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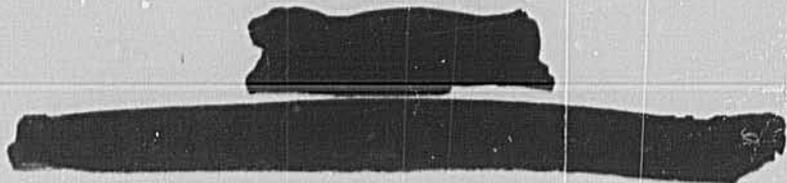
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INNOVATION AND ADAPTATION:  
A STUDY OF LAND TENURE AND SMALLHOLDER  
IRRIGATION SCHEMES IN SWAZILAND

by  
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## Preface

This [redacted] report presents the findings of a study on Smallholder Irrigation Schemes. The study was funded by the USAID Swaziland Cropping Systems Research and Extension Training Project.

This [redacted] report is meant for internal discussion only.

The opinions expressed in the report and recommendations of the report solely reflect those of the author and are not to be construed to reflect those of the Ministry of Agriculture and Cooperatives Swaziland, the University of Wisconsin Land Tenure Center, nor the United States Agency for International Development.

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## 1. INTRODUCTION

It is commonly postulated that communal land tenure and associated customary laws impede agricultural development. The rigidity implicit in the term "traditional" whether relating to practices, values or authority, evokes an image of resistance to change and innovation.

Much of the literature on rural development in Swaziland has prima facie accepted that land tenure practices on communally held areas (for our purposes simply referred to as Swazi Nation Land [1]) are an obstacle to agricultural progress. There is, however, much evidence of a flexibility within Swazi "traditional" society enabling homesteads and those authorities governing them to readily accept innovations such as the plough, row planting, contour ploughing, grass stripping, cash cropping, tractor hire, fertilizer application, fencing and rotational grazing. Many of these "innovations" are now often assumed to be embodied in "traditional" husbandry by contemporary writers. Outside of brief consideration by Hughes (1972), very little study has been made of the process of adoption and adaptation to new agricultural concepts by Swazi Nation homesteads [2].

The claim that communal land tenure inhibits change is generally accompanied by other standard arguments as justification for land reform. The main one, centering on security of tenure, alleges that communal land tenure deprives farmers of durable private rights and that the inherent uncertainty will discourage them from making permanent investments on their land. Usufructuary rights, furthermore, make it difficult to raise credit against immovable assets. It is also contended that fixed land allocations restrict the ability of progressive farmers to accumulate and expand.

Though much supporting evidence can be found for these assertions, there is a tendency to overplay their importance. Land tenure may well be a constraint on rural development but, given the political and social consequences of reform, one must carefully weigh the net results before contemplating something so potentially disruptive. It is likely that other more important impediments to rural development can be more easily tackled with considerably better results. In Swaziland, one will undoubtedly find instances of frustrated farmers held back by tenure issues but, on a more general level, there are indications that land tenure is not a serious obstacle at this stage of Swaziland's economic evolution. This position has been reiterated several times, initially, by the colonial administration and, subsequently, by the Government of Swaziland in various policy documents and development plans.

This paper looks at small-holder irrigation schemes - an innovation still comparatively new and holding much potential for further development on SNL. In terms of their land tenure implications, irrigation schemes are of particular interest: they require consolidation of land, disciplined organisation, communal initiative and joint decision-making - all novel concepts to the largely self-orientated Swazi Nation homesteads. Furthermore, any collective scheme would have important implications on traditional authority as well as strong formal institutional ties, whether with government, commercial banks, input suppliers marketing boards or donor agencies.

Irrigation schemes and, for that matter, other collective schemes offer some distinct advantages over more homestead-specific innovations. First, the appeal of schemes is that, because they are usually jointly endorsed by government and local traditional authorities (chiefs and indunas), participation by plot or collective membership is generally clearly defined by the rules and regulations of a constitution (see appendix 2) and therefore more secure in the sense that what may be sometimes seen as "arbitrary" dismissal is not possible. More importantly, because schemes are based on communal initiative, they involve the pooling of resources (land, manpower, capital and experience) which allow for both economies of scale as well as the dispersion of risk (often jointly borne by members as well as government and/or donor agencies). Yet, despite communality, irrigation schemes - particularly those operating as "farmers associations" enable individual members to benefit from the advantages of their own individual initiative. Schemes also often allow for the participation of women and bachelors who, under customary law have no direct access to land. In terms of financing, schemes, because of their backing by government and local authorities, as well as the pooling of resources, are likely to gain more favourable access to credit than individual homesteads. Furthermore, the communal nature of schemes benefiting groups of farmers gives the member access to direct assistance from government or donor agencies than individual homesteads.

Irrespective of these advantages, prejudice against what are assumed to be the debilitating influences of communal land tenure continues against the development of small-holder irrigation schemes on Swazi Nation Land. This is evidenced in a number of studies commissioned over the past 20 years proposing small-holder nucleus estate schemes (viz. FAO/UNDP 1970; US Army Corps of Engineers, 1981; Tate and Lyle, 1982; and Devres, 1985) which have effectively recommended isolation from the "interference" of traditional authority by establishing autonomously managed enclaves within communal land tenure areas. This type of model (favoured by the World Bank) is given preferential treatment in the Fourth National Development Plan and endorsed by some of the main donor agencies. Within the Ministry of Agriculture and Cooperatives, however, there is evidence that a less capital intensive, smaller scale and grass-roots orientated approach, such as currently advocated by the FAO, is being revived (see II.E).

The negative assessment of land tenure influences reached by recent feasibility studies was premised on two basic conclusions. The first was that the autonomous nature of irrigation schemes threatened to undermine the authority of the chiefs and therefore led to conflict. The second was that the inability to dismiss or expel poor farmers from schemes led to low levels of productivity. Although some feasibility reports gave much attention to the question of land tenure, they have 1) based their analyses on distorted evidence and have, in turn, used them to report the case of large autonomous schemes and ii) made no substantive recommendations for alternative forms of authority (apart from vague descriptions of "Basin Development Authorities" or "Settlement Bodies") nor considered the land tenure implications arising from the proposed schemes. The former reflects methodological weakness and it is hoped that the findings below, based on a survey of virtually all SNL schemes, will offer a better understanding of how such schemes have been implemented and adopted on Swazi Nation Land. The latter, bearing

in mind the crisis prevailing at the Vuvulane Irrigated Farms (see II.B) is a serious omission without which there seems little point in engaging in any meaningful discussion of the relative merits of large scale schemes.

It is understandable that the establishment of smallholder-nucleus estate schemes, given their mode of operation, are likely to require significant adaptations to the communal land tenure system. That is not the concern of this paper. What is at issue is whether, as insinuated in the feasibility studies - particularly that of Tate and Lyle - Swazi Nation smallholder schemes are severely hampered by the constraints of the communal land tenure system.

There are currently some 25 small-holder irrigation schemes on Swazi Nation Land as well as a few irrigated plantations operating on SNL purchased through the "Lifa Fund" [3]. Small-holder - nucleus estate schemes are still only in the blue-print phase. Up to 40,000 ha is estimated to be irrigable, given Swaziland's current water resources [4]. How this land will be developed is subject to debate. The concept of large-scale schemes on Swazi Nation Land has been approved in principle by the Cabinet of the Swaziland Government. On the other hand, in its latest proposals for an national agricultural development strategy, the Ministry of Agriculture and Cooperatives has laid emphasis on smallholder schemes. Volumes of feasibility studies have been prepared for the possible development of large-scale schemes, but very little analysis has been made of smallholder schemes, and much of what little has been done tends to be negatively biased. It is hoped that this study will provide a more systematic and objective examination of existing schemes and the potential for future development.

The original objective of this study was to focus on land tenure issues surrounding small-holder irrigation schemes on Swazi Nation Land. In the course of undertaking research, it soon became evident that little information, even of a general nature existed and that their actual number was only tentatively known. As a result, the paper provides in fair detail some socio-economic background information collected during a survey of the irrigation schemes which will help in better understanding their general characteristics and, to some extent, the land tenure issues affecting them.

The survey was undertaken on all but one of the previously known small-holder schemes on SNL (excluding VIF). In total, 24 schemes were studied, including: one which was discovered during the course of the survey and not on the list of known schemes; one scheme which was inoperative and awaiting a decision by the Swazi Nation authorities at Lobabamba over a dispute (Magagane); and another (Mkhiweni) which was still in its planning stages. The survey also included one community garden to contrast this type of irrigation arrangement with the small-holder schemes (see appendix 1 for scheme descriptions and location). Schemes were defined as an area of two or more irrigated contiguous plots. Generally there was no problem identifying schemes and distinguishing them from community gardens. [5]

The survey consisted of interviews conducted in groups of 3 or more scheme members, of which at least one must have been on the scheme committee (see appendix 4 for questionnaire). The Swaziland Census of Agriculture on Swazi Nation Land of 1983/84

found that there were 525 members belonging to irrigation schemes. The 22 operative schemes covered by our survey had an aggregate of 558 members.

The following section (II) provides a somewhat historical overview of events, recommendations and government policy relating to communal tenure irrigation. Because of the importance attached in the irrigation debate to the potential of large scale schemes on Swazi Nation Land, an analysis is made of land tenure findings and their implications of three major feasibility studies. As many of the recommendations arising from these reports were influenced by the Vuvulane Irrigated Farms - currently facing serious problems - special attention is given to this scheme.

Section III presents some general socio-economic information on smallholder schemes. This has been done for the simple reason that the survey (apart from census data) is the first systematic study of (effectively) all schemes. It will be of relevance for those readers interested in some of the more general aspects of the schemes. Those wanting to consider land tenure issues alone could start immediately with section IV.

Section IV examines how schemes are started and organised. It also looks at the institutional framework such as the role of traditional authorities, particularly the chief, as well as formal sector links with government, banks and donor agencies.

Section V is essentially the core of the paper, where land tenure issues felt to be important in the operation and success of such scheme are considered in the context of our survey data and previous findings.

The conclusions in section VI consider some policy implications for land tenure in general and irrigation schemes in particular.

## II. RECENT POLICY AND DEVELOPMENTS CONCERNING IRRIGATION AND LAND TENURE ON SWAZI NATION LAND

In order to put smallholder schemes and their land tenure implications into a fuller perspective, it is important to briefly look at the evolution of ideas and certain events which have or are likely to influence the debate on land tenure and alternative forms of SNL irrigation. In addition to an overview of developments of smallholder schemes, special consideration is given in this section to the Vuvulane Irrigated Farms and subsequent feasibility studies of smallholder-nucleus estate schemes, with particular emphasis on their land tenure implications. A summary of government policy on SNL irrigation is also presented.

### A. SMALLHOLDER SCHEMES

The first of the smallholder SNL irrigation schemes was Zakhe, established in 1960. Its inception was interesting in that the scheme was initiated by a group of 8 farmers whose forefathers had left the Lubuli area for Zululand (and not Zulus as alleged by Hamnett (1970) and Tate and Lule (1982)). They returned to "the land of their ancestors" in the mid-1950's and were settled as Swazis. Having gained agricultural experience from working on white farms in South Africa, they intended to utilize their knowledge for commercial agriculture and followed the example of another Swazi farmer irrigating from the banks of the Ingwavuma. The latter soon left to join the Vuvulane Irrigated Farms but, the newcomers, through the cooperation of the chief, assistance from the government and a loan from the Swaziland Credit and Savings Bank, started a scheme which was opened by the Prime Minister. For years, Zakhe was considered the show piece irrigation scheme (Thambo Gina, personal communication).

It may well be that this prototype scheme, initiated by "outsiders", demonstrating the advantages of group effort while backed by the enthusiastic support from government, inspired subsequent schemes.

In the early 1970's, irrigation development on SNL saw rapid acceptance throughout the country. A further 11 schemes were established by 1974. However there was no clear explanation of the sudden upsurge. Many schemes were initiated by individuals and chiefs and a few by government but, perhaps, the catalysing factors were free or heavily subsidized government inputs such as land clearing, dam construction, pipe laying, etc. The number of schemes has since grown steadily to about 25. As can be seen from the map (appendix 2), there is little to remark about the distribution of these schemes except that a disproportionate number (7) are based in the Northern RDA - the oldest, most densely populated and agriculturally advanced of the RDA's.

It should be mentioned that there are a number of schemes which never survived or passed the design stage on which little documentation exists such as Madlenya, Eluyengweni (Hamnett, 1970) and Busaleni (Felley, 1968).

The inception of the Magwanyane irrigation scheme (north of Big Bend) in 1972 deserves special mention as it throws open some interesting issues relating to land tenure and the future of SNL

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irrigation. The scheme is by far the largest (100 ha with 36 members) smallholder SNL scheme and, by most accounts, the most successful in terms of economic returns (though the destruction of the main dam during cyclone Demoina, threatens its future). Of the 100 ha, 54 was set aside for sugar to be farmed on a cooperative basis. Eventually the farmers hired management which, in turn, employed labourers. This meant that the farmers became shareholders in a scheme from which they drew a monthly stipend, without necessarily contributing work (some farmers, but not all, devoted their efforts to their individual plots). The Late King Sobhuza indicated his displeasure at the scheme because it created a rural elite in an area that was comparatively poor, and recommended that the farmers be given 25 year leases in order to allow the opportunity to participate to be more evenly shared. Despite, its economic success (estimated at 12% internal rate of return by McCann, 1981), the scheme has never been officially opened by the Ministry of Agriculture which invested considerable resources into its development.

In 1976, in collaboration with the assistance and participation of Republic of China, the Intensive Rice and Vegetable Production Project was established. The project includes 4 SNL irrigation schemes closely supervised by Taiwanese agriculturalists. They are tightly managed, growing rice exclusively during the summer and vegetables in winter. Plots are worked individually but the rice crop is sold on a cooperative basis.

In 1982 the International Fund for Agricultural Development (IFAD) submitted a proposal to establish a national marketing board. A major component of the project was to improve the production (and thereby the reliability of supply) of vegetables. 12 irrigation schemes were selected for rehabilitation (including the levelling of fields, clearing land, cleaning silted reservoirs and canals, etc). Furthermore, 5 irrigation centres would be established comprising of irrigation experts and supporting infrastructure. The proposal also included major changes in the structure of management and involvement in the operation of these schemes (IFAD, 1982). The establishment of the national marketing board was officially gazetted by the end of 1985 and some of the irrigation experts had already arrived in the country (from the Republic of China) but, as yet, no substantive physical work has taken place on the irrigation schemes.

In 1983 USAID evolved a plan to provide assistance for small farmer irrigation schemes and invited experts to write project papers (see, for example, Downs, 1983 and Cohen, 1983). The proposal suggested two complementary strategies. The first included various smallholder schemes varying in size from 12-40 ha where 350 farmers were expected to cultivate an average plot size of 0.91ha. The second component was to assist 180 individual farmers in developing sprinkler systems on plots of at least 4 ha. (Funnell, 1986). (Lack of government commitment to the project is said to be behind its ultimate demise.)

An interesting dimension of land tenure and irrigation farming has been highlighted through education. The School of Appropriate Farming Technology (SAFT) trains secondary school leavers to be, in effect, career farmers. Emphasis is given to irrigated vegetable farming as well as poultry and dairying. After a one year course, graduates are expected to find land of their own. Unfortunately, most graduates are unmarried and find it difficult

to acquire land. About 10 graduates with the assistance of capital grants and advisors from various aid organisations recently formed the Usuthu Young Farmers Cooperative situated on mission land. As will be discussed later, farmers with formal skills such as those acquired at SAFT are needed on many of the irrigation schemes because of poor agronomy. Bachelors are in fact able to acquire membership on several of the schemes (see V.E) but most schemes are oversubscribed with long waiting lists and virtually all do not allow members from other chiefdoms.

## B. VUVULANE IRRIGATED FARMS

A milestone in the development of smallholder irrigation schemes took place in 1962 with the inception of the Vuvulane Irrigated Farms (VIF) on land owned by the CDC [6]. The project was seen as somewhat experimental with Swazi authorities being somewhat critical of the land tenure concepts involved (Tuckett, 1975). Furthermore, unfamiliarity with leases explained the less than enthusiastic initial response from potential farmers [7]. Today some 263 smallholders with plots ranging between 8-16 acres (10 acres felt to be the optimum size) growing mainly sugar but allowed to devote one-quarter of the plot for crops of their own choice.

VIF was the first and remains the most important smallholder contract farming scheme in Swaziland and the scheme has, for some time, been considered a success. Farmers were first settled on the understanding that they would eventually sign a 20 year lease. Leases were delivered in 1964 but dissatisfaction and misunderstandings over the issues of inheritance on death (inheritance was not guaranteed as is the custom under traditional customary law) and compensation on cancellation of tenancy, in particular, eventually led to the farmers protesting by refusing to cut their fields. In 1969, following government intervention, the leases were satisfactorily amended. Subsequently, evidence suggested that management treated farmers somewhat paternalistically and that the farmers grew mistrustful of them (Hamnett, 1970).

In 1983, after negotiations dating back to 1978, the CDC formally handed over VIF to the Swazi Nation, while retaining a management contract to run VIF. The farmers alleged that the late King Subhuza promised that they would be soon regarded as permanent residents and that they would not have to pay rent. The subsequent introduction of rent (to replace previous charges), combined with allegations of management injustices and a variety of other issues, resulted in 62 farmers refusing the harvesting of their cane. Mkhabela (1985) felt that one of the main underlying reasons for prevailing earlier discontent was resentment by Swazi farmers towards expatriate control and that the recent dispute was seen to be one arising over uncertainties caused by the confusion over land tenure. Things came to a head with the appointment of a Commission of Enquiry in 1985, findings of which have not been publicly disclosed.

In July 1986, 20 farmers were summonsed for eviction and moneys owing. 14 farmers were subsequently evicted. Evicted farmers in protest are squatting by the roadside and many are contending the compensation offers made for housing and improvements [8]

The Vuvulane model, in its earlier years, served as inspiration for 3 major feasibility studies examining irrigation potential on

what was mainly SNL. Each of the 3 studies proposed smallholder-nucleus estates (outgrower schemes), discussed below.

### C. FEASIBILITY STUDIES FOR SMALLHOLDER-NUCLEUS ESTATE SCHEMES

In 1967 the Government of Swaziland requested the assistance of the UNDP in formulating a plan for the development and utilization of the Usutu River Basin. In 1969 the scope of the investigation was expanded to include the Mbuluzi, Komati and Lomati river basins. The UNDP/FAO study (Engineering and Power Development Consultants, 1970a) recognised that the location of this form of irrigation scheme on SNL meant that "means must be devised to reconcile Swazi tenurial practice with the demands of a modern agricultural system" and "the present form of tenure cannot be adopted without important modification". To start, it was recommended that a development area should be entrusted by the King to a management body or development authority so that "in effect the scheme area would be a special type of Swazi Nation Land and the "right to avail" [9] would be affected as a result". It was felt that customary law would not be suitable and that constraints and sanctions unknown to traditional practice would have to be introduced.

An interesting feature of the tenure analysis is a perceptive and, in many ways, prophetic insight of the problems affecting the Vuvulane scheme, which unfortunately appeared to be ignored by both VIF and subsequent feasibility studies for irrigation schemes. Notably, the report recommended that the Vuvulane type leases be avoided, as they were seen to be distinctly disadvantageous to the lessees. Instead of detailed leases, general terms of agreement "not much more than the settler agreeing to an obligation to farm properly and to conform to the reasonable requirements of the scheme administration" was seen to be preferable, with no length of time being included as the life of the agreement thus giving the tenants a sense of security in their tenure, provided they farmed reasonably. In other words, the only real difference from the traditional system was the obligation to use the land properly. If, on the otherhand, a man were to farm properly but were to fail to meet his social obligations, he would be subject to banishment by the chief - if so decided by the chief and his libandla (council).

In order to prevent the use of arbitrary powers, it was felt necessary that an appeal procedure should be constituted, say through a sufficiently independent Land Appeals Committee. The report viewed the role of the chief as crucial in the running of the scheme and recommended that chiefs be responsible for the allocation of the plots. This was seen as important in maintaining chief-subject relationships as "their (the chiefs') involvement in agricultural development is a matter of common sense".

In respect to inheritance, problems at Vuvulane suggested that traditional rules of inheritance and succession would, in principle, be respected, conditional to the scheme authority having no strong objections to the heir. If the heir was not acceptable, other members of the deceased's kin would be eligible. One possible conflict with customary law was foreseen in the case of a widow inheriting the plot, as it was felt that only males could ensure that the land be used properly. The report acknowledged that there was no clear solution to the

problem.

Following the general feasibility report, the UNDP/FAO submitted recommendations for the Mapobeni Irrigation Scheme (Engineering and Power Development Consultants, 1970b) which was regarded as a first stage development arising from the general study. The proposed scheme consisted of smallholders with plots of about 7 acres along with a "National Farm". All smallholders would be expected to "khonta" [10] to the chief of the area and the administration of the scheme would be the responsibility of an independent Statutory Board and that the land tenure arrangements would be as recommended in the general report.

In 1972, the recommendations of the UNDP/FAO study were largely reproduced in a mimeograph prepared by the World Bank which proposed an Irrigation Scheme at Mapobeni covering 5 chiefdoms. A draft Maphobeni Development Board Bill was included (essentially reflecting the recommendations of the UN/FAO study) [11]. In the end, for reasons unknown to the author, no scheme was developed at Mapobeni.

In 1981, possibly as a direct response to the recommendations of a comprehensive water development plan (US Army Corps of Engineers, 1981) the Tlhyo Taka Ngwane Trust Fund commissioned Tate and Lyle Technical Services to undertake a feasibility study of the Usuthu/Ngwavuma river basins. The proposed scheme centered on a nucleus/small-holder model which, on full development, would provide more than 7 000 permanent and some 40 000 seasonal jobs; in addition, plots for 4 400 small-holders, growing mainly cotton in the summer and wheat in the winter would surround the estate.

With respect to land tenure, the study recommended, as in the UNDP/FAO study, that the King delegate sufficient jurisdiction to a statutory Settlement Body in matters related to the occupation of land and agriculture on the schemes "to enable them to perform their function without interference from any other arm of customary authority" (jurisdiction in unrelated civil and customary matters would remain in the hands of traditional authorities). In contrast to the UNDP/FAO recommendations, it was suggested that the terms of agreement between the settler and the Settlement Body be renewable on a yearly basis, following an initial probationary period. In respect to inheritance, rather than the farmer registering his successor as in the UNDP/FAO proposal, the deceased's family would have the right to nominate a prospective successor. The Settlement Body, if not in agreement, could select another member or reject the recommendation completely and invite outside applications for the plot. Whatever the circumstances leading to the termination of a contract, compensation for improvements would be made according to a valuation code.

A comparison of the UNDP/FAO study recommendations with the Tate and Lyle report suggests that the latter had never made any reference to the detailed analysis and recommendation of the former. The Tate and Lyle study recommends a structure much more isolated from customary law and traditional authorities. This approach is much more akin to that of Vuvulane and therefore more prone to the pitfalls afflicting that scheme, particularly in terms of security of tenure, inheritance, and the lack of integration of local traditional authorities. Unlike, the proposed Mapobeni Irrigation Scheme Board, no mention was made in respect to the composition of the Settlement Body or the umbrella

In 1985, following proposals arising from Joint Permanent Technical Committee discussions on the proposed construction of 6 storage dams along the Komati (see below), USAID contracted Devres Inc. to undertake an economic study of possible uses of water from the proposed Maguga dam (one of two dams scheduled for the first phase of the overall storage development plan).

The Devres report contained very few original insights into the land tenure issue, indicating that the team drew heavily from the Tate and Lyle study (again, it seemed as if no reference had been made to the findings of the earlier UNDP/FAO report). It was, however, recognised that the people to be affected by the scheme would be more responsive to traditional authorities and that the scheme development authority should work in cooperation with chiefs etc. An important weakness of the report was that, although written during the time when problems at Vuvulane were reaching a peak, no attempt was made to analyse the underlying factors of discontent and the lessons which could be learned from it.

#### D. WATER FLOWS

An issue of mounting concern to the government was the international allocation of water, as Swaziland's agricultural development, especially on IIF estates, was highly dependent on river flow and water storage. The results of the 1970 UNDP/FAO study showed that the future development of irrigation in Swaziland would be contingent on water flow agreements followed by a planned programme of dam construction for each water basin. Although most proposals for dams were considered unfeasible (with the exception of Mnjoli dam for Simunye sugar mill), decreased cross border flows combined with increased demand for water, caused the Government of Swaziland to give priority to water resources in the Third National Plan (1977/78-1982/83).

The growing exploitation by South Africa of common water resources (11% of its part of catchments in the 1960's vs. 30% by the mid 1970's) prompted Swaziland to accede to an agreement existing between South Africa and Mozambique, providing for consultation and cooperation in terms of using rivers of common interest. Swaziland sought assurances that normal dry season flows would be maintained by South Africa, but subsequent negotiations failed to come to any satisfactory agreement on the question of water apportionment. In 1979, ministerial talks were held at which the Joint Permanent Technical Committee was established. The Committee, joined in 1982 by Mozambique, was to discuss, plan and recommend the respective governments' optimal water resources apportionments and development projections, while observing the parameters and guidelines of the Helsinki rules of 1966 (Devres, 1985).

#### E. GOVERNMENT POLICY

Fast Government policy towards irrigation schemes cannot be said to have been dynamic. Recognition was given in previous development plans to the potential importance of the SNL irrigation schemes, but implementation has not been impressive. For reasons discussed later, government-initiated schemes on the

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RDA's have, in general been less successful than those initiated by individuals. The Hunting Report (1983) on the RDA's noted that Government submissions and World Bank appraisals of the RDA programme scarcely mention irrigation schemes and, although there was provision in the UK funded portion of the programme for substantial irrigation development [12] few of these components were implemented.

Future Government policy, as elaborated in the Fourth National Development Plan, would appear to favour the development of smallholder-nucleus estate schemes. The plan recognises that: "Irrigation development, in contrast [to rainfed agriculture], offers improved prospects in terms of employment creation and income generation per land area" and that: "Future developments should take into consideration the national factor endowment and concentrate on employment creation and export diversification, with the nucleus/small-holder scheme as the base model." The Plan then argues that: "Experience of irrigation development on SNL suggests that some limited potential exists here, but only for small-scale allotment schemes congruent with the traditional system". It is not clear what is implied here but a further reference to irrigation development notes: "As in the case of modern sector development, appropriate organizational and support structures are fundamental" suggesting that the traditional system would impede such a framework and that nucleus/small-holder schemes would somehow bypass traditional authority despite being situated on SNL.

Despite its partiality towards the larger schemes, the Plan, under the Ministry development programmes, implies that the Ministry of Agriculture and Cooperatives is giving small scale SNL irrigation considerable attention, including the doubling of the area under small irrigation schemes and 10 new small irrigation schemes which (presumably) would be in addition to the rehabilitation of 12 schemes under the IFAD project [13].

Confirmation of renewed emphasis in smallholder schemes at the Ministry level was articulated in a recent (September, 1986) Ministry white paper "The Agricultural Development Strategy for Kingdom of Swaziland". Part of the main thrust of the strategy is smallholder irrigation. There was a clear recognition of the two basic approaches to irrigation but with a bias towards smallholder schemes. It stated that large scale projects required "large capital investment and usually a heavy commitment of Government funds" taking "many years to produce a positive cash flow and, given current high costs for construction and interest rates, may pay off only in the very long run". On the other hand, it noted that "small scale development which can be implemented through local action with appropriate technical support...if properly planned and managed, produces a positive cash flow quickly and pays off in a few years". Recognising that poor irrigation is a problem on most "farms", the proposed strategy included:

a) strengthening the irrigation Section of the Ministry to increase its effectiveness in providing the technical assistance needed for the proper growth and improvement in irrigated farming;

b) formulating a balanced approach between the small scale and large scale irrigation programmes; and

c) improving the messages on irrigation being extended to all farmers. ' .

### III. GENERAL CHARACTERISTICS OF SNL SMALL-HOLDER IRRIGATION SCHEMES

Unless otherwise indicated, data below refers to the 22 operating schemes

#### A. TYPES OF SCHEMES

The majority of the schemes (14) are farmers' associations which have no legal status but were encouraged by the Ministry of Agriculture and Cooperatives, through its extension officers, on the basis that they encourage group effort. These associations can be roughly generalised as follows (though there were some significant variations): crops are grown on individual plots and the choice of crop is usually left to the discretion of each farmer; marketing is also left to the individual; where there are common facilities such as a dam, furrows, sheds, etc. which need attention, the scheme committee will announce compulsory work groups, (absence being covered by a fine); and, where common purchases such as a pump or tractor are concerned, the committee will call a meeting to raise collective contributions or use existing funds from joining fees or subscriptions. The degree of control over members' activities is generally less than on the cooperatives.

The Ministry is now officially promoting the formation of cooperatives, though there appears to be some disagreement over what approach is best. Only one scheme operated as a pure cooperative (Maphobeni) with production all year round on the whole scheme being undertaken cooperatively. Members buy shares in the scheme. Eight schemes operated partly as a cooperative and partly as an association of which 4 were Taiwanese assisted schemes.

The schemes are characterised by a variety of approaches which are discussed in detail in V.D.

#### B. SIZE AND MEMBERSHIP

Scheme size varied greatly (3-100 ha) as did the number of members (6-60). The mean number of participants was 25 and the average size of the 18 schemes with known areas [14] was 22.5 ha. Plot size also varied considerably but tended to be between one-half to one hectare. Only 4 schemes had an average plot size of 1 or more ha, with Zakhe having by far the largest size (3.6 ha). Five schemes had plot areas less than .5 ha.

#### C. CROPS AND TECHNOLOGY

##### 1. Crops Grown

The most characteristic feature of cropping patterns is their lack of diversity. During the winter (usually the most important season for irrigators), most schemes (18) grow a combination of mainly tomatoes and/or cabbages with an assortment of secondary vegetables. Only 4 schemes grow principal crops other than tomatoes and cabbages i.e. potatoes (Asiphilisane), dry maize (Mapobeni) and sugar (Magwanyane and Mankantshane). In contrast

to the others, these latter schemes did not have any marketing problems (see III. E below).

During the summer - usually a slacker period for most schemes excepting those growing sugar, rice and cotton - most (17) of the schemes grow maize, often planting them early to take advantage of the lucrative green mealie market and leaving unharvested maize to dry for domestic consumption. 5 schemes grow maize only, 6 grow maize with vegetables, 2 grow maize with cotton and 1 grows mainly sugar combined with maize and cotton (Magwanyane). The 4 Taiwanese assisted schemes grow rice only during the summer, while Mankantshane cultivates sugar and Mpatheni grows just vegetables.

One scheme in particular is worth mentioning in respect to cropping. The Maphobeni cooperative plants only maize all year round. In January 1986 they were reaping their first harvest and were aiming to reap 3-4 harvests per year.

## 2. Labour Use

An aspect which suggests that, on the whole, irrigation schemes are more economically attractive than often assumed, is that most of the schemes (16) have members who hire labour either seasonally or full-time. Dunn, studying 5 schemes found that hiring labour was widespread although "the economics would not seem to justify it" (personal communication). There is some evidence however that wages paid to hired labour (often illegal immigrants) may be exploitative and well below the fixed minimum agricultural wage [15].

In turn, one cannot conclude that irrigation schemes provide returns to labour that compete with wage employment. At least 12 of the schemes had some of its members involved in wage employment [16]. In their absence, women and children were found to be responsible for the plots.

Little analysis of labour input on irrigation schemes has been undertaken. The RDA Monitoring-Evaluation Unit farm management survey (1980) of only 29 irrigators in the Northern and Southern RDAs does, however, provide some disturbing insight. There were significant differences in labour inputs between the two RDAs but, in both cases, the labour inputs were well below recommended levels. The survey also found very low returns to labour, being equivalent to only dryland maize production. Only 2 of the 29 farmers surveyed produced more than 25 per cent of the profit of E4-5,000 per ha which could be expected from the recommended production system of vegetable cultivation (Funnell, 1986).

## 3. Equipment

Without a comprehensive examination of scheme books and bank records (something that most schemes were reluctant to divulge to strangers) it was difficult to make any judgement about their success. Given the circumstances, we were left with the somewhat superficial alternative of asking for equipment inventories to form impressions about the comparative endowments of the schemes as well as technologies used.

The picture that emerged shows tremendous differentiation between the schemes. Furthermore, as a result of government assistance

and donor activities, rather than despite it, this differentiation has been exacerbated. 7 schemes had, apart from a basic reservoir or dam and furrows, no equipment at all; the 4 Taiwanese-assisted schemes had a standard assortment of rotavators, tillers and threshers; 3 schemes had 1 pump with assorted accessories; 2 had one tractor; and 5 had at least one pump and one tractor, including, at the extreme, Magwanayane, the scheme receiving most government assistance, had at its disposal 3 pumps, 2 tractors, a van, a crane, a cane harvester and a variety of other equipment. At least 6 schemes (Asiphilisane, Maphobeni, Magwanayane, Kalanga, Ntamakuphila, Phoponyane) were able to buy their pumps or tractors through government assistance or donor contributions (see IV. 6 below). Other schemes usually borrowed money from the Swaziland Development and Savings Bank (Swazi Bank) for these purchases.

#### D. PERCEIVED CONSTRAINTS TO SCHEME DEVELOPMENT

Towards the end of the interview scheme members were asked to discuss, on an open-ended basis, what they felt were the main problems faced by their scheme. The following are the issues raised in descending order of importance.

##### 1. Marketing

All but 5 of the schemes listed marketing as one of their main constraints. Of the 5 who did not, 2 grew sugar and were guaranteed markets through their sugar quota, the Asiphilisane scheme had contracts with the University to sell their potatoes, the Maphobeni cooperative was convinced that selling their maize in the maize deficit low veld would be no problem and the other, Ntamakuphila, perhaps due to its comparatively long experience, appeared to have developed (on an individual basis) reliable outlets.

A variety of problems plagued the rest. As mentioned earlier, the remaining schemes grew tomatoes and/or cabbages as their main winter crop. The South African market has been important to many of the schemes. Until recently, many of the schemes in the north were able to sell Roma tomatoes to the canning factory across the border in nearby Malelane in the eastern Transvaal. The factory has since moved and the market has virtually disappeared because of the distances involved. Many of the schemes (e.g. Zakhe, Kalanga and some in the NRDA) relied heavily on periodic visits from Durban-based Indian buyers. However, the South African Government withdrew their permits but following inter-government discussions, the permits are likely to be re-issued. Consequently, many irrigation schemes during 1985 suffered badly: Pommee and Vreman (1985) found that some schemes in the Northern RDA had almost all of their tomato crop rot as a consequence.

An important buyer, especially of tomatoes was the Central Cooperative Union (CCU) (in 1983 the CCU shipped 183,525 kg. to the Malelane factory). However, farmers in 1985 were complaining about very low prices received and increasingly delayed payments by the CCU, to the extent that they simply do not grow them any more (Pommee and Vreman, 1985).

The most important purchasers are traders from within Swaziland. As with the Durban traders, their visits are sporadic and depend entirely when the trader has depleted his/her stock. Other buyers

include market women who travel by bus to the schemes and buy as much as they can carry, and neighbouring homesteads who often trade in kind (e.g. firewood for vegetables Pommee and Vreman, 1985).

The majority of scheme members are without transport and are thus dependant on the vicissitudes of visiting traders and this, combined with the usually saturated market for tomatoes and cabbages, leads to a very one-sided bargaining relationship where the sellers are often faced with the prospect of having to sell their produce at highly exploitative prices or not at all. Virtually every scheme facing marketing problems mentioned that vegetables had rotted in the fields. One exasperated scheme member lamented that it would have appeared that the only reason that they grew vegetables last year was to improve the quality of the soil by ploughing them back in.

The inception of the National Marketing Board (NAMB) in 1986 and the anticipated 10 per cent levy on all vegetable imports are expected to significantly improve the marketing situation.

## 2. Water Shortages

Shortages of water on the schemes were the second most common problem, mentioned by 11 schemes. It appears that these shortages, in most cases, are seasonal resulting from dried reservoirs and inadequate water flows. Despite these shortages, no complaints were raised during the interviews in respect to water allocation, though water distribution was usually undertaken on a rotational trust basis (see section V. H)

## 3. Transport

Directly, related to the marketing problem is that of transport. Very few scheme members owned a van. Scheme members were often found to "hire" vans from fellow members or neighbours. According to common practice, the costs of hiring vehicles are generally restricted only to fuel consumed, reflecting the common belief that variable costs represent the true cost of using the vehicle.

## 4. Fencing

Many of the schemes were fenced but some of the poorer ones were not and vulnerable to uncontrolled foraging by livestock. The Kalanga scheme, though fenced, was commonly harassed by warthogs who would burrow under the fence at night. Five schemes complained about problems with fencing.

## 5. Other

The lack of funds for purchasing equipment or inputs was raised by 4 schemes. The costs of electricity for pumps was mentioned by 2 schemes. Although it is argued that electrical pumps are more economical than diesel pumps, the experience of the Zakhe and Mavulandlela schemes - both formerly "show piece" schemes merits further examination. Both schemes allowed their electricity bills to mount to such levels that their power has now been cut off and unless their substantial debts are paid, the future of these schemes appears bleak. Three schemes mentioned problems with crop disease. Significantly, only 1 raised the issue of discipline (the only problem related to land tenure).

## 6. Problems Identified in Other Reports

Portch (1980), a former government irrigation officer felt that the main difficulties affecting schemes included inter alia: i) absentee farmers about whom he claimed no action could be taken (see section V.F); ii) marketing; iii) the lack of short term credit; iv) committees, because of their inability to impose discipline, remaining weak and ineffective; v) the lack of control over the allocation and distribution of water; and vi) the inability of progressive farmers to acquire more land to expand. The IFAD project document (1982) listed the following problems: i) the under-application of fertilizer; ii) the non-availability of credit; iii) defective irrigation facilities; and iv) the poor criteria for selection (or, rather, its absence) of members. Bowen feels that schemes in the RDAs, dependent on government inputs, are afflicted by unnecessary bureaucracy and long delays (personal communication).

## E. A SOCIO-ECONOMIC COMPARISON OF SCHEME AND NON-SCHEME HOMESTEADS

To put the role of irrigation schemes into a better perspective within the overall socio-economic context of Swazi Nation Land agriculture, a comparison has been made between those homesteads irrigating on schemes and all SNL homesteads. This has been made possible by disaggregating data made available from the 1983-84 Census of Swazi Nation Agriculture (CSA). Table 1 summarises the findings.

Although 8.6 per cent irrigate some crops in one form or other, less than 1 per cent of SNL homesteads belong to irrigation schemes. Homesteads belonging to irrigation schemes (henceforth referred to as "scheme irrigators") have significantly more residents and thus more labour available for non-subsistence agriculture. A very clear pattern emerges, indicating that scheme irrigators are considerably better off than the average SNL homestead.

Irrigators have higher agricultural production and appear to use more sophisticated methods of agriculture than the average SNL homestead. More than half (55.1%) of the scheme irrigators produce maize which is either always or mostly enough for homestead needs vs. barely one-third (34%) of all SNL farmers. As would be expected, many more scheme irrigators grow fruits and vegetables, but significantly more irrigators also grow cotton and tobacco. More than two-thirds (68.5%) of the scheme irrigators use fertilizers all or most of the time on all or most crops vs. only 38.8% of all SNL farmers. Most (57%) scheme irrigators use either tractors only or both tractors and oxen to plough their fields in contrast to barely one quarter (27.5%) of all SNL homesteads. They also have considerably more contact with extension officers; more than half (54.8%) having been visited at least once a year. More than three-quarters (78.7%) of all SNL farmers do not have any contact with extension officers.

In terms of asset holdings and type of dwelling, scheme irrigators are also noticeably better off. Although it is not known what proportion of the homesteads own cattle (our survey suggests that almost every scheme member does), the number of cattle divided by all irrigators shows a herd size of 13.7 (having deducted two irrigators with disproportionately large

herds). On the other hand, the SNL herd divided by all homesteads gives a herd size of only 8.8 [17]. The number of irrigators with a tractor was about 7 times that of all SNL farmers. Almost twice as many (proportionately) of the irrigating homesteads (42.1%) had all or most of their dwellings built of modern materials as SNL farmers (24.1%). Less than three-quarters (72.3%) of all SNL homesteads were accessible by car, while almost 90% of the irrigators were.

From this information we can conclude that irrigators are, on the whole, much better farmers and are wealthier than the average SNL homestead. Unfortunately, without any intertemporal comparative data, one cannot say to what extent irrigators are better off because they are irrigators or are irrigators because they are better off. The causality in many cases is a mixture of both: as some of the schemes have high joining fees which relatively better off homesteads will join, and others with lower joining fees will provide an opportunity for increasing agricultural income to a wider group. as Ntamakhupila generate considerable income for their members.

TABLE 1

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SOCIO-ECONOMIC CHARACTERISTICS OF SNL IRRIGATION SCHEME MEMBERS  
(SWAZILAND CENSUS OF AGRICULTURE 1983-84)

	TOTAL SNL	SCHEME IRRIGATORS
1. Total Homesteads	58 030	525
2. Residents per Homestead	7.9	10.8
3. Level of Maize Production		
i) Always Enough (% of homesteads)	16.4	34.5
ii) Mostly Enough	17.6	20.6
iii) Sometimes Enough Production	29.0	29.3
iv) Never Enough Production	37.0	15.6
4. Commercial Crop Production		
i) Cotton (% homesteads)	8.1	15.2
ii) Fruits and Vegetables	7.9	77.7
iii) Tobacco	3.4	10.3
5. Main Methods of Ploughing		
i) Tractors only (% of homesteads)	15.6	32.6
ii) Oxen only	59.1	39.4
iii) Tractor and Oxen	11.9	24.4
iv) Other		
6. Plough Machinery and Draught Animals		
i) Tractors (ratio to homesteads)	1:24	1:3.5
ii) Plough oxen	1:3	1:2
7. Fertilizer Usage		
i) All Years/All Crops	30.6	56.7
ii) Most Years/Most Crops	8.2	11.8
iii) Some Years/Some Crops	15.1	17.9
iv) Not Using	46.1	13.5
8. Uses of Extension Services		
i) 6 Times Plus/Year	5.3	21.5
ii) 3 to 5 Times/Year	4.5	12.0
iii) 1 to 2 times/Year	11.5	21.3
iv) Not Using Extension	78.7	45.1
9. Livestock Owned		
i) Cattle	8.8	13.7*
ii) Plough Oxen	2.3	2.9
iii) Goats	5.1	7.9
10. Homesteads Built With Modern Materials		
Modern Materials Used On:		
i) All Dwellings/Sheds	10.7	17.7
ii) Most Dwelling Houses	13.4	24.4
iii) Some Dwelling Houses	28.0	30.5
iv) No Dwelling Houses	47.9	27.4

\* Two irrigator farmers between them allegedly own 5 000 head of cattle. If included, the average irrigator herd size would be 23.2

#### IV. THE INSTITUTIONAL FRAMEWORK

##### A. INCEPTION OF SCHEMES

Given the common impression reflected by Devitt and many others about the constrictive influences of traditional authority and the land tenure system, we were interested in seeing how each of the schemes was initiated i.e. who was the driving force in the conception and implementation of the schemes. By far the majority (15) of the 22 operative schemes were initiated from within the community rather than by government; in fact, only 3 schemes were introduced by the government to the community, 4 others involved government assistance after receiving requests by groups of farmers to establish the schemes. Chief's appeared to play a more forceful role in initiating schemes: 4 schemes were inspired by the chief himself and 1 was initiated by a chief's wife. The remaining schemes were conceived by individuals (6) or groups of farmers (4) who approached the chief. In virtually all cases the government played an important role in providing infrastructure and technical support.

Membership on government-initiated schemes is usually open to anyone wishing to join on a first come first serve basis and is registered on payment of a nominal E1 registration fee. Schemes are legally required to obtain a water permit from the Water Apportionment Board. Once a permit has been obtained, considerable administrative work is undertaken, often by the chief, to involve government in the provision of free instructional support.

one chief  
Chief Dambuza Lukhele spoke of the great frustrations communities have in channelling initiatives to relevant government authorities. There appear to be no formal channels through which an idea conceived at grass root levels should be submitted for consideration. The process of getting such an idea to bear fruit within government or with donor agencies will depend largely on the commitment of the chief to the idea and his perseverance in pushing it through the necessary and often painstaking administrative channels.

##### B. COMMITTEES

The schemes were remarkably uniform in their approach to elected committees. All but 2 had the same system i.e. one elected committee comprising of a chairman, vice-chairman, a secretary and several committee members. Committee size ranged from 5 to 9, but the standard size appeared to be 7 members. Such a committee structure is commonly found throughout Swaziland and is likely to have been introduced and widely adopted during the colonial administration.

Of the 2 which did not have a standard approach, one (Nkungwini) has 5 committees which, in addition to the general committee covered a variety of duties (water, plot, inputs and marketing) thus ensuring that all members of the scheme were involved in some committee or other. Under this system, everyone felt they had a duty towards the running of the scheme. At Asiphilisane there appears to be no committee, the decisions being left in the hands of the scheme manager (see V.E).

The committees' roles are fairly standard: they call meetings to

Discuss issues such as purchasing equipment or new development; schedule work groups; impose penalties and other disciplinary measures except those considered serious enough to be handled by the chief (see V. B); handle the scheme's finances; and in some cases they will arrange bulk buying of inputs.

A fair number (exact unknown) of the schemes had written constitutions ( a copy of the Ntamakuphila scheme is presented in appendix 2)

C. THE ROLE OF THE CHIEF (see Hitchcock, Malinga and Patrick, 1986)

There are 169 chiefdoms in Swaziland (R.K. Hitchcock, personal communication). Each chiefdom is comprised of an average of 4 local communities or "wards" which in turn comprise of approximately 65 homesteads.

Chiefdoms are organised into regional administrative units (tinkundla) which were established by King Sobhuza II in 1953 in an attempt to institutionalize the power of the monarchy by inter alia decentralizing administrative authority and providing a system for information dissemination and collection. More recently they have served as centres for the announcements of development projects.

Chiefs play an important role in the promotion of development in their areas. Where problems arise, he can refer it to the Regional Administrator (indvuna of the tinkundla) who is then expected to pass the information on to the relevant government department. Issues dealt with by chiefs at the local level include physical and social infrastructure provision, land allocation and resettlement, forestry projects, grazing and livestock management, agriculture and health.

The chief consults mainly with two councils or committees on issues relating to development. The bandlancane which, in addition to serving as a court hearing both civil and criminal cases, works as an advisory body discussing community problems and proposing solutions to them. The imisumphe are often elders familiar with land issues and allocations. In some chiefdoms they form a committee of seven members overseeing the allocation of grazing and arable land and, significantly, coordinating development activities in an area.

The IFAD (1982) project proposal mistakenly claims that "the traditional chiefs in the area usually chair the farmers' associations of the irrigation schemes....". It is not clear what they mean by the farmers' associations of the schemes, but it is assumed they are referring to scheme committees. Our findings showed that chiefs were members of only 7 schemes (including Vumuthando where the chief's wife was initiator and member), but the chief did not sit on any of the committees. In virtually all schemes the committees have been given autonomous powers to deal with the day to day running of the schemes, the chief being called in for serious disciplinary matters and anything relating to land such as allocation or expansion.

D. THE ROLE OF GOVERNMENT

The universal outside institutional link for all schemes is

government but this relationship is highly variable. The Magwanyane scheme, for example, has been allocated well over half the Ministry's irrigation capital budget. Some schemes such as Pophonyane have received direct grants for the purchase of equipment. Others such as Kalanga had, a pump purchased through the RDA budget. Several have had government replace damaged pumps following Cyclone Demoina, through a USAID grant. In the near future, 12 schemes are scheduled to undergo a rehabilitation programme involving the levelling of land, the purchase of pumps (for 3 schemes) and general improvements. Nine schemes are registered formally with the Ministry of Agriculture and Cooperatives as a cooperative of one form or other.

On a more general level, the government is usually involved during the inception of a scheme, providing assistance in surveying plots and infrastructural development. Agronomic advice has been made available to virtually all schemes through agricultural extension officers and technical assistance has been provided by one irrigation officer.

In the past, government policy had been one of making straight grants to selected schemes but this is expected to change during the third phase period of the RDAF. The new approach will be centered on cost-sharing so that the capital costs are apportioned between government and scheme members (the latter's contribution possibly being in kind e.g. through labour) as this is felt to generate a more responsible attitude towards the use and maintenance of equipment (F. Lukhele, personal communication).

Government recently appears to be placing greater emphasis on irrigation schemes (see II. E) but the immediate constraint appears to be staffing, particularly on the technical side. Back-up services are effectively restricted to extension officers and one irrigation officer.

#### E. THE CENTRAL COOPERATIVE UNION

8 schemes mentioned that they had had dealings with the Central Cooperative Union (CCU) (e.g. for marketing, the purchase of inputs, credit), but few continued these arrangements [18]. Of the 8, 7 said that they were dissatisfied with their relationship with the CCU, citing late payments and sometimes no payment at all, poor prices, unfulfilled promises, etc. One explanation which might account for the bitterness regarding CCU payments is that often, when credit was given, the proceeds from marketed produce was offset against the credit. This was not always made clear to the farmers who felt they were being cheated.

The role of the CCU in marketing has been substituted in some ways by the new national marketing board. Input supplies such as fertilizer, seeds and fencing are often available at the RDA depots. Ten schemes mentioned that the purchasing of inputs was done on a bulk purchase basis on behalf of all members.

#### F. THE SWAZI BANK

Ten schemes indicated that they had borrowed money from the Swazi Bank and that the main form of collateral was cattle. A common procedure was for members to each pledge a certain number of their cattle against the scheme loan. Many schemes who did not

not borrow were apprehensive because of the interest rates or because they felt that they would not be eligible for a loan. There is in fact a great deal of money available at the bank specifically for irrigation schemes (see V.G.)

#### G. DONOR PARTICIPATION

The most significant donor contribution to irrigation scheme development has come from the Taiwanese Government who have been directly involved in the management and operation of 4 schemes.

In addition to 2 schemes receiving grants from the government, 5 others received grants, loans or equipment from donor agencies. The main donor group was the Unitarian Church Services of Canada which has made large donations to at least 3 schemes and loans to 2. The donations and grants were used mainly for the purchase of irrigation equipment [19]. USAID has also donated money directly to schemes as well as indirectly to the Ministry of Agriculture and Cooperatives to replace or repair pumps destroyed on many of the schemes during Cyclone Demoina.

Two points are worth noting. First, financial assistance has come either as grants or loans for similar purposes and to basically similar schemes. There does not seem to be any obvious reason why schemes were given different forms of aid. If assistance comes in the form of lending, it is likely that a more determined effort will be made by the schemes to succeed. The second is that, although the Taiwanese assisted schemes are running well and members are producing high yields, there is no evidence of a planned transition towards the independent management and technical expertise on behalf of the members.

## V. LAND TENURE ISSUES AFFECTING SNL SMALLHOLDER IRRIGATION SCHEMES

### A. GENERAL

"Farmers' efforts to develop productive irrigated agriculture can be frustrated by customary tenure. Land tenure provisions should freely permit adoption of new farming techniques.... Difficulties [are] experienced by smallholder irrigation schemes on Swazi Nation Land under customary tenure.... and the conclusion drawn [is] that customary tenure is incompatible with this type of development" (Iate and Lyle, 1982)

"The development objectives of the Swazi people cannot be achieved so long as customary land tenure in its present form predominates in the rural areas" (Maina and Strieker, 1971)

"Although the traditional land tenure system represents a serious constraint to the full development of agriculture on Swazi Nation Land, the issue is not generally examined carefully because of its highly political and emotional nature." (Magagula)

"...land cannot be commercially or privately alienated and thus cannot serve as security. From this perspective, land tenure is not so much too insecure as too secure....Any change in land tenure would involve and precipitate the revolutionary transfer of the greater part of Swazi society. There is no surer way of depriving a peasant of his land than giving him freely negotiable title to it." (Hannett, 1978)

"No changes should be made in the present system of land tenure which is a crucial source of security and presents no serious obstacle to the adoption of capital improvements necessary for irrigation." (Downs, 1983)

The above few selected quotes are indicative of the dissension which exists on the effects of land tenure on rural development in Swaziland. In this section a brief overview of the more general debate on land tenure is presented before turning to a more detailed discussion of tenure related issues specifically affecting smallholder schemes.

Maina's and Strieker's (1971) discussion of land tenure is perhaps the most comprehensive and "radical" of the few formal reports examining the sensitive issue of land reform. They argue that: "The development objectives of the Swazi people cannot be achieved so long as customary tenure in its present form predominates the rural areas" and that farmers will only make the necessary investments for viable commercial agriculture if they possess "certain definite, legally protected and commercially essential rights in his land" or more specifically: i) permanency of tenure, ii) clarity of title and iii) freedom of alienability (to at least have the power to utilize the money value of the land as a source of financial capital). They do, however, recognise that, given the few evictions that take place and that most farmers have a good idea of their boundaries, the first two rights do effectively exist under customary land tenure. But, they argue that "these rights, however much they exist in fact, do not exist with the certainty that is required by modern agriculture". To overcome this problem, they recommend a phased programme which would adapt customary land tenure firstly through the adjudication, consolidation, demarcation and registration of land and secondly through the voluntary acquisition of leasehold rights (by chiefdom).

The basic argument is that the lack of total security of land and the inability to use land as security against loans has impeded

agricultural transformation. It is one used by many writers on rural development and is appealing in its convenience to explain the lack of commercial agriculture by Swazi Nation farmers. A more realistic explanation, however, might be that the fear of resettlement is a more tangible obstacle as homesteads moved by the government resettlement schemes are not eligible for compensation for permanent improvements (see section V.C). Nevertheless, the prevalence of permanent brick houses (even in areas not yet resettled) which have been erected in the past few years would appear to belie the notion that Swazis are reluctant to put substantial investments into communal tenure land.

Other writers have taken a less reformist approach to land tenure, inferring that change should or would be more gradual. Holleman (1964) took a minimalist stance, being opposed to any move (even a gradual one) towards the individualization of land but suggesting some measures to help overcome some of the more obvious imperfections of communal land tenure. He felt that government should articulate a statement of policy that "no immediate change of land tenure is contemplated with regard to tribal land" (quoted in Hughes, 1972). Hughes, on the other hand believes that, although Holleman's position might be acceptable within the present circumstances, adequate conservation measures and the encouragement of more progressive farmers is not possible within the framework of present policy and that the traditional tenurial system would ultimately have to be adjusted in certain respects to meet changing conditions. He suggests that the adoption of "Swazified" leaseholds could be the "cornerstone of agricultural development in Swaziland". In this context it is worth noting that the Land Act of Lesotho (date\*) aims at gradually replacing customary title to land with a system of leases and licenses. Doggett (1980), drawing from the experience of Swazi farmers on freehold farms and the experimental leasehold system introduced through the Land Settlement Scheme of 1946 [20], argues that there is no evidence suggesting that a new tenure status will automatically result in improved farming. He feels that SNL farmers should be differentiated according to their agricultural commitment i.e. those who are commercially oriented and others seeking livelihood elsewhere [21].

Hughes (1972) whose formidable work on land tenure in Swaziland is still regarded as the most important reference on the topic, considers "innovations" in his study by looking at fencing, gardens, forest lots, etc. Surprisingly, he gives very little attention to irrigation schemes despite the fact that 5 schemes had been established before and another 3 during the year of publication of his study.

To date, the only significant studies relating to the specific question of land tenure and irrigation schemes were undertaken by the FAO/UNDP (1970), Tate and Lyle (1982) and their respective consultant sociologists (Hamnett, 1970 and Devitt, 1981). Both studies, bearing in mind their objective of establishing smallholder-nucleus estate schemes, must be treated with caution. The Tate and Lyle study in particular, by drawing on the experience of a few irrigation schemes with comparatively traumatic histories (some of which are of questionable accuracy) [22], adopts a strong position on what it perceives as the inhibiting influences of land tenure on smallholder irrigation schemes - particularly in relation to traditional authority - thereby justifying the need for large scale schemes operating as semi-autonomous enclaves on SNL.

Irrigation schemes could be seen as an alien concept to "traditional" values in Swazi culture for two reasons. First, they are relatively new, the first being established some 25 years ago. But, more importantly, schemes in many ways would appear to conflict with the structure of Swazi society which is hierarchical and, at the same time, individualistic in nature. Homesteads are effectively independent economic units which only contribute communally when called upon by their traditional rulers (chiefs or the King) for certain ceremonial functions. Although most schemes run as associations, allowing farmers to reap the benefits of toil from their individual plots, a fundamental prerequisite for the success of any irrigation scheme is the cooperation and coordination of its members to work collectively as a group for certain common objectives - an approach with which most farmers are unfamiliar.

A prevailing assumption of many writers is that customary law creates a monolithic and inflexible framework generally inhibiting progressive ideas from germinating within Swazi Nation Land. Case histories of SNL irrigation schemes, however, demonstrate the fluidity of customary law which, by definition, reflects what is accepted as custom or norm in a society. These can differ markedly from chiefdom to chiefdom, but are guided by certain principles. In effect, Swazi society, is far from rigid in its attitudes, and evidence of its flexibility can be demonstrated in the way homesteads have, over time, responded to modernity.

Armstrong (1986), in her analysis of the legal aspects of land tenure in Swaziland warns against taking the works of Hughes and other foreigners who have written on "customary law" too literally as their information was obtained from interviews or panels of Swazi headmen who are prone to depict custom in ways to serve their purpose and that, by recording these "customary laws", there is a danger of implying that such laws are static when custom is, in fact, in a constant state of flux. It is therefore important to see the issue of customary law and land tenure as being "not so much a set of rules as practices and processes of negotiation (which makes it difficult for a Swazi to answer a hypothetical question about a rule to be applied in a particular situation)" (Armstrong, 1986). Nkambule (1983) neatly captured the essence of customary law as comprising "a set of unwritten codes that embrace the definition of norms and values....(developing) with the people over time".

It is in this context that the land tenure implications of irrigation schemes will be tackled. From our findings and other case studies, it is evident that there are very few standard rules applying to irrigation schemes and their members concerning issues such as membership, inheritance, eviction, the role of the chief and the participation of women. Over time, as irrigation schemes become more common in Swazi Nation Land, we can expect more convergent treatment of these issues and increasing standardization of approach.

#### B. PARTICIPATION OF THE CHIEF

There is a tendency to view chieftainship as a conservative symbol of the vague notion "traditionalism" which embraces those aspects of Swazi life which are not "modern". Such stereo-typing

builds up the image of chiefs as custodians of the status quo. However, as mentioned earlier, traditionalism is fluid and attitudes towards innovation have changed often with the support, approbation or even initiative of traditional authorities.

The Tate and Lyle study (1982), looking at the the relationship between irrigation scheme members and traditional authorities from the distorted perspective of a few case studies, felt that "outside" interference (i.e. from traditional authorities) hindered the development of the schemes. Because schemes were seen to largely operate autonomously, challenging the authority of the chiefs, they were referred to as "minor 'kings' in their own right" and thereby eliciting negative cooperation from the chief. This view has prevailed in many discussions over the future development of small schemes and has been often used as an argument to support smallholder-nucleus estate proposals.

Hamnett (1970), took a less critical view of the chiefs, but nevertheless felt that they were an obstruction to rural development. In a similar vein to the Devitt's and the Tate and Lyle approach, he tended to emphasise the potentially negative aspects of chiefs' participation in the development process. Recognising that chieftainship is the "most effective day to day force in the lives of the greater number of people", the chief's support for any government sponsored projects was seen to be critical for their success. The intervention of non-traditional agencies such as agricultural extension officers and district commissioners, was felt to threaten chiefly rights both in land administration and social control. Referring specifically to irrigation agriculture (presumably large scale), Hamnett felt, that because of heavy capital investment, disciplined soil use and the need to cut across traditional rights and obligations, chiefs usually lacked the ability, training and skills required to superintend such a system and to enforce the rules associated with it. Although this argument was used to suggest ways chiefs could play a more meaningful role in the development of such projects, it implies (in agreement with Devitt) a narrow view of traditional attitudes, giving the impression of paranoia in relation to power and a xenophobic attitude to new ideas and their executing agencies. In contrast, our survey evidence suggests that chiefs are in fact not only receptive to new ideas but also willing to delegate supervisory responsibilities on committees.

Hamnett appropriately observed that chieftainship remained virtually the only form of local government. This is still effectively the case today. And, as in any bureaucracy, one finds both enlightened and reactionary administrators. It is in this context that one can understand the objectives of the US AID project engaged in the training of chiefs [23]. Accomplishments of progressive chiefs and not the failures of the the reactionary ones should be seen as indicative of rural development potential. There is strong evidence that over recent years a dramatic change has taken place in chiefs' attitudes towards development [24] Moreover, the Ministry of Agriculture and Cooperatives (1986) has explicitly recognised "the essential role of chiefs... (and that) all chiefs will be involved more deeply in agricultural programmes in their areas".

As discussed in IV.D above, chiefs and the government together play an important role in the inception of a scheme. The chief's approval is a prerequisite for any scheme; furthermore, the chief

often (but not always) chooses the site (sometimes in consultation with government surveyors) and is responsible for the allocation of plots. It should be stressed that this prerequisite role is an administrative one. More importantly, in at least 5 cases the chief played the initiating role, and in all but 8 pursued the necessary (and often frustrating) steps for establishing an irrigation scheme e.g. obtaining official clearance, water rights, etc.

Against assertions that irrigation schemes foster nodes of autonomy which conflict with the power of the chief, our findings showed that chiefs in virtually all cases voluntarily pursued a laissez-faire approach. Not one scheme committee included a chief, although chiefs were members of 7 schemes. The parameters of authority were, however, clearly recognised by all those interviewed. The committee (with the implicit consent of scheme members) was left free to make up general rules and enforce discipline for more mundane misdemeanours. Any disciplinary action of a more serious nature, e.g. eviction, would be referred to the chief. Furthermore, any issues touching upon land allocation such as expansion, or accepting new members must be approved by the chief. Schemes operated somewhat autonomously, though not in the sense perceived by Devitt and Tate and Lyle. Chiefs allowed, and indeed encouraged, schemes to run their own affairs but with the implicit knowledge that he had ultimate control over the schemes. In only one scheme (Mphatheni) did the chief request that the committee inform him of all decisions and obtain his consent. At Mbekelweni the chief usually attended committee meetings to keep himself informed of developments and at Mkhovu the chief had requested the committee to keep him generally informed of decisions and developments. On most other schemes, meetings and are normally undertaken and decisions on day-to-day issues are made by committees without involving the chief.

The Tate and Lyle report, attempting to substantiate its assertion of inherent discord between traditional authorities and smallholder schemes, claimed that, of 5 schemes studied, 3 had been "subject to disputes between traditional authorities and smallholders over the issue of land and independence". However, looking carefully at the 3 cases we find i) that, at Vuvulane, traditional authority played a minimum role (the scheme, in fact, being used as a model for report's recommendations), ii) Magwanyane was not subject to any dispute but was rather affected by what could be seen as an ethical controversy which did not affect its success and iii) Mankantshane, alleged to be suffering from a land dispute (see V.I) and in the "last stages of collapse", according to our survey and the government irrigation officer, did not suffer from any major land dispute and is currently one of the most successful schemes. Ironically, the report did not mention Zakabe, the only scheme in which we encountered dissent between the chief and its members (see below). Where problems might be attributed to traditional authority, cases should be treated individually, as the circumstances surrounding each are likely to be unique and certainly do not justify the generalizations of the Tate and Lyle study.

The Tate and Lyle (1982) and Devres (1985) reports suggest that nucleus-smallholder schemes should be divorced from traditional authority. The experience of Vuvulane might suggest otherwise, and that the role of the chief as a mediator and adjudicator of

customary law, should not be overlooked. As early as 1970 Hamnett noted that there was a perceived need for a chief by both the smallholders and management alike at Vuvulane. Scheme members retained their old allegiances to the chiefs of their homestead areas but had no chief at Vuvulane. Management felt that a chief appointed by the King would have improved the links between the farmers and the settlement office, while the farmers believed that a chief knowledgeable in Swazi law would be able to more effectively deal with disputes and, at the same time, be their link with higher authorities at Lobamba (who had often been petitioned by the farmers). Hamnett, commented that "they are in a sort of limbo world cut off from the traditional authorities with only the company to turn to." It is likely that, had a chief been appointed to play a mediating role, the recent problems of Vuvulane would not have come to such a dramatic head.

One important issue that should be addressed in more general developmental terms is the question of overruling a chief on what might be seen as detrimental decisions carried out in his constituency. Generally, disputes between chiefs and his subjects or between two chiefdoms are brought to the King and his elders for arbitration (see V.I). There is, however, at least one precedent set in the case of the Zakhe scheme where the District Commissioner forced the chief to re-open the scheme after the chief had closed the scheme in response to its members refusing membership to the chief. According to Hitchcock (personal communication), action can be taken against a chief by a member of the Tinkundla (\* Mark please recheck with Bon Hitchcock).

## C. ACCESS TO IMPROVED RESOURCES

### 1. Scheme Membership and Fees

The relative novelty of irrigation schemes on SNL and, consequently, the lack of uniform approach between them is evident inter alia in the way membership is treated. Membership is given either to the homestead and therefore registered in the name of the homestead head, or to individuals. In the latter case, women can be registered as members. About half the schemes were comprised of homestead members and the other half individuals. At the inception of a scheme, the joining process is either through registration for plots on a first come first serve basis (as for most government initiated schemes) or by applying to the chief. To join on-going schemes, the usual procedure is to apply to the committee who will then refer the case to members. If approval is given, the chief is consulted. It is unlikely that unmarried individuals are granted membership on many schemes, but Downs (1983) noted that there were some schemes where the only criteria for entering the schemes was the ability to pay the entrance fee and that bachelors were not excluded.

At least two schemes (Ntamakuphila and Zakhe) had a preponderance of close relatives among members. This may have contributed to the close sense of unity found at these schemes and the success they have enjoyed (at least until recently in the case of Zakhe).

In general, membership is open exclusively to residents of a particular area (chiefdom). There are, however, 3 schemes - Magwanyane, Vumathando and Magagane which allow outsiders to join. In the case of Magwanyane management felt that outsiders, including some Mozambican immigrants, were the best farmers (Tate

and Lyle, 1982). In the case of Vumathando membership is open to outsiders, though none have joined so far.

Two case studies suggest that the higher echelons of authority in the Swazi Nation - the "elders" of Lobamba - tend to frown upon outsider membership. The Magagane scheme attempted to integrate selected farmers from two chiefdoms on a farm purchased by government situated in one of the chiefdoms. After the scheme began, it was not long before farmers from the area on which the scheme was located, supported by their chief, complained that the farmers from the other area should establish their own scheme and subsequently boycotted the scheme. In the meantime, the outsiders continued cultivating and established a temporary committee. The matter was then taken up by the boycotting farmers with the "elders" who responded by "freezing" the scheme, forbidding those who had farmed from harvesting their produce. The scheme is still awaiting resolution and remains inoperative.

The fate of the Madlenya scheme (now defunct) further suggests that outsider members are not condoned. The Tate and Lyle report noted that the scheme, which had already failed earlier, was revived by a field officer (outsider) who approached the local chief (Gumede) and requested that 5 outsiders (4 field officers and a cattle guard) could join 9 other local participants in the scheme. The chief agreed. The scheme apparently flourished but ran afoul of the Central Rural Development Board (CRDB). The Chairman of the CRDB objected to the inclusion of the outsiders. The chief was summoned to the King, admonished for allowing outsiders to join and ordered to stop the scheme. Later the scheme was allowed to re-open, but without the participation of outsiders.

Accessibility to schemes will largely reflect the objective of those initiating them. Government-initiated schemes can be assumed to be more egalitarian, opening opportunities to anyone who might be interested in raising their income or nutritional intake. In these schemes the economic viability and success of the scheme will probably be eclipsed by the more immediate term desire to impart new agricultural methods on a (presumably) willing but inexperienced target audience. Other schemes, inspired by groups of progressive farmers, are more likely to be restricted to those willing to invest substantially with their own resources for an acceptable rate of return. Membership to these schemes is therefore more likely to be exclusive and expensive.

An analysis of joining fees and subscriptions highlights the dichotomy of these objectives. The more "successful" schemes in terms of production and returns also tend to have much higher joining fees. Thus the Pophonyane, Kalanga, Magwanyane, Maphobeni and Zakhe schemes had comparatively high joining fees of between E200-700 [25]. These fees will obviously restrict membership to those who i) are able to afford the fees, ii) willing to risk a substantial amount of capital and iii) are farmers sufficiently advanced to expect a reasonable return on their investment. Two schemes ( Ntamakuphila and Vumuthando) developed a system for joining which aimed to put new members at par with older ones by adjusting the joining fee according to the capital contributions periodically collected from members for the purchase of items such as pumps or tractors. Three schemes had no joining fees at all and 10 had joining fees which were essentially nominal payments in the region of E10-25. Only three schemes had a

## registration fee (E1).

In addition to joining fees, annual subscriptions were imposed by 12 schemes. These were quite low in most cases, except at Kalanga (E50) and some of the rice schemes (4-10 bags of rice). At the Pophonyane scheme where members have different sized fields under irrigation, annual subscriptions were E10 per acre.

Often, when schemes have to purchase capital items costing in excess of available funds such as a pump, the committee will determine a compulsory contribution to be imposed on all scheme members.

## 2. The Role of Women

Women play an important role in irrigated farming on SNL, particularly in community gardens which are comprised almost entirely of female members. On irrigation schemes their presence is conspicuous on the plots where women and children usually far outnumber the men. This phenomenon is generally attributed to the fact that women tend fields while their husbands are away, engaged in wage employment. More insight on the role of women can be expected from Carolyn Richter currently researching women working on irrigation schemes.

In reality, there is much more formal involvement than commonly assumed: 13 schemes had women members (in those schemes which had membership by homestead, women had taken over the responsibility from deceased husbands and were designated as members representing the homestead); 2 schemes (Vumathando and Kandwandwe) were comprised entirely of women, Vumathando having been initiated by the wife of the local chief. The importance of women in managing the schemes is evidenced from their disproportionate representation (in relation to their official membership numbers) on the committees. Of the 22 operational schemes, 19 had women sitting on their committees with the ratio of women to men on committees being usually between one-third and one half. On schemes where membership was granted to homesteads, women were often elected to the committees as "members", despite the presence of male homestead heads. This practice is not surprising as homestead heads are frequently preoccupied with dryland crops such as cotton in the lowveld while wives concentrated more the cultivation of vegetables. One interesting and unique attitude towards women was observed at the Mkhovu Taiwanese assisted scheme. Women were denied membership on the grounds that the equipment used in the rice paddies is felt to be too dangerous. Despite this rule, women regularly work in the rice paddies.

## 3. Inheritance

Succession in Swazi customary law is patrilineal. When the homestead head dies, his eldest son becomes heir, but where the homestead head is a polygamist, the eldest son of the principal wife succeeds as the head of the homestead. The principal wife - known as the general heir - is chosen by the family council after the death of the headman. (Maina and Strieker, 1971)

As with membership, succession has not been applied in any standard form and a variety of approaches were found. At Zakhe, which can be seen as fairly representative of most schemes on this issue, the wife would take over the field and work it with

the children but, according to its constitution, the son would take responsibility if he was old enough (and if interested).

Some special cases worth noting include Magwanyane whose members are expected to register the successor, i.e. they are known before death and do not necessarily have to be the one chosen according to custom. At Kandwandwe the inheritor would be the oldest child, irrespective of whether it is a boy or girl. At the exclusively female Vumathando scheme, a deceased member's daughter or daughter-in-law would be expected to take over.

At Vuvulane, one of the most controversial clauses in the lease was one dealing with inheritance. The leases were modified in 1969 to allow almost automatic inheritance of plots and to allow disputes to go into arbitration instead of the CDC having unilateral authority (Tate and Lyle, 1982).

The question of inheritance when raised in our interviews stirred little emotion. The general impression gained was that it would be an issue that would resolve itself within the family and that the plot would ultimately be ceded to someone who was willing to bear responsibility for cultivating it. This is not surprising as the plot is probably not regarded as part of the homestead "estate" in that it "belongs" to the scheme and that membership simply allows a member to use the land under what many would perhaps see as fairly stringent regulations (in comparison to the less demanding requirements of tilling usufruct the homestead fields).

Of all the schemes, only Zaihe now has a predominance of second generation members [26]. Most, if not all successors have been eldest sons, though the responsibility in earlier years may have been borne by the deceased member's wife until the son was old enough to take on responsibility.

#### D. RELOCATION AND COMPENSATION

When a site is chosen there are often homesteads which have to be resettled. 12 schemes resulted in the relocation of homesteads away from chosen sites and one involved the voluntary movement of homesteads to the site of a new irrigation scheme (Mancubeni). Generally no compensation is given but land parcels equivalent to the former will be allocated. In one case (Kalanga), resettled homesteads were given larger portions of land to compensate for the move. Resettled homesteads were, however, always given the option of joining the proposed scheme.

In 3 cases (Phoponyane, Tifukutfuku Temadvodza and Nkungwini) homesteads were integrated into the scheme i.e. water was channelled to existing homesteads.

As in the case of most schemes, homesteads of members of the Magwanyane scheme are scattered in the surrounding area. However, the chief has allocated a block of land near the scheme for members to grow their rainfed crops in subdivided plots.

From our survey it was found that all but one scheme did not provide compensation. It was not possible, from the interviews to gauge the extent of disruption and loss caused through relocation, but there was no evidence of strong resistance to the schemes by affected residents.

The principles behind, and the treatment of, compensation is not at all clear. Hamnett (1970) found that when homesteads were removed from the new site of the Luyengo Agricultural College, the affected homesteads were to be given R200 each, but later it was decided that the homesteads would be incorporated into a new irrigation scheme (Eluyengweni Resettlement Scheme) and that government would provide housing, some cattle, and fencing in addition to general infrastructure. Despite this, some scheme members appealed to the King not to be removed. Homesteads resettled during recent construction of the Lumphohlo hydro-electric dam were paid compensation on the assessed value of their homesteads and were given new land. In contrast, those resettled from the site of the Simunye sugar estate were not given compensation for their dwellings nor, it appears, suitable alternative land, as many are still living in caravans awaiting a satisfactory solution. In terms of the RDA resettlement programme, it appears that homesteads which are resettled will not be compensated for buildings but, once they have been resettled, and for some reason must be removed again, compensation will be granted for any investments made. Hughes (1972) made some interesting observations on banishment and compensation, suggesting that, although there was no explicit regulation requiring compensation for permanent improvements made to a dwelling of a banished person, when a case of banishment is put before higher authorities, the material loss which may be incurred from moving is taken into account. In one often quoted case it was agreed to confirm a sentence of banishment provided that the chief or local community paid the concerned E 2 000 in compensation.

#### E. SCHEME MANAGEMENT

Perhaps the most noteworthy feature of the smallholder schemes was the variety of management approaches adopted. All but one scheme had a committee to administer or oversee the activities of the scheme, but there are at least 8 quite distinct models of operation. If one were to look for a "standard model" representing most schemes, the Ntamakuphila scheme perhaps best exemplifies this category. Typically, this approach consisted of a group of about 20 farmers operating as a farmers association with plots of 0.5 ha. A committee of 7 was elected by members, operating autonomously on day to day issues, while calling on the chief to intervene on serious disciplinary issues or on matters concerning the allocation of land. Several of these schemes have constitutions (see appendix 2). Apart from initial infrastructural support, government influence would only be felt in terms of technical and agronomic advice. Whenever work of a communal nature was necessary, the committee would organise work groups, absence from which would be fined. A bank account would generally be held on behalf of the scheme where joining fees, annual subscriptions and specific contributions by members would be pooled. The quality of management on these sorts of schemes is highly variable, depending greatly on the will and motivation of individual members.

The most innovative and probably most controversial approach adopted is that of the Magwanyane scheme. Here scheme management is paid to act on behalf of the scheme members who draw dividends

from the cooperative's profits and, depending on their inclination, will cultivate crops on their individual plots. It is possibly the inspiration behind many of the Vuvulane farmers' claims that they can organise their own management rather than pay for the high costs of CDC expatriates [27]. Although economically successful (at least before Cyclone Demoina damaged its dam), the scheme poses many ethical problems with land tenure implications. The question of privilege and duration of tenancy must be addressed before other schemes of a similar nature are contemplated. The possibilities for replication are limited to areas wherever supply contracts with mills or factories are possible.

A different approach to sugar production was found at the Mankantshane scheme. Here, 15 farmers have a plot of 3 acres each, devoted solely to the growing of sugar. Each plot is cultivated individually but certain tasks such as ploughing and harvesting are coordinated by the committee who require compulsory attendance by all members. The sugar is sold cooperatively under a single sugar quota to the Mhlume sugar mill and dividends are paid out according to respective harvests. The system appears analogous to Vuvulane but on a much smaller scale without a complex infrastructure or central administration.

The Maphobeni scheme offers a more generally acceptable and geographically feasible approach, but one requiring close harmony and trust. The scheme is the only full cooperative in terms of production and marketing. The scheme has 40 members who are expected to work collectively daily (along with some hired labour) on a 40 ha field, growing solely maize. Membership is open to those willing to pay a high joining fee (E400). Management lies primarily in the hands of the committee who hire some full-time personnel such as the farm manager and a mechanic to maintain the over-head sprinkler system. The scheme, albeit new (1983), appears to be operating successfully. One problem emerging, however, is growing mistrust by many of the members of the "clever" (i.e. literate) ones who sit on the committee and make financial decisions. Frequent trips taken to Mbabane and Manzini for business reasons such as finding markets, etc., which allow for per diems to be paid from the cooperative's till, are felt to be excessive and an abuse of privilege.

At the Asiphilisané cooperative scheme there was apparently no committee. Members elected a manager and a marketing agent who were paid from scheme income. What was particularly unique about the scheme is that members who wished to work on the cooperative fields could do so for a daily wage ensuring themselves a regular income. Others, not contributing to the cooperative fields, would share the remaining income. In some ways the scheme is similar to that of Magwanyane. Similar arrangements have been noted in Lesotho (Lawry, 1983). The Government irrigation officer has reported, since the survey, that the scheme reverted back to a farmers' association and is now probably similar to the Nmakuphila model. No information is available as to why the former approach proved unsatisfactory.

At Mgomfelweni, a unique cooperative arrangement has been applied to 10 of the 30 acres belonging to the scheme. This area is farmed collectively by members and all proceeds are put into scheme funds. Another notable feature which distinguishes it from most schemes is that members collectively hire a truck to transport their individual produce to market. Normally

association members take a very individualistic and ad hoc approach to disposing produce.

The Pophonyane and Titfukutfuku Temadvodza schemes are also noteworthy in that they do not conform to the normal definition of a scheme. The "scheme" consists of several adjacent homesteads, which, by virtue of the topography of their fields, were able to irrigate parts of their fields. At Pophonyane, the design and supervision of its construction was largely undertaken by government. Management basically consists of the committee deciding on maintenance procedures and financial matters. The very high joining fees of E 700 per homestead was part of a cost-sharing contribution to purchase equipment with government. A current problem is the default by some of its members in paying their share of the electricity bill, resulting in several homesteads having their taps locked. This type of arrangement appears to have the least land tenure implications and, apart from operating as a group, is essentially no different than several individual irrigators working in close proximity.

Finally, the Taiwanese assisted schemes, although having their own committees, appear to be operating under the strict supervision of Taiwanese personnel. The schemes are perhaps the highest yielding of all the SNL smallholder schemes, but are not likely to serve as useful models in terms of self-reliance and general applicability.

On the whole, the most suitable model for Swaziland appears to be the one of Ntamakuphila. To ensure the success of this approach however, it is essential that key members of the committee have a good grasp of management principles. But perhaps the most overriding constraint to good management is the degree of disciplinary sanction which can be invoked. There is a tendency to assume that disciplinary measures relating to land are circumscribed by what is applicable to homesteads. As discussed in V.F and VI.A, there is no reason why this should be so.

#### F. SECURITY OF TENURE, DISCIPLINE AND EVICTIONS

One of the strongest arguments used against the introduction of irrigation schemes on communal land is the problem of discipline and how to enforce it. Devitt (1981) succinctly encapsulates the problem:

"Farmers associations or committees are seldom prepared to evict one of their members for reasons of poor performance, nor are chiefs normally prepared to do this. There is no precedent in customary law for depriving a person of land on account of inefficient farming. As long as some effort is made to demonstrate continuing use of the land the rights of the holder are usually left intact. Without the ultimate sanction of eviction, there is very little to be done to persuade a recalcitrant farmer to improve his standard of husbandry."

Difficult and rare as eviction may be, it is a reality and at least 16 of the surveyed schemes have made provisions for it. The reasons for which a member may be evicted included the following (in descending order of importance): leaving land fallow (6); conflict with other members (5); disobeying rules (4); failure to

pay financial contributions (3); stealing (3); sleeping with another member's wife (1).

For general misdemeanours most schemes had no problems in applying discipline as this was usually in the form of a fine (for missing work groups, committee meetings, etc). However, for more serious infractions, scheme members often lamented about the difficulty of imposing harsher measures. There were, however, at least 5 schemes which had evicted members. At 2 schemes a member was expelled for failing to pay the required financial contribution (Kalanga and Magwanyane); in 2 other cases eviction resulted from leaving land fallow (Ntamakuphila and Mpatheni). At Nlungwini the chief evicted a person for laziness at the inception of the scheme when he refused to dig channels. In most cases eviction (from a scheme) would be sanctioned by the chief on the recommendation of the scheme committee.

G. CREDIT MECHANISMS

It is generally postulated that communal tenure inhibits the use of credit facilities. In 1977, an examining SML (smallholder credit) bank in Malawi concluded that "credit does not appear to be in demand, constrained by the inadequacy or absence of pledged collateral". About four-fifths of the sample of one credit co-operative had not have an effective demand for credit and, in addition, on economic grounds to forego it. Less than one-quarter of those who attempted but failed to obtain a credit did so because of the absence or inadequacy of collateral security. However, only a few per cent of those who had not attempted to obtain credit cited the absence or inadequacy of collateral security as the reason for not attempting to obtain credit.

Regarding irrigation schemes, there appears to be no constraint on the availability of nor the eligibility for credit. The Swazi Bank for example has at its disposal approximately E10m for small farmer lending of which a substantial proportion has been earmarked for irrigation schemes. Terms are generous, allowing 60 per cent of new purchased irrigation equipment to be offset against the loan as collateral (even old equipment can be used as collateral at 50 per cent of value for 2-5 years of age and 40 per cent for over 5 years). The remaining collateral, bearing in mind the comparatively large cattle holdings of scheme members, should be easily met. The survey found that 10 schemes did, in fact, borrow from the Swazi Bank. According to the government irrigation officer, however, there were various other schemes in need of funds and who, through him, were aware of the credit opportunities but who were simply unwilling to borrow money from a bank. It would appear that, far from being a land tenure problem, it is one of attitude and education.

H. EFFICIENCY IN RESOURCE USE

It is often argued that the lack of disciplinary sanction on communal tenure land results in the inefficient utilization of resources. It was not possible to determine from a static questionnaire how efficiently resources were being used and no systematic temporal analysis has yet been undertaken. Nevertheless, some indicators from the survey as well as other sources provide largely impressionistic trends.

On a general level, the IFAD (1982) report observed that the prevailing efficiency of the irrigation system is generally low due to inter alia the poor maintenance, inadequate monitoring and operational management of dams and irrigation works by the government, inefficient water use, and poor terminal on-field development (see section on water below).

#### 1. Land

The survey found that only 6 of the schemes had fallow plots. There were, however, 10 schemes where members (and in some cases non-members) were allowed to borrow, on a seasonal basis, other members' plots. There appear to be no hard and fixed rules on this type of arrangement and "rent" is usually a matter negotiated between the parties concerned whether in cash or by share-cropping. From this evidence, it appears that the amount of unused land is much less than previously observed. This is corroborated by comments from researchers and government officers associated with irrigation who feel that irrigation plots are more intensely cultivated than a few years ago (personal communications P. Dlamini, G. Dunn and P. Lukhele). Some schemes e.g. Mgomfelweni and Mankantshane apply a simple regulation regarding land use i.e. that no land will be left fallow for whatever reason and that if members cannot ensure cultivation it is their responsibility to find some one to do so. Leaving land fallow on several schemes is sufficient grounds for eviction (see (1.5)).

At Zakhe, because of the prevailing uncertainty surrounding its future, some members have left their plots fallow and are irrigating elsewhere along the Ingwavuma River.

In 1978 Hanson estimated that land utilization was 60 per cent in winter and only 25 per cent in summer due to the cultivation of dry land crops. The RDAF annual report for 1982 mentioned an average utilization of 50 per cent. No careful monitoring of the schemes has, in fact, been undertaken but the 1980 RDA Monitoring and Evaluation report of 29 scheme irrigators concluded that the technical and economic performance on government-supported RDA schemes was low and indicative of a "lack of commitment and sub-standard management" (Hunting Technical Services, 1983).

Little analysis of optimal plot size has been made. The Hunting Report of 1983 suggested that plot sizes of .5ha were too large if irrigated crops were supplemented by dryland crops (which is usually the case). Downs (1983) felt that the recommendation of a minimum plot size of 1 ha (for reasons of efficiency) by the environmental report of the proposed USAID Smallholder Irrigation Project seemed too large because of the wide variability in homestead composition and resources. He also felt that that it was not necessary nor even desirable that irrigated farming become the sole resource of the homestead and recommended plot sizes ranging from 1 to 5 acres depending on the resources and objectives of the prospective members.

Cohen (1983, quoted in Funnell, 1986) found that a one hectare plot in the Middleveld with minimal inputs should produce a net income no less than could be earned from unskilled employment. Allowing for seasonal constraints, Cohen suggests that the optimal cropping pattern would be 0.58ha in summer and 0.8ha in winter.

## 2. Water

A noteworthy aspect about water usage is that, although water shortages were a constraint faced by many schemes (see III.D), the allocation procedures do not appear to be a problem in the eyes of scheme members (to the extent that it was never raised as an issue of concern by interviewees). This was also confirmed by the government irrigation officer who did not come across problems relating to inter-plot water allocation. No charges are levied for water on any of the schemes so control measures are difficult to impose. Watering shifts were rotational and administered every few days. These findings are in sharp contrast to those of the Tate and Lyle report which, without any substantiating evidence, claims that water allocation is subject to "frequent conflict".

Dunn, studying irrigation practice in Swaziland, found that farmers, though spending 40-50 per cent of their actual production time irrigating, did not apply enough water for sufficient seepage. Farmers were under-irrigating and spent too much time doing so (personal communication). This was also substantiated by the government irrigation officer.

The IFAD report noted that one of the biggest impediments to irrigation efficiency was the inadequate attention paid to terminal water use i.e. the way the plots were prepared to receive the water. Unevenness has resulted in the excessive watering of near ends and insufficient watering of the remaining areas. Thus a major component of the irrigation scheme "rehabilitation" programme under the IFAD marketing project will focus on land levelling.

### 1. THE ROLE OF THE KING AND THE SWAZI NATION AUTHORITIES

The role of the King (the late Sobhuza II) and the "elders" in the development of irrigation schemes has been an important one, on which the fate of several have depended or still hinge. King Sobhuza was not only an arbitrator in land disputes; he also intervened in cases deemed to have some consequence for the Swazi Nation.

Some examples of where the previous king or the "elders" of Lobamba have had influence are worth noting. According to the Tate and Lyle report, at Manlantshane, the local induna appealed against the extension of the scheme, claiming that the land rightly fell under his jurisdiction, not the chief who authorised the extension, because the induna's family had been in the area much longer than the chief's. The case was taken up with King in 1979 and to date no decision has been made. As mentioned in V.B, we did not find any evidence corroborating this land dispute and, in contrast, found the scheme to be operating successfully. Similarly, with the case of Magagane (see V.C.1), the case was brought to Lobamba but no ruling has been made and the operation of the scheme has been suspended. The ostensibly successful Magwanyane scheme, as mentioned earlier, did not meet with the approval of the King and, consequently, has never been officially opened. At Madlenya (see V.C.1) the King stopped the scheme because he disapproved of the participation of members from outside the chiefdom.

The involvement of higher traditional authorities in such cases caused Hamnett to observe that: "The effectiveness and

promptitude of royal control over chieftainship affairs appear, according to such evidence so far...., to be open to question". It would, indeed, seem that many of the schemes which did fail, or became "temporarily" inactive pending decisions, are the result of the involvement of higher authorities who are forced to grapple with issues for which there are sometimes no obvious solutions within customary law and practice. Other schemes whose problems (if any) are "internalized" and resolved within their chiefdom appear, on the whole, to adapt reasonably well to the parameters of custom set by their communities.

## VI. IMPLICATIONS OF THE SCHEME EXPERIENCE

## A. IMPLICATIONS FOR SNL TENURE EVOLUTION

A close examination of SNL smallholder schemes has demonstrated varying degrees of success which, on the whole, have been positive - much more so than intimated in previous (ad hoc) studies. The Tate and Lyle study, having examined "a few smallholder scheme, rather presumptuously concluded" that "the schemes "have more or less traumatic histories". By contrast, in the opinion of the government irrigation officer, 18 of the 22 operating schemes could be considered to be performing reasonably successfully.

Reasons for differentiation in performance are many, of which some can be attributed to land tenure. If one were to generalise, however, tenure cannot be seen as a serious constraint. One could even argue the contrary: the present system of land tenure may well be conducive to the evolution of irrigation schemes in that they offer opportunities within protected enclaves on SNL. "Protection" may take various forms: i) irrigation schemes are usually jointly managed physically, morally and sometimes financially by the government and the local chief; ii) individual members need not suffer any stigma which might arise from "doing well" agriculturally; iii) progressive commercial farming methods are encouraged; iv) the communal pooling of resources for purchasing capital equipment and other inputs reduces one's financial burden and risks; and v) credit is generally easier to obtain if applied for by a well defined scheme.

Criticisms which have been levelled at smallholder irrigation schemes on SNL in respect to land tenure center on two basic themes. One is that irrigation schemes are likely to operate autonomously and thus undermine the power of the chiefs, leading to conflict between traditional authorities and scheme operators. The second is that, without recourse to discipline against sub-standard farmers, one will not attain efficient levels of output.

The first criticism is, on the basis of our evidence, clearly false. Only one scheme's (Zakhe) fate appeared was threatened by direct interference from a chief which was later overruled. Chiefs have generally endorsed the management responsibility of the scheme committees while his authority over serious disciplinary matters and land issues remains unquestioned. Chiefs usually maintain a strong interest in the operation of the schemes without meddling in day to day decision-making.

The second criticism is a more valid one. But it is also one whose relevance depends very much on the objectives of the scheme. Schemes, in which much communal investment is placed and which depend on cooperative effort for success, may well require high levels of individual performance. In such cases disciplinary measures and sanctions against inefficient members is desirable. Other schemes, with high levels of government subsidy or donor assistance, will probably not follow the command model. Here incentives might play a greater role. These schemes would generally cater for the lower calibre of farmer, one seeking to improve his/her standard of husbandry and overall level of agricultural output. The objective of these schemes would focus on improved knowledge and techniques. Rather than being efficient at inception, members will be expected to learn and apply themselves at certain minimum rates. In both cases, disciplinary

measures should be resorted to if insufficient effort by members is seen to be depriving others in the community of the opportunity of making a more positive contribution.

Proponents of nucleus estate-smallholder schemes argue that one of the main advantages of these schemes would be that their semi-autonomous nature would allow either leases or "terms of agreement" by which disciplinary measures could be enforced against those members in breach of the stipulated conditions. The implicit assertion of each of the feasibility studies is that such measures could not be introduced on smallholder schemes directly answerable to traditional authority. There is, in fact, no reason to believe this.

There is a generally misguided assumption that irrigation scheme plots are treated similarly to homestead land allocations. As evidenced from the way plots are treated in terms of inheritance, they are not seen as part of the homestead estate because of the implicit responsibilities attached to scheme membership. The important overriding distinction from homestead land is that irrigation schemes are communal enterprises which require certain minimal behavioural norms not expected from individual homesteads. Often these are explicitly spelled out in constitutions. It is only a matter of time, through proper management and training, before committees in collaboration with the chiefs formulate constitutions with terms of agreements which would be signed by scheme members. There is no reason to believe that such procedures accompanied by stricter discipline should conflict with customary law. Eviction from a scheme should in no way be equated to banishment or the deprivation of a family's "right to avail". Membership to an irrigation scheme is a privilege; access to homestead land and communal grazing is a basic right.

If one accepts, as is implied from our evidence, that the land tenure system is flexible enough to allow for the application of such innovations as "terms of agreement" and differential approaches to land, based on right or privilege, then there is little need - at least at this stage of Swaziland's rural development - to introduce fundamental change to the system. Land tenure and customary laws are more a reflection of attitude and changing norms than fixed rules, as commonly assumed by Western analysts. This is exemplified by the phenomenon of fencing. It was once thought that fencing arable plots conflicted with customary law and the "right to pasture". However, over time, the comparative benefits of fencing became apparent and now more than 50 per cent of chiefs tolerate the practice (Hitchcock, personal communication). By using existing institutional structures in the hierarchy of traditional administration such as the Tinkundla (designed, inter alia, for information dissemination), attitudes towards development can be accelerated.

#### B. IMPLICATIONS FOR IRRIGATION SCHEME POLICY

This paper has attempted to constructively contribute to the debate on how best to utilize irrigation potential on Swazi Nation Land. It is not within the capacity of this paper to make any judgement on the need or the appropriateness of large-scale schemes but, before considering some practical implications for smallholder schemes, a few observations on the arguments submitted by the feasibility studies might be pertinent.

Much of the appeal of large schemes was founded on the explicit or implicit arguments of each feasibility study that smallholder schemes are hampered by customary law applied to communal land tenure and that, with special dispensation bestowed on large irrigation schemes and their umbrella authorities, these obstacles could be overcome. On closely examining the proposed administration of these schemes, it is obvious that, outside of a skeletal structure, insufficient thought - especially in respect to the Tate and Lyle proposals - has been given to the more practical aspects of operation and the question of acceptability to the Swazi Nation. The UNDP/FAO study, to its credit, recognised the weaknesses of the Vuvulane structure and recommended an approach which took into consideration lessons learned. More than a decade later, the Tate and Lyle study, either ignoring or unaware of these previous recommendations, offered proposals which appear to be strongly influenced by VIF, but failing to take into account the defects in the system which seriously threaten its future. The VIF experience, rather than a source of inspiration for future projects, should be critically assessed so that the same mistakes are not repeated.

Perhaps the most important shortcoming by previous feasibility studies was their failure to perceive the nature of the relationship between SNL farmers and management. Scheme management is a new form of authority to which communal land farmers are completely unfamiliar. Traditional authority is much less obtrusive in the life of the average SNL farmer. A situation where he is put under constant surveillance and behave according to narrowly defined regulations is, naturally likely to cause tensions. It is not sufficient to dismiss one form of tenure without carefully considering the implications of and reactions to a new set of norms and values.

Turning to smallholder schemes and implications for scheme policy, one should probably first consider factors accounting for the relative success or failure of the schemes. Perceived problems as discussed in III.D i.e. marketing, transport, water shortages, etc., are straightforward enough and need no elaboration nor, indeed, recommendations as efforts are being made, particularly through the IFAD marketing project to address them.

Less conspicuous factors are however at least equally important. Successful schemes are often the result of one or two motivated and inspirational individuals. Schemes therefore become dependent on these members and very vulnerable. It is this vulnerability, perhaps more than anything else which determines the fate of schemes. The critical missing input for irrigation development is an awareness of basic management principles at the scheme committee level.

Drawing from the experience of the schemes studied, an attempt is made below to formulate some general policy recommendations which could be applied to the new initiative which the Ministry of Agriculture and Cooperatives is according smallholder irrigation development.

Specific policy recommendations include:

- 1) Management Extension services focus almost exclusively on

agronomic advice. All schemes, in order to function, need a minimum knowledge of administration. Extension programmes should be designed for irrigation schemes and be explained by one or two specialists, covering the whole country. Training courses could be conducted centrally (as at COBEC) for selected committee members, depending on the subject matter.

iv) Committee Structure The committee system appears to be doing well and has been adopted by virtually all schemes. However, the concept could be developed further. A greater sense of communal responsibility can be promoted by involving all members in committees responsible for different functions e.g. water, marketing, purchasing, etc. Such an approach has proven successful at the Nlungwini scheme. The concept of "operationalizing participation" should indeed be encouraged right from the planning stages of the scheme.

v) Constitutions Each scheme should have a constitution in order to clearly define obligations, rules, disciplinary procedures and other regulations affecting members and scheme operations. Each scheme will obviously have its own peculiarities embodied in its constitution but, at least initially, a standard model constitution, drawn up by experts familiar with agronomy and customary law, should be adopted.

vi) Membership The question of outsider participation, though permissible on a few schemes, is generally not condoned by Swazi authorities. A good argument could be made for opening membership in special cases. In particular, one could foresee possibilities for graduates of the School of Appropriate Farming Technology, which not only allow them to pursue their vocation but would inject their knowledge and experience of irrigation technology, agronomy and marketing amongst other scheme members.

vii) Tenancy and Eviction Perhaps the strongest criticism which the feasibility studies directed toward the operation of SNL smallholder schemes was the lack of disciplinary sanction which could be invoked against inefficient or unmotivated members. The possibility of introducing "terms of agreement" or leaseholds on smallholder-nucleus estate schemes were seen to overcome this constraint. In fact, because membership to irrigation schemes can be seen as a privilege and not a right, there is no reason to believe that, given a constitution, "terms of agreement" cannot be imposed on members of SNL smallholder schemes. With proper preparation through awareness training, etc. more frequent application of more severe disciplinary measures such as eviction can be realistically foreseen. Consideration should also be given to other possible, less extreme, measures of discipline such as denying water allocation.

viii) Cooperative Funding For schemes catering for poorer farmers with limited resources, an effective means of raising finances was observed at the Mgoifolweni scheme which requires all members to devote part of their labour to a cooperatively managed plot. Produce from the plot is then sold to cover costs of running the scheme.

ix) Cost Sharing and Loans An important lesson learned from many of the schemes who have enjoyed substantial government or donor grants, is that there is a tendency to treat equipment etc. with less care than if members had made significant monetary or in-kind contributions to their purchase. There was a tendency for

many of the schemes to expect maintenance to be undertaken by government. There is also a need to develop a much better approach to common works maintenance.

viii) Improved Technical Inputs In addition to promoting management training, government should consider more emphasis on extension focussing specifically on irrigation techniques. Extension officers currently assisting farmers with cropping advice are not sufficiently trained in irrigation methods, thus accounting for the inefficient water management practices observed on the schemes. More support is also urgently needed for the irrigation department which currently employs only one officer to serve some 23 schemes as well as individual irrigators. There is also an urgent need for marketing advisors to create an awareness of marketing strategies and to regularly disseminate prevailing fruit and vegetable prices. The imminent centralized marketing board should help to overcome the marketing constraint.

ix) Performance Standards Depending on the objectives of the schemes i.e. whether they are to be comprised of already efficient farmers or "trainees", some minimum standards of production or rate of improvement should be imposed on members. Perhaps the easiest way of operationalising such an approach would be to accept members on a full-time basis only on the successful completion of a probationary period. This approach has been adopted in Zimbabwe with some success (Bloch, 1986).

1. The question of what constitutes Swazi Nation Land has been examined by Armstrong (1986). Swazi Nation Land was previously referred to as "Swazi Areas" during the colonial period. However, through the "Lifa Fund" and under the British Land Transfer Program, the Swazi Nation has purchased back land lost to concessionaires in the 19th century. This repurchased land is registered in the name of the Ngwenyama in Trust for the Swazi Nation. As Armstrong points out, sometimes this land is given to chiefs and administered according to Swazi law and custom, but more often the land is used by the Tibiyo and Tisuka Funds (companies investing on behalf the royal family) for agricultural or industrial projects and housing developments. It appears that, although private land registered in the name of the King-in-Trust becomes Swazi Nation Land, this land seems to enjoy a rather different tenurial status than the former "Swazi Areas" of Swazi Nation Land.
2. More insight into the process of transition within Swazi Nation Land can be expected from the forthcoming doctoral work of Paul Bowen who has recently completed anthropological field work at the Ntamakuphila irrigation scheme.
3. Schemes such as Sihoya and Sifunga are operated by Tibiyo as sugar estates much along the same lines as those on title deed land (see note 1 on the "Lifa Fund").
4. The Ministry of Agriculture and Cooperatives (1986) states that "Swaziland has sufficient water resources to irrigate a substantial additional area, estimated to be as high as 40, 000 ha." Richardson (1985) estimates that there are presently 41,885 ha under irrigation of which only 2,400 are located in SNL. According to our calculation less than 600 ha are irrigated by SNL smallholder schemes. Funnell (1985), using data from the US Army Corps of Engineers (1981) calculated that about 82,000 ha of TDL and 112,000 ha of SNL would be suitable for irrigation. Richardson found soils to be of excellent quality, having good infiltration capacity and also that water quality was excellent. Heilbronn (no date) noted that there was far more irrigable land on SNL than there is water available for maximum development. Currently the SNL proportion of of the total amount of apportioned water amounts to only 8.5 per cent.
5. There were, however, 4 schemes which differed somewhat from the typical scheme encountered but were included in the survey and are officially considered to be schemes by the government irrigation officer. Three of these, Nkungwini, Fophonyane, and Tifukufuku Temadvodza, differ in that the irrigated plots form part of the land that has been allocated to the homestead for rain-fed crops so that they are not contiguous plots in areas specially designated for irrigation. The other, Vumuthando, differs in that its plots are much smaller than those found on the other schemes (1000m<sup>2</sup>) but nevertheless considerably larger than those of community gardens. In all other respects it operated similarly to other schemes so was defined as such.
6. In 1963 the first 30 farms started and the number has since grown to 263. Initially the farms sizes started at 16 acres with subsequent experimentation with 8, 10 and 14 acre holdings. Since 1971, it was felt that 10 acres holdings was felt to produce the best compromise between maximising the number of farmers and

providing farmers with a reasonable income.

7. In 1964, only 84 applicants were received for the additional 30 plots to be settled. By 1970, the number of applications for that year's allocation of 30 topped 1000.

8. An example of the compensation dispute is the case of one farmer who has had his house valued by VIF at E600 and improvements to land (e.g. trees, etc) at E 1000. Counter claims by the farmer put the value of the house at E 2,500 and improvements at E 26,500. It will be attempted to settle these cases in court.

9. The right to avail gives a homestead a right to make use of various natural resources available to the community such as arable land, grass and other vegetation for grazing, thatching and other purposes, indigenous timber, clay, water and wild game. Except for land which is allocated in sub-divisions within the community, these resources, with few exceptions, are regarded as "free goods" to which the Swazi may have access as and when he wishes (Hughes, 1972).

10. The word Khonta is derived from the verb kukhonta meaning to offer allegiance to a chief and to be accepted as his subject (Hughes, 1972).

11. The Board was to meet 4 times per year and was responsible for the planning and executing the operations of the scheme. The day to day business of running the scheme fell under the responsibility of the Chief Executive Officer. Members to sit on the Mapobeni Development Board included: a chairman appointed by the King; two persons appointed by the King and his Council (Libandla); 5 chiefs from the Mapobeni area; the Permanent Secretaries from the Ministries of Local Administration, Agriculture, Finance and the Department of Economic Planning; the Chief Agricultural Officer, the Chief Veterinary Officer, the Senior Water Engineer and the Registrar of Cooperatives (World Bank, 1972).

12. This included 7 dams, 46 km. of canals, 30 ha. of rice paddies, 210 ha. of levelling, 25 reservoirs, 15 weirs and 10 fish ponds.

13. The Ministry's plan included: the expansion of areas under irrigation on individually operated schemes (presumably farmers' associations) from 263 to 760 ha. and on cooperative schemes from 444 to 1000 ha; to provide an intensive irrigation and horticultural advisory service; to encourage the establishment of vegetable gardens; to construct 10 small irrigation schemes in the RDA's, etc.

14. Three schemes which had their irrigated plots integrated with homestead plots (see note 5) were excluded as was Vumuthando because of the inordinately small size of the scheme.

15. Evidence of gross exploitation was reported on some of the VIF farms. It was alleged that Mozambicans and Zimbabwean workers received only 3 meals as wages at the end of the month and that occasionally, perhaps only once a year, receive E10. The workers say they cannot quit for fear of being reported as illegals to the police. The farmers responded by blaming the authorities at VIF and the Mhlume sugar mill for not paying them for their sugar

harvests over a number of seasons (Swazi News 2.3.85).

16. There may well be several more homesteads with members in wage employment; the interviewer, during the initial stages of the survey, had misunderstood the question in the first 4 interviews.

17. The Swazi Rural Homestead Survey found that about two-thirds of the SNL homesteads owned cattle with an average herd size of 18.6 (de Vletter, 1983).

18. The administration of the CCU fell under heavy criticism and was subject to review in 1985. The review, amongst other things, called for significant changes in the management of the organisation. The CCU has subsequently focussed its attention more to the needs of the small farmer (Ministry of Agriculture and Cooperatives, 1986).

19. At Mapobeni a grant of E50,000 was made for the purchase of a pump, irrigation equipment and a tractor. Similarly at Kalanga, a grant of approximately 50,000 was made to buy a tractor and various attachments. At Mtamakuphila and Pophonyane a loan of E70,000 was made in each case to buy a tractor, to be paid over a period of 5 and 4 years respectively. At Asiphilisane a pump and tractor plough were donated.

20. The Land Settlement Scheme, initiated in 1946 was seen as a vehicle for promoting better agriculture through changing land tenure. Some 27,000 Swazis were to be resettled on 130,000 acres of land on farms averaging 60 acres each (encompassing land for residence, crops and grazing). The scheme, failing to recognise that there were more fundamental obstacles to improved agriculture than land tenure alone, failed and was virtually abandoned by 1954.

21. The Swazi Rural Homestead Survey found that 82% of SNL homesteads had at least one member engaged in wage employment and that almost three-quarters of homestead income was derived from wages. About two-fifths (41.6%) of the homesteads received income from crops, but barely 6% could be regarded as generating a viable existence from crop sales alone. Only 11% realised a gross income from their crops in excess of E200.

22. The Tate and Lyle report (1982) claimed that of the 5 lowveld schemes studied, 3 - Mankantshane, Magwanyane and Vuvulane - had been the subject of disputes between traditional authorities and smallholders over the issue of land and independence. In our opinion, this presents a very misleading picture as we found no evidence of major disputes. It would be more correct to say that, in the case of Magwanyane and Vuvulane, they were subject to some controversy. Mankantshane was described as being in the "last stages of collapse" because of a dispute between the local induna and chief over the issue of expansion, compounded by the treasurer who had absconded with scheme funds. Our findings, on the other hand, found a successfully run scheme with no evidence of a land dispute (neither past nor present) and a bank balance of E46,000. At Magwanyane, there was no question of being economically successful, but it did not meet with the King's approval because of the dangers of creating a rural elite. This is quite different than the type of "dispute" insinuated above. At Vuvulane problems have arisen between smallholders and management. Hamnett (1970), indeed, argues that such problems

might well have been avoided if there was, in fact, a chief representing the farmers! Ironically, the only scheme we did come across that did have a serious dispute between the chief and the smallholders - Zakhe - was not mentioned by the Tate and Lyle report.

23. \* Mark please ask Bob to provide a brief description <sup>of his project</sup> here.

24. Chiefs trained under the Swaziland Manpower Development Project (see note 23), when asked what type of development projects they would like to see, invariably indicate irrigation schemes as their first choice.

25. Some schemes offer an option to pay in cash or in cattle. A curious feature among some of these schemes is the lack of a reasonably uniform exchange rate between cattle and cash. Thus, for example, we find that at Magwanyane, new members can pay either 5 head of cattle or E400 to join, whereas at Mapobeni, the

26. ... 4 after ... in a church and 2 of natural ... run by widows.

27. ... borne by the VIF farmer ... Of the total costs of ... were for central administrative salaries ... spent on senior administrative salaries ... in addition to the central administration costs, management fees of E65,000 were paid to the CDC.

## REFERENCES

- Armstrong, A.K., 1985. "Legal Aspects of Land Tenure in Swaziland" research paper "Changes on Agricultural Land Use: Institutional Constraints and Opportunities" project, Ministry of Agriculture and Cooperatives, Mbabane.
- Bloch, P.C. et. al, 1986. "Land Tenure Issues in River Basin Development in Sub-Saharan Africa" research paper, Land Tenure Centre, University of Wisconsin, Madison.
- Central Statistics Office, 1986. "Swaziland Census of Agriculture 1983-84", Government of Swaziland, Mbabane.
- Cohen, N., 1983. "Financial Analysis of Small Farmer Irrigation in Swaziland", USAID, Mbabane.
- Devitt, P., 1981. "Land Tenure and Settlement Issues and the Development of Irrigation Schemes in the Lowveld" Discussion Paper No. 1 (for Steering Committee of the Usutu and Ngwavuma River Basins Reconnaissance Study), Mbabane.
- Dixes Inc., 1985. "Economic Study of Possible Uses of Additional Water on the Komati River: Swaziland." Vol. 1, Report prepared for US AID, Washington.
- Doggett, C., 1980. "Land Tenure and Agricultural Development in Lesotho and Swaziland: A Comparative Analysis", USAID.
- Downs, R.E., 1983. "Social Analysis", Pilot Small Farmer Irrigation Project Swaziland, US AID, Mbabane.
- Engineering and Power Development Consultants, 1970a. "Usuthu, Mbuluzi, Komati and Lomati River Basins: General Plan for Development and Utilization of Water Resources" report prepared for UNDP/FAO and Government of Swaziland, Sitcup, Kent.
- \_\_\_\_\_, 1970b. "Mapobeni Irrigation Scheme - Technical and Economic Feasibility Report", prepared for the UNDP/FAO and the Government of Swaziland, Sitcup, Kent.
- Funnell, D.C., 1986. "The Quiet Innovators: Small Scale Irrigation on Swazi Nation Land" paper presented at the Research Seminar on Swaziland, Free University of Amsterdam.
- \_\_\_\_\_, 1985. "Water Resources and the Political Geography of Development in Southern Africa: The Case Study of Swaziland", mimeo.
- Government of Swaziland (no date), Fourth National Development Plan 1983/84 - 1987/88, Mbabane.
- Guma, X.P. and Simelane, V.R., "Small Farmer Credit and Small Farmer Attitudes towards Cooperatives, SSRU Research Paper No. 8, University of Swaziland, Kwaluseni.
- Hamnett, I., 1970. Annex 3 - Sociology in "Usuthu, Mbuluzi, Komati and Lomati River Basins General Plan" (UNDP/FAO)
- Hansen, B., 1978. "Horticulture in Swaziland", Swaziland.

- Heilbronn, S.G. (no date) "Swazi Nation Land Irrigation Development", mimeo.
- Hitchcock, R.K., Malinga, R.K and Patrick, R.M., 1986. "Tinkhundla: Traditional and Modern Sociopolitical Structure and Organization in Swaziland", Swaziland Manpower Development Project, Community Development Section, Ministry of Agriculture and Cooperatives, Mbabane.
- Holleman, J.F. 1964. "Some Aspects of Agronomic Policy in Swaziland" in J.F. Holleman (ed.) Experiment in Swaziland, Oxford University Press, Cape Town.
- Hughes, A.J.B., 1972. "Land Tenure, Land Rights and Land Communities on Swazi Nation Land in Swaziland" Monograph, University of Natal, Durban.
- Hunting Technical Services, 1983. "Review of the Rural Development Areas Programme", Mbabane.
- IFAD, 1982 Smallholder Credit and Marketing Project.
- Lawry, S.W., 1983. "Agricultural Cooperation in Lesotho and Implications to LAPIS", US AID. Maseru
- Magagula, G., 1982. "Land Tenure and Agricultural Production in Swaziland", mimeo.
- Maina, G.M. and Strieker, G.G., 1971. "Customary Land Tenure and Modern Agriculture on Swazi Nation Land: A programme of Partnership", Ministry of Agriculture, Mbabane.
- McCann, G.P. 1981. "A Case Study of the Magwanyane Sugar Project, Swaziland", Wye College, University of London, London.
- Ministry of Agriculture and Cooperatives, 1986. "Agricultural Development Strategy", Mbabane.
- Mkhabela, L.S., 1985. "Modernization and Change in a Smallholder Settlement Scheme: The First Twenty Years at Vuvulane Swaziland, 1962-1982", MA thesis, University of Sydney.
- Nkambule, N.M., 1983. "A Diagnosis of Adverse Effects of Customary Land Tenure on Land Use in the Kingdom of Swaziland: Is a Land Privatisation Policy the Answer?", MSc. thesis, University of Wisconsin, Madison.
- Pelley, D., 1968. "A Proposal for the Establishment of a Cooperatively Farmed Irrigation Scheme in Buselani (Nkweni)", mimeo, Ministry of Foreign Affairs and Ministry of Agriculture, Jerusalem.
- Pomme, M. and Vreman, A., 1985. "The Marketing of Vegetables by Small farmers" SSRU/RDRP working paper, University of Swaziland/ Free University of Amsterdam, Kwaluseni.
- Portch, N.C., 1980. "Irrigation Schemes on Swazi Nation Land" from Proceedings of a Conference of the Royal Swaziland Society of Science and Technology, Kwaluseni.
- Richardson, E.V., 1985 "Swaziland Irrigation Rapid Appraisal", US AID, Mbabane.

Sibisi, H., 1981. "Keen Farmers on Swazi Nation Land: A case study in the Motjane-Siphocosini 'Minimum' Rural Development Area", mimeo, Ministry of Agriculture and Cooperatives, Mbabane.

Tate and Lyle Technical Services and WLPU Consultants, 1982. "Reconnaissance Study Usutu and Ngwavuma River Basins", Technical Report No. 5 - Land Tenure, London.

Tuckett, J.R., 1975. "Vuvulane Irrigated Farms: An Historical Report on the First 10 Years", mimeo.

de Vletter, F. "A Socio-Economic Profile of Swazi Rural Homesteads: A Summary of the Main Findings Arising from the Swazi Rural Homestead Survey" in de Vletter F. et. al The Swazi Rural Homestead, SSRU, The University of Swaziland, Kwaluseni.

Whittington, G.W. and McL. Daniel, 1969. "Problems of Land Tenure and Ownership in Swaziland" in M.F. Thomas (ed.) Environment and Land Use in Africa, London.

World Bank, 1972. "Report on the Mapobeni Irrigation Scheme", Mbabane.

US Army Corps of Engineers, 1981 "Swaziland: Water and Related Land Resources Framework Plan", Mbabane.