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INVESTIGATING THE RELATIONSHIPS BETWEEN PRODUCTION AND MARKETING IN SMALLHOLDER IRRIGATION FARMING

A case study in Mpumalanga, South Africa



In cooperation with



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Disclaimer

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ABSTRACT

This study has been carried out in a smallholder irrigation scheme in South Africa. The aim was to investigate the links between production and marketing, as access to produce markets appears now as a major hindrance for smallholder agriculture's development in a context of growing market liberalisation and competition between producers. To achieve this, a survey was done through a detailed questionnaire applied at household level in a case study scheme: the Hereford irrigation scheme.

The Hereford scheme is perceived as a commercially oriented, and quite successful scheme, hence the choice thereof, as a case study. However, a closer look reveals that inner diversity does exist between farmers, in terms of technical and economic performance. Most farmers are not in such a good position and are not economically sustainable, as shown by their low farming income. The scheme has collectively benefited from specific settlement circumstances and large assistance, which allowed it to stand out from other South African smallholder irrigation schemes (more commercialization, bigger size of farms, existence of contract farming on some commodities, huge public investments in refurbishment of irrigation infrastructure, building of a storage-packaging plant –a so-called co-operative-). However, individual farmers seem to manage with difficulty and have kept subsistence-farming practices: low productivity, no record keeping, and little planning in production in order to meet the market requirements.

It seems that the main problem for most farmers is not marketing access *per se*, since they sell their produce to a wide range of market outlets, but rather access to secure and high-price produce markets. Indeed, the farmers sell mainly to hawkers, but more by default than by choice (owing to lack of transport, incapacity to find other markets, lack of market information and collective organisation). Access to more secure markets would give them the opportunity to plan their production in advance accordingly and probably produce more as land is not (yet) a limiting factor (only half of the total commanded surface is being cropped at present).

A publicly funded co-operative has recently been build on the scheme and appears as a great potential to solve the farmers' main issues concerning marketing –and even production. However, it would require much more involvement from the farmers and a shift from individual and opportunistic behaviours, to collective production and marketing management. The ability and readiness of the farmers to do so is being discussed and questioned.

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INTRODUCTION

1- Context of the study

The "Future Harvest" program of the Consultative Group for International Agricultural Research (CGIAR) predicts that food supplies will need to increase by 50% by 2020 in order to feed the world at that time. The previous food crisis scare in the 70's was averted by the Green Revolution, but as its limits have been reached now, the research of new solutions is required. That is why research and development need to be spread much more evenly across the food supply chain from farmers to markets, putting much more effort into post-harvest activities (IITA, 2001). Agricultural growth also has major impacts within rural areas, providing :

- ✓ employment for landless or land deficit households, as rising productivity within agriculture raises labour demand, especially for post-harvest activities (including value-adding)
- ✓ enhanced rural incomes that can then be spent on locally produced goods and services (Kydd, 2000).

However, it has been noticed that even the farmers who can produce a surplus remain trapped in the poverty cycle, the major reason being the lack of access to profitable markets (IITA, 2001). As the farmers are not liable to produce more food if it is not profitable for them, research on market access and post-harvest is essential to increase world food production and enhance living standards of poor farmers.

In South Africa specifically, smallholder irrigation schemes, despite massive investments, have performed very poorly economically. Through reforms and a rehabilitation process, the political choice of the government since 1994 is clearly to have them play a really important role in poverty reduction, by boosting local economy, providing employment for the rural population and therefore limiting the already important rural exodus. A major challenge today is to help the mainly black small-scale farmers access the markets in a context of liberalisation, but most importantly after decades of total assistance and development hindrance in the former homelands. In the case of success, economic and social sustainable development could be achieved by offering a way out of poverty for at least part of the 61% poor of the South African black population.

The present study is part of a wider project entitled "Assessing the economic viability of smallholder irrigation schemes in South Africa; methodologies for prospective analysis and local empowerment (2004-2005). This project is funded under the joint French-South African science and technology agreement, with a grant from the National Research Foundation and French ministries. Prof S.R. Perret from Cirad (Centre de Coopération Internationale en Recherche Agronomique pour le Développement) and Prof. J.F. Kirsten at the University of Pretoria conceived and coordinate this project. This particular study focuses on the marketing aspect in a smallholder irrigation scheme of South Africa, with an emphasis on the organisation linking production and marketing.

The context in which smallholder irrigation schemes evolve in South Africa will first be set up. Then the conceptual framework and the methodology used will be described. Further on, the results of the research on the field will be presented and analysed. Finally, some recommendations will be drawn from these.

2- Research objectives

The overall objective of the project into which this study fits is to address economic and financial viability and overall sustainability of smallholder irrigation. The research described in this report has for central objective the study, on a case study basis, of the links between production and marketing features on two different levels: the farmer's and the scheme's levels. More precisely, the objectives can be described as follows :

- ✓ examination of current production features
- ✓ investigation on the current marketing options used and the farmers' organisation in order to meet the market's requirements
- ✓ identification of collective action and organisation
- ✓ test of various production scenarios and discussion of their marketing implications in an action-research approach so as to trigger farmers' participation and awareness

Unfortunately, the last objective could not be reached for some reasons which will be discussed further on.

SOUTH AFRICA, IRRIGATION SCHEMES AND MARKET ACCESS

In order to study the relationships between production and marketing in smallholder irrigation schemes (SIS), it appears essential to first describe the context in which they evolve. This introduction will briefly present the history and current situation of irrigated agriculture in South Africa, focusing on SIS and the problems they face. Then the particular issue of access to markets will be highlighted, mentioning some of the recent research on this aspect concerning small-scale farmers.

1- South Africa, irrigation farming and smallholders

1-1 A new South Africa and the legacy of Apartheid

In 1994, a new government was democratically elected by the whole population of South Africa, ending five decades of Apartheid policies which advocated the separate development of the different “communities” and have profoundly marked the socio-economic and geographical features of the country. Through its Reconstruction and Development Program (RDP), the ANC aimed at increase household food security and alleviate poverty by improving small-scale agriculture and increasing emerging farmers’ participation in mainstream economy (Makhura, 2003). To achieve so, massive reforms have been undertaken in order to address rural poverty and inequalities inherited from the past regime: land reform program, new water legislation and improvement of service delivery in rural areas. Liberalism was also adopted as the economic and developmental guideline, implying State withdrawal, liberalisation of markets and transfer of power to local management and decision-making structures (Perret, 2002). South Africa is therefore currently under construction and is facing a major dilemma, between a developmental approach aimed at erasing discrepancies between previously advantaged and disadvantaged groups and an economic efficiency approach.

Although South Africa is classified as a lower middle income country, the share of agriculture in the GDP (less than 4%) and in the labour force (14%) is low compared to others countries in this group (Perret, 2002), due to its well-developed mines and industries. However, the real contribution of agriculture is not to be underestimated as it is closely interrelated with the inputs market and the industrial processing sector which absorbs a large part of the raw material produced by farmers. Besides, 52% of the total water usage is taken by irrigated agriculture and stock watering.

The rural population is composed of 1.5 million households living on commercial farms and 2.3 living in former homelands¹. The poverty rate is higher in rural areas than elsewhere, with an incidence of 71.6% and is race-related as it affects 61% of the black population against only 1% of the white population (Forgey, 1999 quoted by Perret, 2002). Some causes to this discrepancy can be found in the past

¹ Homelands (created by the 1913 Natives Land Act), were areas delineated according ethnic, geographical and economic criteria. The Apartheid regime further developed and implemented them as part of its “separate development” policies. They were granted some form of autonomy from the central government, till self-governance in some cases (Bantustans) ; they were re-incorporated into the country in 1994.

apartheid regime which excluded black people from owning or renting land outside the 14% of the country that was delineated as reserves. Thus, 83% of agricultural land is in the hands of white farmers, whose mainly large farms were favoured by the Apartheid's incentives, laws and institutions (Lipton, 1996 quoted by Perret, 2002).

At the same time, black areas suffered (and still suffer) severe backlogs in access to natural resources, financial and agribusiness facilities and rural infrastructures. The consequence today is a dual South African agriculture : well developed commercial agriculture on large farms, mainly owned by white farmers, and largely subsistence oriented agriculture in former homelands where black farmers farm on small plots. However, the picture needs to be slightly tamed as a small number of black farmers have now reached the commercial farmer category (Machethe, 2004).

1-2 Irrigation and smallholder irrigation schemes (SIS)

The total irrigated area in South Africa is estimated at 1 300 000 ha, which represents only 10.8% of the 12 million ha of arable land (including marginal areas), but contributes to about 30% of the national food production (Backeberg, 1996). However, the area covered is only 46 000 ha for SIS and 50 000 ha for garden schemes and food plots, which highlights once again the duality of South African agriculture. Importantly, it is estimated that around 223 000 people depend on those scheme for a livelihood, at least partially (Bembridge, 2000). Among the 287 SIS of the country, more than half are situated in the Limpopo Province (formerly Northern Province) ; most of the others are found in Eastern Cape and Kwazulu-Natal. The main crops grown are vegetables on 45% of the schemes, then maize on 28% and finally fruits on 11 % (Denison, 2004).

Different types of irrigation schemes have evolved in South Africa and can be classified as such (Perret, 2002 adapted from Bembridge 2000) :

- Bureaucratically managed smallholder schemes : formerly fully administered by the government or its agencies (corporations) which carried out most farming operations on behalf of the farmers, they are now privately managed ; they constitute the majority of SIS.
- Community schemes or garden schemes : numerous but usually small in size, many collapse after several years due to maintenance and management problems. Managed by community users or their representatives, their main aim is subsistence.
- State or corporation financed schemes (such as sugar cane) : the government provides the infrastructure and the farmers pay subsidized water charge and make most farming and management decisions. They are quite rare in South Africa.
- Large estates schemes, State or private sector financed : often manages by agents whose aim is to maximise use of resource through high return crop such as tea, coffee, fruits and vegetables, they offer little farmer participation.

South Africa is a water scarce country (average annual precipitation lower than 500 mm) and even though irrigation was first introduced soon after the first European settlers arrived, it really developed only from 1912 (Bruwer, 1991). In former homelands, most irrigation schemes started after the report from the Tomlinson Commission on the socio-economic development of the Bantustans. The Commission suggested that holdings of 1.3 to 1.7 ha were adequate to “provide a family with a living that would satisfy them, whereby the whole family would work on the holding” (Union of south Africa, 1955 quoted by Perret, 2002). It had major effects on the SIS in black

areas as most schemes developed in the 50's and 60's mostly followed its recommendations and were therefore aimed at family's subsistence through surface irrigation.

1-3 An history of dependence and a difficult switch to liberalism

Despite huge investments, the performance and economic success of the South African SIS has been very poor (Bembridge, 2000). However, this has never been the clear and unique goal of the setting up of these entities, as subsistence-based activities were promoted (Perret, 2002). Besides, the all process was fully subsidised and managed by parastatal agricultural corporations, such as the Agriculture and Rural Development Corporation (ARDC) in the former Northern Province. Those agencies were, for over three decades, managing the schemes through top-down command and support system, organising mechanisation, planting, input supply, eventually marketing and not letting any management decisions to the farmers (Shah, 2002). This eventually proved unsustainable. In this respect, Backeberg (1994) identifies four interrelated economic considerations which were neglected : marketing –which was often taken as secondary to technical aspects-, farming size –with some small scheduled areas-, management and capital. Besides, the migration of male labour due to more attractive non-agricultural labour market (mines and industries) left only the women and pensioners on the schemes, who were therefore carrying out extensive food crops and livestock farming with unclear property rights on land and water (Perret, 2002).

However, a gradual change operated from the 80's : as the management agencies were facing financial and social problems, farmers were encourage to make cash profit, starting a shift from subsistence to economic performance and financial autonomy. Nonetheless, food security remained the main objectives as the produce and input market opportunities were poor. After the end of Apartheid, the management agencies were liquidated and the government withdrew from its past functions (service, technical advice and extension, training) as its first steps into liberalism. The result today is that most of the SIS in Limpopo for instance have been moribund and inactive for years, due to several causes among which infrastructure deficiency, poor operational and management structures, bad extension, absence of people involvement and participation and inappropriate land tenure arrangements. Major infrastructural and institutional problems are also faced by many SIS in Eastern cape and Kwazulu-Natal.

Since the late 90's and in order to help the farmers face these issues, the provincial governments have set up rehabilitation and irrigation management transfer (IMT) programs. In parallel, the State has started to implement reforms, such as the land reform, which is unfortunately not moving forward at the expected rate. The New Water Act was also proclaimed in 1998, with high ranked objectives : equity, representativity, sustainability and efficiency, through water management decentralisation, new local and regional institutions, water users' registration and licensing and emergence of water rights' markets. However, the dilemma between economic and social approaches is still present : promoting emergence of small-scale commercial farmers while maintaining the community subsistence function of the schemes will present a real challenge.

2- A growing concern : the access to markets

In a context of growing liberalisation, globalisation and States withdrawal, the access to markets by rural poor appears as a major issue. It is here important to specify that the markets above mentioned are not solely produce markets where to sell agriculture production, but several interlocking markets : for agricultural inputs and produce, extension, finance, information, assets (including land and water), labour, food and other consumers goods (IFAD, 2001). Rural people often say they can not improve their standards of living because they do not have access to at least some of these markets.

This study will focus on the access to produce markets, as the inability to market crops implies a lack of money for production inputs, consumer goods and accumulation of assets (IFAD, 2001). The issues of production increase and market access therefore appear closely intertwined : what would be the use for farmers to produce more if they can not dispatch their production (considered that this latter is above the quantity used for self-consumption) ? In consequence, numerous researches have been undertaken, notably in Sub-Saharan Africa, in order to identify the problems faced by small-scale farmers regarding market access. In this section, we will first present some results from the above mentioned studies ; then the focus will be placed on the situation of the South African SIS regarding this particular issue.

2-1 Market access and small-scale farmers

IFAD (2001) identifies three aspects in market access : the physical constraints (i.e. distance to the markets), the political constraints (i.e. the inability to influence the terms upon which they participate in the market) and the structural constraints (i.e. the lack of market intermediaries). More detailed constraints faced by the rural poor are summarised in Table 1.

Box 5.1: Market access constraints: physical, structural, information and organization		
Constraint	Disadvantaged areas	Disadvantaged groups
Physical	Poor roads, high transport costs, perishable goods, low value/weight produce.	Those located far from markets; women with heavy time burdens; those with poor access to transport and/or limited access to facilities.
Structural	Asymmetry of market relations: reliance on monopsonistic traders, agro-processors or marketing boards whose market power allows excess profit shares.	Those with poor access to land and credit to allow diversification, commercialization and/or marketing of goods in wider markets; those constrained by traditional or cultural norms.
Skills, information and organization	Lack of understanding of how markets operate, lack of information, lack of relevant skills.	Most of rural poor; those who lack education and collective organization.

Table 1 : Market access constraints : physical, structural, information and organisation (from IFAD, 2001)

According to Kydd & Poulton (2000), market access is determined by:

- ✓ ***information about product availability, attributes and prices***, including the frequency, quality and cost of this information
- ✓ ***information about counter-parties to transactions***, as trustworthiness is critical if payment is not instantaneous or checking of quality is costly
- ✓ ***the extent of confidence in market conduct***, e.g. “how well are the markets regulated (voluntarily or by government) ?”
- ✓ ***the physical costs of accessing the market***, a function of the quality of infrastructure and the organisation of the transport sector;
- ✓ ***actual prices*** found in the markets in which people transact.

As shown by von Braun and Kennedy (1994) (quoted in Kydd, 2000), smallholder households engaging in cash cropping generally do see increases in net household income, attributable to higher returns to land and labour, although this may be quite unequally distributed within the household. Importantly, these households rarely sacrifice crops for self-consumption. However, many small-scale farmers have difficulties accessing the market for different reasons. First, they lack market information, especially on prices and their evolution ; this can be partly explained by the fact that extension has been mainly focused on technologies, rather than markets. Also, the often brutal shift from tight central management to liberalisation, switching from secure and known prices to possible daily change, has allowed little time for farmers to adapt. Besides, small-scale farmers are usually not organised collectively and have no experience of market negotiation. Furthermore, due to transport issues and their small size, many rural markets are characterised by extreme asymmetry of relations between a large numbers of small producers/consumers and a few buyers/sellers, which is rarely to the advantage of the small producer (IFAD, 2001).

In order to face these issues, diversification is often prescribed to reduce the vulnerability to price and production fluctuations. Moreover, some marketing cooperatives have been set up in order to allow economies of scale in transportation and storage, as well as more negotiation power. Although these have met the mistrust of farmers, especially in Africa, due to mainly poor management, they are now being reconsidered as an option to facilitate market access.

2-2 The market access issue in South African SIS

South Africa’s dualistic agricultural economy comprises a well developed commercial sector composed of mainly 50 000 commercial farmers (Louw, 2004) , and a predominantly subsistence-oriented small-scale sector estimated to 31 300 farmers (Denison 2004). However, this latter has also some market orientation, as shown by the level of commercialisation in SIS : although 21% of the schemes are practising subsistence farming, 40% of them are semi-commercial and 39% commercial (Denison, 2004). Nonetheless, a major complaint of the schemes is the lack of marketing and commercial support. However, Makhura (2003) notices that despite the policies aimed at improving smallholders’ status (land reform, market deregulation and trade liberalisation), the small-scale farmers’ access to resource and commodities markets is still limited.

As previously mentioned, South Africa is adopting liberalism after decades of protection and support at various levels of production, aimed at supporting commercial farm incomes. Indeed, until recently, agricultural marketing boards were determining the conditions in which a restricted number of large agents could purchase agricultural products from farmers and sell them to processors (NAMC, 1999). Thus, 80% of South African agricultural commodities were controlled by these commodity-specific, producer-dominated boards (Makhura, 2003). The new Marketing Agricultural act (1996) led to the closure of these boards, of which assets have been placed into trusts. The aims of this act are the improvement of market access, the increase in efficiency, the optimisation of export earnings and a viable agricultural sector. The producers are now expected to manage the risks they face concerning price and yield.

Makhura & al. (2003) have identified several constraints faced today by small-scale South African farmers in order to access markets, consistent with findings in studies previously mentioned. Although some of them are related to policies, most of them are location-, farmer- and/or commodity-specific :

- ✓ **Transport** : most small-scale farmers do not own transport and hired transport is expensive due to the small quantities involved
 - ✓ **Assembly and storage of products**, which involves transport to storage facilities and provision of suitable facilities
 - ✓ **Market infrastructure** : the National Fresh Produce Markets are centralised in a dozen of main towns throughout the country, implying sometimes transport over long distances and consequent loss of quality
 - ✓ **Road infrastructure**, with some roads in very bad conditions
 - ✓ **Discrimination**
 - ✓ **Market information** : lack of information in rural areas and lack of means to disseminate it
 - ✓ **Bargaining power** : lack of organisation, bargaining power and knowledge, which prevents an efficient use of representation in trusts. The lack of bargaining power also applies to input purchase
 - ✓ **Institution responsibilities** : loose responsibilities shared amongst the NAMC (National Agricultural Marketing Council), the NDA (National Department of Agriculture) and the Provincial Departments of Agriculture.
- Other constraints identified are : extension services concerning marketing and the quality of products, telecommunications (to improve access to information), training and education, access to electricity and finance (NAMC, 1999).

CONCEPTUAL APPROACHES AND METHODOLOGY

1- Conceptual framework

1-1 Operation of an irrigation scheme

A smallholder irrigation scheme is special in a way that it requires a collective organisation in order to function. Indeed, the infrastructures involved are heavy, and therefore can not be set up for and maintained by individuals. It also involves sound management if the water is to be directed equally to all irrigators. Therefore, as seen on Fig.1, irrigation operates on two levels : the individual sphere, whereby farmers mind their own production and income generation, and the collective sphere which requires the investment of the same farmers to manage the scheme. In South Africa, the collective entities are represented by Water User Association (WUA) or Irrigation Boards².

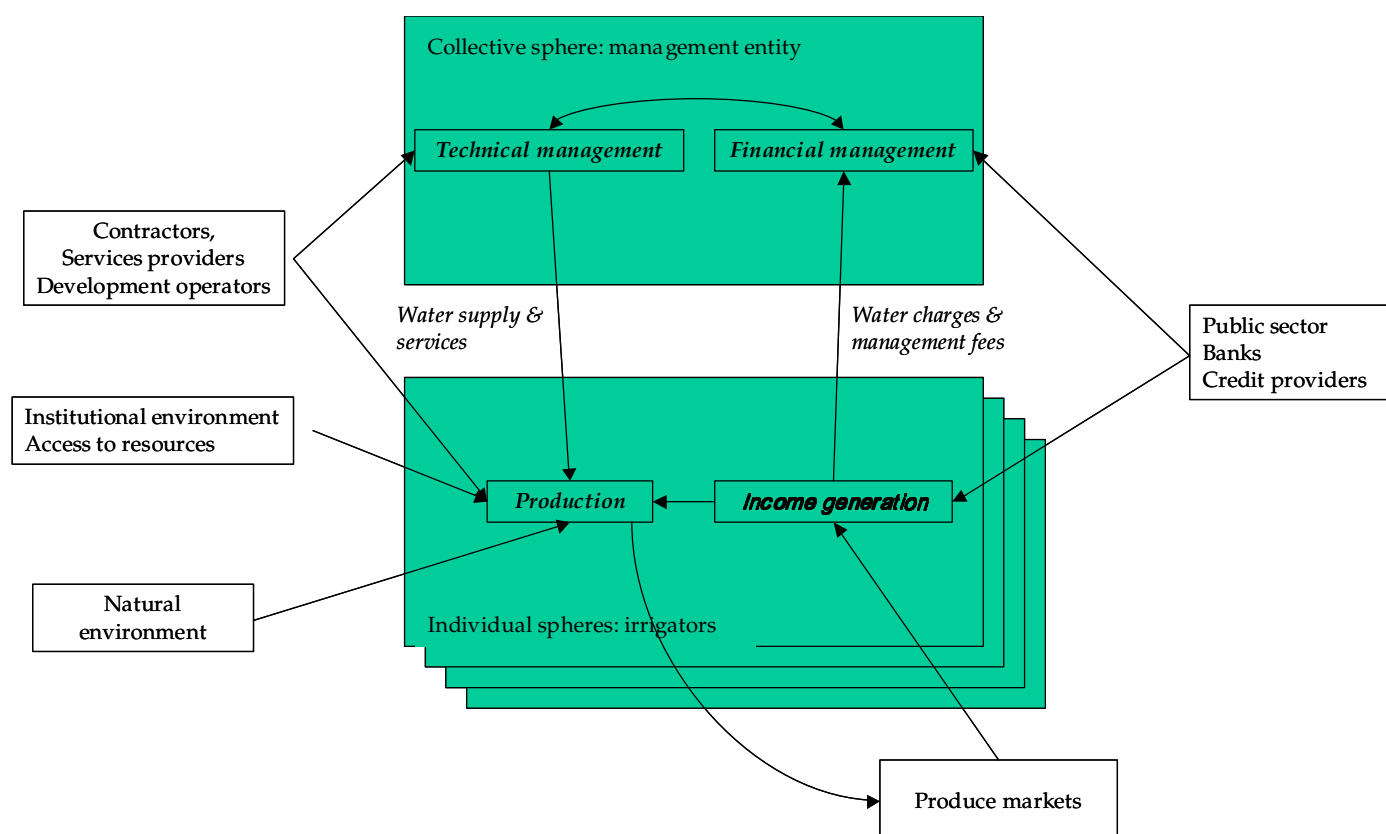


Fig. 1: Operation of an irrigation scheme (from Le Gal, 2001 & Perret & Touchain, 2002)

On the collective side, the WUA has two main tasks :

- technical management of the scheme, which consists in managing the water supply according to some predefined norms and maintain the infrastructures
- financial management whereby it collects management fees and water charges from the irrigators in order to finance the technical tasks. In the context of

² South Africa is in the process of changing the legal entities in charge of irrigation schemes management from Irrigation Boards to Water User Associations (WUA). However, the WUA currently established are rare.

Irrigation Management Transfer (IMT) taking currently place in South Africa, those two tasks are now crucial for the economic viability of the schemes. On the individual side, the farmers add some value to the water supplied through agricultural production ; this value can be financial if the production is marketed (Le Gal, 2001 ; Perret & Touchain, 2002)

1-2 Economic viability and market access

As shown on Fig. 2, in order to reach economic viability, a farm needs to provide enough income to at least cover the costs implied by production. These costs comprise input costs, mechanisation, labour, land fees and eventually irrigation costs (water fees, maintenance fees). If the crops are sold, marketing costs also need to be taken into account. The profit generated at farm level is also crucial for the viability of the scheme. Indeed, farmers are more liable to pay for taxes aimed at managing the scheme and therefore ensuring its viability if their income is more important.

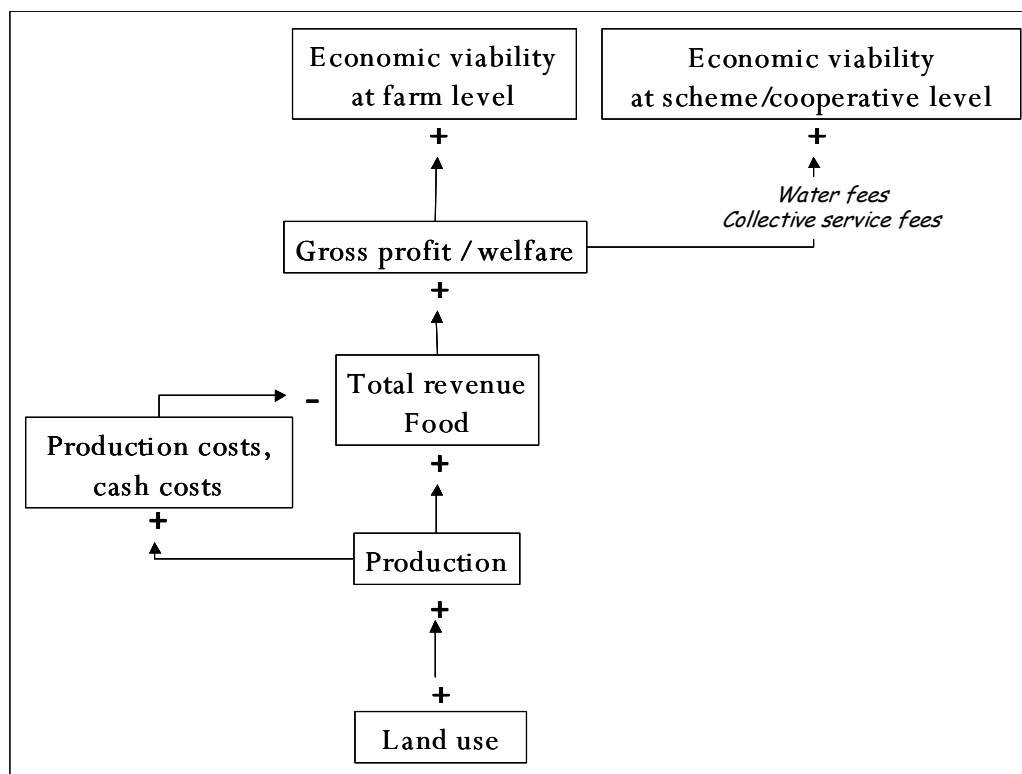


Fig. 2 : Economic viability at farm level (adapted from S. Perret)

Self-consumption of crops is considered as a participation to the household welfare : even though no income is derived from this, it prevents from additional expenses. However, a farm oriented only towards subsistence can not achieve economic viability by itself as no income is generated, but the production costs remain. In this case, farmers have to rely on non-farming sources of income (wages, government grants, remittances) in order to provide funds for household purchases and farming. Therefore, in order to achieve economic viability of their plot, farmers resort to produce markets to generate cash income.

Several market outlets are possible, each one having its particularities. Some of them are shown on Fig. 3, but this does not represent an exhaustive list, as the focus is here on the producer. General factors influence the ability of the latter to access these markets, the main ones being : market information, transport, infrastructures, storage and extension/training. These factors can be divided into two main categories : physical factors and informational factors. The informational factors will help the producer chose the right market to target, while the physical ones will give him/her the means to reach his/her objectives.

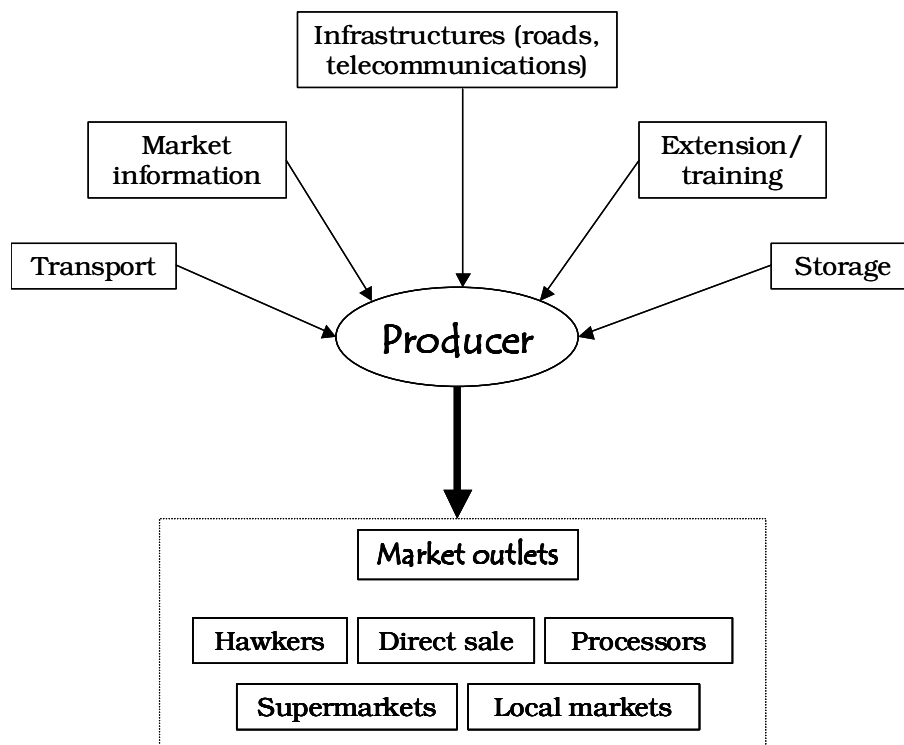


Fig. 3 : Different factors influencing market access (own analysis, from Makhura, 2003 and Kydd & Poulton, 2000)

Although all these factors are essential for choice-driven market access, the importance of each of them is relative to the commodity produced. Indeed, the issue of storage will not be the same for vegetables as for maize for instance, as the first ones require cool storage, which involve bigger investments. Nonetheless, market is accessible even though some of these factors are absent. For instance, some farmers sell their crops without benefiting from means of transportation as some retailers can organise transport themselves, as it is the case with some hawkers. However, it restrains the decision of the farmers as it drastically reduces the scope of possibilities. Therefore, the means available to which the farmers has access to can determine the market outlet used. This is also true concerning the informational factors.

2- Methodology

2-1 Choice of the case study : the Hereford Irrigation scheme

Smallholder irrigation is currently seen by the South African government as a way out of rural poverty in arid and semi-arid areas. The aim is to make them sustainable and producer-managed in order to enhance their economic viability, as most of them are today moribund. To achieve so, investments are being made through a rehabilitation process. The Hereford scheme has recently been one of the beneficiaries of such policies. Indeed, its irrigation scheme has been updated in 2002-2004 and a cooperative is being built. It also records an original history as it was invaded in 1997 by black small-scale farmers, which means it does not carry the burden of decades of State's assistance as do most of the other SIS. Besides, the motivation for farming and commercial orientation of the farmers makes the scheme appear as a perfect case for study, as it embodies the "ideal new smallholder irrigation scheme" in South Africa, i.e. the success story. It is then interesting to study the links between production and marketing in such a scheme, as it allows to analyse the keys to this success and can then eventually provide some useful information to help other schemes.

2-2 Data collection

The first part of the study consisted in collecting data on the field. It was decided to operate through farmers interviews, following a detailed questionnaire. These interviews were conducted between May and July on the farms themselves, with the help of a translator –as the farmers spoke Sepedi but no or little English. The original questionnaire being rather long, it was cut in two parts. The first part (cf. annexe 1) gathered information about socio-economic, organisation, general production and marketing features. It was decided to apply it to all the farmers, as there are only 30 plots on the scheme. However, three non-farmed plots were not taken into consideration and one farmer refused to answer the questions. The interviews lasted around 1h45-2h and were all conducted by the author of this report.

The second part of the questionnaire was describing the production costs (cf. annexe 2) and more detailed marketing aspects (cf. annexe 3). It was first given to all the farmers in order for them to start thinking about it with the intention to visit them later on to fill in the gaps. However, because of lack of time and as most farmers did not start filling the questionnaires, only ten farmers were selected according to the accuracy of their answers during the first series of interviews. Some time was also spent on this matter with the few other farmers who had started filling the questionnaires. Each interview lasted between 1 and 3 hours (cut in two sessions when necessary).

In the first questionnaire, the farmers were asked on which area they planted their different crops. A few of these areas were manually measured, in order to check the accuracy of the answers. As a non-negligible discrepancy was observed between the two sets of figures (sometimes 3 or 4 fold), it was decided to measure all the cropped areas, which, even though not completely accurate, would be closer to the reality. Those last figures are the ones used all along this report, except for gherkins and sweetcorn as the land preparation was done by contractors and a few checks confirmed that the areas were roughly the same as stated by the interviewees.

In the whole, data collection proved to be difficult and many valuable pieces of information could not be obtained. Several reasons could explain this :

- ✓ the farmers did rarely keep records and when they did, those were patchy. They then had to rely on their memory to recall their different deeds. This unfortunately proved difficult, maybe because most of them are quite active and grow a lot of different crops, apparently following different practices from one year to the other (including change of commodities)
- ✓ the author was performing interviews for the first time and might have lacked valuable experience

2-3 Build-up of databases and analysis of the data

Several databases were build on Excel spreadsheets from the data collected during the interviews. They gathered information on socio-economics, production (quantities harvested, areas cropped, production calendar, production costs...) and marketing (quantities sold, price of sale, market outlet..) as well as different categories of issues expressed by the farmers. In order to facilitate the analysis, it was chosen to divide the year into two seasons, according to the planting and harvesting dates mentioned : winter from March till August and summer from September till February.

However, beside the missing information mentioned above, some data collected also appeared erroneous as they were largely standing out from the average or were not consistent with other related data collected from the same interviewee (outstanding yield linked to extremely low input costs for instance). In those cases, documents which could be used as references were looked for in order to check whether this could make sense (as for instance the Combuds (Commodities budgets), which detail the yields and production costs observed in different regions, though mainly in large commercial agriculture). The data which still seemed erroneous was discarded. Besides, after a thorough reading of the questionnaires, farmers were visited again to check what appeared as inconsistencies or misunderstandings.

3- Case study : Presentation of Hereford scheme

The general information concerning the scheme has been obtained through literature, as well as interviews with different stakeholders.

3-1 Situation and history

The scheme chosen for this study is one of the 17 small-scale irrigation schemes of the Mpumalanga province (WRC, 1996) and is part of the Hereford Irrigation Board, which has newly been established as a Water Users Association (WUA) and uses the water from the Loskop Dam. Besides the smallholder scheme –which will be referred to as the Hereford scheme in this report, this WUA encompasses 36 large-scale farmers who grow wheat, citrus, grape, tobacco, cotton and vegetables (Faysse, 2004). The WUA executive committee is composed of 5 representatives for the 36 commercial farmers and 2 for the Hereford scheme.

Unlike most smallholder irrigation schemes in South Africa, the Hereford scheme is not situated in a former homeland. Indeed, the Irrigation Board was originally privately established in 1926 and the Loskop dam was erected in 1935 in response to the crisis and impoverishment of small-scale white farmers. After the Second World War, former soldiers were established in part of the scheme -slightly less than 200 ha, which now constitutes the Hereford scheme. Until 1960, smallholder farmers were using furrow irrigation and growing tobacco, but during the seventies and the eighties, the scheme was gradually abandoned and turned into fallows. After the end of Apartheid, in 1997, 33 black farmers, coming from Tafelkop in the former Lebowa homeland, invaded this unused land and started farming using furrow irrigation. Apart from one who arrived three years ago, all the farmers on the scheme today have been there since the beginning. This original history involves that the farmers do not have the same past as the ones in the irrigation schemes settled in the former homelands and started afresh in different conditions.

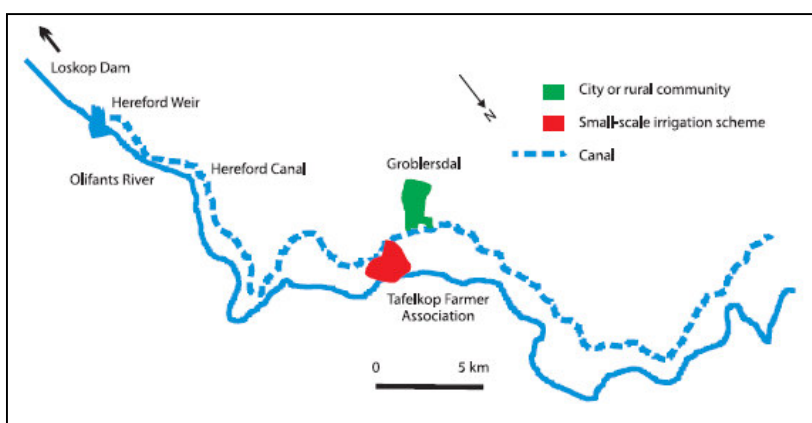
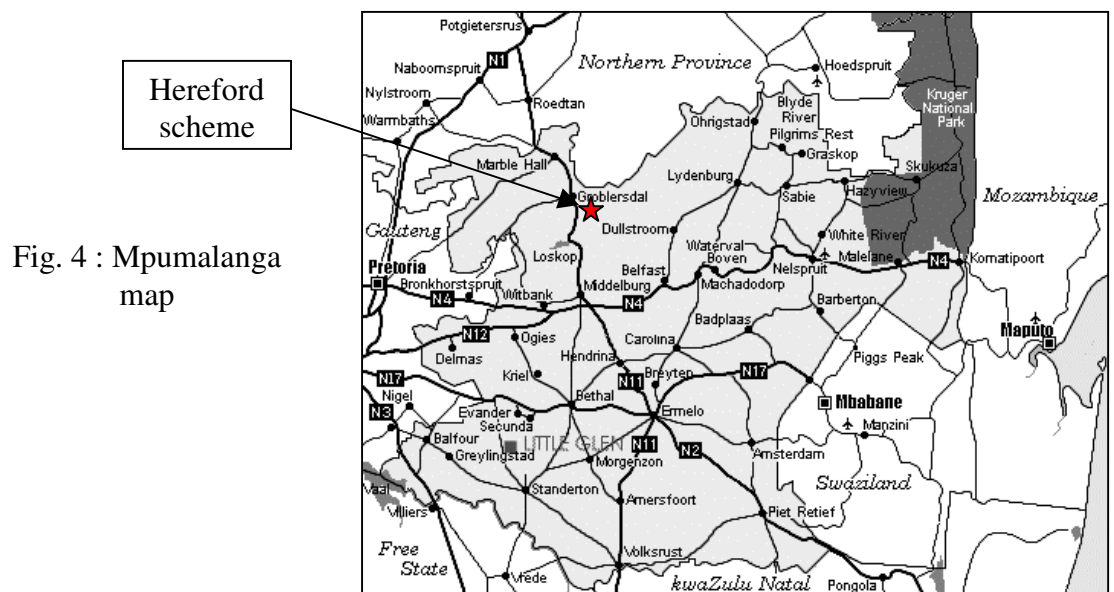


Fig. 5 :
The Hereford Irrigation Board
(from Faysse, 2004)

The Hereford scheme is situated in the Greater Sekhukhune District Municipality, 1 km from away Groblersdal, a rural agricultural town which provides relatively easy access to input and produce markets. The strategic places around are Marble Hall (21 km), another rural agricultural town which provide markets, Pretoria (160 km) and Johannesburg (210 km) ; the roads are in good conditions.

3-2 Irrigation system and water management

Until recently, the Hereford farmers were using furrow irrigation. In the past few years, a numbers of investments have been made to upgrade the scheme. First, the Hereford canal was lined with concrete in 2000 in order to limit the loss of water. Then the irrigation system was completely refurbished in 2002-2003: building of a large buffer dam (still supplied by the Hereford canal), set up of a pumping plant, installation of underground pipes leading to each field as well as provision of pipes and sprinklers to the farmers. This project was fully financed by the Provincial Department of Agriculture, for a total cost of R 7 millions³. The works were completed by august 2004, but meanwhile the farmers had to stop farming. A few of them restarted during winter 2004 and all had gone back to work on the fields by September 2004.

Besides, each farmer was provided with a meter in order to measure the amount of irrigation water he/she used. Although these meters were ready to use during spring 2004, no advantage was taken of it. There has been a trial to hire an external person to check the individual meters, but this failed after a few weeks due to the farmers disapproval. There is therefore no records of the amount of water used by each and every farmer.

The allocation of water is decided every year in April and the WUA is in charge of dispatching it. Hereford scheme has to this day been given the same monthly amount of water, but then will now be able to chose which quantity of water it receives each month. As there was a lack of trust from the Hereford farmers concerning the amount of water they actually received, a meter was installed at the entrance of the canal leading to the dam during the refurbishment works. No check has been made on this meter yet ; its functioning is even challenged these days.

After a few years of tension, which can be partly explained by the way the Hereford farmers arrived on the land and the consequent reluctance of the neighbouring commercial farmers, the relationship between the Hereford farmers and the Irrigation Board-WUA seem to have got better, partly because of the meter installation, partly because the water used by the farmers has finally been paid for. Indeed, the farmers have never paid for the actual irrigation water they have been using, but the Department of Land Affairs decided to pay their debts in early 2005, asking the farmers to participate from then on, which they still avoid. However, they have to pay R100/month each for the pumping costs as well as the maintenance of the main pipes. This fee is completely independent to the amount of water used by each farmer (which is anyway unknown), the plot size or the cropped area. The cleaning of the canal leading to the dam is also the responsibility of the scheme and is done by the farmers themselves.

3-3 Institutional setting and organisation in Hereford

The farmers on the scheme are organised through the Tafelkop Farmers Association (TFA), which is stated to perform the following tasks :

- taking part in the WUA meetings
- keeping contact with the rest of the community which stayed in Tafelkop
- organising farmers to farmers exchanges, training and demonstration days

³ The Rand is the national South African currency ; 1 R = 0.13 €

- inviting experts from agricultural colleges, from the Agricultural Research Council or the University of Limpopo
- grouping purchases of inputs and providing collective storage facilities
- maintaining the community hall, where the meetings are held on the scheme
- organising marketing for the members.

It has a committee composed of seven members : a chairman, a treasurer, a secretary and four additional members, one of them being a woman. This committee was appointed when the farmers settled on the scheme and has not changed ever since.

As observed during the study, there is actually no organisation concerning the input supply or the storage of produce. Each farmer is in charge of getting his/her own input, generally from Groblersdal, although some contractors sometimes provide them on credit. Therefore, they miss on the opportunity to cut production costs which could be reached through economy of scale and increased negotiation power. The organisation for marketing is limited to a few contracts : the contractors go to the TFA which then decides which farmers will grow the crop depending on the total demand of the contract. It is not quite clear how this decision is made, but it appears that there is no collective consultancy at this stage. Outside contracts, the farmers have to find their market themselves. This point will be further developed thereafter. Some trainings have indeed taken place, notably for cattle husbandry, record keeping, financial planning (for some of the farmers who then reported it) and vegetables growing under furrow irrigation (no training has been done for sprinkler irrigation).

3-4 Tenure

The farmers benefited from a long-term leasing arrangement with both the Department of Public Works for the infrastructure and the Department of Agriculture for the land and were paying around R 110/ha/year. However, the lease ceased about three years ago and has not been renewed yet ; the farmers then currently benefit from the land free of charges. As expressed by the farmers themselves, the absence of ownership is a major issue as there is no security concerning the future, though it is quite unlikely that the land will be taken away from them. Besides, it is a major impediment to access credit. Talks between different government agencies are taking place in order to transfer the land to the appropriate government agency so that it could be transferred to the farmers for ownership, along with a settlement grant (R20 000 to 100 000 per farmer). The deal should be concluded by the end of the year 2005. The delimitation of the plots is the same as when the scheme was first implemented after the Second World War. The plots were not allocated, they were obtained on a “first arrived, first served” basis.

3-5 New market outlet

A cooperative is currently being build on the scheme, also financed by the Provincial Department of Agriculture, for a total cost of R 550 000. The incentives for this project were the lack of market and input supply finances. It appeared during the study that another cooperative is being build a few kilometres away from the scheme, financed by a Non-Governmental Organisation. The TFA was first approached by this charity but the farmers refused to have it build outside their scheme, arguing that transport would be a problem and that commercial farmers had their pack house on their

land. This project was meant to be for all Greater Sekhukhune Municipality small scale-farmers but is seemingly far from the other smallholder schemes. The building work is now on stand-by. The chairman of the TFA argues that a lot of politics started to be involved and he can not explain why the charity went on with the project after the farmers objected. This situation is a clear example of a waste of development projects' funding, but it was not possible to cast a light on its very cause. The new cooperative on the scheme will be further studied in the marketing section.

3-6 General problems

During the interviews, the farmers were asked which general problems they encountered on the scheme, marketing and production problems excluded. No single issue was raised by a majority of them, but the major one was the lack of household electricity, for daily life as well as for cool storage. The lack of school was bothering them as their children in age to go to school have then to stay in Tafelkop –about 20 km away further North- and the families are divided. Equally important was the lack of title deed to officialise their presence on the land. Finally, a few mentioned some problems with the scheme management, talking about the lack of transparency and consultation. Only three farmers complained that their land was too small. A bit less than a third of the farmers did not have general problems on the scheme.

RESULTS AND DISCUSSION

The above scheme presentation shows that this scheme has gone through a lot of changes recently, therefore it was quite difficult to obtain valuable data. Indeed, the study taking place in autumn 2005, it was decided to interview people on their agricultural activities during winter 2004 and summer 2004-2005, since it was the first year they had used sprinkler irrigation. However, winter 2004 does not seem representative as many farmers could not plant because of the refurbishment works ; the farmers active during this season were using furrow irrigation. Some information has been collected about winter 2005, but not enough to extract complete valuable results. Therefore, the following report focuses on the description of features at a given time in a moving environment.

1- Assessment of the current situation

1-1 The farmers, their social environment and their assets

1-1-1 Demography and general traits

The Hereford scheme is divided into 34 sections : 33 plots and a communal land (roads, dams, cooperative). Among the land beneficiaries, 30 actually farm ; the remaining 3 plots are left to fallow. This is an issue as the land is a difficult-to-access resource in South Africa and could benefit other people ; some talks are taking place so as to expulse those beneficiaries in order to let new farmers use the land. Only the 30 farmed plots will be considered in the results of this report. Table 2 gives some general features about the farmers and their plots.

Average age of the farmers	58 years
Percentage of female heads	27 %
Average number of people in a household	9
Percentage of pensioners ⁴	37 %
Average plot size	5.35 ha
Average percentage of cropped area in summer 2004-2005 (as a percentage of the commanded area)	58 %
Percentage of farmers cropping more than half their land	55 %

Table 2 : General statistics

Although the Hereford scheme has an original history, the general features regarding the demography and socio-economics are quite similar to those found in the irrigation schemes situated in former homelands. Indeed, the farmers are relatively old, with half of them being pensioners. In comparison, the average age is 60 years in

⁴ Pensioners are people who benefit from an old-age pension granted by the State, consisting in R 780/month. Can benefit from this pension women over 60 years old and men over 65.

Mphephu⁵, 58 in Thabina, 60 in Dingleydale and 62 in New Forest. Although some interviewees mentioned this feature as a hinder for the market orientation of the scheme, the data collected do not show a clear link between the farming activity, the market orientation and the age of the farmers. Besides, some of the eldest farmers already have a sibling working with them on the farm and ready to take over. It is not excluded that those two observations might be linked, the younger siblings pushing forwards. There is as well a minority of female heads, most of them among the most active farmers.

1-1-2 Financial features

A high percentage of farmers rely on extra-farming income, half of them benefiting from a state pension (R 780/month). One out of five farmers get an income from his own job, but it does not seem to affect their farming activities too much as most of them have cropped more than half their land last summer. Thus, the second job seems to be more a security, or maybe a way to fund more easily their farming activities, but not a lack of involvement in the fields. This was confirmed by some interviews where the farmers said their regular job was not done by choice but by obligation as the sole farming income was far too thin.

Percentage of farmers benefiting from an additional source of income	69 %
Percentage of farmers indebted	66 %

Table 3 : Financial statistics

Two third of the farmers are in debt, which shows that they are active to find some funding but most of all that they are not recovering their costs. Those funds are mainly used for their farming activities, although a fifth of the farmers use them equally or solely for household purchases. In comparison, only 20 to 40 % of the farmers of Thabina, Dingleydale and New Forest use credit facilities. This might be explained by the fact that the Hereford farmers are more involved in contract farming, which gives easier access to credit.

1-1-3 The land and its use

Even though the plots vary in size -between 1.58 ha and 8.56 ha, most of them measure between 4.5 and 6.5 ha. Thus, they are relatively large compared to other smallholder schemes : 2.8 ha for New Forest, but around 1,6 ha for Thabina and Dingleydale and only 1 ha in Mauluma, Mphephu and Mphaila. This is due to the fact that all these schemes are found in former homelands where the size of the plots were defined according to the Tomlinson Commission, whereas the Hereford plots were first devised to settle former white soldiers. All the land which can be used for crops can be irrigated. Another difference with most smallholder irrigation scheme is that most of the

⁵ Some studies carried in other smallholder irrigation schemes, all situated in northern South Africa, will be used as references along this report. Unfortunately, although they all followed roughly the same methodology, they do not all focus on the same features. Therefore it was not possible to compare our results to all of them each time. The results have been found in Challet G. (2002) for Mphephu and Mphaila, Lavigne M. & Stirer N. (2003) for Thabina, Dingleydale and New Forest and Keetelaar E. (2004) for Mauluma.

farmers live, at least during the week, on their plots, which avoids all the inconveniences of having to travel to access the land.

However, the land in the scheme is not used at its full potential. It must be said that the percentage of cropped land presented here is not really accurate as each farmer has his house and a tobacco dryer on his plot and only the total surface of the plot is known. The broad assumption was made that the area not available for planting was the same on each plot, namely 1ha, which is not totally correct as this area varies from one plot to another. However, it gives a rough idea of the land use, more or less close to reality. The result is presented here for last summer, as last winter was not deemed representative. Thus, about half the farmers cropped more than half their land in this season, meaning that a lot of land resources are still available. The use of land in winter seems even lower as observed on the scheme during the study. Indeed, although all the farmers had planted in summer, a bit less than a third of them did not plant at all or very little this winter. As this is the dry season, it shows that a category of farmers is rather risk averse. In any case, if ever the land is used at its full potential, although it was said that there was no water shortage problem (which is doubtful as some sprinklers have been seen working with almost no water pressure during the study in July and August), some problems are likely to arise as the irrigation is not currently controlled.

1-1-4 Large equipment and contractors

As shown in Table 4, just above half the farmer own a tractor, although a number of them are in quite bad condition, restraining the farmers in their work. Thus, according to the farmers themselves, the need of a tractor in good condition is a major production issue, being expressed by nearly a third of the farmers, who argued that it would allow them to produce more. The other farmers hire tractors, but complain on the excessive cost (between R 450 and R 600/ha for discing and ploughing and around R 150/ha for furrowing) and in some cases the delay which occurs as the contractor does not come in due time. This business is done mainly by people external to the scheme and there seems to be little organisation to share these assets or loan them at a lower rate. Some exceptions apart, the farmers seem to act rather individualistic, not taking any advantage of a possible collective organisation, allowing among others a cut in their production costs. This is all the more a shame since they rate the lack of money -in particular for input purchases- as their n°1 issue. Slightly more farmers own a bakkie, which give them easier access to markets (inputs and produce). Transport also is a major issue on the scheme, the hire of it, as well as diesel, being deemed costly.

Percentage of farmers owning a tractor (in working condition)	55 %
Percentage of farmers owning a bakkie	59 %
Average number of hired workers on a farm	3
Percentage of farmers hiring permanent workers	45 %

Table 4 : Statistics on large equipment and hired labour

1-1-5 Labour

Nearly all the farmers hire some labour, but they do not all use the same system. Indeed, while only half of them employ permanent workers, almost everyone hires some temporarily. In this respect, the scheme participates in the local economy by creating a small number of jobs. All the workers are paid, usually around R 20 to 30/day, but some are fed and accommodated and then earn about R 300/month, thus allowing a cut in the production costs for the farmer. Those prices seem to reflect the general tendency as they are the same found in Mphaila and Mauluma. Some workers are also paid R 15/day, but there was not enough information collected to know whether that was the integrity of their income or if they were also partly paid in kind. Logically, there seem to be a link between the strategy chosen, as in the choice permanent/temporary workers, and the use of the land all year round as most of the farmers who hire permanent workers crop in winter and summer. Nonetheless, a non negligible number of farmers who are active all year hire only temporary workers. This may be due to a difference in production planning, but is not well explained.

1-2 Production features

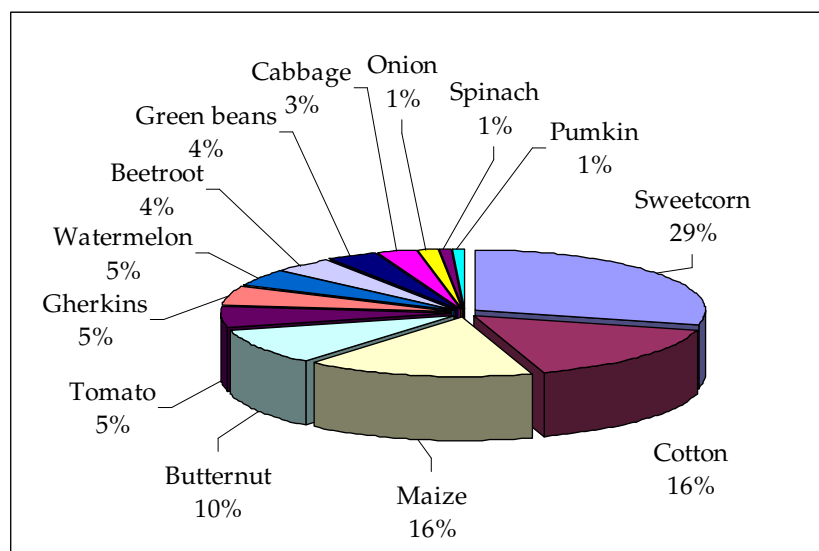
The crops studied in this chapter are the one grown during winter 2004 –using furrow irrigation- and summer 2004-2005 –using sprinkler irrigation.

1-2-1 Crops grown on the scheme

As seen on Fig. 6, the main crop in 2004-2005 was sweetcorn (yellow corn), but this is due to the fact that the farmers benefited from an occasional contract and is not representative of what they usually grow. It was the first year they were trying this crop -with various results depending on the farmer. The other crops covering large areas are cotton and maize (white corn). It is not surprising to find maize as a major crop as it is staple food in South Africa, though it is interesting to note that it does not constitute the major crop on the scheme as it is in numerous smallholder irrigation schemes throughout northern South Africa, as confirmed by the studies done in Thabina, Mauluma, Dingleydale and New Forest for instance. Maize is mainly grown for self-consumption, but some farmers also sell it. Cotton has been grown on the scheme for a long time, and some of the farmers even won some awards in the past. As stated by the farmers, the main reason for growing cotton is that it always has a market in the area and is profitable.

All the other important crops grown on the scheme are vegetables, the main ones in area cropped being butternut and tomato. According to the farmers, they are grown because they offer a good market and are profitable. Are also grown on the scheme green beans and spinach which present the advantage of growing quickly and then provide a rapid financial return. Those two crops can also span on a large period of time, allowing regular income. Although some crops are only grown during one season, principally in summer, some can be produced all year round in the area, like beetroot, cabbage, spinach and occasionally tomato. However, apart from the beetroot, they are preferentially grown during one season, winter for cabbage and spinach (as the summer production seems more risky due to increased diseases occurrence) and summer for tomato (as they are frost sensitive).

Fig. 6 :
Main crops grown in
2004-2005 according to
area planted



The comparison with the crops grown in 2002 (Fig. 7) shows that the farmers' strategies and practices are not stabilised yet, as a big difference can be observed. As the way these data have been obtained is not known, only a comparison in the share of each crop in the total surface cropped will be done as an important margin was observed when the area measured and those declared by the farmers were compared during this study. Thus, the main change occurred with tobacco which, although a predominant crop in 2002, was grown by only two farmers last summer. Indeed, the majority of Hereford farmers find this crop not lucrative enough, which added to some tensions with the cooperative to which they were selling it.

Cotton and maize are still major crops as they used to be, but they are now on the same level, meaning that either the cropping of maize has decreased, or the cotton has gained some importance. When compared to the areas stated by the farmers during the interviews (around 17 ha), the first possibility seems more likely as around 27.5 ha are stated in the Faysse's study. In any case, maize is no more the major crop on the scheme which indicates that the farmers are moving away from this subsistence crops towards marketed-only or -principally crops, like cotton or sweetcorn (through contracting for the latter), or even tomatoes.

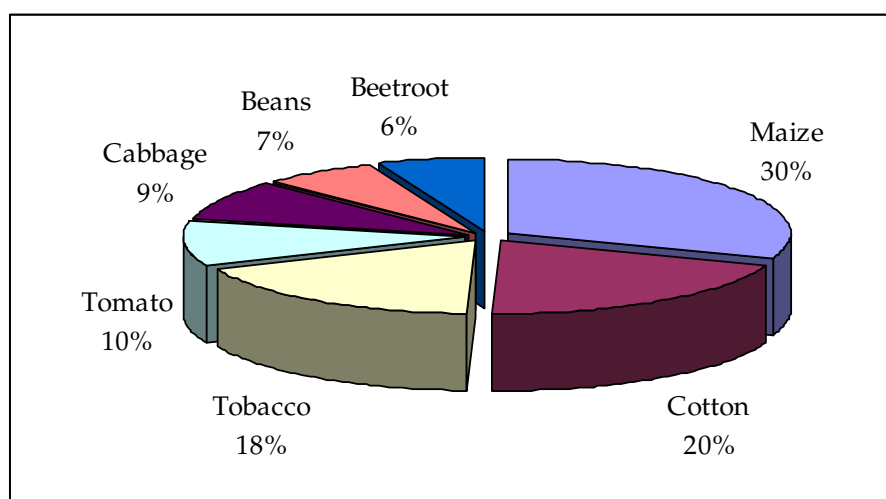
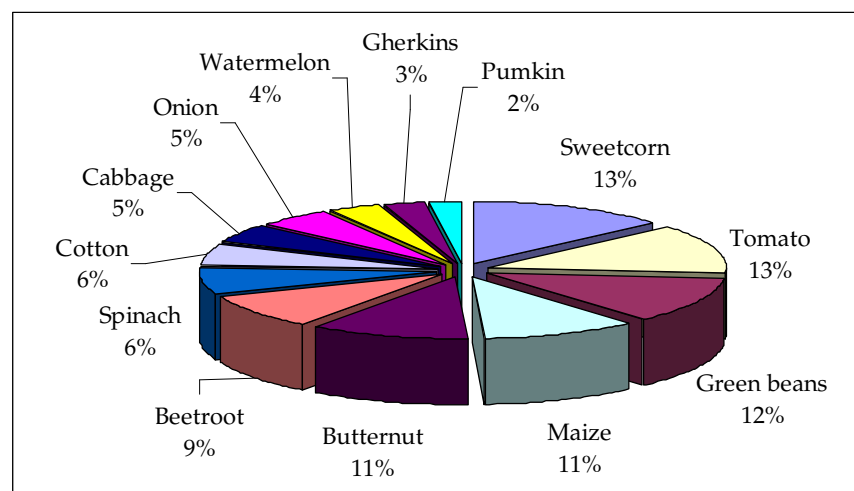


Fig. 7 :
Crops farmed by
the TFA farmers
in 2002 (adapted
from Faysse
(2004))

1-2-2 Different areas for different crops

A difference can be observed in the prevalence of the different crops when the number of farmers is taken into account rather than the area cropped, as seen on Fig. 8. Indeed, although sweetcorn remains the major crop, tomato and green beans become more predominant, showing that a lot of farmers grow them, but on small areas. Butternuts are still widely grown, but on larger areas as no difference is observed between the two graphs. A possible explanation is that butternuts keeps longer, whereas green beans and tomatoes are more quickly perishable, therefore it is more risky to grow big quantities as the market is uncertain (cf. section 1-3-2). Sweetcorn is an exception as it was under a relatively big contract (40 ha) which was shared evenly between the majority of the farmers. On the other hand, cotton which appears as a widely grown crop interests a minority of farmers who plant it on relatively large areas.

Fig. 8 : Main crops 2004-2005 according to number of farmers growing



1-2-3 Diversification

The level of diversification of each farmer was also considered : a farmer was qualified “diversified” if he was growing three or more different crops in one season, regardless of the area covered. Were taken into account summer 2004-2005 and winter 2005, as the different crops grown in this last season were known. The farmers can then be divided into four groups as shown on the graph below. It appears that the majority of the farmers are diversified in at least one season, showing that they decide to rely on different crops for their security. This can probably be explained by the fact that they mostly market their crops using hawkers (cf. section 1-3-1), which offers no security that a big amount of one crop will easily find a market. Whereas most farmers are diversified in summer (75 %), only a third follows this pattern in winter, which is in line with the lower land use observed in that season and the risk aversion. Interestingly, diversification was not directly linked to the total area, or the area per crop. Thus, the diversification appears, at least in some cases, as a real strategy and not only some trial on crops the farmers are not quite sure about.

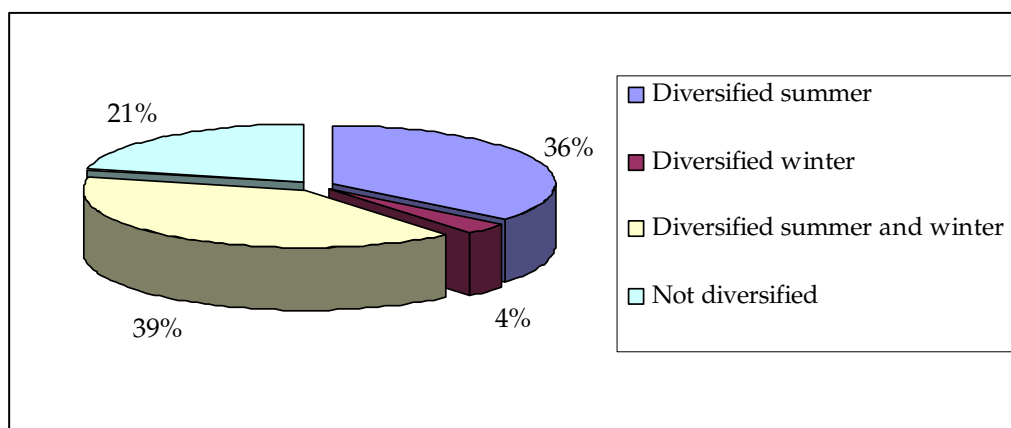


Fig. 9 :
Percentage of
diversified
farmers
depending on
the season.

1-3 Marketing features

1-3-1 Some commercially-oriented farmers targeting various outlets

The farmers in the Hereford scheme are commercially oriented and sell most of their production. This is confirmed by the fact that a considerable area is cropped with vegetables which, being perishable, are cropped only with the intend to sell. Only maize is predominantly produced for self consumption. The other crops are either grown for market only, including cotton and the crops under market contracts (sweetcorn and gherkins) or for market mainly, meaning that the farmers keep a small part of the harvest for their own consumption and sell the rest. Nonetheless, it happens that farmers grow a small area of vegetable only for consumption purposes ; this has been observed for beetroot and spinach. It was not possible to precisely evaluate the percentage of crops self consumed as the farmers could not generally remember their total production, but only the amount they had sold. Nonetheless, all the farmers sell the major part of their crops.

These results can be compared to previous studies made in other smallholder irrigation schemes. Thus, in Thabina, only 10% of the farmers are subsistence oriented, which is a situation close to the one in Hereford. The situation is different in Dingleydale and Mphaila where respectively about half the farmers and 18% of the farmers are commercially oriented. In Dingleydale and Thabina were considered only the farmers who actually farm, as a fair number of land beneficiaries do not crop their land (25 to 50% depending on the year). Those difference do not seem to be due to the irrigation system as Mphaila also benefits from aspersion irrigation, but Thabina and Dingleydale are under flood irrigation. This feature will be discussed further on (cf. section 2-1-2)

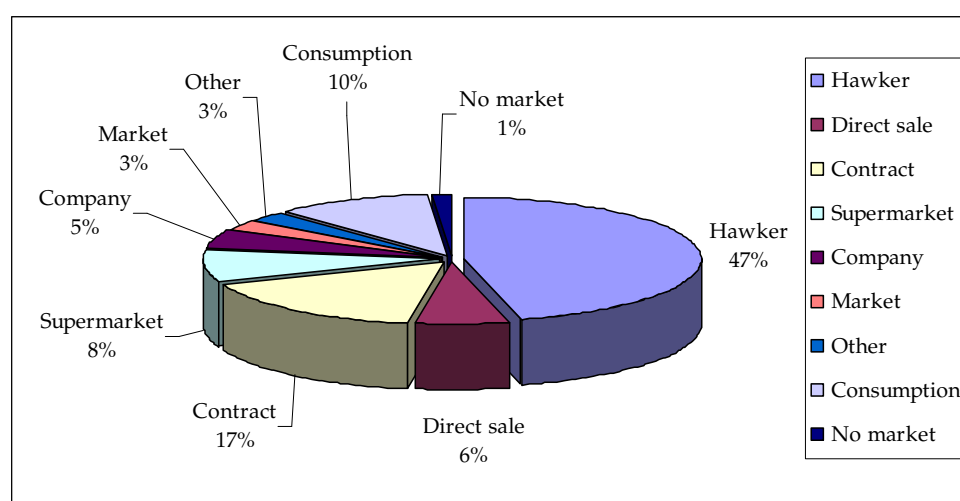
According to the farmers, their main issue is the transportation of crops to be sold. This is either because they do not own a mean of transportation themselves and have to hire it at high cost, or because petrol is too expensive for them if they own a vehicle (bakkie mainly). In consequence they do not have access to long distance markets, as Pretoria or Johannesburg Fresh Produce Markets for example. Some farmers entirely depend on the hawkers to come and buy their products on farm, which does offer no security of selling all their production.

The second important issue pointed at is the low prices at which they sell their crops. According to the interviewees, it is due to the competition of their neighbouring commercial farmers who can produce at lower prices considering their equipment and the size of their farms. These commercial farmers do not seem to have the same market outlets though ; one of them was interviewed and appeared to sell through contract farming (supermarkets and companies). Nonetheless, it was said that those farmers were selling at least part of their production to hawkers, and therefore dropping the prices.

In order to market their crops, the Hereford farmers use different market outlets, the main ones being contractors, supermarkets, markets and companies as far as the formal sector is concerned (40% of all sold crops), hawkers and direct sale in the informal market (60%). Other minor outlets are millers, commercial farmers cooperatives and local shops. Thus, the farmers have a seemingly equally access to both types of markets. Furthermore, they use a wide range of market outlets, which indicates that they are active in searching market opportunities, but as well that they are not organised to find markets collectively, as seen during the study. Indeed, they get together when a contract is offered to them, but this is due to the fact that those contracts agree on an amount of produce too large to be supplied by a single farmer. However, there is no coordination among the farmers themselves in order to gather their crops in search of a better market ; when this coordination occurs, it is because the market is brought to them, as in the case of contracts which were obtained through a commercial farmer.

Figure 10 shows the different outlets used by the Hereford farmers. It does not take into account the quantity of produce sold, as the data collected was not accurate enough. For each crop, the number of farmers selling to the different market outlets was counted, then these numbers were added for each outlet. This shows the frequency to which each outlet is used by the farmers. Are considered in self-consumption only the crops which were solely grown for this purpose ; this category is therefore underestimated as almost all the crops are partly self-consumed. The same applies to the crops which did not meet the market.

Fig. 10
Relative importance
of the different
market outlets
(number of crops
sold by all the farmers
to each market outlet)



The graph shows that hawkers (informal traders) are the most often used market outlet, the crops being sold half of the time to them. Contractors were the second most used outlet last year, but it might not be really representative on the long run as the two contracts were signed for the first time and no renewal is certain. It shows however that

the farmers are seriously involved in formal markets, more the less as they have had a number of other contracts in the past (tobacco, vegetables for export). The relative importance of supermarkets in the sales goes equally in this direction, showing that the Hereford farmers are willing to reach various markets and find bigger outlets where they can more easily market their production. Only a negligible number of crops did not find a market at all, but this does not give valuable information on the difficulty to access the market. Indeed it happened that some farmers sold most of their crops, but could not find a market for part of the harvest. Unfortunately, the percentage of produce which did not reach the market remains unknown.

1-3-2 Different market outlets for different crops

A more thorough look at the proportion of different market outlets used shows that it varies from crop to crop. Cotton, sweetcorn and cucumbers have been excluded from the graph below as they are sold through an exclusive market outlet, respectively company (with no contract) and contracts. Maize is mostly consumed, which is no surprise as it is staple food. Among the vegetables, while they are principally sold to hawkers, some of them are also significantly marketed through other channels, as it is the case for green beans, spinach and watermelon. When looking at the crops which did not reach the market at all, only cabbage appears, showing that the farmers have especially met difficulties for this crop ; some did not even harvest and let the crop rot in the field as no market was found. The farmers confronted with this problem both harvested in December, which was the time when many farmers on the scheme harvested as well, therefore it is possible that this commodity's market was overflowed. In any case, it did not discourage the farmers to grow cabbage once more during winter 2005, as a third of them did.

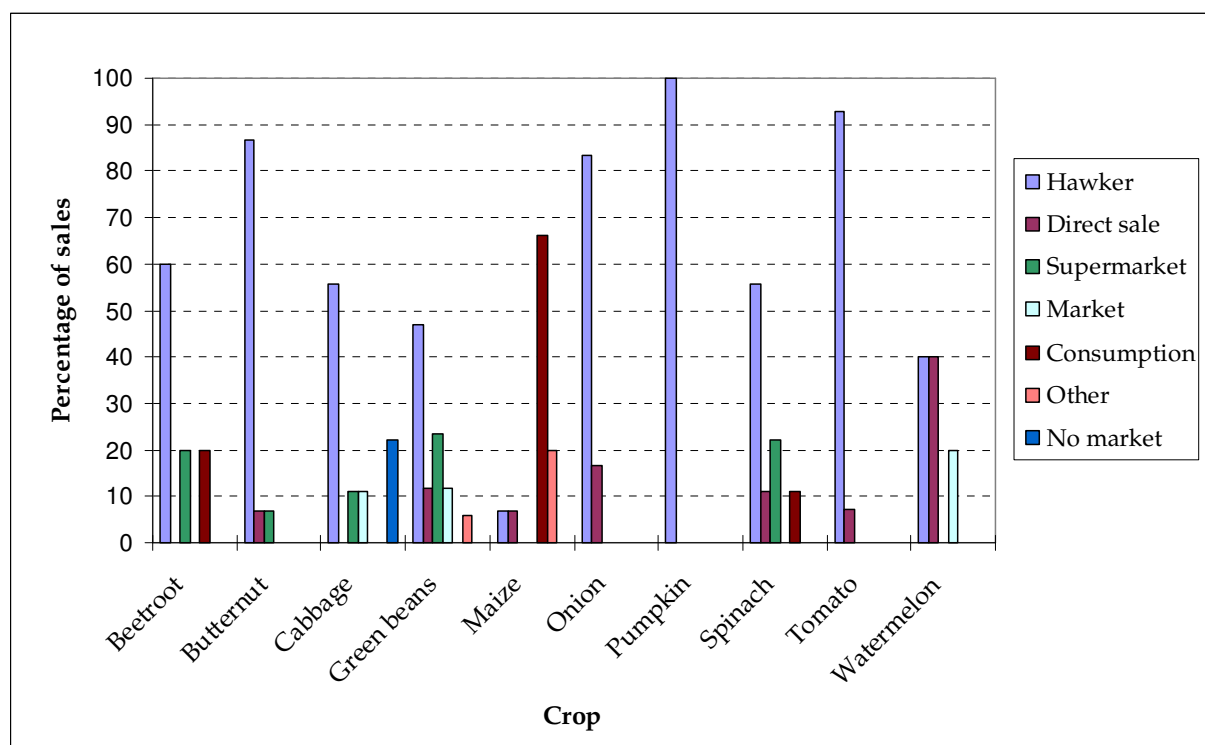


Fig. 11 Proportions of the different market outlets according to the crop

Around half of the farmers who market their vegetables use alternative channels to hawkers, though none sell solely to these other markets. It appears nonetheless that when a farmer uses an alternative market, all the vegetables not sold to hawkers are marketed through this same channel. Therefore, there does not seem to be real organisation in looking for alternative markets for vegetables, but this seems to be done according to the opportunities. This is confirmed by the fact that the crops sold through alternative channels differ according to the farmer, though some are exclusively sold to others than hawkers by this type of farmers, as it is the case for green beans, which suggest that the market is more easily available for such crops. Anyway, hawkers are the simplest and most direct option ; some farmers try to find alternative options, but still rely on hawkers for the crops they cannot sell elsewhere.

The interviewees were asked which outlet they preferred. More than a third expressed contracts as their favourite marketing channel for the main reason that it brings the security that all the production will be sold, at a fixed price. Other reasons were that some help is given with quality control, some inputs are provided on credit or the signing of the contract makes it easier to get a loan to pay for the production costs. Markets and supermarkets were second favourite outlets. The reasons stated did not appear as clearly, but it seems to be because those outlets buy large quantities, so it is easier to sell the whole of the production. Interestingly, most of the farmers who expressed this preference did not actually use those channels last year, so one can wonder how much information they have access to and what drives this judgment as some reasons given seem quite obscure. Hawkers come last on the preference list, being the favourite outlet of one out of seven farmers, confirming that this channel is chosen by default, probably because it can be accessed without transport.

1-3-3 In depth description of the main market outlets

Hawkers (informal traders)

Hawkers are the main marketing channel used by the Hereford farmers, but all the farmers do not deal with them in the same way. Some farmers have regular hawkers they can contact when the harvest is ready, and in some rare cases even have an informal agreement before planting the crops. In this case, there is a kind of trust relationship and it seems to work rather well. A number of hawkers come randomly on the scheme to buy some vegetables and most farmers market part of their production that way, which seems to suit them. It offers the advantage of cutting the transport cost but is highly dependant on the hawkers. The ones who own a bakkie can overcome this last issue by taking the remaining vegetables to the hawkers staying on the road nearby, with the risk that the hawkers refuse to buy the produce. However, a few farmers simply rely on the hawkers passing by on the scheme. In this case, there is a complete lack of security and planning possibilities and some produce is sometimes lost because not enough hawkers came or they did not come on time.

As seen above, the farmers do not sell mainly to hawkers because it is their favourite outlet. It suggests that this channel offers an easier access than the other ones and that is why it is so widely used ; it is then the option by default. The first advantage is that hawkers accept smaller quantities than supermarkets do for example, which suits most farmers on the scheme as they usually grow on small areas. Besides, as many

hawkers come to the scheme, farmers without transport and funds to hire some can have access to this market ; other farmers can also benefit of those transport costs cuts.

Contracts

The Hereford farmers have collectively benefited from three contracts last summer, respectively for gherkins, sweetcorn and tobacco. As for tobacco, they used to have a long lasting contract with a commercial farmers' cooperative, but they have decided not to grow this crop anymore as they find it not profitable enough and feel like they have been cheated by this cooperative. Thus, only two farmers grew tobacco last summer. The two contracts for vegetables were obtained through a neighbouring commercial farmer and passed on to the emerging farmers at the condition that the process be monitored by the commercial farmer, as the farmers had never grown those crops in the past.

The gherkins contract was agreed with Tiger Food Brands for 2 ha that were dispatched by the TFA into four farmers. It stipulated the quality expected and retail price. The contract was never signed by the farmers, but no major problem occurred. The seeds and chemicals were provided on credit. The yield was lower than expected by the contractor, but it acknowledges that it is a difficult crop to grow considering the quality expected (only small gherkins are bought) and some farmers complained on the lack of extension. Another contract is not excluded, though not on the agenda yet. Importantly, all the farmers made a profit, though not always considerable (from R1 730 to R4 150) from growing this crop, some farmers having done better than others.

The outcomes of the sweetcorn contract were more mixed. It was signed with Nature's Choice for 40 ha, but due to general delays and other problems only half of it was actually grown (though all the seeds were paid for). After a first failed selection by TFA, anyone who wanted to grow had the opportunity to do so, on 1 ha for all but one farmer who grew on 2 ha. The contractor agreed on a price and an expected yield ; the farmers were in charge of the whole process, from land preparation to transport, during which they were advised by the commercial farmer who found the contract for them. Each farmer contracted a loan to pay for all the expenses, among which soil preparation and herbicide spraying -which were performed by a contractor hired collectively- and transport. Many farmers encountered problems : half the farmers lost a fair amount of money (around R 7 000); for the others, a wide range of profit occurred and a few farmers did really well, as shown in Table 5.

Income from sweetcorn contract	Number of farmers
- R 10 000 to - R 5 000	8
- R 5 000 to - R 2 000	2
- R 2 000 to R 1 000	3
R 1 000 to R 3 000	4
R 3 000 to R 6 500	3

Table 5 : Farmers' income from the sweetcorn contract, after expenses were deducted

The farmers who are deeply in debts had no harvest done ; some had only a small quantity harvested. The causes of this failure seem to originate from both sides : the farmers were growing sweetcorn for the first time and were therefore lacking

experience, but it also seems that the contractor failed them in some ways, noticeably during harvest time. Indeed, some farmers have mentioned that the contractor refused to accept the harvest on time as the factory was closed for holidays. When it reopened, the sweetcorn was not in good condition anymore. However, the amount spent on inputs, mechanisation, labour and transport needs to be questioned as the cost estimated to grow maize under irrigation is R 3 670/ha (without taking into account the cost of water, Combud 2005). In any case, the loss is very important and it would probably not have been so if the farmers had grown crops without this contract as it is unlikely that they would have chosen by themselves to spend such an amount.

Contract farming is meant to bring security to the farmers by assuring them their production will have a market. The farmers seem to have been partly unlucky for the sweetcorn contract, but the success of the gherkins contract, knowing that the farmers had no previous knowledge of this crop, shows that it might be worth following this path. This is confirmed by a previous contract experience the Hereford have had before the irrigation update, with the help of a Non-Governmental Organisation, which allowed them to reach an agreement with a wholesaler exporting to Honk-Kong and France and supplying the South African national market and therefore to increase their income (Shah, 2002). It is nonetheless necessary to make sure that the farmers are properly advised, especially when they grow the crop for the first time, as the failure of the contract can lead the farmers in heavy debts, which can prove difficult to pay off considering their average yearly income (cf. 2-1-2).

Besides, the farmers have obtained these contracts indirectly, benefiting from the broad Black Economic Empowerment policy and the efforts of some commercial farmers to help emerging farmers develop. In order for the Hereford farmers to become sustainable, they should try and find their own contracts in the future, more the less than the commercial farmers might not be ready to keep helping if they do not get something in return.

Supermarkets

A few farmers sold some of their production to supermarkets in Groblersdal, mainly Spar and Fruit'n'Veg. In both cases, there is no written agreement, but sometimes informal agreement takes place before the planting or before the harvest. Usually, the farmers bring a sample of their crops after harvesting and the supermarkets decide according to quality and the state of the market. Those two shops generally get their vegetables from Pretoria Fresh Produce Market, but their policies differ : Spar prefers this supplier because it is cheaper, while Fruit'n'Veg's preference goes to locally grown produce. The main problems concerning the Hereford farmers are quantity and regularity of delivery, as the farmers are not organised and sell their crops individually. Quality does not seem to be an issue. Furthermore, they are only a few kilometres away from the scheme (less than 5) so there are no important transport costs.

The supermarkets in Groblersdal then offer an alternative outlet to hawkers. It does not bring more security as no written agreement takes place, but allows farmer to sell more of their production on a regular basis, especially through Fruit'n'Veg. However, the farmers do not completely fulfil the expectations of the supermarkets as they are not organised to pool their production to provide larger quantities and regular delivery. Places like Fruit'n'Veg accept small quantities, but it seems to be once more

through a Black Economic Empowerment policy, as was mentioned by the local manager during an interview, which does not make the scheme sustainable on the long run. Besides, according to a commercial farmer, the Hereford farmers are not complying with standards, such as EurepGAP (private norms which “aim at the global certification of good agricultural practices”), often followed by other national supermarkets chains, therefore their access to these outlets is compromised.

1-3-4 From production to marketing

As stated by an interviewed commercial farmer, the golden rule in agriculture is to find the market before planting, so that the farmer will be assured of a way of disposing of all his/her production on time. Unfortunately, most of the Hereford farmers do not follow this advice, as most of them decide where to market their crops once they have started the harvest -except obviously in the case of contracts. However, some agree with the market outlet just before harvesting, but only a few actually know the channel they will use before planting. Those last agreements have been seen on the scheme for hawkers, markets or supermarkets, though they seem extremely rare with hawkers. When they have occurred, they have seemed to be rather well implemented. Interestingly, the decision also depends on the crop, as a same farmer often finds a market at different period of the growing process for different crops, although for a same crop different farmers will find their markets at different times. Thus, there does not seem to be a logical explanation to this observation. The lack of early decision in marketing is consistent with the fact that hawkers are the main outlet, as they are “last minute” buyers. The same issues as stated above arise from this situation : lack of security resulting in difficulty in planning which crop to grow and in which quantity, produce wasted because it has not found a market.

The farmers are also not organised together in order to access more easily the market. Each farmer decide himself what he/she grows, in which quantity and when he/she plants, without seemingly consulting the other farmers. It results from this that many farmers grow the same crops and find themselves in competition when harvest time has come as they do not gather to find a common market where they could sell bigger quantities. For example, a lot of farmers grew cabbage this last winter and had trouble finding a market for it or had to sell at a low price.

However, some farmers take the market into account when they decide what they will produce. Indeed, they are aware of price fluctuation during the year, and a few farmers decide to take the risk to grow out of season in order to benefit better prices. For instance, one farmer grew tomatoes in winter last year and therefore harvested when the price was high (R 30-50/crate, instead of R 20-30/crate in summer). His yield was also among the highest on the scheme last year, thus he seems to have made the right choice.

The decision on which area to crop also seems to be influenced by the market, although more by its uncertainty than by the different outlets. Thus, some vegetables are usually grown on very small areas (between 0.1 and 0.2 ha on average) when the commodity is quickly perishable, as for green beans and tomatoes, but on slightly larger areas when the commodity can await the market a bit longer, as for the butternut (0.47 ha average) and cabbage (0.3 ha average). However, a few exceptions apart, the decision on the cropped area is not influenced by the moment the market is known. Indeed, it is rare to find a bigger area than average even when the decision of the market

is done before planting. This might be explained by the fact that, although the market outlet is targeted, the uncertainty remains as the agreement is always informal.

1-3-5 Major constraints to market access for the Hereford farmers

In the introduction, the constraints faced by small-scale farmers have been reviewed. Even though many of them apply to the Hereford farmers, some do not. Indeed, being situated only 1 km from a rural town which provides input markets and markets opportunities to sell fresh produce, the farmers on the scheme are in a good position compared to a number of smallholders. Besides, they are settled by a major provincial road, which is tarred, giving easy access to major markets. However, the problem of transportation subsists as some of the farmers do not own or have access to a bakkie. Storage is also an issue, partly because the houses on the scheme are not linked to the electricity network (but this is apparently only a question of time). This is all the more important as the farmers produce perishable produce, like tomatoes, which would require cool storage in order to avoid quick loss of quality.

The farmers also face a lack of market information : their main complaint is they do not know which market to target and what their different opportunities are. They are nonetheless not totally unaware as they have a range of market outlets nearby (hawkers, supermarkets, markets), which can allow them to compare prices and not rely on a single source of information. Although they are not too much of a long distance away from some National Fresh Produce Markets (150 km from Pretoria, 115 km from Witbank), they are not using these facilities because of the high transport costs on one hand and a lack of organisation on the other hand which prevents them from pooling their production, the quantities produced by individual farmers being too small to justify such transportation expenses. Therefore, there seems to be a possibility to access this alternative market outlet, currently unexploited.

This lack of organisation on the scheme appears like a major issue as the individual farmers lack of bargaining power and could also benefit from the gathered knowledge of the different members. It could also be a tool to fight the discrimination of which some interviewees have complained about in some supermarkets, explaining that the white and black farmers were not treated in the same way, the white producers benefiting from higher prices. However, these statements have to be handled with care as they could not be verified.

In short, the Hereford farmers still face a number of constraints to access market, as most smallholders in South Africa do. However, they benefit from a number of advantages which allow them to access different markets, even though this access is far from secure. Indeed, their proximity to local markets and to major roads in good conditions are non negligible assets which can offer a number of opportunities. However, the lack of security and planning in their marketing dealings seems to be the biggest hindrance to further development. The nearly finished cooperative being built on the scheme itself is full of promises as it should be a way to lead to farmers towards more collective action and therefore open new doors. These possibilities will be studied further on.

2- From individual to collective

2-1 An apparently successful scheme constituted by individuals

2-1-1 Convergences and divergences

It is interesting to try to classify the farmers of an entity into different groups in order to identify the different strategies implemented and which factors can influence decisions regarding production and/or marketing. The farmers were then divided into six groups according to some of their production decisions, i.e. the land use and the diversification. For each group, the occurrence of different production or socio-economic features were put in prospect. Table 6 sums up these findings.

	Less than 50% of the commanded land is cropped (11 farmers)			More than 50% of the commanded land is cropped (15 farmers)		
	S (4)	SW (4)	ND (3)	S (7)	SW (6)	ND (2)
Tractor : good condition	1	2		2	4	2
bad condition	2	1		1		
Bakkie : good condition	1	3		4	6	1
bad condition	1			1		
Pension		3	1	2	4	1
External income		4	2	6	5	1
Female head		2	1	2	1	1
Age	52	66	61	54	64	57
Total area	6.22	6.18	4.88	5.72	4.78	4.06

Table 6 : Identification of trends in the farmers' strategies

S = diversified only in summer ; SW = diversified in summer and winter ; ND = not diversified; the numbers are bold when they stand for more than 70% of the total number of farmers in the group (into brackets)

Although some similarities can be found between farmers of the same group, they do not seem to apply to enough farmers to conclude that some factors are definitely responsible for one production decision more than the other. Indeed, most farmers cropping more than half their land own a tractor in good conditions ; however, a significant number of farmers who do not benefit from this asset managed to crop the major part of their land. Therefore, the absence of a tractor does not justify in itself a low crop coverage. However, some trends can be identified.

Thus, the farmers who are diversified all year seem quite homogenous. Their different features can be described as follows : possession of a tractor and a bakkie in good condition, additional non-farming income which mainly consists in a pension, high average age. Although the production is more risky in winter as it is the dry season, the regular source of income provided by the State to the pensioners might be an incentive for them to take some risks, although in a way secured through diversification. The possession of a bakkie also seems to influence diversification, especially in winter, as the specialised farmers usually do not own one. This could be easily explained by the fact that multiple commodities often involve multiple markets and consequently

journeys to various locations. The limitation of the number of market outlets aimed therefore reduce transportation costs, especially valuable when vehicle has to be hired.

However, the earning of non-farming income does not seem to be determinant in the land use strategy. Indeed, although most farmer benefiting from other sources of income farm more than half their land, a number of them do not. The gender of the household head has not been identified as leading to specific production decisions. It is commonly acknowledged that female heads have to bear additional charges and can consequently put less effort into farming. The above finding is nonetheless not surprising as this is not the case in Hereford, the children staying outside the scheme and being taken care of by other members of the household. Finally, farmers cropping a smaller part of their land have in general bigger plots ; this simply could be that they crop as much land as the others.

In conclusion, the lack of defined strategies in the scheme suggests that the farmers are still trying to find their way in farming. Indeed the farmers have been on the scheme for only eight years, and although they were involved in agriculture before, it was not in the same conditions (dry land for instance). In addition, they have just gone through some changes, like the irrigation upgrade which made them switch from furrow to sprinkler irrigation. The change in the crops grown, with for instance the farmers' withdrawal from tobacco growing confirm this proposition.

2-1-2 Farmers monographs

As a typology could not be constructed, it was decided to proceed through a few monographs. Three farmers were then chosen among the ones for which most data was available and whose answers were considered more or less accurate. Attention was paid so as to chose farmers with different features, especially concerning non-farming income. Table 7 recaps the results obtained concerning winter 2004 and summer 2004/2005 (details can be found in annexe 4). Unfortunately, no sufficient data could be collected for farmers using a large part of their land. The pricing of self-consumed commodities was obtained using prices in local supermarkets. The most striking figures coming out of this study is the very low farming incomes. Indeed, although most of the crops are marketed and the self consumption is low, the cash derived from the sales is barely sufficient to pay for all the expenses due to production and marketing.

However, it has been noticed that labour costs were ranking very high and a doubt can be cast on the accuracy of this feature. Anyway, even without taken them and the irrigation costs (sometimes not paid by the farmers) into account, the gross margins still appear really thin considered the farmers are commercially oriented. Indeed, in the best of cases, it amounts to R 626/month, which is less than an old-age pension (R 780/month). Therefore, in order to live out of poverty, the farmers have to rely on non-farming income, which mainly takes the form of government grants (pension, child grant⁶) but can also be the wages of an household member. Thus, for one of the farmers studied, the government grants are the main source of his very poor income. For the other two, the situation is much better, not only because they generate a more important income from the farm, but mainly because they have access to pensions, and in one case regular wages. However, in the best scenario, the farming income does not participate

⁶ A child grant is given by the government for children under 14 and amounts to R 180/month

for more than a third in the total revenue (this is counting a minimum R 1 000 for labour and not counting the irrigation costs).

	Farmer 1	Farmer 2	Farmer 3
Farm size	1.58	8.56	5.39
Area cropped in 2004/2005	0.18	3.69	2.10
Household members	9	6	15
Number of crops	4	6	4
Amount sold (Rand/year)	2483	21022	19971
Self-consumed (Rand/year)	178	680	560
Production costs (Rand/year)	1029	11764	10088
Marketing costs (Rand/year)	50	3678	2929
Gross margin (Rand/year)	1582	6260	7514
<i>Gross margin/ha cropped (Rand/year)</i>	<i>8879</i>	<i>1696</i>	<i>3578</i>
Labour (Rand/year)	2640	2976	3560
Irrigation charges (Rand/year)	1000	1000	1000
Net farming income (Rand/year)	-2058	2284	2954
Government grant (Rand/year)	4320	9360	15840
Wages (Rand/year)	0	18000	0
Net yearly revenue (Rand)	2262	29644	18794

Table 7 : Traits and performance of different individual farmers

These findings can be compared to other studies. Thus, in Thabina, the average annual profit per ha cropped is R 1 581 (Perret, 2003), which would amount to for instance R 5 834 for 3.69 ha. This figure is quite close to the gross margin observed, which means that the Hereford farmers are not necessarily performing much better than farmers in other SIS. In Mauluma (Keetelaar, 2004), where most farmers' gross margin average between R 3 000 and 9 000/ha/year. When compared to Hereford farmers' gross margin/ha cropped, it appears that the latter do not perform better. These results are supported by an interviewee who said that after several years on the scheme they were still not making any profit on farming.

Then, farmers in the Hereford scheme seem to perform even more poorly than in other SIS. However, it is important to specify that some large quantities of commodities grown by Farmer 2 and 3 have not met the market. This means that the costs have been paid for, but there has not been the correspondent cash return. For example, it can be estimated that Farmer 2 could have increased his gross margin by around R 3 000 (15 crates of tomatoes and 90 crates of green beans) ; these have not been completely counted in self consumption as it would certainly have distorted the results (higher price for self-consumption for products which would surely not have been consumed in the household considering the quantities involved)⁷. Farmer 3 has lost a fair amount of money in the sweetcorn contract as well. Therefore, if some farmers are performing poorly, it might be more because of a problem regarding marketing than production.

⁷ In this case, the quantity self-consumed applied was the average of self-consumption observed for this commodity among the other farmers of the scheme

2-1-3 A mixed success

The Hereford scheme is presented as a “success story”, emphasising on the fact that the farmers are all significantly market-oriented and are not subsistence farmers anymore. This image is largely conveyed by the farmers’ association, especially its chairman. This reputation, however, built up on real achievements. Indeed, different farmers from the scheme have won awards in 1998 and 2000 (National Farmer of the Year, 2nd Woman Family Farmers of the Year, Small Cotton Farmer of the year). Furthermore, the farmers have exported vegetables on the international market before the irrigation update (with the assistance of a non-governmental organisation), by the way of a contract-farming with a wholesaler which notably exported to Hong Kong and France (Shah, 2002). Therefore, they seem to stand out among the numerous South African SIS, largely oriented towards self-consumption.

This could be explained by different factors. As mentioned earlier, the scheme’s situation nearby a rural town provides produce as well as input markets, which is not the case in many of South Africa’s SIS. Besides, the farmers benefit from an average farm size (around 5 ha) much bigger than the usual 1 ha plot found in other schemes. Even though the crop coverage was quite low last summer (around 58% of commanded area), the average cropped area was still more than double this figure (around 2.3 ha).

The main root of this success is probably to be found elsewhere, i.e. in the original history of the scheme. Indeed, the land was invaded by small-scale black farmers coming from a former homeland, therefore it is a tremendous showcase for many institutions and organisations as it embodies the new South Africa, where “historically disadvantaged individuals” -as black people are called, access means they were denied before. This can be seen in the outstanding assistance the farmers have received from different directions : non governmental organisations, large commercial farmers, supermarkets, as well the government. Their situation in Mpumalanga, which encompasses a minority of SIS has also recently provided them with help : they might not have benefited so easily from the irrigation update and the cooperative had them been in Limpopo, where so many SIS are to be rehabilitated. The management of the scheme, although challenged by some farmers because of a lack of transparency and consultation in the decision-making process, has also had an influence as it is very active looking for funds and assistance.

However the picture is not as bright as it seems. Indeed, this study has shown that the farming revenues on the scheme were not so exceptional, even compared to other SIS. Besides, the farmers proclaim themselves commercial, but do not follow the associated practices : hardly any records are kept, regarding as much production as marketing, which means that they can not analyse properly their past practises in order to improve them. This is all the more a problem as they do not recall those practices either. It seems then that they have moved away from subsistence farming thanks to the factors mentioned above, but have not adapted their practices to their new environment.

2-2 Production at scheme level : offer calendars for different commodities

An offer calendar at the scheme's level is a valuable tool to organise production collectively in order to meet the requirements of the market targeted regarding quantities of produce and dates of availability. When compared to the price fluctuation during the year, it allows to check if the planting decision is best made, i.e. in order the harvest to take place when the prices are high. Therefore, it is interesting to know the current state of the production when all the Hereford farmers are pooled together.

Three different situations can occur, according to the commodity studied :

- ✓ the harvest takes place early in Hereford compared to other agro-climatic regions
- ✓ the harvest is done at the same time than most others
- ✓ the harvest is late compared to the others

In the first and third cases, the comparative advantage of the Hereford farmers is the time when their produce is available for the market and they should therefore target gross markets -supplied by farmers from different agro-climatic regions- like Fresh Produce Markets. In the second case, it is more interesting, if the farmers want to keep growing this commodity, to find local markets where proximity would be the comparative advantage (due to reduced transport costs).

Such offer calendars were compiled for different main vegetables produced on Hereford and compared to the price fluctuation for this commodity along the year. The reference chosen is the prices in the Pretoria Fresh Produce Market which is relatively near to the scheme (150 km) and therefore could be a possible market outlet for the cooperative. The results obtained for butternuts are presented in Fig. 12. It shows that this commodity is mainly produced rather early in Hereford, i.e. when the price is medium. Besides, Hereford seem to benefit from the right conditions to produce butternut when the price is very high (October), therefore the farmers should take more advantage of this by trying to produce earlier than it is done currently and sell to Pretoria Fresh Produce Market. Similar figures for beetroot, cabbage, green beans and spinach can be found in Annexe 5.

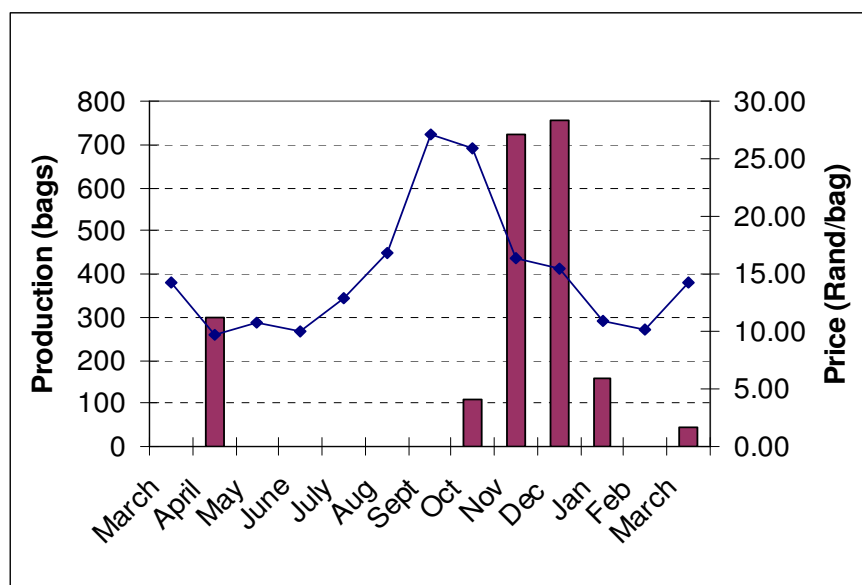


Fig. 12 : Offer calendar for the whole scheme in regard to price fluctuation for butternuts

2-3 An attempt to organise collectively : the cooperative under construction

2-3-1 The cooperative's objectives : a promising asset...

The Hereford farmers have now a nearly completed cooperative, but no business plan has been previously established. Therefore, the diagnostic attempted in this study is, to the author's knowledge, the only one available at present. This raises some questions, as to how the decision to make such important public investments is made. This can also have some consequences on the future of this asset, and the development of the scheme in general, as an investment done without the participation of the farmers can minimise their involvement. Indeed, their responsibilities towards the South African society, which paid for the expenses, are not made clear when no counterpart is requested from them.

For these reasons, the future of this asset is quite obscure. In order to make the scheme more sustainable, the local extension officer has suggested to redirect it into citrus production, particularly lemon, there being a market for this crop through the Coca Cola company. However, citrus require a considerable investment as the trees start producing only three or four years after being planted ; it was thus proposed that the farmers keep growing other crops on part of their plot meanwhile. Anyway, the various stakeholders seem to have different expectations as the farmers apparently prefer to stick to vegetables. The new cooperative would then only deal with the latter (tomatoes, cabbages, butternuts, green peppers, green beans, beetroots, carrots, onions, peas, cucumbers, spinach, broccolis, cauliflowers and baby veggies).

Five fields of action are planned :

- × *Mechanisation* : buying of tractors and implements in order to hire them to the farmers at a lower cost

- × *Finance* : provision of some loans to the farmers (with interests)

- × *Marketing* : finding of some local, national and international contracts for vegetables marketing

- × *Processing* : packaging of fresh vegetables, eventually dry heating in order to produce powder (tomato, cabbage, carrots, beans, peas), depending on the markets found.

- × *Extension* : access to its own extension officer, specialised in vegetables, paid by the farmers or in partnership with the Provincial Department of Agriculture ; provision of training.

The TFA is currently trying to access a loan of R 5 million to get the cooperative started. It plans on having it running on its own profit after 2 years of operation.

This new cooperative seems to be the perfect answer to many major problems the farmers are currently facing. Indeed, the main production problem stated by the farmers, the lack of tractor, could be overcome by the hire of some tractors from the cooperative at lower costs. Most importantly, it would be in charge of pooling the production of different crops on the scheme in order to access new markets, which would be a big step forward as the lack of market is also a main constraint stated by the farmers. Economies of scale could also be performed, notably for transport, which is another major issue for the farmers. Besides, the cooperative would increase the bargaining power of the farmers.

2-3-2 ...which requires collective organisation

Fig. 13 schematises the changes in market outlets as the marketing management switch from individual to collective on the scheme. The main outlet would become the cooperative, which could access more secure markets as some supermarkets or Fresh Produce Markets as bigger quantities could be marketed at the same time, or the production could be spread in order to provide the markets with regular quantities of produce during a certain period of time. It also appears clearly on the graph that the cooperative would not deal with the whole production in Hereford, at least in the short term. Three main reasons explain this. First, some farmers are not wanting to deal with this new asset and will continue marketing their crops on their own. Secondly, as mentioned above, the future of the cooperative is currently uncertain. Therefore, some farmers prefer to keep selling part of their production to other outlets -mainly hawkers- for more security. In the third place, the farmers are very diversified ; it is very unlikely that the cooperative will be able to deal with so many different commodities, forcing the farmers to find other outlets if they want to keep growing the crops not dealt with by the cooperative.

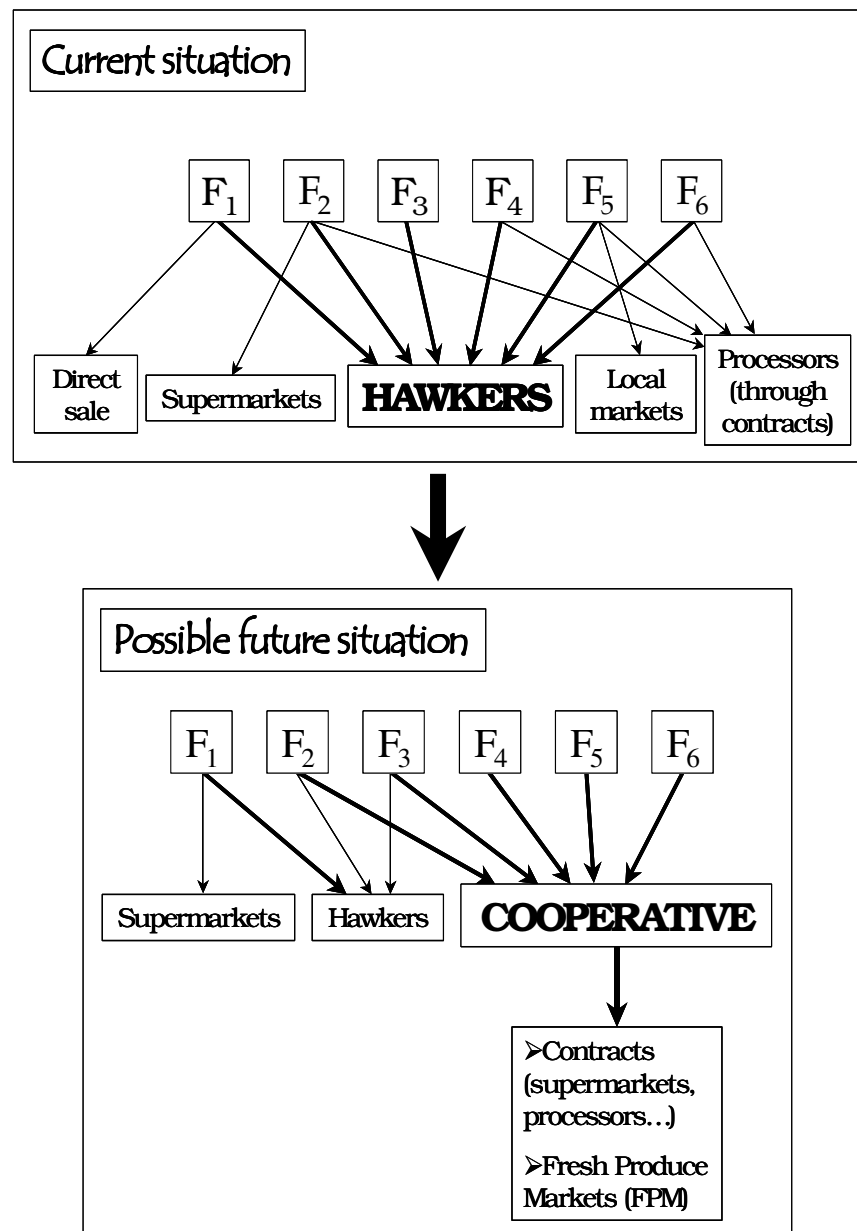


Fig. 13 :
Change in the market
outlets following the
set up of the
cooperative in
Hereford

However, this requires organisation as it needs to be well understood which farmer grows which crops and when does this crop need to be available for the cooperative, which implies that the production need to be planned ahead depending on the marketing. However, at the moment, the farmers are not organised collectively at all, except in the case of contracts which do not represent the major part of the production. They will have then to put a lot of effort to follow some collective rules dictated by the cooperative and its markets, instead of “minding their own business”. The question is whether they are ready to do it.

According to the interviews, the major expectations regarding the cooperative are the provision of produce markets and storage, as stated by respectively nearly two third and half of the farmers. Input provision, loans, technical advice, transport and processing are other expectations, but only mentioned by very few farmers. The planned objectives of the cooperative therefore meet the stated needs of the farmers, which is important as, their involvement being necessary, the farmers have to feel concerned. The overwhelming majority of them want to take part in this collective marketing, most of them being ready to sell 100% of their production through the cooperative. However, only 10 are currently members, while the cooperative is nearly completely build. The others have not joined for three main reasons :

- ✓ they lack money to pay for the registration fees but will join as soon as they can (20% of the farmers)
- ✓ they are not informed on how exactly this cooperative will operate and will decide when this information is available (20% of the farmers)
- ✓ they do not want to join, either permanently or temporarily to assess the success of the cooperative first (7% of the farmers).

The fact that a relatively important number of farmers complain about a lack of information, whether real or felt, is quite preoccupying. It means that they are not completely ready to get involved, therefore limiting the chances of success for the cooperative.

In short, the cooperative being newly established on Hereford scheme has still a long way to go in order to become successful. It presents major opportunities, but also the major challenge to bring some individuals used to deal mainly on their own to work together. Besides, the farmers, individually and as a whole, are not precisely aware of which quantities of different commodities are being produced on the scheme, which is a major impediment to find market opportunities. Hopefully, this study can help them with this issue. Anyway, the future of this promising asset is currently quite blurred. It would be really interesting to come back on the scheme in one or two years to find out how successful it proves to be.

3- Limits to these results

The main limit to these results is the accuracy of the data collected. Indeed, as mentioned in the methodology section, major problems were met during the interviews to access data as the farmers hardly kept any records. They definitely had some trouble recalling valuable information as important as total quantity harvested, date of planting, input purchases and even the detail of crops grown. When the data could be double-checked, like the cropped areas, it was done ; however, most of the time it was not

possible and the word of the farmer had to be taken as such. It was nonetheless possible to compare it to references or other farmers, but this only allowed to check whether it sounded realistic or not. From this, data which appeared credible were selected and analysed and allowed to draw some general conclusions.

The interviews had to be translated as they were conducted in English. This language is not understood by most of the farmers and is also a foreign language to the interviewers and as it is well known, some information is always lost in translation...

Because of a lack of time, not all the farmers could be interviewed regarding production costs. This proved really problematic as, despite the many hours spent, too little valuable information was collected. Thus, the big differences between the different farmers' answers could not be interpreted, as it could not be assessed which was the one standing out. Therefore, instead of a complete study on the economic viability of each farmers, monographs had to be adopted, which do, unfortunately, not provide a general view of the scheme.

Finally the choice of the period over which the study spanned does not seem to have been best chosen, by lack of clear information beforehand. Indeed, the interviews were carried out from May until July, which is in the middle of the winter growing season. Therefore, data concerning this season could not be collected. This would not have usually been an issue, but it appeared that the irrigation update works had finished during the previous winter, preventing some of the farmers to crop. In consequence, the data regarding winter 2004 are not representative of what the farmers would do in normal conditions. Some of this data was used however, when possible and deemed not distorting. Some pieces of information could nonetheless be collected for winter 2005 as the field work lasted some time. Although not complete, it provided valuable information to better analyse some features, such as diversification strategies.

A meeting was organised with the farmers, where all were invited, in order to present the results of this study and for them to validate (or invalidate) the findings described in this report. Unfortunately, the farmers present (around a third) did not comment on this restitution. They only brought forward a new issue, central to them at the moment : water scarcity, which was surprising as during the interviews most farmers described the new water irrigation system as an improvement in their situation, mainly because it had put an end to water shortages. The project was however ending, so this issue could unfortunately not be addressed.

RECOMMENDATIONS

Overall, the study allows for drafting some recommendations, as follows:

On the farmers' side:

- ✓ Records on production and marketing should be kept by the farmers, so as to be able to analyse past actions and expenditures, successes and failures, and to document future business plans or contracts with marketing channels. This is essential if they are to become proper “commercial farmers”.
- ✓ Organisation and collective action around the new co-operative is very weak at the moment, and cannot only rely on a couple of committee members in the farmers' association, and on the willingness and sole leadership of its chairman. There's a clear need for revamping the inner governance of the scheme, towards more transparency, more sharing of information, and the acknowledgement of inner diversity of strategies and objectives within the farmers' community.

On extension and development agents' side:

- ✓ More assistance should be brought to the farmers regarding record keeping and crucial information on markets, such as market prices and their evolution. This should be done in a way that requires the farmers' participation in order for them to become more involved and independent. In this respect, the role of the extension officer could be reinforced.
- ✓ Provisional calendars should be compiled regularly in order to have a clear picture of when produces can be delivered by the scheme. When compared to price fluctuation in different markets, it would help to target the adequate outlet by choosing the one in which the farmers have a comparative advantage (local market for proximity or gross market when differentiate offer calendar).

On decision makers and fund providers' side:

- ✓ The public investments performed in smallholder irrigation scheme should be clearly evaluated beforehand. This is important to ensure the success of such undertakings, but most of all to ensure the farmers' participation and make them fully aware of the responsibilities it implies on their part. The recent plethora of financial support to the Hereford scheme (in terms of infrastructural investments) can be questioned since (1) the huge water storage and irrigation investments fall far short of the amount of water actually allocated and flowing to the scheme (amazingly, in spite of brand new equipment, farmers are experiencing water scarcity in 2005), and (2) the co-operative has been built with no proper collective business plan whatsoever (not all farmers adhere to the project; some are not even aware of it, or of its implications; there's critical uncertainty as to what to grow and when, etc.).

CONCLUSION

The Hereford irrigation scheme is generally presented as successful. Most of its farmers are active, largely commercially oriented and target a number of market outlets, ranging from hawkers (informal traders) to contractors and including direct sale, supermarkets and local markets. The key to its apparent success could be found in its original story, which started in 1997 with the invasion of some unoccupied land, and ultimately with the settlement of black emerging farmers on unusually large farm size (as compared to other black irrigators throughout the country). This attracted a lot of attention and assistance from diverse origins, including provincial government and the Department of Water Affairs and Forestry, which have recently invested in water supply and irrigation equipment, and (the former only) in a cooperative (storage-packaging plant) in the scheme. Thus, they benefit from a really good environment as compared to many smallholder irrigation schemes of South Africa.

However, a thorough look at the farmers' production and marketing features show that they are not so much economically sustainable. Indeed, their farming income revenues appear really low and insufficient to access decent standards of living and many rely on other sources of income, including government welfare grants. Added to the lack of sound practices such as record keeping or research of markets before planning the production, it shows that they are not yet "commercial farmers". It seems as they have gone away from subsistence farming thanks to favourable conditions, but have not changed their practices adequately.

Land is not an issue as most farmers do not use their plots to their full surface potential. The main issue appears to be marketing as they can produce some crops which do not meet the market. Indeed, when they do not benefit from any assistance in marketing, their main outlet is hawkers, more by default than by choice. Although hawkers are very important in some conditions, especially remote areas, they do not offer a secure nor profitable market, which prevents from sound production planning. In consequence, the farmers use only small areas to produce vegetables especially and often diversify their production to provide a certain security.

Market access is often cited as the major impediment for small-scale farmers. However, the Hereford farmers have access to markets, especially produce markets, but those are often not secure as agreements are rare and always informal. The issue here seems then more one of security than access. The assumption is made that more secure markets would allow the Hereford farmers to plant more and then make better use of their relatively large plots, increasing their farming revenues.

However, it was noticed that the farmers were helped a lot through actions implementing the Black Economic Empowerment policy, including some form of affirmative action by certain market channels, favouring productions by smallholder black farmers in order to erase past inequalities. Indeed, it made access to some supermarket possible, although the requirements were not always met (quantity and regularity). The contracts they obtained from processors for vegetables belonged also in this context. Whatever the BEE options at farmers' disposal, it appears essential that they find their markets on their own and plan production accordingly if they want to achieve economic sustainability on the long term.

When dealing on their own, the farmers still face some major constraints to be able to choose which market they target. Indeed, they lack information, transport, storage and most of all collective organisation. However, many of these issues could be overcome thanks to the co-operative being newly established on the scheme itself, as the pooling of the scheme production could open more secure markets such as supermarkets, Fresh Produce Markets or contracts with processors for instance. However, it implies that the farmers really co-operate together. This appears as a big challenge as they are used to deal on their own and an apparent lack of consultation by the management leaves some farmers reluctant. The future remains open, all the more so than the farmers have arrived on the scheme quite recently and are still trying to find their way. A critical point, however, is that the Hereford farmers are used to receiving a lot of assistance, and have long adopted a rather passive approach, relying on external help more than on themselves.

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ANNEXES

Annexe 1 : First part of the questionnaire

**HOUSEHOLD QUESTIONNAIRE
TAFELKOP**

Date :

Respondent's name :

Gender : Male / Female

Name of household head :

Plot number :

Interview reference number :

Type :

1- HOUSEHOLD COMPOSITION

	Age	Gender (M/F)	Main occupation	Age when left school
Head				
Spouse				
Children > 14				
Children < 14				
Children < 5				
Other relatives				

Occupation : 1- Farmer

2- Regular salaried employee

3- Casual salaried employee

4- Unemployed

5- Self employed

6- Retired/pensioner

7- Student/ pupil

Do you live on the scheme ? YES NO

If no, how far away ?

2- LAND

Type of plot	Size (unit)	Status (cost)
Total		

1- Irrigated land

2- Dry land

3- Orchard

4- Backyard garden

5- Other

ha, m² (morgen, bed...)

1- owned

2- leased (fees)

3- rented (cost)

4- borrowed

3- CROPPING SYSTEM

Crops for winter 2004 (W) & summer (S) 2004/05

Crop name	Season		Area planted (unit)	Quantity harvested (unit)	Quantity sold (unit)	Price/unit	Market outlet	Reason for growing
	W	S						
1-								
2-								
3-								
4-								
5-								
6-								
7-								
8-								

ha, m² (bed,
morgen...)

tons, kg, bags, boxes, bundles, crates...

1- Local shop/Spaza
2- Hawker
3- Neighbour
4- Contractor
5- Supermarket
6- Other (specify)

Do you own any large equipment (e.g. tractor, bakkie, implements) ? YES NO
If yes, which ?

List the 3 major issues with crop production :

1-

2-

3-

Which crops have you planned for winter 2005 ? On which area ?

1-

2-

3-

4-

5-

6-

7-

8-

Which crops do you think should be emphasized in the future ?

4- CROP CALENDAR

Crop name	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1												
2												
3												
4												
5												
6												
7												
8												

When is food scarce in your household ?

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

When is money scarce in your household ?

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

5- LIVESTOCK

Livestock type	Number owned	Number slaughtered for household consumption last year	Number sold last year	Gross income
Cattle				
Chicken				
Goat				
Sheep				
Pigs				
Other :				

Where are they grazing ?

Do you have any problems with livestock (e.g. in the scheme) ?

6- MARKETING

For marketing, have you ever experienced any problems concerning :

- Products quality ?

- Products quantity ?

- Reliability of the buyer ?

- Payment (delays, fluctuations) ?

- Selling at the time you wish to ?

- Storage ?

- Other ?

What is your favorite or main outlet ?

Why ?

Do you have any marketing contract ongoing ? YES NO

With whom ?

What are the main terms of the contract ?

Have experienced any problem with them ? YES NO

If yes, which problems (listed above + regularity of your production output) ?

Has there been any changes as far as marketing is concerned over the last few years ?

What are your expectations concerning the new cooperative ?

What is going to change in your view ?

7- FINANCES

Other sources of income	From who	How much per year ?
1- Pension		
2- Child Grant Support		
3- Own salary		
4- Other salaries/remittances		
5- Own business (bakkie/car/tractor renting...)		
6- Other		

Are you using credit facilities ? YES NO

If yes, what was the source ?

- 1- Supplier
- 2- Relative or friend
- 3- Money lender
- 4- Financial institution (specify) :
- 5- Other (specify) :

What was it for ?

- 1- Farming
- 2- Household purchases
- 3- Food
- 4- Other (specify) :

Have you any debts outstanding ? YES NO

8- FARMING STYLES

Do you think there are different kind of farmers on the scheme ?

If yes, what are the major points which make the difference between the different kinds ?

Ex : production (sort of crops planted, summer/winter crops, areas planted, use of input), commercialisation (quantity sold, main outlet)....

How would you describe the different styles of farming ?

Which one do you belong to ?

9- SCHEME MANAGEMENT

Do you experience any water shortages ?

Never

Sometimes

Often

Always

Do you have any problems about water sharing ?

Tafelkop Farmers' Association (TFA)

Are you aware of the work of Tafelkop Farmers' Association ?

Are you a member ? YES NO

Are you pleased with it ?

Would you like it to get more :

- involved ?

- active ?

- supportive ?

If yes, in which matter ?

10- CONCLUDING THE INTERVIEW

What are your major problems as a beneficiary of the scheme ?

How do you see the future and what are your prospects ?

More specifically, scheme members are ageing. Do you plan to hand over your farm to anyone when you give up farming ?

To whom (relative, friend...) ?

Has your situation improved since the rehabilitation of the scheme ? Why ?

Final comment you would like to make :

Annexe 2 : Production costs questionnaire

Crop name :

Season : Winter ? YES NO

Summer? YES NO

Input type	Brand name	Quantity used (unit)	Cost/unit	Supplier	Input market (distance, organisation)	Marketing costs (transport, packaging)
Fertiliser						
Seeds						
Herbicides						
Pesticides						
Other (specify)						
Labour	Number of people hired	Number of days each one worked	Cost of 1 worker per day	Number of unpaid people working for this crop	Number of days they worked	
Tillage (costs)	Furrowing	Plowing	Discing	Ridging	Other	

Annexe 3 : Detailed marketing questions

PER CROP

Which market outlet

- Local shop (which one ?)
- Hawker
- Neighbour
- Contractor (which one ?)
- Supermarket (which one ?)
- Cooperative (which one ?)
- Direct sale
- Gross market / local market
- Not sold → why ? (not profitable enough, not enough buyers, market too far, didn't know where to sell...)
- Other

Problems experienced with marketing

- Products quality
- Products quantity
- Reliability of the buyer
- Payment (delays, fluctuation)
- Delivery scheme (selling at the time wish to ?)
- Storage
- Transport
- Other

Contract

- With whom ?
- For how long ?
- Main terms of the contract (what was the agreement) ?
- Negotiated or imposed ?

Informal agreement

- Do you have any informal agreement with the buyers ?
- With whom ?
- Main terms of the agreement ?

When do you decide how to market your crops ?

- Before growing them ? During the growth ? After harvesting ?
- How has market an influence on the decision ?

Crop calendar

- Check dates (get more precise if possible)
- Delay ? If yes, why ?
- Does time of harvesting influence the market ? How ?

GENERAL

- Do you prefer to sell your production to the same buyer or to deal with various buyers? Why ?
- Can you negotiate (price, quantity, quality) ?
- Do you plan on becoming a member of the cooperative ? (if not already)

Annexe 4 : Detailed farmer monographs

Farmer 1

	Green beans	Maize	Pumpkin	Spinach	Total
Sold	480	60	1670	273	2483
Self consumed	60	93	25	0	178
Production costs	410	236	258	125	1029
Marketing costs	25	0	0	25	50
Gross margin	105	-83	1437	123	1582
Labour					2640
Irrigation charges					1000
Net farming income					-2058
Child grant					4320
Net yearly revenue					2262

Farmer 2

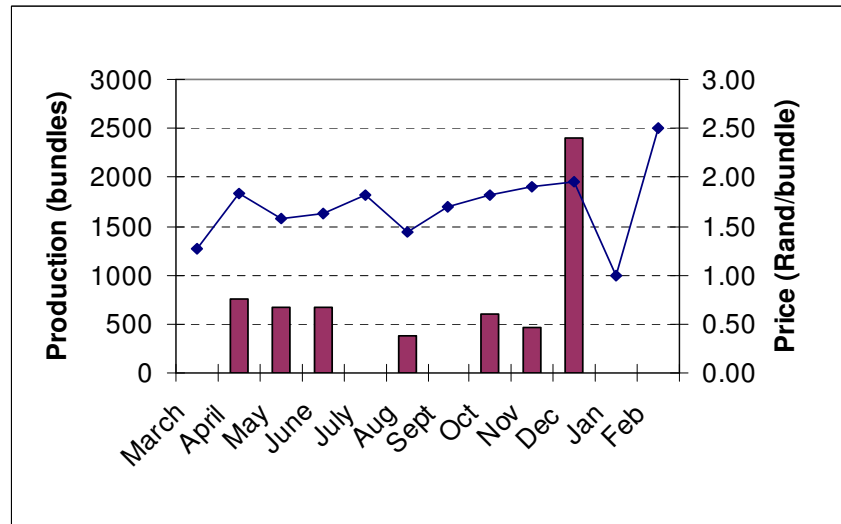
	Butternut	Cotton	Green beans	Sweetcorn	Tomato	Watermelon	Total
Sold	1215	7053	2730	9574	450	0	21022
Self consumed	0	0	120	0	560	0	680
Production costs	412	3813	555	4781	1958	245	11764
Marketing costs	120	200	120	3118	120	0	3678
Gross margin	683	3040	2175	1675	-1068	-245	6260
Labour							2976
Irrigation charges							1000
Net farming income							2284
Child grant							0
Pension							9360
Wife salary							18000
Net yearly revenue							29644

Farmer 3

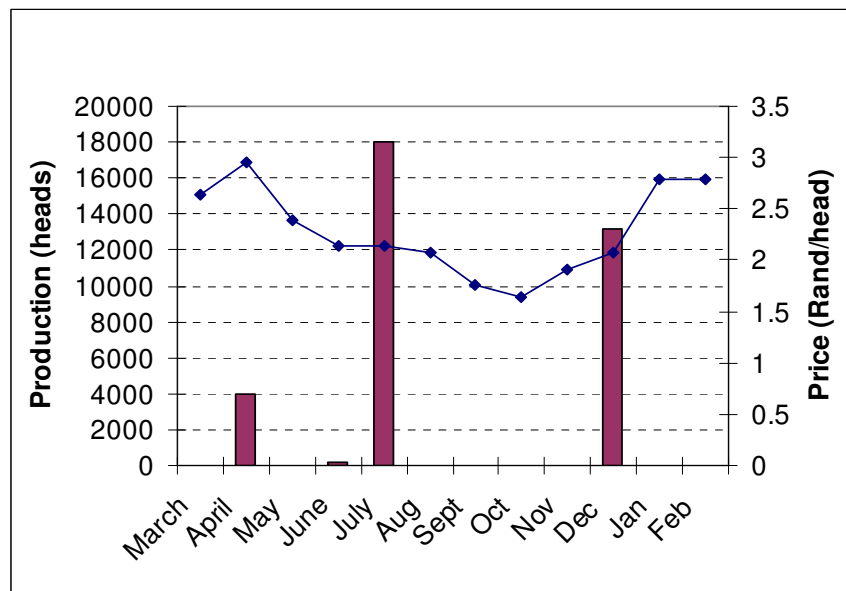
	Cucumber	Green pepper	Sweetcorn	Tomato	Total
Sold	5717	1350	2624	10280	19971
Self consumed	0	0	0	560	560
Production costs	1717	2230	3991	2150	10088
Marketing costs	50	0	2009	870	2929
Gross margin	3950	-880	-3376	7820	7514
Labour					3560
Irrigation charges					1000
Net farming income					2954
Child grant					6480
Pension					9360
Net yearly revenue					18794

Annexe 5 : Offer calendars in regard to price fluctuation

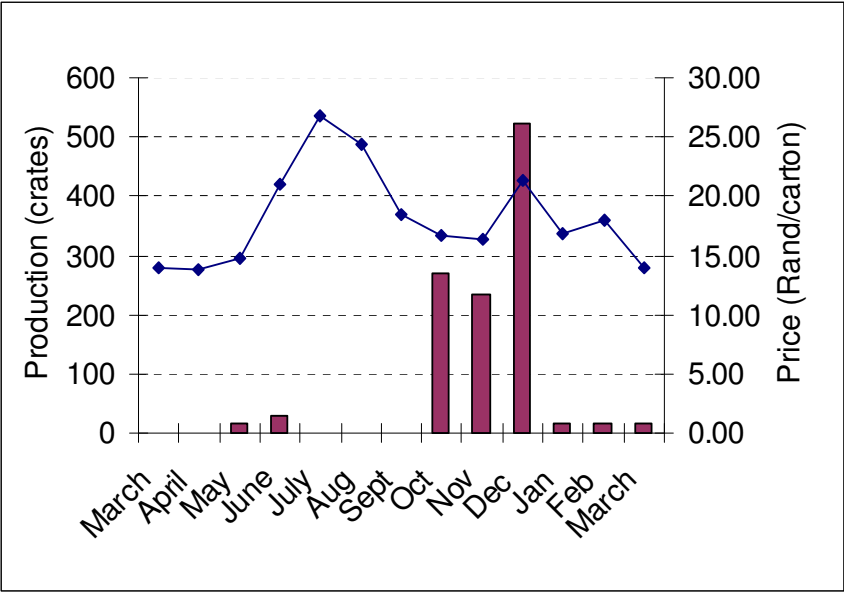
BEETROOT



CABBAGE



GREEN BEANS



SPINACH

