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UPDATED SOCIAL SOUNDNESS ANALYSIS

COMMERCIAL AGRICULTURAL PRODUCTION AND MARKETING PROJECT

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and

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I. Introduction and Objectives of this Revised Social Soundness Analysis

This analysis concentrates on the various types of farmers on irrigated lands as the client group for the revised CAPM project. Consequently, the structure of Swazi agriculture and the MOAC are not the major focus. Rather, the current and potential participants are highlighted with reference to their farming and marketing practices, problems, and constraints. The marketing structures and facilities are also considered. Attention is paid to actual and potential aspects and difficulties of implementing the extended CAPM project. Additionally, particular consideration is given to gender issues.

The content of this SSA is based on current farmer surveys, Women in Development (WID) studies of Swaziland, CAPM and other donor-financed project documents, a rapid rural appraisal of CAPM farmers, interviews with CAPM staff and farmers themselves, and analysis of data on CAPM participants.

II. General Characteristics Of Farmers (By Type And Gender) On Irrigated Lands

Agricultural production in Swaziland is divided into farming of (a) Title Deed Land (TDL) that focuses on commercial production of cash and export crops of sugarcane, citrus, cotton and pineapple, (b) Swazi Nation Land (SNL) primarily for subsistence (maize) and cash (cotton), and (c) irrigated schemes for vegetables as well as maize and rice. The land tenure system has been extensively studied with SNL land occupying 60% of 10,000 square kilometers, while TDL covers the remaining 7,500 square kilometers (Black-Michaud and Simelene 1982, de Vletter 1979, 1987, de Vletter et al. 1983, Freund and Maphalala 1984).

Individual SNL is allocated by the chief to married men, but it is also usually inherited by the relatives of the homestead head. Women do not traditionally hold land in their own names, but sometimes act as guardians for their sons and often manage land while spouses/male relatives are engaged in off-farm employment. Chiefs also resettled people and allocated plots on many of the irrigated SNL schemes. Women may be allocated plots on irrigated schemes in their own names.

Irrigation from surface water for crop production began on TDL in the 1950s and spread to SNL in the early 1960s with most of the schemes being commissioned between 1968 and early 1980s. In 1990 there were about 42,000 ha area under irrigation with 41,000 ha on TDL and 1,100 ha on SNL (the total land area having irrigation potential is 244,000 ha). There are 24 government SNL irrigation schemes with a total of 700 ha with the average

holding size being 0.5 ha/farmer (other small schemes also exist, but have less commercial potential). Five schemes produce rice and several others produce cotton, but vegetables are the principal crops. A cyclone in 1984 damaged many of the schemes, but an IFAD project rehabilitated 12 schemes, CAPM, Phase II also assisted in upgrading some of the schemes.

There are approximately 350 TDL farms in use and an additional 650 registered, but not currently farmed (MOAC 1991). Individual SNL farms with irrigation total about 385 hectares and 877 households (USAID 1991, Annex S).

A. The CAPM Baseline Study

A baseline study undertaken in 1990 for the CAPM Project delineated the characteristics of Swazi smallholders and offered information about potential client groups (Robbins 1990). It was based on a ten week formal survey period with eight enumerators and a data processor. The study aimed to form a rural household baseline plus a commercial homestead profile and had a total sample of 154 farmers (87 women and 67 men). The author divided farmers into high and low commercial producers and defined commercial agriculture as "growing a crop or producing an animal product with the intention of selling it," while high commercial activity was defined as "the production of sugarcane, 6 or more bales of cotton, high levels of poultry or milk, or more than 200 crates of vegetables." The least commercialized farmers were women who obtained land from the chief to grow vegetables and were in associations, women farmers in production schemes were more commercialized.

The national figure for female household heads quoted was 21%, but this sample had only 14%. Women owned fewer implements, had smaller land size, less crop diversity, and lower sales compared to men. Women tended to rely on the agricultural extension agents for decisions about production, while men made decisions themselves. More men than women were in the high commercial producers category, but small numbers of female high commercial producers could be found everywhere. Households that did not have resident men were more likely to be in the low commercial category.

The findings showed that there were no cultural constraints to limiting commercial development, however, there were constraints of credit (especially for women where lack of credit and cash limited their expansion into higher commercial activity), and the need for additional parcels of land and for knowledge of markets. Sellers used all available markets, with farm gate retail sales being the most prevalent even though farmers said they preferred NAMBoard, because it took their entire marketable stock (Note: this contradicts subsequent findings discussed below). However, farmers did object to the uncertainty of their eventual sales price and delayed payments. Local and farm gate retail markets were employed by the predominately "low commercial farmer" who could set the price (although the buyer might not take all of the product). Few "high commercial producers" sold at farm gate (those who

did were women with limited transport). The high commercial producers relied on contracts, and they perceived competition from the Republic of South Africa (RSA) as being problematic.

The report noted that the crop that producers were unable to sell most often was vegetables, although the perception of a strong market existed among farmers. About 58% produced and sold vegetables, with the average quantity produced being 177 crates and the average sales being 169 crates. Farmers said the biggest constraint to production was lack of cash and inputs, followed by lack of water and poor soils. Only 2% mentioned shortage of technical assistance or labor. Few sex differences were seen in terms of the use of inputs, although women were less likely to get credit. Farmers in general at the lower end preferred to use cash.

The report stated that rural homesteads earned 60% of their total income from cash wages and less than 5% from agriculture, but in commercial homesteads agriculture was the primary source of income for 22% and the secondary source for another 27%. Farmers did not distinguish between income and profit, and even sound commercial groups and individuals lacked sound management practices. Forty percent of the high commercial homesteads had incomes of more than E5,000/year, another 38% reported sales of E1,000 to 5,000. Of the low commercial farmers, 50% had sales of less than E250/year and 94% had total crop sales of under E1,000.

High commercial producers were more typically found in the highveld and lowveld. High commercial producers tended to come from homesteads with larger holding size, all TDL farmers were in this category, but only 37% of SNL farmer were high commercial producers. These farmers hired labour, especially male labour (Note this contradicts subsequently findings discussed below) and obtained credit. These producers had their own transport and farm machinery, and had access to a telephone, scale and management factors greatly assisted outcome. The report noted that the highly active producers had solved more of their marketing problems than the low commercial producer, mostly by obtaining marketing contracts.

B. The Project Paper Amendment's Social Soundness Analysis

Carried out in 1991 as part of the PPA, 26 individual interviews were conducted with farmers, plus 25 small-holder irrigation schemes were observed in a rapid appraisal (Boyd-Clark et al 1991; USAID 1991). The report considered data from schemes, SNL and the Vuvulane Sugar Farms. TDL farmers were not mentioned. Only data for males were given; those for females must be calculated by the reader. Calculations show that women constitute 10% to 29% of homestead heads, that irrigation plots are usually allocated to elderly males, but that women constituted an average of 51% of the farm workers, and it

was noted that they "may perform an even larger share of the actual vegetable cultivation " The PPA used 1990 estimates of 1,472 irrigated hectares farmed by 1,757 households as its base.

It was suggested that CAPM's marketing firms could immediately begin to work in 9 schemes, but three would require repair of the irrigation systems, while in 6 the marketing firm could purchase vegetables "with relatively little technical assistance " Ten schemes were defunct There was some idea that vegetable production is traditionally a woman's occupation, but that men have taken it over as it became commercialized and now have the advantage Also, the report noted that it was "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" Women did manage the plots Two of the schemes observed were women-only, and judged to be less successful and therefore not recommended for CAPM participation

In this study, farmers mostly sold and preferred to sell their product to hawkers and neighbors, NAMBoard was disdained because of consigned vegetables rotting In general, farmers were not doing too well in marketing and with diseases and pests, water shortages and hail had also been problems The marketing problems included lack of transport, lack of buyers, and low prices received

The section of the report on social influences was quite informative in that it dealt with such issues as jealousy and factionalism, the role of the chief, and the commercial orientation of farmers The findings were that "small-scale vegetable growers have a semi commercial orientation"--that is, they sell, but have no real marketing strategy Individual farmers on SNL have had to cope with pressures of doing commercial farming on land they did not own, and that up until recently, was thought to be for subsistence farming Interactions with the chief in terms of delays in planting dates, tribute labor requirements, close contacts to avoid banishment and the like, could influence success in commercialization

Irrigation scheme associations were seen as possibly becoming "powerful positive forces for development" and an example of the one at Mpatseni was given (the current project does not use this scheme) It was suggested that this association was a model one and that CAPM should give training for the association members in terms of rules and strategies for conflict resolution, leadership skills, accounting, etc. Also noted was that CAPM should develop a Swazi Vegetable Association Grower's Association with area and nation-wide meetings and exchanges The section on training presented suggestions for a leadership training course for representatives from the ten schemes

C. Other Projects and Studies of Farmers with Irrigated Lands

The irrigated schemes have been the focus of a number of donors in addition to CAPM. Farmers have had about 20 years of continuous and multiple donor-funded projects as well as government extension in several of the schemes in which CAPM is working (IFAD 1993; Fritsch 1990). Comments on many of these irrigated schemes are given in Boyd-Clark et al. (1991) and Brosz and Grenoble (1991). However, discussions with the farmers revealed that with the exception of the "leaders," most scheme members could not accurately distinguish the various technical and financial services of each. Table 1 (all tables are located at the end of this Annex) compares farmers' knowledge of development activities by a number of different categories of farmers. Farmers in irrigated schemes and those receiving credit from the Swaziland Development Savings Bank (SDSB) were most aware, but only of some development activities. Only about half of the male household heads were aware of any development activities at all, while only about a third of female household heads were aware of any of these activities. The table shows that even though there has been continual presence of donor and government-financed assistance in some areas, only some farmers can specify what these are, and even they may only have a limited knowledge.

1. Chinese Agricultural Mission Projects

The Chinese Agricultural Mission (CAM) of the Republic of China first established a bilateral agreement with Swaziland in 1969 and has been working to raise productivity of SNL farmers through new varieties, production techniques trials, and demonstrations, mostly in maize, but also in rice and vegetables. CAM has been working in 5 schemes in the north since 1972 with four being currently used by CAPM (Mkhovu, Mashobeni, Mavulandlela, and Mgubudla) and one scheme in the central area (Embekelweni), where CAPM has farmers.

Data on total hectareage and total tomatoes hectareage were obtained from the CAM technical assistance person who resides in the Hhohho area and are given here for four of the schemes involving CAPM farmers, along with CAPM data on hectareage cultivated. Table 2 shows that in every case farmers grow additional tomatoes outside of CAPM's purview. Also, if the lower figures for total hectares are used, some of the schemes have little unplanted land.

2. IFAD's Smallholder Credit and Marketing Project

IFAD's project, the Smallholder Credit and Marketing Project (SCMP) was approved in 1984 and completed in 1993. It rehabilitated 12 schemes covering 267 hectares for the production of rice and vegetables for 519 farmers. A continuation is currently being negotiated (IFAD 1993).

Currently, owners of irrigated plots grow a wide array of vegetables (see below for the types and percentages). Twelve of the schemes under SCMP (four of which are used by CAPM farmers) provided estimates of tomatoes that yielded 25 MT (actual 15 to 25 MT) with a total production of 2,505 tonnes on 99 hectares. Of production targets set by this project, only tomatoes achieved the target (in fact exceeded the target--105% if 25MT is used). The report noted that tomatoes are the favoured crop and "some flexibility in the cropping patterns will be necessary to provide for rotation to avoid build-up of disease." (IFAD 1993 Working Paper No. V 38) Also noted is the competition for labour between commercial crops and subsistence maize, especially in the summer production season.

Scheme farmers prefer tractors for land preparation, although some use oxen and power tillers on irrigated, small plot. Timeliness in planting is important, but not all farmers can receive tractor or ox-plough services at "the right time," and of the 72% of farmers using tractors (IFAD 1993 Working Paper I 6), some have easier access than others. A recent analysis of maize yields, the staple, noted that characteristics of homesteads with poor yields included poor, shallow ploughing (presumably by oxen), male absenteeism, poor seedbed preparation, low plant populations, low and uneven fertilizer application, and poor pest control (IFAD 1993 Working Paper I 11).

Many of the same issues concerning the CAPM farmers have been studied in a survey of the SCMP schemes by the Monitoring and Evaluation Unit of the MOAC in 1992. The study addresses various constraints including labour, farmer's organizations, production, credit, marketing, and irrigation (MOAC 1992). Of the 300 homestead heads, 46 (15%) are female headed, 86% are employed, with 58% earning a living solely from farming. Although the bulk of the population is under 25 years of age, the majority of full-time farmers are over 50 years of age.

The data here are regrouped to give the four schemes that CAPM is working in (Mashobeni, Mkhovu, and Mgbudla in the north and Embekelweni in the central area), as well as the total for the 12 schemes. Table 3 shows that 60% of homestead heads are available for full time farming, but this ranged from 57% in Embekelweni in central area to 81% to 85% in two schemes in the north. Table 4 shows that 60% of the full time and 47% of the part time labour is carried out by women, men do 40% of full time, but 53% of part time labour. Full-time female labour predominates (71%) in Embekelweni and Mashobeni. Women account for 17% of actual plot owners, although they often manage plots for husbands.

Most irrigation systems are surface (77%), while the remainder (21%) are pumped (furrow pipe or pumped surface). Water availability is a concern due to unlined canals, small reservoirs, inappropriate systems, poor water management by farmers, and pipe shortages. The average size area under production is 0.791 hectares per farmer. Interestingly, the report mentions the common problem of the difficulty in knowing how much land was really

ANNEX D

planted or held as there are different units used including hectares, acres, steps, lines, and plots. (This is a problem for most CAPM farmers as well.)

The most popular vegetables grown are cabbages (79%), tomatoes (62%), beetroot (60%), green mealies (58%), and onions (53%). Also grown are spinach (43%) and carrots (42%). The report notes that green pepper (20%) and potatoes (17%) are not popular to grow, but pay the highest returns. Farmers prefer to grow vegetables in the winter season, because in summer (1) there are more diseases and pests, (2) there is competition for labour and land with maize and rice production, and (3) there is the problem of rotted product caused by water problems from excess rain. Because the farmers did not keep records, sold in small quantities, and used income in small daily increments, it was impossible to compute reliable returns.

The report noted that there was a greater demand for labour than could be obtained by the farmers, because of either scarcity or shortage of funds. About 60% employ labour, especially for ploughing, weeding, planting, and harvesting. Labourers are paid E3.20/day or E7.48/plot on average. Farmers mostly rent tractors for land preparation from the government hire pool and other farmers, oxen are used for discing and furrowing.

Some schemes are organized into cooperatives and associations with by-laws, memberships fees, securities, and shares. They have the power to discipline and expel members, but there are members who leave plots uncultivated, and the effectiveness of their discipline in these cases is unknown. Some schemes employ a night watchman, one is paying back a loan on a tractor, others have expenses for water pumps, contingency funds, and the chief's gift. Some rent power tillers to their members. A constraint is that tractors and power tillers are in short supply and late ploughing often results.

Farmers use a variety of input suppliers including the Central Co-operative Union (CCU), Farm Chemicals, supermarkets and general dealers, the preference is to buy from a supplier who delivers. Farmers use six types of fertilizers (2.3·2· (22), 2·3·2 (38), 2·3·4 (4), lime, urea and LAN and primarily 6 different insecticides (rogor, dithane, sevin, bravo, malathion, and copper oxychloride). Most farmers do not note the price of inputs or the quantity used. Sixty eight percent of farmers purchased inputs from the CCU shed (also see Table 6), but most of them (70%) mention availability problems and quality of the seeds (varieties out of stock or not available, poor germination, rotten seed). Difficulty in choosing the most appropriate seed is often experienced because of lack of technical advice and because the seller alleges that the seeds on hand are as good as the seeds the farmer wants.

There are a variety of credit sources available to the farmers including the SDSB, that accepts cattle as collateral, IFAD, European Development fund, People's Participation Fund, and the Women in Development Fund. The report noted that farmers complain about lack

of funds, but few want to borrow, and those who do usually ask for small sums (E100 to E500), which is below the ceiling set by the bank, to supplement what they have available at the time. Most of the funds are used for seasonal inputs (83%) and buying farm implements, although paying labour, school fees, building a house and buying cattle are other uses. Many farmers are against credit because "they are bitter about credit institutions" (especially the SDSB). Reasons given for not obtaining credit are the lack of collateral, lack of sufficient information about how to get loans, fear of indebtedness, and lack of marketing facilities. Repayment rates are high, however. "Most farmers borrow as individuals and only a few practice group lending. This is surprising because farmers in the schemes are organized into cooperatives and associations. Some farmers, however, are aware of the benefits of group lending" (MOAC 1992 vii).

The report notes that women farmers have particular problems of being discriminated against because of their legal status of minors. Generally, women lack knowledge of how to get credit, and both men and women in general have no idea as to whether or not women can obtain bank loans (65%), 14% say women have no access and only 14% comment that women can borrow money from banks. Those who are knowledgeable tend to note that there is no discrimination by gender in terms of collateral and conditions. However, in fact, collateral is a problem for women, since traditionally, cattle are registered in the man's name and banks in fact have more stringent conditions for women in that "they need the husband's consent and if not married they need to be accompanied by an extension officer and/or a male member of the family" (MOAC 1992 20).

The SCMP provided packing sheds for each scheme, but the report noted that for them to operate efficiently, "there must be a well established marketing chain and necessary equipment and facilities such as packing material and cold storage" (MOAC 1992 25), but that these were lacking. The farmers prefer to sell product on the farm and more than 50% of farmers sell directly to buyers, however, the sheds are used for storing inputs and produce, holding meetings, and weighing rice. In some schemes, the sheds are not used at all, in Embekelweni it is because of the fear of theft. (Although not mentioned in the report, farmers in the current CAPM schemes who were interviewed note that all the sheds have been burgled and recently in Mavulandlela E11,257 was stolen from the safe.)

Farmers sell in bags, cases, tins, basins, and plastic bags, although some sell in bulk and have little idea of whether they are underestimating or overcharging. Fifty four percent sell to hawkers, 52% to neighbors, and 37% to Nokwane. The schemes near the Manzini/Mbabane/Mahlanya corridor sell to hotels, colleges, shops, and town markets. Many farmers (65%) express dissatisfaction with Nokwane market, and even those who were satisfied say it is the last resort, because of low financial returns. The study tabulates expected and received revenues, farmers receive 58% of their expectations! Farmers did not understand consignment and they thought they got cheated because of being charged

commissions, transport costs, and market fees.

The difficulty of increasing throughput is discussed as well as the high costs because farmers are expected to pay for transport services, packing, and marketing fees. Also, much of the product sent spoils. Thirty seven percent of farmers failed to sell all their product and reasons included glut, inferior quality, farmer location ("those at the bottom of the scheme do not get customers regularly"), and lack of transport (MOAC 1992 27).

Farmers report the following as marketing constraints: (1) that there is "no source of marketing information which will give them the best prices" (MOAC 1992:27), (2) there are delays in payments which cause late planting, and (3) there is the lack of collection, packing materials, and organized transport

The MOAC survey evaluated the SCMP project, but also informed the farmers that the project would end. Eighty five percent of the farmers were not aware that the assistance provided by the project would end and only 10% "said they will be able to stand on their two feet," because they have associations (MOAC 1992:29). Farmers said the project should be extended "because the sheds do not have electricity, not all farmers have taken training, and the benefits of the Project have not yet been realized" (MOAC 1992 29)

Recommendations were made and some are repeated or paraphrased here as they are relevant to the CAPM project

- "Associations and/or cooperatives need to be strengthened by soliciting the support of the chiefs" (MOAC 1992: x)
- Suppliers should provide transport
- Associations and/or cooperatives need to buy their own tractors.
- A credit guarantee scheme by government could help solve the gender problem to facilitate loans for women
- "Farmers must consider signing a legal agreement with certain buyers for a percentage of their produce so that they can be assured a market for some of their produce" (MOAC 1992: x1)
- Nokwane agents should pay cash, and "be obliged to buy the local produce first and only supplement with produce from neighboring countries" (MOAC 1992:x1).
- Training on record keeping is needed.
- "A common unit of measurement must be used for measuring. produce" (MOAC 1992:x1).

3. Government Extension

SNL farmers agricultural receive extension with a ratio of 1 extension worker to 260 homesteads with a total of 164 extension workers. The structure of the Service is based on the "T and V" system that began in 1983. A recent conclusion is that after the Rural Development Areas Programme was completed and the funding reduced, that extension services

"suffered from a severe lack of operating funds which affected morale and mobility. The problems encountered during the RDAP through lack of acceptable messages and advice to extend to the majority of the farmers still persist" (IFAD Working Paper No. 1 27).

Currently the service focuses on the more privileged farmers who have good soils and technology supervised by the CAM. There are 6 horticultural specialists in CAPM areas who are currently being upgraded in their skills by the MOAC. CAPM scheme farmers favourably noted some assistance from these workers. However, there is little linkage to research endeavors or development of technologies to meet the needs of various categories of farmers. The IFAD project continuation proposes improvements in current training courses for extension workers that includes "irrigated horticultural crop agronomy." Additionally, the formation of farmer groups by the extension workers (for water delivery and extension services including credit) is planned.

D. Marketing Channels for Vegetables

The marketing of fresh produce is handled by specialized wholesalers, itinerant traders and retailers. It is estimated that there are 200 to 300 itinerant traders involved in fresh produce marketing. Most of them buy directly from the farmers, usually without prior arrangements. They also buy from farmers and markets in RSA. A survey collected by CAPM, and analyzed by this author, shows that these vendors and hawkers have little loyalty to growers, are not particularly focused on the Swazi producer, and will readily supply from RSA sources.

The sellers for their part try to maintain a number of outlets (See the discussion under Section Annex D, III-B below on current CAPM farmers). A recent evaluation shows that credit clients and irrigation scheme farmers had four to six outlets, including NAMBoard and Nokwane markets (now also through CAPM), traders (both those who came to the farm and those where product was delivered), neighbors, and other markets (Doughty 1992). These are given in Table 5 specifically for vegetables. SDSB credit clients and irrigation scheme farmers both produce more product than the other categories, but also utilize a variety of markets other than local sales.

NAMBoard operates Nokwane Fresh Produce Market, where CAPM has worked with Philani. Floor trading involves the charging of a commission of 5% to 7.5% , and the agents pay a 5% fee of the value of the produce traded to use the facilities. The market has flourished and the throughput has increased from 7,400MT to 12,400 MT between 1988 and 1991 with an increase in value of E1.3 to E9.5 million in the same period. The major problem is that while being financially viable, the market has not yet truly fulfilled its mandate of marketing Swazi products, especially from smallholders. Major reasons include (1) preferences by the agents to buy from RSA because of ease of getting large consignments, rather than dealing with many small farmers, (2) agents lack marketing contracts with small farmers, (3) agents are exempted from import duties; (4) agents can pay cash, add their mark-up, and sell to Swazi consumers; and (5) Swazi smallholder produce, unlike that from RSA, has not been graded and packed (IFAD 1993 Working Paper III.13)

Smallholders and itinerant traders view Nokwane as the market outlet of last resort, and they dump product that cannot be sold elsewhere, which may rot, frustrate the agents, and irritate the farmers who may not get paid or receive very low prices.

The Central Cooperative Union (CCU) facilities are currently serving both as places to secure inputs and CAPM is using its sheds as collection points in the southeast areas (Siphofaneni and Sithobela). Although previously financially insolvent, it has been rehabilitated, but problems persist. Among them are

unorganized and scattered smallholders, which renders produce gathering expensive, lack of Nokwane market--smallholder linkages,.. and inability of smallholders to meet formal market standards of packing and presentation (IFAD 1992 Working paper III 21).

The MOAC survey described above noted farmers difficulties with CCU input supplies, especially poor seed quality and lack of preferred varieties. Table 6 gives the percentage of homesteads and where they obtained inputs in terms of the CCU sheds, private traders and other sources. The various categories of farmers are divided mostly into the CCU and private traders (Doughty 1992)

III. Findings About CAPM Farmers And CAPM Operations

A. Analysis of Current CAPM Farmers by Gender and Type

1. Participation

The project currently has a total of 138 farmers (based on lists generated at the beginning of the winter production season, March 1993) (It should be noted that during the season, farmers may have been added or dropped) For this analysis the data are divided into scheme, individual non-scheme Swazi Nation Land (SNL), and title deed land (TDL) farmers. Table 7a shows that 27.5% of current total CAPM participants are women. Women constitute 29.9% of scheme farmers in the north and 66.6% in the central scheme area, whereas the individual SNL and TDL category has only 10% women in central and 0% in the southeast areas (Previously, there were some women scheme farmers in the southeast, but the scheme was dropped from CAPM for this season) Considering the data by scheme and non-scheme farmers, 33.9% of scheme farmers are women, but only 3.4% (1 TDL farmer) of non-scheme farmers is a woman.

Table 7b shows that CAPM farmers account for 109 of 193 farmers (56.5%) in the scheme areas where CAPM is working; 32.6% of them are women. Comparable figures for individual SNL and TDL farmers are not available. However, the Social Soundness Analysis for the PPA gives a figure of 377 households with irrigation (with women constituting at least half, if not more of farm workers) and MOAC reports 350 TDL farms in use, hence, the 29 CAPM farmers who make up both individual SNL and TDL CAPM farmers are but a small fraction (2.3%)

Table 7c disaggregates the number and percent of men and women in all the current schemes that CAPM is working. Women constitute an average of 32.6% of all scheme farmers with a high of 47.1% in Mavulandlela, one of the areas where the rapid rural appraisal was carried out (see below). Since CAPM will require greater volume of product, more scheme and non-scheme farmers will undoubtedly be brought into the project. Sensitivity to the issue of increasing the number of women in general (as well as in relation to their proportional numbers), and strategies for doing so should be addressed by the project. Additional investigations are necessary to determine the actual deterrents; the literature abounds with cultural constraints, yet women do constitute 32.6% of scheme participants. Also, actual deterrents need to be studied to ascertain if there are limitations for women to have further agricultural intensification in terms of obtaining credit, increasing hectareage, improving irrigation, and remedying labour shortages.

In order to participate in CAPM, farmers must have irrigation. Scheme farmers already have furrow irrigation (drip irrigation is currently being installed at Embekelweni scheme

in central area using Government of Swaziland funds) However, non-scheme SNL and TDL farmers have used CAPM to assist them in obtaining loans to increase the amount of their land under irrigation or to upgrade their systems. Excluding the current Embekelweni scheme upgrade, Table 8 shows that 10.9% of the total farmers in the CAPM project have added to or upgraded their systems. Non-scheme SNL and TDL farmers have taken advantage of CAPM to do so in central (50%) and southeast (47.4%) areas.

2. Labor hired

Calculated in Table 9 is the number and percentage of farmers who hired labour and obtained credit because of CAPM. CAPM data show that 23.2% of farmers hired labour, with the largest percentage being in the southeast (52.6%) and central areas among non-scheme SNL and TDL farmers. A total of 130 persons were hired by 32 CAPM farmers. Scheme farmers only hired 1 or 2 compared with individual SNL farmers who hired 2 to 5 and TDL farmers who hired 5 to 15 labourers.

3. Credit facilitated by CAPM

Table 10 shows that the farmers who obtained credit were almost exclusively in the southeast where 52.6% of the farmers obtained bank loans (this explains their irrigation additions and upgrades (individual SNL farmers mentioned this type of assistance from CAPM very positively during the rapid rural appraisal, while scheme farmers seemed less interested--see below).

4. Land under CAPM production

It should be noted, however, that farmers do not use all of their irrigated land for CAPM production either because they allow some to be in fallow, or because they are cultivating other non-CAPM crops. Data in Table 11 shows that scheme farmers in the north put 51% of their land in tomatoes while central area scheme farmers only put 24%. Some of the latter refused to plant because they had not been paid for previous production. Individual SNL farmers put 44% of their land in CAPM crops, while TDL farmers, who have large holdings, put only 7%. These figures differ significantly from those collected by CAM (Table 2), but CAM totals are for the entire year and include both summer and winter production seasons. Table 12 shows the differences between what CAPM has programmed and what farmers have actually planted. Farmers in the north planted 77% to 78% of what CAPM programmed them to plant, with women planting more than men of their total hectareage (63% compared to 49%). At the scheme in central area, men planted 63%, but women only 27%, as they were unhappy about non-payment for previous crops. Individual scheme farmers planted 62% of what was programmed for them. Male TDL farmers planted 53% and the one woman planted 83%.

5. Income from CAPM crops

An indication of income changes between the baseline and current situation was calculated for each crop based on estimated yields and prices given in the technical section for prices of CAPM crops. It should be noted that there is still one more planting expected for most farmers, and the final average incomes will be higher than those given in the tables. Table 13 provides the average incomes, yields, and hectares for scheme, non-scheme SNL and TDL farmers by gender for tomatoes from baseline through the three production seasons of CAPM. In the baseline, the yields of 12 MT for scheme farmers and 15 MT for non-scheme SNL and TDL farmers are used. These increase to 18 MT and 20 MT, respectively, as a result of CAPM. Incomes for male scheme farmers have not increased from the baseline, although the conditions of drought and hail for winter 1992 and summer 1992 undoubtedly contributed. As there is yet another planting in the programmed production for the winter 1993 season, the incomes will in fact show an increase over the E1,733 in the table. The women's incomes have increased more than the men's. It remains to be seen if this gender difference is real or an artifact of incomplete data. Individual SNL farmers' incomes have increased from E3,030 to E4,848, which will probably be higher and a significant difference. The data for the one male TDL farmer are interesting, as it is the same farmer in the baseline (25 ha and E1,136) and currently (2 ha and E12,120). His hectareage increased eight-fold, while his income increased by 10 and a half fold.

The data for green peppers given in Table 14 show significant increases for all farmers in all categories and for both men and women. Table 15 gives the data for sweet corn, which with the exception of one scheme farmer, was not grown in the baseline nor in the previous two production seasons. Although total income appears good, there have been problems with disease and with marketing and lower prices, which have in fact lowered yields and income. Both these tables should be recalculated at the end of the current production season to give final figures for the winter 1993 production season. Additionally, total income from each farmer for all CAPM crops grown in each production season should be calculated, but this was not possible here.

B. A Focused Rapid Rural Assessment of CAPM Farmers

A rapid rural assessment (RRA) of a sample of farmers participating in CAPM was carried out specifically to assess the impact of the CAPM project on the farmers. The RRA was a brief, but focused exercise to both learn about the farmers' methods and needs and to allow them to assess the impact of CAPM on their farming systems.

The data were collected from the three areas that CAPM is currently working in, and recognition was given to crops grown, and type of farmers based on kind of land holding. Irrigated scheme farmers in the north and central areas were grouped together, as were

individual SNL farmers in central and southeast areas and TDL farmers in central and southeast areas.

1. The rapid rural appraisal sample

(a) Group irrigation scheme farmers growing fresh market and Nema-1400 tomatoes, sweet corn, and green peppers were interviewed in three of 9 schemes--in the north at Mkhovu and Mavulandlela and in the central area at Embekelweni (n=12, 5 male and 7 female; this is a sample of 11%). Scheme farmers have limited amounts of irrigated land and little room for expansion or rotation. Diseases/insects on tomatoes are limiting factors in production as a consequence. These farmers have small hectares, but are commercially oriented because of over 20 years of project enterprises and experiences--e.g., through IFAD projects and Republic of China extension assistance. Sales from primarily tomatoes and other vegetables provide the major income source for the farmers in the north, while off-farm/non-farm income sources are larger in the central area.

(b) Individual farmers who have irrigated their Swazi Nation land (SNL) (n=5, all male; this is a sample of 26.3%) grow tomatoes (fresh market and Nema 1400), sweet corn, and green peppers as a result of CAPM. These are located in Malkerns in the central area and in Siphofaneni in the southeast area (two of several areas where CAPM is working). All CAPM farmers in this category are men.

(c) Individual farmers who own irrigated title deed land (TDL) (n=4, 3 male, 1 female; this is a sample of 50%), grow tomatoes (fresh market and Nema 1400), sweet corn, and green peppers. They are located in the Malkerns and Sidvokodvo in the central area and in Siphofaneni in the southeast area. All are men except for one woman in Sidvokodvo.

2. Findings

(a) Reasons for joining CAPM

All farmers joined the project because of marketing considerations primarily. For scheme farmers technical assistance was a second priority, while non-scheme SNL farmers were also enticed by their loans being facilitated.

(b) Participation in CAPM services (i.e., training, credit, technical assistance)

Virtually all scheme farmers have taken all the courses given in their area (see Table 3), while only a fraction list another project service (credit--two farmers). There were no gender differences. All farmers were invited to training events and SNL and TDL farmers have had some training, although less than scheme farmers, but they also mention the receipt of seedlings and credit as services received. The woman TDL farmer is hoping that CAPM can facilitate a loan for her and she particularly appreciates the technical advice of the FA,

although at times she does not follow CAPM's technical recommendations.

(c) Other services wanted from CAPM

Both scheme and non-scheme SNL farmers want support for their farmers' associations; these were their first and second reasons respectively. The type of support they imagine relates to transportation to attend meetings, assistance with drafting the constitution, and facilitation of substantive matters such as marketing. SNL and TDL farmers' first response, however, was a request for more technical assistance (for diseases and pests, water management, production, and marketing).

(d) Changes in production as a result of CAPM

Scheme farmers mentioned more changes than non-scheme SNL farmers who have more changes than TDL farmers. Fifty percent or more of scheme farmers mention the programming of crops, changes in inputs, shift to new crops as the 1st, 2nd, and 3rd most important changes followed by changes in cultural practices (particularly plant spacing) and the receipt of higher yields. Non-scheme SNL farmers mention changes in grading practices, the shift to new crops, more inputs and cultivating larger areas in descending order. TDL farmers note only the shift to new crops and improved technical assistance.

(e) Changes in labour as a result of CAPM

Both the non-scheme SNL and TDL farmers have had to hire more labour, especially for harvesting and grading, as a result of CAPM, whereas the great majority of scheme farmers have had no increase (only two farmers increased their hired labour) and mostly use their own and some family labour. There is a particular system in Embekelweni of groups of four farmers planting and harvesting each person's field in turn.

Some farmers have definite preferences towards hiring men rather than women while for other farmers, it is the opposite in terms of permanent labourers. In general, most hire both sexes, but there is a tendency for women to be hired for harvesting. Scheme farmers tend to pay in kind (mostly produce not taken by marketers), while non-scheme SNL and TDL farmers mostly pay in cash.

(f) Programmed production

Scheme farmers appreciate the programmed production and see its results. However, they do not think they can do programmed production on their own and have doubts as to whether or not a farmers' association or organization could coordinate this aspect. They see any management by peers as problematic.

(g) Market channels and strategies

Scheme farmers have difficulty distinguishing NAMBoard and CAPM marketing services; some farmers are likewise confused about CAPM firms and FAs as market channels.

However, a single discussion with the farmer is not enough to elicit this information carefully enough. All farmers use a number of marketing channels (NAMBoard, CAPM and hawkers and vendors are used by all farmers). However, only scheme farmers also sell to Indian traders. Only some of the SNL, but all the TDL farmers have their own vans, while none of the scheme farmers do. A few scheme and TDL farmers also had contracts with supermarkets.

Farmers strategize to supply all sources with product. They balance off price, immediate versus delayed payments, and whether or not all or part of the product is taken. CAPM is presently the second choice with some scheme farmers, who prefer the Indian traders who take everything for a lower price, while other scheme farmers prefer hawkers who pay immediately and the farmer is able to set the price. In this case, the hawkers only take part of the product, and the farmer does not have to grade the product

(h) Advantages of CAPM

Scheme farmers perceived marketing access and assistance as the overwhelming advantage of CAPM with production support and programmed production being mentioned to a much lesser degree. Credit was relatively unimportant with some farmers noting that they were happy that the project did not require them to take inputs on credit, so there were no inputs to repay. These farmers have long term experience on schemes to produce vegetables and other crops, however, many cannot distinguish between CAPM, and previous programs services of IFAD and Chinese funded projects. A number of farmers mentioned that it was too soon to tell and that CAPM was still on its best behavior (as reflected in the quote from the woman tomato farmer)

Drought and other weather conditions, have undermined some of CAPM's efficacy. It should be noted that those farmers who do understand all the services available, seem to obtain more services and have better results. No gender differences were observed, except that married women in the scheme in the central area are not interested in getting credit because their husbands' non-farm income is used to purchase inputs. This is not the case of scheme farmers in the north. Some women there appreciate getting credit in their own names (since at first credit was only given to the husband).

By contrast, the SNL farmers view both marketing and technical assistance as being important. They mention that CAPM knows more marketing channels, including South Africa, which they do not have access to. The seedlings, training and encouragement from CAPM are highly valued. For some, the assistance of CAPM in getting credit loans is the major advantage. Two farmers mentioned that the time to receive bank loans was greatly decreased because of CAPM's assistance compared to their previous experience. An added benefit is in terms of a new visibility of these farmers, it was noted that the MOA now knows about these farmers because of CAPM ("the Minister himself has walked on these

lands").

TDL farmers also value the production assistance and assistance in obtaining seedlings given by CAPM, as they do not have extension agent advice. Two farmers have had loans facilitated by CAPM. For some, the vegetable crops are new and they are enjoying the regular field visits from CAPM's field assistants. Still others are skeptical and say it is too early to tell if CAPM will produce the results they expect.

(i) Constraints and problems with CAPM

All farmers see both marketing and production problems that may not be solved by CAPM. In terms of market problems and constraints, scheme and non-scheme SNL farmers are concerned about delayed payments, grading, and not understanding marketing firms. Scheme farmers are worried about not being able to market all of their product and receiving low returns, while non-scheme SNL farmers note the lack of competition for the crops produced under CAPM and that it is too soon to tell if there will be problems. This latter statement is echoed by the TDL farmers, who are also worried about market glut, price fluctuations, and delayed payments.

Farmers perceive production problems as secondary, although all farmers worried about diseases and pests. Scheme farmers have less land to rotate crops and to put in fallow, and diseases on tomatoes are increasing. Scheme farmers are particularly concerned about the costs of inputs and seeds, their lack of knowledge, access to inputs and crop rotation. SNL farmers are concerned about spacing and yields, with one remarking that he does not like programmed production as it is too restrictive. The only problem mentioned by a TDL farmer has to do with hopes that CAPM will assist with a loan. Scheme farmers also mention transport and credit as constraints, and non-scheme SNL farmers mention credit and CAPM staff turn over as being problems.

(j) Constraints external to CAPM

Both scheme and SNL farmers cite unreliable markets and vendors as marketing constraints for their non-CAPM crops. Scheme farmers are also constrained by lack of farm machinery (they have to hire tractor services and share machinery such as the rotovator that breaks down) while SNL and TDL farmers are more concerned about water and irrigation systems, but have their own farm machinery. In fact, the irrigation system in the schemes is communally worked on, upgraded by CAPM and other projects, while SNL and TDL farmers, who have a great deal more land than scheme farmers are always strategizing financially as to how to bring more land under irrigation, or to upgrade from furrow to sprinkler or drip systems. Both scheme and SNL farmers see diseases and pest as constraints, while TDL view transport for their non-CAPM crops as a constraint.

(k) Farmers' associations

Scheme farmers are accustomed to farmer associations, although there have been problems with management and handling of funds. Previously, credit was given to one scheme association and defaults resulted due to poor production by some members. As a consequence, the association owned vehicle and tractor were taken to repay the loan.

Scheme farmers in the north are enthusiastic about the packhouse and have great hopes that it will provide "complete" market facilities and additional marketing options. However, they have concerns about transport of product from the other schemes to Mkhovu where the packhouse is located. They also think that there must be extensive training and support to the management system to sustain the packhouse.

SNL farmers have less experience with associations and their organizations are more rudimentary and still developing. All remarked that few farmers attend meetings and that there is not much organization.

3 Summary

Scheme farmers see the advantages of CAPM in terms of helping them with marketing; production aspects are secondary, probably because they have received technical assistance from the previous projects and from government extension agents. All see problems with late payments and transport. There is the strong notion that all marketers should be supplied and multiple outlets may still be necessary for CAPM farmers, especially since they also market other crops as well.

Scheme farmers perceive themselves as doing commercial enterprises, but their production is circumscribed in terms of expansion by the size of the scheme (a few farmers did increase their land for CAPM crops by renting an additional plot from others). It is possible that continued cultivation without much rotation will cause declining yields. It should be determined as to whether or not more farmers could participate in producing CAPM crops and if there are additional crops to rotate with tomatoes (that are not in the same family group such as peppers).

Scheme and some individual SNL farmers have a limited range of understanding about the functions, methods and purpose of CAPM. Some think it is a marketing firm. Others think it is there to help with transport. Training on the nature, organization, and scope of activities (of projects, programmes, firms of CAPM) is necessary to clear up misconceptions.

Individual SNL and TDL farmers have a greater capacity than scheme farmers for increasing production by increasing their hectareage under irrigated cultivation. These farmers mostly are independent of each other, and not linked to any network or association. TDL farmers

could be linked up into a farmers' association. These farmers are attuned to the market, understand and feel market shifts and gluts, however, they do need technical production assistance. They are able to strategize to obtain better prices and do not have to sell at the farm gate. CAPM has less effect on them in terms of production advice and crops, because they are already cultivating many crops and large areas.

IV. Recommendations For Enhancing Project Success

A. Training

Scheme farmers confuse the project services offered by CAPM, government extension, and previous and on-going IFAD and Chinese-funded projects. They are therefore likely to confuse information about the packhouse and how it is linked to the farmers' organization and to the Management Firm. Therefore, training sessions are needed that carefully explain the types of projects and services that exist. Currently, the seven board members of the associations (representatives of the schemes in the north) have much greater knowledge of the types of project services than the other farmers. Training that explains the notions of "value-added" through grading and packing, selling on consignment, marketing fees, etc., needs to be developed, and attention paid to having all farmers, not just the leaders and male farmers, attend the sessions.

Farmers also need training sessions on (1) crop rotation and (2) record keeping and farm finances. The development of a simple system that farmers can use to keep track of inputs and outputs would be beneficial in general and in developing a commercial mentality.

B. Farmers' Organizations and Packhouses

The farmers' organizations to operate packhouses need careful structuring and nurturing. Detailed management training is required on how to organize and operate such an organization. Issues covered should include information on:

1. How to structure representation between the schemes in the north and between men and women on the board and in committees or governing bodies. Women should be represented, and unless there are strategies for including them, it is unlikely that many (or any) will be elected. (An organization in Embekelwani would undoubtedly contain women members as women members are the majority.)
2. How to operate a small business enterprise which would include keeping books and records of members' production and sales.

3. How to get value-added by correct grading, packing, and business practices

Several issues will need special attention. In the north with scheme farmers, transportation between Mkhovu (where the packhouse is located) and other schemes in terms of meetings and product collections is likely to be a problem. To facilitate collections and payments, the possibility of having telephones should be explored. There is already one telephone at Mkhovu in the shed across from the packhouse. The project or GOS should consider expending some funds for communication networks to facilitate marketing activities in CAPM areas. Since roads are often poor and individual farmers and schemes scattered from the packhouse and markets. Therefore, collection and information for buyers must be facilitated by communication. By comparison, all large, commercial farmers have telephones that facilitate their contact with market agents, buyers, and input suppliers.

It should be determined as to how the Indian traders would use the packhouse to source (Individual SNL and TDL farmers noted that when these traders were asked to make a contract commitment, they refused and did not return to the area.) In the northern area, would the trader who operates there still hire a scheme farmer as a sourcing agent, as he does at present, or would he go directly to the packhouse? Would the packhouse obtain the commission? Would there be some resentment from the farmer presently receiving this commission?

In the central (Embekelweni) area, the feasibility of having an on-site packhouse should be examined, however, the proximity to NAMBoard must be considered as well. A closed shed built by the IFAD project does exist there, but farmers note the burglary problems.

Scheme farmers both in the north and central areas have become dependent on donor-financed assistance and their ability and confidence to form independent organizations with business functions will have to be developed. They mostly come together for irrigation maintenance or farm machinery rentals. Another severe problem concerns those who have been hired through the SCMP as secretaries at the individual packing sheds. Accusations of mis-handling funds have occurred, and careful attention needs to be paid to persons hired by the farmers' organizations in any capacity.

Individual SNL farmers in both the central and southeast areas need extensive assistance in forming their farmers' organization in terms of its constitution and by-laws, as well as the practical operation of turning an organization into a business. These farmers are scattered, and only a few have transport. Whereas they can take a bus or other transport to attend a meeting, it is inconvenient and time-consuming, and it is one of the reasons why the limited type of association they presently envision is not yet underway. Some attention needs to be given to ameliorating this constraint.

Farmers in central area are closer to markets (NAMBoard/Nokwane, the Marketing Firm, and entities such as Entikini and Philani). It may be difficult for a farmers' organization to be developed with the individual SNL farmers in the central area who are few, scattered, and close to a variety of markets

Here again, one way to address the distance and bad roads problem is to have a communication system that links the farmers with the FAs, Management Firm, and with each other. The availability of telephones and or radio phones to do this is critical. The central collection zones (CCU sheds) could also be the locations for public telephones.

C. Marketing Issues

The MOAC report recommended that the Swazi produce industry would be enhanced if the Nokwane agents would pay cash, and "be obliged to buy the local produce first and only supplement with produce from neighboring countries" (MOAC 1992 xi) The Marketing Firm will have to deal with uneven supplies of product unless there is clear evidence of initial success and farmers flock to the packing houses and CAPM project for sales. Timeliness of payments, under the control of the Firm, is essential, and will go a long way with the farmers

D. Specific Women in Development Issues

1. Production

Women scheme farmers generally have less land than men, and in the north they plant more of their holdings. CAPM can assist women scheme farmers in particular to obtain credit, get the right kind of seeds and other inputs, and provide technical assistance about crop protection. Special efforts should be made to schedule the timing of training so as to facilitate women's attendance. Along those lines, wives of CAPM male farmers should also be encouraged to attend training, as they often manage plots in their husbands' absence. Any additional trials or demonstrations in farmers' fields or with farmer management should assure that there are significant numbers of women participants

2. Participation and representation

Women scheme farmers are participating in CAPM, and they are active participants. However, women farmers may need some encouragement to increase the amount they plant, obtain the necessary credit to purchase inputs, attend training, and keep records. Also, the inclusion of women farmers' schemes through the MOAC's Zenzele programme (Home Economics Branch n.d. 1990) should be considered, especially if they are located in the areas where CAPM is working and close to other farmers. (There are some of these in the

southeast area near individual SNL farmers) Their hectareage may be smaller, but their participation in CAPM may be advantageous for the smallholder commercial sector.

Also, there undoubtedly are women farmers who manage or individually farm SNL and perhaps more than the one female participant who has a TDL farm. A strategy for including more of them is important and needs to be formulated and implemented.

What would a strategy that targets women farmers add to developing the small farmer commercial sector? The answers are multiple and include issues concerned with (a) distribution and equity, (b) production labour; and (c) welfare and nutrition.

First, it may be argued that it is easier to obtain product in greater volume from large farmers than from small farmers. Yet in order to develop the majority of the population, small farmers should not be bypassed, because it is more difficult to work with them or because questions of scale might predetermine lesser yields. It may be easier to deal with male farmers rather than with females, but again, the majority of the rural population would be discounted.

Second, it is necessary to add women farmers to commercial farming programs because women already are doing commercial production on schemes in their own right and as wives of scheme and non-scheme farmers, in general, there are more women doing agriculture than men. If women participants or wives of registrants are not fully trained and participating in production and marketing techniques, product production and quality are undermined (Armstrong and Russell 1985, Ginindza 1989; Sachs and Roach 1983, USAID 1991).

Third, from the point of view of the overall welfare of the country, a nutrition study carried out by the MOAC noted that children of SNL farmers had more stunting than those on individual tenure and that mother's education and income levels were correlated with children's nutrition (National Nutritional Council n.d.) Mothers with higher incomes had fewer malnourished children. Participation in commercial vegetable production impacts positively on women's incomes.

From the point of view of the commercial sector, the development of women's production skills and entrepreneurship is critical in terms of keeping production coming from the smallholder irrigated scheme sector. Women's conscientious work in farming has also been capitalized upon in terms of seed and seedling selection and production, packing and grading, and record keeping.

Finally, as noted above, there should be some attention to women's participation in the farmers' organizations both as board members and as general members. Currently, each of the seven schemes in the north is represented by a man, and the total structure is thus far all

male. Strategies for inviting women to participate should be devised by CAPM.

E. Monitoring and Evaluation

Although the project has grouped farmers by area (north, central and southeast) and size of holding, (less than 0.5 hectares, more than 2 hectares, and more than 10 hectares--Grenoble et al. 1993), it is better to use the designations of scheme, individual SNL and TDL farmers in terms of monitoring and evaluation. It is suggested that the summary tables presented here (Tables 7 to 15, which are based on CAPM data collected by the FAs and other technical assistance personnel) as well as the one on training (Table 3) in Interim Assessment (Ronco 1993) should be followed and updated at the beginning and end of each production season. Finally, the suggestions for monitoring and evaluating project activities given in Section IV of the main text should be followed.

Table 1: Knowledge of Development Activities by Various Farmer Categories

	Percent of Respondents having knowledge of activities					
	Activities aware	Number of activities specified				Number
		None	One	Two to Three	Four or more	
SDSB Credit Clients	64%	38%	31%	29%	2%	42
Irrigation Schemes	68%	32%	16%	45%	7%	31
Non-Scheme	41%	60%	18%	22%	0%	63
Survey Total	54%	48%	21%	29%	2%	136
Lowveld	27%	73%	18%	9%	0%	22
Middleveld	31%	69%	22%	6%	3%	32
Men Household Heads	49%	51%	23%	24%	2%	159
Women Household Heads	32%	68%	13%	10%	9%	31

Adapted from: Doughty (1992:53)

Table 2 Hectarages For All Crops And For Tomatoes On Four Schemes Having Both CAM And CAPM Farmers

Scheme	Total Estimated Hectarge*	Hectarage All Crops 1992-93	Hectarage by C AM for all tomatoes	Hectarage C APM for tomatoes
Mkhovo	34 to 50	27.3	6.0	3.1
Mavulandlela	12	26.5**	8.4	3.4
Mgubudla	24	26.1**	1.6	1.3
Mashobeni	24	20.7	6.3	5.5

*C AM and C APM have different estimates of total hectarages. Also see Boyd-Clark (1991), Brosz (1990), and Brosz and Grenoble (1991)

**Includes two planting seasons

Table 3: Labour Availability of Household Heads for 12 Irrigated Schemes, Including 4 CAPM Project Schemes

SCHEME	FULL-TIME		PART-TIME		NO LABOR AVAILABLE		TOTAL HOUSEHOLD HEADS	
	N	%	N	%	N	%	N	%
EMBEKELWENI	12	57	7	33	2	10	21	100
MASHOBENI	21	50	13	31	8	19	42	100
MKHOVU	22	82	3	11	2	7	27	100
MGUBUDLA	11	85	1	8	1	8	13	100
ALL 12 SCHEMES	175	60	77	26	42	14	294	100

Adapted from: Ministry of Agriculture and Cooperatives
1992: 62-63

Table 4: Family Members who are Available for Full-Time and Part-Time Farmwork for 12 Irrigated Schemes, Including 4 CAPM Schemes

SCHEMES	FULL-TIME						PART-TIME					
	M	%	W	%	TOTAL	%	M	%	W	%	TOTAL	%
EMBEKELWENI	7	29	17	71	24	100	34	57	26	43	60	100
MASHOBENI	28	29	53	71	75	100	91	54	77	46	168	100
MKHOVU	23	52	21	48	44	100	62	55	51	45	113	100
MGUBUDLA	11	55	9	45	20	100	21	38	35	63	56	100
ALL 12 Schemes	192	40	286	60	478	100	588	53	527	47	1115	100

Adapted from: Ministry of Agriculture and Cooperatives, 1992: 62-65

Table 5: Vegetable Marketing Outlets used by various homesteads selling vegetables

	Percent of Homesteads reporting sales usually to:						N
	NAMBoard/ Nokwane	Other Markets	Trader Visiting Farm	Delivered to Trader	Sold to Neigh bors	Other	
SDDS Credit Clients	88%	57%	41%	100%	29%	98%	42
Irrigation Schemes	81%	55%	39%	94%	39%	65%	31
Non-Scheme	0%	20%	0%	0%	100%	0%	5
Survey Total	35%	47%	45%	100%	76%	0%	49
Lowveld	0%	0%	0%	0%	0%	0%	1
Middleveld	0%	0%	0%	0%	0%	0%	0
Men Household Heads	34%	41%	48%	11%	75%	0%	44
Women Household Heads	33%	100%	17%	0%	83%	0%	6
Adapted from: Doughty (1992:52)							

Table 5: Source of Farming Inputs for Farmers of Various Categories

	Percent of Homesteads reporting inputs obtained from:					Number
	CCU Lepot		Private Trade		Other Sources	
	Local	Elsewhere	Local	Elsewhere		
SDEB Credit Clients	67%	26%	21%	45%	5%	42
Irrigation Schemes	77%	6%	19%	32%	16%	31
Non-Scheme	51%	13%	22%	17%	3%	63
Survey Total	60%	15%	21%	29%	7%	136
Lowveld	91%	0%	50%	0%	5%	22
Middleveld	39%	0%	19%	81%	3%	31
Men Household Heads	60%	11%	26%	33%	7%	159
Women Household Heads	65%	13%	13%	39%	0%	30

Adapted from: Doughty (1992:53)

TABLE 7a Farmers Participating in CAPM by Area and Type of Farmer, as of the start of the Winter Production Season, March 1993

		Men		Women		Total	
		N	%	N	%	N	%
<hr/>							
Area							
North	(7 schemes)	68	70.1	29	29.9	97	100
Central	(1 scheme)	4	33.3	8	66.6	12	100
	(individual SNL/IDI)	9	90	1	10	10	100
Southeast	(individual SNL/IDI)	19	100	0	0	19	100
<hr/>							
TOTAL		100	72.5	38	27.5	138	100
<hr/>							
8 Schemes		72	66.1	37	33.9	109	100
Individual SNL/IDI		28	96.6	1	3.4	29	100

TABLE 7b Number and Percent of Scheme Farmers Participating in CAPM, as of the start of the Winter Production Season, March 1993

Total CAPM and non-CAPM Farmers for 8 Schemes	130	67.5	63	32.6	193	100
% of CAPM Farmers in 8 Schemes	72	55.4	37	58.7	109	56.5

**TABLE 7c Estimated Number and Percent of Total Scheme Farmers
(in areas where CAPM is working)
as of the start of the Winter Production Season, March 1993**

	Men		Women		Total	
	N	%	N	%	N	%
North (7 schemes)						
Sikhuniweni	13	72.2	5	27.8	18	100
Mkhovo	20	66.7	10	33.3	30*	100
Mvembi	17	68.0	8	32.0	25	100
Mavulandlela	9	53.9	8	47.1	17	100
Mashobeni	34	65.4	18	34.6	52*	100
Mgubudla	12	75.0	4	25.0	16	100
Vusweni	13	92.9	1	7.1	14	100
Central (1 scheme)						
Embekelweni	12	57.1	9	42.9	21*	100
TOTAL (8 schemes)	130	67.5	63	32.6	193	100

*Estimates

Source: CAPM Fields Assistants, June 1993.

Table 8 Farmers Adding or Ungrading Irrigation Systems as a Result of CAPM by Area and Type of Farmer, as of the Start of the Winter Production Season, March 1993

		Men	Women	Total	
		N	N	N	% of total farmers in the category
<hr/>					
<u>Area</u>					
North	(non-scheme)	1		1	
Central	(individual SNL/IDI)	4	1	5	50.0 (5/10)
Southeast	(individual SNL/IDI)	9		9	47.4 (9/19)
<hr/>					
TOTAL		14	1	15	10.9 (15/29)
Northeast	(Vuvulane scheme in 1992)	1		1	??

Table 9 Farmers Hiring Labour as of the Start of the Winter Production Season, March 1993

		Men	Women	Total	
		N	N	N	% of total farmers in the category
<hr/>					
<u>Area</u>					
North	(7 schemes)	14	2	16	16.5
Central	(1 scheme) (individual SNI / HDL)	0	2	2	16.7
		3	1	4	40.0
Southeast	(individual SNI / HDL)	10	0	10	52.6
<hr/>					
TOTAL		27	5	32	23.2 (32/138)

Table 10 Farmers Obtaining Credit as a Result of CAPM as of the Start of the Winter Production Season, March 1993

		Men	Women	Total	
		N	N	N	% of total farmers category
<hr/>					
<u>Area</u>					
Northeast	(Vuvulane scheme, 1992)	1		1	2.2
Southeast	(individual SNI / HDL)	10		10	52.6 (10/19)
<hr/>					
TOTAL		11		11	2.2

Table 11 Total Available Irrigated Land Vs Area Programmed and Area Planted - Winter 1993

Location	TOTAL Available Irrigated Land	TOMATO				PEPPER				SWEETCORN				Actual % of Total Ha		
		Prog Ha	Actual Ha		Prog Ha	Actual Ha		Prog Ha	Actual Ha		M	W	T			
North (7 schemes) data	Men = 46 Women = 18	M	W	M	W	NOT GROWN				NOT GROWN				49	63	51
	43.2 ha 5.7 ha	27.2	4.6	21.2	3.6											
	23 missing 11 missing															
Central (1 scheme) data	Men = 2 Women = 6	NOT GROWN				M	W	M	W	M	W	M	W	31	22	24
	0.8 ha 2.8 ha					0.4	1.3	0.25	0.11	0	1.0	0	0.5			
	2 missing 2 missing															
Individual SNL data	Men = 12 Women = 0	M	W	M	W	M	W	M	W	NOT GROWN				44	0	44
	48 ha	22.6	0	12.4	0	11.2	0	8.7	0							
	9 missing															
TDL data	Men = 4 Wcmen = 1	M	W	M	W	M	W	M	W	M	W	M	W	9	4	7
	86 ha 35 ha	3	0	2.5	0	5.0	0.8	3.1	1.1	6.2	0.9	1.9	0.3			
	2 missing															

Table 12 Total Available Irrigated Land Vs Area Programmed and Area Planted - Winter 1993

Location	TOTAL Available Irrigated Land	ALL CAP M C R O P S									
		P R O G R A M M E D				A C T U A L P L A N T I N G S					
		Prog Ha	% of Total	Prog Ha	% of Total	Actual Ha	% of Prog	% of Total	Actual Ha	% of Prog	% of Total
North (7 schemes) data	Men = 46 Women = 18	Men		Women		Men			Women		
	43.2 ha 5.7 ha	27.2	63	4.6	63	21.2	78	49	3.6	78	63
	23 missing 11 missing										
Central (1 scheme) data	Men = 2 Women = 6	Men		Women		Men			Women		
	0.8 ha 2.8 ha	0.4	50	2.3	82	2.5	63	31	6.1	27*	22*
	2 missing 2 missing										
Individual SNL data	Men = 12 Women = 0	Men		Women		Men			Women		
	48 ha	33.8	70	0	0	21.1	62	44	0	0	0
	9 missing										
TDL data	Men = 4 Women = 1	Men		Women		Men			Women		
	86 ha 35 ha	14.2	16.5	1.7	5	7.5	53	9	1.4	83	4
	2 missing										

Table 13 Baseline and Current Hectarage, Yields and Income for Fresh Market and Nema 1400 Tomatoes by Type of Farmer

	BASELINE		WINTER '92		SUMMER '92		WINTER '93*	
	Scheme Fresh Market Men 28 Women 15		Scheme Fresh Market Men 48 Women 12		Scheme Fresh Market Men 9 Women = 0		Scheme Fresh Market Men = 79* Women = 32*	
Total Ha	17.7	2.8	17.2	4.2	2.81		25.1	5.1
Est Yield/Ha	12 MT	12 MT	12 MT	12 MT	14 MT		18 MT	18 MT
Total Yield	164.4 MT	33.5 MT	206.4 MT	50.4 MT	39.3 MT		451.8 MT	91.8 MT
Total Income	£ 49,813	£ 10,144	£ 62,539	£ 15,271	£ 11,908		£ 136,895	£ 27,815
Average Income	£ 1,780	£ 676	£ 1,305	£ 1,273	£ 1,323		£ 1,733	£ 869
	Non-Scheme Fresh Market Men = 3 Women 0		Non-Scheme Fresh Market Men 9 Women 0		Non-Scheme Fresh Market Men 9 Women = 0		Non-Scheme Nema 1400 Men = 20* Women = 0	
Total Ha	2.0		11.9		7.8		16.5	
Est Yield/Ha	15 MT		15 MT		15 MT		20 MT	
Total Yield	30.0 MT		178.5 MT		117 MT		320.0 MT	
Total Income	£ 3,090		£ 54,085		£ 35,451		£ 96,960	
Average Income	£ 3,030		£ 6,009		£ 3,939		£ 4,848	
	TDL Fresh Market Men 1 Women 1		TDL Fresh Market Men 3 Women 0		TDL Fresh Market Men 1 Women 1		TDL Nema 1400 Men 1* Women = 1	
Total Ha	0.25	0.8	4.4		0.1	0.1	2.0	Not
Est Yield/Ha	15 MT	15 MT	15 MT		13 MT	13 MT	20 MT	Growing
Total Yield	3.8 MT	12.0 MT	57.3 MT		1.3 MT	1.3 MT	40.0 MT	Tomatoes
Total Income	£ 1,136	£ 3,636	£ 17,362		£ 394	£ 394 MT	£ 12,120	
Average Income	£ 1,136	£ 3,636	£ 5,787		£ 394	£ 394 MT	£ 12,120	

* There is yet another planting for most of these farmers

Table 14 Hectarage, Yields and Income for GreenPeppers Winter '92, Summer'92 and Winter '93

	WINTER '92		SUMMER'92		WINTER '93*	
	Scheme Men 13	Women 7	Scheme Men = 0	Women = 0	Scheme Men 5*	Women - 2*
Total Ha	2.72	0.64			1.4	0.21
Est Yield/ Ha	5 MT	5 MT			12 MT	12 MT
Total Yield	21.8 MT	5.1 MT			16.8 MT	2.5 MT
Total Income	£ 17,745	£ 4,151			£ 13,675.2	£ 2,035
Average Income	£ 1,365	£ 593			£ 2,735	£ 1,017
	Non-Scheme		Non-Scheme		Non-Scheme	
	Men 10	Women - 0	Men 9	Women - 0	Men 15*	Women = 0
Total Ha	6.68		3.18		11.55	
Est Yield/ Ha	10 MT		12 MT		12 MT	
Total Yield	66.8 MT		38.2 MT		138.6 MT	
Total Income	£ 54,375		£ 31,004		£ 112,820	
Average Income	£ 5,437		£ 3,455		£ 7,521	
	TDL		TDL		TDL	
	Men 2	Women - 0	Men = 0	Women 1	Men 5*	Women 1*
Total Ha	1.2			0.16	7.2	1
Est Yield/ Ha	10 MT			10 MT	12 MT	12 MT
Total Yield	12 MT			1.6 MT	86.4 MT	12 MT
Total Income	£ 9,768			£ 1,302	£ 70,329	£ 9,768
Average Income	£ 4,884			£ 1,302	£ 14,065	£ 9,768

*There is another planting for most of these farmers

Table 15 : Hectarage, Yields and Income for Sweetcorn Baseline, Winter '92, Summer '92 and Winter '93

	BASELINE		WINTER '92/SUMMER '92		WINTER '93*	
	Scheme Men - 0	Women - 1	Scheme		Scheme*	Women - 4
Total Ha		0.06	NO SWEETCORN GROWN		0.3	0.5
Est Yield/Ha		2.6 MT			3.6 MT	3.6 MT
Total Yield		0.16 MT			1.1 MT	1.8 MT
Total Income		F 461			F 3,170	F 5,188
Average Income		E 461			F 1,585	F 1,297
	Non-Scheme		Non-Scheme		Non-Scheme	
	Men - 0	Women - 0				
Total Ha			NO SWEETCORN GROWN		NO SWEETCORN GROWN	
Est Yield/Ha						
Total Yield						
Total Income						
Average Income						
	TDL		TDL		TDL*	
	Men - 0	Women - 0			Men - 3	Women - 1
Total Ha			NO SWEETCORN GROWN		3.6	0.3
Est Yield/Ha					3.6 MT	3.6 MT
Total Yield					13 MT	1.1 MT
Total Income					F 37,466	F 3,170
Average Income					F 12,489	F 3,170

*There is another planting for most of these farmers