor guiding the PP design efforts in determining the mix of inputs. This was appropriate for a project that included institution building, policy development and is partly programmatic. Many alternative combinations of inputs were considered. These were evaluated in terms of the best results, i.e., the quality of the results for the costs incurred. The conclusions in the PP concerning cost effectiveness were reached after extensive discussions among GOS officials, the private sector and design team members and many alternatives were considered.

This approach remains appropriate for the justification of the work completed before the effective date of redirection and extension and for portions of the activities afterwards. The main one is the program of linkage or TA for assisting UNISWA/Luyengo. This has a large potential for benefiting people far beyond the targeted group engaged in marketing and producing horticultural and specialty crops. The details of the program will be defined during a short term consultancy to be conducted by CAPM.

B. Recurrent Costs

According to the original PP economic analysis, recurrent costs were judged to have an insignificant impact on the GOS budget in the original PP economic analysis. This conclusion is still valid. In fact, the effect of CAPM on the GOS ministries recurrent costs likely will be less than originally anticipated because the program activities initiated under CAPM are expected to be continued in the private sector.

C. Technical Assistance

Technical assistance is the principal intervention strategy for CAPM during the period of redirection and extension. The amount and kind of TA is critical for its success. The structure of the team proposed in the PPA is the outgrowth of intensive and extensive discussion among USAID, GOS and Contractor staff in evaluating the environment for small holder commercial production and CAPM outputs produced to date.

The result is the organization proposed in Annex C which identified the combination of long term and short term TA judged to be cost effective.

Some of the requirements for short-term technical assistance during the remaining life of CAPM have been specifically identified such as irrigation system design and utilization, assistance with company business plans, export market analysis, irrigation policy and program implementation on GOS schemes, farm management training, market investigations and banana growing and marketing. Other needs are expected to develop as the project proceeds to deal with constraints, issues and operational problems.

The original PP team gave careful consideration was the use of local technical assistants, pointing out that local people would be reasonable in cost and would be more effective in carrying out certain tasks. It was determined that the local marketing and production advisors and field assistants with technical, local and cultural knowledge local technical assistants would be cost effective. Most importantly, as the companies grow, the local staff will be well qualified as employees or entrepreneurs to carry the TA initiated by CAPM in the private sector.

D. Training

The PP provided for larger amount of training than is included in the proposed for the PPA. With the narrowing and sharpening of focus for CAPM much of this is not relevant. Most of the training included in the PPA is in-country hands-on training, such as field days for the farmer and company participants in the production and marketing activities. Therefore, the costs of training in the PPA, exclusive of training that may be planned for UNISWA when the UNISWA Linkage/TA program is defined, is included in the IRR analysis. The costs of on-the-job training associated with the provision of production and marketing technical assistance to farmers and other participants is not specifically labelled as training but is included in the IRR analysis.

The Linkage/TA grant provided for UNISWA/Luyengo in the PPA redirects the resources provided for this component of the project to focus on outreach activities in a manner which is less costly and more cost effective given the current stage of commercially oriented curriculum development and outreach programs at UNISWA/Luyengo. This conclusion was reached as a result of extensive discussions between senior USAID mission staff and the UNISWA administration.

E. Commodities and Supplies

Commodities for the UNISWA/Luyengo Linkage/TA grant will be defined during the assessment and are included in the budget for that grant. They will be based in part on a revision of the needs assessment completed under the project. The cost of these commodities was not included in the IRR analysis but considered to be cost effective on the basis of the PP analysis and the modifications developed during the consultations cited above.

The cost of the additional vehicles for local technical assistance staff was included in the IRR analysis. The cost of vehicles justified in the PP as necessary for long term expatriate technical assistance staff were not included in the IRR analysis.

Basic office equipment -- photocopier, computers, desks, files, etc. were provided under the PP for the project support office to assure that the CAPM personnel will be efficiently supported. Such office furnishings and equipment procured prior to the effective date of redirection and extension were not included in the IRR economic analysis. The costs of these kinds of commodities incurred subsequent to that date were included.

F. Management

The basic approach to management of the project has been continued, but streamlined and focussed on the active program approach outlined for the balance of the project. This was described in Annex C.

G. Recurrent Costs

Generally the CAPM project was designed so as not to have a significant impact on the recurrent costs of the ministries. The recurrent costs relating to counterparts and trainees will be less than previously projected. No additional staff are proposed as GOS counterparts. The central idea of CAPM is that the technical assistance provided the companies and which is expected to be continued will not require added GOS extension staff. The CAPM TA team will work with existing GOS staff as counterparts.

SECTION II QUANTITATIVE ANALYSIS

A. IRR Analysis

An internal rate of return (IRR) analysis was conducted for assessing the costs (outlays) and benefits (value of output) for Swaziland from the main project interventions from October 1, 1991 until February 28, 1994. The value of output and the outlays, exclusive of estimated local transactions, were projected for a period of ten years. The basic assumptions for the economic analysis are consistent with findings in the technical, financial, and social analyses.

Production, costs and returns were estimated for the participating farmers. Outlays for fixed capital investment, sales and expenses were projected for the participating vertically integrated produce companies combined.

The number of participating farmers, area and production were derived from the technical and financial analyses as follows:

Farmers: Number, Area Cultivated, Area Cropped and Production.

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*****
YEAR          FARMERS          AREA          AREA          PRODUCTION
              FARMERS          CROPPED      CULTIVATED
*****
              Number        Hectares          Tons
1992             67            150              54        4,550
1993            101            243              81        6,825
1994            135            324             108        9,100
1995            169            405             135       11,376
1996            202            485             162       13,651
1997            236            566             189       15,926
1998            270            647             216       18,201
1999            303            728             243       20,476
2000            337            809             270       22,751
2001            337            809             279       22,751
*****

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The company outlays projected for the economic analyses are consistent with throughput generated by the projected farm production and the budget projections for the financial analysis. The total projected outlays were adjusted to account for the domestic content of the expenditures.

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Company Outlays: Cash Expenditures, Fiscal Years 1992-2001.
 Thousand Emalangeni

 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001

VEHICLES	200	180	0	120	170	151	60	58	29	210
EQUIPMENT	150	120	0	0	0	50	150	20	0	0
BUILDINGS	0	265	0	0	0	0	40	0	0	0
REPAIRS & MAINTENANCE	32	37	50	70	70	70	70	70	70	70
FUEL AND OIL	29	31	35	35	35	35	35	35	35	35
OVERHEAD	150	162	159	159	159	159	159	159	159	159

ADJUSTED FOR LOCAL CONTENT

VEHICLES 1_/	135	122	0	81	117	101	41	39	19	142
EQUIPMENT 2_/	102	82	0	0	0	34	101	14	0	0
BUILDINGS 2_/	0	180	0	0	0	0	7	0	0	0
REPAIRS & MAINT. 2/	22	25	41	48	48	48	48	48	48	48
FUEL AND OIL 3_/	26	27	30	31	31	31	31	31	31	31
OVERHEAD 4_/	60	65	64	64	64	64	64	64	64	64

 TOTAL 345 501 135 224 250 278 292 196 162 285

- 1_/ PERCENT IMPORTED 68
- 2_/ PERCENT IMPORTED 88
- 3_/PERCENT IMPORTED 40

Aggregate outlays for the participating farmers were derived from the data generated for the preparation of the technical analysis. The major part of the total input in vegetable production is the result of resources of Swazi origin: management and labor, land and water. However, the purchased inputs for farm production - fertilizer, planting material, chemicals, fuel, machinery - have significant imported components. The projections of total cost for the participating farmers below are based on the mix of crops suggested in the technical analysis. A weighted average was derived based on estimates of the cost of purchased inputs in budgets prepared for individual crops weighted by their relative importance in the mix. The cost inputs were adjusted for estimated local content.

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Farmer Outlays: Cash Expenditures, fiscal years 1992-2000.

Thousand Emalangeni

 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001

INPUTS 454 684 914 1,145 1,368 1,598 1,829 2,052 2,283 2,283

ADJUSTED FOR LOCAL CONTENT 1_/

INPUTS 307 465 622 778 930 1,087 1,244 1,396 1,552 1,552

 1_/ PERCENT IMPORTED =

The value of output was estimated at the level of sales by the vertically integrated companies, appropriate for the vertically integrated approach of the project. The estimates reflect the strategy of aiming initially at regional, i.e. domestic and regional export markets.

Value of Output

	LOCAL SALES	REGIONAL EXPORTS	OVERSEAS EXPORTS	TOTAL	TOTAL	ADDED VALUE
	Thousand Emalangeni				Thous. US\$	1_/
1992	1,649	822	2_/	2,471	915	719
1993	2,473	1,383		3,856	1,428	1,123
1994	3,298	1,844		5,142	1,904	1,497
1995	4,122	2,305		6,427	2,380	1,871
1996	4,947	2,766		7,713	2,857	2,245
1997	5,771	3,227		8,998	3,333	2,619
1998	6,596	3,688		10,284	3,809	2,994
1999	7,420	4,150		11,570	4,285	3,368
2000	8,245	4,611		12,856	4,761	3,747
2001	8,245	4,611		12,856	4,761	3,743

 1_/ EXCHANGE RATE ASSUMED: 2.7 Emalangeni = 1 US\$.
 2_/ ULTIMATE POTENTIAL LARGE BUT NOT PROJECTED.
 CONSIDERED EXPERIMENTAL DURING LIFE OF THE PROJECT.

Outlays: Swazi Entities

 FISCAL USAID GOS COMPANIES FARMERS MARKETING TOTAL
 YEAR FEES 1_/

Thousand Emalangeni

YEAR	USAID	GOS	COMPANIES	FARMERS	MARKETING FEES 1_/	TOTAL
1992		363	381	307	82	1,134
1993		372	501	465	138	1,476
1994		198	135	622	184	1,139
1995			224	778	231	1,232
1996			258	930	277	1,465
1997			278	1,087	323	1,688
1998			325	1,244	369	1,937
1999			196	1,396	415	2,007
2000			162	1,552	461	2,176
2001			285	1,552	461	2,298

U.S. Dollars 2_/

YEAR	USAID	GOS	COMPANIES	FARMERS	MARKETING FEES 2_/	TOTAL
1992	1,344	134	128	114	30	1,750
1993	1,377	138	186	172	51	1,924
1994	731	73	50	230	68	1,153
1995			83	288	85	456
1996			95	345	102	542
1997			103	403	120	625
1998			120	461	137	717
1999			73	517	154	743
2000			60	575	171	803
2001			105	575	171	851

1_/ 10 PERCENT OF REGIONAL EXPORT SALES

2_/ EXCHANGE RATE ASSUMED: 2.7 Emalangeni = 1 US\$.

The net cash flow for computation of the internal rate of return shown below was generated by subtracting the outlays (expenditures) for all parties concerned adjusted for imported content from the revenue. There is some production on the target irrigation sites currently, primarily from one crop per season and substantially below the level of yields/hectare necessary for commercially viable production. So added value was selected as an estimate of revenue. This is projected to occur from attainment of higher yields, multi-season cropping and targeting production for higher priced markets.

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FY	REVENUE	EXPENDITURES	NET CASH FLOW
U. S. \$	U. S. \$	U. S. \$	
1992	719	1,750	-1,031
1993	1,123	1,924	-801
1994	1,497	1,153	344
1995	1,871	456	1,415
1996	2,245	542	1,703
1997	2,619	625	1,994
1998	2,994	717	2,276
1999	3,368	743	2,625
2000	3,743	806	2,937
2001	3,743	851	2,891

IRR 53.2 percent

Part of the reason for the high IRR was that "sunk" investment in the irrigation sites targeted. Nonetheless, a large investment is necessary in existing irrigation site rehabilitation and improvement to bring their productivity up to the level required for commercial success. This is included in the proposed budget for the GOS in this PPA for the sites targeted. Future expansion beyond this would require additional investments not projected in this analysis.

B. Economic Risks

The economy of Swaziland is relatively stable as is the agriculture here. The political situation in Swaziland is stable. There have been no major changes in the ministries since those made during the preparation of the PP which delayed preparation of the PP. The GOS budgetary situation has been relatively stable the past few years.

The principal economic risk influencing the project impact for the target group reaching its full potential is achieving the level of productivity found possible in the technical analysis and which is essential for commercial success in competition with other producers in southern Africa and elsewhere. The strategy is outward looking and cannot rely on government protection measures for success.

A reduced performance scenario which assumed a revenue reduction of 30 percent was analyzed. This could occur from lower harvested yields or failure to recognize available market prices. The former is far more likely to occur than the latter as the markets targeted are relatively strong and growing.

The CAPM strategy does not rely on any single market as outlets for the produce. This is an important means of reducing risk for the growers and the companies. For example, the domestic market is comparatively easy to saturate with particular vegetable at a particular time. This has been experienced in domestic markets in the most favorable growing season with tomatoes and cabbages, popular crops small scale Swazi growers.

C. Sensitivity Analysis

30 Percent Revenue Reduction

FY	REVENUE U. S. \$	EXPENDITURES U. S. \$	NET CASH FLOW U. S. \$
1992	504	1,750	-1,247
1993	786	1,924	-1,138
1994	1,048	1,153	-105
1995	1,310	456	853
1996	1,572	542	1,029
1997	1,834	625	1,209
1998	2,096	717	1,378
1999	2,358	743	1,614
2000	2,620	806	1,814
2001	2,620	851	1,769

IRR 27.8 percent

A "bad case" scenario was projected assuming the same level of outlays and a reduction of 50 percent in receipts. The results are summarized below.

50 Percent Revenue Reduction

FY	REVENUE U. S. \$	EXPENDITURES U. S. \$	NET CASH FLOW U. S. \$
1992	360	1,750	-1,391
1993	561	1,924	-1,362
1994	748	1,153	-405
1995	935	456	479
1996	1,123	542	580
1997	1,310	625	685
1998	1,497	717	779
1999	1,684	743	941
2000	1,871	806	1,065
2001	1,871	851	1,020

IRR 10.5 percent.

The results of the IRR analysis show that a high level of productivity by the farmers and effective marketing are essential to realize the large benefits for small scale growers projected based on the technical and social analyses. A revenue reduction of 30 percent would result in a an IRR of 27.8 percent which is still substantial. A fall in revenue by 50 percent would still produce a positive IRR of 10.5 percent.

The quantitative economic analysis did not take into account the values that may result from expansion of production by the actions of others, which could be inspired by CAPM facilitated production for the domestic and regional export markets or successful penetration of overseas export markets as a result of the trials conducted under the CAPM project. However, the impact in both directions -- more farmers, more area and overseas markets -- is potentially very large given the natural environment and market potential for commercial irrigated agriculture identified in the technical analysis.

There is significant potential for substantial impact on auxiliary industries which was not explicitly recognized in the quantitative analysis. The expansion of the output of horticultural and specialty crops resulting from the CAPM programs will also create a demand for goods and services that can be filled within Swaziland. These include, for example, boxes and other packing materials, plant propagation materials, tomato stakes and sorting and repacking in consumer packs. The project will concentrate on fresh produce, but there will be some opportunities created for processing to deal with unavoidable seasonal surplus for crops such as tomatoes.

In order to verify the economic return and impact of the expansion and replication of the activities initiated under a redirected CAPM Phase I, it would be desirable to conduct another cost/benefit and internal rate of return analyses in 1993 to guide the planning of future activities. A short-term economic advisor can perform these analyses. With the costs and sales data from trials and production and marketing programs in hand, the economic analysis of the project can be based on actual data.

COMPONENT VI
ADMINISTRATIVE AND ORGANIZATIONAL

SECTION I
ADMINISTRATIVE AND ORGANIZATIONAL

A. Background

The concept that the CAPM project should focus on the development of private sector involvement in the marketing of horticultural produce from the small-scale irrigator in Swaziland is analyzed from a technical standpoint in Component II and from a social soundness standpoint in Component III, and from a financial soundness standpoint in Component IV. In this Component, number V, the ideas arising from those analyses are examined in the light of administrative and organizational considerations.

B. Organization

1. Policy and Direction

Appendix OA-1 is a representation of the environment in which the Project is expected to operate. At the top of the chart is the overall controlling component of the project, which is expected to consist of two hierarchal committees which will determine the policy and direction of the project. The present overall controlling committee will continue to exist as the Project Steering Committee (PSC).

A newly formed project Working Committee will be constituted with nominee(s) from appropriate GOS ministries, the United States Agency for International Development (USAID), the prime contractor, the private sector, small-scale farmers, and general managers from companies involved in the marketing of the horticultural produce from small-scale irrigators. This working committee will oversee the project and provide practical advice and direction.

2. Executive

Those involved in the implementation of the project are represented in the section of Appendix OA-1 labeled "Executive." Three sets of players are seen to be involved in this process. Depicted first are the small-scale farmers, who are the ultimate targeted beneficiaries of the project as a whole; secondly are shown the marketing companies that will be assisted so that a sustainable horticultural marketing infrastructure can be established in Swaziland; and thirdly are shown the CAPM team members who through targeted efforts, expertise, and specific inputs, are expected to facilitate the achievement of the project objectives. Functional and working relationships between all the "players" shown in this chart are detailed and discussed later in this paper.

C. Milieu

A third component of the project environment, may be termed its "milieu". Milieu is a French word which means: "environment," "state of life," or "social surroundings." The milieu or social surrounding described in this paper is comprised of all other parties that in one way or another are expected to affect and/or relate to the project, its participants, activities and particularly, the small-scale farmers. (See Appendix OA-1 and OA-4.)

1. Farmers Associations.

Many of the irrigation schemes have constituted associations. While it is expected that the relationship between the farmers and the others in the project will be direct, where necessary, specific liaisons will take place with farmer associations. This will be particularly important when group matters are of concern; for example, on an irrigation scheme when repair of the irrigation facilities as a whole is required. In such cases, liaison will probably be best achieved through the farmers' associations.

2. Traditional Leadership

The success of the project will depend on the goodwill, and indeed the active patronage, of the traditional leadership in Swaziland. The crucial role that the chiefs are likely to play has been recognized and is described in Component III, Social Soundness Analysis. The responsibility for ongoing liaison with the chiefs is included as a component of CAPM's contribution to the project, detailed below.

3. Input and Credit Suppliers

While it is expected that the marketing companies will supply the small-scale farmers with some of their requirements for crop inputs, other suppliers are expected to continue to operate. If the marketing companies are unable to offer credit, as will probably be the case, the companies may find it convenient to act as a conduit for other suppliers of credit.

4. Horticultural Campaign Committee (HCC)

The Horticultural Campaign Committee of MOAC is expected to be a key participant in the horticultural development in Swaziland. The objectives of this project agree with those of the HCC. The CAPM project and the HCC are expected to work closely together, to their mutual benefit.

5. Extension Agencies

The project is not expected to displace any of the existing extension activities underway in the small-scale farming sector. Indeed, the project will benefit from inputs from the Government and other extension organizations.

6. Hawkers

In the past, hawkers have provided a valuable, although unreliable, market outlet for the small-scale farmers. The project is not expected to displace them, nor is the project expected to be threatened by them. Hawkets will still have their particular niche to serve, and will complement the activities and benefits that the project is expected to advance.

7. NAMBoard

The Horticultural Wholesale Market operated by NAMBoard is a major influence in the horticultural environment in Swaziland. It is anticipated that CAPM and NAMBoard will complement each other's activities. NAMBoard agents could well become a major outlet for the companies, to the benefit of all parties.

8. Government

There will be a need for ongoing liaison with government officials at all levels throughout the life of the project. Participants will need to keep in regular contact with those officials who will influence their particular responsibility.

SECTION II PROPOSED STRUCTURES

A. Companies

The organization structure, as it is envisaged for the CAPM Team and the companies in the early stages of the project is shown on Appendix OA-1 within the section labeled "Executive." Appendix OA-2 shows these organizations as they are expected to be after the end of the CAPM project. This evolution of the organization is expected to occur as the companies grow and as the need to specialize develops.

The CAPM project is expected to stimulate the growth of at least two Swaziland companies in the business of marketing horticultural produce on the domestic, regional and overseas markets. The multilateral nature of CAPM's intercession is demonstrated on Appendix OA-1 in the depiction of two stacked organization charts. The various companies involved, however, may not necessarily mirror each other exactly.

Initially the companies are expected to be lean. The general manager will have, in addition to the management of the company, the portfolio of marketing which will include negotiating with buyers, assessing the needs of the market, pricing, etc.

The operations manager will be responsible for the link between the market and the producers. He will negotiate contracts with the growers, organize inputs for the farmers, plan production schedules in relation to market needs, arrange for collection of produce, organize consolidation, grading and packing, as well as dispatch and delivery to respective buyers.

Key persons in the organization will be the production facilitators (PFs). They will provide the vital link between the market, the company and the farmer. It is envisaged that the PFs will reside among the farmers, and in all matters, represent the company in its dealings with the farmers. The PFs will maintain stocks of inputs and distribute them. They will arrange and supervise production schedules, provide appropriate technical information to the farmers, and assist in organizing harvest, grading and packing. Most importantly, they will communicate with the operations manager to ensure that inputs arrive on time, that produce is harvested and collected at the correct time.

From the start of operations, the companies will be encouraged to employ qualified technical advisors who will be responsible, inter-alia, for advising and assisting the small-scale farmers with the production. The technical advisors will receive intense training from the CAPM subject matter specialists.

It is envisaged that support staff will be kept to a minimum. The company will employ a number of drivers and other

support staff. A secretary/office orderly and a bookkeeper/ clerk may be necessary.

In time, it is expected that the company will expand and more staff will be required. In particular, it is expected that the company will operate a nursery to provide seedlings of the correct cultivars at the right time for optimum production. A nursery manager and labor for the nursery will be needed.

As the companies grow, it will probably be necessary for them to enhance their marketing strengths with the engagement of marketing assistants or marketing managers. Appendix OA-2 shows how the companies may evolve after the CAPM intervention is completed.

An important feature of the organization of the project is the idea of direct association between the companies and the individual farmers. The absence of any intermediary in the link between the farmers and the marketer will ensure the most efficient communication between them and ensure that the commercial objectives of both the farmer and the marketer are not diluted or distorted by outside influences. However, it is envisaged the all parties; farmers, companies, and the CAPM team, will liaise with the other organizations in the environment when this will be of benefit.

B. CAPM Team

It is proposed that the CAPM team be constituted to provide solid capability in the fields of agribusiness management, in horticulture, in irrigation technology, and in horticultural marketing, with all it entails. It is proposed further that the team should be strengthened with the participation of Swazi specialists, who will assist the expatriate team members and at the same time, gain invaluable knowledge and practical experience in horticultural production and marketing. The Swazi team will be the means by which the benefits of the CAPM horticultural concept can be perpetuated in Swaziland after the project has ended.

The proposed organization of the CAPM team and its Swazi counterpart is shown in Appendix OA-1. Functional and working relationships, and scopes of work are detailed later in this paper, and in Appendix OA-3.

1. Chief of Party/Agribusiness Specialist/Swazi Project Coordinator

It is proposed that the position of Chief of Party, who will be responsible for the overall control and coordination of the project, is filled by the agribusiness specialist. He will be assisted by a Swazi project coordinator.

2. Horticulturalist

There is a great deal of information available in Swaziland on the various horticultural crops that can be grown in the country. However, this information is not readily disseminated to the small-scale farmer. The successful

development of the horticultural industry in Swaziland will depend on the small-scale farmers being able to achieve the yields envisaged. The horticulturalist will play an important role in ensuring that farmers are given every chance of success. New varieties of current horticultural produce and completely new crops may be needed in the market. This is especially true of the overseas market. The horticulturist will have, as an additional responsibility, the field trial and testing of new horticultural products that are expected to be required in the newly penetrated markets.

3. Irrigation Specialist

For the farmers to achieve the yields envisaged in the project, it will be essential that the irrigation facilities be used to maximum effect. Especially in the early years, when a market driven expansion of horticultural production is expected, it will be essential that production is not hampered through ineffective irrigation techniques. It is currently anticipated that the irrigation specialist will be used on an intermittent basis, depending on particular needs.

4. Swazi Production Coordinator

The horticulturist and the irrigation specialist will be assisted by a Swazi production coordinator, who will work closely with them both. His or her major task will be to liaise with the technical advisors and operations managers of the companies. As part of a "hands-on" training program, he or she will be expected to be able to gain detailed knowledge of horticultural production on small-scale irrigation facilities.

5. Marketing Facilitator

Knowledge of, and expertise in, regional and overseas marketing of horticultural produce is lacking in Swaziland. Currently, there is not a highly developed export horticultural business in the country. To overcome this deficiency, and with the aim of endowing a fledgling horticultural industry with as much knowledge as possible in a short time, it is proposed that a marketing facilitator be added to the CAPM team. This person should have extensive practical knowledge of the marketing of horticultural produce into external markets. He or she should have the ability to impart skills and knowledge in all aspects of horticultural marketing, from post-harvest handling, to packaging and transportation, to negotiating with the buyer.

6. Swazi Marketing Advisor

A marketing advisor is proposed as a counterpart for the marketing facilitator. He or she will assist the marketing facilitator, and in the process, should gain skills and insight into horticultural marketing.

7. Swazi Field Assistants

It is proposed that the CAPM team employ a number of Swazi field assistants who will work with the technical specialists and the production advisor, and also liaise closely with the PFs and the small-scale farmers. The number of field assistants will vary depending on the project's stage and on needs as they develop. It is expected that up to six field assistants may be employed.

C. Government of Swaziland (GOS)

The various GOS ministries as well as UNISWA/Luyengo will be integrally involved in providing support to the project. Activities conducted through the university's proposed "outreach" program, the MOAC extension program, NAMBoard marketing operations, and MCIT's agribusiness promotion and assistance, among others, will be incorporated in the ongoing operations in support of the project.

The Project Steering Committee, which is constituted by Principle Secretaries from the MOAC, MCIT, Department of Planning and Statistics (DEPS), MOF, MOE and UNISWA/Luyengo administrative members, will continue to provide overall scope and direction to the project. The yet-to-be-created Working Group, made up of private and public sector leaders, will provide practical advice and direction to the project.

It is also anticipated that the GOS will be making substantial contributions to the project in terms of infrastructure support to the irrigations schemes which are targeted for project assistance.

SECTION III
WORKING RELATIONSHIPS AND FUNCTIONS

Appendix OA-3 shows the expected working relationships that will operate among the participants in the project, while Appendix OA-4 shows the relationships and linkages between these participants and other parties. A unit comprising the CAPM Chief of Party and the project coordinator will provide advice and assistance to the general managers of the companies, (see Appendix OA-3). This unit will have the added responsibility of liaising with the government, traditional leadership, farmers associations, and other regulatory and influential bodies (Appendix OA-4).

The CAPM technical specialist and the production coordinator will have responsibility for liaising with the operations managers in the companies and with the company technical advisors. They will also keep in close contact, on a technical level, with the MOAC, the University of Swaziland, and the Malkerns Research Station. Through the field assistants and the production facilitators, the technical specialist and the production coordinator will provide technical advice and extension to the small-scale farmers.

The primary function of the marketing facilitator and marketing coordinator will be to create and maintain a linkage between the company and the markets. The marketing facilitator will interact with the general managers and, if employed, the marketing executives of the companies. He and the coordinator will also interact with the operations managers and company technical advisors, the suppliers of inputs, the HCC, buyers and hawkers and with NAMBoard.

SECTION IV
SCOPES OF WORK

A. The Companies

1. General Manager (GM)

The GM will have the function of overall management and personnel component as well as policy decisions and financial control. He should have proven abilities and experience in management at this level.

At the outset of the redirection and extension, it is likely that he will also be responsible for the marketing portfolio of the company. It is essential, that even if the company expands to include a marketing manager as projected, that the GM has significant "hands-on" experience in this critical field. He will therefore be initially responsible for market contact and information, which will be necessary for procurement programming.

Initial structural proposals do not include a specific financial controller, so the GM will be responsible for the financial liaison and control of the company. Proven ability here is essential, given the financially sensitive nature of the business.

2. Marketing Manager (MM)

As outlined above, this post may be created after the project is underway. The incumbent would, however, be directly responsible to the GM and would be concerned with creating and maintaining the market links required for the efficient and profitable operation of the company. As this is possibly the key position in this company, it is essential that this position is filled by someone with experience in the field, even though the GM will be able to provide some support.

The MM will be required to liaise with both the operations and technical managers to provide the market feedback required to generate the correct production programs as well as the possible changing quality or presentation requirements, the interpretation of new crop trends. Because of this liaison requirement, some technical background will be of value for this position.

3. Operations Manager (OM)

This position is responsible for coordinating all aspects of production; from field programs to input requirements and transport. The position reports directly to the GM but also communicates with both the marketing manager and technical manager to determine production programs. Since this position requires significant local knowledge, experience in the commercial sector in Swaziland will be essential. It is also important that the incumbent has the ability to communicate effectively with and understand small-scale SNL producers. The OM will be required to control a field force of production facilitators (2 initially). He will ensure that the production facilitators carry out their duties effectively and in the company's interest.

4. Technical Advisor (TA)

This position is the key to the companies sustainability and vertical-integration of the system. It is essential that the company stimulate production by the SNL producer, to the highest level possible. To achieve this, technical knowledge covering all aspects of small-scale horticultural production will be required. This includes irrigation and systems maintenance, land preparation, crop scheduling, production practices including pest and disease control as well as post-harvest processing and storage. Complete knowledge of all these areas is not necessary in the initial stages, while CAPM assistance is available, but the incumbent must be able to assimilate and utilize available technical data to the advantage of the small-scale producers. It is through this position that all technical constraints will be directed for solution. The technical advisor will act as a horticultural resource specialist, supporting the production facilitators. He/she must become familiar with sources of technical and horticultural information and use them.

5. Production Facilitator (PF)

This position is the key to the sourcing power of the company, and provides the essential contact with the small-scale producer. The PF will provide a two way communications linkage, transmitting the information originating from the company's management structure to the SNL producer, and in turn, informing management about the producers' constraints and suggestions. The incumbent must have an ability to communicate well with, and maintain the trust and loyalty of, the SNL producer. He should begin with a technical background, roughly equivalent to that of an agricultural extension agent. On-the-job training through the company will ensure that this technical knowledge is reinforced. The PF will be required to live and work in the target community, and will work closely with the farmer-producers, meeting with each farmer two to three times per week throughout the growing season.

B. The CAPM Team

1. Project Coordinator (PC)

This position is essential for guiding the project in the proposed way and ensuring the successful introduction of the concepts to both the producers and government bodies. This position must be filled by a Swazi who has extensive knowledge of both the rural communities and government-level problems and objectives. The incumbent will work directly with the agribusiness specialist/Chief of Party, and will form the link between USAID/CAPM and the commercial world via companies' general managers.

2. Production Advisor (PA)

The PA will be the Swazi counterpart for both the CAPM expatriate horticultural and irrigation specialist. He/she will provide the link between the CAPM component and the middle management teams in the company structures who require production

assistance, the operations manager and production advisors. The incumbent should have a technical background, at least at a qualified technician level, with emphasis on practical as well as theoretical knowledge. His or her technical knowledge will be developed further through on-the-job training.

3. Marketing Advisor (MA)

The MA will be a direct counterpart to the expatriate CAPM marketing specialist, and as with the PA, will provide the link between the CAPM and middle management components of the companies requiring marketing input. Requirements for this position include, but are not limited to, commercial experience in a service or commercial field. Good communication skills are essential.

4. Field Assistants (FA)

This position falls under the CAPM PA and requires abilities similar to the company's production facilitator. The FA's task will be to act as field support for the small-scale farmers, providing two way communications between the company and the producers.

5. Agribusiness Specialist/Chief of Party (ABS/COP)

It is felt that the present position of the COP in the CAPM structure shall continue to be combined with the requirements of the agribusiness specialist. The ABS/COP will be required to liaise with all senior partners in this project: USAID, MOAC, and the company general managers as well as the CAPM project coordinator.

6. Irrigation Specialist (IS)

The need to improve farmer yields requires the dedicated services of a practical irrigation specialist. This intermittent position will liaise directly through the Swazi team counterpart of production advisor and to the technical advisors in the company structures. He will also assist in designing and monitoring structural improvements made to the schemes. It is essential that this position is filled by someone who has the ability to understand small-scale irrigators and their problems, and be able to communicate complex techniques at their level. The IS will report directly to the ABS/COP.

7. Horticultural Specialist (HS)

This position is essential for two reasons; primarily, to maintain the development drive into new crops and cultivars which is important for extending the season of production, and secondly, to ensure that sufficient and appropriate technical knowledge reaches the small-scale irrigators through the production advisor and field assistants in the CAPM Swazi team and to the company technical representatives, the technical advisors. A practical approach is essential, as is the ability to communicate complex concepts to all levels in the system.

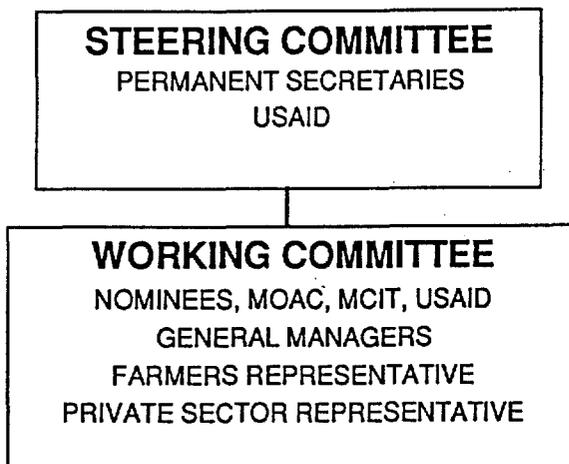
B. Marketing Facilitator (MF)

This position is critical to the successful development of the commercial interventions proposed, as marketing is one of the weakest links presently within the system. The MF must have the ability to understand the requirements of the market and be able to implement these on a small-scale system of production. He or she must be able to communicate the market's requirements to the producers, at their level, while maintaining quality and quantity requirements. He or she will liaise with the marketing components of the CAPM Swazi team and the marketing advisor. He or she will ensure that the information is correctly communicated to the field agents at all levels via the marketing managers. The ability to communicate well at all levels in this position cannot be overemphasized.

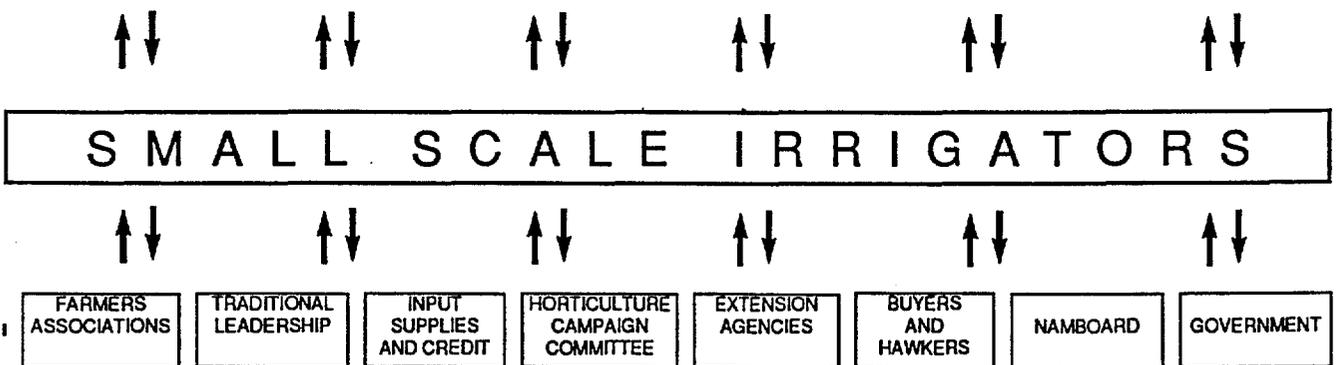
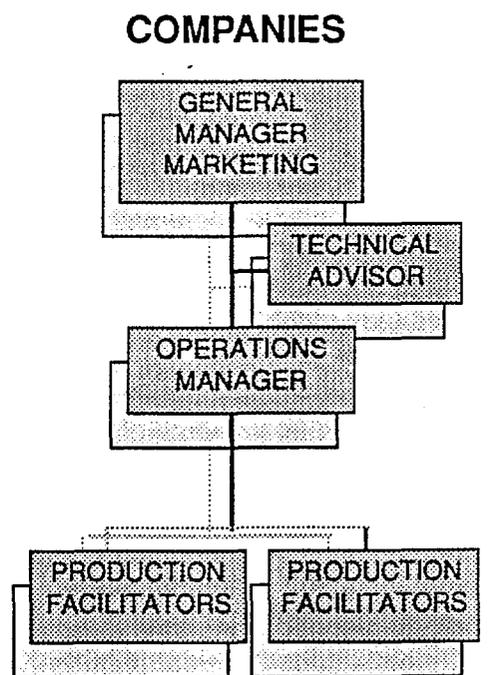
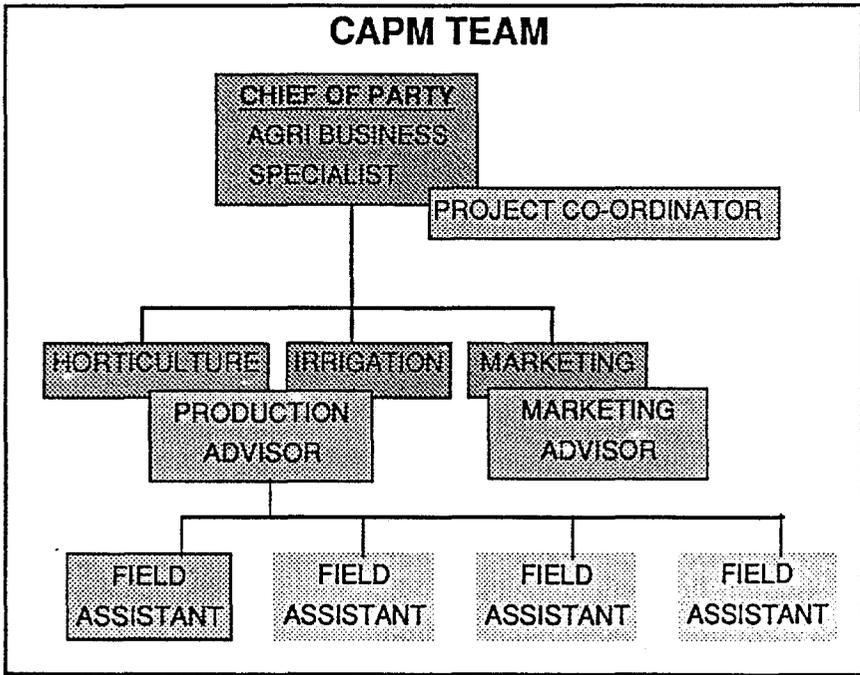
ORGANIZATIONAL CHARTS

POLICY AND DIRECTION

ORGANISATION CHART during Project Phase



EXECUTIVE



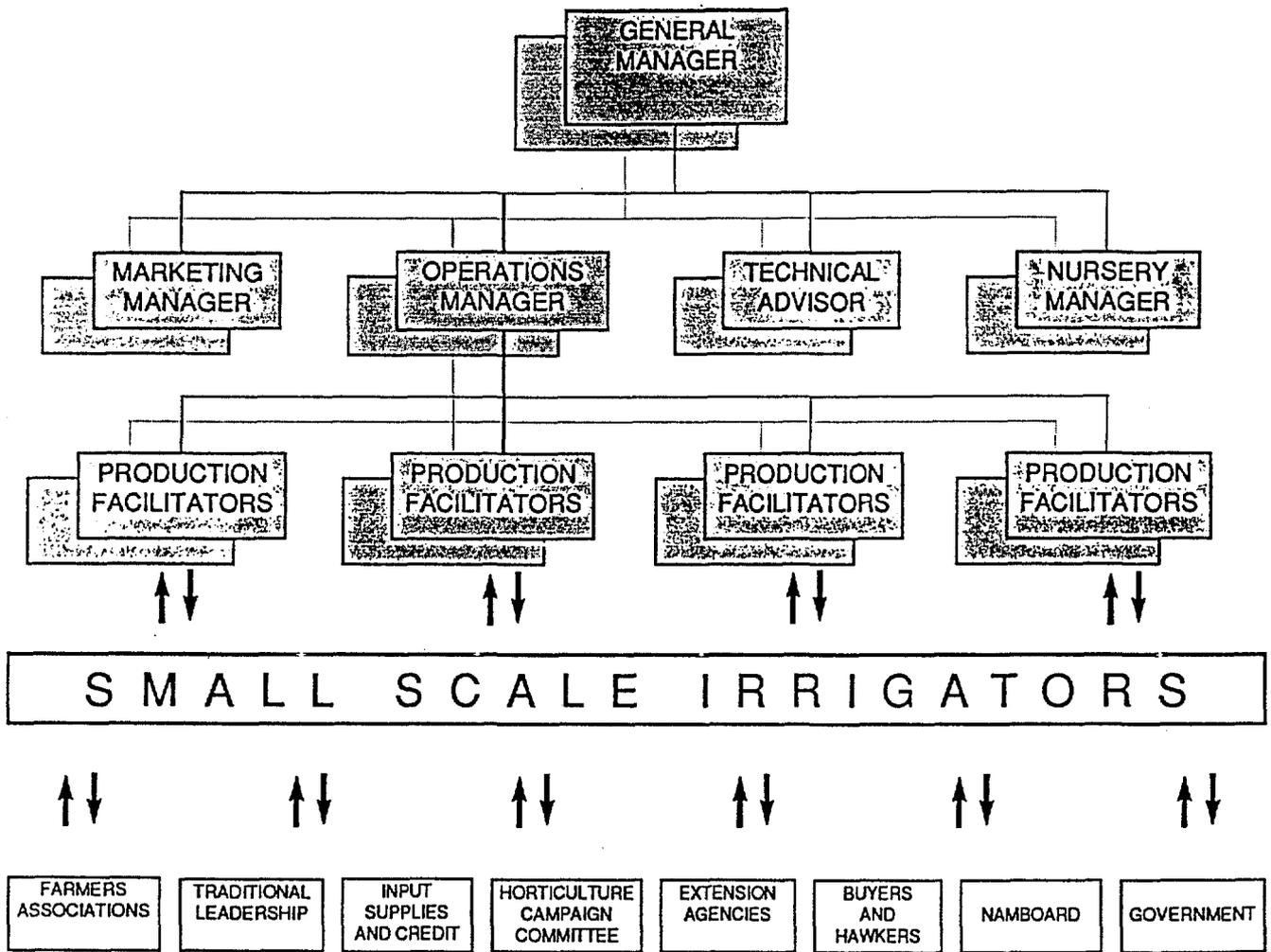
SWAZI NATIONAL PARTICIPANTS
 CAPM LONG TERM TECHNICAL ASSISTANTS
 CAPM TEAM

125

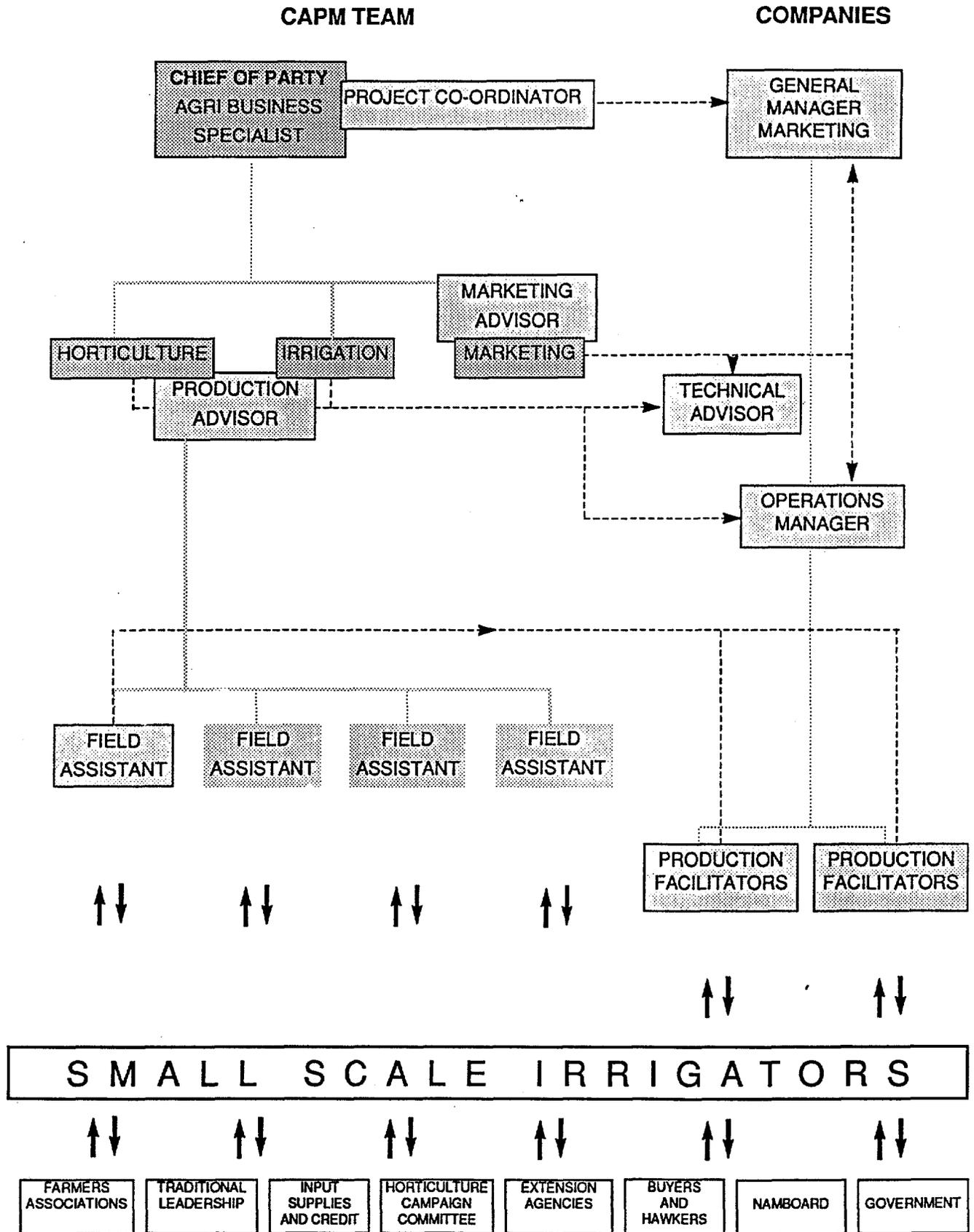
ORGANISATION CHART

after CAPM completed

EXECUTIVE

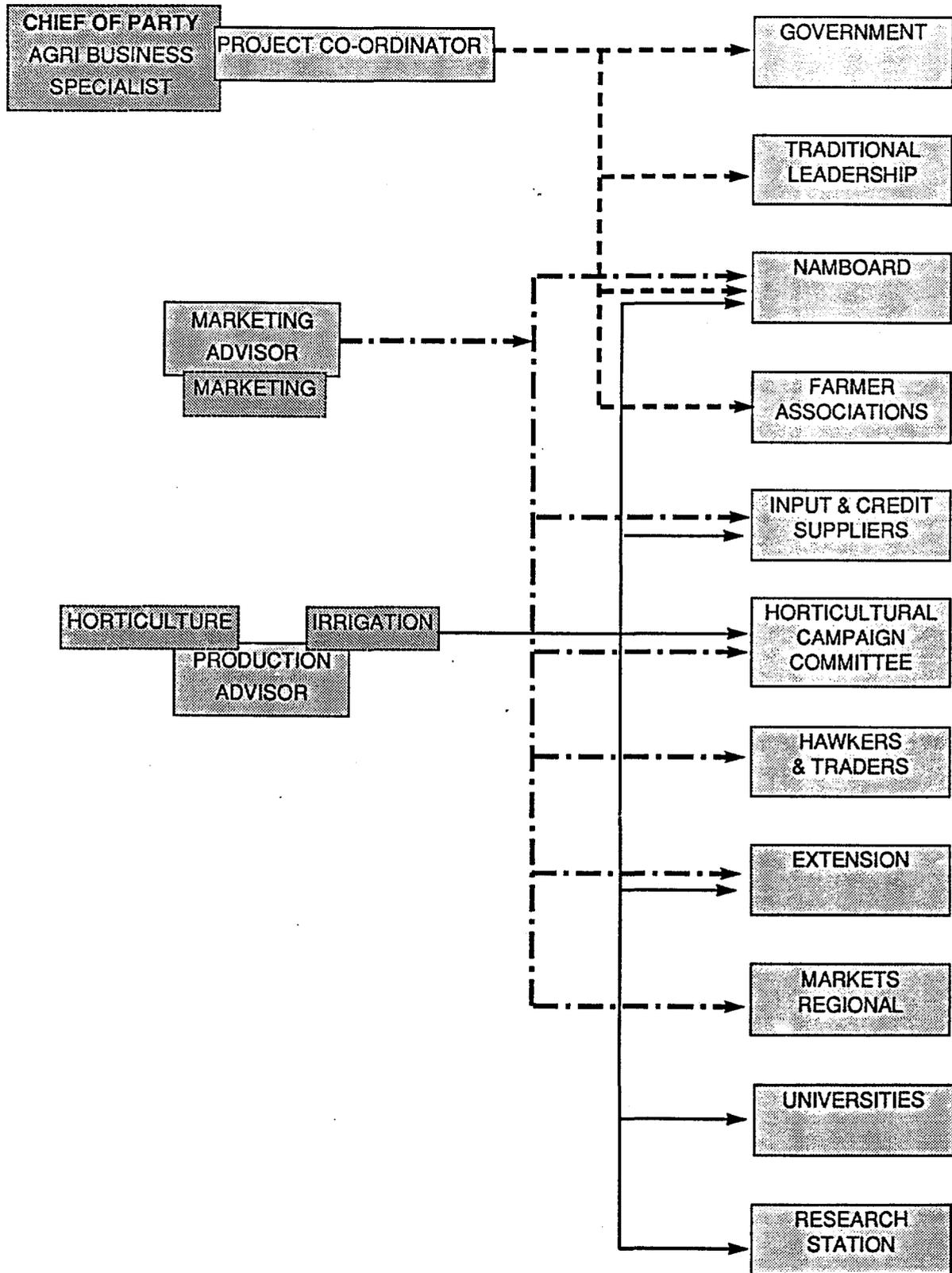


FUNCTIONAL RELATIONSHIPS



..... Direct line supervision
 - - - - - Adviser/consultant

CAPM GROUP LIAISON LINKAGES



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