

8 Small-Scale Farming in KwaZulu-Natal: Experiences from some 'Promising Pockets'

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1 Introduction

Agriculture in the former homelands of South Africa is generally perceived as 'subsistence' and is extremely marginal in terms of the commercial-dominated agricultural sector (Bembridge 1990). Yet, it continues to play a part in the livelihoods of large numbers of households, involving substantial numbers of farmers (Cooper 1988). The transformation of South African agriculture in the post-apartheid era is faced with the challenge of designing new remunerative options for small-scale farming systems that improve family food security and create new employment opportunities for historically disadvantaged people.

In South Africa, large-scale commercial farms have been seen as the predominant model for farming success. The capacity of agricultural service providers to support the emerging sector of small-scale farmers is still relatively low. Alternative, more ecologically orientated, agricultural systems, which typically combine smaller-scale farming practice with a diversity of crop and stock varieties, and soil and water conservation practices, are far more widely practised in many other African countries than they are in South Africa (Turner 1998). In this country, ecological approaches to agriculture have traditionally been viewed as synonymous with subsistence agriculture, rather than as a possible route for income generation.

KwaZulu-Natal province contains some of the most intensively developed large-scale farms (that could be described as 'overdeveloped') in the country, as well as some of the poorest 'underdeveloped' areas. Nevertheless, some promising examples of sustainable small-scale farming systems can be found in the province, although the opportunities (and constraints) to develop these farming systems need to be seen against the background of the apartheid system, old and new Agriculture and Land Reform Policies, provincial agricultural policies, the bio-physical environment of small-scale farming, the social and cultural context and agricultural research and extension.

Before discussing some promising experiences in developing of small-scale farming systems, we will first give a brief description of the agricultural production potential in KwaZulu-Natal followed by a thorough description of past and present developments at national and local level, which constrain or enable the development of small-scale farming systems.

2 KwaZulu-Natal Province and Agricultural Production

KwaZulu-Natal (KZN) is one of the nine provinces of the Republic of South Africa, and has a total area of 9,210,000 ha. Of this, 30.3 per cent is suitable for dryland cultivation, 12.7 per cent has a high potential for dryland cultivation, and 15.9 per cent is currently under cultivation with 1.2 per cent under irrigation. Natural vegetation, excluding Nature Conservation Areas, occurs in 60.4 per cent of KZN, with 10.1 per cent designated as Areas of Nature Conservation. KwaZulu-Natal has a population of 8,577,000 people (21% of the South African population), of which 5,300,000 (62%) live in rural areas (Anon 1996). There are an estimated 400,000 rural agricultural land user households (i.e. black farming families).

The diversity of natural resources in KZN is enormous. Variations in altitude, which ranges from sea level to over 3000m, results in a considerable range in temperatures. The topography varies from the undulating coastal plains of Maputaland to the rugged, broken terrain of the Valley of a Thousand Hills and the precipitous mountains of the Drakensberg (Camp 1997).

Rainfall variations (mean annual from 600 to 2000mm) and a variation in the distribution of rain over the year, temperature variations and soil variations have resulted in a diverse and intricate vegetation pattern (Anon 1996). Savannah is found in the low-lying hot and dry areas of northern KZN and in most of the river systems. In the northern plains of the province tall grassland is characteristic, while in the cold highland areas the grassland is typically short (Camp 1997).

Soil variations include deep sands along the northern coastal belt, young weathering soils in the steep valleys, well-drained, deep soils in the midlands and the highland areas and poorly drained duplex soils in the upland areas with rainfall below 750mm per year (*ibid.*).

This great variation in natural resources in turn leads to variations in the type of farming and levels of production throughout the province. KwaZulu-Natal has long been recognized as the 'food basket province' in South Africa, particularly with regard to vegetable production and dairy farming. However due to the high humidity along the coastal areas and the relatively high rainfall in the central midlands region, there is also a

high risk of plant disease in these areas. Viruses are prevalent along the coastal belt and fungal diseases are a continual curse during the summer months in the midlands. So, although farmers can expect high yields due to ideal climatic conditions, these are often offset by loss of yield due to disease.

3 Agriculture and Land reform

Prior to (the declaration of) the apartheid era, black people in South Africa were confined to native reserve areas, known as homelands. In 1936 the total reserve area was 13.8 per cent (6.21m hectares) of the national area. Under apartheid the process of homeland consolidation continued into the 1980s. By 1980 homelands covered 20 per cent of the national area and supported 11 million people (Wilson 1991). It was impossible for black Africans to own land in the white farming areas and measures were taken to impede black agricultural production on white-owned farmland, driving black farmers out of the commercial farming areas. Many households became reliant on incomes from migrant labour in towns and mines.

The agricultural policies of the apartheid era in South Africa reflected a biased concern towards white-owned commercial farming units. The White Paper for Agriculture in 1984 stated that a '*maximum number of financially sound owner-occupant farms*' was an important aim of the policy as it would '*contribute to the retention and establishment of a stable, happy and prosperous rural population*' (Anon 1984). This largely excluded the homelands, which were far from being financially sound.

Almost all of the land in the former homelands of South Africa is held under 'communal tenure', which combines elements of individual and collective property rights. It is communal in that an individual's entitlement to land flows from membership of a socio-political community (e.g. a tribal unit), rather than from private ownership but production is generally on an individual basis (Bennett 1995).

Communal tenure is managed by Tribal Authorities through tribal chiefs and headmen, who survived the transition to democracy with their powers virtually intact, although, their powers currently are gradually declining. In KwaZulu-Natal, however, the system still enjoys a relatively high level of legitimacy.

Every household within a communal area has, in principle, a right to a residential site, an arable plot for crop production, and access to common property resources, such as grazing. In practice, however, a substantial proportion of people in communal areas have little or very meagre access to land (Simkins 1981; Lahiff 2000). The right to land usually applies only to male 'household heads' but is sometimes extended to women (Bennett 1995). Those who obtain land receive a right to its permanent use, but not to sell it. Unallocated land is generally used as commonage, providing

pasture for livestock and other natural resources, such as timber, grass and sedges for craft production, thatching grass, edible fruits and plants and materials for use in traditional medicine (Cousins 1996). Tribal leaders have the power to repossess allocated land but *very* seldom do so, and the communal system is generally seen as a reasonably secure form of tenure (Bromberger 1988; Lahiff 2000). While major dismantling of the current 'communal tenure' system would be inappropriate, reform of the tenure system is clearly required to account for changing socio-political circumstances and to address issues such as the inherent gender bias of the current system.

The first ANC-led government faced the challenge of redressing land injustice without risking the collapse of the nation's commercial farming sector. It has adopted a broadly neoliberal approach to economic policy and avoided many of the demands of its more radical supporters for nationalisation or expropriation of white-owned land (Lahiff 2000). The Land Reform Programme was initiated to address the highly controversial issue of land ownership and access to land. It aimed to return land to those denied land based on racially discriminatory laws and to transfer ownership of land in the former homelands from the state to the people who live on that land and have legitimate right to it. The Land Reform Programme has three key elements: land restitution; land redistribution and land tenure reform.

Restitution refers to the direct return to the previous owners of land and property that had been removed due to racially discriminatory law or practice. The types of property loss that land restitution seeks to redress are clearly specified in the restitution of Land Rights Act (Act 22 of 1994). By the deadline of 31 December 1998, a total of 67 531 claims were registered, although it is suspected that many valid claims were not submitted as people did not know about, or did not sufficiently understand the process (Turner and Ibsen 2000). To date, 10 per cent of the claims have been settled. Approximately 80 per cent of claims are for urban land and many involve the payment of financial compensation rather than the return of land. Restitution offers no assurance with regard to livelihoods, as there is no effective link between restitution and development (Turner and Ibsen 2000).

It was anticipated that market-led, demand-driven, state-supported redistributive land reform could achieve political and equity goals, and create strong economic growth in the agricultural sector and start to transform South African farming into small, efficient black-owned family farmers. This would involve the redistribution of 30 per cent of white-owned land to over 800,000 black households in five years at a cost of ZAR17.5 billion (Williams *et al.*; 1996). Agricultural production was assumed to be the core function and purpose of redistributive land

reform, although residential land use was also acknowledged as a goal (Anonymous 1997). Cooperation between the National Department of Agriculture and the Department of Land Affairs (DLA) was poor and there was little collaboration or integration of land agrarian reform efforts. Provincial Departments of Agriculture (PDAs) needed to cooperate with the DLA, which was problematical due to logistical difficulties, the PDAs' inexperience, lack of capacity and ideological hostility (Turner and Ibsen 2000). Although support mechanisms helped beneficiaries acquire their land, little 'post-transfer advice' existed for potential farmers. The long-term support and extension services would need to come from the Provincial Departments of Agriculture. This merely served as a reminder of how little capacity there was in the PDAs to support small-scale farming. Compounding this was the fact that not many 'beneficiaries' showed serious farming intentions. It was clear that the redistribution challenge was much more complex and long-term than had initially been thought (*ibid.*). Despite early difficulties, the programme made progress in achieving secure access to land for many poor South Africans. By August 2000, 340 redistributions (to 55,383 households) had been carried through to land transfer (*ibid.*)

Land tenure reform was a method whereby the Department of Land Affairs (DLA) aimed to transfer ownership of land in the former homelands from the state to the people who live on that land and have legitimate rights to it. The transfer of ownership was complex and difficult, arising from the lack of fit between the exclusive nature of the Western concept of property ownership, and the inclusive, flexible and nested character of many African systems of property rights (Cousins 2000). The tenure system in South Africa has already demonstrated a striking capacity to adapt to economic change in areas where economic incentives are strong, but without an economic space into which the rural economy can expand, no amount of tenure reform will be able to produce real results (Cross *et al.* 1982). As yet no substantive tenure reform had been achieved for the former homelands.

In the second democratic election in 1999, Ms Thoko Didiza was appointed Minister of Agriculture and Land Affairs. Since then, there has been some acceleration in the restoration of lost rights through land restitution but there is little prospect of restitution being built into a broader process of enhancing livelihoods or achieving sustainable development. The Minister's new policy emphasis on helping black Africans gain entry into commercial farming should mean a significant expansion of the black large-scale farming class in the future. But most sub-sectors of South African agriculture are in poor economic shape at present and many existing farmers are leaving agriculture. The land redistribution model turned out to offer little scope for sustainable small-scale agricultural growth and South Africa continues to lack the technical

expertise and available information to support small-scale farming. Thus, there is little prospect for the rural poor to improve their farming methods and enhance their income from agriculture through land and agrarian reform.

A core problem is that land and agrarian reform has not been part of a broader, integrated rural development process. Rural development efforts suffer from fragmentation and lack of a coherent programme or agency at both the national and provincial level. At present, land and agrarian reform show little sign of effectively addressing the deepening crisis of the rural poor, who remain marginalised by the process of economic growth (Turner and Ibsen 2000). Wildschut and Hulbert (1999) emphasised that the government has adopted a low-key welfarist, rather than a productive approach, to rural development. This is based on the government's belief that urban-based growth will somehow trickle down to the rural areas, which has largely not taken place.

4 Agricultural Research and Extension Services within KwaZulu-Natal

Land ownership is only one of the many complex issues facing emerging farmers in KwaZulu-Natal and the other South African Provinces. The role of the Provincial Departments of Agriculture (PDAs) also plays a significant role in determining the potential of emerging farmers to succeed in agricultural production. We will briefly outline the current research and extension services available to small-scale farmers by the KwaZulu-Natal Department of Agriculture and Environmental Affairs (KZNDAEA). A number of non-governmental organisations (NGOs) active in KwaZulu-Natal also provide much needed extension services to emerging small-scale farmers (see Section 5.1). However, as the KZNDAEA services are more widely spread, more visible and thus more open to critical comment, they will be the focus of discussion, after a brief history of extension in South Africa.

The commercial farming sector in South Africa has been served by extension services since 1924. The main tasks of the extension workers were the selection of breeding livestock for farmers and the provision of services to farmers' associations and show societies. Due to the limited impact at the time of educational films, lectures and demonstrations, whole-farm demonstrations were initiated and were more successful in *stimulating* the adoption of new farming methods (Bembridge 1990).

In the 'homelands', few demonstrators were appointed before 1910 to *teach* improved cultivation to small-scale farmers (*ibid.*). It is interesting to note that historically, commercial white farmers and black small-scale farmers have been treated differently with regard to the content of extension services and methods (stimulation *versus* teaching) by which extension services have been implemented.

From 1949, after the establishment of an Agricultural Division, the focus of extension work was on irrigation farming, physical development, soil conservation works, planning of arable lands, development of stock watering points, fencing and tree planting. After reorganisation in 1962, an in-service training programme for extension staff was established and the role of extension staff was reorganised, development work was divorced from extension and areas were demarcated as extension wards each to be serviced by an extension officer (*ibid.*). These extension wards, serviced by an extension officer, still exist today.

Extensional personnel in the former KwaZulu (homeland) areas have the hardest task as they deal with small-scale farmers who have not had the legacy of support of continued government research and extension services. Extension workers have a poor reputation in the more isolated areas and are perceived as being paid for doing nothing. Stories abound that they stay at home and only go out when they choose, and some even expect to be treated as if they are chiefs, receiving gifts before they will perform their functions (Greenberg 2000). PDAs face a growing problem in managing their extension services. Due to budget cuts and the loss of skilled staff to resignations and voluntary severance packages, they are forced to make do with less and less. Budgetary restrictions and the lack of suitable candidates to fill vacated posts means that some departments have to do without engineers, veterinarians, agricultural scientists, economists and skilled, experienced administrators (Greenberg 2000).

Many of the problems that extension workers encounter are related to agriculture, but are not directly associated with improving agricultural production. For example, commercial farmers require services related to the dose-response of crops to fertilisers, whereas small-scale farmers are more concerned with how to purchase fertiliser on a low income (for example a pension) and how to transport it from the depot to their farmland.

There has been a positive move by the Farming Systems Research section of the KZNDAEA to address the needs of small-scale farmers, through the establishment of a farming systems demonstration unit focussing on small-scale enterprises. The Farming Systems Research Unit also conducts trials with farmers on their fields, primarily in maize production. The Soil Science section is addressing soil fertility constraints by investigating the use of chicken litter to address soil nutrient imbalances. This research is currently conducted on the research farm but will also be conducted in farmers' fields.

Government-supported agricultural research has been overwhelmingly concentrated on the commercial, high external input sector, and even the NGOs that are focussed on small-scale farmers, have placed a low priority on documenting the experiences of these farmers.

University research within KwaZulu-Natal to address the needs of small-scale farmers has largely focussed on the development of 'appropriate' technologies on research farms. These technologies include: tread mill water pumps; improved crop varieties; reduced tillage planters; and feed intake programmes for chickens, goats and cattle. The transfer of these technologies to the intended audience has not always been successful and a need exists to develop technologies with farmers. With this in mind, the University of Natal has launched its Centre for Rural Development Systems, which aims to create a seamless continuum between the University's teaching, research and extension personnel and the small-scale farmer. While directly assisting the small-scale farmer, the University also intends to provide its students with a more relevant training programme.

There remains a dichotomy within the agricultural sector and the associated assistance provided for commercial and small-scale farmers. The Mandela Government gave support to subsistence farmers and they were in some ways the focal point of assistance to the 'new' agricultural sector. The Mbeki government on the other hand has shifted focus more to assisting emerging farmers (those who intend to become commercial farmers). So in many ways, the agricultural services provided by government departments are directed towards the needs of a relatively small number of small-scale farmers, while almost ignoring the plight of the majority. . It appears that once again, the problem of the poorest farmers is left to NGOs.

As mentioned above, there are many different actor organisations with a great diversity of underlying motives (objectives) for intervention in the agricultural production of South African small-scale farmers. These objectives, which shape and define the role played by the different actors, include the following.

- 1 Promote commercialisation and profitability of production.
- 2 Facilitate the transfer of agricultural land to black people, who have been disadvantaged by past injustices
- 3 Enhance food security
- 4 Alleviate poverty
- 5 Promote the ecological sustainability of production.

These objectives overlap to varying degrees, with some (e.g. food security and poverty alleviation) re-enforcing each other. Others, however, are potentially in conflict (e.g. focussing resources on promoting promising emerging black commercial farmers rather than spreading resources to reach as many poor farmers as possible in an effort to promote food security and farming as a sustainable livelihood intervention).

The various actors obviously vary according to the emphases they place on these respective objectives. The sugar industry, for example, has been relatively successful in increasing the commercialised production of small-scale farmers through their 'Out-growers Programme'. Over 30 per cent of South Africa's commercial sugar production is now by black farmers, whose contribution has been increasing progressively over the last few decades. However, the ecological sustainability of production is relatively low, involving high external input, and the application of inorganic fertilisers, herbicides and pesticides. Sugar production has also had a very limited contribution to increasing the food security of rural communities, which is understandably not its focus.

In contrast, NGOs have tended to focus mainly on enhanced food security, which they have done successfully in the areas within which they operate. However, they have been unable to offer much assistance to emerging farmers wishing to expand their remunerative production and access external markets. Government departments are caught between trying to satisfy all of the above objectives, as well being subject to the shifting priorities of politicians. Generally, the KwaZulu-Natal Department of Agriculture and Environmental Affairs (KZNDAEA) has interpreted sustainability in a fairly narrow sense, with short-term gain based on high external input agriculture being held up as the most productive and desirable option for which to aim.

In response to the KZNDAEA's general insensitivity to local technologies and ecological requirements, NGOs have tended to work fairly independently of government in developing alternative approaches, and only recently are opportunities developing for joint exploration and learning. A fairly negative 'us and them' attitude has developed amongst individuals in both 'camps'. It appears, however, that a shift in the government approach, at least at a policy level, is taking place, which is creating a more enabling environment. An important development is the national government's recently initiated LandCare initiative. The vision of the LandCare Programme is:

'to have communities and individuals adopt an ecologically sustainable approach to the management of South Africa's environment and natural resources, while improving their livelihoods. This means people use the soil, water and vegetation resources in such a manner that their own quality of life is improved and that future generations will also be able to use them to satisfy their needs.'

Although the Programme is certainly not without teething problems, it presents many opportunities. It has already had active participation of many NGOs, and provides a useful means for increasing the level of collaboration between government and NGOs in supporting small-scale farmers.

A number of demonstrations and training courses are available to small-scale farmers. Training includes both high and low external-input methods, with low-external-input training based on predominantly organic, sustainable and conservation farming techniques. The PDAs provide high-external-input training in crop and animal production systems. University-affiliated courses provide training on mixed input methods for crop and animal production systems on demonstration farms. NGOs provide sustainable, organic low-external-input training in crop and small-animal production systems using a hands-on approach and working examples.

We will now discuss some 'promising pockets' of small-scale farming within KwaZulu-Natal, identify possible and existing entry points for applied research and extension, the impact of existing agricultural and land reform policies and frameworks, and the prevailing socio-economic climate.

5 Some 'Promising Pockets' of small-scale farming in KwaZulu-Natal

5.1 The Valley of a Thousand Hills

The Valley of a Thousand Hills lies to the north west of Durban. Due to urban sprawl in the region, the area is not deeply rural (by African standards) and some wards could be classified as tending towards peri-urban. Many homesteads have access to electricity and piped water, but no sewerage system is in place. Most wards in the area are linked to the surrounds by a well-developed infrastructure of roads (some tarred), serviced by taxis and busses.

A non-government organisation, the Valley Trust has been assisting people in some areas of the valley since the 1950s, following the establishment of a primary health care facility as an intervention to promote good health. It was realised that the health of the communities that the clinic serviced was poor, because of nutritional deficiencies. The vision of the organisation was broadened to include food production to ensure that the people of the valley were adequately nourished.

The Social Plant Use Programme (SPUP) of the Valley Trust actively assists potential and existing farmers to overcome constraints to food production. The programme is based on organic methods of production within the paradigm of low-external-input sustainable ecological agriculture (this being identified as the safest means of producing the most nourishing food). It also fills a gap in support as extension personnel from KZNDAEA already support farmers wishing to use chemical means of production.

Crop Production

In summer, the area around the homestead is planted to maize, beans and pumpkins. These are often planted in a mixed system, with plot size

varying from 0.5 to 2 hectares. Some vegetable crops are grown in the summer months but most vegetables are grown in abundance in autumn and winter. A communal area that is fenced-off and secure from foraging animals is often used for growing vegetables. As fencing can be a major financial cost, an area is fenced 'communally' forming what is known as a community garden. A committee is established and the members of the garden contribute a certain amount for the purchase of seeds, seedlings and in some cases, the fence. Sometimes the PDA assists with the cost of providing fencing. Community gardens are usually situated some distance from the homestead. The chief, or a resident with some land to spare, often donates the land. As a result the community gardens are frequently situated on poor soil, and in many cases in wetlands (Adey *et al*; 1998). As these community gardens are often distant from the homesteads and this reduces the time that members can spend on their plots, and weeding and watering is not done so frequently. For the same reason, and despite the fencing, theft of produce is also common. Also the interest of members in maintaining a plot can fluctuate, for a variety of economic and social reasons. It is not therefore, uncommon to see plots in the community garden lying fallow. .

Extension officers, under direction of KZNDAEA, assist the members of formal community gardens with vegetable production. This assistance may be in the form of recommending vegetable varieties; providing seeds or seedlings; testing soils for fertility status, or establishing the amount of fertiliser needed to balance soil nutrient status. A fairly constant range of vegetables is grown in the community gardens, with the only variations being due to climatic constraints.

The Valley Trust's SPUP was initially active with some community gardens whose members were unable to purchase the inputs promoted by the KZNDAEA as 'best practice' for vegetable production. These inputs included fertiliser, seedlings and improved vegetable varieties. Due to the prescribed methods of crop production and crop varieties within these community gardens, the SPUP realized that the potential of the community gardens was being constrained and they started exploring the potential for diversification and the inclusion of traditional varieties or indigenous crops. These traditional crops and varieties are ideally suited to the local climate and can thus produce an adequate yield. Also, the seeds of these traditional crops can be selected and kept each year for the next crop, which has important implications for sustainable production: helping the farmers save money; to preserve traditional crop material and; to affirm indigenous knowledge and culture. Within four wards of the Valley of a Thousand Hills, farmers who are assisted by SPUP still grow traditional varieties, some of which are listed in Table 1 together those varieties more commonly grown in community gardens.

Table 1 Some introduced vegetable crops (community gardens) and traditional crops (homestead gardens) grown by small-scale farmers in the Valley of a Thousand Hills, KwaZulu-Natal

<i>Introduced Vegetable crops</i>	<i>Traditional crops still grown</i>
Green beans (<i>Phaseolus vulgaris</i> L.)	Dry beans (<i>Phaseolus vulgaris</i> L.)
Irish potatoes (<i>Solanum tuberosum</i> L.)	Sweet potatoes (<i>Ipomea batatas</i> Poir.)
Beetroot (<i>Beta vulgaris</i> L.)	Madumbes (taro) (<i>Colocasia esculenta</i>)
Onions (<i>Allium sepa</i> L.)	Sorghum (<i>Sorghum bicolor</i> L.)
Carrots (<i>Daucus carota</i> L.)	Yellow maize (<i>Zea mays</i> L.)
Swiss chard (<i>Beta vulgaris</i> L.)	Gourds (for beer, milk) (<i>Cucurbita</i> spp. L.)
Cabbage (<i>Brassica oleracea</i> L.)	Izindlubu (<i>Vigna suberranea</i>)
Chillies (<i>Capsicum annuum</i> L.)	Pumpkins (<i>Cucurbita</i> spp. L.)
Tomatoes (<i>Lycopersicon lycopersicum</i> (L.) Karst.)	Imfino (spinach) (<i>Amaranthus</i> spp. L.)

Community gardens do provide locally produced fresh vegetables at reasonable prices and the growers are able to augment the family budget through selling surpluses (Crosby *et al.* 2000). They also provide a place where people can learn from each other and share ideas and they have valuable social functions, such as providing a place where new wives can get some peace from the mother-in-law (Shezi, *Pers. Comm.*).

Although the community gardens provide a means for growers to learn from each other and to help motivate each other, the SPUP felt that individuality and resulting agricultural innovations are stifled because of the perceived need to conform to established production practices. A perception that is compounded by the prescriptive approach of the local organisation. Also, rules within the community gardens, based on social norms, tended to exclude certain members of the community from participating. For example, following a death in the family, a member is not usually allowed to participate in the community garden for a period of one year. Also, physically challenged or older, less able people are not capable of walking the usually long distance to the community garden. Those excluded from the community gardens for whatever reason are then forced to work mostly in isolation in their homestead garden.

The SPUP encouraged these excluded farmers to interact with each other and to form informal groups that could then be assisted by facilitators from the SPUP. Such groups exist in a few of the wards in the Valley and interact within and between each other and with the SPUP. Most groups have a farmer who is well established and active, who assists other farmers with advice, seeds and plants. The role of the SPUP is to facilitate these farmer-to-farmer learning activities, promote a ecological approach to production, empower these farmers with skills to increase their production and assist them with the acquisition of plants, seeds and animals.

Biophysical constraints to crop production

Biophysical constraints to production include low soil fertility, high soil acid saturation values, lack of access to sufficient water, weeds, pests and plant diseases. As a result the agricultural potential of many former homeland areas is relatively low. Within KwaZulu-Natal, a survey of community gardens serviced by both NGOs and Government extension personnel revealed that, in most cases, soil fertility status was the major biophysical constraint to increased productivity (Adey *et al.* 1998).

Within the Valley of a Thousand Hills, the majority of soils sampled are phosphorus deficient.

Livestock production

Livestock ownership is fundamental to all Zulu communities, and animals play a central role in their spiritual life. All celebrations and occasions are marked by the sacrifice of animals, including cattle, goats and chickens. Livestock provide meat, milk and a continual supply of manure. Grazing is conducted on communal lands, usually the steeper, less agriculturally productive land. Although communally owned land is used for grazing, there are presently very few community-based livestock management systems in place, and overgrazing is a common phenomenon.

Winter fodder tends to be a problem as very little grazing is available in the winter months. Cattle commonly feed on maize stover during this time, but maize grown on infertile soil does not always provide adequate nutrients.

Those farmers in the Valley who do not own their own cattle can obtain kraal manure from other farmers. It is not common to pay for the manure, but transport can be problematic when farmers are from different areas. Goats and cattle are kept at the homestead at night and are grazed on communal land during the day. Any manure produced during the day is not available for crop production. Chickens are also kept, usually caged near the homestead. Ducks are becoming popular, as they are easy to maintain and are highly productive. The SPUP has introduced a system by which they will supply farmers with animals, usually chickens, ducks or goats and when the animal has produced offspring, these are then returned to the SPUP as 'payment' for the original animal. This means that farmers who would not usually be able to buy animals can still access or increase their animal production capacity.

Livelihoods and socio-economic constraints to crop production

Socio-economic constraints have been identified as poor access to markets, theft, violence, lack of fencing, inability to purchase inputs due to lack of money, difficulties in transporting produce, and poor health of members of the household.

For most families in the Valley, as in other rural areas, income is usually not from one source, and is derived from a number of activities. Some food is produced on the land and animals are kept. Usually at least one family member works away from home, within the community, within another community or in an urban centre. Up to 48 per cent of rural households in South Africa are dependent on wages, with approximately half of South Africans earning less than ZAR1000 per month. The average expenditure on food in rural households constitutes 23 per cent of total household earnings. In South Africa, 22 per cent of all children are stunted due to malnutrition, the main contributing factor being not enough food in the household, and the subsequent lack of a balanced diet. The macroeconomic policy of South Africa is not changing the socio-economic situation and standards of living of many South Africans continue to deteriorate (Bonti-Ankomah 2001).

Unemployment within South Africa is currently estimated at 40 per cent, and it is a commonly held belief that urban unemployed are moving back to the rural areas. There is also an influx in the rural areas of people too sick to work (often due to AIDS), putting pressure on rural households.

Besides crop production, not much of which is sold, income-generating activities include craft making, beadwork, beer selling and woodwork. Craft making and beadwork are time-consuming and both are a dying art as young women are not interested in making a living from these means.

Few rural people in KwaZulu-Natal make a significant income from agriculture. The financial return is often not worth the effort when set against the risks (Taylor and Cairns 2001). Agriculture is often perceived as the occupation of the poor, and young people have no desire to be involved. In a family farming household, usually only the younger children will assist as the adolescents consider the tasks too menial.

The SPUP are encouraging farmers to produce organic produce for external markets where higher prices are obtainable. Despite the observation by Taylor and Cairns (2001) that the expansion of farming based on traditional crops is unlikely to make a significant contribution to poverty alleviation, there is an increasing trend by more affluent consumers to buy traditional crops in supermarkets. However, the problem lies in ensuring an adequate, continual supply to these outlets. Farmers within the groups are working together to ensure that a variety of vegetables is available at one time and that sufficient farmers are growing vegetables at one time to ensure continuity. Although farmers and SPUP are seeking to tailor the supply of produce to meet demand, factors such as market-availability are not yet fully resolved. Farmers feel that the SPUP should assist them in establishing market linkages, but the SPUP feel that unless the farmers themselves address these factors, little sustainability will result.

A constraint to agricultural and rural livelihoods now having a major impact on the survival and advancement of rural agricultural communities is the advance of the AIDS pandemic. AIDS is devastating the most economically productive citizens, those between the ages of 15 and 49, and in rural areas many of these die in utter poverty and with little care. Most women who die leave their children in the care of family members. Old women already struggling to care for others on their welfare pension money are expected to take care of the orphans (Christine 2000). Also, money that would be available to the household for the purchase of seeds and seedlings or for transporting produce to market has to be used for medicinal needs. Many households deal with additional costs by disposing of assets that are needed in production, such as savings, cattle and tools. Children, especially girls, are taken out of school to help with agricultural tasks, as less labour is available for fieldwork when a family member is sick.

There is often discrimination against HIV-positive people in rural areas where access to information is poor. Most HIV-positive people in rural communities do not admit to their condition, and the family only finds out when person has full-blown AIDS (Kelly 2000). Editors of the *Technology Development Needs of African Smallholder Agriculture* concluded that there is a need to emphasise the need to encourage labour-saving innovations in technology e.g. lighter ploughs, modified hoes and planters, intercropping and animal weeding (Kelly 2000).

AIDS is proving to be one of the biggest challenges development work has ever faced, rural development workers (in particular NGOs) have to go beyond raising awareness of AIDS, to active strategies to support rural communities (Lekalakala and Monare 2000). Localised agricultural production should be encouraged, as this will improve the nutritional status of households and keep the carers home-based, near the sick.

To address the issue of HIV/AIDS, the SPUP is promoting organic farming with the incorporation of immune-system boosting herbs, and food gardens that will help to alleviate the sense of helplessness that many families affected by AIDS face. The SPUP is also working with Traditional Health Practitioners (*Sangomas*) to establish which traditional medicines can be grown by small-scale farmers and used at home. The use of traditional vegetable varieties plays an important role in sustainable livelihoods for people affected by AIDS. Not only are these crops more likely to produce adequate yields but, as the seeds and propagating material are kept after each harvest, the financial outlay for crop production is lessened. Their production is also less labour-intensive. Within the farmer groups in the Valley, the effects of AIDS are obvious; although not openly discussed, they are readily observed. Economically active people are dying; the graves are there to be seen. The number of children in the households has also increased and some farmers are

cultivating smaller areas, as their time is taken up looking after the young children. Farmers are also unable to purchase as much vegetable seed as in previous years. And widows head many households. Due to the decrease in available finance, small-scale, low-external-input agriculture will be one of the few livelihood strategies available to rural families afflicted by AIDS. The greatest challenge to development work, the research community and extension services is to empower farmers to ensure sustainable livelihoods.

5.2 *A Promising Pocket-Full of Taro*

This section describes taro cultivation in KwaZulu-Natal and the novel approach of integrating it with other natural resource-based modes of production. Taro (*Colocasia esculenta*), referred to by the Zulu people as *amadumbe*, is one of the most extensively grown indigenous crops in KwaZulu-Natal. Originating in Asia, it is thought to have spread across tropical and sub-tropical Africa via Egypt, where it was recorded over 2 500 years ago (Plucknett 1976). Although it is uncertain how long it has been in KwaZulu-Natal, its cultivation was well established here on the arrival of European settlers.

Taro is grown primarily for its starchy corms, which have small starch grains that are easily digestible. Young leaves are also used as spinach, which provides a dietary supplement to maize (Shanley 1966). Taro is a sought after food item amongst many Zulu communities, to the extent that alternative cheaper carbohydrate sources such as potatoes are not regarded as substitutes (IPS 1996).

Taro is by no means a predominantly 'subsistence crop'. Much of the taro produced in black rural areas is sold locally, and some farmers also employ local people on a temporary basis to assist in the cultivation, which has a relatively high labour requirement.

The technology encompassed in taro cultivation has developed over countless generations of farming. Taro has a relatively high soil moisture requirement and is grown under dryland conditions only where rainfall is high (i.e. above approximately 1000 mm per annum). Where rainfall is lower than this, as is the case in much of the Province, taro cultivation is restricted to wetland areas, which also tend to have more fertile soils (Kotze 1999). Taro is relatively tolerant of waterlogging and therefore does not require extensive drainage. It is characteristically cultivated in raised beds, about 20-50 m² in area, using hoes. Corms are planted in spring, grown through summer and harvested in winter. Although very widespread, taro cultivation has remained essentially hidden to the major technological regime and very little research or technical guidelines exist for the crop. The technology for taro production is well established locally, and government extension services play an insignificant role in providing technical support (Kotze 1999). Another example of 'hidden' indigenous crops is that of traditional Zulu calabashes. There are a

number of these cucurbits, with each different variety serving a specific function: e.g. beer making, milk souring and ladle making, embedded within traditional Zulu culture).

Although the drainage and cultivation of wetlands was actively promoted by the Department of Agriculture until the early 1980s, it is now discouraged. Wetland cultivation is generally regarded as damaging to the natural (ecological) value of wetlands as well as impacting negatively on catchment water quality. However, taro cultivation practices are generally less disruptive than the commercial cropping practices commonly applied in South Africa for a number of reasons:

- Large-scale drainage is not required.
- Tillage and harvesting is by hand, which results in less disturbance, and hence potential erosion, than mechanical tillage and harvesting.
- Pesticides and artificial fertilisers are not used, reducing the impact on water quality.
- There is a shifting pattern of cultivation, with most individual patches being continuously cultivated for less than four years compared with large-scale cultivation where areas are continuously cultivated.
- The spatial configuration of areas cultivated is generally in the form of small isolated areas, rather than larger consolidated areas, which is more favourable for wetland-dependent wildlife (including the red-chested flufftail *Sarothrura rufa*) (Kotze 1999).

Taro cultivation may, nevertheless, have potentially high impacts on the ecological functioning of wetlands, especially if the cultivated areas have a high erosion risk or are very extensive. Therefore, cultivation needs to be well controlled to account for the environmental requirements of the biophysical system. At the same time, other means of utilising the wetland that result in less disruption of the wetland's ecological functioning need to be promoted as incentives for limiting the extent of taro cultivation in individual wetlands. The most promising alternative is probably the harvesting of wetland plants for craft production. Wetlands in KwaZulu-Natal provide abundant fibrous leaf and stem material valued for weaving, and the Zulu people have a very rich tradition of weaving such materials. Mats woven from wetland plants continue to play a significant role in many events, including weddings, funerals and worship ceremonies.

A promising initiative is currently underway at the Mbongolwane wetland, near Eshowe in northern KwaZulu-Natal, to integrate taro production with the utilisation of wetland plants (particularly the sedge *Cyperus latifolius*) used for weaving crafts. It involves controlling cultivation in erosion-sensitive areas and craft development and marketing to penetrate much broader markets than have traditionally been accessible. . The participation of service providers in such integration

is a novel approach, in KwaZulu-Natal at least, and is being nurtured within the LandCare Programme, which provides a vehicle for promoting the initiative more widely. The adoption of this novel integration in other wetland areas will, however, clearly require an enabling institutional and economic environment. The experience at Mbongolwane shows that many constraints (e.g. poorly understood external markets and a diminishing ability to influence cultivation practices) must first be addressed.

6 Discussion

During apartheid, policies and laws were in place that restricted land ownership and trade by black people, and greatly limited commercialisation amongst black farmers. While there was a supportive extension service for small-scale farmers in the former homelands, this was always afforded a low priority in relation to South Africa's overall agricultural production. With the dismantling of the apartheid regime, expectations for the commercialisation of black small-scale farming were high. Progress has, however, been slow owing to several constraints, namely: (1) dwindling financial and human resources within the National and Provincial Departments of Agriculture; (2) lack of a coherent overall rural development programme; (3) a high level of poverty ('poverty trap'); and (4) slow delivery in the transfer of land.

Support for small-scale farmers is caught between focussing either on emerging commercial farmers, who already have reasonable resources on which to build, or ensuring food security for subsistence farmers with very meagre resources. The current government policy appears to be increasingly favouring emerging farmers, highlighting the importance of NGOs assisting the government (or filling this gap and) in supporting subsistence farmers.

The Valley Trust is one such NGO. They seek to assist subsistence farmers with low-external input, ecologically sustainable agriculture, based on a mixture of traditional and introduced crop types. They work through identifying innovative farmers and facilitating farmer-to-farmer learning. This allows for the transfer of promising technologies throughout the farmer learning-groups within the Valley. By working at the homestead level, the Social Plant Use Programme facilitators are better able to perceive the impacts of non-agricultural activities and constraints on agricultural production. From this they gain an overall perspective of the farming system within which the subsistence farmer operates, and are able to engage in a more integrated fashion.

The disadvantage of this is that far fewer farmers are reached directly than by the prescriptive 'community garden' approach of the Department of Agriculture, where many households cultivate land in one location that

is logistically much easier to service than widely spaced households connected by poor roads.

The national and provincial governments are focussed primarily on high-external-input agriculture with introduced crop types in its support for both subsistence and, especially, emerging farmers. Little interest has been taken in promoting low-external-input sustainable agriculture, which is often the focus of NGO support. The high external input, large-scale model clearly remains the dominant regime within the Department of Agriculture and Environmental Affairs. However, with the increasing importance of concepts such as catchment management, biodiversity conservation and long-term sustainability of agriculture, a growing interest in low external-input, ecological agriculture is taking place through such government initiatives as the LandCare Programme. At Mbongolwane we see a novel approach to maintaining the functional integrity of wetlands, which are important hydrological components in the catchment. This involves harnessing well-established traditional technologies previously viewed as unsophisticated by the dominant technological regime. These technologies are being married with introduced technologies around catchment management and market innovation for craft products.

The two promising pockets described in this article, demonstrate that low-external-input agriculture based strongly on local technologies is economically viable, ecologically sustainable and supportive of local cultures and traditions. However, a romanticised return to entirely traditional crop types and practices is clearly unrealistic. For example, people's cultural preferences for particular foods largely determine what is feasible. While some crop types such as taro are still in high demand, others now have a general low preference. Instead, the objective is to blend promoting traditional crop types and technologies with introduced technologies (e.g. green manuring) and 'modern' technologies (e.g. laboratory-based soil chemical analyses to identify specific fertility constraints requiring remediation). Introduced technologies build on local technologies rather than replacing what already exists.

In KwaZulu-Natal the actors, knowledge systems and technologies in place are extremely heterogeneous. The main actors include:

- Farmers (ranging from extremely poor to wealthy)
- Extensions workers
- Educators (secondary and tertiary institutions)
- Agricultural researchers
- Soil analytical services

These actors have a variety of foci and objectives operating at many different levels, from national level down to household level. The situation is complicated by sometimes competing objectives, notably: commercialisation versus poverty alleviation, maximising agricultural production versus respecting ecological constraints, and maintaining the ecological integrity of natural systems. However, in striving to balance these apparently opposing objectives so as to achieve social, economic and ecological sustainability, as described by Goodland (1995), that novel technologies arise.

Interventions by different actors are unlikely to be effective if they take place in isolation. NGOs such as the Valley Trust play a pivotal role in mediating useful exchanges and synergies, nurturing local technologies that are drawn from traditional technologies, as well as 'modern' technologies to achieve improved modes of local production. Together these show signs of leading to positive changes in the dominant regime.

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