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AGRICULTURE AND RURAL LIVELIHOOD IN NORTH-WEST PEDDIE DISTRICT[1]

N.N. Monde-Gweleta[2], W. Van Averbeke[3], A. Ainslie[4] , Z.M. Ntshona[5], G.C.G. Fraser[6] and A. Belete[5]

The present contribution of small scale agriculture to rural livelihood in north-west Peddie district and the four factors identified by Lipton (1996) as being essential for small scale farming to flourish, were analysed by making use of data obtained in two recent studies conducted in the area. The two studies, which both used a questionnaire survey for data collection, enabled a comparison between dryland and irrigated agriculture. The analysis showed that agriculture adds to rural livelihood in a modest way only, and hardly ever constituted the main source of household income. For the majority of households in both the dryland and irrigated production environments the main source of income consisted of State transfers of which pensions were the most important. In the area, three of the four factors identified by Lipton (1996), namely access to agricultural land, research and development of appropriate technology, and rural infrastructure were found to require reform for local small scale farming to become a viable livelihood option. The only factor which did not appear to present a major constraint was access to markets. Relative to the present level of production, the market in the rural area itself is sufficiently large to absorb most produce, usually at prices higher than those offered by formal markets. In future, access to markets could become a constraint if production by small scale farmers were to be increased significantly.

LANDBOU EN LANDELIKE HEENKOME IN DIE NOORD-WES PEDDIE DISTRIK

Die huidige bydrae van kleinskaalse landbou tot landelike heenkome in Noordwes Peddie Distrik asook die vier faktore wat deur Lipton (1996) geïdentifiseer is as syned essensieel vir kleinboerboerdery om te floreer, is ontleed deur die gebruik van data wat in twee onlangse studies in die gebied ingesamel is. Die twee studies wat albei vraeboogopnames vir dataversameling gebruik het, het 'n vergelyking tussen droëlandse en besproeiingsboerdery moontlik gemaak. Die analise toon dat die landbou slegs in 'n matige mate tot landelik

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[1] *The authors based at the University of Fort Hare gratefully acknowledge funding by the Water Research Commission which enabled the study by the Faculty of Agriculture and ARDRI (1997), the data of which were used in this paper. The contribution by ISER staff forms part of a collaborative programme between LAPC, SEI and ISER and was funded by Sida.*

[2] *Department of Agriculture, Eastern Cape, seconded to ARDRI.*

[3] *Agricultural and Rural Development Research Institute (ARDRI), University of Fort Hare, Alice.*

[4] *Agricultural Research Council, Grassland Institute, Grahamstown.*

[5] *Institute of Social and Economic Research, Rhodes University, Grahamstown.*

[6] *Department of Agricultural Economics, University of Fort Hare, Alice.*

bestaanbaarheid bydra, en nouliks ooit die hoofbron van huishoudelike inkomste was. Vir die meeste huishoudings in beide die droëlandse en besproeiingsproduksie-omgewings was Staatsoordragte, met pensioene as die belangrikste komponent, die hoofbron van inkomste. In die gebied is bevind dat hervorming nodig is in drie van die vier faktore wat volgens Lipton (1996) voorvereistes is vir plaaslike kleinskaalse boerdery om 'n leefbare bestaan te lewer. Toegang tot landbougrond, navorsing asook die ontwikkeling van toepaslike tegnologie en landelike infrastruktuur. Die enigste faktor wat nie geblyk het om 'n belangrike beperking te wees nie was marktoegang. In verhouding met die huidige produksiepeil is die mark in die landelike omgewing groot genoeg om die meesteprodukte te absorbeer, meestal teen pryse hoër as die by die formele markte. In die toekoms kan marktoegang beperking raak indien kleinboere se produksie drasies sou toeneem.

1. INTRODUCTION

Indications are that the labour surplus in South Africa will increase in the next few decades. According to the UN (1993) the population aged 15-64, which represents the source of most work seekers, will grow to 2,2 times its 1995 size over the next three decades. Due partly to high and rising costs of employment in urban and non-farm activities, an increasing proportion of this growing workforce may find rural livelihood options only, small scale agriculture being the most obvious and important (Lipton, 1996). World experience shows that growth in farm output and employment in the small scale agricultural sector of developing countries is conditional on four complementary reforms being implemented in a balanced way. These reforms are improved access to agricultural land; the implementation of agricultural research programmes resulting in the development and dissemination of appropriate technology; the development of infrastructure that makes rural areas sufficiently attractive for households to stay; and the opening of markets to small scale farming enterprises (Lipton, 1996). With reference to South African conditions, Lipton (1996) suggests that irrigated agriculture is one of the most promising avenues for small scale farming to develop.

The object of this paper is to assess the current state of small scale agriculture and its contribution to livelihood in a rural district in Eastern Cape and to assess the current state of the four factors which Lipton (1996) identified as crucial to the emergence of a viable small scale farming sector. A comparison between irrigated and rainfed condition enables the testing of the impact of irrigation on small scale farming development.

2. METHODOLOGY

The target area of the study is the Peddie district, situated in the coastal part of the Central Region of the Eastern Cape Province. The assessment of small scale

agriculture and its contribution to rural livelihood uses secondary information obtained in two recent studies conducted by Faculty of Agriculture and ARDRI (1997) and Ainslie & Ntshona (1997). The first study represents the irrigated environment and presents data obtained in five settlement, namely Ndlambe, Ndwayana, Glenmore, Pikoli and Kalikeni, which all form part of the Tyefu Irrigation Complex. The target population of this study were holders of irrigated small plots and allotments. The second study was conducted in a rainfed farming environment and reviews data on three settlements in the dry part of the district north of the N2 road, namely, Rura, Mankone and Gwabeni. Both studies made use of a questionnaire survey for data collection. The two studies also provided much of the information used to assess the four factors critical to success in small scale agriculture. Where gaps were identified these were filled by consulting other secondary sources. In the calculation of household income in the irrigated environment (Tyefu Irrigation Scheme), the original survey documents used in the Faculty of Agriculture and ARDRI (1997) study report were scrutinised for reliability of the income data. Of the 156 responses, 63 were discarded because there was evidence of at least one source of income not having been revealed quantitatively. The remaining 93 income data sets, which were apparently complete and reliable, were used in the household income analysis presented in this paper.

3. DESCRIPTION OF AGRICULTURAL ENVIRONMENT AND FARMING SYSTEMS IN NORTH-WEST PEDDIE DISTRICT

Peddie district formed part of the former Ciskei homeland and has a history of small scale farming. The north-western part of the district is dry semi-arid receiving less than 500 mm rain per annum. Soils are generally shallow and deficient in phosphorus. As a result most of the land's potential for crop production is extremely marginal. Limited areas of land suitable for irrigated cropping occur mainly in the valleys of the Fish and Keiskamma rivers.

Dryland environment

In spite of unfavourable agro-ecological conditions, households remain involved in production of maize, sorghum, potatoes and vegetables. Crop production is mainly conducted in home gardens, which are 0,1-0,3 ha in size, and which form part of the residential sites. The crops are grown mainly for home consumption. The majority of households (69%) hire tractors to plough their gardens, land preparation by hand being the other main way of cultivating garden soils (ARDRI, 1996a). An estimated 80% of households have abandoned production on their arable land allocations, mainly because of drought (41%) and the absence of fences protecting crops against livestock

(36%) (Ainslie and Ntshona, 1997). The shallow soils and low rainfall make the area best suited to extensive livestock production. Open access to rangeland resources provides for an important socio-economic safety net, enabling even the poorest households to benefit from running a small number of livestock. However, rangeland in the area is not in good condition, being widely encroached by undesirable and non-palatable species. Erratic rainfall and soil depth limit the growth of natural vegetation.

Irrigated environment

Tyefu Irrigation Scheme was initiated in 1977. It is situated on the eastern bank of the Fish river and consists of five settlements. At present the total irrigated area occupies 644 ha and consists of 32 mini farms of 4 ha each, 223 small plots of 0,25 ha, 547 small plots of 0,20 ha, 717 allotments of 0,16 ha and 228 ha of vacant farm land, which was formerly farmed as part of an estate. The scheme provides access to irrigated land to a total of 1519 households. Most irrigation water is sourced directly from the Fish River, of which the flow is augmented by inter-basin transfer of Orange River water. In some parts of the scheme the Fish River water is pumped into storage dams during times of high flow, where it is diluted by additions of runoff water, reducing the overall salinity of the water used for irrigation. Until recently the Scheme was managed by Ulimocor, the agricultural parastatal of Ciskei. The main responsibility of Ulimocor was the supply of water to all sections of the scheme and the supply of tractor services to farmers able to pay for this service. The mini farms are mainly involved in the production of baby carrots for a processing plant in Port Elizabeth. Small plots and allotments were allocated to members of the community in exchange for releasing rainfed land for irrigation development (223), and later on to the other 1487 plot holders as part of a farmer development programme, when Ulimocor discontinued estate production at the scheme to focus its activities on small scale farmer support. The concept of the small plot or food plot was an allocation of land sufficiently large to enable the holder to produce food for subsistence and a small cash profit. The plots are irrigated by means of a moveable sprinkler and drag-line. Land preparation is mainly by tractor (99% of households), which are hired from the scheme. The main crops grown on these food plots are maize (50,4% of the land area) cabbage (28,6%) and potatoes (18,5%). Estimated mean yields obtained on the plots were 4,1 tons of maize grain per ha, 31,5 tons of cabbage per ha and 9,2 tons of potatoes per ha (Faculty of Agriculture and ARDRI, 1997). In addition to irrigated crop production households in the five scheme settlements also practice livestock production using a system very similar to that used by households in the rainfed environment (De Lange *et al.*, 1994).

4. THE CONTRIBUTION OF AGRICULTURE TO LIVELIHOODS IN NORTH-WEST PEDDIE DISTRICT

Ainslie & Ntshona (1997) did not present household income in monetary terms, limiting their analysis to identifying the main source of income of each of the households surveyed. In order to obtain an idea of the proportional contribution of the different sources of income to household income in the rainfed environment of Peddie district, other sources of data were consulted, namely Steyn (1988) and Fabricius & MacWilliams (1991).

The data in Table 1 show that agriculture generally does not contribute much to household income in Peddie district. Relative to the results obtained in the household survey conducted in 1990 by Fabricius *et al.* (1991), there appears to be a significant increase in the relative importance of the contribution of state transfers (pensions and welfare grants) to the gross cash income of Peddie households. In 1990 the contribution of state transfers to household income was 15,2% (entire Peddie district). In 1995 - when the survey was conducted - state transfers contributed 54,8% to the household income of plot holding households at Tyefu Irrigation Scheme. This observation is supported by the data presented in Table 2, which show state transfers to constitute the main source of income of 65,3% of households surveyed in the dryland environment of north-west Peddie district (Ainslie & Ntshona, 1997) and 76,3% of households in the irrigated environment (Faculty of Agriculture and ARDRI, 1997) of that area.

Agriculture was the main source of income for one of the 93 irrigated food plot holders only. None of the households surveyed in the dryland environment identified agriculture as their main source of income. It follows that in both the dryland and irrigated environments under investigation, agriculture does add to the livelihood of many households, but rarely constitutes a livelihood in its own right.

5. THE CURRENT STATE OF THE FOUR FACTORS CONSIDERED CRUCIAL TO THE EMERGENCE OF A VIABLE SMALL SCALE FARMING SECTOR IN PEDDIE DISTRICT

Access to agricultural land

Households in both the dryland and irrigated north-west Peddie environments were found to have limited access to agricultural land. In the dryland environment, 68% of responding households had access to arable land, but allocations were generally small (1-2 ha) and the quality of the land

Table 1: Gross cash household income of small plot holders at Tyefu Irrigation Scheme in 1995 (n=93), of a representative sample of households in Peddie district in 1990 (n=400) and of households in Lujiko and Nyaniso in 1985 representing Peddie dryland agricultural environment (n=81), all expressed in 1995 prices

Agricultural environment	Total household income (R/a)	Pensions (%)	Welfare grants (%)	Salaries and wages (%)	Remittance (%)	Rental & insurance (%)	Trade and self employment (%)	Agriculture (%)
Irrigated[1)]	7 430	49,2	5,6	16,8	3,7	0	9,9	14,7
Peddie[2)]	12 730	14,4	0,8	49,2	24,3	1,2	10,1	
Rainfed[3)]		8 483		94,0			6,0	

1) Faculty of Agriculture and ARDRI (1997)
2) Fabricius and Mac Williams (1991), survey covered the entire Peddie district
3) Steyn (1988), household income in Lujiko and Nyaniso in western Peddie (1985/86)

Table 2: The major source of income of households in rainfed (n=175) and irrigated (n=93) agricultural environments in north-west Peddie district

	Proportion of households identifying their major source of income				
	State transfers (%)	Salaries, wages and remittances(%)	Trade and self employment (%)	Agriculture (%)	Non-income earners (%)
Dryland	65,3	29,3	3,7	0,0	1,7
Irrigated	76,3	17,2	5,4	1,1	0,0

very poor as a result of environmental factors and degradation (Ainslie & Ntshona, 1997; ARDRI, 1996a). Open access to rangeland results in the distribution of benefits derived from access over a large number of people, limiting the mean size of that benefit per household. Furthermore, livestock production by local households is rarely a commercial enterprise whereby animals are regarded as fungible assets (Ainslie & Ntshona, 1997). The main motivation of most local livestock owners is to increase their herd size (ARDRI, 1996b), which may result in the area being a net importer instead of a net exporter of livestock. It follows that access to and control over agricultural land in the dryland environment is insufficient for agriculture to become an important contributor to rural livelihood.

In the irrigated environment most residents of the five settlements have access to small parcels of irrigated land and in 1995 the land use intensity of this land was 92% out of a possible 200% (two crops can be grown each year). All respondents reported that they were actively producing crops on their plots. Maize, cabbage and potatoes covered 97,5% of the cropped area and 56% of the crops (expressed in monetary value) were consumed at home. Sales of crops were insufficient to cover production costs, which on average exceeded gross income from sales by R122 per annum (Faculty of Agriculture and ARDRI, 1997). Production on irrigated plots at Tyefu Irrigation Scheme, therefore, is essentially for subsistence purposes. Rights of households over their irrigated plots were found to be insufficiently broad, preventing the development of an active market for land rentals. As a result, few if any plot holders were producing on more than one plot. Tenure at Tyefu Irrigation Scheme is a modification of communal tenure of arable land in dryland areas. The main difference is that on the Scheme land livestock is not allowed to access the fields, whereas on rainfed arable land livestock has access during winter. Elsewhere in South Africa communal forms of tenure have also been shown to lead to insecurity about land rights, deterring agricultural production and investment (Thomson & Lyne, 1995).

Access to agricultural land appears to be a limiting factor in both the dryland and irrigated environment. Reform options do exist. In the dryland environment of Central Peddie District there are large tracts of State land which are available for redistribution. In the irrigated environment the strengthening of tenure security and the development of institutional arrangement governing and protecting land exchanges could open a land rental market, enabling interested plot holding households to increase their land holding and consequently their ability to increase the contribution agriculture makes to their livelihood.

Research and technology development

During the 1970s and 1980s small scale crop farming households were encouraged by the State to adopt modern farming methods. This encouragement came in the form of State subsidised tractor schemes, the use of hybrid seed and chemical fertilisers and centralised marketing systems. Extension officers were trained to encourage the adoption of these "modern" agricultural systems. However, under local conditions these systems proved unsustainable and many of the support systems have been withdrawn. Two to three decades of State support aimed at bringing about a change in farming systems have left the majority of farmers dependent on external inputs, especially with respect to land preparation. The withdrawal of the tractor schemes has caused a crisis in local small scale crop production and the lack of means to prepare the land is the major factor causing dryland arable to remain fallow (Lo Presti, *et al.*, 1996). The imminent closure of Ulimocor, the parastatal responsible for farmer support services at Tyefu Irrigation Scheme, is expected to cause a similar crisis on irrigated land. Thus far, very little effort has been put into the development of technology aimed at making small scale farmers more independent of external resources by optimising the use of on-farm resources and renewable energy. The absence of appropriate technology is considered a major constraint preventing the emergence of a viable small scale farming sector.

Access to markets

At present levels of production in north-west Peddie district, marketing of both crops and livestock is not considered a major constraint. All available evidence suggests that the main market for small scale producers constitutes the rural areas surrounding the production centres. Generally produce fetches higher prices on local markets than offered by the formal markets. For example, one ton of maize grain which sells for about R650 on formal maize markets will be sold for R1000 or more to local rural households. Problems do arise when producers attempt to market large amounts of fresh produce at once, as may be the case on the irrigation scheme. In most cases use is made of hawkers who visit the scheme and transport produce to markets. Strengthening of these informal marketing systems may absorb future increases in production. At present accessing of fresh produce markets in the cities by small scale farmers is not a suitable option, because transportation costs limit profitability (Faculty of Agriculture and ARDRI, 1997).

Rural infrastructure

According to Lipton (1996), the infrastructure in rural areas needs to be adequate in order for households to want to remain staying there. Infrastructure in north-west Peddie district is not adequate. The major felt needs for infrastructure were access to a reliable and clean supply of domestic water, electricity, schools, better housing, better roads and access to medical facilities (clinics). The inadequacy of rural infrastructure especially affects youth, many of whom express the desire to migrate to the cities, because "there is nothing to keep us here" (De Lange *et al.*, 1994).

6. CONCLUSION

In north-west Peddie district agriculture was found to add to rural livelihood in a modest way only. For most households in both irrigated and dryland environments State transfers, consisting of pensions and disability grants mainly, were found to provide the main source of income. Agriculture was the main source of income to a very limited number of households. Of the factors identified by Lipton (1996) as being crucial for the emergence of a viable small scale farming sector, access to agricultural land, the availability of research and development of appropriate technology and the state of rural infrastructure were identified as constraints requiring reform. The only factor which did not appear to present a constraint at present was access to markets, mainly because the market in the rural area itself is sufficiently large to absorb current production. However, market constraints may develop when levels of market-oriented production are increased.

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