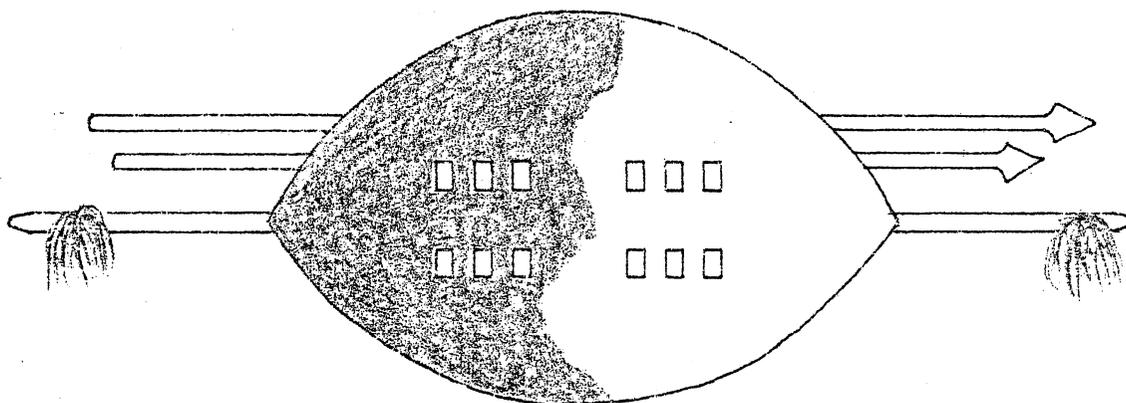


Southern Africa Development Analysis Paper (SADAP)

Agriculture Sector

SWAZILAND



Prepared By

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and

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Cooperating

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F O R E W O R D

This Agricultural Sector Assessment (ASA) for Swaziland is one of nine being done for a Southern Africa Development Analysis Paper (SADAP). The nine countries include Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, Swaziland, Zambia, and Zimbabwe.

To varying degrees, much recent description and analysis of the agricultural sectors of these countries has already been done in connection with previous projects. However, because of the extreme importance to U.S. Southern Africa policy of these recently emerged and emerging countries into majority rule, Congress again instructed the President to do a comprehensive analysis of this region so as to be better able to make timely decisions on the types and forms of assistance that the U.S. could provide.

Because of the many recent studies done in connection with other projects, large amounts of descriptive data will be left out of this paper and only summarized in the first chapter called "Background for Economic Development". Instead, a comprehensive bibliography of previous studies, projects and sources will be included, numbered and cited, when appropriate. As directed by Congress, emphasis in this paper will be on: identifying constraints to development; policies and programs necessary to overcome these constraints; and, possible medium to long range U.S. strategy for assistance to this region in collaboration with other donors and the African governments.

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Also contributing their information and opinions were the various persons contacted listed in Appendix D which included GOS officials and others.

SELECTED COUNTRY DATA^{1/}

DEMOGRAPHIC.

Total Resident and Absentee Population, 1978	554,322
Total Resident Population, 1978	518,264
Total Absentee Population, 1978	36,058
Resident African Population, 1978	500,729
Resident European Population, 1978	11,227
Other Resident Population, 1978	6,308
Male African Resident Population, 1978	238,770
Male African Absentee Population, 1978	27,005
Female African Resident Population, 1978	261,959
Female African Absentee Population, 1978	9,053
Median Age, Resident African Males, 1978	14
Median Age, Absentee African Males, 1978	29
Median Age, Resident African Females, 1978	16
Average Age of Resident African Population, 1978	20.5
Resident African Population Residing on SNL, 1978	(72%) 360,041
Resident African Population Residing on ITL, 1978	(22%) 110,344
Total Rural African Population, 1978	(94%) 470,385
Resident African Population Residing in Urban Areas, 1978	(6%) 30,344
Resident Europeans Residing on SNL, 1978	(4%) 463
Resident Europeans Residing on ITL, 1978	(55%) 6,127
Total Rural Resident Europeans, 1978	(59%) 6,590

Resident Europeans Residing in Urban Areas, 1978	(41%)	4,637
Population Density/sq km, SNL, 1978		40
Population Density/sq km, ITL, 1978		15
Population Density/sq km, Urban Areas, 1978		396
Population Density/sq km, All Swaziland		30
Average Rate of Population Growth 1966-76 (%/yr)		3.1+
Birth Rate (1970-75)		49
Death Rate (1970-75)		22
Infant Mortality Rate, 1974		149
Life Expectancy at Birth, 1974		44

ECONOMIC.

% of GDP from Agriculture, 1978 (19)		31
% Contribution of Agriculture to Export Earnings 1978 (19)		70+
% of Total Resident African Workforce Employed in Agriculture 1978 (19)		75
% of Population Depending on Traditional Agriculture, est. 1978 (19)		50
% Growth in Output/Acre on ITL, 1978 (19)		5
% Growth in Output/Acre on SNL, est. 1978 (19)		3
GDP, Millions \$ (Factor Cost), 1977/78, est. (8)		\$256.7
GDP per capita, Millions \$ (Factor Cost) 1977/78, est. (8)		\$495
Annual Growth of GDP since 1960 (%)		7

GEOGRAPHY AND CLIMATE. (8)

Region	Altitude Range (ft)	Rainfall Range (in)	Mean Temp. Range (°F)
1. Highveld	2,985 - 6,002	40 - 90	87 - 69
2. Middleveld	1,082 - 3,510	30 - 50	92 - 72
3. Lowveld	197 - 2,394	20 - 35	98 - 75
4. Lubombo	886 - 2,690	25 - 40	92 - 74

LAND USE 1974/75. (8)

ITL, Hectares	(46%)	803,487
SNL, hectares	(53%)	923,629
Urban Areas, hectares	(1%)	<u>9,300</u>
Total Land in Swaziland		1,736,416

	Swaziland	ITL	SNL
Cropland:	169,747	56,403	113,344
In Crops	(132,230)	(40,596)	(91,634)
Fallow	(37,517)	(15,807)	(21,710)
Grazing Land:	1,143,112	351,378	791,734
Natural Veld	(1,048,616)	(256,882)	(791,734)
Improved	(94,496)	(94,496)	(---)
Commercial Forest:	95,590	95,590	---
Pines	(73,671)	(73,671)	(---)
Other Species	(21,919)	(21,919)	(---)
Other Farm Land	84,444	79,836	4,608
Other Land	234,223	220,280	13,943
Urban Area	<u>9,300</u>	---	---
Totals	1,736,416	803,487	923,629

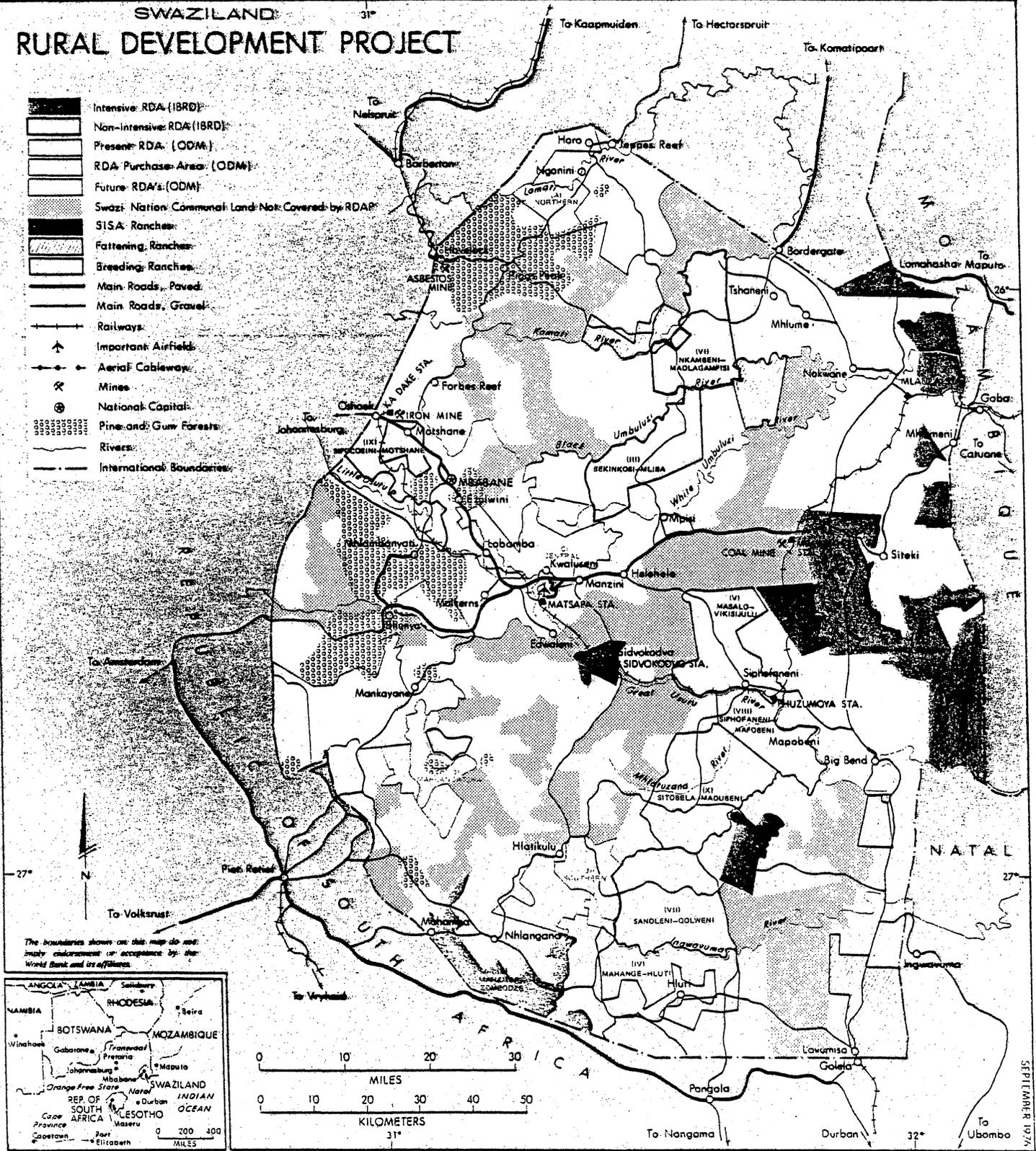
FARMS AND FARM CHARACTERISTICS. (9) (19) (25)

No. of ITF's, 1978 est.	790
No. of SNF's, 1978, est.	39,000
Average Size of ITF's, 1978, est. (hectares)	800
Average Size of SNF's, 1978, est. (hectares)	3
% Growth in Output/Hectare From ITF's, 1978, est.	5
% Growth in Output/Hectare From SNF's, 1978, est.	3
% of Agr. Sector Output From ITF's, 1978, est.	60
% of Agr. Sector Output From SNF's, 1978, est.	40

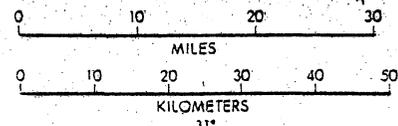
^{1/} Estimated for mid-1978, unless otherwise noted, using projection techniques used in GOS publications, when appropriate, or simple projection techniques otherwise. Most demographic data were based on provisional figures from the latest Census conducted in August 1976 giving total population (resident and absentee) of 527,791. Details of this census were not yet published but were projected from the most recent data published in each case.

SWAZILAND RURAL DEVELOPMENT PROJECT

-  Intensive RDA (IBRD)
-  Non-Intensive RDA (IBRD)
-  Present RDA (ODM)
-  RDA Purchase Area (ODM)
-  Future RDA's (ODM)
-  Swazi Nation Communal Land Not Covered by RDAP
-  SISA Ranches
-  Fattening Ranches
-  Breeding Ranches
-  Main Roads, Paved
-  Main Roads, Gravel
-  Railways
-  Important Airfield
-  Aerial Cableway
-  Mines
-  National Capital
-  Pine and Gum Forests
-  Rivers
-  International Boundaries



The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates.



GLOSSARY OF TERMS AND ACRONYMS.

ADB	African Development Bank
ASA	Agricultural Sector (Analysis, Assessment)
CCU	Central Cooperative Union
CDC	Commonwealth Development Corporation
CIDA	Canadian International Development Agency
CLUSA	Cooperative League USA
CODEC	Cooperative Development Education Center
DANIDA	Danish International Development Association
EDF	European Development Fund
EMALANGENI	The Swaziland currency worth \$1.167 in U.S. currency--July 1, 1978
EMRS	Economic and Marketing Research Section
GDP	Gross Domestic Product
GOS	Government of Swaziland
IBRD	International Bank for Reconstruction & Development (World Bank)
ITF	Individual Tenure Farm
ITL	Individual Tenure Land
LILANGENI	Singular for Emalangeni, the Swaziland currency
MCC	Ministry of Commerce and Cooperatives
MFEP	Ministry of Finance and Economic Planning
MOA	Ministry of Agriculture
ODM	Overseas Development Ministry, UK
OSARAC	Office of Southern Africa Regional Activities Coordination
RDA	Rural Development Area
RDAP	Rural Development Areas Program

REDSO Regional Economic Development Support Office

RSA Republic of South Africa

SADAP Southern Africa Development Analysis Paper

SDSB Swaziland Development and Savings Bank

SECID South-East Consortium for International Development

SMC Swaziland Milling Company and Swaziland Meat Corporation

SNC Swazi National Council

SNDC Swazi National Development Corporation

SNF Swazi Nation Farm

SNL Swazi Nation Land

TONNE A metric ton consisting of 2,204.6 pounds or 1.1023 tons

UBS University of Botswana and Swaziland

UK United Kingdom of England, Scotland, and Northern Ireland

UN United Nations

UNDP United Nations Development Program

I. BACKGROUND FOR AGRICULTURAL DEVELOPMENT

A. HISTORY OF SWAZILAND.

Swaziland is lucky in one respect compared with many other black African countries. It has, for all practical purposes, only one predominant tribe, the Swazi. This eliminates one barrier to development which plagues many black African countries, many tribes with different conflicting cultures.

According to legends of the Swazi, the tribe once lived near what is now Maputo (formerly Lorenzo Marques). In the late 1700's, the Swazi Chief Ngwane II led a small band of people over the mountains to what is now southeastern Swaziland. There they found other African^{1/} tribes. Ngwane II and the Chiefs who ruled after him united several of these tribes with the Swazi.

British traders and Boers first came to what is now Swaziland in the 1830's. In the 1880's gold was discovered. Prospectors rushed in and persuaded the Swazi chief to sign documents granting them mineral rights and land.

Great Britain took control of Swaziland in 1903 after the Boer war in 1902. The territory was kept intact when the Union of South Africa was formed in 1910 and was administered by Swazi rulers and the British High Commissioner for South Africa. In 1967 Swaziland gained control over its internal matters and received full independence on September 6, 1968. It is ruled by the longest reigning monarch in the world, King Sobhuza II, who celebrated his 79th birthday July 22, 1978 and has ruled since 1921. It was admitted to the UN on September 24, 1968.

^{1/} The term "African" will be used throughout this paper to mean persons of "black" or dark complexion who are indigenous to the African continent. The term "European" will be used to characterize most persons classed as caucasian who are not indigenous to the African continent except in the last few hundred years.

B. GENERAL ECONOMIC SITUATION.

The total population of Swaziland, estimated at about 554,322 in 1978, is growing at an annual rate of about 3.1%. About 94% of the population lives in rural areas with approximately 72% in scattered homesteads on Swazi Nation Land and the remainder on individual Tenure Land and in cities.

Swaziland has prospered since achieving independence in 1968. Average per capita GDP was estimated at US\$495 in 1977/78 and GDP growth has averaged about 7% per annum since the mid-1960's. The economy is relatively diversified, with agriculture and manufacturing accounting for about 35% and 15% of the GDP respectively. Mining accounts for about 10%.

In spite of overall prosperity, a severe dual economy exists. The modern sector accounted for over 80% of the GDP and wage employment and is expanding rapidly while the traditional sector, mostly Swazi on SNL, accounted for less than 20% of the GDP and is growing less rapidly.

The population is extremely young with 50 percent of the population under 14 years of age. There are more females than males in the country with an estimated 27,005 males absent from the country--mostly working in South Africa.

Swaziland has long had a visible balance of trade surplus. In 1973, exports at R75 million, were more than R7 million higher than imports. In 1974, however, because of high sugar and wood pulp prices, exports rose to R120 million and the surplus exceeded R26 million. The surplus slumped to R1 million in 1975 mostly due to decline in wood pulp exports. Heavy commitments to future capital investments may raise concern for the future but foreign capital inflow has, so far, offset any trade deficits in the late 1970's and foreign exchange reserves continue to grow.

Sugar is consistently the largest export by value, although varying from year to year depending on the world price. Next is wood pulp, followed by iron ore, asbestos, fresh and canned fruit, and livestock products.

C. GEOGRAPHY AND CLIMATE.

Swaziland's great variety of agricultural products is explained by its geography. There are four distinct regions. The first three are steps down from a high plateau. The highest plateau is partly mountainous, with moderate climate and high rainfall, called the Highveld. It supports extensive pine forest and temperate climate crops. Next is a middle area of fertile soils, rolling grasslands and sufficient rainfall for farming called the Middleveld. The third is low lying, moderately flat, with very little rainfall, but with enough streams for extensive irrigation called the Lowveld. The fourth region rises again into low mountains on the east side of the country, has higher rainfall, and is called the Lubombo Region.

Of the country's total land area of 1.7+ million hectares, about 66% is presently used for grazing and about 10% for cropland. Some 6% is in forests, which are mostly man-made and which support a growing forest industry.

Rainfall ranges from 40-90 inches in the Highveld with relative cool temperatures to 20-35 inches in the Lowveld with hotter temperatures.

D. RELATIONSHIP TO NEIGHBORING COUNTRIES.

Swaziland is surrounded by the RSA on three sides and Mozambique on the fourth. Most of its exports move through the Mozambique port of Maputo (formerly Lorenzo Marques) and, to a lesser extent, through the South African port of Durban. Most of its imports come from South Africa. The country is ruled by a monarch, which gives it little in common, politically, with socialist Mozambique. Nor does it, as a black African country, have much in common,

politically, with the RSA. Yet it has long had close economic ties with the latter. It is in a customs union with the RSA, which means that most goods move freely between the two countries without duty. The Swaziland currency, the Emalangeni, is kept on a par with the RSA Rand. The RSA is the major market for a number of Swaziland's agricultural products. Its cotton, tobacco, and rice, for example, are mostly consumed in the RSA. And, since Swaziland does not have well established food wholesale markets, many of its other agricultural products are sold into the RSA where they are processed. The same or like products may come back to Swaziland.

There are important exceptions, however. Its sugar, pineapple, meat and canned citrus are marketed in countries other than the RSA. Often, when these export industries have been in the development stages, the RSA counterparts have helped, e.g., in the case of sugar.

Swaziland, therefore, has conflicting interests in its relationship to its immediate neighbors. While it has little in common politically, its economy is extremely dependent on good relations with them.

E. DUALISMS IN SWAZILAND.

1. Dual Cultures.

Two cultures exist side by side in Swaziland, as in many developing countries. There are the Swazi people whose history goes back several generations in this region. These are a black African people with a traditional culture characterized by subsistence agriculture and a strong attachment to cattle as a form of wealth. Only recently has the money economy been applicable for a large number of these people.

Alongside the Swazi culture is a much smaller number of people not indigenous to the African continent and who have controlled most of the money or

modern economy in recent years. These are mostly of European origin but include a few of other ethnic origins such as Indian. The cultures of these groups are generally oriented to private ownership of resources, wages, profit, and economic efficiency.

These two cultures may come into conflict from time to time. One problem of development is in deciding on National goals in light of the different cultures represented. One aim of the SNC, which is an instrument of the traditional Government representing the Swazi people, is to safeguard the Swazi culture in any development which takes place. At the same time, there is a small, but powerful, educated group of Swazi and expatriates who are oriented to Western culture. Swaziland, like many developing countries, must constantly deal with these problems of conflicting cultures.

2. Dual Economies

The Swaziland economy is sharply dualistic with a modern, capital intensive, largely foreign owned and managed sector on the one hand, and a traditional sector producing mainly agricultural products for subsistence on the other.

Agriculture is especially dualistic with the modern sector consisting of 790 foreign owned farms and estates, almost entirely on ITL and averaging about 800 hectares (about 1,976 acres) each (19). In general, these are highly mechanized and use modern technology. Consequently output per unit is high and growing at about 5 percent per annum. Although only about one-half of the land of these farms is economically exploited, their output accounts for about 60% of the total agricultural sector output. The traditional sector consists of some 39,000 small SNF's with an average size of less than 3 hectares (about 7+ acres) (19). In addition to these small farmsteads,

which is where most of the arable land is located, there is communal grazing land, usually not arable or poorly suited for cultivation. These farms are run largely along traditional lines, employing family labor and draft animals. Although adequate data are not available, there is reason to believe that agricultural output in this sector is growing less than the population rate of 3.1% per annum (19). Consequently, the country is becoming increasingly dependent on imports of food, especially maize, the staple food, from the RSA.

3. Dual Governments.

The Swaziland political system is dualistic with a modern bureaucracy alongside a traditional political system based on royalty. The King, Sobhuza II, has the power and the authority to rule and decide on all policy matters in both governments. Advisor to the King is the SNC. Below the SNC are the appointed chiefs and their councils. The King and the SNC communicate to the chiefs and people through several regional centers. The centers are established by tradition and encompass several of the chieftaincies. An interesting evolution of these traditional regional centers is their role as centers for donor project development. Social services, employment opportunities, and development projects are increasingly being located in these traditional political centers.

While political participation and the Constitution have been suspended for the present, while a new constitution is being written, there is freedom to participate in the discussions and decision-making in the traditional political structure. Discussion and voting at the SNC and at the Chiefs' Councils is open to any Swazi. In practice, however, discussion is generally limited to important persons and voting is often a symbolic affirmation of the Council's decisions. The traditional political system, however, acts as a communication

and participation linkage between the political leaders and the people and, in so doing, can relieve pressure that might build in the Swazi socio-political system.

The traditional political sector has authority over questions of land and development of the Swazi Nation (which makes up about 53% of the total land area of Swaziland), affairs of a traditional nature, and disputes between members of the Swazi Nation.

4. Dual Tenure Systems.

Swaziland agriculture is sharply dualistic with a modern capital intensive, largely foreign owned and managed sector (including 46% of the land) on the one hand and a traditional sector producing mainly for subsistence on the other. This division results from pre-independence days when use of some land was granted by Swazi rulers to foreign settlers. The remainder (53% of the total) is SNL. The King holds this land in trust for the Nation and governs it through local chiefs. One aspect of tenure on SNL affecting development is the existence of communal grazing land. In such a case, no one individual owns the land, or feels responsible for its upkeep and protection, which is one factor leading to overgrazing and erosion.

There is a program started a few years ago by the UK to assist the Swazi in buying back the ITL for SNL. Also, individual Swazi may buy ITL.

F. NATURE OF PRESENT AGRICULTURAL PRODUCTION.

Swaziland agriculture is sharply dualistic. ITL production is modern, capital intensive, much of it expatriate owned and managed, producing mostly irrigated crops for export from large farms or company owned land. SNL production, on the other hand is traditional, labor intensive, small holdings,

producing maize and other crops mainly for subsistence and supporting 84% of the cattle numbers in the nation.

1. Crop Production.

Crop production in Swaziland can be grouped conveniently for most crops into those produced on ITL for export and those produced on SNL mainly for subsistence with a smaller amount for cash income. Generally maize, cotton, groundnuts, dry beans, sorghums, potatoes, and tobacco are associated with SNL while sugar cane, citrus, some cotton, pineapple, wheat, rice, and miscellaneous fruits and vegetables are associated with ITL. Relative amounts produced on ITL and SNL are given in the following table for 1974/75. The reader should be cautioned that some change is constantly taking place and that relative amounts may have changed since this time. Also, small amounts may be grown of various crops on SNL and ITL even when no amount is shown in official data.

a. Maize. Maize, the local word for corn, is the staple food of the Swazi people. The great bulk of SNL under cultivation is planted to maize. Yet Swaziland is not self-sufficient in maize. Imports vary with the local crop, but average some 25,000 tonnes a year, most of which comes from the RSA. It is estimated that Swaziland's dependence on imported maize is growing, in spite of Government efforts to reverse the trend.

Only a small portion of locally produced maize moves into the commercial market. Most of the grain milled for commercial sales is imported. The SMC has been given exclusive rights by the Government to import maize into Swaziland and to operate a commercial mill. In return, this organization must purchase all corn offered by Swazi farmers at no less than Government-fixed floor prices. In 1974, the last year for which figures are avail-

Hectares and Production of Different Crops in Swaziland, 1975/76 (8)

Crop	Total		ITL		SNL	
	Hectares Planted	Tonnes	Hectares Planted	Tonnes	Hectares Planted	Tonnes
1. Maize	65,947	93,911	4,948	5,950	60,999	87,961
2. Sugar Cane	19,060	1,781,012	18,929	1,767,042	131	13,970
3. Cotton	17,583	16,723	6,247	6,820	11,336	9,903
4. Groundnuts	5,808	2,503	--	--	5,808	2,503
5. All Dry Beans	3,572	2,598	210	189	3,362	2,409
6. Sorghums	3,449	2,320	2	4	3,447	2,316
7. All Potatoes	1,787	10,737	294	2,218	1,493	8,519
8. Rice	1,613	4,418	1,613	4,418	--	--
9. Pineapples	1,205	17,394	1,205	17,394	--	--
10. Grapefruit	1,193	24,832	1,193	24,832	--	--
11. Oranges	1,063	29,063	1,063	29,063	--	--
12. Wheat	446	442	446	442	--	--
13. Pecan Nuts	383	7	383	7	--	--
14. Tobacco	334	306	74	52	260	254
15. Avocados	221	117	221	117	--	--
16. Bananas	150	945	150	945	--	--
17. Mangoes	114	729	114	729	--	--
18. Naartjies	82	58	82	58	--	--
19. Granadella	56	33	56	33	--	--
20. Tomatoes	40	225	40	225	--	--
21. Misc. Vegetables	21	534	21	534	--	--
22. Lemons	11	30	11	30	--	--
Total Planted in Crops	124,138	--	37,302	--	86,836	--

able, the SMC purchased only 2,000 tonnes from Swazi producers. At the same time, the value of maize imports, milled and unmilled, from 1972 through 1975 were as follows:

1972	E 1,063,000
1973	E 1,255,000
1974	E 1,585,000
1975	E 1,638,000

The Government fixes producer prices but the farmer may sell direct to consumers at any price he chooses. Market outlets must abide by the Government price. The price is set by a formula that incorporates the prices paid in the RSA plus a subsidy to the farmer. On the average, the Swaziland prices are 12 to 20% higher than the RSA price. Data are not available on the Government's effectiveness in enforcing price floors in the local market outlets.

Witchweed, a parasite plant, and inadequate storage are constraints to the development of maize production. Witchweed can be controlled by weeding or applying herbicides and, to some extent, by timely planting. Inadequate storage and protection from weather damage, pests, and rot also are responsible for losses estimated at 20% of the marketed crop. The present low output per hectare is another problem caused mostly by poor seed and cultural practices.

b. Sugar. Sugarcane is the most important export crop grown in Swaziland. It is grown in accordance with sucrose quotas issued by the Swaziland Sugar Industry Quota Board. During the 1975/76 season, 44% of the sucrose quotas were held by the two milling companies, and the remainder by independent growers. Among independent growers, about 25% of the quotas were held by Swazi growers, including 264 small holders on individual farms of

about four hectares. The Swazi Nation itself held quotas amounting to 8% of the total. Through its shareholding in Ubombo Ranches, Lmt., it has a 40% interest in the quota (25% of the total) held by that company. Thus, although production of cane remains predominantly on ITF, the role of the Swazi Nation in the sugar industry, through development of its own estates and through equity participation in one of the milling companies, is becoming more important.

The cane is grown under irrigation in the hotter and more humid Lowveld region of Swaziland. Until recent years, harvesting and loading of cane were done by hand. Now, it is widespread practice to use mechanical loaders in the fields, and mechanical harvesting is being introduced. The cane yield is very high by international standards and has averaged over 100 tonnes per hectare in recent years. The sugarcane is processed in two modern mills, at Mhlune in the northern growing area and at Big Bend in the southern area. The present combined capacity of the mills is about 220,000 tonnes of sugar per annum. The responsibility for marketing sugar production rests with the SSA, whose Council, composed equally of representatives of the Sugar Millers' Association and the Cane Growers' Association but with an independent chairman, administers the business affairs of the SSA. Just under 10% of the output is sold in Swaziland for domestic consumption or local manufacture, and the balance is exported. The major export market for Swazi sugar is the UK, under long-term marketing arrangements. Formerly, the arrangement was under the Commonwealth Sugar Agreement (CSA); but, upon the CSA's expiration in December, 1974, Swaziland was allocated an EEC delivery quota of 120,000 tonnes per annum under the Lomé Convention. Sugar is sold to the UK under a commercial agreement between the association and UK refiners. For the balance of output, Swaziland has concentrated on developing markets

in the United States and Canada. Until 1975 Swaziland had a quota of 27,000 tonnes per annum under the U.S. Sugar Act. Although the long-term guarantee was removed when the act expired in December 1974, the U.S. has remained a principal market, receiving just over 30,000 tonnes per annum. Shipments to Canada also provide a favorable market due to Commonwealth preference, and Swaziland has established herself as an accepted traditional supplier. Swaziland has exported to other export markets such as Zambia and Israel in recent years, but not normally under long-term contractual arrangements.

The growth in sugarcane crop area and cane output brought sugar output to over 200,000 tonnes in the 1975/76 season; therefore, the sugar industry is now reaching the limits of its productive capacity. For some time, the Swazi authorities have been considering the possibility of constructing a third sugar mill, and recently the decision was made to go ahead on the project, as well as to expand capacity at the existing mills. The additional capacity will probably come into production in the early to mid-1980's, and will bring the industry's processing capacity up to about 350,000 tonnes of sugar per annum. After allowance for growth in domestic consumption of sugar, export availability will be about 320,000 tonnes per annum.

c. Cotton. Cotton is an important cash crop, both for the modern commercial farms and for Swazi farmers. It is grown both as a dry-land crop and with irrigation in the Middleveld and Lowveld regions of Swaziland. Swazi farmer participation in the growing of cotton has shown a marked increase in recent years. In the 1968/69 crop season, a poor year for overall output, the percentage of seed cotton produced by Swazi farmers dropped to a low of 13% and remained at that level in the two following seasons. By 1974/75 the percentage of seed cotton production accounted for by Swazi farmers had grown to nearly 49%.

Sugar Production in Swaziland, 1971/72-1975/76

	1971/72	1972/73	1973/74	1974/75	1975/76
	<u>(In thousands of hectares)</u>				
<u>Crop area</u>					
Area under cultivation	15.0	16.7	18.4	18.9	19.0
Area harvested	13.6	15.0	16.3	16.6	17.1
	<u>(In thousands of metric tons)</u>				
<u>Production</u>					
Cane	1,515.1	1,506.4	1,595.9	1,767.0	1,867.0
Sucrose	207.4	202.3	202.8	232.8	244.2
Sugar	177.2	171.4	171.2	195.5	208.2
<u>Yields</u>					
Cane yield per hectare harvested	111.8	100.6	98.0	106.6	109.0
Sucrose per ton of cane	13.7	13.4	12.7	13.2	13.1
Sugar per ton of cane	11.7	11.4	10.7	11.1	11.2

Source: Swaziland Sugar Association, Annual Report, 1975/76.

The resurgence in cotton production by Swazi farmers reflects the emergence of a more favorable price situation, and the promotional efforts of the Cotton Board, the MOA, and the cotton ginnery at Matsapa. Through these agencies, substantial improvements have been made in the provision of improved seeds, disease control techniques, marketing, and credit to Swazi farmers. In 1974/75 the local ginnery at Matsapa absorbed just over half the output of seed cotton, with the rest being sold to ginneries in the RSA. The Cotton Board aims to increase production of seed cotton to 33,000 tonnes in 1985. This compares with the 1974/75 output level of 23,000 tonnes. If this objective is realized, another ginnery in Swaziland would be required, and would be built in the south of the country.

Cotton Production in Swaziland, 1968/69-1974/75
(In Thousands of Tonnes)

Years	Total Tonnes	Tonnes	Percent of Total	Tonnes	Percent of Total
1968/69	5.904	5.132	86.9	0.772	13.1
1969/70	7.265	6.305	86.8	0.960	13.2
1970/71	9.834	8.530	86.7	1.304	13.3
1971/72	12.397	10.115	81.6	2.282	18.4
1972/73	12.535	9.521	76.0	3.013	24.0
1973/74	17.644	11.449	64.9	6.195	35.1
1974/75	22.618	11.578	51.2	11.040	48.8

SOURCE: Swaziland Cotton Board, Annual Report and Accounts, December 1975.

d. Groundnuts. Swazi farmers grow groundnuts mostly for home consumption and only insignificant quantities are marketed commercially. They are grown mostly in the Middleveld and Lowveld regions. Only about 5,800 hectares were devoted to the crop in 1975 and this amount is only expected to expand slightly as population expands.

e. Dry Beans. Production in Swaziland in 1977 was estimated at 1,000 tonnes per annum, and is grown primarily for subsistence purposes on SNL, with only small quantities being sold commercially. A commercial company based at Manzini purchases and packages between 40-100 tonnes per annum for distribution to retailers. The present annual import requirements is estimated at 900 tonnes. Production in the future is expected to expand about in line with the rate of population growth.

f. Sorghums. The present area devoted to sorghums by Swazi farmers is approximately 3,000 hectares and this has remained relatively constant for the past few years. The crop is mainly grown in the Lowveld for brewing of homemade beer, although a small proportion is marketed locally (approximately 100 tonnes). Imports from the RSA amounting to 3,000 and 4,000 tonnes/year also are for distribution to breweries. Production in the future is expected to expand only in line with the rate of population growth.

g. Irish and Sweet Potatoes. Potatoes in the past, have mostly been grown by Swazi farmers for home consumption, with some reaching local markets. There has been, however, a rapid increase in production in the past few years. This is apparently because of high prices and an available export market to the RSA.

h. Rice. Rice culture in Swaziland is almost entirely restricted to ITL in the Middleveld and Lowveld regions. A major proportion of this crop is grown at the Commonwealth Development Corporation site at Tshaneni where rice is milled at the Corporation's mill and sold direct to the RSA. ITL production statistics for rice for the period 1971/72-1974/75 are presented in the table. The area devoted to this crop on ITL is not expected to expand significantly during the 3rd 5-year plan period.

Production and Value of Rice (1971/72-1974/75)

Year	1971/72	1972/73	1973/74	1974/75
Area Harvested (has)	1,699	1,323	1,106	1,613
Production (Mt)	5,645	4,537	3,614	4,418
Value (E)	772,580	775,550	779,475	679,095

SOURCE: Annual Statistical Bulletin, 1976.

Small areas of rice also are grown by Swazi farmers under supervision of the Chinese (Taiwan) Agricultural Missions at Matsapha, Emvembili and Nkungwini. The Mission supervises a total of 79 farmers and production in 1974 was estimated at 316 tonnes. The Mission intends to have 500 farmers trained in rice production and to cultivate 400 hectares of rice by the end of the third 5-year plan period.

Most of the rice produced in Swaziland is sold direct to the RSA market and approximately 10% of the crop is retained for sale to urban retailers. Nearly all of the rice is milled locally.

i. Pineapples. Swaziland's pineapple production is on a 5-year cycle: 30 months from planting to harvest, 18 months for the ratoon to be harvested (only one ratoon), then one year for knock down and replanting.

The MOA's annual report for 1975 said there was 3,207 acres planted to pineapple. An official of the pineapple company told the U.S. Agricultural Attache in 1977 that there was some 3,500 acres in pineapple. Both may be correct since there has been some expansion.

Pineapple Production in Swaziland, 1970/71 - 1974/75

Year	Crop Area (hectares)	Area Harvested (hectares)	Quantity Produced (tonnes)	Quantity Sold (tonnes)	Value of Quantity Sold
1970/71	952	621	8,612	8,612	E 131,532
1971/72	778	778	7,918	7,918	113,725
1972/73	1,079	810	18,853	18,853	216,422
1973/74	644	411	21,193	21,193	272,426
1974/75	1,205	310	17,394	17,124	395,733

SOURCE: GOS, Annual Statistical Bulletin--1976.

As can be seen from this table, almost all of the pineapple is processed. The rest is sold fresh, mostly in Swaziland and the RSA.

The pineapple company produces 85% of the pineapples which it processes on rented land with European managers. As a matter of policy, the company does not buy land. There is also contract production done by 21 Swazi farmers and two European farmers. The Swazi farmers are all in a project started by the UK, CDC some years ago.

j. Citrus. Nearly all citrus in Swaziland is grown on ITL with supplementary irrigation. Production is concentrated in three main areas: one in the Middleveld (Engonini Estates, Lomati Valley) and two in the Lowveld.

Despite rising costs of production, grapefruit and orange plantings continue to increase so that estimated total citrus production by the end of the third 5-year plan period will be approximately 100,000 tonnes. Production of limes and naartjies is insignificant but experiments are presently being undertaken for the introduction of exotic orange varieties. Lemon production is declining.

Citrus orchards in Swaziland are generally medium to large size with all estates having their own packing facilities. Under the Citrus Act of 1967, the Swaziland Citrus Board was established as the sole marketing agency for citrus produced by growers having more than 50 trees. The Board is affiliated with the South African Co-operative Citrus Exchange which is responsible for basic marketing policy, distribution, and overseas markets. Swaziland sells a portion of its crop in the overseas markets. In addition, canned citrus fruit juices also enjoy a wide overseas market.

Though Swaziland has its own brand of citrus, Swazi Gold, it has not gone to the expense of establishing this brand in most overseas markets. It has been useful, however, in areas such as Scandinavia where the RAS's Outspan brand is boycotted by some groups. Most of Swaziland's citrus, however, is marketed under the RSA's Outspan label.

Under the Lomé Convention, Swaziland's fruit has a preferential duty in the EEC which the RSA does not share. Swaziland also has a duty preference in countries of the British Commonwealth. These Swaziland advantages create a natural temptation for RSA fruit to be marketed as coming from Swaziland.

However, the Swaziland Citrus Board carefully policies this situation, a spokesman maintained.

Swaziland Citrus Production (1971/72-1974/75)

Year	1971/72	1972/72	1973/74	1974/75
Oranges	35,900	36,097	38,190	29,063
Grapefruit	37,136	35,580	35,411	24,830
Lemons	209	215	39	30
Naartjies	4	23	13	53

k. Tobacco. Commercial tobacco production in Swaziland is centered around Nhlangano, Hlatikulu, Mankayane, Manzini, and Entonjeni in the North. Production on SNL has increased markedly in recent years with the total area devoted to the crop increasing from 308 to 578 hectares over the period 1971/72-1973/74. The majority (90%) of tobacco is now produced on SNL. A small quantity of burley or flue cured tobacco is produced on ITL and is marketed through a co-operative at Nelspruit in the RSA.

Pipe tobacco produced on SNL is marketed through the Tobacco Co-operative Company Lmt., situated at Nhlangano, with producers receiving a price preset for each grade by the Tobacco Industry Control Board in the RSA. Pipe tobacco marketed in the RSA is sold direct to manufacturers with a small proportion sold locally.

Tobacco producers in the RSA are supported by a high import duty on un-processed tobacco and, since Swaziland is a member of the Customs Union, local tobacco producers enjoy the same protection. However, since supplies of RSA tobacco exceed demand, a portion of the crop must be sold on the world

market at significantly lower prices. The Board, therefore, allocates annual co-operative quotas and all excess quantities are subject to the lower export price. The value of Swaziland tobacco exports are presented below for the period 1971-1975.

Volume and Value of Tobacco Exports, Swaziland,
(1971-1975)

Year	Volume (tonnes)	Value (000 E)
1971	171.2	115.1
1972	144.6	92.4
1973	159.2	131.7
1974	252.9	232.0
1975	159.5	166.1

SOURCE: Annual Statistical Bulletin, 1976.

Intensive efforts will be made to increase the area devoted to tobacco under the RDAP. Anticipated increase in RDA tobacco production by the end of the third 5-year plan period will be approximately 1,750 tonnes. In addition, attempts will be made to increase production in non-RDA's under a new tobacco promotion project. The aim of this project will be to increase non-RDA production by 375 tonnes by the end of the third 5-year plan period.

1. Miscellaneous Vegetables. Vegetable production has increased rapidly in recent years with the area now grown being double the 1969 level of 500 hectares. Practically all of this increased area is on newly irrigated SNL. Significant potential exists for further expansion, given efficient management and careful supervision.

Local vegetable production is now rapidly reaching the point where the potential exists for replacing almost all imports from the RSA, although a more organized marketing system will be required to ensure quantity and quality control. Indications are that, at present, local retailers prefer the RSA wholesale markets as a supply source because of their greater reliability and more consistent quality.

Production of winter vegetables in frost-free areas has considerable export potential. Johannesburg, Durban, and Pretoria are large markets accessible to Swaziland; and, at present, substantial quantities are sold at these outlets. Considerable potential also exists for supplying export outlets with asparagus and other premium vegetables which can be produced locally.

Under the RDA program, efforts will be made to increase the area devoted to vegetable production through small scale irrigation schemes. Attempts will also be made to improve the marketing, grading and storage facilities. By the end of the third 5-year plan period an additional 250 hectares are expected to have been leveled for small scale irrigation of vegetables in the RDA's.

2. Production of Livestock and Livestock Products. Cattle are, by far, the most important class of livestock raised in Swaziland, although there are a variety of others, also. The following table gives trends in numbers of different classes of livestock in Swaziland over the last 10 years.

Livestock Numbers in Swaziland, 1966-76 (19)

Class of Livestock	1966	1976
Cattle	491,000	634,000
Goats	220,000	237,000
Sheep	36,000	30,000
Horses, Mules, and Donkeys	18,000	15,000
Poultry	245,000	521,000
Pigs	8,000	18,000

a. Beef Cattle. In spite of the suitable climate and the absence of major disease, the livestock industry in Swaziland continues to contribute little towards the GDP in comparison with other farming activities. A combination of factors contribute to this, such as lack of proper management in communal grazing lands, social attitudes towards livestock, and inefficient marketing systems which have led to rapid increases in stock numbers resulting in over-grazing and deterioration of grazing lands.

In view of the magnitude of the problem, a concerted effort will be made in the 3rd 5-year plan to provide an integrated extension approach aimed at promoting proper range management, forage production, improved breeding, and increased offtake coupled with applied research programs aimed at developing improved techniques and the establishment of a suitable infrastructure. The GOS will continue to provide suitable disease control services in order to support increased animal production. At the same time, the livestock extension service will endeavor to persuade farmers to adopt a more commercial attitude towards livestock farming as a means of obtaining

higher incomes. A land consolidation program will help facilitate the promotion of livestock productivity and introduction of suitable range management systems. Improved marketing facilities will be coupled with the use of fattening ranches and feed lots.

The program for improved livestock production will include planning, limited fencing, bush control where necessary, provision of stock water, and forage conservation. Livestock management practices will include the determination of the indicative stocking rate and the optimum herd structure, the culling of non-productive and surplus animals and provision of improved bulls wherever possible.

Of a total number of 68,656 animals slaughtered in the country in 1978, 28,227 were handled by the Swaziland Meat Corporation located in Matsapa which operates at about 75% its capacity. Social and institutional factors militate against any rapid increase in the annual offtake from the Swazi herd. However, a program involving animal husbandry extension, intensification of production and improved marketing was launched and a target offtake of 12% per annum of the herd on SNL has been accepted as a realistic goal for the Third Five-Year Development Plan.

Owing to stringent disease control, Swaziland is able to find export markets for its meat and meat products in such markets as the RSA, the UK, and the EEC. Agreements also have been signed with Gabon and Ivory Coast for the export of beef to these countries. The GOS is continuing to explore new markets for Swaziland beef both in Africa and Europe. In spite of currency fluctuations, prices are generally firm and the prospects for obtaining these additional outlets are promising. The main products for export are chilled carcasses and frozen de-boned beef. In addition, small amounts of canned meat, pet food, offal, suet, and hides are also exported.

b. Dairy. In spite of its large number of cows, Swaziland depends on imports for much of its milk. Approximately 80% of the nation's milk is imported. This refers only to the milk which goes through commercial channels and does not include that produced and consumed locally by cow owners. It is estimated that only about 1% of milk produced in Swaziland and retained for human consumption is sold through commercial channels.

A substantial program to increase dairy production is being conducted through a Canadian technical assistance project. Four hundred calves have been flown in to start a pure bred herd. These will be multiplied and their progeny used to develop several small dairy herds and, hopefully, several large ones. The plan includes:

1. The establishment of a dairy multiplication farm organized on a commercial basis utilizing 400 imported Canadian heifers. Stock from this farm would be sold to progressive local small farmers.
2. Construction of a dairy processing plant. The plant would serve as a central processing plant for the multiplication farm and all other dairy farmers.
3. Construction of a feed mill, utilizing locally available by-products to compound dairy rations for use by the multiplication farm and the small farmers.
4. Construction of two additional milk collection centers, as project progress permits, in order to give small farmers an organized marketing system.

Trade in Dairy Products: 1967-1975
(000 E)

	1967	1968	1969	1970	1971	1972	1973	1974	1975
<u>Exports</u>									
(Butter & Butterfat)	93	87	44	27	42	34	22	7	3
<u>Imports</u>	380	437	551	646	632	586	531	669	1343

c. Poultry. Recent years have brought major developments in the poultry industry in Swaziland, mostly in the private sector. Two privately owned hatcheries were established in the Malkerns Valley to produce day old breeding stock for export. Also, major steps have been taken to train poultry staff for the Extension Services. As a result, the number of specialized poultry extension staff increased from 5 to 14 in the last 5 years, all trained overseas.

Poultry production on SNL continued to be hindered by high costs of feed and lack of an organized marketing infrastructure. In addition, the industry was confronted with severe competition from imports from the RSA.

In order to increase local production to replace imports, steps are being taken to establish a feed mill at Matsapha which will produce poultry feeds in addition to its primary purpose of producing dairy feed. It is also planned to establish an organized marketing facility under the CCU which would encourage production on SNL and control imports.

The Extension Service will concentrate in both RDA's and non-RDA's to promote egg production. Since the broiler industry will be heavily dependent on the establishment of a processing plant, it is envisaged that broiler

production farms will be promoted within a 60 km radius of Malkerns, where the marketing infrastructure will be situated, in order to ensure viability.

It is anticipated that during the period of the Third Five-Year Development Plan, the existing poultry distribution centers will be converted into demonstration farms in order to facilitate the demonstration of different poultry farming systems. Distribution of chicks will take place from RDA centers where rearing sheds are to be established.

d. Pigs. Pigs are kept on a limited scale for domestic purposes. Commercial production would face fierce RSA competition but may be feasible on irrigation schemes using vegetable and crop residues.

e. Goats. Goats provide a valuable source of animal protein for many rural families; but, commercially, they play an insignificant role. During recent years, improved goats have been introduced into the country. These include mohair and meat goats from the RSA as well as milking goats from Switzerland. Measures are underway to improve the marketing of goats and by-products. There is also a proposal for a mohair project.

II. THE THIRD FIVE-YEAR NATIONAL DEVELOPMENT
PLAN FOR AGRICULTURE: 1978-82

The third Five-Year National Development Plan for Agriculture: 1978-82 is the document which details the policies and goals of the GOS toward the agriculture sector and details certain objectives which provide the terms of reference for its program of development in the foreseeable future. Most GOS policy is directed toward the subsistence sector on SNL. The primary instrument for carrying out a program of integrated rural development of these areas is the RDAP. Any donor contemplating aid to Swaziland will be almost compelled to work within this framework, as it is the route that the Swazi themselves have chosen for developing the traditional sector and has already received wide approval from both the traditional government, the modern government, and the people..

A. OBJECTIVES.

The following objectives have been detailed in the Plan for the traditional agriculture sector on SNL:

1. Strengthening the framework of basic services, particularly agricultural and animal husbandry extension, and crop and livestock input supply and marketing.

2. Through (1) above, increase crop yields and introduce more farmers to cash farming, especially cash crops of maize, fresh vegetables, cotton, and tobacco, thereby increasing marketed production of key food and cash crops.

3. Continued promotion and expansion of the program for consolidation of land holdings, protection of the natural resource base, and creation of physical and social infrastructure in rural areas.

4. Raise the offtake of cattle from the National Herd in excess of any increase in numbers resulting from improved livestock production programs, as well as naturally occurring increase, in order to alleviate the existing over-grazing situation.

The primary mechanism for carrying out these objectives is the RDAP which has the specific target of doubling existing cash incomes within the RDAs within the 5-year plan period. The GOS is being assisted in this program by a consortium of donors. It is expected that approximately 60% of SNL and rural population will be affected by the RDA schemes in this 5-year plan and that, eventually, all SNL will be incorporated into the RDAP.

Within the objectives of the Third Five-Year Plan are embodied most of the constraints to development identified by most donors in various documents. There are other constraints outside of the RDAs themselves, however, which are enumerated in Chapter V.

B. THE RURAL DEVELOPMENT AREAS PROGRAM (RDAP).

The basic goal of Swaziland's RDAP is to increase the income and general standard of living of persons living on SNL. To achieve this, the RDAP is helping Swazi farmers to make the transition from subsistence to commercial agriculture, with minimal damage to the Nation's land resource, and with consideration for the social impact of the RDA process on the Swazi culture.

The program is divided into three phases:

1. The Planning Phase. An RDA is selected, base data for the area are collected, and a detailed development scheme is designed.

2. The Minimum-Input Phase. The RDAP introduces a minimal package of inputs and services to initiate the process of increasing crop and live-stock production and improving marketing operations in the early years. Among the inputs at this stage are improved seeds, fertilizer, and equipment; improved husbandry standards; construction of access roads; a project center; demonstration plots; and provision of extension personnel and staffs for cooperatives.

3. The Maximum-Input Phase. This phase culminates the RDAP process by introducing improved technology, intensive cropping, soil conservation, improved rural infrastructure, and social services. These efforts are based on detailed land use plans developed during the preceding phase.

Since the RDAP began in 1970 with financing from the UK, four RDA's have moved into the third phase. These four areas account for about 7% of the SNL area and 10% of its population. The GOS has been encouraged by the progress in these RDA's and by the reception the program has received from the local people. Consequently, it has designated thirteen more RDAs for development over the next five years. Five of the thirteen are scheduled to attain the maximum-input phase by 1981.

Together with the original four RDAs, these thirteen would extend the program to roughly half the SNL and its population. Eventually, the GOS hopes to extend the RDAP to all Swazi Nation Land.

In addition to the assistance of the UK and USAID, the RDA program receives funding from the IBRD, the ADB and the EDF.

III. ANALYSIS OF CONSTRAINTS TO AGRICULTURAL DEVELOPMENT

A visitor's first impression of Swaziland, upon entering the country, might well be that Swaziland is a beautiful, modern country, apparently prosperous, and in little need of much aid in development. Indeed, average data for Swaziland will bear out that it is in much better condition than many of the so-called developing countries of the world. This first impression is misleading, however, as the visitor's first impression will likely come from a series of modern cities, hotels, resorts, and large plantation type agriculture along paved roads roughly from Mbabane through Manzini and up the Malkerns valley, plus a few other areas. A few kilometers off these corridors, however, and one soon becomes aware of another Swaziland; rural areas of subsistence agriculture, where the view of life is much different. When speaking about constraints to development in this paper, therefore, reference is almost exclusively directed to this traditional subsistence sector, and GOS components which deal with it, presuming that the modern sector, while important, can more nearly take care of itself.

Also, before listing constraints to development, it should be pointed out that these constraints are both those documented and those alleged by persons interviewed by the writers of this paper. Different readers may, therefore, disagree that certain alleged constraints to development actually exist or their extent. It is hoped, however, that no offense is taken by different readers and that this document is taken for what it is--the opinion of the writers based both on documented and alleged constraints by persons interviewed. Even if subsequently shown to be groundless, certain alleged

constraints need to be further studied, if such beliefs and allegations exist, in order to demonstrate their truth or falsity.

A. THE LACK OF TRAINED MANPOWER.

The lack of trained manpower at all levels is probably the most serious constraint to development of the traditional sector of Swaziland, and to the various GOS organizations which deal with it. This also may be true of the modern private sectors, but to a much lesser extent, as the modern private sectors, both agriculture and non-agriculture, can usually afford to satisfy their manpower needs by drawing trained Swazi away from other jobs or by importing expatriates. And, because people are free to move from job to job as they please in Swaziland, there is little to stop large companies from paying higher salaries and drawing off much needed manpower from the generally lower paid Swaziland civil service positions.

The lack of trained nationals is a condition common to many former colonies of colonial powers. It is now only about 10 years since independence for Swaziland and, as in many former colonies, training and educating local people was largely neglected during colonial times. Also, injections of money alone usually will not cure the situation immediately, as it takes time to bring students through several years of primary and secondary education, plus higher education, to qualify for high level jobs. In addition, it takes time for attitudes and aspirations to change. For example, it is common in former colonies, for the local people to have the attitude that education prepares one to teach or to rule. As a result, there is often little aspiration among the local people for employment in technical or practical applied fields. This is especially true in the agriculture sector where an education usually meant an escape to a "white-collar" job in the

city. Parents and young people alike are traditionally little interested in preparing for a career in agricultural production on "family type" farms as the Western world knows them. Usually their only experience has been with either small subsistence agriculture or large modern vertically integrated factory type agricultural production. It is difficult for people from traditional agriculture to visualize a respectable, profitable, family type agriculture in between. Attitude, therefore, also must change, in addition to education and training, before extensive development in the traditional rural sector can take place and young people aspire to remain on the farm.

Also, as many developing countries have found, it is politically dangerous to have large numbers of rural people suddenly educated and desirous of big city, white collar jobs move to the capital of the country or some other large city. Traditionally, the urban sector cannot absorb these people fast enough and an unhappy, potentially politically disruptive group of unemployed intellectuals develop. Most theory of development of traditional societies now suggest that it is better to encourage development of a money economy in the rural areas in order to produce a surplus of food and other agricultural products to support the growing urban areas and to induce surplus people to stay there.

The manpower problem can be further broken down into various aspects as follows:

1. Needs of the Primary and Secondary Education System. Needs in the primary and secondary education systems can apply to the teaching of agricultural subjects as well as to general education in preparation for college training. They can be summed up as follows:

- a. Lack of teachers and physical resources for both agricultural and general subjects. However, this applies particularly to agricultural

subjects. The teaching of agricultural subjects in primary and secondary schools has not been an aim of most developing countries, including Swaziland, and both the curriculum and teachers are generally inadequate for training young people for returning to the farm. This is complicated by the fact that most students have no intention of returning to the farm after receiving a higher level of schooling.

b. The inadequate preparation of primary and secondary school teachers for instructing in the agricultural subjects and, to some extent, in the general subjects.

c. Inadequate infrastructure for training teachers in agricultural subjects, including curriculum, materials, and facilities.

d. Administrative restrictions on number of teachers that may be trained.

2. Problems in the Certificate, Diploma, and Degree Programs at the UBS.

a. Short-term vs. long-term needs. While in the short-run there is a need for greater output from the certificate, diploma, and degree programs to man the many positions now open and planned and to replace expatriates, there is also the consideration that, eventually, there will be excess capacity and a surplus of unemployed trained people by the end of the 1980's. This is a common problem of most underdeveloped countries. Such unemployed intellectuals frequently form the nucleus of political unrest. The question is, then should Swaziland gear up to meet short-term needs with possible excess capacity in the future, or, continue to rely on expatriates in the near future and pursue a gradual policy of training Swazi to replace expatriates at a pace commensurate with replacement needs in the future. The GOS has generally opted for the latter policy.

b. Losses of trained manpower to non-agricultural agencies and to the private sector.

c. Poor quality and poorly motivated students for entering agricultural training. This relates back both to the poor preparation for higher level work in the primary and secondary schools as well as to cultural influences mentioned above.

d. Insufficient staff in the UBS and other college level institutions.

e. The lack of Swazi with higher degrees to replace expatriates on the UBS staff and in other college level institutions.

f. Insufficient practical work in UBS courses. This is particularly important as students may not have had this in their primary and secondary education and they may not have had a farm background. Even if they have been in traditional subsistence agriculture, this experience was probably not appropriate for learning recommended practices.

g. Lack of coordination between the MOA and the Scholarship Selection Board in choosing both number and type of students to enter UBS.

3. Needs and Problems of the Extension Service.

The Extension Service, of all the civil service infrastructure, should be singled out as a particularly important constraint to development in Swaziland, as it is the key to dissemination of improved techniques in agriculture to the RDA's. It is also in the Extension Services where the greatest shortage of trained personnel now occurs. Problems and needs can be summed up as follows:

a. Insufficient staff, both in the MOA and in the RDA's. At present there is a ratio of one extension officer to 500 farm families in

the non-RDAs and one to 400 in the RDA's. In addition, many of these are poorly qualified (25).

b. Lack of central support services for preparation of materials for dissemination.

c. Poor linkage with research programs.

d. Few women agricultural extension agents although the majority of farmers are women. Women agents also are needed in the subject matter of home economics.

e. Poor planning of extension programs.

f. Lack of training of agents in extension methods.

g. Administrative separation of different subject matter branches of the Extension Service resulting in poor coordination of programs, both in the MOA and in the field.

h. Inadequate in-service (on-the-job) training such as short courses and seminars for those already on the job.

4. Need for Researchers and Planners.

Most research and planning positions in the MOA and elsewhere in Swaziland are expatriates and may be for some time. The Director of Economic Planning, Land Use Planning, and Research (a newly created position in the MOA) indicated in an interview that he had 14 research positions with 8 vacancies. There are presently no Swazi in any of these posts; nor, are there enough in training (25). It takes time to train persons for these types of positions, as they usually require higher level degrees. More Swazi need to be sent for higher degrees to man these positions.

5. Need for Farmer Training.

While much concern is with training the upcoming generation of Government officials and technical personnel, training of existing farmers in recommended techniques in agriculture may, and has, received inadequate attention. There are some programs for farmer training now, but there are many farmers not being reached or receiving inadequate training. While such training does come, to some degree, from the existing Extension Service, there is a need for expansion of more elaborate programs, such as short courses, etc. in the RDA's.

6. Needs of the Private Sector for High to Middle Level Manpower.

While the main thrust of agricultural development in Swaziland is directed at the subsistence sector, it is a fact that the modern agricultural sector also needs trained manpower which it frequently hires away from positions in the Ministries working with subsistence agriculture. Unless the needs of this sector is met in some way, this will continue to be a problem. Perhaps in the near future some training for careers in modern agribusiness such as the sugar, pineapple, and citrus industries should be included in the curriculum of the UBS. The problem with training for such positions, however, is that these positions may become much more popular than going to the MOA and MCC to work with subsistence farmers. The fact should be recognized, however, that many students trained to work for the GOS will end up in private, modern agriculture.

7. Remuneration and Amenities of Employment in the Civil Services.

One of the reasons for the high attrition rate of civil servants to private agribusinesses in the past has been the higher salaries and amenities of private employment. Working for the Swaziland Sugar Corporation, for

instance, carries with it not only a good salary, but good housing, education for children, recreation, health care, and other perquisites that the civil service has not been able to match to date. Until the GOS salaries and perquisites approach those of private industry, holding the most competent employees may be a problem. Some progress is being made in this area recently, however.

B. THE CATTLE OVERGRAZING AND EROSION PROBLEM.

Swaziland has a severe erosion and sedimentation problem in spite of the fact that all MOA officials do not uniformly agree on the degree of severity. This may, therefore, be classed as one of the "alleged" constraints to development. Alleged or documented however, these issues must be faced and treated. One official in the Land Use Planning Division, MOA, estimates the rate of erosion as high as 25 to 35 tonnes of soil loss per hectare per year (23). A maximum acceptable soil loss is usually recommended to be no greater than about 3 tonnes per hectare per year. This is especially a problem in the southern regions of Swaziland, but is true to some degree in most other sections. It is also greatest on SNL in areas of communal grazing.

The erosion problem comes about through a complex interaction between cattle overgrazing and the Swazi culture. Swazi culture has, for many generations, been tied to cattle as a store of wealth and for "lobola" or bride price. In this culture, cattle are not looked upon as a farm enterprise produced for subsistence or for profit. There has been little interest in the past in maximizing offtake from the National Herd for sale. Rather, the aim has been to maximize numbers that can be maintained in reasonable condition. This is interestingly verified in a study which noted that as prices of cattle rise, fewer are sold and vice versa for a price drop. This is a supply

curve for cattle which is downward sloping rather than the traditional upward sloping supply curve as prices rise. This is brought about by the fact that Swazi traditionally sell cattle only to meet certain relatively fixed annual expenses. Therefore, when the price is high, fewer cattle are needed to meet these expenses.

The problem is further complicated by the land tenure system in which all SNL is held in trust for the people by the King. The greatest problem is with communal grazing land which usually has steeper slopes and has more susceptibility to erosion. While this subject treats ideological and cultural considerations, it would probably be agreed by most people that man does not take care of assets which are not personally his as well as he does personal property. This is not to say that he is not acting perfectly rationally. There is no rationality, for instance, in holding down numbers of your own cattle to prevent over-grazing and preserve soil if other people do not do this also. Nor, is there any incentive for an individual to put his labor or other assets into conservation practices on this land unless all users of the land do this also, especially if others continue to abuse the land.

There are several assumptions which must be taken as given before recommendations for solving this problem can be made. The first assumption is that a severe erosion problem exists. The second is that there is overstocking of cattle on much of the grazing land of Swaziland relative to "recommended" levels for maintaining the soil within acceptable erosion levels. A third assumption is that communal ownership of SNL will continue to be the tenure system.

Given these assumptions, the MOA has initiated measures in an attempt to solve this problem. Among the measures taken have been generally to in-

crease production through better husbandry methods while, at the same time, encouraging a reduction in the stocking rate on grazing land. This action is being carried out through the RDAs, especially those now in the intensive stage of development, but also to some extent in other RDAs.

C. THE LACK OF INFRASTRUCTURE IN RURAL AREAS.

In addition to improvement in numbers, training and coordination needed in the Extension Service in rural areas, already mentioned as a separate topic, there are a number of other services which are needed to bring the rural area, mostly SNL, to a more developed state.

1. Markets.

One of the goals of the GOS is to bring rural people more into the money economy. To do this, subsistence farmers must be induced to produce a surplus of farm commodities to sell for cash. But, most of the marketing infrastructure in the past has been to serve the modern sector. Needed are markets willing and able to buy a range of small lot commodities from farmers, consolidate them, and to perform grading, processing and other marketing services. The GOS, through the MCC, has opted to achieve this through cooperatives. Originally these have been mostly suppliers of farm inputs, but the GOS policy is to eventually have cooperatives of a multipurpose nature supplying farm inputs, buying and marketing farm products, and even selling certain consumer goods. Given the nature of Swazi culture, which has a tradition of group discussion of problems, cooperatives will probably fit their culture quite well. If the GOS attains its aims, this infrastructure problem could be solved sometime in the future.

To date some purchasing of cash crops from SNL has been done through cooperatives, especially cotton and tobacco, but there is still a long way to go for these and for other commodities, especially fresh produce.

2. Credit.

Credit is another constraint to development in rural areas if not available or used. The GOS also includes this as part of its RDAP and it is already in effect in many areas. Credit is being supplied to cotton farmers as well as to farmers to buy farm inputs such as fertilizer and for hiring tractor plowing done. All that needs to be done in the area of credit is to extend and perfect the credit system to more situations. This would include consumer credit in the multi-purpose cooperatives.

The SDSB already has a pilot project to expand credit to cotton cooperatives in the area of Nhlngano involving keeping good records and with a number of credit supervisors with authority to make loans without coming to the bank to get approval. These will be production loans to farmers limited to E 1,000.

3. Schools and Teachers.

A constraint to development in rural areas of most developing countries is good school facilities and teachers. A start has been made in this direction but more needs to be done. Needed are schools in the community where people live rather than having to send children to expensive boarding schools in towns and cities. The system of local public schools, so common in the U.S., is looked upon enthusiastically as a new thing in many rural areas in Swaziland.

4. Roads.

Regardless of the infrastructure in place in rural areas, such as schools, cooperatives, etc., a rural area is severely handicapped in its development effort without adequate farm-to-market roads. Not only are good roads necessary to get farm products to market during rainy seasons, which are frequently seasons of harvest for some crops, the rural community needs

intercourse with the developed sector of the economy for other purposes. Textbooks of development economics talk of exchange of ideas and breakdown of elements of a culture which are constraints to development as people are more mobile and able to move freely between rural and urban areas. Not only is there freer exchange of people with good roads, but private industries and investments are more likely to occur in the rural areas providing jobs and opportunities for the rural people. Swaziland has better roads than many developing countries in the modern sector but there is real opportunity for improvement in most rural areas of SNL.

D. THE DOMINANCE OF THE REPUBLIC OF SOUTH AFRICA.

The dominance of the RSA may or may not be a constraint to development, depending upon how one looks at it. On the one hand, the RSA provides a market for Swazi products, both farm and non-farm, as well as a convenient and inexpensive source of inputs and consumer goods. This is a definite advantage to Swaziland in comparison to many developing land-locked countries.

On the other hand, there are some definite disadvantages. From a political standpoint, Swaziland has little in common with apartheid RSA or socialist Mozambique. But it is forced into a "marriage of convenience" with both at the moment because of the extreme dependency of its economy upon them. It can pursue a policy of gradual disengagement; but, an abrupt break with either, especially the RSA, would be unfavorable or even a disaster to its economy.

More specifically, the migration of Swazi labor to the RSA is a potentially disruptive aspect of the tie-in. On the surface it appears to be a plus in the Swazi balance of payments, and usually has been. It is sometimes overlooked, however, how vulnerable the Swazi economy is to a sudden disrupt-

tion by the RSA of this source of employment. It could happen for instance, that in order to stabilize its own economy in times of recession, the RSA would lay off expatriate workers which could cause instability and an unemployed pool of workers in the economies of surrounding labor-supplying countries, including Swaziland.

From another standpoint also, Swaziland may need this pool of relatively skilled labor if it could be absorbed gradually as it is made up mostly of males in their most productive age range. Perhaps such a policy of reabsorption should be accelerated.

Another potential constraint related to the dominance of the RSA is that Swaziland's continued water supply has not been guaranteed by agreement. It is reported that dams are being built west of Swaziland's borders and the RSA will thus be in a position to control the flow of water in Swaziland's rivers, all of which rise in the RSA.

IV. EXTERNAL ASSISTANCE TO AGRICULTURAL DEVELOPMENT

The kingdom of Swaziland was the recipient during 1976 (the latest published figures by the UN) of approximately US\$8.5 million in technical and pre-investment assistance representing about 20% of Swaziland's recurrent budget for the year. Capital assistance of about US\$18 million was extended during the period April 1976 - March 1977, principally from the World Bank, African Development Bank, and the United Kingdom, for a total 1976 aid figure of about \$26.5 million. The following tables show the distribution of these resources by donor and sector on the aggregate level as reported variously by the UNDP, IBRD AND OECD (24).

Table I

Donor Distribution of Technical Assistance, 1976^{1/}

United Nations	33.6%
United Kingdom	32.9%
United States	13.6%
Sweden	12.6%
Netherlands	3.0%
Denmark	2.0%
Norway	1.0%
Other (incl. Canada)	1.3%

Table II

Sectoral Distribution of Technical Assistance, 1976^{1/}

Education	30%
Agriculture	27%
Social Security	13%
Transportation & Communication	7%
Industry	6%
Health	6%
Other	11%

Table III

Donor Distribution of Capital Assistance, 1976^{1/}

World Bank	40%
United Kingdom	32%
African Development Bank	7%
Sweden	6%
R. F. Germany	4%
Denmark	3%
Canada	3%
European Development Fund	2%
Other	2%

Table IV

Sectoral Distribution of Capital Assistance, 1976^{1/}

Transportation & Communication	27%
Education	23%
Agriculture	23%
Community Services	18%
Health, Industry & Power & Cooperatives	9%

A detailed breakdown of past, planned, and continuing donor aid to Swaziland can be studied by project in Appendix VI-B.

A. PRESENT AND PROPOSED U.S. AID.

1. Cooperatives and Marketing.

This is Project 645-005, now in effect. It is designed to train Swazi for CCU management positions and to provide housing, vehicles, and other infrastructure for assisting in developing a viable producer oriented cooperative structure providing production related inputs and marketing services to rural farmers. This includes credit.

2. Rural Development Infrastructure Support.

This is present Project 645-0068, designed to provide heavy equipment and training of operators and mechanics for land development.

3. Produce and Marketing Infrastructure

This is proposed Project 645-0206 which will organize and establish a produce marketing infrastructure for handling and redistributing surplus

^{1/}This publication also indicated that a loan of about \$4.2 million from OAPEC (Organization of Arab Petroleum Exporting Countries) was not included in the above figures as full details were not available when compiled.

production in areas of demand and to handle export marketing of certain crops. This will include warehousing, processing and refrigerated storage facilities, a small transport fleet, participant training, and technical assistance.

4. Mohair Production.

This is proposed Project 645-0210 to support the establishment of a national foundation herd of purebred Angora goats, ewes, and rams. Also included in the project is the training of Extension Agents and farmers in Angora production.

5. Rural Health Manpower Training.

This is present Project 645-0062. Under this project, a five-member long-term technical assistance team to design and implement training programs for various categories of nurses and other health workers is provided. Emphasis is on preventative activities in rural areas. Also involved is the design and establishment of hospital and rural health services administrative support systems.

6. Rural Water Borne Disease Control.

This proposed Project 645-0087 is designed to reduce the incidence of water borne diseases in rural areas through provision of personnel, technical assistance, and some construction of facilities.

7. Southern Africa Manpower Development.

The purpose of this present project, 645-0069, is to assist the GOS in overcoming its shortage of development-related trained manpower by providing selected operational personnel and related training. This is done through provision of professional and technical training for selected participants to fill key positions and U.S. technicians as operating personnel, pending the return of trained Swazi participants.

8. Assistance to the University College of Swaziland in Adult Education.

The purpose of this project, 645-0081, is to increase the capacity of the University College of Swaziland's Department of Extramural Studies to meet mid-level manpower training needs. This is the equivalent of adult education programs in the U.S. This will involve providing U.S. technicians, training Swazi, and providing some infrastructure.

9. Assistance to the Swaziland Institute for Manpower and Public Administration.

This is proposed Project 645-0202 designed to upgrade the staff and curriculum of the Swazi Staff Training Institute in order to help increase the output of lower and mid-level trained manpower who primarily supervise and manage direct public services.

10. Development of Rural Education Centers.

This is proposed Project 645-0201. These centers will serve the needs of rural people who have not completed primary school in provision of training in basic skills of literacy, numeracy, and communication combined with employment-related or vocational type training.

11. Assistance to Swaziland Institute for Development Research.

This is proposed Project 645-0204 aimed at establishing a university-based research institute with the capacity to independently define and articulate country and regional development constraints, opportunities, and requirements, particularly those that pertain to the poor majority. AID will provide technical assistance, training, support the initial costs of research, and build physical facilities for the new Institute.

12. Primary Curriculum Development.

This is present Project 645-0009 designed to establish an institutionalized Swazi capability for developing primary curricula. In addition to technical assistance, this project will involve production and distribution of prototype curriculum materials for all six primary years.

13. Low Income Shelter.

This is proposed Project 645-0099 designed to provide at least 2,500 lower income housing units under a Housing Investment Guaranty while developing the GOS's institutional capacity to develop, manage, and finance housing programs for lower income groups.

14. Rural Small-Scale Industries.

This is proposed Project 645-0205 designed to assist in-country efforts to identify and exploit promising small and medium scale industrial activities with high employment possibilities.

15. Alternative Energy Research.

This is proposed Project 645-0207 designed to develop and test low cost systems of alternative energy sources relevant to the needs of Swazi citizens living on SNL.

V. MEDIUM TO LONG RANGE STRATEGY FOR U.S. ASSISTANCE AND
COLLABORATION WITH GOS AND OTHER DONORS FOR
AGRICULTURAL DEVELOPMENT

The purpose of this SADAP effort is to provide Congress with a medium to long term U.S. strategy for foreign assistance. This paper deals with the agricultural sector in particular.

The U.S. has not been the predominant donor in the past in Swaziland; and, it is difficult to come into such a situation and find a meaningful place in concert with other donors. However, it appears that the Swaziland AID mission, in its present and proposed projects, has done a good job of recognizing the key constraints to Swaziland development and of fitting relevant projects into a group of aid projects already in effect. The SADAP team members who participated in this paper generally agreed that present and proposed USAID projects generally reflect the direction that future U.S. strategy should take. Only minor changes are proposed along with one new project.

A. THE RURAL AREAS DEVELOPMENT PROGRAM (RDAP)

As the RDAP is the primary instrument for developing the SNL, which is the traditional sector and in most need of development, the U.S. strategy must be, in a large measure, directed at working through this program.

AID became involved in the RDAP in 1971 when it authorized a \$2.2 million loan to the GOS, mainly for the purpose of earth-moving equipment for its new soil conservation construction units. The GOS had established the units the previous year in an effort to reclaim seriously eroded areas and to prevent further erosion. The loan included \$110,000 to equip a research

and demonstration ranch in the Highveld and \$290,000 for intermediate agricultural credit.

In 1972, the U.S. approved a \$1.855 million grant project to provide technical services, participant training, and other AID assistance to the RDA's. Included in this grant were the funds to construct and equip a heavy-equipment repair facility. AID also provided a workshop foreman who, after two years, was replaced by U.S.-trained Swazi technicians.

Other technical services that AID has provided to the RDA's include a soil conservation engineer for planning, who is now acting as Chief Land Development Officer in the MOA; a soil conservation engineer for design of conservation facilities; animal husbandry and range management officers for the research ranch; and, a marketing research officer in the MOA's economic planning office. AID is attempting to designate and train local counterparts for each of these officials.

In 1974, AID evaluated its involvement in the RDA program. A study team determined that the RDA was well designed for dealing with the problem of rural poverty in Swaziland. It also determined that the GOS could not move the program ahead much faster without additional external assistance. The team suggested that AID do what it could to accelerate the RDA program.

The report made several recommendations to guide further AID involvement in the RDAP. One was to stress institution building within the GOS to improve its ability to design, implement, and evaluate its rural strategy. The team suggested that AID encourage the GOS to review its mechanism for formulating rural strategy and its capability to carry out economically sound projects.

The team recommended that AID offer to help the GOS to strengthen its agencies responsible for the RDA's, stressing project management in areas such as soil conservation, equipment maintenance, marketing, extension,

research, livestock development, and range management. The study also recommended that AID offer to supply RDA-related technical assistance and training requested by the GOS.

A 1976 Project Identification Document (PID) suggested that AID narrow its focus to helping the GOS develop the institutions and manpower that would bolster RDA efforts in land planning, land development, equipment maintenance, range management, economic planning and evaluation and administration.

The Project Review Paper (PRP), completed early in 1977, was more specific in its suggestions for further AID involvement in the RDAP. It recommended that AID be most concerned with the provision of equipment, repair facilities and the training of operators and repairmen; with the creation of detailed land use and land development plans and the training of Swazi in this area; with the development of institutions to provide optimal soil conservation and engineering practices; and, with the coordination of AID efforts in the RDA's with those of other donors.

The GOS recently requested that AID examine several aspects of the RDA program, particularly: manpower requirements, the cost-effectiveness of soil conservation practices, and the land development operations of the MOA. Two studies have been prepared to respond to those requests from the GOS and to evaluate the feasibility of continued and expanded AID involvements in the RDAP. One identifies Swaziland's agriculture-related manpower requirements, manpower supply and training capacity. The other study examines the operation and adequacy of the heavy equipment purchased by the RDAP with an AID loan and the efficiency of the AID-funded equipment repair facilities. Other foci are the effectiveness of MOA land planning and land development activities--including administrative organization, soil and water conservation practices and range management, and the sociological impacts of the RDA program.

It is the consensus of the Study Team and the present SADAP personnel that the RDAP is a well-conceived and useful mechanism for rural development. It is targeted at the lower income, rural population and is in concert with U.S. objectives in Development Assistance. The RDAP also recognizes that a realistic time span of continued concentrated effort of at least a generation or two is required to bring about the economic and social changes envisioned.

B. STRATEGY FOR THE MANPOWER CONSTRAINT.

There is already much effort among the various donors, including the U.S., to relieve this serious constraint to Swaziland's development. Almost all present and proposed U.S. projects involve training of Swazi, as do those of other donors. These efforts should continue, and be expanded. Some specific recommendations are as follows:

1. MOA/GOS should institute a regular program of manpower planning to avoid excess supply of trained agriculturists.
2. In order to reduce unemployment of school leavers in urban areas, public investments should be redirected to rural areas to make them more attractive as living places and enhance the possibility of employment in those areas. Wage structures should be reviewed to reduce disparity between rural and urban incomes.
3. AID and GOS should consider initiation of further projects to strengthen the extension service. Among the elements which might be included are:
 - a. expansion of the UBS certificate course;
 - b. expansion of the public information office of the extension service including provision of necessary equipment and staff;
 - c. increasing the number of film mobiles and similar equipment;

- d. reorganization of extension to integrate all extension programs and coordinate better with research;
 - e. improvement of the inservice training program for extension workers.
4. GOS and AID should consider a program to strengthen formal agricultural education in Swaziland and speed its establishment. Important elements might include:
- a. expansion of the diploma program in agricultural education through the provision of additional staff facilities and equipment as needed;
 - b. provision of resources necessary to provide for adequate preparation of primary teachers at William Pitcher and Nhlanguano teachers colleges;
 - c. support of central administration of the agricultural program through provision of needed personnel and equipment for preparation and delivery of teaching materials and supplies; and,
 - d. assisting individual schools to build physical facilities for agricultural education.

C. STRATEGY FOR THE CATTLE OVERGRAZING AND EROSION CONSTRAINT.

While encouraging and supporting the approach already adopted by the Swazi of reducing cattle numbers through fattening ranches and improvement of the National Herd through breeding ranches and improved breeding stock, the main thrust of the U.S. effort in this problem should continue to be in helping to correct past abuses. The soil conservation and range management aspects of this problem should continue to be stressed and expanded in USAID efforts with heavy equipment, expertise, and training for Swazi. This should extend to all RDA's whether presently intensive or not.

This effort should go in concert with an improved soil survey so that specific erosion problems can be better identified and better planning can take place. This presents an opportunity to contribute to the development of Swaziland which no donor is now doing.

Soil information now available is based on a reconnaissance soil survey of the Nation by G. Murdoch in 1968. This survey is an excellent general tool and there is no intention of criticizing it in this report. However, according to operational and research scientists, there are severe limitations to using the existing survey for detailed planning on particular fields, as the existing survey is not detailed enough for this. More detailed soil surveys are needed on arable lands and/or other areas where intensive use is planned. The recommendation is for a detailed soil survey of these lands which would have an estimated cost of about \$5-9 million.

In conjunction with the survey, there is also needed an expansion of basic laboratory data to support sound soil survey interpretations. Very little reliable data exist on the physical, chemical, and mineralogical properties of Swaziland soils. Good soil surveys must be accompanied by these data for making good fertilizer and other recommendations. The U.S. could provide further facilities at the UBS along with technical assistance and training for Swazi for this aspect. Specific recommendations are as follows:

1. Work through the Ministry of Agriculture to accelerate the formal training of highly qualified Swazi's in the soil sciences, (both classification and mapping as well as investigations) range science, agronomy, engineering, and possibly forestry disciplines. This could be done by training in foreign colleges and universities that have these capabilities. Training of qualified women should be considered.

2. A detailed soil survey is needed in much of the Nation. A new and modern detailed soil survey should be undertaken in the near future to produce soil surveys for operational planning and as a basis for expanding research information. The new survey should be designed to meet the needs of the foreseeable future and the survey should be phased into a recognized soil taxonomic system. Of the several systems of Soil Taxonomy now in existence, it is recommended that the system adapted by the Swazi government should be their decision. However, the American system is the one now in use in Lesotho and is the most comprehensive one now in existence. The cost of such a National Soil Survey is difficult to estimate, but probably would range between 5 and 9 million U.S. dollars.
3. A need exists for laboratory data on the physical, chemical, and mineralogical properties of the soils. The data obtained must be reliable and obtained through standardized and recognized procedures. There is presently some limited laboratory information available through the Malkerns Research Station, but it is difficult to relate to kinds of soils. Also, the facility is very limited in its mission.

D. RURAL MARKET DEVELOPMENT.

The adequacy and efficiency of the marketing systems in Swaziland varies among commodities. It ranges from generally adequate for cotton and tobacco to much less efficient for fruits, vegetables, and several minor crops. Existing deficiencies will become more evident as serious constraints to the success of the RDAP in an effort to convert subsistence farmers to commercial production. Provision or assurance of marketing facilities in advance of production programs to provide incentives to subsistence farmers to break out of their traditional production patterns is needed.

Although reasonably adequate for the present status of the cattle industry, further refinements in the cattle marketing system will be necessary if other programs are successful in increasing the annual off-take from the national cattle herd. Developing an effective marketing system for fluid milk and commercial vegetables from small-scale producers will probably be the most difficult.

The existing organizational framework for cooperatives organized under the Central Cooperative Union provides the best means for further development of an integrated system of full service cooperatives embracing farm inputs, credit and marketing. Progress has been slow thus far but the combined efforts of several foreign donors, as well as active support from the Government of Swaziland should eventually produce the desired results.

The U.S. is already playing a role in helping create rural input and marketing coops through Project 645-0055. Specifically, it involves training of Swazi for CCU management positions, in addition to providing housing, vehicles, and other coop infrastructure. The U.S. should continue and expand these activities to all RDA's. In addition, the U.S. should consider expansion of the coop activity into areas not now covered such as provision of consumer goods and consumer credit.

In addition to Project 645-005 already in progress, proposed project 645-0206 dealing with marketing coops should be implemented and eventually extended to all RDA's to provide warehousing, processing, refrigerated storage facilities, a transport fleet, participant training, and technical assistance.

E. RURAL ROADS.

While there is some rural road improvement taking place through efforts of donors other than the U.S., there is considerable potential for further projects on this important constraint to development. While difficult to

quantify, rural road development would open rural areas to influx of the needed rural infrastructure as well as improve marketing of farm products.

Specific projects needed (although there are many others) include:

1. Paving of the Mpaka-Lomahasha road.
2. Improving the Phuzumoya-Big Bend road.
3. Improving portions of the Manzini-Nhlanganos-Mahamba road.
4. Upgrading the Pigg's Peak-Jeppes Reef road.

No comments will be directed to rail and air transportation as this should appear in another sector analysis.

F. LIVESTOCK PRODUCTION AND HUSBANDRY.

In the area of cattle, the Swazi are probably on the right track in their present programs to destock and upgrade the National Herd and improve offtake. The U.S. role should be primarily in support of the Extension service in promoting these objectives.

There is, however, room for projects concerning swine, poultry and goats on SNL. While the U.S. has a proposed mohair project, production and husbandry of these classes of livestock have largely been neglected. Collection centers for poultry and eggs should be considered as well as a market structure for milk buying.

G. IRRIGATION DEVELOPMENT.

Swaziland has already developed much of its irrigation potential in connection with crops on ITL. One source estimates that there remains a further potential for only about a 50 percent increase from surface sources and that sub-surface water potential is limited. Some irrigation projects have recently been developed on SNL and these efforts are continuing. There is probably limited potential for U.S. involvement in further irrigation schemes, but they should be considered. One area for U.S. involvement might

APPENDIX A1

Agricultural Manpower and Education in Swaziland

Kurt Ansel

Introduction

This paper presents the results of a one-week study in Swaziland. It was the author's task to:

- A. Assess the agricultural manpower supply and demand structure in Swaziland;
- B. Identify the major institutions responsible for agricultural education in the country and, through discussions with their personnel, identify any constraints to their full contribution to agricultural development; and,
- C. Suggest programs and policies for overcoming these constraints.

The paper is presented in three sections. In the first section, labor force and employment trends are described. This is followed by a description of the types of agricultural education programs available in Swaziland and a brief discussion of their problems. Finally the needs for assistance in three areas are described.

I. Labor Force, Wages, and Employment Trends in Swaziland

In 1975, the labor force of Swaziland included 161,000 Swazi workers, (Table 1). Projections which assume that 22,000 Swazis will continue to be employed in South Africa over the next decade indicate that the labor force will increase more rapidly than population because Swaziland's population is

be in the area of improving efficiency of irrigation techniques on SNL projects. However, an important policy question needs to be resolved with the RSA on water rights before further extensive irrigation schemes are initiated.

so young. While population will grow at approximately three percent per annum, the labor force will increase at the rate of 3.6 to 4.0 percent. Annually 7,000 to 9,000 new workers will have to be absorbed.

Table 1

Active Labor Force in Swaziland 1975, with
Projections to 1980, 1985, and 1990

	1975	1980	1985	1990
Males	94,300	116,700	140,000	168,000
Females	66,800	78,900	93,000	110,400
Total	161,000	195,600	233,000	278,000
Average Annual Increase	6,900	7,480	9,160	

Source: Christopher Colclough and Peter Wingfield Digby, Skills for the Future, Swaziland Ministry of Finance and Economic Planning, Mbabane, May 1978, p. 2.

Currently about 40 percent of the workers are employed in the modern sector (Table 2). The remaining 60 percent are employed in the subsistence economy, largely agriculture. Although growth of the modern sector has been remarkable, and continues to be rapid, a projection based upon current growth rate (4.25 percent) indicates that the labor force will grow twice as fast as employment opportunities in the modern sector. The surplus workers will have to be employed in the subsistence economy, particularly agriculture. The growth rate of the subsistence labor force will be 3.5 to 4.0 percent.

In order that income per worker in the subsistence sector remains constant, productivity will have to increase. This can only be achieved through the expansion of the area under cultivation and/or more intensive use of existing resources. One of the critical factors necessary to achieving this goal is an adequately manned Ministry of Agriculture, especially the Extension Service.

Table 2

Modern Sector Employment by Industry, 1976
with Projections to 1982

	1976	1982
Agriculture and Forestry	28,520	35,000
Mining and Quarrying	3,076	3,000
Manufacturing	8,216	10,600
Electricity and Water	799	1,000
Construction	3,075	5,400
Trade and Hotels	5,093	6,800
Transportation and Communication	2,566	3,200
Finance and Business Services	1,147	1,500
Social and Personal Services	13,723	18,500
Total	66,215	85,000
Annual Average Increase		3,131

Source: Christopher Colclough and Peter Wingfield Digby, Skills for the Future, Swaziland Ministry of Finance and Economic Planning, Mbabane, May 1978, p. 4.

As in most developing countries, skilled manpower is in extremely short supply in Swaziland. In 1977, there were 13,937 skilled Swazi in the labor force, three-fourths of which had ten years or less of education. Almost 45 percent had less than nine years of education. Only three percent of the skilled labor force, 412 individuals, had a university education.^{1/}

One of the results of this shortage of manpower, is the employment of expatriates to fill critical positions, usually technical ones, for which Swazi are unavailable. Of the skilled manpower in the country, 19 percent are expatriate including seventy percent of those with university degrees. Sixty-five percent of the skilled manpower with two years of university education or equivalent and 20 percent of high school graduates employed in Swaziland are non-Swazis.^{2/} The bulk of these are employed in the private sector, 69 percent of the total of 3,204. The government employs 321 expatriates.

The greatest shortage of skills are those requiring a background in mathematics, science, and the technical areas. Hence, the MOA uses proportionately more foreign workers than other branches of government. Although it employs only 8.7 percent of the government's skilled workers, it employs 16.2 percent of its expatriate employees.^{3/} In total, MOA employs 791 workers of which 717 are skilled workers. By 1982/83 the GOS intends to increase its total labor force to 1,226 of which 1,107 will be skilled.

^{1/} Christopher Colclough and Peter Wingfield Digby, Skills for the future, Swaziland Ministry of Finance and Economic Planning, Mbabane, May 1978, p. 13.

^{2/} Ibid; pp. 64-65.

^{3/} The Third Five Year National Development Plan for Agriculture: 1978-82, pp. 68-70.

Table 3

Ministry of Agriculture Manpower 1977/78
and Projection 1982/83

	1977/78	1982/83	Increase
High Level			
Scales 12 or above	74	88	14
Middle Level			
Scales 9-11	182	374	192
Low Level			
Scales 6-8	451	645	194
Unskilled			
Scales 2-5	84	119	35
Total Skilled	717	1107	390
Total	791	1226	435

Source: The Third Five Year National Development Plan for Agriculture: 1978-82, pp. 66-70.

The Ministry plans only a moderate increase in its high level manpower, 14 positions or 19 percent of the 77/78 level (Table 3). Proportionately the greatest increase is planned for the middle level positions--diplomats or certificates with experience. By 1982/83 there are to be 374 middle level employees as compared to 182 in 1977/78, an increase of 105 percent. Low level skilled manpower is to be increased an equal amount. However, because the current number is larger, this is proportionately less; 43 percent. Unskilled employment is to increase 42 percent, from 84 to 119. Capacity to educate this manpower is insufficient but may be excessive in some programs.^{1/}

^{1/} U.S. Agency for International Development, Government of Swaziland Manpower Requirement Study, Mbabane, September 1977, pp. 32-35.

Because school enrollments are increasing very rapidly, the shortage of skilled manpower will be largely eliminated in the next several years.^{1/} In fact, severe surpluses and resulting unemployment can be anticipated in the 1980's for all categories except degree holders. The supply of degree holders will meet demand by the late 1980's.

The major manpower issues with which Swaziland will have to deal are:

- a) In the short-run, these will continue to be a shortage of skilled manpower at all levels, but particularly of degree holders. More acute is the shortage of highly competent Manpower at each level.
- b) In the near future, existing shortages of skilled manpower will be overcome except of degree holders. As a result many educated young people will find it impossible to locate jobs in the fields for which they prepared. In order to survive, many will be forced to become small farmers. Others will remain in urban areas where they will be unemployed. This together with the large disparities in income can be the cause of substantial social and political unrest.^{2/}
- c) As the GOS is well aware, efforts will continue to be required to improve the science and mathematics capacities of Swazi students.

^{1/} Colclough and Digby, Op. Cit., pp. 37-41 and Richard P. Warestal, Human Resources Development Study for Swaziland, Research Triangle Institute, May 1976, p. 3.

^{2/} Colclough and Digby, Op. Cit., pp. 29-34.

II. Agricultural Education in Swaziland

Primary and Secondary Education

One of six major goals of the Second National Development Plan was to "Improve the education system to fit the manpower needs of the economy".^{1/} In order to achieve this goal, practical courses have been established in primary and secondary schools in metal working, drafting, carpentry, and agriculture. The agriculture course was first taught in 1973 and is now taught in standard four and five of LTT primary schools and in Forms I, II, and III of three secondary schools.^{2/} Progress has been substantial. Curricula materials, including books and teachers manuals have been prepared. Facilities, including classrooms, storage sheds, and small animal pens, have been built at the participating schools. A diploma course in agricultural education is taught at the University of Botswana and Swaziland. Plans have been drawn up for training in teaching agriculture at the primary level at the new teachers' college to be built at Nhlngano. In 1978, 1,150 students took the junior certificate examination in agriculture. However, there is still substantial opportunity to strengthen the program including improving curricula materials, preparing slides and film strips, increasing equipment and materials, and expansion of the program into additional schools.

In addition to the formal teaching program in agriculture, 238 schools participate in the School Garden Scheme. In this program the schools are supplied fencing materials, seeds, fertilizer chemicals and tools. Students,

^{1/} U. S. Agency for International Development, Transition in Southern Africa - Swaziland, February 1977, p. II-23.

^{2/} Swaziland Government, The Annual Report Summary of the Ministry of Education, 1977, p. 45.

under the guidance of a teacher, plant a small plot and sell the produce. However, teachers often are not prepared to teach this program. As a result, it is not very active in many schools.

Certificate Courses

Certificate courses related to agriculture are offered by the University of Botswana and Swaziland (Agriculture), Ministry of Agriculture (Animal Health), and Swaziland College of Technology Mechanics (agricultural motor mechanics and heavy equipment operation). Typically these courses require one year to complete. Applicants must have a junior certificate. The largest demand for certificate holders is as Field Officers (extension workers). The annual output of this agricultural course at UBS is 40.

The first certificate class completed in May 1978. Of the 40 who were admitted to the program two years earlier, 31 actually completed the program and accepted employment with the MOA. It is widely anticipated, however, that a substantial number of certificate recipients will be hired away by the private sector. Hence some expansion is desired to assure the MOA obtains 40 field workers annually.

Diploma Courses

The following diploma courses relevant to agriculture are part of the curriculum of the UBS:

Agriculture

Agricultural Education

Animal Health and Management

Home Economics

Twenty students are admitted annually to each of these two-year programs. Entry requires a pass on the Cambridge examination. Typically, students admitted to these programs received class three and class four passes. Upon completion, students become middle level employees of the Ministry of Agriculture.

MOA extension personnel frequently criticize the diploma courses as being too "theoretical", a charge which is stoutly denied by UBS faculty. It was not possible to ascertain which party is correct. However, it does appear that UBS personnel and facilities devoted to the practice program are limited.

Degree Programs in Agriculture

The UBS offers a Bachelor of Science degree in general agriculture. Approximately ten Swazis are admitted annually. Students wishing to specialize or undertake graduate education must go abroad.

Heretofore, a major weakness of this curriculum results from the poor background students have in mathematics and science at the primary and secondary level. As a result, College of Agriculture students are required to take two years of introductory course work. Only two years remain for agricultural courses. However, beginning in 1979, applicants will be required to take a semester-long preparatory course in mathematics and science prior to formally enrolling in the university. This will permit three years of agricultural courses as well as more thorough screening of applicants. Students whose performance on the Cambridge examination was not outstanding will be given an opportunity to prove their capacity.

Agricultural Extension

In 1970, Swaziland initiated the Rural Areas Development Program. This program consists of an integrated program for rural development involving

crop and livestock extension, health services, road improvements, school construction, tractor hire services, construction of water systems, terracing, and construction of dipping tanks. The primary goal of the RDAP is to promote agricultural development and to improve living standards of Swazi farmers.^{1/} The MOA and the traditional government jointly manage the program. Other ministries also participating are Education, Health, and Local Government. In the future, all agricultural extension services will be offered through the RDAP. Presently, some services are provided in a conventional way in those areas not yet included in RDA.⁴

At present, Swaziland has a severe shortage of extension field workers. Only 365 are employed by MOA of which only 50 are crops specialists. By 1982 MOA plans to employ 577 extension agents, including 166 crop specialists.^{2/}

Because of the shortage of personnel, extension has had difficulty in meeting the demands for its services.^{3/} In several parts of the country, personnel have been withdrawn and transferred to the RDA.⁴ Personnel is so limited that many farmers cannot be reached. A survey of farmers living within six kilometers of the northern RDA revealed that two thirds had never received a visit from an extension field officer.^{4/} MOA has devised plans to eliminate their problem and has the goal of employing an extension worker in each subject matter speciality for every 200 farmers.

^{1/} World Bank, Swaziland Rural Development Project Appraisal Report, Report No. 1306-SW, January 12, 1977, Annex 2, p. 3.

^{2/} Third Five Year Development Plan, Op.Cit., pp. 64-69

^{3/} FION de Vletter, The Rural Homestead as an Economic Unit, University College of Swaziland, 1978, p. 29.

^{4/} Carol Allan, unpublished manuscript.

At the present time, each division of the MOA (agriculture, livestock, fisheries, and forestry) has its own extension program. In spite of the fact that the production of these commodities is related, there has been little coordination between extension programs in these areas. The initiation of the RDAP makes integration of extension services even more important. Such a reorganization is currently under consideration.

A primary weakness of Swaziland's extension service is its very rudimentary program planning and reporting. Plans are made in terms of the desired changes in farmers' behavior, but are not translated into specific activities and step by step procedures for obtaining the desired results. Reports of activities are presented in terms of the achievement of targets, with little reporting of specific activities. Apparently, programs are rarely written out prior to presentation.

Central services for extension are rudimentary. The MOA does not have a printing press, publication staff (editors, photographers, artists, etc.) and has little broadcast recording equipment and visual aids. It only has one partially operative film mobile unit. In order to have an effective extension service, these services must be improved.

MOA does not have a well organized in-service, on-the-job training program. At the present, meetings of the extension field workers to improve their skills are only held every two or three years. If the staff is to maintain its knowledge and grow professionally, a regular program of seminars, workshop, and short courses is essential.

Needs of the Primary and Secondary Education System

The following is a listing of problems of agricultural education in Swaziland. They were largely derived from interviews. Their ordering is random.

1. Primary and Secondary Agricultural Education

- a. Limited capacity to expand the program to additional schools due to lack of teachers and physical resources.
- b. Inadequate preparation of primary school teachers for instructing agricultural subjects.
- c. Insufficient personnel and resources for preparing curricula, teaching materials, and for teaching diploma program.
- d. Inadequate facilities at Nhlanguano.
- e. Recurrent budget limitations limit number of teachers that may be trained and posted.

2. Certificate, Diploma and Degree Programs

- a. Possible surplus of certificate and diploma recipients emerging during 1980's.
- b. Probable losses of agriculture certificate recipients to other agencies and the private sector.
- c. Poor quality and unenthusiastic students enrolled in the diploma program.
- d. Insufficient personnel for the UBS programs.
- e. The lack of qualified Swazi to replace foreign professors.
- f. Insufficient practical work in the diploma courses.
- g. Lack of coordination between Ministries and the Scholarship selection Board.

3. Extension Programs

- a. Insufficient staff
- b. Lack of central support services for preparation of materials.
- c. Poor linkages with research programs.

- d. Few Women agricultural extension agents although the majority of farmers are women.
- e. Little attempt or guidance in preparing extension programs.
- f. Little training in extension methods.
- g. Crop and livestock extension administratively separated and frequently uncoordinated in the field.
- h. Infrequent in-service (on-the-job) training such as short courses and seminars.

Recommendations

- 1) MOA/GOS should institute a regular program of manpower planning to avoid excess supply of trained agriculturists.
- 2) In order to reduce unemployment of school leavers in urban areas, public investments should be redirected to rural areas to make them more attractive as living places and enhance the possibility of employment in those areas. Wage structures should be reviewed to reduce disparity between rural and urban incomes.
- 3) AID and GOS should consider initiation of a project to strengthen the extension service. Among the elements which might be included are:
 - a. expansion of the UBS certificate course;
 - b. expansion of the public information office of the extension service including provision of necessary equipment and staff;
 - c. increasing the number of film mobiles and similar equipment;

- d. reorganization of extension to integrate all extension programs and coordinate better with research;
 - e. improvement of the inservice training program for extension workers.
4. GOS and AID should consider a program to strengthen formal agricultural education in Swaziland and speed its establishment. Important elements might include:
- a. expansion of the diploma program in agricultural education through the provision of additional staff facilities and equipment as needed;
 - b. provision of resources necessary to providing for adequate preparation of primary teachers at William Pitcher and Nhlangano teachers colleges;
 - c. Support of central administration of the agricultural program through provision of needed personnel and equipment for preparation and delivery of teaching materials and supplies; and,
 - d. assisting individual schools to build physical facilities for agricultural education.

Persons Interviewed:

William Bell
Dean of the Faculty of Agriculture, UBS

David Gooday
Agricultural Education, UBS

C. F. Dludlu
Director
Agricultural Certificate Program, MOZ/UBS

John Menz
Chief Economist, MOA

Carol Allan
Consultant, USAID and Sociologist,
National University of Lesotho

Victor Pungwayo
Director of Agriculture, MOA

Patrick K. Lukele
Senior Agriculture Officer, MOA

B. Gumedze
Project Manager
Central RDAP

Wilson McKinley
Mechanization Officer
Central RDA

J. Watson
Chief Research Officer
Malkerns Research Station
Malkerns, Swaziland

E. Givon
Training Officer, MOA

C. Dawson
Planner
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Z. Kingsley
Planning Officer/Agriculture, MFDP

N. Dlamini
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N. Gumedze
Senior Veterinary Officer, MOA

APPENDIX A2

Agricultural Marketing in Swaziland

(Present structure and future potentials, with specific reference to farmers on Swazi Nation lands)

William H. Scofield
Marketing Economist, Consultant

Acronyms

CCU	-	Central Cooperative Union
SDSB	-	Swaziland Development and Savings Bank
MCC	-	Ministry of Commerce and Cooperatives
MOA	-	Ministry of Agriculture
CDC	-	Commonwealth Development Corporation
CIDA	-	Canadian International Development Agency
RDA	-	Rural Development Area
SNL	-	Swazi Nation Land
CLUSA	-	Cooperative League, USA
SMC	-	Swaziland Meat Corporation
RSA	-	Republic of South Africa

Summary and Recommendations

The adequacy and efficiency of the marketing systems in Swaziland varies among commodities. It ranges from generally adequate for cotton and tobacco to much less efficient for fruits, vegetables, and several minor crops. Existing deficiencies will become more evident as serious constraints to the success of the RDAP in an effort to convert subsistence farmers to commercial

production. Provision or assurance of marketing facilities in advance of production programs to provide incentives to subsistence farmers to break out of their traditional production patterns is needed.

Although reasonably adequate for the present status of the cattle industry, further refinements in the cattle marketing system will be necessary if other programs are successful in increasing the annual off-take from the national cattle herd. Developing an effective marketing system for fluid milk and commercial vegetables from small-scale producers will probably be the most difficult.

The existing organizational framework for cooperatives organized under the Central Cooperative Union provides the best means for further development of an integrated system of full service cooperatives embracing farm inputs, credit and marketing. Progress has been slow thus far but the combined efforts of several foreign donors, as well as active support from the Government of Swaziland should eventually produce the desired results. It will be a major undertaking, however, requiring at least a decade to develop an efficient and functioning system.

Agricultural Marketing in Swaziland

This paper outlines the current market structure for the principal commodities produced by Swazi farmers on Swazi Nation lands. It specifically excludes the marketing organization for commodities produced on commercial farms on ITL (shiefly sugarcane, citrus and pineapple) which is generally well developed and beyond the scope for assistance from donor agencies.

Swaziland is fortunate in having a wide range of climate and soils capable of producing a number of products for both domestic and export markets. These potentials are not being realized because the marketing system is defi-

cient in several respects. Significant quantities of vegetables, milk, maize, and other basic foods, which could be produced in the country, are imported. Likewise, domestic production is not capable of capitalizing on export market demands. Because of deficiencies in the internal market structure, some products are shipped out of the country for assembly, grading or processing and subsequently re-imported.

Apart from the commercial farms, which account for about 60 percent of agricultural output, there are 39,000 Swazi Nation farms which have 70 percent of the population and produce mainly for subsistence. Lacking a marketing system, there is little incentive to step up production beyond the level needed for subsistence.

Consequently, the major objective stated in the Third Five Year National Development Plan for Agriculture, 1978-82, is to assist Swazi farmers in making the transition from subsistence agriculture to semi-commercial and commercial agriculture. One of the means for achieving this objective is to strengthen the framework of basic services, including extension, input supply, and marketing. As more fully described elsewhere, these efforts are being focused in the Rural Development Areas (RDA's) which are in the early stages of implementation.

The existing cooperative system, under the general direction of the Central Cooperative Union (CCU), has been designated as the institutional structure on which to build an efficient marketing system. The longer-term goal is to combine the functions of providing production credit, farm inputs and consumer credit into multi-purpose cooperatives or farm service centers. Such units will become an integral part of rural development projects as they are expanded to cover most of the country.

Progress in achieving these goals has been slow, although technical services and capital for physical facilities is now in place as a result of multi-donor assistance, as well as from the GOS. A Cooperative Development Center has been established, as well as a training center to develop skills in accounting, management and operations of cooperatives.

Thus far, the major activity of the cooperatives operating under the CCU has been in supplying inputs, accounting for about one-third of total requirements. Fertilizer tonnage handled has increased sharply. The CCU has also been involved in supplying credit. The credit function rests with the Swaziland Development and Savings Bank (SDSB) whose previous operations have been geared chiefly to servicing commercial, non-Swazi farmers. The CCU has lacked managerial and technical staff, as well as the physical facilities--warehouses, grading equipment, transportation--to carry out a marketing program, but one is planned for the future.

Small Farmer Credit Program

About one-fourth of Swazi farmers have less than 1 ha, which is not sufficient to feed their families at present yield levels. Their credit needs, although in small amounts, are often critical in increasing production to the full subsistence level. However, the present credit system is not designed to handle such needs well. Without land titles, cattle represent the only security available to meet requirements of the SDSB. Thus credit sources are reluctant to make small loans because of high administrative costs and lack of experience in determining credit worthiness.

A special trial or experimental program will be needed to design a credit program appropriate to the needs of significant groups of farmers.

Concessionary interest rates and terms, as well as a subsidy for administrative costs will be needed in the initial phases of the program. In addition to the mechanism for extending credit to small farmers, an educational program is needed to show such farmers how they can use credit effectively to increase food production and their responsibility for repayment. Such a program should be an integral part of the extension efforts in the Rural Development Areas.

The USAID technical assistance program for cooperatives initiated in the fall of 1977 will make a substantial contribution to the development of the cooperative structure through training of staff and funds for selected physical facilities. Further expansion of technical assistance will be needed to implement marketing and credit services. Certain administrative changes may be needed to achieve better coordination between the CCU and the Rural Development Program. In addition a permanent source of operating capital for the purchase of inputs will need to be found. Such funds will need to be increased as the cooperatives move into marketing to provide farmers with immediate cash payments upon delivery to collection points.

Following are brief descriptions of the current status and needed improvements in the marketing system for specific commodities.

Maize. A concerted effort is being made to increase yields by providing better seed and wider distribution and use of fertilizer. At least 70 percent of total maize production is consumed on farms where produced, or sold to local mills. Thus, the surplus available for sale and the need for marketing facilities is limited.

The Swazi Milling Co., privately owned, is required to buy all locally-produced maize at prices fixed by the GOS slightly above imported maize from the RSA. However, the requirements regarding moisture content, quality, and

minimum lot size (30-90 kg bags) precludes this outlet for all but the largest producers. The CCU has conducted a limited maize purchase and assembly program and handled about 1,000 tons in 1975-76. This program will need to be expanded when the RDA's are successful in increasing production in excess of family subsistence needs.

Cotton. Cotton production by Swazi farmers has increased sharply in recent years, accounting for 42 percent of total production in 1975. Eighty percent of Swazi production is handled by the Cotona Cotton Ginnery which provides a limited amount of credit. Prices are fixed by a Cotton Committee in the RSA, and most of the ginned cotton is exported to, or through, that country.

Swazi cotton producers must deliver their seed cotton to the gin, which requires arranging for transportation and frequently long delays at the gin. They receive an initial payment, but must wait for final payment in 2-3 installments. These problems have brought itinerant buyers into the market who buy small lots at the farm and pay cash, although their prices are usually less than could be obtained through normal marketing channels. Cooperatives could perform a similar function if trained graders and storage facilities were available.

Tobacco. An important and profitable cash crop, tobacco has long been marketed through the Tobacco Cooperative Co. at Nhlangano which operates independently from the CCU. Limited quantities grown near the border go to RSF tobacco cooperatives. Both the Swazi and RSF markets sell via auction.

As with other crops produced in small quantities, there are problems in grading at the farm, assembly, and transportation. Some observers believe that Swazi graders should be trained to eliminate dependence on graders from

the RSA. Such training would require considerable time and expense, and hence, could not be implemented immediately.

Minor Crops. Dried beans, sorghum and groundnuts are grown in limited quantities as subsistence crops and no organized market is needed at the present level of production. However, there is an unfilled domestic market for beans and sorghum which the RDA's could undertake to meet.

Rice is grown almost entirely on ITL. A small-scale rice project sponsored by the Chinese (Taiwan) Agricultural Mission is now supervising 79 Swazi farmers and intends to expand this program to 500 farmers who would cultivate 400 ha by 1982. The existing rice mill could undoubtedly handle the expected output from Swazi farmers.

Vegetables. These crops, chiefly Irish potatoes, tomatoes, onions, and cabbage, offer a promising potential for increased production to meet both domestic and export demands. Production has increased to about 1,000 ha recently, some of which is on recently developed irrigated tracts in several RDA's. Such production is especially promising as it would meet off-season market demands in the RSA.

The CCU has considered establishing marketing facilities but presently lacks the special requirements for handling perishables. Commercial production is now bought by private dealers for distribution to wholesale and retail outlets. Some products are shipped to the RSA for grading and subsequently shipped back to the larger retail outlets in Swaziland.

USAID has proposed a new project for funding in FY-1979 to organize a produce marketing infrastructure in connection with its ongoing Cooperative and Marketing project. Funding is requested for district cooperative warehouses, a cold storage unit, packing, grading and transportation equipment,

and participant training. Technical assistance would include a market manager, sales manager, purchasing and grading specialist and a processing specialist.

Livestock. Swaziland has developed one of the best veterinary and health programs for cattle in Africa. This emphasis reflects long-standing cultural values that view cattle as a storehouse and symbol of wealth, rather than a regular source of cash income. This view has resulted in serious overgrazing and several proposals or actions to increase the annual off-take from the national herd of nearly 700,000 head. Improved marketing facilities would be one means of increasing the contribution of the cattle industry to the national economy.

Present market outlets are: (1) the Swaziland Meat Co. which has slaughter, processing and freezing facilities and exports meat and meat products; (2) an auction company willing to provide its services wherever animals and facilities are available. Possibly 15 percent of total marketing move through this channel; and, (3) private sales at diptanks. Cattle also are exported live for slaughter in the RSA.

The major livestock marketing problems are centered in such areas as reliable price information, grading, and alternative market outlets. The establishment of cattle fattening farms by the GOS, as a part of its efforts to reduce overgrazing, provides a means for assembly and grading, and should contribute to improved quality and uniformity of carcasses.

Milk. This is an especially difficult product to market efficiently from small-scale producers. Even so, the Swaziland Milk Board has established collection centers that receive milk from 300 Swazi farmers. The Canadian International Development Agency has agreed to fund 72 percent of

a E4.7 million dairy development project during the Third Five Year Plan. Canadian heifers have been imported and a feed mill and processing plant has been constructed. The feed mill also will produce poultry feed. Egg production is stated to be an enterprise to be encouraged in the RDA's.

Present consumption of milk and dairy products is substantially below WHO/FAO recommendations. Only 7 percent of the total supply is produced within the country, and much of this is sold unpasteurized by producer-retailers. Substantial quantities of milk powder for reconstitution are imported under the World Food Program. Additional imports, mostly from RSA, consist of tinned milk, powder, butter and cheese. More fluid milk is imported for processing in the Dairy Board Plant than is produced locally.

Maintaining high and uniform quality competitive with imports, and distributing pasturized fluid milk to outlying areas, is a major problem, as is insuring adequate refrigeration facilities at retail outlets. The establishment of a dairy testing laboratory and the installation of a modern milk packaging machine are initial steps taken to strengthen the dairy industry.

It is not clear at this time how successful the RDA's will be in stimulating production by Swazi farmers. Initially, quantities are likely to be too small for collection and hauling to the Dairy Board plant. But the Board will provide assistance to the local cooperative in the collection and sale at the local level.

Persons Interviewed:

Ezrom M. Dlamini
Deputy General Manager,
Designate, CCU

Lewis Townsend
Deputy General Manager, CCU

J. L. Mbingo
Deputy Commissioner for
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A. V. Kunene
Commissioner for
Cooperatives, CCU

Patrick K. Lukele
Senior Agricultural Officer
RDA, MOA

References:

1. Swaziland Cooperatives and Marketing Project Paper, USAID, May, 1976.
2. The Third Five Year National Development Plan for Agriculture, 1978-82, second draft, September, 1977.
3. Report on the National Seminar on Agricultural Marketing, Ministry of Commerce and Cooperatives, October, 1975.
4. Report on the Agricultural Marketing Seminar for Botswana, Lesotho and Swaziland, Gaborone, June 1975, FAO Document AL DP/BOT/71/012.

APPENDIX A3

Soil Resources in Swaziland

Charles M. Thompson

The severe erosion and sedimentation problems of Swaziland are well documented in numerous papers and previous reports. The rates of erosion have been estimated to be as high as 25 to 35 tons of soil loss per hectare per year.^{1/} A maximum acceptable soil loss should not be greater than about 3 tons per hectare per year. The reduction of soil loss must then be a high priority problem needing immediate attention. No nation can survive for long after erosion has taken its toll of the nonrenewable resource that provides the basis for not only subsistence agriculture but also products for profits and export.

The primary problem areas of greatest soil loss are on the Swazi Nation lands that now comprise about 52 percent of the land area of the nation. Some effort is being made to control soil erosion through the Rural Development Areas Program. However, these RDA areas only cover about 12% of the nation at the moment. Soil information that is now available is based on a reconnaissance soil survey of the nation by G. Murdock in 1968.^{2/} This soil survey is a useable tool for broad or general planning and is now the only survey available. According to operational and research soil scientists there are severe limitations in using the existing survey for detailed planning or for expanding research information.

^{1/} Spaargaren, Walter, Estimated Soil Loss Due to Sheet Erosion, MOA, Mbabane.

^{2/} Murdock, G. 1968. Soils and Land Capability in Swaziland, MOA Bul. Nos. 23, 24, 25.

Also, the reconnaissance survey does not adequately identify the eroding areas. Detailed soil surveys are needed to arable lands and for all areas where intensive use is planned. Without good detailed soil surveys, research information is extremely difficult to expand to similar areas.

There is also a lack of basic laboratory data to support sound soil survey interpretations. Very little reliable data exist on the physical, chemical, and mineralogical properties of the soils. Therefore, little can be predicted about the engineering behavior of the soils. Good soil survey interpretations are needed for determining not only the land use plans and land capabilities, but also in the areas of wetlands, flood plains, steep grazing land, soils suitable for forests and woodland site information, engineering behavior, recreation, open space, and for areas of aesthetic value.

Additional information, as well as an update of existing data, is needed since the present land capability classification does not include subclass information that designates the primary soil problems, i.e., erosion, wetness, soil limitation, or climate limitation. This kind of information is helpful in explaining to lay people the need for land use changes and why certain land treatment recommendations are made and the need for implementation and maintenance. Any conservation and land development plan, regardless of how well planned and developed, cannot be carried out successfully, nor can it be maintained, without the understanding and willing cooperation of the local people. This key point calls for qualified soil scientists, agronomists, range conservationists, and engineers that can work on a one-to-one basis with the decisionmakers at the field level so that cooperative decision making can be accomplished.

One constraint to a new soil survey that we expressed by operational soil scientists is that the people using the old survey now understand it

and it would be difficult to train them to accept a more comprehensive product. Although this may be true, it cannot be a valid reason for stopping the gain of knowledge and understanding of soil behavior in this nation of good agricultural potential. This concept simply reflects the lack of trained people who can use and interpret soil information.

Recommendations:

1. Work through the Ministry of Agriculture to accelerate the formal training of highly qualified Swazi's in the soil sciences, (both classification and mapping as well as investigations) range science, agronomy, engineering, and possibly forestry disciplines. This could be done by training in foreign colleges and universities that have these capabilities. Training of qualified women should be considered.
2. A detailed soil survey is needed in much of the nation. A new and modern detailed soil survey should be undertaken in the near future to produce soil surveys for operational planning and as a basis for expanding research information. The new survey should be designed to meet the needs of the foreseeable future and the survey should be phased into a recognized soil taxonomic system. Of the several systems of Soil Taxonomy now in existence, it is recommended that the system adapted by the Swazi government should be their decision. However, the American system is the one now in use in Lesotho and is the most comprehensive one now in existence. The cost of such a National Soil Survey is difficult to estimate, but probably would range between 5 and 7 million U.S. dollars.
3. A need exists for laboratory data on the physical, chemical, and mineralogical properties of the soils. The data obtained must be reliable and obtained through standardized and recognized procedures. There is pre-

sently some limited laboratory information available through the Malkerns Research Station, but it is difficult to relate to kinds of soils. Also, the facility is very limited in its mission.

Persons Interviewed:

Mr. N. Nkambule, Soil Scientist (Operational)
Ministry of Agriculture
Mbabane

Mr. M. Shongwe, Soil Scientist (Operational)
Ministry of Agriculture
Mbabane

Mr. T. K. Maseko, Soil Chemist (Research)
Malkerns Research Station

Mr. Mike Jones
Soil Fertility Agronomist (Research)
Malkerns Research Station

References:

Murdoch, G., 1968, Soils and Land Capability in Swaziland, Part I, II, III. Ministry of Agriculture, Bulletin Nos. 23, 24, 25.

Doran, M. H.; Low, A.R.C.; Kemp, R. L., Overgrazing and Cattle Development in Africa. Lessons from Swaziland.

Roder, Wolf, 1977, Environmental Assessment, Swaziland, Rural Development Areas Program, University of Cincinnati and University of Zambia.

Government of Swaziland, 1970, General Plan for Development and Utilization of Water Resources, Usuta, Mbuluzi, Komati and Lomoti River Basins, Food and Agricultural Organization of the United Nations.

Government of Swaziland, 1977, Soil Conservation Cost-Effectiveness Study. U.S. Agency for International Development in Cooperation with the U.S. Department of Agriculture Rural Development Area Study Team.

APPENDIX A4

Swaziland Livestock Sector Analysis

Dee L. Cross
Livestock Specialist, SADAP

Brief Description of the Livestock Sector

Livestock is an important source of income for Swaziland. Meat, livestock and livestock products exports were valued at E3.2 million for 1975. This represented 2.4 percent of total domestic exports. Total cattle numbers were estimated at 634,000 head in 1976. There are also approximately 237,000 goats and 30,000 sheep in Swaziland. Most cattle and goats are owned by Swazi farmers and grazed on SNL pastures in a communal grazing arrangement. Of the 634,000 head of cattle, approximately 100,000 head are owned by commercially-minded farmers on ITL. These farmers generally employ modern management techniques.

Cattle play a vital role in Swazi society. Cattle ownership, by tradition, confers prestige. They are a measure of wealth and serve a banking function for subsistence farmers. Cattle also serve as the dowry in marriages. In addition to meat from cattle, goats, pigs, and chickens are important sources of subsistence food on SNFA. Also, oxen are used as draft power, although rental of tractor power is beginning to be increasingly used.

The local breed of cattle (Nguni) are well adapted to local conditions but they are very inefficient and take 5-6 years to mature under present conditions. Cross breeding with exotic cattle increases their productivity markedly. In 1976, the estimated offtake of cattle on SNL was 8.4 percent.

Off take of cattle on ITL averaged approximately 15 percent.

Major Constraints to Increased Efficient Production

Overgrazing, as a result of overstocking, with subsequent soil erosion, is a major problem on SNL. Productivity could be increased substantially by reducing grazing livestock numbers along with good management techniques. Stocking density (hectares/livestock unit) has increased from 2.3 in 1968 to 1.9 in 1975. Cattle numbers on SNL have increased by 3 percent per annum in recent years. The future of agricultural productivity in Swaziland is dependent on willingness to correct the overgrazing situation. Use of communal grazing lands, along with the Swazi farmers' attitude toward cattle as a source of wealth, are major contributing factors to overstocking. Also, recent decreases in mortality due to an efficient livestock veterinary service has ironically contributed to the overstocking problem. With communal grazing, there is no incentive to decrease livestock numbers. In fact, it gives one an incentive to hold large numbers of livestock, as many Government officials and village leaders allegedly do. Participation of officials in solving the overgrazing situation may be hampered by possible conflicts of interest.

What is Being Done?

Four Rural Development Areas (RDA's) began in 1970 with financing from the United Kingdom. These four areas account for about 7 percent of the Swazi Nation land (SNL) area and 10 percent of its population. The GOS has been encouraged by the progress in these RDA's and by the reception of the program by local farmers. USAID has begun assisting in these RDA's.

In comparison to other African countries, Swaziland remains free of most major animal diseases with the exception of rabies which has occurred

sporadically since 1974. Veterinary services are excellent. Foot and mouth disease prevention measures were consolidated by completion of a double cordon fence and a patrol road stretching from the Usutu River to Mananga and along the Western foot of the Lubombo escarpment. A compulsory calf vaccination scheme for brucellosis was commenced in 1974. A national beef cattle breeding program was established in 1974-75. In order to track breed performance on specified ranches (using Brahman and Simmental bulls) a data processing unit was set up in 1975-76. Cattle breeding stations have been completed in the Lowveld and Highveld. Improved bulls have been distributed to Swazi stock owners in certain areas to encourage commercially oriented production. Attention has been given to development of "group ranching" by Swazi farmers in the RDA's. Two such ranches have been established, one in the Northern RDA and the other in the Mahlangatsha RDA. Grass fattening ranches have been established to entice farmers to reduce numbers and prepare animals for slaughter (most cattle are too thin for slaughter). These have had limited success. It has been observed that Swazi cattle farmers do not respond to supply-demand situations as Western cattlemen do. In fact, as price of cattle increase, sales of cattle decrease.

There has been a strengthening and re-organization of the Swaziland Milk Board. Milk sales, extremely low from SNL in previous years, through the Board have increased by 170 percent to 8,100 litres/day from mid-1974 to mid-1977. Milk collection centers were established and in 1974-75 this operation resulted in a supply of 1/4 million litres of milk from 300 Swazi subsistence farmers. At the end of 1976 the Canadians agreed to fund 72 percent of a E4.7 million dairy development project. Three hundred forty-five dairy calves have arrived to stock that program. In the RDAs, 1-4 dairy cow herds

are being started on part of the arable land. Milk pasteurizing, processing, and a feedmill is being planned at Matsapa. Maize to support the dairy industry is one major constraint which is foreseen.

Most rural households have poultry for home consumption and some have swine and goats. All are very important for subsistence. Very little is being done to develop poultry, swine, or goats, either commercially or for subsistence. Arbor-Acres Poultry Company, under the auspices of Swaziland Poultry Institute, opened a hatchery and is allegedly interested in expanding into other areas. Commercial poultry expansion is severely hampered by strong competition from efficient RSA poultry imports.

What Needs to be Done?

Many officials in the MOA are quite aware of the overgrazing problem, although some refuse to agree or downplay its importance. Their plans for solving the problem in the future include expansion of the Extension Service in the RDAs with the idea of communicating and convincing the village farmers and their leaders of the value of destocking and good management practices. It is envisioned that a village committee will make these decisions. Also, better communication with the Community Rural Development Board is planned. Legislation to control stocking rates was approved in 1954. The Central Rural Development Board was supposed to enforce this legislation, but has not.

Considering the impetus that RDA's presently have, it appears that future U.S. aid should continue to support the RDAs. A pilot project to determine the effectiveness of a well equipped Extension Service to sell the idea of destocking, along with good management techniques, seems feasible. However, large amounts of money should not be put into the RDAs to increase the level of management unless it is shown via a pilot project, that destocking can be

accomplished. Further increases in level of management without destocking will only add fuel to the fire.

A project or projects to increase the efficiency and level of production of swine, poultry and goats for household consumption should be considered. This could possibly be accomplished via the Extension Service in the RDAs. Very little attention is being given to these important areas.

References and Contacts:

1. Report on a Study Tour of Cattle Ranching Schemes in Kenya and Tanzania, 1975. N. T. Gumedze.
2. Overgrazing and Cattle Development in Africa: Lessons from Swaziland, 1977. M. H. Doran, A. R. C. Low and R. D. Kemp.
3. Swaziland Rural Development Appraisal Report. 1977. Document of the World Bank, Report No. 1306-5W.
4. Government of Swaziland Soil Conservation Cost Effectiveness Study. 1977, H. L. Kugler, Coordinator.
5. Third Five-Year National Development Plan for Agriculture: 1978-82. 1977. Government of Swaziland. (Draft, December 1977).
6. Background Notes--Swaziland. 1977. U. S. Department of State.
7. Swaziland. In: Africa South of the Sahara. 1977-78. London Europe Publi. Ltd.
8. Transition in Southern Africa....Swaziland. 1977. South Africa Task Force, USAID.
9. The Rural Homestead as an Economic Unit. 1978. Fion de Vletter, University College of Swaziland.
10. Personal Communication. M. Butterworth. Livestock Project Manager, Ministry of Agriculture, Government of Swaziland.
11. Personal Communication. N. Gumedze, Senior Veterinary Officer, Animal Production, Ministry of Agriculture, Government of Swaziland.

B. EXTERNAL ASSISTANCE TO THE
AGRICULTURE SECTOR

Inventory of On-Going Technical Cooperation Activities in Swaziland, 1976

(1) Project Activity (Title)	(2) Source of Assistance (Executive Agency)	(3) Assistance Committed For 1976 (US \$ Equivalent) Total 1976		(4) Duration-Total Project Begin-End Dates	(5) Nature of Assistance and Location, Comments Where No Place Indicated--Mbabane
SWA/71/005 Agricultural Planning (OPAS)	UNDP (FAO)	94,589	3,629	Jan. 1972 to June 1976	Ministry of Agriculture <u>Fellowships</u> : \$3,600 1/12mn
SWA/72/014 Livestock Production and Extension Project	UNDP (FAO)	630,709	163,729	May 1973 to Mar. 1978	Ministry of Agriculture Vet. Dept. <u>Equipment</u> : \$1,032
One Associate Expert (Pasture Agronomist) to project SWA/72/014	Denmark (FAO)	---	20,000	Sep. 1974 to Sep. 1977	<u>Fellowships</u> : \$31,200
Two associate Experts (Animal Production and Economist) to project SWA/72/014	Netherlands (FAO)	---	40,000	Feb. 1975 to Sep. 1978	
SWA/72/015 Crop Production and Extension Project	UNDP (FAO)	596,723	157,574	Oct. 1973 to Aug. 1978	Ministry of Agriculture
Two Associate Experts (Tobacco Agronomist and maize and legumes Agronomist) to Project SWA/72/015	Netherlands	---	40,000	Dec. 1973 to Aug. 1978	
SWA/73/004 Dairy Industry Advisory Project	UNDP (FAO)	125,594	46,025	Dec. 1973 to Dec. 1977	Ministry of Agriculture
SWA/75/009 Dairy Factory Manager	UNDP (FAO)	94,000	46,172	Oct. 1975 to Oct. 1978	Ministry of Agriculture Encourage milk production and consumption <u>Equipment</u> : \$3,332
SWA/75/012 Senior Agricultural Economist	UNDP (FAO)	108,000	32,334	Nov. 1975 to Nov. 1978	Ministry of Agriculture Development of an Economic Section within the Ministry: <u>Fellowships</u> : \$4,200
TF/SWA.6 (SWE) Animal Health (Diploma Course)	Sweden (FAO)	820,300	107,700	Aug. 1974 to Aug. 1979	UBA, Faculty of Agriculture

Inventory of On-Going Technical Cooperation Activities in Swaziland, 1976 (Continued)

(1) Project Activity (Title)	(2) Source of Assistance (Executive Agency)	(3) Assistance Committed for 1976 (US \$ Equivalent) Total 1976		(4) Duration-Total Project Begin-End Dates	(5) Nature of Assistance and Location, Comments Where No Place Indicated--Mbabane
One Associate Expert (Animal Health and Management) to project TF/SWA.6 (SWE)	Denmark	---	20,000	Jul. 1975 to Jun. 1977	UBA, Faculty of Agriculture
One Associate Expert (Veterinary Medicine) to project TF/SWA.6 (SWE)	Netherlands	---	1,700	Dec. 1976 to Dec. 1977	" " " "
TF/SWA.7 (SWE) Home Economics (Diploma Course)	Sweden (FAO)	408,640	88,065	Nov. 1974 to Apr. 1978	" " " "
Two Associate Experts (Home Economics) to project TF/SWA/7 (SWE)	Sweden	---	40,000	Sep. 1974 to Aug. 1977	" " " "
TF/SWA.8 (SWE) Lecturers in Agriculture Degree Studies, UBS	Sweden (FAO)	1,606,270	94,376	Oct. 1975 to Oct. 1981	" " " "
SWA/76/SIDA/005 Fisheries Officer (OPAS)	Sweden	49,223	49,223	Jan. 1976 to Dec. 1976	Ministry of Agriculture
SWA/76/SIDA/007 Nutrition and Home Economics Officer (OPAS)	Sweden (FAO)	13,656	13,656	Jan. 1976 to Dec. 1976	" " "
One Associate Expert (Nutrition and Home Economics) to Project SWA/76/SIDA/007	Norway (FAO)	---	20,000	Jan. 1976 to Dec. 1976	" " "
SWA/76/SIDA/008 Dean/Reader	Sweden (FAO)	79,216	10,500	Sep. 1973 to Mar. 1978	UBS, Faculty of Agriculture
Agricultural Demonstration Project	Republic of China	Not Available		January 1971 Ongoing	Project of demonstration & training which involves a large team of ag. experts & staff, administrative costs, equipment & materials in Matsapha area. A handicraft promotion project was initiated in 1973.

Inventory of On-Going Technical Cooperation Activities in Swaziland, 1976 (Continued)

(1) Project Activity (Title)	(2) Source of Assistance (Executive Agency)	(3) Assistance Committed for 1976 (US \$ Equivalent) Total 1976		(4) Duration-Total Project Begin-End Dates	(5) Nature of Assistance and Location, Comments Where No Place Indicated--Mbabane
Agricultural Experiments	Republic of China	Not Available		Mid-1972 Ongoing	Phase II of Demonstration Project. Northern RDA
Rural Development	USA	1,364,000	165,000		Provides 23 person years of long-term technical assis- tance and 12 person years long-term training to Minis- try of Agriculture in land use planning/engineering, animal husbandry, range management and heavy equip- ment maintenance. Related commodity support and short- term training also provided. Location: Mbabane, Manzini and Highveld Ranch.
Development Personnel and Training	USA	741,000	461,000	1973 - 1978	Provides technical services of a loan appraisal officer to SDSB and land development officer for Ministry of Ag- riculture. Four Swazis are in long-term overseas train- ing in fields relating to rural development, nutrition, education & development plan- ning. Other technicians al- ready on job or under recruit- ment include: Education Plan- ner, Project Coordinator for Low-Cost Housing, Fisheries Officer, Land Development Con- struction Engineer, & General Manager of Swaziland Develop- ment and Savings Bank

Inventory of On-Going Technical Cooperation Activities in Swaziland, 1976 (Continued)

(1) Project Activity (Title)	(2) Source of Assistance (Executive Agency)	(3) Assistance Committed for 1976 (US. \$ Equivalent) Total 1976		(4) Duration-Total Project Begin-End Dates	(5) Nature of Assistance and Location, Comments Where No Place Indicated--Mbabane
Rural Development	Peace Corps (USA)	Not Available As of November, 1977 Peace Corps had 145 volun- teers in Swaziland, of whom 41 were in agriculture and rural development. Total cost approx. \$492,000 in 1977		1968 - 1981	Total Peace Corps Program for 1976 was US\$513,000) Fisheries Biolo- gist, 18 m/m Mbabane. Se- nior Dairy Officer, 12 m/m, Manzini. Communications & Visual Aids, 16 m/m, Mbabane. Lab Technologist, 36 m/m, Manzini-Mbabane. Computer Programming Statistician, 24 m/m, Mbabane. Irrigation Officer, 28 m/m, Manzini. Veterinary Officer, 12 m/m Lubombo. Farm Manager, 12 m/m, Mbuluzi.
Operational Specialist	Netherlands	Not Available		Ongoing	Ministry of Agriculture
Project Manager Rural Develop- ment	UK	124,463	33,000	Jan. 1974 to Jan. 1979	Ministry of Agriculture Loca- ted at Mahlangatsha
Veterinary Investigation	UK	124,463	33,000	Sep. 1974 to Sep. 1977	Ministry of Agriculture Loca- ted in Manzini
Chief Coordinator Rural Develop- ment Areas	UK	108,406	33,000	Oct. 1973 to Feb. 1980	Located in Ministry of Agri- culture, Mbabane
Project Manager Rural Develop- ment	UK	124,463	33,000	Oct. 1973 to Oct. 1978	Ministry of Agriculture Nhlangano
20 OSAS Officers Ministry of Agriculture	UK	---	239,260	Ongoing	Ministry of Agriculture

Inventory of On-Going Technical Cooperation Activities in Swaziland, 1976 (Continued)

(1) Project Activity (Title)	(2) Source of Assistance (Executive Agency)	(3) Assistance Committed for 1976 (US \$ Equivalent) Total 1976		(4) Duration-Total Project Begin-End Dates	(5) Nature of Assistance and Location, Comments Where No Place Indicated--Mbabane
Economist	UK	---	17,000	Aug. 1976 to Jul. 1978	Ministry of Agriculture
Cotton Entomologist	UK	---	33,000	1976 - 1978	} University Research Station Project Big Bend
Cotton Researcher	UK	---	33,000	1976 - 1978	
Dairy Production Development	Canada	3,700,000	581,000 disbursed in 1976	Six Years	To develop dairy industry based on local milk produc- tion & to expand exports; grant & loan form.

CAPITAL ASSISTANCE TO SWAZILAND. THIS CAN BE IN LOAN, CREDIT, OR GRANT FORM.

<u>Country</u>	<u>Activity</u>	<u>Amount</u> US \$
Canada	Dairy Cattle Multiplication Scheme	188,800
	Poultry Distribution Centres	93,150
	Milk Collection Centres	59,500
	Livestock Feed Milk	75,900
Denmark	Seed Multiplication	90,000
UK	Northern RDA	237,569
	Central RDA	204,296
	Mahlangatsha RDA	205,195
	Southern RDA	188,499
	RDA Overheads	103,500
	Farmer Training Centres	199,352
	Balegane Fattening Ranch	11,500
	Lowveld Cattle Breeding Station	19,550
	Balegane Cattle Breeding Station	453,482
	Mpisi Farm Livestock Development	101,775
	Dip Tanks	23,846
	Quarantine Camps	27,600
	Film Project	17,250
	Farm Surveys	11,500
	Crop Promotion	129,128
Grain Storage	11,500	
Land Purchase (Grant)	1,150,000	

CAPITAL ASSISTANCE TO SWAZILAND (CONT'D)

<u>Country</u>	<u>Activity</u>	<u>Amount</u> US \$
UK	Orthophotomapping	221,260
	Sidvokodvo SISA	57,500
	Lavumisa Cattle Fattening	
	Ranch Extension	86,250
	Mpisi Farm Feed Mill	23,000
	Bush Clearing	152,950
	Foot and Mouth Disease	
	Control Fence	55,376
FRG	Simmentaler Study	93,150
African Development Development Bank		
Bank	Ingwavuma River Basin Study	418,772

Development Assistance Projects and Programs Anticipated for 1977 and Beyond,
Pipeline Projects Funded and Unfunded, Ideas Discussed by SADAP Team with
Government and Others, Other Possible Activities

Project Idea or Proposal	Source	Estimated Costs	Commentary	Source of Info.
Rural Development Areas	UK	\$15.37m total; for 1977/78 est. expenditure \$3.22 million	Approved July 1977 this 5-year project will continue the development of four existing integrated rural development areas & commence development of four other areas.	UK
Rural Development Project	EDF	\$2.9 million grant	Overall this project involves nearly 45% of arable & pasture land in country affecting about 125,000 people on 14,500 farms over 400,000 ha in all. Goal to increase maize, cotton & tobacco production; cattle-farming improvements sought: the EDF grant covers part of this major undertaking with African Development Bank providing \$5.2 million, IBRD \$4.1 million, UK ODM \$348,000 & Cos \$4.4 million for a project total of \$17 million. EDF financing will fund eight minimum input areas (schemes involving supervisory staff, transport, training & technical assistance).	EDF
Rural Development Infrastructure Support	USAID	Loan of \$5.4 million & grant of \$4.2 million for 1978-83	To provide capital for land development & facilities to repair/maintain equipment for the Rural Areas Development Program outlined above. This will include provision of US technicians & involve training of nationals in US plus provision of equipment. See part 5b for AID data sheet.	USAID

New Activity, USAID

Title	Funds	Proposed Obligation (In Thousands of Dollars)		
RDA Infrastructure Support	Security Supporting Assistance	FY 78		
Number 690-0068		7,934	(Grant 2,534 ; Loan 5,400)	
Grant <input checked="" type="checkbox"/>	Loan <input checked="" type="checkbox"/>	Initial Obligation FY 1978	Estimated Final Obligation FY 1982	Estimated Completion Date of Project FY 1983

Goal: To assist Swazi farmers in making the transition from Subsistence farming to semi-commercial and commercial farming.

Purpose: (1) To provide capital for land development and facilities to repair/maintain equipment for the Rural Development Area Program, and
 (2) To establish and train staff for Government institutions in the design, construction, analysis and evaluation of land development activities as related to the overall rural development process.

Background: Since Independence in 1968 the Government of Swaziland has accorded the highest priority to the development of agriculture in the rural areas. Approximately 90% of the population lives in rural areas, and such programs are a major means by which the standard of living of the majority of Swazis could be improved. The chief objective of the development strategy is to promote the progressive transformation of traditional agriculture from subsistence to semi-commercial farming in order to raise incomes and create more opportunities for gainful employment amongst the rural population. The Rural Development Area program (RDA), which the Government of Swaziland is undertaking with assistance from several donors, will expand the land consolidation, construction of physical infrastructure, strengthening of basic extension services and increased marketing of cash crops started under earlier rural development efforts.

Major Outputs:

	FY 78	All Years
Land Development related farming systems	---	X
Improved maintenance and repair of heavy equipment	---	X
Range rehabilitation and improved management	---	X
Functioning Government institutions to carry out land development	---	X

Host Country and Other Donors (\$000):

	All Years
Government of Swaziland	7,000 (equivalent in local currency)
IBRD, UK, EEC	8,000

FY 1978 Program:

AID-Financed Inputs (\$ Thousands)

	FY 78	All Years
LOAN		
Land and Road Equipment	5,400	5,400
Shop Building	4,250	4,250
Shop Equipment	250	250
	900	900
GRANT		
Technical Assistance - (324 pm) (Land Development, Mechanical, Planning, Range Management, Administration and Consultancies)	2,534	4,200
	1,975	3,200
Training - US, Third country and in-country (149 pm)	160	440

Commodities- - 6 Pick-up trucks and miscellaneous office equipment	124	260
Other Costs - Housing for US technicians and local costs for project support	275	300
TOTALS (LOAN AND GRANT)	7,934	9,600

New Activity, USAID (Continued)

Title Southern Africa Manpower Development	Funds Security Supporting Assistance	Proposed Obligation (In Thousands of Dollars)		
		FY 78 433		
Number 690-0069.3		Initial Obligation FY 1978	Estimated Final Obligation FY 1982	Estimated Completion Date of Project FY 1983
Grant <input checked="" type="checkbox"/> Loan <input type="checkbox"/>				

Goal: To help the Government of Swaziland meet its acute shortages of qualified technical and administrative manpower for carrying out development programs.

Purpose: To increase host government effectiveness in implementing development programs by training local nationals in selected key areas and providing services of skilled American technicians to assist with local manpower development while filling selected key civil service posts.

Background: For several historical, political, and administrative reasons, Botswana, Swaziland, and Lesotho have smaller bases of local manpower suitably trained in technical matters and administration than most former British territories in Africa. Thus, professional ranks of the civil service are still dominated by expatriates and a critical shortage of trained local manpower exists in technical and general management areas. Recent development planning has increased needs of this kind: The administrative manpower base is stretched thinly across a wide variety of development activities, and the inability to plan and implement development programs adequately has become a major constraint on absorptive capacity.

The AID assistance will provide professional and relevant training for selected participants to fill key positions presently occupied by expatriates, thus meeting the Government's objective in developing an adequate local manpower resource. The role of the U.S. technicians will be to assist in carrying out developmental activities pending the return of trained participants.

Major Outputs:

	FY 78	All Years
	(Cumulative as of End of FY)	
Person Months Technical Services	9	360
Trained Participants	-	21
Host Country and Other Donors (\$000):		<u>All Years</u>
(Basic salaries, office space, housing, and allowances for participants in training)		475 (equivalent in local currency)

FY 1978 Program: FY 1978 funding is to provide initial two year tours for three U.S. technicians, other cost funded housing, initial U.S. academic training for three participants, and initial third country training for one participant.

	AID-Financed Inputs (\$ Thousands)	
	FY 78	All Years
Personnel:		
Three U.S. technicians (72 pm)	300	1,500
Training:		
3 participants in U.S. and 1 participant in third country (48 pm)	43	520
Other Costs:		
Housing for U.S. technicians	90	90
TOTALS:	433	2,110

Continuing Activity, USAID

Title Curriculum Development	Funds Security Supporting Assistance	Proposed Obligation (In Thousands of Dollars)		
Number 690-0009	Prior Reference FY 1977 Africa Programs, p. 230	FY 78 621		
Grant <input checked="" type="checkbox"/> Loan <input type="checkbox"/>		Initial Obligation FY 1975	Estimated Final Obligation FY 1981	Estimated Completion Date of Project FY 1981

Purpose: To establish an institutionalized Swazi capability (the Primary Curriculum Unit) for developing primary curriculum.

Progress to Date: A six-member U.S. contract team has developed jointly with the Swazi counterparts a comprehensive plan for the preparation of new curriculum materials. This plan has been approved by the Ministry of Education, and will now be implemented through testing, revising and mass production.

Major Outputs:

9/30/76 FY 77 FY 78
(Cumulative as of end of FY)

Curriculum Production System	X	X	X
Teaching Materials, preparation/ production/distribution system	X	X	X
New curriculum test	X	X	X
Teacher Training System	X	X	X
Trained Staff			
a. returned participants	X	X	X
b. in-service training	X	X	X

FY 1978 Program:

AID-Financed Inputs
(\$ Thousands)

Personnel:

Funding for long-term US technicians
8 consultants (78 pm)

FY 78

531

Training:

Five continuing and two long term participants (28 pm)

65

Commodities:

25

TOTAL

621

<u>Host Country and Other Donors (\$000)</u>	<u>All Years</u>
Government of Swaziland (Local costs for personnel and materials)	6,452
IBRD (Construction of educational facilities and educational equipment)	241

Continuing Activity, USAID (Continued)

Title Southern Africa Development Personnel and Training	Funds Security Supporting Assistance	Proposed Obligation (In Thousands of Dollars)		
		FY 78 121		
Number 690-0030.3	Prior Reference	Initial Obligation FY 1973	Estimated Final Obligation FY 1978	Estimated Completion Date of Project FY 1979
Grant <input checked="" type="checkbox"/> Loan <input type="checkbox"/>	FY 1977 Africa Programs, p. 229			

Purpose: To enhance the host government's effectiveness in implementing its development programs in selected key areas by providing qualified U.S. technicians and training for local nationals.

<u>Host Country and Other Donors (\$000)</u>	<u>All Years</u>
Government of Swaziland (Local salaries, office space and allowances for trainees)	200 (equivalent in local currency)

Major Outputs:

Advisory Services:
(person months)

	9/30/76	FY 77	FY 78
Agriculture	69	105	136
Education	--	9	9
Economic Planning	--	12	36
Low Income Housing	--	12	18
TOTAL	69	138	199

Trained Participants:

	9/30/76	FY 77	FY 78
Agriculture	1	5	7
Education	--	1	2
Economic Planning	--	--	1
Low Income Housing	--	--	2
TOTAL	1	6	12

Progress to Date: The major activities to date include; (1) the provision of a technician to operate the small farmer credit window at the National Development Savings Bank; (2) provision of a technician to oversee management, operation, and maintenance of the Government's heavy equipment pool, which is being used to develop the infrastructure associated with the multi donor-supported Rural Development Areas Program; and, (3) long term participant training for two participants in the above two areas and for four other participants in disciplines related to food production and nutrition. Beginning in FY 1977, the project covers funding of six Americans associated with education planning, economic planning, low income housing development, fisheries, and crop production. Counterparts will be given participant training to prepare them to take over these positions in two years' time.

FY 1978 Program:

AID-Financed Inputs
(\$ Thousands)

FY 78

Training for 12 participants in home economics, seed multiplication, education planning, low income housing development, and economic planning (144 pm)

121

Continuing Activity, USAID (Continued)

Title Cooperatives and Marketing	Funds Security Supporting Assistance	Proposed Obligation (In Thousands of Dollars)		
Number 690-0055		FY 78 739		
Grant <input checked="" type="checkbox"/> Loan <input type="checkbox"/>	Prior Reference FY 1977 Africa Programs, p. 224	Initial Obligation FY 1976	Estimated Final Obligation FY 1980	Estimated Completion Date of Project FY 1981

Purpose: To assist in developing a viable producer-oriented cooperative structure providing production-related inputs and marketing services to the rural sector.

Host Country and Other Donors (\$000):

Government of Swaziland (Local salaries, allowances for participants in training)

All Years

\$1,500

Major Outputs:

9/30/76 FY 77 FY 78
 (Cumulative as of end of FY)

FY 1978 Program:

Trained Swazis in Central Cooperative Union Management Positions

--- --- ---

AID-Financed Inputs
(\$ Thousands)

FY 78

Sixteen Centers joined to Radio Communications Network

--- --- 16

Personnel:

Funding for nine member U.S. institutional contract team (81 pm)

517

Marketing Outlets

--- --- ---

Training:

Training for 11 participants (132 pm)

118

Primary Societies Offering Marketing Services

--- --- 10

Commodities:

Processing Equipment

5

Warehouses constructed and well supplied

--- 3 4

Other Costs for Project Support:

99

Primary Societies with Trained staff

--- --- 12

TOTAL

739

C. REFERENCE MATERIAL

1. Africa South of the Sahara. 1977-78. "Swaziland", London Europe Publications, Ltd.
2. Central Statistical Office, GOS. 1975-76. Annual Survey of Swazi Nation Land.
3. Colclough, Christopher and Peter Wingfield Digby, Skills for the Future, Swaziland Min. of Finance and Economic Planning, Mbabane, May 1978.
4. Doran, M. H., A. R. C. Low, and R. L. Kemp. 1977. Overgrazing and Cattle Development in Africa, Lessons from Swaziland.
5. Durdle, Wayne M. 1978. The Production of Mohair in Swaziland, A Feasibility Study, USAID and Tibiyo Taka Ngwane, June 30, 1978.
6. FAO, UN. 1970. General Plan for Development and Utilization of Water Resources, Usuta, Mbuluzi, Komati, and Lomoti River Basins.
7. FAO, UN. 1975. Report on the Agricultural Marketing Seminar for Botswana, Lesotho, and Swaziland, Gaborone, June 1975, FAO Document AL DP/BOT/71/012.
8. GOS. 1976. Annual Statistical Bulletin, 1976, Central Statistical Office, P.O. Box 456, Mbabane, Swaziland.
9. GOS. 1977. The Annual Report Summary of the Ministry of Education.
10. Gumedze, N. T. 1975. Report on a Study Tour of Cattle Ranching Schemes in Kenya and Tanzania.
11. Howard, James O. 1978. Agricultural Attache Reports during January, 1978:
 - (a) Swaziland: Situation, Jan. 20, 1978.
 - (b) Citrus in Swaziland, Jan. 12, 1978.
 - (c) Tobacco in Swaziland, Jan. 11, 1978.
 - (d) Pineapple in Swaziland, Jan. 12, 1978.
12. IBRD. 1975. Economic Memorandum on Swaziland, Report No. 852a-SW, Country Programs Dept. II, Eastern Africa Region, Nov. 24, 1975.
13. IBRD. 1977. Report and Recommendation of the President of the International Bank for Reconstruction and Development to the Executive Directors on a Proposed Loan to the Kingdom of Swaziland for a Rural Development Project, Feb. 9, 1977.

14. IBRD. 1977. Swaziland Rural Development Project Appraisal Report, Report No. 1306-SW, Eastern Africa Region, Agr. Credit and Lstk. Div., Jan. 12, 1977. For Official Use Only.
15. IMF. 1977. Swaziland, Recent Economic Developments, Contains Confidential Information, August 5, 1977.
16. MCC, GOS. 1975. Report on the National Seminar on Agricultural Marketing, MCC, October, 1975-
17. Menz, John. 1978. The Impact on the Rural Community of Change from Subsistence to Commercial Farms, Unpublished manuscript, June 1978.
18. MOA. 1976. Directory of Professional and Technical Staff.
19. MOA, GOS. 1977. The Third Five Year National Development Plan for Agriculture: 1978-82. Second Draft--For Discussion Purposes Only, Sept. 1977.
20. Murdock, G. 1968. Soils and Land Capability in Swaziland, MOA, Bulletin No. 23, 24, and 25.
21. Research Triangle Institute, Human Resources Development Study for Swaziland, May 1976.
22. Roder, Wolf. 1977. Environmental Assessment, Swaziland, Rural Development Areas Program, Univ. of Cincinnati and Univ. of Zambia, October 1977.
23. Spaargaren, Walter T. 1976. Estimated Soil Loss Due to Sheet Erosion, MOA, Mbabane.
24. UNDP. 1977. Externally Financed Technical and Capital Assistance--Swaziland. For Official Use Only.
25. UNDP. 1978. Swaziland's Second Country Programme--1979-1981, Agriculture. Unpublished Draft. 20 June 1978.
26. USAID. 1977. A Framework for United States Assistance Programs in Southern Africa, Office of Eastern and Southern Africa Affairs, Bureau for Africa, March 1977.
27. USAID and USDA. 1977. Government of Swaziland Soil-Conservation Cost-Effectiveness Study, Mbabane, Swaziland. Sept. 1977.
28. USAID, USDA. 1977. Government of Swaziland, Manpower Requirement Study, Mbabane, Swaziland, Sept. 1977.
29. USAID. 1974. Swaziland Agricultural Sector Assessment, Nov. 6, 1974.
30. USAID. 1976. Swaziland Cooperatives and Marketing Project Paper, May 1976.

31. USAID. 1977. Transition in Southern Africa--Swaziland, Southern Africa Task Force, Office of Southern and East African Affairs, Africa Bureau, Feb., 1977.
32. U.S. Department of State. 1977. Background Notes--Swaziland.
33. de Vletter, Fion. 1978. The Rural Homestead as an Economic Unit, University College of Swaziland.

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