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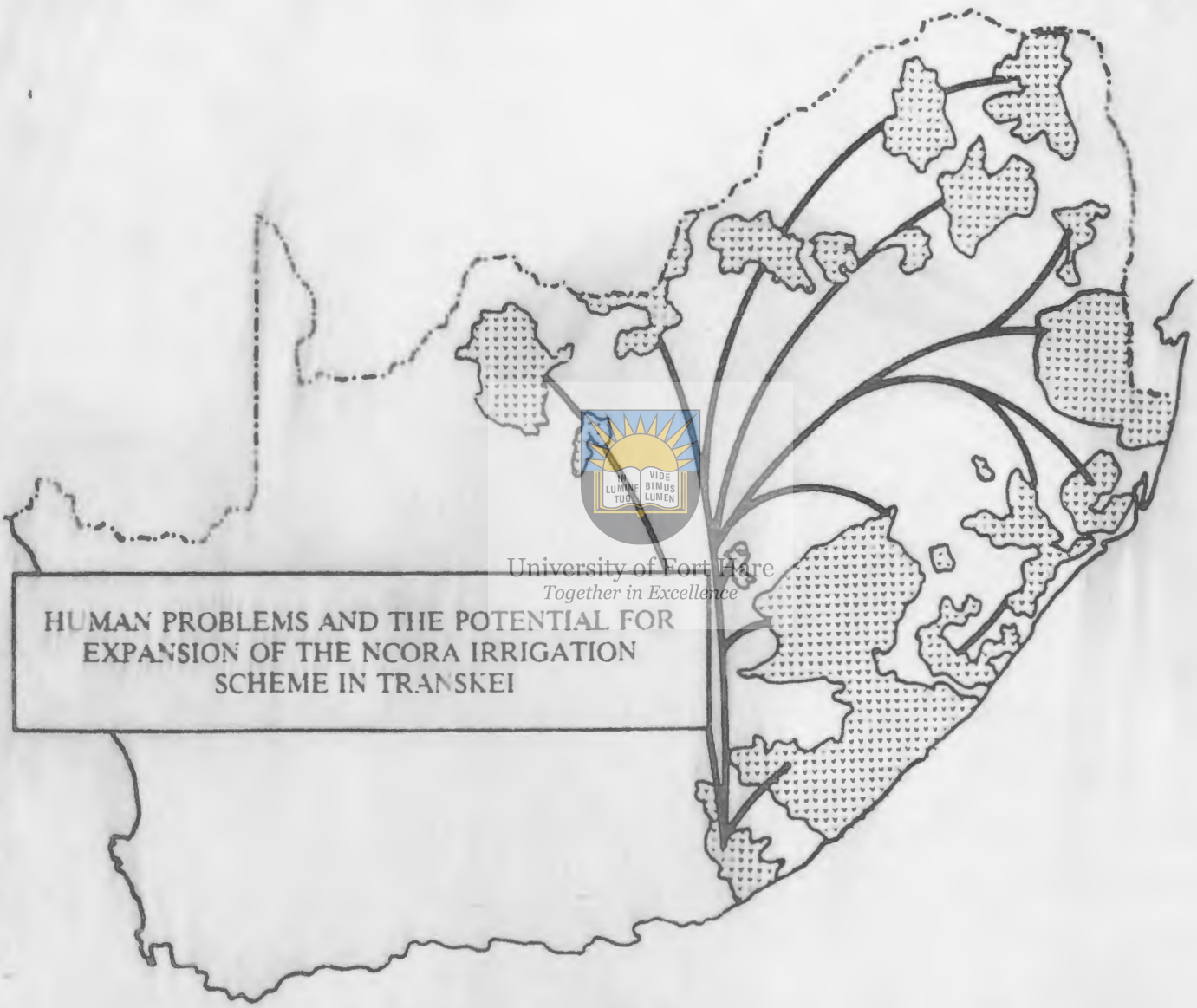

HUMAN PROBLEMS AND THE POTENTIAL FOR EXPANSION OF THE NCORA IRRIGATION SCHEME IN TRANSKEI

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JUNE 1988

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ACKNOWLEDGEMENT

This report summarises the results of an investigation into farmer's views on the expansion of the Ncora Irrigation Scheme. Many people, too numerous to mention by name, have contributed to this investigation and the authors acknowledge their participation and assistance.

The investigation was carried out on behalf of the Secretary General for Agriculture and Forestry, Umtata, who has had, in the past, to take many decisions concerning the future of the irrigation scheme with limited information on the views of the farmers involved. Many of his staff members contributed to this investigation and are too numerous to mention by name. Their assistance is acknowledged and greatly appreciated.

The staff of the management agents of the Ncora Irrigation Scheme, Interscience Services (Pty) Limited, made special arrangements to assist with data collection and the agents bore many of the costs of the survey for which, the authors are grateful. Data, analysis was carried out by staff of the Agricultural and Rural Development Research Institute, Fore Hare University. They also provided valuable advice on research procedures and the analysis of data, and commented on an earlier draft of this paper. The main investigation was partially financed by a grant from the HSRC. The Department of Development Aid seconded the senior researcher to Transkei for a number of years which made it possible for him to carry out the investigation.

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CHAPTER 1

INTRODUCTION

Irrigation schemes in less developed countries are often intended to promote food production and increase economic activity in areas with good arable land and an abundance of water. They are usually designed on the basis of profitability and economic viability, while the expectations and needs of the participants, especially in less developed areas, are given less attention (Carruthers 1983: 17; Adams and Grove, 1983). This paper summarizes some of the human problems that need to be taken into consideration with the expansion of the Ncora Irrigation Scheme in the Republic of Transkei.

The area under discussion is known as Qumanco administrative area and is adjacent to the Ncora Flats administrative area where the Ncora Irrigation Scheme was initiated in 1978. The consultants proposed in 1983 that this area be developed for irrigation on the same basis as the Ncora Irrigation Scheme. However, after appraisal of the proposal and evaluation of the Ncora Irrigation Scheme by the Development Bank of Southern Africa, it was agreed not to proceed until more was known about the views of the farmers. This decision provided the motive for the investigation.

Objective of the study

The information contained in this paper is a result of an extensive

survey of the irrigation scheme and is aimed at assisting planners and developers in making decisions on the future development and expansion of the scheme. The objectives of this paper are

1. to describe the history and institutional framework of the Ncora Irrigation Scheme on which respondents were asked to comment;

2 to describe the physical characteristics of the study area that may have an influence on the opinions of the respondents;

3. to describe the technical aspects that have an influence on production;

4. to describe the characteristics of the farmers of Qumanco administrative area in close proximity to the Ncora Irrigation Scheme;

5. to report on the attitudes and perceptions of the farmers that may affect the expansion of the irrigation scheme; and

6. to make recommendations on the development of Qumanco and improvement of the Ncora Irrigation Scheme.

Apart from providing useful information to planners and decisionmakers, the aim is to establish a bench mark against which the impact of the Ncora Irrigation Scheme on its participants can be measured.

CHAPTER 2

HISTORY AND INSTITUTIONAL FRAMEWORK OF THE NCORA IRRIGATION SCHEME

2.1 History and development of the project.

Development of the Ncora Irrigation Scheme commenced in 1978 when a contract for development and management of the scheme was entered into by the Department of Agriculture and Forestry of Transkei and a private management agent. At that time about 1200 ha of land was developed and ready for production and a first crop of wheat, grown by individual farmers under the guidance of Departmental officials on about 300 ha, was established. Within five years the management agent had increased the area under irrigation to 2900 ha complete with a modern infrastructure for farmer support and product handling. (Fig. 1) However, further development of the scheme according to the development plan of the consultants came to a standstill because of lack of funds. The result is that the greater part of Qumanco still has to be developed for irrigation farming.

2.2 General administration

The area on which the irrigation scheme was started falls under the jurisdiction of the Hala tribal authority. Chief Jackson Matanzima was appointed senior headman (later acting chief) of the Ncora Flats administrative area and in this capacity,

FIG 1. Layout of the Ncora Irrigation Scheme (Loxton, Venn and Associates, 1984)

became the main link between project administration and the people of the irrigation scheme. However, with the expansion of the irrigation scheme to blocks D and E some farmers from Qumanco administrative area under Chief Kaulele Mgudlwa were included in the scheme. Chief Kaulele Mgudlwa represents the Jumba tribal authority and almost all of the presently undeveloped area of the irrigation scheme falls under his jurisdiction. Further development of the irrigation scheme will be within the area of jurisdiction of the Jumba tribal authority.

Both tribal authorities are in the district of Cofimvaba, where the magistrates and other Government offices are situated. In turn, tribal authorities fall under the Western Tembuland Regional Authority headed by Paramount Chief Kaizer Matanzima who has shown a keen interest in the development and maintenance of the scheme.

2.3 Project administration

In terms of the contract the consultants were required to appoint a resident consultant as project manager. He was to act as the official link between the Department, local leadership and scheme officials. The project administration provided for three main functions viz. production, development and engineering services as well as commercial services, all supported by an administrative unit. As activities increased

some adjustments were made to the staff structure, but the main functions remained basically the same.

Initially, senior positions were filled by expatriates but junior staff and labour were recruited locally. Because of continual training and recruiting exercises, Transkeians were promoted within five years to more senior positions. This is not only in line with the stated staffing policy but was also necessitated by a high turnover of expatriate staff.

The development plan provided for the establishment of a management committee for planning and policy formulation, and consultative committees for communication and coordination of activities. Various farmer committees were established for the different interest groups with varying degrees of farmer participation. Because of the diversity of interests it was found necessary to establish a central liaison committee where less important matters could be dealt with by farmer leaders and the project management without involving the management committee. The management committee consists of farmer leaders, senior project officials and delegates from the management agents, consultants and the Department of Agriculture and Forestry. A senior official from the Department is ex officio chairman of the managenent committee.

A new extensive service administrative system which utilised the existing traditional system was therefore introduced at the scheme.

2.4 Services

A package of services to participant farmers is offered by the management agent. The package differs according to the crops grown, but it usually includes seed, fertilizer, seedbed preparation and planting, chemicals for weed control and crop protection, harvesting and transportation costs. Interest free crop loans are offered, but the total crop production has to be taken to the storage facilities of the Marketing Section as security where normal processing such as drying and packaging is carried out. The proceeds of the crop are usually released once the amount owed by the farmer for seasonal loans is paid for either in cash or in kind. A similar package was worked out for dairy producers, except that they work on a monthly instead of a seasonal account.

Commercial services are supplemented with staff training and agricultural extension services.

2.5 Future development

A decision about the expansion of the scheme to its full extent will have to be taken in due course. Such a decision will depend on many considerations, of which financial and economic issues may be seen as the most important. However, for the purpose of implementation, clarity about the future roles of local authorities and project administration in providing

services to the farmers under the irrigation scheme will be needed. The services to be offered will need to be investigated as well. It is essential that the services offered should satisfy the needs of the farmers and the community and that the services should result in physical, institutional and human development.

CHAPTER 3

PHYSICAL CHARACTERISTICS OF THE STUDY AREA

3.1 Climate

The climate is cool, moist and very windy (Loxton, Hunting and Associates, 1978). The average rainfall is 725 mm per annum, but yearly figures may vary considerably. Since 1979/80, rainfall figures of between 415 mm 890 mm per annum have been recorded at the scheme. The scheme falls within the area where mist occurs regularly and daily sunshine varies from 7 to 9 hours, increasing to 13 to 14 hours per day during October. Frost occurs during the period May until September. A few hailstorms can be expected every year, especially in the vicinity of the mountain range. These storms are usually accompanied by strong winds which destroy crops and damage buildings. Dry, berg winds occur during the year, often at critical growth stages of the crops.

3.2 Soils

The dominant soils on better drained sites are medium textured red soils of moderate depth (Msinga series). A high content of fine sand and injudicious tillage practices result in compaction problem. The soils are acid and very infertile. The pH value varies from 4,5 to 4,9 (KCl) and P values of less than 10 ppm are the rule (Loxton, Venn and Associates, 1984).

Some grey hydro-morphic soils have also been included in the scheme. These soils are less suitable for production of ordinary cash crops, but well suited for pasture crops. Inspection of soil profile pits on the irrigated area of Ncora Irrigation Scheme has shown a rising watertable in some of the grey soils.

3.3 Water and irrigation

Irrigation and domestic water demands constitute only 30 per cent of the capacity of the Ncora dam. Because of the availability of surplus water, a hydro-electric power-station with a potential output of 2350 kW was astablished in close proximity to the Ncora dam (Loxton et al., 1984). Water quality poses no problem to irrigation, but serious soil erosion was identified in the upper catchment area of the dam causing an increased silt load in the water (Rural Development Services, 1983).

Based on climatic data Loxton et al., (1978: 30) calculated a probable summer deficit of 191 mm of water during the period October to March with a probability of 80 per cent. The highest demand for irrigation water is during spring and earliest summer with a possible seasonal drought during January or February. Irrigation is therefore required only to supplement rainfall.

3.4 Potential enterprises

Farmers in the dryland areas surrounding the Ncora Irrigation Scheme traditionally grow maize. Limited intercropping with pumpkins, watermelons, sorghum and beans is practised to cater for home needs. Some enterprising persons may even grow cabbage and potatoes in their home gardens. Loxton et al. (1978: 119-131) found these crops agro-ecologically adapted to the area, but stated that the extent of production will be determined by their potential profitability, the size of the market and the levels of management skills demonstrated by the producers. Other crops such as peas, wheat, onions, carrots, tomatoes, tobacco and lucerne were also planted on a trial basis but, because of climatic and management problems, production had to be either limited or completely abandoned. Certain new crops such as asparagus and gooseberries were introduced as cash crops by the project administration, but production practices of these crops are still unknown to the majority of local farmers.

Several pasture crops are agro-ecologically well adapted to the area and the establishment of a dairy enterprise was suggested by the consultants. Experience has shown that crop production risks at Ncora are lower with a dairy enterprise, but it requires a higher level of management from the producer/participant.

Since the project started, various production constraints and hazards have been observed (Rutherford, 1985). Constantly low, average maize yields led the consultants to the conclusion that the climate is sub-optimal (too cool) for maize production, which confirms the postulation of Geyer (1971: 140). Early summer rains destroyed some of the winter crops which were ready for harvesting. High humidity and overhead irrigation resulted in diseases of beans and asparagus. Damage to crops is experienced from strong winds and occasional hail and thunderstorms. Crusting and soil compaction forced the management agents to introduce new seedbed preparation practices. Weeds accumulated and new diseases and insects were found on crops. These crop production hazards are the result of interaction between the natural physical environment and crop production practices introduced at the scheme.

To the management agents these problems may mean a challenge to better performance. To the producers it means further orientation and adaptation to a new way of life. It also created suspicion among farmers concerning the appropriateness and soundness of the new practices introduced by the management agents, with a consequent desire to return to known practices and methods. As farmer reactions of this nature can influence scheme performance it is essential that these be monitored by the authorities on a regular basis.

CHAPTER 4

TECHNICAL ASPECTS OF AGRICULTURAL PRODUCTION

4.1 Dryland farming

Average maize yields in the Southwestern parts of Transkei, were found to be 350 kg per hectare and even less (Bembridge, 1984: 338; Geyer 1971: 54; Rural Development Services, 1983). According to Bembridge (1984) there was a decline in maize yields over the long term as a result of poor methods of crop culture resulting in active erosion and severe depletion of the soil. Inadequate pest control, plant population, weed control and crop rotation practices have all contributed to the appallingly low maize yields. Geyer (1971: 181) calculated a potential maize yield of between 2100 and 3800 kg per hectare for the high rainfall areas near the irrigation scheme. More recently, using the simulation model of the Agricultural Cathments Research Unit (ACRU) of the University of Natal, it was confirmed that an average dryland maize yield of 3500 kg per hectare is possible at the Ncora Irrigation Scheme. The ACRU model uses daily climatic input data for the determination of run-off, supplementary irrigation requirement and estimates of crop yields (Schulze, 1985).

4.2 Experience to date with irrigation farming

Irrigation farming on block E in Qumanco commenced in 1981 on

approximately 500 ha of land allocated as traditional plots of one hectare, together with half hectare food plots to landright holders. The yields obtained by these farmers compared to those obtained by irrigation farmers on the rest of the scheme is shown in Table 1.

TABLE 1 Average crop and vegetable yields under irrigation over three seasons compared with target yields, 1982-84.

Crop	Target yield[1]	Qumanco (N = 192)			Ncora (N = 1373)		
		No.[2]	Mean	Standard deviation	No[2]	Mean	Standard deviation
	(t/ha)		(t/ha)	(t/ha)		(t/ha)	(t/ha)
Foodplots:							
Maize	7.0	109	4.7	0.9	2527	3.6	1.6
Cabbage	40.0	109	16.5	8.5	2527	20.1	10.5
Traditional plots:							
Maize	7.0	280	4.7	1.3	1438	4.0	1.6
Peas	1.6	280	2.9	1.6	1438	2.4	1.5
Beans	1.5	280	0.4	0.3	1438	0.4	0.4

1) Loxton et al., 1978: 124
2) Total entries over period of three years

Source: Ncora Irrigation Scheme

Table 1 shows that target yields used in the development plan were not achieved except in the case of dry peas. On food plots Qumanco farmers harvested 1.13 tonnes of maize per hectare more than the average for the whole scheme, but the cabbage yields were substantially lower. On traditional plots there was also a tendency for Qumanco farmers to harvest on average more maize and dry peas than the rest of the scheme. The variation in yield was lower among Qumanco farmers than that of the whole scheme. It can be concluded that, on average, the Qumanco irrigation farmers produced higher yields than the rest of the farmers on the scheme.

Using the ACRU simulation model at Cedara it was calculated that an average maize yield of 3167 kg/ha per annum can be expected under irrigation at Ncora. Average yields obtained by the farmers are therefore well below the potential of the area for irrigation farming and not much higher than the potential for dryland farming.

Financial figures show the same trend as yield figures (Table 2).

TABEL 2 Gross margins obtained with various crops under irrigation over three seasons by Qumanco farmers compared to scheme averages, 1982-1984.

Crop	Qumanco (N = 192)			Ncora (N = 1373)		
	Income	Cost	GM	Income	Cost	GM
	R/ha	R/ha	R/ha	R/ha	R/ha	R/ha
Foodplots:						
Maize	1072	488	584	722	478	244
Cabbage	3904	2770	1134	4260	2492	1768
Traditional plots:						
Maize	807	397	410	636	378	258
Peas	927	674	253	835	672	163
Beans	89	347	(258)	53	340	(288)

Source: Ncora Irrigation Scheme

Food plots of Qumanco showed a gross margin on maize of R340 per ha more than the average for the scheme, but the gross margin on cabbage was R634 per ha less for Qumanco than for the rest of the scheme. Net farm profit for Qumanco food plots was R382 per plot on average compared to R204 per plot on average for the scheme. However, one must take into consideration that foodplot size is 0,5 ha at Qumanco and 0,3 ha on the remainder of the scheme. From Table 3 it should be clear that although Qumanco food plot farmers have received more cash from their

plots, they were actually worse off on a per hectare basis than the foodplot farmers on the rest of the scheme.

TABLE 3 Summary of gross margins obtained over three seasons by Qumanco farmers compared to scheme averages, 1982-84.

Crops	Qumanco (N = 192)		Ncora (N = 1373)	
	R/plot	R/ha	R/plot	R/ha
Foodplots:[1]				
Maize	292	584	78	244
Cabbage	90	1134	126	1768
NFP[2]	382	-	204	-
Traditional plots:				
Maize	246	492	155	258
Peas	85	253	106	163
Beans	(76)	(258)	(86)	(288)
NFP	255	-	175	-

1) Annual dividend of R180 from group farm not included.

2) Net farm profit (NFP) = Total income - Total cost for all crops grown on the plot during the financial year.

Source: Ncora Irrigation Scheme

Traditional plots at Qumanco yielded higher gross margins for maize and peas as well as lower losses on beans than on the remainder of the scheme (Table 2). Accordingly, the net farm profit was also higher for Qumanco traditional plots than for the rest of the scheme (Table 3). It can be concluded that the Qumanco farmers were more successful over the first three years with traditional crops such as maize, peas and beans than with more sophisticated crops such as cabbage.

As the physical conditions at Ncora and Qumanco do not differ substantially, it can be concluded that the human factor, particularly labour and management inputs, plays an important role in determining farming success on the irrigation scheme.

CHAPTER 5

METHODOLOGY

5.1 Data sources

Two planning reports (Loxton, et al., 1978; Loxton et al., 1984) provided technical background for the design of the scheme. Further information was obtained from internal reports, official records and overseas publications. Interviews with Transkeian officials, farmer leaders and development agents provided further insights on development problems. Data on crop and livestock production, socio-economic and socio-psychological characteristics of respondents were obtained, by means of a comprehensive, questionnaire-controlled survey.

5.2 Design of questionnaire

The questionnaire was designed to measure the present situation of irrigation farmers on the developed area of the Ncora Irrigation Scheme. Minor alterations were made to the questionnaire to reflect the situation of non-participating dryland farmers in close proximity to the scheme. This allowed the researcher to compare the "with" and "without" situations regarding irrigation development.

Although some quantitative information was collected from respondents, the major part of the questionnaire called for

qualitative information and subjective responses. Liberal use was therefore made of open-ended questions in an attempt to determine motives behind responses. The data presented should therefor be treated with caution in the sense that it represents a situation at a certain point in time.

The survey included three questionnaires administered to the farm household. The main questionnaire was directed at the head of the household or his/her representative. A shorter questionnaire covering questions about diet and stress related items was directed to all female respondents and the wives of male respondents following the main questionnaire. A third, short questionnaire to measure children's responses to the irrigation scheme was completed with the eldest child in the household between ten and twenty years of age.

Draft, questionnaires were submitted to professional and field staff of the Department of Agriculture and Forestry and the development agents of the Ncora Irrigation Scheme, as well as to various academic staff for comment and scrutiny before being tested in the field. After field testing, the necessary adjustments were made and some questions were even deleted before the questionnaires were finalised.

3.3 Norms for success

Because of the general lack of records among respondents it was

not possible to verify income and production figures supplied by dryland farmers. However, the enumerators knew most of the respondents and assured the researcher that major misrepresentations would be detected if reported. It was possible to compare information given by irrigation farmers with scheme records.

Information of a demographic and socio-economic nature was compared with survey information collected by Bembridge (1984) and the Development Bank of Southern Africa (1985).

5.4 Sampling procedure

By 1984 a total of 194 farmers of Qunanco administrative area had been allocated irrigation plots in block E of the Ncora Irrigation Scheme. A further 906 landright holders have still to be allocated plots in blocks F and G, adjacent to the Ncora Irrigation Scheme, when these areas are developed (Figure 1). Because of the cost and time implications of the lengthy questionnaire it was decided to select only a 10 per cent sample on a random basis for inclusion in the survey.

From the irrigation farmers eight, with foodplots (0.5 ha) and 13 with traditional plots (1,0 ha) were selected giving a total of 21 irrigation farmers. The consultants were asked to submit from their records a list of names of a randomly drawn sample of 10 per cent of the landright holders. The consultants

provided a list containing 73 names, but the enumerators could only trace 44 of these. A further list of 30 names were called for, but from the two lists of names a total of only 67 dryland farmers could be found. The available time did not allow for a search for more dryland farmers. The enumerators reported that a large number of dryland farmers were of advanced age or working somewhere else. A few names were unknown to the locals indicating that some people had left a long time ago. Despite the small sample size it is considered that the data give a good indication of trends which should be confirmed by future monitoring of programmes.

5.5 Field survey

The field survey was carried out partly by a group of senior agricultural students from Fort Hare University who visited the irrigation farmers and partly by three departmental officials who visited the dryland farmers. These officials included the local extension officer of the Department of Agriculture and Forestry at Qumanco, and two officers from the regional office who had considerable working experience in the area. The enumerators were fully briefed on the purpose of the study, the methods and control system to be used to ensure that questionnaires were completed properly. The enumerators were also introduced to the chiefs and headmen of the irrigation scheme who assisted them with the identification of respondents. The survey in Qumanco commenced in January 1985 and was completed by the end of April 1985.

CHAPTER 6

CHARACTERISTICS OF THE TARGET POPULATION

6.1 Conceptual background

The human resources input concerns mainly labour inputs, decision making and management. A further task of the human resources is to make and implement decisions concerning the allocation of non-human resource inputs such as tillage, seed, fertilizer, insecticides, cattle, disease prevention and control measures, stock feeds and other inputs. Such decisions can be influenced by various personal and institutional constraints (Bembridge, 1984: 122).

6.2 Personal characteristics

6.2.1 Age groups

It is well known that a large proportion of the able bodied men in Transkei are migrant workers who are usually absent from home. This phenomenon is reflected in the age distribution of the respondents included in the sample. Only 16 per cent of the respondents from Qumanco were under 40 years of age, 19 per cent between 40 and 50 years of age, 25 per cent between 50 and 60 years of age and 40 per cent over 60 years of age. This means that the heads of households in the sample

included more older people than was found by Bembridge (1984: 130). It seems, however, that cognisance was taken of the regular and hard work involved in irrigation farming as 50 per cent of the respondents allocated irrigation plots in Qumanco were under 50 years of age. The availability of younger persons who can manage the hard work on irrigation plots is therefore a factor to be considered in the expansion of the irrigation scheme in Qumanco.

6.2.2 Sex of respondents

Another important feature of rural Transkeian society is the large number of female heads of households. These women are in an unenviable position. Women not only supply the major source of labour but are the prime decision-makers in agriculture. Bembridge (1984: 125) found that farms headed by females showed a negative correlarion with knowledge, adoption of maize and cattle practices and contact with information sources. The same author found that three out of five heads of households in Transkei were women, which is slightly higher than at Qumanco where 50 per cent of de facto heads of households were women.

The age and sex distribution of the de facto households included in the sample is shown in Table 4. The absence of productive males in the category 20 to 44 years of

age is a feature of the distribution. These figures compare well with those from a base line data study of 18 rural communities in Transkei (DBSA, 1985: 24) Cognisance should be taken of this age and sex distribution in decisions concerning the future expansion of the irrigation scheme in Qumanco.

TABLE 4: Age and sex distribution of a sample of the de facto population of Qumanco administrative area compared to the average situation as found in 18 communities all over Transkei, 1985

Age group	Qumanco[1)]				Transkei[1)]	
	Male		Female		Male	Female
Years	Nr.	%	Nr.	%	%	%
0-19	114	63	107	49	71	54
20-49	33	18	78	36	18	32
50+	34	19	33	15	11	14
Total	181	100	218	100	100	100

Source: 1) Survey data

2) DBSA (1985: 24)

6.2.3 Family size

Rural families tend to be large because of their extended nature. However, the migratory labour system has the effect that household sizes may be much smaller. Bembridge (1984:127) found an average family size of 6 people in three locations of Transkei. In a

survey of 18 rural communities of Transkei an average household size of five was found (DBSA, 1985: 15). In Qumanco the average household size was between five and six persons. With most of the able-bodied persons working away from home many households consist of elderly people only or elderly people with schoolgoing grandchildren. The implications for further development of the irrigation scheme are that entrepreneurs will have to be recruited, while labour shortages may be experienced at times.

6.2.4 Marital status

Two thirds (67 per cent) of the respondents in Qumanco reported that they were married and one third (33 per cent) were either single, widowed or divorced. Bembridge (1984: 30) found a rate of 25 per cent single persons and indicated that this can be regarded as a constraint to farming efficiency in the sense that both labour and earning capacity is reduced.

6.2.5 Education levels

Bembridge (1984: 136) found that adoption and knowledge of livestock practices, managerial aptitude, contact with mass media, organisational participation, aspirations, living standards and socio-economic status were all significantly related to farmers' education

level. Education is therefore an important factor in the modernisation process. In the Qumanco sample it was found that 62 per cent of the husbands and 54 per cent of the wives had an educational level of 0-4 years which, for practical purposes, can be considered as illiterate. A further 18 per cent of the men and 16 per cent of the women had five to six years schooling. The low levels of education is an indication that an administrative system which initially requires a high level of literacy and numeracy should not be included in the project design. Provision of suitable adult education should therefore be an important feature of any rural development project.

6.2.6 Tribal status of the respondents.

Among the persons in the sample there were three who regarded themselves as chiefs (members of the royal family). One was a headman, one a sub-headman, two were elders and three councillors. It can therefore be concluded that tribalism is still a factor in Qumanco administrative area. The tribal structure can be used as a foundation for a local organisation dealing with farming and other related matters. The most practical method might be to identify headmen's wards and to organise a farmers association in each. Geyer (1971: 363) actually came to the conclusion that there would be merit in organising joint farming projects within an

extended family context. However, it must be realised that even at ward level, influential people will be found whose cooperation must be obtained. Within the tribal structure such persons can exert a lot of pressure on local decision-making.

6.2.7 Religious denominations

No attempt was made to assess membership of the respondents to various religious denominations. It is known that the Jumba tribe was one of the first to accept the Methodist church. At present various other denominations are also active in the area. According to Bembridge (1984: 139) membership of a world religion is related to farming progressiveness and it should therefore be considered as a supportive factor in development. It was found, however, that the respondents did not consider the church as a private organisation that should play an important role in community development.

6.2.8 Managerial aptitude

Summarizing research findings, Bembridge (1984: 196) came to the conclusion that managerial aptitude is the most important ingredient for farming efficiency. Without management skills there is little likelihood that even the most up-to-date knowledge of modern

practices will lead to financial success. Bembridge (1984: 196) found considerable cause for concern about the low levels of managerial aptitude of Transkeian farmers. The study of the Qumanco farmers confirmed these findings. The majority of dryland farmers do not keep records (80 per cent) and have no idea about farming costs (74 per cent). Fifty per cent of the dryland farmers had no specific plans for improving their farming enterprise. Where future plans were mentioned, these concerned improvements to the homesteads and home gardens rather than farming itself. With about one third of the respondents there was no sign of maintenance of farming equipment and fixed improvements (35 per cent) or labour organisation and control (30 per cent).

Bembridge (1984: 198) found that managerial aptitude was significantly related to farming knowledge, farming resources, crop and livestock production, contact with information sources, level of education, progressive attitudes and socio-economic status. At Qumanco it was found that managerial aptitude was significantly related to condition of health, farming experience in the area, satisfaction with yields, time spent on the lands by women, education of the wife, knowledge of insect control, perception of veld condition, farming experience in the White Sector (RSA), family size and living standard. Managerial aptitude also significantly

correlated ($P < 0.01$) with the items used in the scale viz. future planning, budgeting skills, attitude towards maintenance work and labour organisation and control. These elements of managerial aptitude should play a much more important role in the future selection and training of irrigation farmers.

.3 Socio-economic factors

6.3.1 Leadership and organisational participation

Geyer (1971: 60) identified three aspects of traditional lifestyle which influence the economy of rural areas: residential areas inhabited largely by relatives on a patrilinial basis, sharing of goods and the local pattern of authority. In terms of these aspects relatives and friends have a mutual obligation to look after the well-being of each other and to respect kinsmen and elders in leadership positions. Traditional leadership is vested in family and clan heads who act as councillors, sub-headmen and headmen. According to Walker (1984: 41) it is worthwhile, when establishing an irrigation project, to see how far the existing traditional group structures and leadership structures can be utilized for controlling the farmers on the project.

In order to delve into traditional leadership at

Qumanco, respondents were asked about community activities and the role of their leaders. Sixty per cent of the respondents were positive that the people of Qumanco were working for a common purpose at the time of interview and 55 per cent were positive about support from their leaders in this respect. In all, 36 per cent of the respondents preferred not to respond to the leading questions. From the reactions of the respondents, the enumerators reported that only 48 per cent of the respondents were positive about the effectiveness of traditional leaders. This lack of support for the traditional leaders may result in poor organisational participation when village committees are established. Consideration should therefore be given to leadership training when a project is established in Qumanco.

Formal leadership in organisations was measured by giving different weights to the positions of chairman, secretary, etc. and adding the total per respondent. By using this scale it was established that 76 per cent of the respondents did not have any formal leadership role in organisations. The remaining respondents had very low ratings for formal leadership as well. It would therefore be advisable to introduce training in meeting procedures as soon as a project with a multiplicity of committees for farmer involvement is introduced.

6.3.2 Outside employment

According to the respondents, 63 per cent of the households have one or two males working elsewhere and 22 per cent had one or two females working elsewhere. The distribution of work done by these migratory workers is summarised in Table 5. The majority of men working elsewhere is unskilled. Depending on the type of work it can be expected that they will neither contribute substantially to household income, nor will the reservoir of skills in the households with which money can be earned be increased.

TABLE 5 Occupation of migrant workers from Qumanco, 1985.

Class of work	Males		Females	
	Number	%	Number	%
Unskilled	35	40	4	5
Skilled	9	10	3	3
Clerical & sales	3	3	1	1
Technical[1)]	1	1	2	2
Professional[2)]	13	15	6	7
No reply	27	31	72	82
TOTAL	88	100	88	100

1) Mainly Agricultural Officers and nurses

2) Teachers only.

Source: Survey data

Four out of ten respondents indicated that,at some or other time, they had worked on a White-owned farm in South Africa and it can therefor be concluded that they gained some idea about commercial farming. However, at the time of tbe survey, only a few members of the households of the respondents were working at the Ncora Irrigation Scheme where more experience could be gained. The implications of this situation is that younger, able-bodied men who are interested in farming would only be available to take up irrigation holdings at the scheme, provided they could earn more or at least equal remuneration in cash than by working elsewhere. Being unskilled, however, they will need extensive training to make a success of irrigation farming.

The absense of these migratory workers must have an efffect on the work situation at home. It is not surprising that 31 per cent of respondents complained that they always have problems to get all the work done, while a further 37 per cent complained that they occasionally have problems. It seems that weed control and planting are the main bottlenecks in dryland farming and this can be related to lack of cultivation and difficulties with seedbed preparation. In four out of ten cases it was reported that other people do not help the respondents and 80 per cent of the respondents do not employ labour. In the case of 37 per cent of respondents, women have to do most of the work on the

dryland plots, while relatives and other people assist in 20 per cent of the cases. In only 21 per cent of the households were men found doing most of the work on the lands.

It seems then that even under dryland farming conditions there is a labour shortage in Qumanco. Expansion of the irrigation scheme to Qumanco will put additional pressure on the women for maintenance of rural life which includes farm work. Bembridge (1984: 181) concluded that labour problems due to irrigation constitute an added constraint on the adoption of inputs of modern technology.

6.3.3 Household income

The average income of Qumanco respondents amounted to R488 per annum with a standard deviation of R1 184. Average farming income amounted to only R143 per annum, with a standard deviation of R481, while other sources of income amounted to R346 per annum with a standard deviation of R1 078. It is therefore obvious that, according to the reports of the heads of households, they are much more dependent on outside income than on farming income. This should be seen as confirmation of the situation regarding outside employment reported under 6.3.2. With an average household size of 5,5 it gives an average income of only R89 per capita per annum.

which is considerably lower than the R313,80 per capita per annum found in Transkei (DBSA 1984: 147), and also lower than the R250 per capita per annum reported by Bembridge (1983: 193) for 1979.

TABLE 6 Household income of farmers at Qumanco and Ncora Irrigation Scheme, 1985.

Nature of income	HOUSEHOLD INCOME	
	Dryland (N = 67)	All farmers[1] (N = 223)
	R	R
On-scheme farming	7,46 [2]	274,90
Off-scheme farming	135,19	81,74
Employment at scheme	29,07	79,20
Employment elsewhere	74,76	120,88
Other	241,86	167,07
TOTAL	488,34	723,79

1) Dryland and irrigation farmers
2) Apparently through relatives

Source: Survey data

From correlation studies it was found that households with higher total income had husbands with higher levels of education. They were able to ensure better weed control and although they had a poor knowledge of plant diseases they had more positive attitudes to cash crop production and a better perception of the condition of

the natural grazing. Their women spent less time on the lands, but they employed more labour to keep the lands weedfree. The male household heads had worked on a white-owned farm some or other time ($P < 0.05$) and their farming income was higher.

Farming income of those who considered themselves unemployed was less than for those who were self employed or employed. Those who had higher farming income were better educated and kept more sheep and pigs. ($P < 0.05$). They also possessed more equipment and tools ($P < 0.05$).

6.3.4 Housing and household amenities

About half of the respondents (54 per cent) in Qumanco indicated that their standard of living had improved over the past five years due to increased income. These improvements were mainly housing improvements (39 per cent), obtaining household appliances and furniture (21 per cent), improvement of the homegarden (12 per cent) and obtaining additional livestock (12 per cent).

About half the respondents (49 per cent) lived in traditional rondavels and a further 34 per cent had traditional pole and thatch houses. With only 16 per cent of Qumanco respondents living in brick and iron houses it can therefore be concluded that the housing

standard is rather low. No attempt was made to calculate the number of rooms (rondavels) available per household or the number of persons per room. It was however found that in the case of 55 per cent of the respondents home gardens were unattended. When asked about their future plans, 33 per cent indicated that they would like to build a modern home and a further 77 per cent wanted to add a room or rondavel. Forty four per cent of the respondents would like to fence in the homestead.

Household equipment also plays an important role in determining the quality of life and socio-economic status. The distribution of household amenities owned by the respondents is shown in Table 7 and, in general, it compares favourably with the situation elsewhere in Transkei, though rather low. The relatively small number of radios kept should be noted as it is of importance to modernistion and communication. The high dependence on paraffin for heating and lighting - being a cash expenditure item - should also be noted.

6.3.5 Transport

At Qumanco, 78 per cent of the respondents have no form of transport and these people have to rely on buses as a means of mobility. Horses are used by 11 per cent and only three respondents had motorised transport. Any

development plan introduced for Qumanco should therefore also aim at increasing the mobility of the people.

TABLE 7 Household amenities owned by Qumanco households and in Transkei, 1985.

	Qumanco[1] (N = 88)		Transkei[2] (N = 1616)
	Number	%	%
Radio	33	38	49
Paraffin lights	74	84	-
Sewing machine	16	18	13
Wood stove	17	19	14
Paraffin stove	47	53	-
Rainwater tank	8	9	12

Source: 1) Survey data
2) Baseline study of 18 administrative areas, DBSA, 1985: 324)

6.3.6 Health

One out of five of the respondents (23 per cent) complained about poor health and a further 25 per cent described their condition of health as fair. Seventy two per cent of the women were concerned about the family's health situation and felt that there was a need for better health care facilities. Interviews with the health authorities at the scheme and at the nearest hospital revealed a high incidence of chest diseases as well as stomach disorders. Reference was made to the

general lack of sanitation in the villages and the pollution of canal water from where 80 per cent of the respondents obtained water for domestic use. Introduction of improved domestic water supplies and better health care facilities seem to be an urgent basic need of the people.

6.3.7 Nutrition

Thirty per cent of the respondents were not satisfied that their families were getting enough to eat. A similar number of respondents indicated that their families were not as well fed as five years ago when the Ncora Irrigation Scheme was started. No attempt was made to determine kilojoule intakes or the quantities of food intakes, but respondents were subjected to a two day recall of food served. In this way an indication was obtained of the quality of food intake (protein and vitamins) included in the daily meals. A, summary of the responses is given in Table 8.

Of the animal proteins, meat was consumed by only one out of five households (22 per cent) while eggs and fish were rarely eaten. Milk was consumed by about four out of ten households (39 per cent) which is very low in an area with a surplus of milk for sale. Cabbage and beans are popular foods. The low frequency with which some

important protein and vegetable sources are consumed gives an indication that food, production and education on nutritional aspects should get a high priority when the scheme is expanded to Qumanco. Once household needs are satisfied the surplus will be taken up in local trade and only when the local trade is saturated should a surplus removal marketing scheme be introduced.

TABLE 8 Percentage respondents who consumed various foods during the two day period before the survey at Qumanco, 1985 (N = 88).

Kind of food	Respondents (%)
Meat	22
Milk	39
Eggs	11
Fish	8
Beans	25
Cabbage	35
Peas	7
Other green vegetables	20
Other protein rich food	2

Source: Survey data

6.3.8 Discussion on the characteristics of the landright holders of Qumanco.

The old age of the landright-holders and the large percentage of female heads of households, many of whom are single, are factors to be considered in the expansion of the irrigation scheme to Qumanco. The relatively low level of education further suggests that about sixty per cent of the present landright-holders will not be responsive to written communication and modern farm management techniques. Accordingly, managerial aptitude was found to be of a rather low level in general. Selection of prospective commercial farmers and accommodation of the remainder in community gardens on small garden plots would therefore seem to be the answer to the need for effective use of irrigation land.

There seems to be a need for training in leadership and meeting procedures, starting with the traditional leaders. The introduction of an irrigation scheme will require communication, coordination and discipline which is usually obtained through the establishment of new farmer organisations and various committees. It was shown that few people in Qumanco play an active role in formal organisations and a training need was identified.

It seems further that the Ncora Irrigation Scheme had only limited impact on the well-being of dryland farmers of Qumanco. Three in five households have able-bodied men working elsewhere under the migratory system, women are burdened with additional farming responsibilities, housing standards are low, few people have their own transport and the nutritional and health situations need improvement.

CHAPTER 7

ATTITUDES TO AND PERCEPTIONS OF THE PROJECT

7.1 Perception of farming problems

For successful communication and behavioural change it is important to identify the perceptions of farmers and extension workers and to work towards a better understanding of the different views held by both parties (Heyns and Düvel, 1980). The existence of different perceptions concerning farming problems is quite obvious at meetings held between the farmers and the management agent.

The Farming problems as perceived by the respondents are listed in Table 9. The main problems experienced by farmers are with harvesting, combining and transportation of crops, insect control, livestock management practices, weed control and theft. Dryland farmers are also concerned about declining soil fertility on their lands.

The perceived problems of the irrigation farmers show a different order of importance. Their problems in order of importance are the need for assistance with harvesting, combininig and transportation of crops, assistance with management practices of their livestock, theft, high cost of services, livestock not getting enough to eat, poor veld condition, low yields of beans, low profits from peas, low prices for maize and peas and insect control.

TABLE 9 Perceptions of farming problems by Qumanco farmers, 1985.

Problem area	Respondents					
	Irrigation (N = 21)		Dryland (N = 67)		Total (N = 88)	
	No.	%	No.	%	No.	%
1. Disagree with crops grown	3	14	0	0	3	3
2. No advantage in using seeds, fertilizers, etc. supplied by scheme	1	5	0	5	4	5
3. Dissatisfied with seedbed preparation	1	5	2	3	3	3
4. Decline in soil fertility	0	0	23	34	23	26
5. Dissatisfied with way planting is carried out	4	19	3	5	7	8
6. Difficult to keep crops weedfree	6	29	32	48	38	43
7. Difficult to control insects	7	33	51	76	58	66
8. Harvesting, combining and transportation to be provided	16	76	50	75	66	75
9. Dissatisfied with prices of						
(a) maize	7	33	15	22	22	25
(b) beans	5	24	16	24	21	24
(c) peas	7	33	14	21	21	24
(d) cabbage	6	29	14	21	20	23
10. Theft	10	48	26	39	36	41
11. Disagree with way inputs are made available	5	24	0	0	5	6
12. High cost of services	9	43	7	10	16	18
13. Low yields of						
(a) maize	2	10	20	30	22	25

TABLE 9 (continued)

Problem area	Respondents					
	Irrigation (N = 21)		Dryland (N = 67)		Total (N = 88)	
	No.	%	No.	%	No.	%
(b) beans	8	38	19	28	27	31
(c) peas	3	14	13	19	16	18
(d) cabbage	5	24	14	21	19	22
14. Low profits from						
(a) maize	2	10	19	29	21	24
(b) beans	5	24	17	25	22	26
(c) peas	7	33	13	19	20	23
(d) cabbage	3	14	11	16	14	16
15. Assistance with livestock management matters	12	57	39	58	51	58
16. Livestock not getting enough to eat	9	43	2	3	11	13
17. Poor veld condition	8	38	2	3	10	11
18. Have problems to get all the work done	0	0	21	31	21	24

Source: Survey data

The importance of livestock problems to about half the irrigation respondents should be noted. This is a field that does not get any attention from the management agent at present and the assistance received from the field staff of the Departement of Agriculture and Forestry seems to be inadequate.

The high cost of services rendered by the management agent is a problem to 43 per cent of the irrigation farmers of Qumanco. Apart from the fact that these farmers will have to get used to the high cost of crop production, it is also essential that ways and means be investigated to reduce these costs to the farmers.

.2 Technical aspects of crop production

With expansion of the irrigation scheme to Qumanco the present dryland farmers will be entitled to the input services presently rendered to Ncora farmers. An effort was therefore made establish farmers' views on various crop production services rendered by the management agent.

7.2.1 Crop selection

Each year a cropping programme based on profitability, marketability and the crop rotation needs of the scheme is worked out by the management agents. A package of services is rendered for the production of each of these crops and the irrigation farmers find it very difficult

not to conform. However, some of them complain about the cropping pattern and others try to grow additional crops in the lands and in tbeir homegardens. The question thus arises as to what crops the farmers would select if they had to make a decision on their own.

In the minds of the farmers, maize seems to be the most important crop to grow, but they prefer to grow it because it is the most useful crop to them and not because it is the most profitable one (Table 10). Suitability and ease of growing maize in the area are also more important factors than profitability. Profitability is more important to irrigation farmers possibly because they have surplusses for sale.

TABLE 10 Reasons why Qumanco farmers prefer to grow maize, 1985

Reason	Respondents					
	Irrigation (N = 21)		Dryland (N = 62)		Total (N = 88)	
	No.	%	No.	%	No.	%
Most suitable	18	86	43	64	61	69
Easy to grow	15	71	38	57	53	60
Most useful	19	91	48	72	67	76
Most profitable	17	81	24	36	41	47

Source: Survey data

When their preferences for alternative crops are considered (Table 11) one finds that dryland farmers

prefer to grow certain crops, while irrigation farmers may have other preferences. These preferences are not necessarily based on their perception of the profitability of these crops, but most probably on factors such as demand and usefulness. What is important is that the alternative crops preferred are food crops and not cash crops. It was found that only five per cent of the dryland farmers showed interest in growing cash crops such as gooseberries and asparagus. The risk factor (crops unknown to them) and social disapproval seem to be the main reasons for the lack of interest in these crops.

TABLE 11 Preference for crops other than maize among irrigation and dryland farmers of Qumanco, 1985.

Crop	Respondents						
	Irrigation (N = 21)		Dryland (N = 67)		Total N = 88)		Most Profitable (N = 88)
	No.	%	No.	%	No.	%	%
Cabbage	2	10	22	33	24	27	16
Potatoes	5	24	14	21	19	22	1
Beans	2	10	13	19	15	17	20
Peas	3	14	12	18	15	17	3
Vegetables	0	0	7	10	7	8	0
Pumpkins	3	14	3	5	6	6	1
Wheat	1	5	1	2	2	2	0

Source: Survey data

This discussion brings forward a very important policy issue which may eventually have an influence on farmer participation in scheme matters. On the one hand it is easier for the management agent to select a few crops and to concentrate on the production of these. On the other hand subsistence farmers will prefer to grow crops for home use and local bartering to a point where surplus products have to be marketed elsewhere. Entering the market economy usually leads to further adjustments which may be easier to accept if basic needs are satisfied.

7.2.2 Seedbed preparation

Because of the regular absence of able bodied males and the lack of machinery and equipment in the Qumanco administrative area, 61 per cent of the respondents are looking to the Ncora Irrigation Scheme for the provision of mechanization services. About one in five (23 per cent) mentioned other farmers, private contractors and doing the work themselves. Against this background it is not surprising that 82 per cent of the respondents from dryland areas were satisfied with the way seedbed preparation is done at the scheme.

Because of the problem of soil compaction on the fine textured soils of Ncora a system of minimum tillage and the use of tyned implements for seedbed preparation were introduced by the management agents. This concept is still new to the Qumanco dryland farmers and 72 per cent of tbe respondents showed preference for the mouldboard plough which they are used to. New forms of seedbed preparation should therefore only be introduced once the farmers are convinced of the benefits thereof.

7.2.3 Crop establishment

At the irrigation scheme input such as seed and fertilizer are provided by the management agent as well as carrying out ploughing for farmers. Planting is carried out irrespective of whether the farmers are present or not. The cost of seedbed preparation and planting is then debited to the account of each farmer.

Four out of five respondents (78 per cent) saw an advantage in using seed supplied by the management agent. According to them risks are decreased (40 per cent), production is increased (24 per cent) and the difficulty finding inputs in the rural areas is reduced (10 per cent). These respondents also felt that seeds, fertilizers and agricultural chemicals should be provided to dryland farmers as well, but only 50 per cent of them were satisfied with the way it is presently

carried out. It seems that a large number of the dryland farmers would rather buy the inputs and use them at their own discretion.

When asked how they would plant various crops if they had to do it on their own, only 12 per cent of the respondents indicated that they would use a tractor with planter, while about half of them would plant by hand or by ox-drawn planter (Table 12).

TABLE 12 Planting methods for various crops preferred by the farmers of Qumanco, 1985. (N = 67)

Method	Maize		Peas		Beans	
	Respon-dents	%	Respon-dents	%	Respon-dents	%
By hand	11	17	14	21	10	15
By oxplanter	23	34	8	12	22	33
By tractor planter	9	13	8	12	8	12
No reply	24	36	37	55	27	40
TOTAL	67	100	67	100	67	100

Source: Survey data

Planting time is an important aspect of crop production that needs to be considered each year. Geyer (1971: 113) came to the conclusion that it would be better not to plant maize in nearby Fingoland during October, but rather in November, to avoid the mid-season drought in February. However, late planting towards the end of

November can result in heavy stalkborer infestations.

The management agent prefers to plant maize in September/October and beans during November/December and peas during May. From the survey it was established that the respondents prefer to plant maize in October (37 per cent) and in November (18 per cent). They prefer to plant beans in November (34 per cent) and in December (9 per cent), although 12 per cent preferred to plant beans in October. There was some uncertainty about the best planting time for peas (72 per cent), but those who responded preferred April (13 per cent) and May (9 per cent). Late planting of crops will therefore be met with complaints because according to the experience of the dryland farmers it increases the risk of crop production. On the other hand, work scheduling and delays due to unfavourable weather conditions and machinery breakdown often forces tbe management agent towards late planting for at least some irrigation farmers. An appropriate system of crop establishment should therefore be worked out between the management agents and the farmers.

7.2.4 Crop protection

Weed infestation and the occurrence of pests and diseases on the irrigation scheme were a production hazard at the time of the survey. An effort was therefore made to establish whether the dryland farmers

were aware of the problem and prepared for crop protection measures.

About half the respondents (43 per cent) confirmed that they find it difficult to keep their crops weed-free. The most difficult crops to keep weed-free are peas (37 per cent) and beans (21 per cent). When asked to rate the seriousness of the weed problem half of the farmers (51 per cent) rated the situation as serious to very serious. The respondents indicated that the management agent should do more to assist dryland farmers with weed control. They claim that the management agent can use more effective methods (37 per cent) and can overcome the manpower problem more easily (15 per cent).

Two out of three respondents (66 per cent) find it difficult to control insects themselves, mainly because of the methods and procedures involved. The majority (80 per cent) could identify some of the insects attacking maize and beans, but on cabbage 58 percent and on peas 85 per cent were apparently not clear on which insects were attacking their crops. More than half the farmers (59 per cent) were of the opinion that the best way to control insects would be to rely on the management agent. Only 30 per cent of the respondents preferred to control insects themselves.

Only a few farmers reported that they had seen plant

diseases on maize, peas, beans and cabbage during the previous season. When asked to name some of the diseases which occurred, only a few were able to do so, even in Xhosa. This was certainly not because of lack of diseases, because various fungus diseases were prevalent.

The picture that emerges is that where crop protection measures require modern technoloy, the management agent will have to assist until farmers have sufficient training and experience to do it themselves.

7.2.5 Harvesting and marketing

Because of the diversity of crops practiced at Ncora Irrigation Scheme there is an urgency every year to get the crops off the land and to get the next crop planted. Combines are therefore used to harvest the grain crops as fast as possible. However, delay due to unfavourable weather conditions and breakdown of machinery is often experienced. Heavy losses sometimes occur, especially with winter crops ripening during the rainy period in October and November.

On the harvesting of crops a difference of opinion was found among the respondents. It seems that more respondents favour harvesting their crops themselves

than using a combine. They complained about the cost factor and the risk involved in waiting for the machines which are often poorly adjusted and consequently waste grain. The discomfort of harvesting by hand under conditions of labour shortage and the saving of time are arguments quoted by those in favour of combines. The feasability of using combines on small irrigation plots should be reassessed by the management agents.

The farmers also have problems with the transportation of crops and crop residues since only a few of them have sledges, while ox-carts and wagons are rarely seen. Hiring a truck or tractor-trailer combination from the management agent helps them to overcome this problem. The dryland farmers would like this service to be extended to them. The introduction of transportation services is possibly a field where entrepreneurship should be encouraged. Transport services can be contracted out to individuals, but farmers can also be assisted financially to obtain their own means of transport in the form of carts and tractors with trailers.

7.2.6 Conclusions on crop production

Regarding the expansion of the irrigation scheme in Qumanco it appears that farmers should be allowed to

grow food crops of their own choice for home consumption. For market-sensitive crops an outgrower system involving interested producers may have to be introduced. Changes in practices of crop cultivation should not be too drastic and proper demonstration and training is essential. Sophisticated practices considered to be essential in the interest of all farmers should be done by the management agents until the farmers are capable of taking it over. Use of appropriate technology and introduction of entrepreneurship should be reconsidered by the management agents.

7.3 The livestock situation

Livestock is a major component of agricultural production in Transkei and even at Qumanco herds of cattle and flocks of sheep can be observed grazing on lands and veld that will eventually be irrigated. According to the information supplied by the respondents of Qumanco, income from dryland and pastoral farming is significantly correlated with total household income ($P < 0.01$), sheep kept ($P < 0.01$) and pigs kept ($P < 0.01$). However, cattle and goats are also kept by some farmers and it can be expected that when the scheme is expanded they will try to protect their interests.

7.3.1 Purposes for which livestock are kept

In African society, cattle play important social, spiritual and economic roles and various purposes for which cattle may be kept have been identified by Bembridge (1984: 381-382). It seems that with irrigation farmers, the emphasis is on milk and meat production, while dryland farmers put the emphasis on draught power and milk. With sheep the emphasis is equally on meat and wool production, while selling of sheep is of a lower order. Goats are kept by fewer people and the emphasis is on meat production and ceremonial purposes. Pigs are kept by 76 per cent of the respondents for both slaughtering and selling. With dryland farmers the emphasis is more on slaughtering than on selling of pigs. Poultry are kept by 85 per cent of the respondends and the emphasis is on slaughtering and selling of birds. Egg production was also mentioned by some dryland farmers.

It seems then that livestock is mainly kept to supply the local demand for livestock products, but mainly for meat, the intake of which seems to be rather low. Commercial livestock farming with sophisticated marketing as mentioned in the Development Plan for Ncora Irrigation Scheme (Loxton et al., 1978: 130-131) is of less importance to the dryland farmers.

7.3.2 The role of livestock in the farming system

For the purpose of this paper only the relationship between livestock kept and other socio-economic factors that may influence participation patterns are discussed.

A positive correlation was found between cattle kept and sheep kept ($P < 0.01$), implements and tools owned ($P < 0.05$) and standard of living ($P < 0.05$). It is therefore possible that cattle owners have a higher socio-economic status in the community which, according to Bembridge (1984: 159), correlates with farming knowledge, adoption of farming practives, managerial aptitude, contact with information sources and progressive attitudes. Cattle owners of Qumanco were found to practise better weed-control, have more knowledge of farming costs but have less favourable attitudes towards foreigners. With an average herd size of nine head of cattle and actual herds varying between one and 28 head of cattle it is possible that some of the cattle owners will be interested in commercial dairy farming at the scheme.

Sheep are normally kept by younger farmers ($P < 0.05$), by men with higher levels of education ($P < 0.01$), who have better forms of transport ($P < 0.01$). They normally enjoy a higher living standard ($P < 0.01$), a higher farming income ($P < 0.01$) and have more implements and

tools available ($P < 0.01$). The number of sheep kept was also correlated significantly with the numbers of cattle kept ($P < 0.01$), goats kept ($P < 0.01$), pigs kept ($P < 0.05$) and poultry kept ($P < 0.05$). With an average flock size of 32 sheep per sheep farmer it can be concluded that some of the sheep farmers of Qumanco are already commercial farmers and should be treated as such in the future development of the irrigation scheme.

The number of goats kept were correlated with the number of sheep kept ($P < 0.01$), but these farmers have large family sizes ($P < 0.01$) and a distrust in foreigners ($P < 0.05$). It seems that because of their larger family units and apparent lack of business orientation these farmers can best be accommodated on standard irrigation plots where the women can attend to food production. Special attention will have to be paid in extension efforts towards creating a more positive attitude among them.

The number of pigs kept correlated with the number of sheep kept ($P < 0.01$), higher education of the husband ($P < 0.01$) and a higher farming income ($P < 0.01$). Since pig farming is normally considered by the Xhosa people as part of the wife's duties, the number of pigs kept may be used as an indicator to identify the more industrious wives. It may be possible eventually to upgrade such households towards commercial farming, but

initially they would be candidates for standard irrigation plots.

Poultry is normally kept by women with a higher standard of living ($P < 0.01$), whose health situation does not allow heavy work on the lands ($P < 0.05$). Such households may keep more sheep ($P < 0.05$), have better means of transport ($P < 0.05$) and have more implements and tools available ($P < 0.05$). If these households have sufficient labour they may be allocated a standard irrigation plot, but if not, it may be better to assist them to improve their home garden and/or to start some cottage industries to supplement their income from poultry.

7.3.3 Perceived benefits of integrated farming systems

An effort was made to ascertain farmers' perceptions about the benefits of livestock farming integrated with crop production under irrigation. While seventy per cent of the dryland farmers thought that livestock farming would be of benefit to crop production, only 57 per cent of irrigation farmers at Qumanco still held this idea. This may be because of the cropping system prescribed by the management agent, but most probably it is because of the realities of irrigation farming where more work and regular attention to the lands are required.

Those that were positive about the integration of livestock and crop farming mentioned the advantages of oxen for cultivation, the availability of manure for use on the lands and the use of wastes as fodder. Some also referred to the practice of slaughtering a pig for work parties on the lands. However, looking at their future plans, one finds that 55 per cent of the dryland farmers would like to fence in the home garden while 25 per cent would like to attend to livestock improvement. Those with irrigation plots merely indicated that they would like to produce vegetables and flowers in their home gardens.

Because of the subsistence nature of the households represented by the respondents, food production should receive more attention. A wider variety of food crops and the possible integration of small scale livestock enterprises with crop production should be given attention. The alternative of producing for a market economy can only be achieved on economically viable farming units by experienced and well trained farmers. A distinction between commercial farming units and small scale subsistence units should therefore be made and appropriate training and extension be provided to each group.

7.3.4 Adoption of livestock practices

Although livestock farming is playing an important role at Qumanco, it can only make its full potential contribution towards improving living standards if restrictions are identified and attended to. It was not possible to deal with all aspects of livestock management in the survey. Responses were obtained regarding internal parasite control, disease control, supplementation of minerals and proteins and provision of sufficient roughage (Table 13). Taking the responses at face value it is obvious that considerable improvement of disease and parasite control as well as nutritional aspects can be achieved. Livestock owners seem to be aware of this and 58 per cent of respondents actually indicated that the management agent should assist with these problems. The condition of the veld seems to be largely overrated by about two thirds of the dryland farmers (64 per cent) while the irrigation farmers do not share in this optimism. Although a fair amount of concern about the veld condition was shown by 55 per cent of all the respondents it is an aspect that should be given timely attention in order to prevent the degradation of physical resources around the irrigation scheme.

TABLE 13 Adoption of livestock practices as reported by Qumanco farmers, 1985

Practise	Farmers					
	Irrigation (N = 22)		Dryland (N = 67)		Total (N = 88)	
	No.	%	No.	%	No.	%
Dosing for internal parasites	9	43	20	30	29	33
Inocculation against quarter evil	7	33	20	30	27	31
Use of mineral licks	3	14	8	12	11	13
Use of protein and energy licks	3	14	1	2	4	5
Provide sufficient roughage	4	19	56	84	60	68

Source: Survey data

7.3.5 Conclusions on livestock production

It seems that there is scope for the integration of livestock practices with crop farming at the irrigation scheme and that, as a first step, attention must be given to some management practices. Timely action is also needed to prevent a negative ecological impact on the surroundig area of the irrigation scheme as only about half the dryland farmers are concerned about the conditions of the natural grazing. Livestock improvement programmes of a very simple nature can be introduced to improve livestock farming for self sufficiency and local trade. The aim should be to assist farmers with farming problems without doing

things for them and making them too dependent on the management agents.

.4 Economic factors

7.4.1 Credit

At the time of the survey, seasonal credit in terms of the crop production package of the management agents could not be repaid by a growing number of farmers because of

(i) crop failures of beans and peas as a result of diseases and adverse weather conditions,

(ii) poor yields of maize as a result of hail damage in some parts of the irrigation scheme and

(iii) low prices due to marketing problems with cabbage.

The accumulation of debt by some farmers at the Ncora Irrigation Scheme was of considerable concern to both farmers and the authorities.

It was found that the Qumanco farmers were not really aware of the mounting debt load of some farmers on the Ncora Irrigation Scheme. Only one in five (19 per cent) of the respondents indicated that, in their opinion, farmers today have more debt than when the scheme was

started. Increased cost of production was blamed for this situation rather than reduced yields. This finding was predictable because the dryland farmers do not have a clear idea of production costs and were accustomed to low yields. Provision of credit facilities to subsistence farmers should therefore be carefully monitored with the expansion of the scheme to Qumanco.

7.4.2 Income patterns

Of those respondents who were allocated irrigation plots 52 per cent indicated that their income was increased by the irrigation scheme. Those respondents with dryland plots indicated either that their income remained the same (38 per cent) or that their income decreased (27 per cent). The latter is mainly due to the resettlement of some families in residential areas without reallocation of arable land. This situation resulted from a lack of funds for the expansion of the irrigation scheme in Qumanco administrative area.

When the wives alone were asked if they were satisfied with the income from the plot 66 per cent with irrigated plots confirmed their satisfaction. In the case of dryland farmers it was only 44 per cent. However, 38 per cent of the wives of dryland respondents preferred not to reply to the question. It was found in any case

that 80 per cent of all the wives were concerned about money matters for the household.

7.4.3 Income aspirations

Bembridge (1984: 202) found in Transkei that a high level of income aspiration was significantly related to level of education, motivation, favourable attitudes to cooperation and to land, size of holding, adoption of cropping practices and farm output, managerial aptitude, standard of living and socioeconomic status. Because farmers differ in the value they place on income levels, education and improved farming, it is important for extension and development workers to take such indicators of aspirations into account. It was found that, on average, the dryland farmers of Qumanco aspired to an income of R4 133 as against an average of R2 700 for irrigation farmers. The higher income aspirations of some of the dryland farmers may be ascribed to a higher socio-economic status associated with livestock ownership. Income aspirations correlated positively with farming income as well as household income ($P < 0.05$). It can be expected that these farmers will respond by applying pressure for larger farming units and higher farming income from irrigation plots. <u>The establishment of commercial farming units should therefore receive a high priority</u>.

7.4.4 Food production

It was shown that the respondents of Qumanco prefer food crops to cash crops. When asked if farmers should grow food crops at home 82 per cent confirmed but only 44 per cent were actually growing food crops in their home gardens. Lack of fencing for the home gardens and lack of irrigation water were important reasons for not growing food crops at home. However, because of the scheme, food is more readily available and the importance of food production is reflected in many replies to the questionnaires. To those who are allocated garden plots or foodplots some form of assistance may be necessary, but it should not be necessary for the management agents to take over their production function. Women's clubs should rather be promoted for utilisation of and control over foodplots.

7.4.5 Conclusions on economic factors

The available data suggest that a clear distinction be made between economic farming and subsistence food production. There seems to be an urgent need for more opportunities to increase income from farming and other sources at Qumanco.

7.5 Perception of project objectives

7.5.1 Impressions about Ncora project

The Ncora Farm was called the hub of the wheel by the consultants who designed the Ncora Irrigation Scheme. The Ncora Farm is providing services to farmers which include production inputs, mechanization services, harvesting and marketing. The funds for these services are obtained from commercial farming on an estate basis and from recoveries from farmers. When asked whether they agree that Nocra Farm is essential for the success of the scheme only 52 per cent of the respondents from Qumanco were in favour, while 41 per cent were uncertain. More farmers with irrigation plots tended to agree that the Ncora Farm is essential for the scheme. However, while dryland farmers referred to better land-use, the irrigation farmers referred to manpower development and the provision of improved technologies as the main purposes of the Ncora Farm.

It would be possible to replace the estate farm with the so-called Group Farm. In this case the management agent is farming on behalf of some farmers on part of their land allocation. This system was designed to assist landright holders who are struggling to work their lands properly due to old age and poor health. The lands are grouped and farmed as an estate farm with a Group Farm

Committee to give directions to the Management Agent.

It was found that 62 per cent of the respondents with irrigated plots considered the Group Farm a good idea as against 15 per cent of the dryland farmers. Seventy eight per cent of the dryland farmers were uncertain about the Group Farm concept. It was found that only a few of the dryland farmers had any idea of how the Group Farm is supposed to work and what its purpose was. It seems that this form of collective or cooperative farming will require further explanation and mutual agreement among land right holders for successful operation.

In conjunction with the Group Farm, participants were allocated food plots ranging from 0,25 ha to 0,33 ha. Package programmes for maize and cabbage production were originally offered for these plots. Participants could actually satisfy their household needs of maize and in addition have a cash income from cabbage and the Group Farm dividend. However, only 25 per cent of the Qumanco farmers were positive about this arrangement and about 60 per cent did not take any positive or negative stand on this form of land-use. Since more irrigation farmers were in favour of food plots (42 per cent) it seems that dryland farmers need more information about this form of land-use.

The standard allocation of land at Ncora Irrigation Scheme is one hectare for which package programmes for maize, peas and bean production were also originally offered. In this case it was found that 32 per cent of the respondents were positive about 'traditional plots' as they are called at the scheme. Two out of three irrigation farmers (67 per cent) were found to be positive about this form of landuse, while the same proportion of dryland farmers preferred to take a neutral stand.

An important objective of the Ncora Irrigation Scheme is to establish so-called commercial farmers. For this purpose a number of five hectare units were set aside and facilities for dairy farming were developed on them. A selection committee was formed and a package programme designed for commercial dairy farmers. Although it was difficult to find suitable candidates, a total of 21 commercial farmers were on site at the time of the survey. It was found that 69 per cent of the respondents from Qumanco preferred not to reveal their attitudes toward commercial forms, while the remainder were equally distributed between positive and negative.

TABLE 14 Types of plots preferred by Qumanco farmers, 1985.

Type of plot referred	Irrigation farmers (N = 21)		Dryland farmers (N = 67)		Total (N = 88)	
	No.	%	No.	%	No.	%
Commercial farm	0	0	5	8	5	6
Traditional plot	12	57	6	9	18	21
Foodplot only	1	5	1	2	2	2
Foodplot with group farm	0	0	0	0	0	0
No reply	8	38	55	82	63	72

Source: Survey data

The majority of irrigation farmers at Qumanco preferred to have a traditional plot. This is mainly because a one hectare plot is large enough to produce sufficient food for household purposes and can be managed with relative ease by the rural family (Loxton et al., 1984, p.). None of the irrigation farmers in the sample indicated that they would rather have a commercial farm than the traditional plot or foodplot allocated to them. Among the dryland farmers only five respondents indicated that they would prefer a commercial farm. Unfortunately, land allocation seems to be an emotional issue among these farmers as 38 per cent of the irrigation farmers and 82 per cent of the dryland farmers preferred not to reply to the question. Apart from possible fear about prejudice in land allocation

which seems to prevail among many farmers at the scheme, it is also possible that many land right holders were not realy enthusiastic about irrigation plots. Sixty five per cent of the respondents were older than 50 years of age and irrigation farming is associated with hard work. It was found that 55 per cent of the wives in the sample were actually satisfied with the dryland plots they have.

The situation regarding their farming preferences becomes more clear when the motivation of farmers for having a plot at the scheme is considered (Table 15). Food production for household consumption was the most important motivating factor to those who did reply, but maintaining their landright as a form of security was also very important. Interest in farming and obtaining income from the irrigation plot were only mentioned by 14 per cent of the respondents. Again 63 per cent of the dryland farmers preferred not to reply, probably because of fear that they may loose their landrights or because they were not realy interested in irrigation farming.

TABLE 15 Motivation for having a plot at the irrigation scheme as indicated by Qumanco farmers, 1985

Motivation	Respondents					
	Dryland (N = 67)		Irrigation (N = 21)		Total (N = 88)	
	No.	%	No.	%	No.	%
His right	2	3	12	57	14	16
Interest in farming	6	9	1	5	7	8
Food production	15	22	5	24	20	23
Income	2	3	3	14	5	6
No reply	42	63	0	0	42	48

Source: Survey data

Against this background it is interesting to note that only 52 per cent of the respondents stated that their expectations on the Ncora Irrigation scheme were met. About 38 per cent of the respondents were not in favour of the scheme when it was started, but at the time of the survey 75 per cent opposed the idea of allowing this situation to return to what it was before the scheme was started. The majority felt that such a move would result in food shortages and less opportunities for earning an income locally.

The impression gained is that the respondents were not really enthusiastic about any of the farming models introduced at the scheme. They lack information about them and are more concerned about utilizing their land

rights for food production. Only 14 per cent of the present landright holders could perhaps be developed into commercial farmers.

7.5.2 Knowledge gained

About half the respondents (53 per cent) indicated that there is a need for adult education at the scheme, but they were rather vague about the kind of training required. Only 52 per cent of the irrigation farmers indicated that they received some training from the scheme. The management agency did not attend to the training of the dryland farmers because in terms of their contract they were not expected to do so. Only 15 per cent of the dryland farmers indicated that there is a need for training from the scheme.

From Table 16 it is obvious that Qumanco farmers do not have a good knowledge of fertilizers, plant diseases and the insects that attack peas and cabbage. Forty per cent had some idea of the type of fertilizer to be used on maize, but they could not give an indication of the quantity to be used. More than 70 per cent could name insects which attack maize and beans and 40 per cent could name those attacking cabbage. Only one third of the irrigation farmers had some idea of bean diseases.

TABLE 16 Awareness of fertilizers used and of the occurrence of insects and plant diseases, 1985.

Knowledge Item and crop	Irrigation farmers (N = 21)		Dryland farmers (N = 67)		Total (N = 88)	
	No.	%	No.	%	No.	%
1. Fertilizer: Type used						
(a) maize	9	43	27	40	36	41
(b) beans	5	24	1	2	6	7
(c) peas	5	24	0	0	5	6
(d) cabbage	4	19	2	3	6	7
2. Fertilizer: quantity used						
(a) maize	1	5	4	6	5	6
(b) beans	1	5	0	0	1	1
(c) peas	1	5	0	0	1	1
(d) cabbage	0	0	0	0	0	0
3. Insects on						
(a) maize	19	90	59	88	78	89
(b) beans	8	38	54	81	62	70
(c) peas	4	19	10	15	14	16
(d) cabbage	7	33	28	42	35	40
4. Plant diseases observed on						
(a) maize	3	14	20	30	23	26
(b) beans	7	33	11	16	18	20
(c) peas	2	10	4	6	6	7
(d) cabbage	1	5	7	10	8	9
5. Plant diseases named on						
(a) maize	0	0	3	4	3	3
(b) beans	6	29	4	6	10	11
(c) peas	0	0	0	0	0	0
(d) cabbage	0	0	0	0	0	0

Source: Survey data

It can therefore be concluded that the dry land farmers have a poor knowledge of important aspects of crop production and are not aware of their own training needs. Any development plan for expansion of the scheme should concentrate on training and agricultural extension.

7.5.3 Customs and beliefs

Ten per cent of the respondents complained that the management agent is acting contrary to the wishes and customs of the people. A further 25 per cent were undecided about this aspect. These complaints mainly originated in the difference of values and beliefs of the rural people and the expatriates working for the management agent. Indications are that many of these complaints revolved around work ethics and aspects of traditional culture.

It was found that 16 per cent of the respondents considered the "hlonipa" custom (where the wife has to refer to the husband in indirect speech) as necessary even when negotiating with the management agent. This would certainly affect communication between farmers and management agency since male absenteeism affects as much as 60 per cent of the households. Thirty per cent of the respondents complained about communication problems as a result of this custom.

Dryland farmers (68 per cent) consider a hailstorm as a visitation from above and believe that for some time after such a hailstorm one should stay away from the affected lands. This belief can have serious repercussions should a hailstorm hit the crops during the growing season when weeds are growing rapidly.

Wedding and initiation ceremonies were mentioned by the respondents as the main festivities in the rural areas. During these ceremonies custom and mutual obligations play an important role. It was found that 55 per cent of the respondents did not consider urgent work in the lands as a valid excuse for staying away from such ceremonies. Staying away from these ceremonies would be regarded as disrespect for the ancestors and the customs of the tribe and 86 per cent believed that this would bring wrath on the culprit and his family.

The position of the eldest son in the family is of special importance in Xhosa culture. He is the natural heir and the person destined to take up a leadership position in the extended family. It was found that 70 per cent of the respondents would be very concerned should the eldest son decide to settle permanently in the city. Pressure would therefore be exerted on the management agents to employ such persons or to refrain from dismissing them. However, the importance of education is well recognised and 77 per cent of the

respondents of Qumanco admitted that a better educated person should get preference for employment rather than a member of the clan.

From the above findings it can be concluded that customs and beliefs still play an important role in everyday life at Qumanco.

In a situation where rational decisions have to be made about irrigation farming and management aspects it is essential to obtain active participation in decision making and evaluation of progress. Rather than pressure from outside (coercion) the objective should be to create pressure for performance from within groups. Regarding farming operations, these should be organised in such a way that the individual can neglect key aspects without serious financial implications (small subsistence units) or it should be such that the commercial nature of operations will enforce rational decision making.

7.5.4 Conclusions on project objectives

There seems to be uncertainty among dryland farmers about the objectives of the management agent with regard to land-use matters. The role of Ncora Farm as a central service centre is not fully understood as

dryland farmers perceive it to be a production unit. The impression is gained that they are not really enthusiastic about the various farming models introduced at the scheme. Farmers lack information about these farming models and are more concerned about utilizing their land-rights for food production. While training is emphasized in the development plans for the scheme, the data suggest that more attention need to be given to this aspect. It was found that the farmers lack information on important aspects of crop production. Even if such information is provided it can be expected that customs and beliefs will play a role in the adoption thereof.

7.6 Interest in participation

Staff members of the management agent complained that many farmers at the Ncora Irrigation Scheme do not fully participate in scheme activities. Some do not attend meetings held to discuss production programmes or they do not turn up when important activities like seedbed preparation, planting, or weed and insect control are given attention. The question is often asked whether the management agent should carry on doing these things for farmers or whether it should be done on request only. In order to cast more light on this question an effort was made to determine whether farmers have the means to do some of the work themselves. According to Table 17 it is

thoroughly

obvious that, apart from hoes and spades, the dryland farmers generally lack the implements needed to cultivate the lands themselves.

TABLE 17 Possession of implements and tools by Qumanco farmers, 1985.

	Irrigation farmers (N = 21)		Dryland farmers (N = 67)		Total (N = 88)	
	No.	%	No.	%	No.	%
Hoes	21	100	54	81	75	85
Spades	17	81	49	73	66	75
Garden rake	4	19	12	18	16	18
Garden fork	5	24	5	8	10	11
Sledge	6	29	19	28	25	28
Ox cart	4	19	2	3	6	7
Ox drawn planter	5	24	20	30	25	28
Ox drawn cultivator	11	52	34	51	45	51
Tractor drawn trailer	1	5	1	2	2	2
Tractor drawn plough	1	5	1	2	2	2

Source: Survey data

Because of lack of implements and tractors (Table 17) farmers of Qumanco are looking to the management agent for the supply of mechanization services, inputs, crop protection, harvesting and transportation.

From table 18 it can be seen that more services are required

than those offered by the management agent at present. However, this does not mean that these farmers do not want to do things for themselves. In respect of almost all the services listed, there were some farmers who indicated that they would like to do it themselves. It is a matter of getting assistance to help them break out of the web of poverty and their lack of knowledge and skills. On some issues like

TABLE 18 Services required from the management agents by Qumanco Farmers, 1985.

Service	Irrigation farmers (N = 21)		Dryland farmers (N = 67)		Total (N = 88)	
	No.	%	No.	%	No.	%
Provision of production inputs	20	95	49	73	69	78
Mechanisation services	16	76	48	72	64	73
Weed control	12	57	36	54	48	55
Insect control	18	86	34	51	52	59
Disease control in crops	20	95	52	78	72	82
Harvesting, combining, transport	16	76	50	75	66	75
Marketing	14	67	56	84	70	80
Assistance to livestock farmers	12	57	39	58	51	58
Development for community needs	9	43	35	52	44	50

Source: Survey data

weed control, livestock practices and community needs it is a matter of providing extension officers and community development officers with improved techniques to assist the farmers. Rather than a bureaucratic or paternalistic approach the farmers should be encouraged to participate in planning, implementation and evaluation of the services rendered by the management agent. Once methods and techniques have been mastered and capital accumulated it can be expected that entrepreneurs will emerge.

There is a real danger that services to farmers will become institutionalised and that a "dependency syndrome" will develop to the extent that privatisation and development of entrepreneurship will be difficult to achieve. From Table 18 it is obvious that much can be done to encourage farmers towards self help by encouraging them to obtain basic tools and equipment for their farming activities. The right mix of appropriate technology for these farmers still has to be worked out.

7.7 Perception of institutional framework

7.7.1 Role of consultants and management agents

It was found that none of the respondents from Qumanco were aware of who the real planners (consultants) of the scheme are. About half the irrigation farmers and seven in ten dryland farmers in Qumanco had a feeling that the planners do not really understand their situation. This

perception can have a negative influence on the acceptability of programmes proposed by the consultants and management agency.

On the other hand, the staff of the management agency are on site and known. Two thirds of the respondents at Qumanco indicated that the management agency is acceptable to them. About half (53 per cent) of them indicated that they are satisfied with the way the scheme is run by the management agency, while a third was undecided. This situation does not arise merely because of a distrust in expatriates, but relates to the yields that farmers can expect from participation and the risks involved. About half the respondents indicated that they have trust in the expatriates because of their competence, trustworthiness and client orientation.

It can therefore be concluded that the consultants should do more to localise planning and that the performance and conduct of some of the staff of the management agency should be assessed in terms of their acceptability to the farmers as well. The emphasis should shift from implementation of the consultants plans to assistance of the farmers with implementation of their own plans.

7.7.2 The extension services

Ninety per cent of the irrigation farmers in the sample indicated that they were satisfied with the information obtained from scheme officials and 40 per cent of the dryland farmers had a similar impression. This was tested against their contact with and understanding of the role of the extension services at the scheme.

None of the dryland respondents from Qumanco paid the scheme headquarters a visit during the year preceding the survey. The irrigation farmers on the other hand reported that 80 per cent of them visited the scheme headquarters during the previous year. However, sixty per cent of them indicated that they seldom visit the scheme headquarters. These visits were probably for administrative reasons only.

Services are rendered from the four scheme subheadquarters (service centres) which are conveniently placed in landblocks and are usually close to the relevant residential areas. As services are not rendered to dryland farmers it is not surprising that only one dryland farmer paid a visit to the subheadquarters of Qumanco during the previous year. It is, however, a matter of concern to note that 24 per cent of the irrigation farmers indicated that they seldom visit the scheme subheadquarters. One third of the irrigators (33

per cent) could also not name the officer in charge of the scheme headquarters, while 57 per cent could not name the extension officer for irrigation. Only two dryland farmers could name their extension officer. Even more disturbing is that only 29 per cent of the irrigators could name the production supervisor who organises mechanisation services and inputs for the farmers. These findings may reflect an inability on the part of the farmers to discriminate between the various posts, but it could also mean that the relevant officers are not held in high esteem by the farmers. It was found that farmers did not have a clear perception of the work done by the extension officer and the production supervisor. Some farmers also had strong feelings about the suitability of the field staff serving them.

These are matters that should be attended to by the Project Manager and senior staff. On the other hand, it was also found that about half the irrigators (48 per cent) did not attend meetings regularly at the scheme sub-headquarters or in the lands as organised by the field staff. In this respect, cognisance should be taken of the view of 43 per cent of the Qumanco irrigators that there are already too many meetings at the scheme, while 42 per cent of the dryland farmers are of the opinion that the number of meetings they have are sufficient.

There seems to be ample scope for improving the image of extension at Qumanco and for introducing programme planning in extension activities. The present system whereby field staff are merely trying to get as many persons as possible to participate in the cropping programme does not satisfy the farmers and does not create a feeling of involvement among them.

7.7.3 Perception of farming needs

During interviews the farmers emphasized the need for short term benefits such as the provision of services and inputs at minimum costs (Table 18), increased yields and lower risks. The provision of information and training does not seem to be rated highly by the majority of farmers. Not only do farmers demand more services from the management agent, but they also demand more services from the government departments. The persons supporting self-help and local organisations seem to be in a minority. It seems that a dependency syndrome is developing fast which may jeopardise the national objective of creating small scale commercial farming units. This is an aspect to be addressed by planners and policy makers.

The impression is easily gained that farmers show little farming initiative and that they want to be spoonfed all

the way. Initially, this may be true. As subsistence farmers, they are the victims of their environment and few are successful in breaking through the constraints to farming success. When a project is established with seemingly unlimited resources of capital, know-how and skills, the response to fully utilise such facilities is natural. However, people soon realise the costs involved and start to rationalise their behaviour.

7.7.4 Perception of development needs

Needs other than agricultural production have to be developed in the community according to 62 per cent of the respondents. The most important issues that need attention are the provision of clean domestic water, improvement of the facilities for health care, as well as better roads and bridges. Some dryland farmers also complained about the shortage of firewood. Half the respondents (50 per cent) felt that the management agents should play a role in developing these facilities because they have the capacity to make a technology input. It was also felt that the Departments of Agriculture, Health, Education and Works and Energy should play a more important role in community affairs.

When asked to name the private organisations which should play a more important role in community affairs,

65 per cent of the respondents did not reply. The Transkei United Women's Organisation (TUWO) were referred to by the majority of respondents and to a lesser extent also the Zenzele movement. Organisations where males play a more important role were seldom referred to. It seems that men are getting sufficient satisfaction from working through the tribal authority and do not have an explicit need for working through other private organisations. Women, on the other hand, do not have this kind of satisfaction from participating in the tribal structure. Sixty two per cent of the respondents mentioned that women should play a more important role in the decision making processes at the scheme. Through their own organisations women would have more confidence to exert pressure for community needs in a patrilinial society. It should also be realised that agricultural development without attention to the perceived community needs will certainly not satisfy the people of Qumanco.

7.7.5 Role of farmer committees

In terms of the development plan for Ncora Irrigation Scheme two kinds of farmer committees were to be established by the management agents. For day to day operations a consultative committee that would meet on a weekly basis had to be established. For planning and

policy decisions a management committee had to be established.

The consultative committee for Qumanco irrigation farmers seems to be fairly active and the farmers are getting above average yields from maize. According to the officer in charge of the village subheadquarters there were eight members on the committee which meets once every fortnight. At these meetings the committee is informed about operations and after deliberate discussions the committee would call a meeting of farmers to deliver the message. This committee is assisted by the extension officer attached to the village subheadquarters. However, it was found that only 52 per cent of the respondents regularly attended these meetings. Similar committees for dryland farmers do not exist at present.

It was found that the management committee for irrigation farmers were meeting rather irregularly, usually once every six to eight weeks. Initially, a joint meeting was held with farmer representatives of Ncora and Qumanco, but on the insistence of the Qumanco farmers a separate management committee for Qumanco was established. The patten of discussion at these meetings is usually characterised by accusations by and demands from farmers and explanations by the management agents.

Against this background respondents were asked whether they are satisfied with the management committee. Fifty two per cent of the irrigation farmers indicated that they were satisfied with the management committee. The general complaints were that there is inadequate leadership and coordination at these meetings. There is at present no management or coordinating committee for dryland farmers

A central liaison committee was established by the management agents in an effort to deal with some farmer complaints before they reach the management committee. This committee consists of farmer representatives from the various farmer committees at the scheme. However, only 29 per cent of the irrigators from Qumanco responded positively about the central liaison committee. Complaints about this committee seem to revolve around differing group standards between farmers and staff of the management agents as well as the pattern of communication. About half the farmers (47 per cent) suggested that this committee should put more emphasis on coordination of programmes. This committee only has relevance where the management agent is rendering services to groups of farmers.

Since farmer committees provide a vehicle for the involvement of farmers in the management of the scheme, every effort should be made to improve their effectiveness. It seems that village committees and village meetings should be given more importance for planning and control purposes. At the same time the central liaison committee should be streamlined for better coordination of efforts on the scheme. The management committee in its present form should be reconsidered. If the emphasis is to be on leadership and coordination as indicated by the respondents then the management agents should play a more prominent role in this. If the emphasis is to be on management, then the committee should be restructured so that functions such as planning, staffing, leading, coordination and control can be properly attended to. In this case the farmers' delegates should play a more important role and the management agent should act in a supporting role. Somewhere between these two extremes a workable formula for the management of the scheme will have to be found.

If services are to be extended to the dryland farmers, as requested the need for more village committees will be obvious. Such committees may be in the form of interest groups working closely with extension officers on well defined extension programmes or they may be committees representing the tribal authorities for the

particular village. From an extension point of view the former will be a more effective arrangement as it will allow the stimulation of small projects at community level, a strategy currently recommended throughout Africa and other Third World Countries (Underhill, 1984: 27).

7.8 Discussion on attitudes and perceptions

According to Bembridge (1984: 204-211) research has shown that attitudes and opinions can be changed through effective persuasive communication. Attitudes are motivationally based and find expression in behavioural terms. The general attitudes of farmers towards the irrigation scheme are therefore likely to influence their responses to future development. It is important that the attitudes of the farmers be interpreted in terms of Maslow's five basic needs of motivation:

- physiological needs of food, water, shelter, etc.;
- security needs for physical safety and psychological security;
- need for group belonging which provides self identity, love and affection;
- need for improving self-esteem and status; and
- self realization on the desire to achieve.

If farmers are suffering from an unfavourable socio- economic situation it can be expected that their attitudes will have an inclination to favour activities supporting physiological, security and group belonging needs. Under such conditions activities favouring the improvement of status and achievement will meet with unfavourable attitudes.

Perception is the interpretation or meaning of a situation from the point of view of an individual and is based on past experience. To most rural people in Transkei the introduction of irrigation farming would be something new and prone to misconception about its intent, advantages and relevance on the one side and the mutual interest of the people on the other. The extent to which aspects of irrigation development are perceived in a negative way will determine the willingness of the farmers to participate. The attitudes and perceptions reported on can therefore be used as a guide for decisions about adjustments to the existing programme and future extension efforts.

CHAPTER 8

CONCLUSION AND RECOMMENDATIONS

8.1 Introduction:

The objective of this chapter is to summarize the major findings and make recommendations on the development of the area and the people in close proximity of the present Ncora Irrigation Scheme. It includes the proposed irrigation as well as dryland areas.

8.2 The institutional framework

The greater part of Qumanco administrative area is still to be developed for irrigation farming. This area falls under the Jumba tribal authority which is at present the most important local decision-making body. A management agency was created for the Ncora Irrigation Scheme through a joint effort of the Department of Agriculture and Forestry and a private company. It is recommended that the existing management agency, because of its experience to date, be appointed for the development of the Qumanco area as well. The present management agency operates through the creation of service centres at village level, the establishment of farmers' associations and joint committees, the rendering of commercial services for the supply of inputs, credit facilities and marketing, and an

extensive training and extension effort. It is recommended that even before the lands are prepared for irrigation farming, some or all of the services offered to irrigation farmers be extended to the Qumanco farmers according to need. However, the creation of such an institutional framework must be supplemented by an appropriate and carefully phased physical and human development plan. It is recommended that the development proposals of Loxton et al, (1984) be reviewed in terms of farmer and community needs and that a White Paper be prepared on the completion of Ncora Irrigation Scheme in terms of the present development priorities of the Transkei Government.

8.3 Physical characteristics of Qumanco

The variability in the climate of the area creates risks to farming and requires sound decision-making regarding the selection of farming enterprises and farming practices. It is recommended that climatic data be collected at all the village service centres and analysed in such a way that guidelines for development and farming management can be drawn up.

It is known that various soil series occur on the Ncora Irrigation Scheme and that these soils differ in their suitability for crop production and irrigation farming. Common features of the soils of Qumanco are the high content of fine sand, low fertility and low pH values. It is essential that more information be obtained about the reaction

of these soils to crop production under irrigation as well as under dryland conditions. Accordingly, it is recommended that the research function at the Ncora Irrigation Scheme be extended to include dryland farming at Qumanco.

Because of the limited number of crops that are agro-ecologically adapted to the area farmers' experience of various crops is limited. Experience at Ncora Irrigation Scheme has shown that with intensive cropping, farming hazards of various kinds including infestations of weeds, insects and diseases can be expected. It is recommended that demonstration plots be established at each of the proposed village service centres at Qumanco and that these be used regularly for training and extension purposes.

8.4 Technical aspects of crop production

Under dryland conditions a potential maize yield of 3 500 kg per hectare is possible. Maize yields obtained by dryland farmers seem to be, on average, ten times less due to inadequate pest control, plant population, weed control and crop rotation practices. It is recommended that on those dryland areas where irrigation farming still has to be introduced extension efforts be directed at improving the abovementioned aspects of crop production.

Under irrigation a potential maize yield of 9 000 kg per

hectare is possible, but irrigation farmers realised only half this potential. Average yields of cabbage and beans were also well below the conservative target yields set by the consultants. These low yields are obtained despite careful planning of cropping programmes by consultants and efforts by project staff to get farmers to implement the cropping programmes. The management agency claims that 25 to 30 per cent of yields are removed from the plots unlawfully or without permission, but still this does not explain fully the low yields obtained by present irrigation farmers. It is recommended that the research section explore the reasons for low yields under irrigation and find means of increasing the yields in order to improve the financial return of irrigation farmers.

To implement this recommendation it will be necessary to upgrade the Research and Development Section of the management agency. In this regard the following recommendations are made:

(i) A resident graduate agricultural specialist needs to be appointed to identify research needs, plan the implementation of research projects and control programs and coordinate the dissemination of research findings. Technical and professional staff should be appointed to assist him.

(ii) A control committee consisting of the project manager, the Director for Agriculture and appropriate academic staff needs to be formed to assist the abovementioned research specialist.

(ii) One of the main functions of the Research and Development Section should be continual review and collation of results obtained by farmers and achieved on the various sections of the project.

(iv) New developments on the production front need to be tested prior to their inclusion in the production programme.

(v) Cultivar trials, fertilizer trials, etc. need to be included in the research programme only in so far as they will promote efficient and economic production.

(vi) The services of the researcher should be available to extension officers and interest groups of farmers to assist with the establishment of demonstration plots.

8.5 Characteristics of the farmers

8.5.1 Age is a feature of the landright holders. Sixty five per cent of respondents were over 50 years of age and 40 per cent were over 60 years of age. It can

therefore be concluded that large numbers of the present landright holders lack the physical ability to do the hard work required for irrigation farming. As old age is normally combined with poor health it is recommended that age of landright holders be considered in the allocation of irrigation plots. Larger irrigation plots should rather be allocated to younger landright holders while smaller units should be allocated to old persons without young members in the family to assist them.

8.5.2 Sex and marital status

It was found that 50 per cent of the heads of households were women. One third of the respondents were either single, divorced or abandoned. Men in the age group 20 to 49 years of age were absent, leaving farm work mainly to older men, women and children. A situation of this nature can be expected to have a negative effect on the adoption of farming practices and on the contact of farmers with extension. Adoption of new practices and regular contact with extension is crucial to the successful introduction of an irrigation scheme. It is recommended that the family situation of landright holders be considered in the allocation of irrigation plots.

8.5.3 Education and training

More than sixty percent of the landright holders have an educational level of less than six years at school. Only a few respondents had any skills or vocational training. Subsequently, managerial skills were found to be very poor. Production planning, farm budgeting and record keeping as required for modern irrigation farming, hardly exists and even on maintenance and labour control there is considerable scope for improvement. It is recommended that even prior to the expansion of the irrigation scheme attention be given to adult education in order to improve the literacy and numeracy levels of the landright holders. This could best be achieved through production oriented extension programmes where the basics of farm management could be taught informally at the proposed village service centres.

8.5.4 Leadership and organizational participation

It was found that only half the respondents were positive about the effectiveness of their traditional leaders. In the absence of other organisations operating on a significant scale among the farmers of Qumanco, it seems necessary that the effectiveness of traditional leaders in serving their followers be

improved. It is recommended that even prior to the expansion of the irrigation scheme consideration be given to leadership training of traditional leaders and their advisors. As the introduction of irrigation farming will require the formation of farmers associations and joint committees it is also essential that training in meeting procedures be introduced.

8.5.5 Employment and sources of income

More than sixty percent of the households had males working elsewhere, but only a few respondents reported that members of their households were working at the Ncora Irrigation Scheme. The majority of men working elsewhere was unskilled. It is recommended that interested young men be recruited to join their families with the aim of eventually taking over the landrights from their parents. However, in order to attract such persons it will be necessary to develop a situation where local employment is available or to offer them farming situations with earnings equitable to employment elsewhere.

The absence of these migratory workers has a negative effect on the work situation at home. Two thirds of the respondents complained about problems to get the work done. Seedbed preparation and cultivation of the

lands were the main bottlenecks mentioned. Since irrigation farming requires more regular attention to crop production than dryland farming, it can be expected that expansion of the irrigation scheme will worsen the existing labour shortage. Accordingly, it is recommended that in the case of households where migratory work is preferred or is essential for survival, or where labour problems exist, the allocation of small irrigation plots be considered. Alternatively, where it is possible to attract younger and more progressive persons for a farming career, allocation of plots large enough to ensure full time farming should be considered.

At present the dryland farmers of Qumanco are more dependent on outside employment as a source of income than on farming income. The average household income was reported as only R488 per annum which is less than the average household income of R145 per month in the rest of rural Transkei. The distribution of these income figures gives an indication that some respondents are more successful than others. Correlation studies show that household income is related to certain characteristics and behavioural traits. The ultimate conclusion is that average income will improve if more opportunities for income generation are created. It is therefore recommended

that attention be given to satisfying basic needs and improving current farming operations as a first step towards the development of the area.

8.5.6 Possession of capital goods

Housing standards in Qumanco were found to be low and three out of four respondents had plans to improve the situation. They relied heavily on paraffin as a source of light and cooking energy. Radios were kept by less than 40 per cent and sewing machines by less than 20 per cent of the respondents. Riding horses were kept by eleven per cent of the population and only three had motorised transport. Even agricultural tools and implements are rarely acquired. These are typical signs of an underdeveloped economy. It is recommended that businesses in Oumanco be encouraged to stock such capital goods that would lead to income generation and improved living standards.

8.5.7 Health and nutrition

About half the respondents complained about poor health and three out of four women were concerned about the health situation of their families. A high incidence of chest diseases and stomach disorders was reported. Sanitation in the villages required attention.

Introduction of improved domestic water supply and better health care facilities seemed to be urgent basic needs of the people. It is recommended that the Department of Health be called upon to upgrade its services to the Ncora Irrigation Scheme.

It was found that the consumption of important foods was rather low among the dryland farmers. These foods include animal proteins as well as popular crops like cabbage and beans. It is recommended that the dryland farmers be encouraged, and assisted where necessary, to produce more food items locally and that extension on nutrition and food preparation be stepped up.

8.6 Attitudes and perceptions of the farmers

8.6.1 Farming problems

The main problems identified by the respondents were harvesting, transportation of crops, insect control, livestock management, weed control and theft. Problems relating to crop production are being attended to by the management agent on behalf of irrigation farmers. As stated under 8.2 these services should be extended to the dryland farmers as well. The importance of livestock management problems to farmers of Qumanco indicates that services in this regard should be

rendered as well. At present the management agent does not attend to off-scheme livestock farming and the services of the Departmental field staff in this regard seem inadequate. It is recommended that the management agent should also render extension services leading to the improvement of livestock farming.

8.6.2 Attitudes and perceptions on crop production

In the development plans for the irrigation scheme emphasis was placed on the profitability of crops. In the current investigation it was found that usefulness is the main reason why farmers prefer to grow maize. For apparently the same reason farmers prefer to grow food crops like cowpeas, potatoes, beans and peas. As shown under 8.5.7 the consumption of these foods are rather low. It is recommended that the dryland farmers of Qumanco be encouraged to grow more food crops in home or community gardens and that extension be provided on improved dryland crop production.

More than 60 percent of the dryland farmers are looking towards the management agent for assistance with seedbed preparation and crop cultivation. However, they refer the use of the mouldboard plough which is known to them and any new system of soil tillage should be properly tried out and demonstrated prior to its incorporation in the production plan.

It seems that about half the dryland farmers prefer to buy production inputs and do the planting themselves, but many of them lack the means to do so. As an alternative they rely on the management agent, but work scheduling and delays often result in late planting. The dryland farmers are also aware of the need for proper crop protection, but they lack the knowledge and skills and the means to do so effectively. Even in respect of harvesting and transportation farmers rely on the management agent because of labour and transport shortages.

<u>The attitudes and perceptions of the dryland farmers confirm the need to establish village service centres for training purposes and the rendering of essential services. It is recommended that these village service centres should concentrate on the development of appropriate technology, selfhelp and the promotion of entrepreneurship</u>.

8.6.3 <u>Attitudes and perceptions on livestock farming</u>

It seems that livestock is mainly kept at Qumanco to supply the local demand for livestock products, mainly meat. The intake of these products is rather low and there seems to be scope for increasing production. Initially, commercial farming as mentioned in the

Development Plan for Ncora Irrigation Scheme (Loxton et al, 1978: 130-131) will be of less importance to the dryland farmers.

Correlation studies have shown that larger numbers of cattle and sheep kept, relate to favourable farming and social characteristics. The conclusion is reached that livestock owners with above average livestock numbers should be considered as candidates for commercial farming. On the other hand the number of goats kept was related to the number of sheep kept and the size of family. At present the emphasis is on meat and ceremonial slaughtering. The number of pigs kept related to the number of sheep kept, the education of the husband and the farming income of the household. The number of pigs kept may therefore be used as an indicator to identify the more industrious families. Poultry are normally kept by women with a higher living standard whose condition of health does not allow hard work on the lands.

It is recommended that extension officers should identify interest groups among livestock farmers and concentrate extension efforts on them in order to develop their farming and managerial skills. It is also necessary to pay attention to the integration of farming enterprises on the farm yard and between

livestock and crop production.

It is recommended that livestock improvement programmes should concentrate on improved animal nutrition as well as disease and parasite control as the adoption of these practices are still very low. Initially the aim should be on self sufficiency and increased local trade.

It was found that the farmers of Qumanco have over optimistic views about the condition of the natural grazing, while some livestock owners are concerned about it. It is recommended that timely action be taken to control the grazing and the livestock numbers in order to prevent a negative ecological impact on the area surrounding the irrigation scheme. Close cooperation between farmers, tribal authority and agricultural staff of the Department will be required, but extension officers can also contribute by encouraging farmers to keep cattle and goats for milking purposes and to promote pig and poultry production as alternative sources of meat.

8.6.4 Attitudes and perceptions of economic factors

The majority of landright holders at Qumanco are not commercial farmers and they are not accustomed to the

free availability of credit as practised at the Ncora Irrigation Scheme. It is recommended that credit facilities to the dryland farmers be offered with discretion and carefully monitored to avoid embarrassment.

There was general concern among respondents about their income situation. The average income aspiration was R4 133 per annum as against an average household income reported as R488 per annum. Some respondents reported an income aspiration which was much higher. The conclusion is reached that there is an urgent need for opportunities to increase income from farming and other sources at Qumanco. It is recommended that the establishment of commercial farming units receive a high priority with the expansion of the irrigation scheme. On the other hand food production was an important issue with many households but lack of fencing and irrigation water prevented them from growing food crops at home. It is therefore recommended that some form of financial assistance be devised to provide water and fencing material where households prefer to grow food crops in home gardens or community gardens.

8.6.5 Perceptions on project objectives

The dryland farmers of Qumanco were not really

enthusiastic about the farming models promoted by the management agent. There seems to be lack of understanding about concepts such as Ncora farm, group farm, commercial farm, traditional farm, food plot and special plots. Seventy percent of those landright holders who responded to the question why they wanted a plot on the scheme were much more concerned about exercising their right to have a plot and being able to produce food on it. Generating income on the plot seems to be of importance to only six per cent of the landright holders while eight per cent reported interest in farming.

It is recommended that the management agent should launch an extensive campaign to demonstrate and explain the various farming models, the purpose of each and the potential of each to satisfy the needs of the community. It is further recommended that final decisions about future land-use and land-allocation be postponed until there is a better understanding of these concepts among the farming public of Qumanco. On the other hand, these farming models should not be so inflexible that they become unacceptable to farmers.

It was found that the Qumanco farmers have a poor knowledge of fertilizers, plant diseases and insect pests, but were vague about their own training needs

and the role of the management agency as a training agency. It is recommended that once the village training centres have been established and interest groups have been identified the training needs of these farmers be identified and incorporated in a comprehensive extension and training programme. The costs of such a training programme should be charged against the Government of Transkei.

Customs and beliefs are still affecting everyday life at Qumanco and it can be expected that the objectives of the management agency will be affected too. It is therefore essential to obtain active participation of farmers in decision making and evaluation of progresses. It is recommended that negative effects of customs and beliefs among the farmers of Qumanco be discussed by interest groups and that these interest groups should be the vehicle to present alternatives to the public and the tribal authority.

8.6.6 Interest in participation

Reacting to the list of services required from the management agency by the farmers, it can be readily concluded that the Qumanco farmers do not want to do things for themselves. The reaction of the farmers to ask for more and more services can be ascribed to the

lack of even the most basic farming tools and implements on the one hand and ease of access to the services of the management agent on the other hand. The real danger is that the provision of services may become institutionalised and that a "dependency syndrome" may develop to the extent that privatization and development of entrepreneurship will become difficult to achieve. Much can be done to encourage farmers towards self help by selling the most basic tools and equipment and the production inputs required by them for own use and to encourage the farmers to participate in planning, implementation and evaluation of the technologies available to them. It is recommended that the management agency should work towards the establishment of a farmers cooperative which would gradually take over some or all of the commercial services.

8.6.7 Perception of the institutional framework

The management agency was acceptable to two thirds of the respondents at Qumanco, but only 53 per cent indicated that they were satisfied with the way the Ncora Irrigation Scheme is run. It is recommended that the emphasis should shift from implementation of the consultants' plans to assistance to farmers with the implementation of their own plans. In such an approach the extension service will play a crucial role. Their

role is not only to provide information, but to initiate and maintain interaction between farmers and the village service centre. The current system whereby field staff are merely trying to get as many persons as possible to participate in the prescribed cropping programmes does not satisfy the irrigation farmers and does not create a feeling of involvement among them. It is recommended that cooperative extension methods be introduced and that the responsibility for production be put on the farmers themselves.

Extension officers should be placed at the proposed village service centres of Qumanco to organise farmers into interest groups, to develop farmer training programs together with these interest groups, and to initiate demonstrations of improved farming practices. However, they should not involve themselves in the rendering of commercial services which is a function of production supervisors.

It is recommended that extension officers be carefully selected and trained and provided with the technical back-up to initiate improved production programmes among farmers. The training of these extension officers should be related to a time-bound extension programme to improve farmer participation in dryland crop production, home or community gardens and livestock production.

Extension programmes should be properly planned with clear-cut objectives and specific activities to achieve these objectives, and with evaluation methods built into the programme.

In order to ensure coordination of efforts it is recommended that the extension officers should also fall under the jurisdiction and control of the management agency.

The farming needs identified by the respondents relate to short term benefits like the provision of services and inputs at minimum costs, increased yields and lower risks. Extension officers will have to relate these felt needs to the real needs for information and training and in this way create opportunities for human development. The most important community needs that need attention are the provision of domestic water, improvement of the facilities for health care and better roads and bridges. Complaints were also raised about the unavailability of firewood.

It is recommended that the Departments of Agriculture and Forestry, Health, Education, and Works and Energy should play a more important role in satisfying community needs.

Private organisations appear not to play any important role in community development at Qumanco, but there is a need for strenghtenining women's organisations. Even churches are not seen as having a role to play in community development. It is recommended that formal organisations be encouraged to play a more dynamic role in community development.

The joint farmer committees created by the management agency do not meet the expectations of the farmers of Qumanco. These committees suffer from differing group standards among farmers and officials and the general complaint is that there is not sufficient guidance and coordination efforts on their meetings. It is recommended that the functions of these committees be reviewed and that more emphasis be put on village committees and interest groups.

CHAPTER 9

SUMMARY OF RECOMMENDATIONS

Detailed recommendations are given in Chapter 8 of this report, but for convenience these are very briefly summarised in this chapter.

9.1 INFRASTRUCTURE

(1) Upgrading of roads and building of bridges for easier access.

(2) Domestic water supplies to residential areas.

(3) Clinics and health care facilities to be upgraded.

(4) Proposed rural service centres to be established for rendering services to farmers, as a base for extension officers and for demonstration plots. Weather recording stations to be placed at these service centres.

(5) Development proposals of the consultants to be reviewed in terms of farmer and community needs.

(6) Irrigation plots to be large enough to ensure full time farming. As an alternative, homegardens or community gardens to be developed to accommodate landright holders who are merely interested in food production for the household on small plots. At present it seems that not more than 15 per cent of present landright holders should be accommodated on commercial farms.

(7) Priority order for agricultural development to be as follows:

- Stabilizing dryland crop production and livestock farming
- Development of home or community gardens near villages
- Allowing entrepreneurs to invest in irrigation systems for commercial farming purposes close to present canals and feeder pipes
- Development of remaining infrastructure.

9.2 AGRICULTURAL (CROPS)

(1) The research function of the scheme to include dryland farming.

(2) Extension efforts on dryland areas to be directed to pest control, plant population, weed control, and crop rotation practices.

(3) The research section to investigate the reason for low yields under irrigation and to recommend means for increasing yields and financial return to farmers.

(4) Dryland farmers to be encouraged to produce more food crops in home and community gardens and to increase

dryland crop production. Commercial services to be extended to dryland farmers.

9.3 AGRICULTURE (LIVESTOCK)

1. Management agency to assist with improving livestock farming at Ncora and Qumanco.

2. Interest groups to be identified by extension officers in order to develop farming and managerial skills.

3. Integration of livestock farming with crop production to get attention.

4. Initially livestock improvement programmes to concentrate on improved animal nutrition as well as disease and parasite control. The objective is to improve self sufficiency and increased local trade.

5. Grazing and livestock control to be introduced to prevent a negative ecological impact around the scheme.

6. Introduction of dairy cattle and milch goats to replace beef and mutton producers, and concentration on broilers and pig production as alternative sources of meat.

9.4 EXTENSION

1. Demonstration plots to be established at village service centres for training purposes Extension officers to be placed at village service centres.

2. Adult education through production oriented extension programmes.

3. Training of traditional leaders in leadership and meeting procedures.

4. Businesses to be encouraged to stock capital goods that will lead to income generation and improved living standards according to extension programmes.

5. Farmers to be encouraged to produce more food items locally.

6. Extension on nutrition and food preparation to be stepped up.

7. Extension officers to identify interest groups, establish training needs and launch extensive extension and training programmes.

8. Negative effects of customs and beliefs to be discussed

by interest groups and to present alternatives to the public and tribal authority.

9. Extension officers should not render commercial services but concentrate on the training function.

10. Extension programmes to be properly planned.

11. Extension officers to fall under the management agency and to work in close collaboration with production supervisors.

12. Formal organisations to be encouraged to play a more dynamic role in community development.

9.5 ROLE OF THE PRESENT MANAGEMENT AGENCY

1. To be appointed for the development of the Qumanco area.

2. Some or all of the commercial services for irrigation farmers to be rendered to dryland farmers.

3. Research function to be extended to include dryland area.

4. Research and Development Section to be upgraded.

5. Age and family status to be taken into account in the allocation of land. Tribal authorities to be provided with guideline for the selection of farmers and plotholders.

6. Adult education even prior to irrigation development through production oriented extension programmes.

7. Young men interested in farming to be offered local employment or farming situations where they can earn as much money as with employment.

8. Land use to be in the form of commercial farms which allow full time farming or in the form of smaller plots where food for household consumption can be produced.

9. Satisfying basic needs and improving current farming operations to get priority over irrigation development initially.

10. Village service centres to concentrate on appropriate technology, self-help and the development of entrepreneurship.

11. Credit facilities to be offered with discretion and to be carefully monitored.

12. The various farming models to be explained to the public of Qumanco.

13. Management agency to work towards the establishment of a farmers cooperative and village farmer associations.

14. Emphasis to shift from implementing consultants' plans to assisting farmers with implementing their own plans.

15. The functions of joint farmer committees to be reviewed and more emphasis to be placed on village committees and interest groups.

16. Cooperative extension methods to be introduced linking the farmers through interest groups to extension, training and research programmes.

17. To assist the tribal authorities in getting other government departments involved at Qumanco.

18. Relevant formal organisations to be encouraged to play a more dynamic role in community development at Ncora and Qumanco.

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