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## Should subsistence agriculture be supported as a strategy to address rural food insecurity?

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### Abstract

*At first glance South Africa's black farming sector appears to contribute rather minimally to overall agricultural output in South Africa. However, despite the complexity involved in this sector and the often marginal conditions in which agriculture is practised it appears to be important to a large number of black households. Furthermore, the significance they attach to subsistence agriculture as means of supplementing household food supplies seems to heavily outweigh other reasons for engaging in agriculture. Some South African researchers have indicated the contribution subsistence production makes to household food security, despite the prevalent complexities and the low input nature of this production. Statistics South Africa's Labour Force Survey data from 2001 to 2007 and a case study of subsistence farming in Limpopo Province are used to support the argument that, despite the complexity of this sector, the more than 4 million subsistence farmers, need and merit greater support. Such support should be based on the local context, build on and, where appropriate, improve existing local practices, while addressing various existing threats to this type of production. Recommendations are made as to what policy makers need to consider when considering how best to support subsistence production.*

**Keywords:** Subsistence production; Labour Force Survey; traditional crops; local agricultural practices

### 1. Introduction

The South African agricultural sector is dualistic in nature. It comprises of a vibrant, well integrated and highly capitalised commercial sector on the one hand and fluctuating subsistence sector on the other hand (Vink & Kirsten, 2003; May & Carter, 2009). According to the 2007 commercial agricultural census (Stats SA, 2009), there are 39 982 commercial farm units in the country,

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producing about 95% of the agricultural output, the overwhelming majority of which are situated on 87% of the total agricultural land. In contrast, and despite the land reform initiatives since 1995, the black subsistence and smallholder producers are predominantly settled in the former homelands and rural reserves, and produce on the remaining 13% of the agricultural land (Feynes & Meyer, 2003). The actual numbers of these black farmers are far from clear, as are their reasons for farming. A 1998 survey by ESKOM indicated that there were approximately 2.1 million small-scale and emerging farmers in South Africa (Coetzee, 2003). The *Strategic Plan for South African Agriculture* (DOA, 2001) indicates that there are approximately 240 000 black farmers in South Africa who provide a livelihood for more than a million of their family members, and provide temporary employment for another 500 000 people (these farmers are thus probably more commercially oriented). It further estimates that there are approximately 3 million small-scale farmers who produce food primarily to meet household consumption needs.

In an analysis of the first wave, during 2008, of the National Income Dynamics Study (NIDS), May and Carter (2009) report that slightly more than 1.25 million people or 4.6% of the adult population participated in some form of agricultural production. It is apparent that these figures are far from consistent. From the available evidence it is not always clear for what reasons black households and individuals engage in agricultural production. Scale is sometimes confused with reason for production. Also the engagement of individuals and households in agriculture fluctuates and is dependent on livelihood diversity. These factors make this sector extremely complex and can constrain the type of support required by the black farming sector.

This article contributes to the understanding of the magnitude and complexity of subsistence agriculture in South Africa and the contribution of this sector to household food security. Furthermore, with well developed support it is possible that this sector could potentially contribute more to household food security and livelihoods. The article seeks to do this by drawing together three lines of inquiry. First, it reviews some studies that describe the complexity and contributions of subsistence farming in South Africa. Secondly, selected Labour Force Survey data is used to characterise the size and nature of South Africa's 'subsistence sector', so as to convey a sense of its overall importance and complexity. Thirdly, the article illustrates the contribution of this type of farming for supplementing household food supplies, complexity inherent in pursuing subsistence farming and the contextual nature of the support required by means of a case study of subsistence farming drawn from a village in Limpopo. The paper concludes that given the large number of people

involved in subsistence-level farming and the importance that people attach to 'traditional' crops for supplementing household food supplies, further investigation is required to determine whether subsistence production should be supported in other areas and what types of support programmes are required in different contexts in order to improve on existing subsistence practices.

## 2. Complexities and contributions

Land holdings in the former homelands are generally very small (Groenewald & Nieuwoudt, 2003) and are mainly used for subsistence purposes. According to Feynes and Meyer (2003), the majority of rural inhabitants in the former homelands are the aged, women and children who reside on land more for social security purposes than for agricultural production and they estimate that arable land in the former homelands is between 11% and 16% of the total area. They further stress that cultivation of this land fluctuates significantly with between 40% and 80% being cultivated in any given year. While many of the former homelands are situated in the eastern part of South Africa, which obtains significantly better rainfall than the western part, the steep terrain reduces the amount of arable land available and this is further exacerbated by the increases in soil erosion brought about by this terrain (Feynes & Meyer, 2003). Although the veldt grazing in these areas is of high potential, current stocking practices exceed the carrying capacity of the land in most of these areas. Subsequent overgrazing has severely affected the quality of arable land and in many areas it is no longer suitable for crop production (Feynes & Meyer, 2003).

In a study in the Eastern Cape (Fraser *et al.*, 2003) it was revealed that often when African farmers had access to crop land, but lacked access to implements and other resources, they rather concentrated on home gardens in order to provide some measure of food supplementation. They did not have the necessary resources to farm the large tracks of land they accessed and could not afford the associated risks and inputs, even when resources were pooled amongst five households (Fraser *et al.*, 2003). Risky crop production is a result of South Africa's climate, the relative scarcity of water in most areas and the low potential of arable land available to subsistence producers (Ortmann & Machethe, 2003). Their poverty further exacerbates the situation preventing them from overcoming these circumstances by purchasing the costly inputs required and making long term investments. Consequently, they engage in more intensive and diverse practices and crops in order to reduce risk while striving for a measure of food security for the household.

Such households also diversify their sources of livelihoods and income in order to manage their risk (Coetzee, 2003). Consequently, off-farm income is sought and is part and parcel of what it means to be a subsistence farmer in South Africa. Most subsistence farmers in South Africa tend to diversify their income and livelihood sources where possible; this is a strategy to spread and manage risk and is a buffer against poverty. While some livelihood and income might arise from agricultural production and the exchange of produce for other products or services, a greater percentage of income is earned from other sources such as remittances (including social grants and migrant labour contributions), purchase and sale of goods – especially consumables such as food, beverages and paraffin, the renting of animals for traction, sale of labour and off-farm full-time and seasonal employment in rural towns or on commercial farms.

Despite the complexity inherent in the subsistence agricultural sector, Hendriks (2003) seems to suggest that subsistence production renders two distinct nutritional benefits, first in the form of whatever food is produced for own consumption, and second in terms of freeing up income that can be spent on even more nutritious foods that the household might not be in a position to produce itself:

While production for home consumption increases the availability of vegetables and increases micronutrient intake, the income ‘savings’ derived from home production seems to have more positive influences on the nutritional status of rural populations. Income replacement leads to increased purchases of energy-dense foods such as fats, oils and meat (Hendriks, 2003:39).

In a more recent study, Van Averbeke and Khosa (2007) reported that while income is the most important determinant of household food security in two villages in the Waterberg District Municipality, Limpopo Province, food obtained from various types of dryland agriculture contributed significantly to household nutrition. They argue that without farming the food security of these households would be reduced, especially for the ultra-poor. Furthermore, they note that small-scale irrigated vegetable production has the potential to substantially increase the amount of Vitamins A and C available to such households.

Kirsten *et al.* (1998) conducted a survey of rural households in KwaZulu-Natal in order to discern the relationship between the incidence of stunting among

children and the agricultural practices of their households. They conclude broadly that:

...agricultural activities make a positive contribution to household nutrition, which suggests that designing effective programmes for improving agricultural productivity in the less-developed areas of South Africa could have a potentially positive impact on household and child nutritional status (Kirsten *et al.*, 1998:586).

Given the contribution of subsistence production to household food security it would seem that support should be based on the development of 'effective programmes'. As a consequence of the complexity inherent in this type of production such programmes must take into account the dynamics, diverse needs, practices and circumstances of all those engaged in subsistence agricultural activities. These issues are now firstly explored in terms of national data and then using evidence from a recent case study.

### **3. The subsistence farming sector as revealed by the Labour Force Survey**

#### **3.1 Introduction**

The status of black farming is reviewed below. Statistics South Africa's Labour Force Survey (LFS) is used in order to generate an understanding of the magnitude and nature of 'black agriculture', of which subsistence farming is by far the largest component. The value of the LFS in this respect is that it is the only national survey that enables reasonably robust estimates as to the total number of people involved in agriculture for own account over time (i.e. as opposed to being wage employees on others' farms), in this case from 2001 through 2007. This owes in part to the large size of the LFS - typically in the order of 25 000 to 30 000 households - as well as to the limited nature of other surveys seeking to offer information on agriculture, such as Stats SA's now-dated Rural Survey of 1997, which covered 5 000 households in former homelands only, and Stats SA's more ambitious but methodologically flawed Survey of Large and Small Scale Agriculture of 2000 which, among other limitations, chose to omit subsistence farmers.<sup>2</sup> However, it must be stressed that what the LFS asks about agriculture is extremely limited. The focus in this

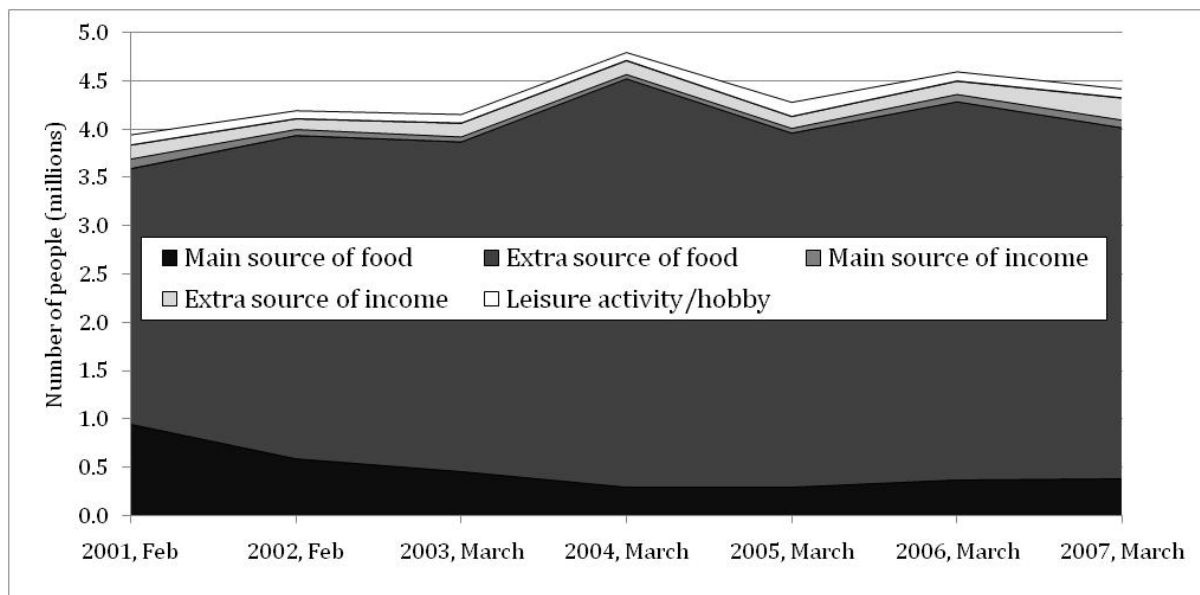
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<sup>2</sup> In other words, the 'Small Scale' of the title refers only to a subset of agriculturally active black households, namely those for whom 'the respondent considered the household or a member of the household to be a farming operation' or who via some other criterion were deemed 'farming units' (Stats SA, 2002a:2).

article falls on only two LFS questions, namely the yes/no filter question that establishes whether anyone in the respondent household 15 years or older has spent any time involved in own-account agriculture over the previous 12 months, and a follow-on question that asks for a crude characterisation of the main reason why those who engaged in agriculture did so. Information from these variables is combined with household-level and individual-level data.

### 3.2 Trends in participation in agriculture

We begin with a depiction of the extrapolated numbers of black (African and Coloured) South Africans who engage in agriculture, according to their stated 'main reason', where these main reasons are options provided for in the LFS questionnaire. The trends are depicted in Figure 1. Broadly, we take 'subsistence producers' to include those who produce food primarily for consumption in their own households, whether as a main source or extra source.



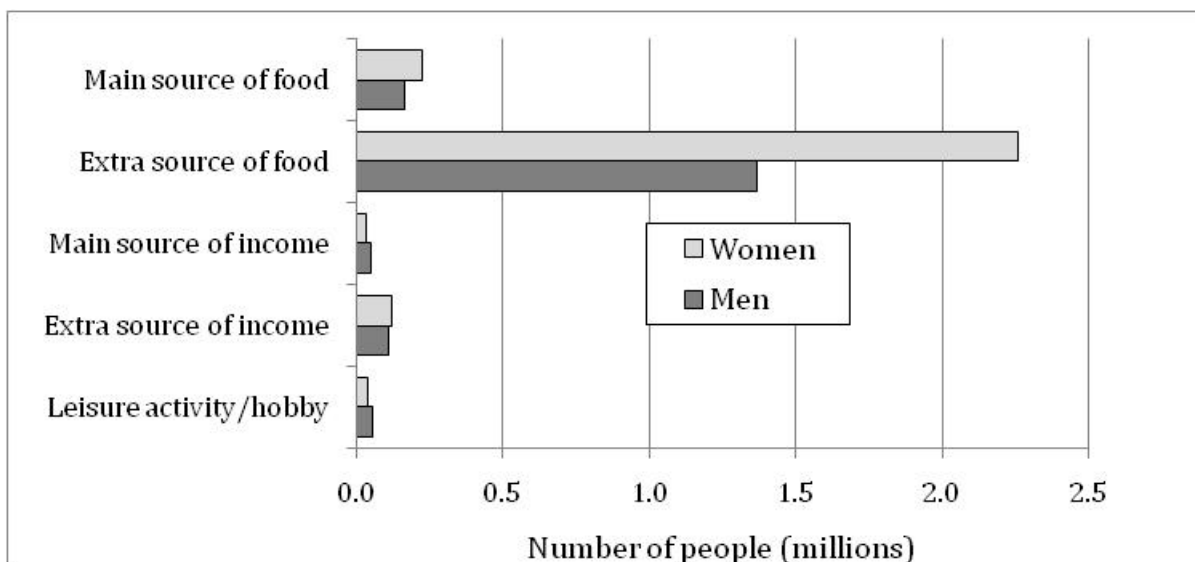
**Figure 1: Numbers of blacks involved in agriculture for own account, 2001 to 2007, excluding data from September surveys of LFS**

Source: Labour Force Survey, February 2001 (Stats SA, 2001), February 2002 (Stats SA, 2002b), March 2003 (Stats SA, 2003), March 2004 (Stats SA, 2004), March 2005 (Stats SA, 2005), March 2006 (Stats SA, 2006), and March 2007 (Stats SA, 2007)

There are four main observations: first, the overall number of people involved in agriculture (within which we include both crop and livestock husbandry) is large, in the order of 4 million people or more; second, the predominant reason for which people engage in agriculture is to procure an 'extra source of food'; third, there appears to be a trend over time whereby the share of those involved in agriculture for this reason, has expanded at the expense of those

involved in agriculture as a 'main source of food', implying that the nature of subsistence is changing;<sup>3</sup> fourth, those involved in agriculture for a main or extra source of income, is small but consistent over time.

What is the profile of those involved in agriculture? Starting with the question of gender, the LFS of March 2007 is used here to determine the relative participation of women versus men, differentiating according to the 'main reason' variable (Figure 2). Women make up 60% of all those involved in farming, and are on a par with, or slightly more numerous, than men in respect of each of the main reasons, except for the 'extra source of food' reason, in which case they exceed men by about 65%. Insofar as women outnumber men as subsistence producers, this is consistent with the prevalent stereotype of homeland agriculture. What is perhaps surprising is that commercially-oriented black farmers are equally likely to be women as men.



**Figure 2: Sex of black farmers, by 'main reason' for farming**

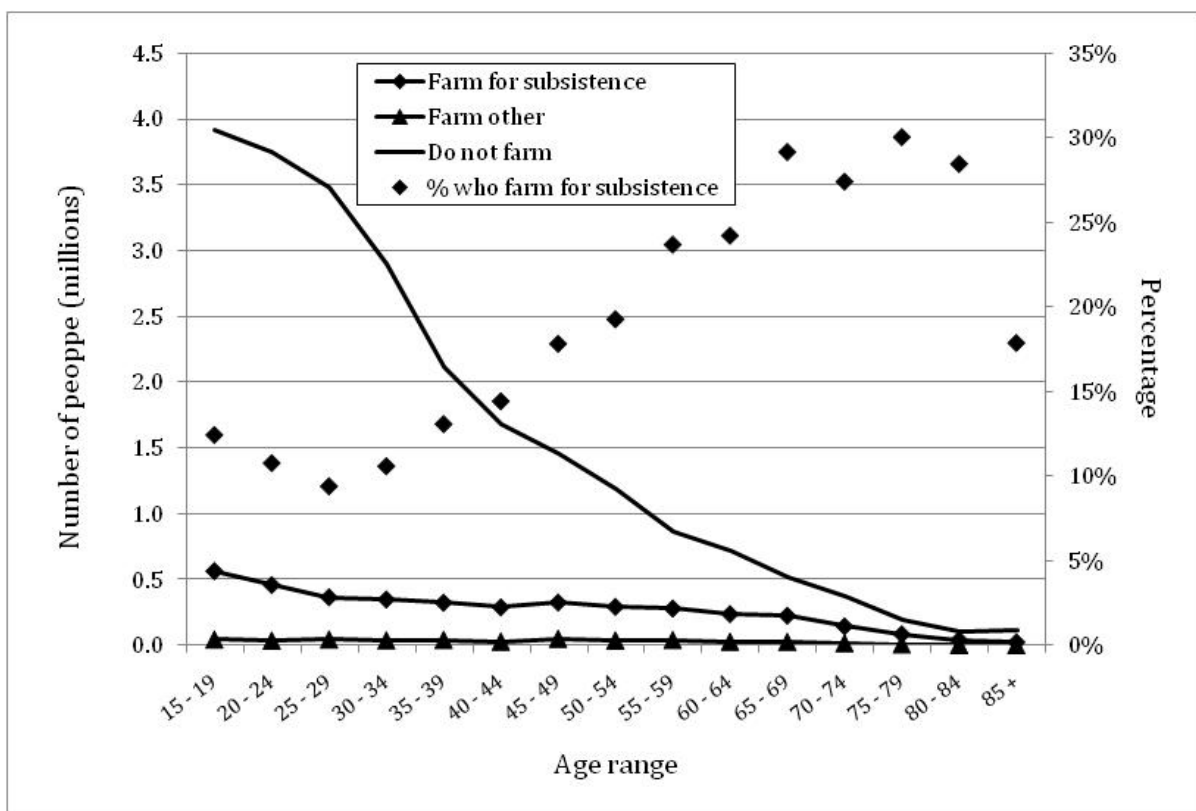
Source: Labour Force Survey, March 2007 (Stats SA, 2007)

As for the age of those engaged in agriculture, Figure 3 shows for each age range the number of people who farm for subsistence, those who farm for other reasons, the number of people who do not farm, and the share of the cohort who farm for subsistence. The graph helps place some perspective on a recurrent theme among those concerned with rural development, namely the apparent disdain of the youth for agriculture (see e.g., Aliber, 2005:90, 99). It

<sup>3</sup> The authors conjecture, but do not attempt to prove, that the period up to 2004 roughly coincides with the successful push of the government to enrol all eligible people for social grants, meaning that those households who were especially vulnerable were henceforth able to reduce their dependence on own production.



shows that, in absolute terms, younger people involved in subsistence farming outnumber older people, i.e. the number of people involved in subsistence agriculture declines with age. However, the number of youth who farm for subsistence is smaller relative to the size of their age cohort than is the case for older people (at least until the 1980s, at which stage the ability to farm is presumably increasingly constrained by infirmity), which perhaps contributes to the perception that the youth stay away from farming. For example, there are twice as many 15- to 19-year-olds involved in agriculture than there are 55- to 59-year-olds, however those 15- to 19-year-olds who farm make up only 12% of all 15- to 19-year-olds, whereas the 55- to 59-year-olds who farm make up 24% of all 55- to 59-year-olds. The data are a useful antidote to the belief that engagement in farming is restricted to the old, who carry on with it as much out of nostalgia as for economic reasons. Although the March 2007 LFS data were used here, the picture is effectively the same for other editions of the LFS.



**Figure 3: Participation in agriculture by age**

Source: Labour Force Survey, March 2007 (Stats SA, 2007)

### 2.3 Transition analysis 2006–2007

Over 21 000 rural and urban households were surveyed in both the March 2006 LFS and the March 2007 LFS. Given this overlap in the survey sample, an analysis of the transition between 2006 and 2007 may shed some light on the reasons why people chose to engage in, or disengage from, agriculture. Overall, although almost 27% of black households farmed in 2006 and about 25% in 2007; less than 16% farmed in both years. However, it is also worth noting that only 64% of black households farmed in *neither* year.

Table 1 shows a transition matrix for black households for 2006 to 2007 where the 'states' are defined according to the 'main reason' variable. The values in most of the table's cells are very small; the four cells marked with bold emphasis together account for 92% of all households. Moreover, even the cells along the diagonal – those for which the household remained in the same 'state' from the one year to the next – are mostly close to zero, with the major exceptions of the 11% of black households who remained farming for extra food, and the almost two thirds of households who remained out of farming for both years. One implication is that, while the number of those who farm for a main or extra source of income is small, the number who do so *consistently* is actually much smaller.

**Table 1: Transition matrix for participation in agriculture by 'main reason'**

|      |                     | 2007             |                   |                    |                     |         |               |
|------|---------------------|------------------|-------------------|--------------------|---------------------|---------|---------------|
|      |                     | Main source food | Extra source food | Main source income | Extra source income | Leisure | Did not farm  |
| 2006 | Main source food    | 0.22%            | 0.82%             | 0.02%              | 0.06%               | 0.03%   | 1.08%         |
|      | Extra source food   | 0.70%            | <b>11.53%</b>     | 0.22%              | 0.76%               | 0.17%   | <b>8.96%</b>  |
|      | Main source income  | 0.02%            | 0.21%             | 0.06%              | 0.04%               | 0.00%   | 0.16%         |
|      | Extra source income | 0.05%            | 0.36%             | 0.03%              | 0.03%               | 0.02%   | 0.47%         |
|      | Leisure             | 0.02%            | 0.14%             | 0.00%              | 0.02%               | 0.02%   | 0.32%         |
|      | Did not farm        | 0.91%            | <b>7.41%</b>      | 0.25%              | 0.47%               | 0.31%   | <b>64.13%</b> |

Source: Labour Force Survey, March 2006 (Stats SA, 2006) and March 2007 (Stats SA, 2007)

Tables 2 and 3 attempt to identify correlates of some of these transitions or non-transitions. However, values are shown only where the underlying number of observations was 20 or more. Table 2 examines per capita income

from wages or salaries<sup>4</sup>, while Table 3 examines household size. In each cell of both tables, the first figure is the actual average value of that variable for 2006, while the figure below in brackets is the percentage change in that average between 2006 and 2007.

The first thing to note about Table 2 is the extremes in per capita wage/salary income that it captures, with the low being associated with those who farmed as a main source of food in both periods (R96), and the highs being associated with those who farmed in neither period (R937), or who moved between farming for leisure and not farming (R992), or vice versa (R1 290). In other words, farming as a main source of food is a sign of extreme poverty. A second important observation is that, of those who farmed to procure a main source of food in 2006, there were three main destinations where they ended up in 2007: 1) those who remained farming for a main source of food experienced significant income improvements, albeit from an extremely low base; 2) those who moved into farming as an extra source of food, experienced smaller percentage income improvements but from a higher base, giving them higher average per capita incomes in 2007, seemingly to the extent that they were less reliant on own production; and 3) those who ended up out of farming altogether in 2007, who tended to start with far higher per capita incomes, in conjunction with which a large percentage increase rendered farming entirely unnecessary. By the same token, the move from farming as an extra to a main source of food appears to coincide with a significant drop in per capita wage/salary income. What is not so easy to understand is that those who moved from not farming in 2006 to farming as a main source of food in 2007, began in 2006 with a relatively large income from which they enjoyed a good increase, which does not 'fit' with the interpretation of farming as a main source of food being driven by desperation.

Finally, as for movement into and out of farming for an extra source of food, the principal starting place or destination, respectively, are one and the same, i.e. not farming. Both shifts are associated with reasonably favourable per capita incomes and percentage improvements.

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<sup>4</sup> Household income from wages or salaries was calculated by summing up the wages or salaries of all household members who reported any such income. For those household members for whom the answer was rendered as an income range rather than an actual income value, the mid-point of the range was taken. In calculating percentage changes between 2006 and 2007, no adjustment was made for inflation. Unfortunately, the LFS does not provide straightforward information about other income sources such as social grants.

**Table 2: Average per capita monthly wage/salary income in 2006, and average percentage change in per capital wage/salary income 2006-2007**

|      |                     | 2007             |                   |                    |                     |                    |                  |
|------|---------------------|------------------|-------------------|--------------------|---------------------|--------------------|------------------|
|      |                     | Main source food | Extra source food | Main source income | Extra source income | Leisure            | Did not farm     |
| 2006 | Main source food    | R96<br>[+44.4%]  | R133<br>[+23.8%]  |                    |                     |                    | R254<br>[+41.4%] |
|      | Extra source food   | R309<br>[-24.1%] | R241<br>[+9.0%]   | R166<br>[+19.2%]   | R235<br>[+41.3%]    | R687<br>[+3.5%]    | R393<br>[+18.1%] |
|      | Main source income  |                  | R260<br>[+26.1%]  |                    |                     |                    | R831<br>[-41.7%] |
|      | Extra source income |                  | R418<br>[-14.4%]  |                    |                     |                    | R474<br>[+52.5%] |
|      | Leisure             |                  | R622<br>[+30.8%]  |                    |                     |                    | R992<br>[+23.5%] |
|      | Did not farm        | R333<br>[+20.8%] | R382<br>[+15.7%]  | R258<br>[+24.7%]   | R663<br>[+26.4%]    | R1,290<br>[+21.5%] | R937<br>[+22.7%] |

Source: Labour Force Survey, March 2006 (Stats SA, 2006) and March 2007 (Stats SA, 2007)

Table 3 yields one main insight, namely that the movement into farming from not farming (i.e. the bottom row except for the last cell on the right) is generally associated with an increase in household size, while the movement out of farming from farming is associated with a decrease in household size (i.e. the right-hand column except for the last cell at the bottom). Two interpretations are possible: a change in household size signifies a change in the household's *need* to find supplementary sources of food through agriculture, and/or change the household's *capacity* to engage in agriculture.

**Table 3: Average household size in 2006 and average percentage change in household size 2006-2007**

|      |                     | 2007             |                   |                    |                     |                 |                  |
|------|---------------------|------------------|-------------------|--------------------|---------------------|-----------------|------------------|
|      |                     | Main source food | Extra source food | Main source income | Extra source income | Leisure         | Did not farm     |
| 2006 | Main source food    | 6.13<br>[-9.8%]  | 5.45<br>[-2.8%]   |                    |                     |                 | 4.97<br>[-12.0%] |
|      | Extra source food   | 5.68<br>[-6.8%]  | 5.13<br>[-3.0%]   | 4.68<br>[-0.5%]    | 5.03<br>[+3.4%]     | 4.76<br>[+5.3%] | 4.63<br>[-5.9%]  |
|      | Main source income  |                  | 5.65<br>[-0.6%]   |                    |                     |                 | 4.43<br>[-6.2%]  |
|      | Extra source income |                  | 4.90<br>[+3.1%]   |                    |                     |                 | 4.38<br>[-6.7%]  |
|      | Leisure             |                  | 4.48<br>[+9.2%]   |                    |                     |                 | 4.40<br>[-5.1%]  |
|      | Did not farm        | 4.17<br>[+11.8%] | 4.63<br>[+2.3%]   | 3.60<br>[+8.1%]    | 4.24<br>[+11.2%]    | 4.07<br>[+3.0%] | 3.65<br>[-1.4%]  |

Source: Stats SA, Labour Force Survey, March 2006 and March 2007

The analysis generally confirms the findings of a similar, earlier exercise (Aliber, 2005), in that there is considerable movement into and out of agriculture, suggesting that many households treat agriculture as a sort of fall-back activity from which they can seek benefit when it suits them and when they are able, but abandon when it is unnecessary or inconvenient. While this might appear to diminish the significance of the subsistence sector, it can also be said to underline its importance as an available and flexible response to vulnerability to food insecurity. Together with the observations related above in terms of the scale of the subsistence sector, and the predominance of women and indeed youth in it, it appears that the subsistence sector is large, complex, and indeed important.

#### 4. Buffering food insecurity in a Limpopo village

##### 4.1 Background to the case study

The profile of subsistence agriculture developed in the previous section largely applies also to Limpopo. From the March 2007 LFS, we know that 1 million blacks are involved in agriculture in Limpopo, belonging to over 600 000 households. Of those involved, 69% are women and 96% are involved in agriculture for mainly subsistence purposes. Taking together the LFSs from 2001 to 2007, a similar pattern is evident to that which obtains nationally, whereby the number of those farming to procure a main source of food has declined in favour of the number of those farming to procure an extra source

of food. Moreover, it is worth noting that 32% of black adults in Limpopo are involved in agriculture for their own account, which is the second highest share after Eastern Cape. Limpopo accounts for 25% of all black adults involved in agriculture for own account across the country.

The case study discussed below is located in Mopani District Municipality. Also from the LFS, we know that there are about 110 000 black households practicing agriculture at some scale, representing about half of all black households in the District. Of these, 98% farm mainly for subsistence purposes.

The purpose of the case study is to illustrate vividly the nature of subsistence farming in Limpopo, its contribution to household food security, as well as the complexity in providing government support to these farmers. While of course the authors cannot claim that the case study is generalisable in a statistical sense, we maintain that it is typical in many ways, as it coincides with the findings of other scholars discussed above.

The village in which the case study was conducted was Molati, which comprises about 830 households. Fieldwork was conducted from January 2005 to June 2006, with a follow-up visit in August 2008. The fieldwork included a random survey of 108 households in June 2005, 10 participatory workshops in which 42 people participated, and in-depth qualitative interviews with 22 residents and agricultural officials working in the area. Officially the area is classified as a semi-arid zone with limited potential for agricultural production (AGIS, 2008). Despite this most households engage in low-input subsistence agricultural production.

## **4.2 Socioeconomic and agro-ecological context**

Most households in Molati are poor, with 83% having a monthly income of less than R2 000 per month.<sup>5</sup> Forty-nine percent of households reported experiencing hunger and not having sufficient income to purchase enough food for the household at some stage during the 12 months preceding the survey. Table 4 summarises the various livelihood sources available to village residents. Employment outside of the village and state grants are the main regular sources of household income. About 46% of households have a member who is employed regularly throughout the year. Seasonal

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<sup>5</sup> *At the time of the study US\$1 was equivalent to ZAR7. With an average household size of 4.77 members, 83% of the residents would be living on less than US\$2 per day and 49% would be living on less than US\$1 per day.*

employment in the local citrus industry is highest during the late autumn and winter months, until mid-September. This provides 20% of households with extra income during this period.

Although widespread (83% of households are recipients) and regular, state social grants are relatively small, especially given the mean household size of almost five members. These grants are used for a range of expenses, from purchasing groceries and food to contributing to health and education. Very few households spend any income on agricultural activities, excepting the purchase of seeds, where these have been damaged during storage. Even fewer households purchase fertiliser (6%) and other agrochemicals (2%).

Agricultural production was the most widespread livelihood activity, with 90% of households cultivating crops in homestead food plots and 59% producing livestock – mainly poultry. Food plots were on average 853m<sup>2</sup> in size, with the smallest being 100m<sup>2</sup> and the largest being 4 550m<sup>2</sup>. Women were responsible for household food production on food plots. A handful of men and even fewer women accessed larger fields below the village, of approximately one hectare in size. These producers predominantly intercropped maize with groundnuts or cowpeas or cucurbits,<sup>6</sup> in order to generate a little extra income for themselves, but reported that invariably most of these crops were consumed by the household. For most households, agriculture was not a source of cash income; 83% of those who cultivated crops did so to provide an extra source of food for the household – of the order of magnitude as the national figures from the LFS reported above.

Crops cultivated in food plots were considered to be ‘traditional’ crops and included maize, cowpeas, groundnuts, cucurbits and plants known as African vegetables. This last group includes the following plants: Pigweed (*Amaranthus spp.*), Spider flower (*Cleome gynandra L.*), Jute or Jew’s Mallow (*Chorchorus olitorius* and *C. tridens*), and Black Jack (*Bidens pilosa L.* and *B. bipinnata L.*). The leaves of these plants, and those of pumpkins (*Cucurbita maxima*), are generally higher in macro- and micronutrient content than cabbage (*Brassica oleracea var. capitata*), which is the most commonly consumed exotic vegetable in the village (see Hart & Vorster, 2007). Most of these African vegetables germinate after the first seasonal rainfall. Only 3% of households,

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<sup>6</sup> Intercropping was the norm on fields and in home gardens. Villagers argued that this was necessary for two reasons. Firstly, the small sizes of their fields and gardens meant the only way to their efficient use of the land was to intercrop. Secondly, they argued that intercropping as they practised it restored nutrients to the soil, and that certain crops grew well together.

all having a standpipe on their property, reported growing exotic vegetables such as spinach, cabbage, onions, beetroot, peppers and tomatoes. For the rest, agricultural production and the volumes harvested are heavily reliant on seasonal rainfall. While 61% of households reported growing small quantities of fruit, such as paw-paw (papaya), marula (*Sclerocarya birrea*), avocado, litchi and mango, this was often confined to one or two trees in the homestead.

Given the extremely low levels of household income, villagers do not have the resources to engage in high-input agricultural production. Almost half of the households are food-insecure and reportedly do not have sufficient income to purchase food, let alone expensive agricultural inputs. As a result, household food production concentrates on crops that are known to fare well in the semi-arid conditions that prevail, and for which local producers have developed cropping practices they deem appropriate to their situation.

**Table 4: Household livelihood sources**

|  | %  |
|--|----|
| At least one member with some form of employment   | 66 |
| <i>A member with full-time employment</i>  | 22 |
| <i>A member with regular part-time employment</i>  | 24 |
| <i>A member with seasonal employment (predominantly in the winter months – May to September)</i> | 20 |
| State grant recipient households   | 83 |
| <i>State old-age pension</i>   | 24 |
| <i>State child grant or disability grant</i>   | 59 |
| Remittances from temporary migrants  | 22 |
| Remittances from family member permanently living away from village                              | 7  |
| Collecting wild edible plants  | 7  |
| Hunting, trapping or collecting wild animals and insects   | 3  |
| Collecting and selling firewood  | 2  |
| Agricultural activities  | 90 |
| <i>Production of crops</i>   | 90 |
| <i>Extra source of household food</i>  | 83 |
| <i>Primary source of household food</i>  | 5  |
| <i>Extra source of income</i>  | 2  |
| <i>Production of livestock</i>   | 59 |
| <i>Extra source of household food</i>  | 29 |
| <i>Primary source of household food</i>  | 26 |
| <i>Extra source of income</i>  | 4  |
| Other livelihood sources – including resale of crops/groceries and making traditional beer       | 5  |

### 4.3 The local importance of traditional crops

Eighty-nine percent of the households in Molati consumed maize meal at least twice a day, while 72% reported consuming African vegetables, often mixed with groundnuts or cowpeas, twice a day. Ninety-five percent of the



households noted that African vegetables are important to their annual food supply. Only 3% of households grew exotic vegetables as they had access to water and finances to purchase agrochemicals.

For most households (94%) the dried leaves and fruit of African vegetables are a very important part of their diet in the six months from May to October – depending on rainfall patterns – when fresh vegetables are not available. They have to buy exotic vegetables if they do not have enough dried leaves, and they usually buy cabbage. If they do not have to buy cabbage because they have enough dried leaves, they then use the money to buy other foodstuffs or they save the money for other expenses such as health, clothing and schooling requirements. They say they eat better if they have dried leaves during the winter months. Some households reported giving dried leaves to neighbours and family that did not have their own supply.

During discussions on household food security, the general impression was that the importance attributed to African vegetables differed from household to household. Households without a constant income tended to be more reliant on African vegetables during summer and winter.

In August 2008, approximate figures were obtained with regard to costs and yields for maize and African vegetables for the 2007/2008 summer rainfall season. An attempt is made to understand the economic implications of maize and African vegetables by means of estimating indirect income (imputed savings by not having to purchase) arising from their production. The information obtained illustrates a general pattern though does not distinguish poorer from wealthier households and those with large versus small plots. Households interviewed in this process ranged in size from three to seven members and access to land ranged from one to two plots of varying sizes.

The amount of maize harvested for own consumption ranged from 50 kg to 350 kg. Generally households felt that the production of their own maize could feed them for between three and five months. If this amount of maize were to be purchased from a local shop, it would cost the household R160 for 50 kg of maize meal and R1 120 for 350 kg. This implies a similar saving for the year because of the limited cost of inputs and the amounts used.

When discussing the consumption of African vegetables, respondents reported that the consumption of fresh leaves was difficult to determine as these were picked from the plants as required by the household during the summer months. This ensured that the leaves consumed during the season

were always fresh. They estimated the volume of fresh leaves to be between the size of a 25 kg bag and a 50 kg maize-meal bag, and that these plants would be consumed by the households for between four and six months. This consumption would contribute to a saving for the household of between R1 000 and R2 000 during the season. Similar figures were given for dried leaves, although these were consumed for only three months after the summer season.

Maize and African vegetables were planted and cultivated (or encouraged) at the same time. Most of the expenses involved are a result of growing maize rather than growing African vegetables. The cost of ploughing, hiring donkeys and a plough, was R100 at the beginning of the season. Between two and five bags of maize seed were purchased for which the cost was between R10 and R20 per bag, depending on the supplier. The largest amount sown was five bags at R20 per bag resulting in a cost of R100. Only one household bought fertiliser (LAN) at a cost of about R50. Others used differing amounts of kraal manure, obtained at no cost. No pesticides, herbicides or fungicides were used during the planting and growing season. The maximum input costs are therefore R250. Most villagers who grew African vegetables attempt to save their own seeds. Based on these figures, own production, harvesting and storage of maize and African vegetables could provide a household with a saving of up to R4 870 (R5 120 - R250) during the year. While this may appear modest, it is substantial in relation to the low incomes enjoyed by most households, as is the mere fact that subsistence production of maize and African vegetables can provide a poor household with more than a third of its food needs at little cash cost and using and using very little labour.

#### **4.4 Threats to the natural resource base**

Household food production is done under relatively harsh conditions in which rainfall is unpredictable and soil fertility is declining. Various agro-ecological conditions, combined with social conditions, are resulting in the deterioration of the natural resources.

Access to water is a serious problem in the village. Annual average rainfall is low at around 500 mm and pan evaporation is relatively high at between 2 001 and 2 200 mm<sup>a-1</sup> (AGIS, 2008). Most rainfall occurs in the summer months from November to April, with no rainfall falling from May to October. Four boreholes, with diesel pumps, supply the domestic water to communal stand-pipes. A number of residents accessed household water from nearby summer streams because of the frequent congestion at communal stand-pipes. Supply

from the boreholes was erratic with pumps breaking and local 'pump-men' failing to switch on the pumps on the scheduled days. Pressure on the communal standpipes is such that, after water is collected for domestic purposes, there is no time to collect water for irrigation purposes. While 11% of households had a standpipe in their homestead, which they shared with neighbours, only 6% acknowledged using this water to irrigate some of the crops in their food plots. Agricultural production is therefore almost exclusively reliant on summer rainfall during the months of October to April. Seasonal rainfall can be delayed by a month or two, as it was during the summer of 2005/2006.

The natural resource base is being depleted as a result of the mismanagement of the commons. There is extensive and unmanaged harvesting of firewood and overgrazing of livestock. A visit during winter 2008 indicated that barren areas in the village had increased and that numerous trees on the surrounding hills had been harvested for firewood. There were some plans to reduce overgrazing, but it was said that this was hard to enforce in winter, as livestock died because forage at this time of the year was generally scarce. Measures included tethering livestock and rotating them on a daily basis so that they were not able to overgraze one particular area. However, few people complied with this practice and very few tethered livestock were actually seen on the commons. Grazing areas were seldom rotated. Since the 1960s, increases in the number of households and the demand for agricultural land and pasture has placed great strain on the natural resource base. Depletion of wild plants has implications for food security. Most African vegetable plants, many of which grew wild on the commons in the past, are now almost exclusively found in food plots. Here they find a measure of protection as their growth is encouraged by most households.

This situation is further exacerbated by erosion. Dwellings and home food plots are situated on a sloping terrain (13–20% slope according to AGIS, 2008), backed by foothills. Rainfall erosivity is officially considered to be high in this area and is estimated between 701–800 mm (AGIS, 2008). During the dry winter season the vegetation on the communal lands and home gardens is reduced and the ground is left bare after harvesting and grazing. Rainfall during the summer thunderstorms is hard, but generally short in duration. Water rushes down the hills, through the village and removes the topsoil in the fields and homestead gardens. This has a significant negative impact on soil availability, fertility and the presence of seeds of the self-seeding plants in the area. Some areas were virtually free of vegetation throughout the study period. Transect walks indicated places where gullies were becoming

increasingly wider. While villagers and extension services are aware of the current situation and the impact it will have on the natural resource base and the ability to produce food in the future, nobody is taking the lead in concertedly addressing the causes or reducing their effects.

In the smaller home gardens it was observed that people did not plough across the slope in order to restrict the water flow. Much of the rain ran down the slope without penetrating the soil sufficiently. While intercropping may contribute to erosion control, it is not as efficient as it could be. It was also observed that people in the village had no knowledge of simple and effective water management technologies such as grass strips, planting pits, semi-circular pits, earth basins and raised beds. Similarly, there was also no use of household grey water for crop production. Management of this water could allow for the production of certain crops during winter. Ninety two percent of dwellings had a zinc roof with potential for rainwater harvesting. However, the lack of guttering prevented effective capture of rainwater.

This picture of the local situation is stark and coincides with the findings of other researchers (see Nieuwoudt & Groenewald, 2003) who note that most farmers in the former homelands are resource-poor and cultivate traditional food crops, predominantly for household consumption. This cultivation is mainly done in poor soils under rain-fed conditions (Nieuwoudt & Groenewald, 2003). It is within this context that the Limpopo Provincial Department of Agriculture and Environment (LPDAE) delivers services.

#### **4.5 Agricultural support services**

Since 1985, the Gazankulu Department of Agriculture and its post-1994 successor, the LPDAE, supported two vegetable garden projects in Molati village. At the time of the study only 32 people (30 women and two men) from 30 households were active in these projects. According to the extension officer, the exclusive focus on the vegetable garden projects means that extension services only reach those people participating in the projects.

Participants are encouraged to grow high-input cash crops such as spinach, cabbage, onions, beetroot, carrots, green peppers, tomatoes and green beans for local output markets. The local extension officer spends one day per week at each project, providing advice on exotic vegetable production and the use of agrochemical inputs. This person facilitates participants' access to project inputs, infrastructure and training. The latter emphasises farm budgets, cash crop management and plant propagation. Over the years the extension

services, directly or indirectly, have provided the projects with plant material, agrochemicals, and infrastructure, including two boreholes, four borehole pumps (two of which have been stolen), water storage tanks, irrigation piping, and fencing.<sup>7</sup> Given the socioeconomic and agro-ecological circumstances in the village, few of these conventional technologies can be used by residents in their home gardens and large fields.

Active members reported that the practices and the technologies promoted at the vegetable projects differ remarkably from those at their home gardens. At home they practised agriculture the 'traditional' way and did not want to lose this part of their culture as it enabled them to secure food even in times of poor rainfall. They noted that they did not have the resources to make use of the modern technologies and inputs at home, as many of these were expensive. For example, water was scarce at home and therefore it was considered too risky to attempt to produce most of the exotic crops which would not survive without adequate irrigation. Most households (92%) reported that they did not irrigate African vegetables, maize and other traditional crops and felt that irrigation was not required, except in particular instances. Some residents mentioned using very small amounts of household water to irrigate pumpkin and kale plants when first planted if deemed necessary. While a few households incorporated fertiliser with manure and ploughed this into the soil of their home gardens, only two people were identified who could afford to and used pesticides.

The emphasis on cash crops that are reliant on irrigation has detracted from the success of the two projects, both of which have had their borehole pumps stolen. One project was without a borehole pump for 15 years. Its replacement, installed in late 2006, is ineffective as it is unable to sufficiently irrigate an area of 400 m<sup>2</sup>. The other project has been without a borehole pump since late 2004. While a pump was donated in 2005, the LPDAE is unwilling to purchase the fittings required, although the cost is small (a few hundred Rand). The extension officers report that the people cannot afford to maintain or replace the pumps as they are too poor.

Despite the problems experienced with the water and borehole pumps over the years, project members do not frown upon conventional technologies to which they were introduced, as they saw the benefit of these under certain

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<sup>7</sup> It should be noted that this description of a 'community garden' mirrors what is one of the most common types of intervention of Provincial Departments of Agriculture in black agriculture; see e.g. Monde and Van Averbek (2004).

conditions – i.e. when the borehole pumps worked. However, they were concerned about high input costs, the lack of some inputs in the village, and the degradation of the soil. They reasoned that many ‘modern’ techniques could be used by them to improve their traditional farming, such as mulching and in-field water harvesting, which some had seen elsewhere. Many people could see the strengths of both types of farming under certain conditions, as well as their respective weaknesses. Meanwhile, members of both projects have continued with the seasonal production of traditional food crops at the projects and in home food-plots.

What is most striking about the intervention of the LPDAE in Molati is not the failure of the community garden projects, but the apparent neglect of the villagers’ indigenous agricultural practices. Villagers continue to rely on their traditional practices, but as noted above, in the context of a natural resource base that is under pressure. Appropriate assistance to current ‘local’ practices could enable increased availability of food from household gardens. For example, attempts could be made to rehabilitate the soil structure and composition, to promote water harvesting and management, and to introduce hardier crop varieties; including those with different growing seasons.

## **5. Conclusion**

From the LFS data, we know that a significant proportion of blacks – some 4 million people from over 2.5 million households, mostly residing in the former homelands – are engaged in agriculture as a means of supplementing household food supplies. Although, engagement in this and other types of farming fluctuates from year-to-year, the consistently large numbers of subsistence producers should be taken as evidence of both the importance people attach to subsistence production and in some cases depend on it to ensure extra access to food.

The case study shows the importance of this type of agriculture for many households at the village level. It indicates that despite the low-input nature of subsistence production it contributes directly to household food security as a supply of food, as well as enabling households to divert income to meet household’s food and other requirements. It also highlights the complexities involved in this type of production, given local agro-ecological (poor and deteriorating natural resource base) and socioeconomic circumstances (high levels of poverty). The prevailing situation illustrates the complexities in trying to support agricultural production in such contexts. It shows that the current form of support is relatively ineffective, as it does not significantly

consider the local context and does not attempt to support and strengthen local agricultural practices or address constraints. At best, current support benefits a very small number of households, typically those with access to water for irrigation purposes.

These findings have implications for policy in support of the food security activities of subsistence farmers. Firstly, given the large numbers of people involved in this type of production they require adequate support and it should be determined if the current support being offered in many other areas is faced with the same complexities as those evidenced in the case study. This could be done by implementing monitoring and evaluation systems at the various projects where government support is currently provided. Assessments need to include both project beneficiaries and non-beneficiaries, to determine the broader impact and contribution such projects make to household food security, as well as the broader constraints experienced that prevent the adoption of promoted technologies. Such an approach requires that monitoring and evaluation initiatives need to be more qualitative in nature.

Secondly, more evidence, and thus further research in a number of diverse contexts within which subsistence farmers engage in agriculture should be conducted to determine the nature of the support required in different contexts. Such studies may indicate that while context specific support is required there may be commonalities between different study sites. For example, at those sites where irrigation water is available households might be able to make use of conventional inputs, but context specific constraints such as access to inputs and input markets may well be a constraint. Where people cannot readily purchase inputs and planting material on a regular basis, alternative strategies may need to be introduced, such as seed saving and alternative methods of soil fertilisation.

Thirdly, the promotion of certain crops and livestock which can enrich people's diets needs to be considered. However, this process will need to consider local food preferences and other local circumstances. It might require further local research to address socioeconomic and agro-ecological factors that might constrain such promotion.

Fourthly, a lack of appropriate attention to the seemingly marginal conditions in which black farmers practice subsistence agriculture can only result in the deterioration of current production capabilities in contexts similar to that of the case study. As noted in section 2, many subsistence farmers in the former homelands tend to operate in marginal areas. Lack of appropriate support

may result in natural resource deterioration as evidenced in the case study and this may result in reduced food production.

Finally, as other contributors to this volume indicate, the provision of appropriate support to such farmers might not only improve the quality and quantity of outputs but might allow innovative farmers to move from subsistence to more commercial and market oriented production. Such a situation is more desirable than a decline in subsistence agriculture, which may increase the food insecurity of those engaged in this type of production and increase their dependency on the state.

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