

**N.i.D.S.**

NATIONAL INCOME DYNAMICS STUDY

# Agriculture: Analysis of the NIDS Wave 1 Dataset

Discussion Paper no. 6

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# 1. Introduction

The agricultural sector in South Africa is starkly dualistic, comprising a highly capitalised well-integrated commercial sector, and a subsistence sector that is mostly to be found in the former 'homeland' areas. Although only about 12 percent of South Africa can be used for crop production, with areas of high-potential making up 22 percent of this land, South Africa is virtually self-sufficient in all major agricultural products and is usually a net food exporter. Further, while agriculture production contributes less than 3 percent to GDP and 7.2 percent of formal employment, downstream linkages into agro-industrial processing increases this contribution to 15 percent of GDP. The Western Cape, KwaZulu-Natal and Free State are the largest provinces in terms of the number of commercial farms, although Gauteng displaces the Free State in terms of gross farming income. Estimates of the contribution of the subsistence sector in terms of value, employment and impact on food security are scanty and prone to measurement error. Official statistics show employment in 'informal sector agriculture' to be highly variable, but attribute some 470 000 workers to this sector, mostly concentrated in KwaZulu-Natal (42.6 percent) and the Eastern Cape (37.3 percent) (Stats SA, 2007: xiv).

In this discussion paper, we will first discuss the potential role that can be played by agricultural production and by government support for this sector. We will then note methodological decisions concerning weighting and the selection of variables that have been used. We then go onto discuss data contained in the Adult Questionnaire which can be used to show the demographic profile of those who are employed in informal or subsistence agriculture. The information in the household questionnaire is then discussed and these data are combined in a preliminary analysis of the outcomes from agricultural production on household well-being. We end by noting some data quality concerns and make suggestions for amendments to the Wave 2 questionnaire.

## 2. Agriculture and poverty reduction

Despite the potential contribution to be made by agricultural production to poverty reduction and improved food security, rural and agricultural policy remains an area in which comparatively little progress has been made. Against this backdrop, we might ask what role the agricultural sector and agricultural policy might play in the direct enhancement of the wellbeing of less well-off households. The realm of possible interventions beyond those already been undertaken in South Africa includes:

- 'Next Harvest' Interventions that aim to enhance the productivity of the agricultural assets to which households already have access
- Asset Grants and transfers that increase the stock of productive assets available to households
- Land Tenure Reforms designed to increase ownership security and thereby enhance incentives for agricultural investment and improve the fluidity of land markets

In a recent paper, de Janvry and Sadoulet (2008) suggest that the sub-commercial farm sector—that has often been ignored in many countries' agricultural strategies—may merit targeted programmes and support, especially in countries where many of the poor have access to at least some agricultural resources and especially given recent spikes in the price of foodstuffs that consume most of the budgets of poor households. In related work, they refer to such programmes as next harvest programs, meaning that benefits will accrue with the next agricultural season. In countries where public administration is weak, or where poor people are otherwise hard to reach or target with other kinds of assistance, these authors suggest that there may be a strong public policy logic for such programs.

One model for such programmes is the so-called 'starter pack' programme implemented in Malawi in the 1990s. This programme offered small farmers a subsidized packet of improved seeds and fertilizers with the explicit goal of raising the productivity of subsistence agriculture. While the original starter pack programme was much criticized for its 'market unfriendly' implementation, more recent efforts in Malawi and elsewhere have come to rely on subsidy coupons (rather than state provision) in an effort to deepen, rather than supplant, agricultural input markets. Especially in the wake of the 2008 food price spike, a number of countries have implemented or are beginning to implement such programs, including, Kenya, Tanzania, Rwanda and Mozambique. In South

Africa, most government support of this kind is directed towards the commercial sector, with the Comprehensive Agriculture Support Programme (CASP) being the main policy that is targeted at emerging farmers. By March 2006, with an annual budget of R300 million, the programme was reported to have assisted 53 206 farmers benefiting 21 017 households.

Whether there is space or logic to complement that programme with assistance targeted at the largely non-commercial sector is an open question. Using the NIDS data, the next section of this paper explores the degree to which households make recourse to subsistence food production and thus might be candidate beneficiaries for a next harvest programme.

Agricultural asset grants have to date played a more important role in the realm of South African agricultural policy. Improving access to productive land is obviously an important way in which the prospects of these subsistence and small scale farmers can be improved and the Land Reform for Agricultural Development (LRAD) Programme is currently the most important of the land redistribution programmes being undertaken in South Africa. The aim of this programme is to give previously disadvantaged people access to land through a match-funding arrangement in which the beneficiary contributes money, labour or capital equipment. LRAD began in 2001 and reached about 25 000 beneficiaries by 2006 (Government of South Africa, 2007).

The National Income Dynamics Study (NIDS) may offer new data for policy formulation, and, to this end, this paper explores some of the information available from these data. Because beneficiaries of the LRAD programme are relatively few in number, NIDS is however unable to provide information on the programme's impact. Fortunately, an impact evaluation of the LRAD programme has recently been completed using a specialized survey and a 'pipeline' methodology (Keswell and Carter 2009). That study identifies quite significant impacts of the programme. In section 2 below, we lay those estimated impacts up against the NIDS to get a sense about the degree of mobility afforded by the LRAD programme to its beneficiaries.

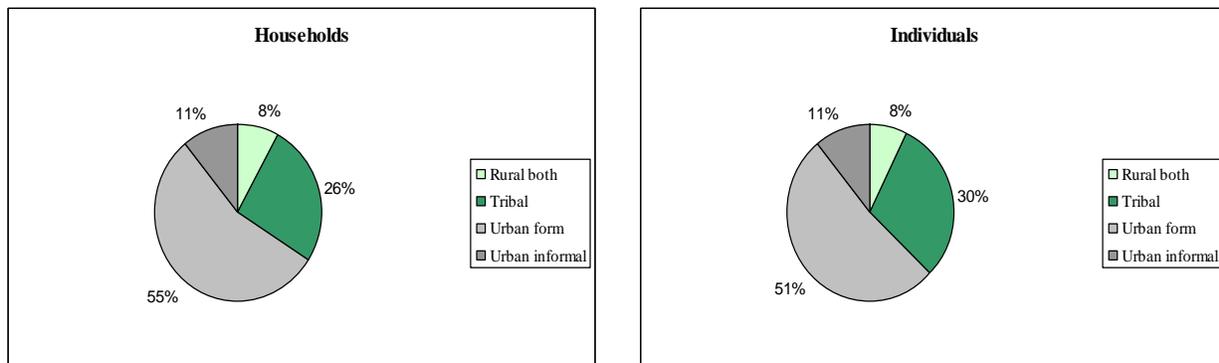
Concerning land tenure reform, international evidence is quite mixed and context specific about its effectiveness. While it is certainly true that small farms are those that most frequently do not have legally secure property rights, it also appears that property rights reform by itself may do little for small farms within dualistic agrarian structures like South Africa's if it is not also accompanied by efforts to improve these farms' market access. In a study of Paraguayan farms, Carter and Olinto (2003) find that land tenure reform has its largest impacts on mid-sized farmers who can access capital in the wake of efforts to enhance the legal security of their land holdings. For smaller

holdings, the putative positive effects of titling are muted by the failure of titling by itself to open up capital access. NIDS again can give us at least some insight into the numbers of small scale producers who access land under insecure forms of land tenure and who thus might benefit from well-executed land tenure reform.

### 3. Methodological Considerations

Unless otherwise indicated, the data used in this paper have been weighted by the variable: w1\_wgt. This produces the following geo-spatial distribution of households of interest to this paper.

**Figure 1: Geo-spatial distribution of households**



Two questions are directed towards the participation of household members in agriculture. These are: “H1; Over the last 12 months has anyone in this household participated in growing food or raising livestock other than as part of paid employment?”. There are 1280 such cases which weight up to 1,728,520 households, or 12.6 percent of South Africa’s households. This leads to a filter question: “H2: Are the agricultural activities all part of a commercial farming enterprise which is run as a separate business with its own accounts?” Respondents from the 79 households in which commercial farming enterprises are reported are then directed to the next and final module of the questionnaire and are excluded from subsequent questions. Unless stated otherwise, the analysis in this paper is based on the remaining 1201 households in which agriculture is conducted as a subsistence activity only, or at best, as a micro-enterprise.

Turning to an appropriate proxy with which to measure the contribution of agriculture to household well-being, imputed income from the consumption of own production is an obvious starting point. This was provided in both data releases although was not added to the existing household income variable. Only 648 cases of the 1280 that reported cultivation have been assigned any income from these activities. The mean monthly income from this cultivation for all cultivators was R44.37 and the median amount was R0.03. The mean monthly income of those that did receive such an income was R88.14 and the median amount was R11.33.

In interrogating the net income variable an immediate concern arises with regard to the imputation of incomes from cultivation and the frequent use of ‘individual units’ as the way of measuring output. Of the 2313 responses to 29 different crops for which production is reported, 834 (36 percent) were “individual units”. While it is easy to see how pumpkins may have been measured in this way, it is not apparent what the 917 units of spinach might comprise. Similar results are reported for potatoes, green beans and onions suggesting a population of cultivators who are at least meticulous if not efficient. A further 356 responses were coded as missing and 55 as “Do not know”, suggesting that just over half of the estimates of production cannot be properly measured. In this context, estimating net income is perhaps spurious accuracy, especially since expenditure is likely to have been better recorded than income, and we conclude that this variable has little to offer for analysis.

We then attempt to make use of Section E1: Food spending and consumption where questions En.6 ask: “What was the value of [...] eaten from own production and/or from own shop stock in the last 30 days?” In a workshop convened by the NIDS team, a group of agricultural specialists identified this question as a potential window on subsistence production. Unfortunately the wording of the question was amended in the final questionnaire to include reference to shop stock. While this is an important consideration, the result is to conflate two quite distinct forms of activity. To address this, we first exclude all food items that are unlikely to have been grown in South Africa leaving a list of ten items for which the consumption of own production is possible<sup>1</sup>. We then identify households in which an adult member has reported self-employment. Since it does not seem possible to establish which of this is employment as a spaza or tuck shop operator, we exclude the value of own-production for 78 households in which self-employment has taken place and where the occupation code of the adult is either not specified or is identified as ‘Service workers and shop and market sales workers’. This leaves 652 cases in which consumption from own production is likely to have occurred in the 30 days preceding the interview, which weight up to 1,179,036 households, promisingly close to the number of producers reported elsewhere in the questionnaire. Sadly, 471 of these cases did not report participation in agricultural cultivation in the last 12 months, suggesting that as calculated, this variable is also not usable.

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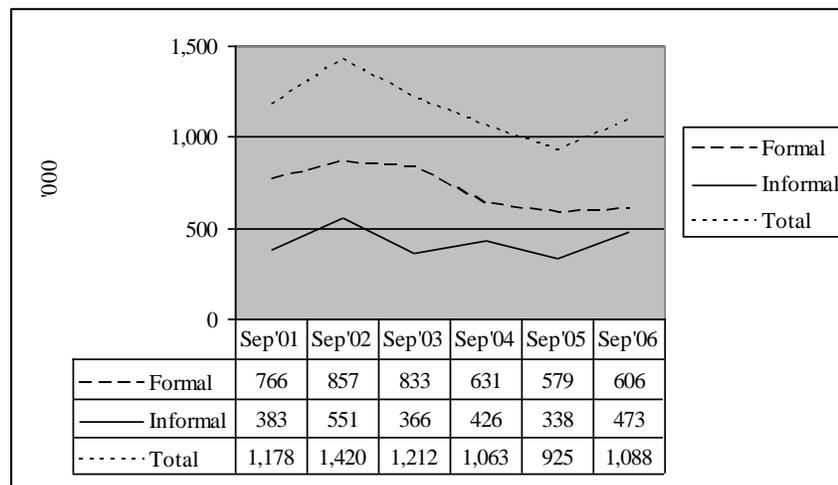
<sup>1</sup>The were mealie meal, samp, red meat, chicken, dried peas and beans, potatoes, other vegetables, fruit, eggs and other food expenditure.

Our final opportunity is to make use of perceived food security through questions D36 and D37. Respectively these ask: “In the past 12 months, did any adult in this household go hungry because there wasn’t enough food?” and “In the past 12 months, did any child in this household go hungry because there wasn’t enough food?” Responses are a five point scale ranging from none, through seldom, sometimes, often and always. The results of these questions reveal at least some degree of adult hunger in 28.9 percent of households, weighting up to 3.9 million households. Obviously child hunger can only be reported for households with children, and this shows child hunger in 24.0 percent of these households.

## 4. Potential “Next Harvest” Food Security Beneficiaries: Insights from NIDS

There are several avenues for the analysis of those who participate in agricultural production to be found in the NIDS questionnaire. In the adult module, Question E45 identifies individuals as having “worked on their own, or in the household’s plot, farm, food garden, cattle post or kraal, or helped in growing farm produce, or looking after animals in the last 30 days”. There are 889 such cases, weighting up to 1,258,439 individuals. This estimate is higher than any of figures recently reported in Stats SA’s Labour Force Survey as is shown in the next Figure.

**Figure 2: Participation in formal and informal employment in agriculture**



*Source: Stats SA, 2007*

This may well be due to definitional or seasonal differences, but it is worth observing that Stats SA have reported similar figures in the past, with 1,508 000 workers involved in subsistence agriculture in their 2000 LFS, which has since halved to the figure reported in 2006. In line with the Stats SA figures, agricultural producers are concentrated in KwaZulu-Natal, although not in the Eastern Cape, perhaps implying under-reporting or a drought year in this province.

**Table 1: Adults involved in agriculture in last 30 days by province**

	Producers	Row %	Column %
Western Cape	12,618	0.5	1.0
Eastern Cape	130,449	3.5	10.4
Northern Cape	5,813	0.9	0.5
Free State	55,835	3.3	4.4
KwaZulu-Natal	752,013	14.3	59.8
North West	30,645	1.5	2.4
Gauteng	130,283	2.1	10.4
Mpumalanga	54,172	2.7	4.3
Limpopo	86,610	2.8	6.9
	1,258,438	4.6	100.0

Overall, 4.6 percent of the adult population of NIDS had been involved in some form of agricultural production in the 30 days prior to being interviewed. This was highest in KwaZulu-Natal at over 14 percent of adults and lowest in the Western Cape and Northern Cape. KwaZulu-Natal is quite distinct and accounts for almost 60 percent of all producers, supporting concerns about extrapolating to the national level when using data such as the KwaZulu-Natal Income Dynamics Study (KIDS). Producers are also mostly concentrated in ‘tribal areas’, not surprising given the dominance of KwaZulu-Natal in agricultural production.

**Table 2: Adults involved in agriculture in last 30 days by geo-spatial type**

	Producers	Row %	Column %
Rural formal	129,084	6.7	10.3
Rural informal	28,302	13.6	2.2
Tribal	805,631	9.4	64.0
Urban formal	195,880	1.4	15.6
Urban informal	99,541	3.4	7.9

It is also noteworthy that although only a small percentage of the total formal urban population, NIDS suggests that there are almost 200,000 agricultural producers in these areas with a further 100,000 producers in urban informal areas.

By linking demographic information to economic activity including agriculture, NIDS provides interesting insight as to who is involved in this sector. As might be expected, women are over-represented among subsistence producers.

**Table 3: Adults involved in agriculture in last 30 days by sex**

	<b>Producers</b>	<b>Row %</b>	<b>Column %</b>
Male	527,663	4.4	41.9
Female	730,776	4.7	58.1

Further, it is striking that almost 35 percent of the producers are older than 50 years of age, implying that for many agriculture is an activity that is undertaken on retirement or retrenchment from formal non-farm employment.

**Table 4: Adults involved in agriculture in last 30 days by age group**

<b>Age Group</b>	<b>Producers</b>	<b>Row %</b>	<b>Column %</b>	<b>Ratio of women/men</b>
15-19	138,473	3.2	11.1	0.5
20-24	129,103	3.5	10.4	1.1
25-29	84,373	2.4	6.8	1.8
30-34	93,167	2.9	7.5	0.9
35-39	115,021	4.3	9.2	1.8
40-44	132,743	6.6	10.7	1.2
45-49	119,829	6.4	9.6	2.8
50-54	96,446	5.9	7.7	3.3
55-59	108,648	8.1	8.7	1.4
60-64	71,403	6.6	5.7	1.5
65-69	76,442	9.3	6.1	1.9
70-74	57,562	9.7	4.6	1.5
75-79	15,716	5.6	1.3	1.7
80-84	3,310	2.2	0.3	0.9
85+	2,899	4.0	0.2	1.5
	1,245,135	4.6	100.0	1.4

Participation rates are highest in the 60-64 and 65-69 year age bands in which some 10 percent of this group are involved in agricultural production. Women are noticeably over-represented in the younger age groups, 45-49 and 50-54, suggesting that agricultural work become more feasible once child-bearing is complete.

Turning to other demographic indicators, Africans dominate agricultural production, accounting for 87.9 percent of all producers, although perhaps surprising, production is most common among Indians/Asians at 9.5 percent of this group. Producers are also more likely to be married or widowed than non-producers, and to have marginally less education. In terms of their economic status, the odds ratios show that although producers were less likely than non-producers to be in

receipt of an income from wage employment, they were more likely to be in receipt of government grants, especially the state old age pension, or remittances.

**Table 5: Adults involved in agriculture in last 30 days by other economic activity**

	<b>Producers %</b>	<b>Activity %</b>	<b>Odds ratio</b>
Wage employment	18.6	3.0	0.64
Self-employment	11.4	8.1	1.82
Receipt of Old Age Pension	15.5	8.9	2.02
Receipt of Child Support Grant	26.4	7.4	1.65
Remittances	15.4	7.1	1.60
No income source	31.3	4.1	0.88

Just less than 19 percent of those involved in agricultural production were also in wage employment, with 26 percent receiving a Child Support Grant (CSG), making up 7.4 percent of all those in receipt of such grants. Overall, producers were less likely to have no income source than non-producers, but only 6.8 percent of producers received money from the sale of crops or livestock. Mean hours worked on agricultural activities per week were 12.9 and the median was 9 hours.

Finally, only 14 cases of those who had worked on the land in the last 30 days were members of a community gardening group while a further 78 cases had not farmed in the past 30 days but were in such a group. Likewise 25 who had farmed were members of a farmer's association while a further 87 cases had not farmed in the past 30 days, but were in such a group. This suggests that a number of producers may have been filtered out due to the recall period that was used.

## 5. Household Characteristics

Information concerning household participation in agricultural production is collected in Section H of the NIDS household questionnaire. Two questions are used to identify and filter participants: H1 identifies households in which anyone had participated in growing food or raising livestock in the past 12 months, and H2 identifies which of these undertook these activities as commercial farming enterprises. Most of the analysis in this section concerns households in which production had taken place and which was not a commercial enterprise.

As with individuals, households that had been involved in agriculture in the past 12 months, including as commercial farmers, are concentrated in KwaZulu-Natal. This is less extreme than is the case with individuals, with Limpopo having a much higher incidence of agricultural production for households than individuals. This is probably a result of the differing recall periods use for these questions (30 days compared to 12 months) and perhaps depicts greater seasonality of production in Limpopo.

**Table 6: Households in which some had farmed in past 12 months including commercial enterprises**

<b>Province</b>	<b>Have produced</b>	<b>% of Province</b>	<b>% of Producers</b>
Western Cape	8,498	0.6	0.5
Eastern Cape	256,857	15.0	14.9
Northern Cape	24,972	8.0	1.4
Free State	127,548	15.4	7.4
KwaZulu-Natal	675,877	29.5	39.2
North West	121,190	12.0	7.0
Gauteng	95,773	2.6	5.5
Mpumalanga	84,221	8.3	4.9
Limpopo	331,155	23.0	19.2
	1,726,091	12.6	100.0

A further noteworthy feature of these results is the difference between the distribution of subsistence producers who are concentrated in Kwazulu-Natal, Limpopo, the Free State and the Eastern Cape, and the distribution of commercial production reported by Stats SA which is more heavily concentrated in the Western Cape and Gauteng. As before, this is not unexpected since

households in 'tribal' areas, mostly referring to the former homeland areas, make up the bulk of subsistence producers.

Although the single NIDS question is different to the six questions concerning different types of agricultural activity that was used in the 2007 General Household Survey (GHS) undertaken by Stats SA, comparison of these results is mostly reassuring.

**Table 7: Households in which some had farmed in past 12 months (GHS)**

	<b>Have produced</b>	<b>% of Province</b>	<b>% of Producers</b>
Western Cape	41,917	3.1	3.4
Eastern Cape	491,355	27.4	40.4
Northern Cape	10,668	3.6	0.9
Free State	29,387	3.4	2.4
KwaZulu-Natal	311,211	12.3	25.6
North West	39,992	4.2	3.3
Gauteng	37,393	1.2	3.1
Mpumalanga	39,153	4.4	3.2
Limpopo	215,871	16.4	17.7
	1,216,947	9.2	100.0

The weighted results of the GHS show 1.2 million producers as against NIDS in which 1.7 million producers are estimated. These producers are again concentrated in KwaZulu-Natal, the Eastern Cape and Limpopo. The differences in the Western Cape and Eastern Cape are a concern though, and again suggesting possible under-counting in NIDS of agricultural production in this province.

Focusing on subsistence producers only, the next table shows the provincial distribution of those involved in agricultural activities which were not run as a separate commercial enterprise.

**Table 8: Households in which some had farmed in past 12 months**

	<b>Have produced</b>	<b>% of Province</b>	<b>% of Producers</b>
Western Cape	2,994	0.0	0.2
Eastern Cape	232,908	0.1	14.8
Northern Cape	8,760	0.0	0.6
Free State	117,196	0.1	7.5
KwaZulu-Natal	642,707	0.3	41.0
North West	101,384	0.1	6.5
Gauteng	91,037	0.0	5.8
Mpumalanga	74,320	0.1	4.7
Limpopo	297,747	0.2	19.0
	1,569,053	0.1	100.0

Although the distribution of the estimated 1.6 million subsistence producers is similar to all producers reported in NIDS, it is not clear who has been excluded from the analysis as a result of the filter question. The results imply that there are 110,000 households participating in commercial farming as entrepreneurs. This is surprising since Stats SA (2008) report that there are only 5,693 commercial farming enterprises in South Africa, albeit these are limited to only those enterprises with a turnover in excess of R3 million. Of interest is the concentration of commercial producers reported by NIDS in Limpopo. This accounts for 20 percent of these producers and is a substantial greater proportion than reported by Stats SA for large scale commercial farmers located in this province (7 percent). The implication is that a number of small-scale producers may have been inappropriately filtered out of NIDS from whom agriculture may represent a more significant source of income.

Turning to the location of these producers, including those involved in commercial agriculture, the next table shows the geo-type in which they were located.

**Table 9: Households in which someone had farmed in past 12 months**

<b>Geo-Type</b>	<b>Have Produced</b>	<b>% of total in Geo-Type</b>	<b>% of Producers</b>
Rural formal	161,920	15.7	9.4
Rural informal	31,272	34.2	1.8
Tribal	1,168,170	32.9	67.7
Urban formal	206,724	2.7	12.0
Urban informal	158,005	10.7	9.2
	1,726,091	12.6	100.0

As with individuals, producing households are predominantly located in ‘tribal’ areas. Again it is worth noting that there are more than 350,000 households living in settlements that have been classified as urban formal or urban informal who indicate that they are involved in agricultural production, lending support to debates concerning the need for policy that take account of urban agriculture.

A number of household characteristics of producing households can be investigated using the NIDS household questionnaire. One obvious consideration is the sex of the household head. However, it appears that male headed households are as likely to participate in agricultural production as are female headed households.

Poverty status is another obvious area for investigation. Although total expenditure from the consumption module appears not to have been calculated as yet, total income from all sources is available. We have calculated per capita income using variable ‘w1\_hhincome: Household monthly income - full imputations’ and “w1\_hhsizer: Number of household residents”. We have then used this to calculate a normalised poverty score using the lower bound poverty line estimate of Hoogeveen and Ozler (2005), adjusted to 2008 prices which results in a threshold of R502 per capita per month.

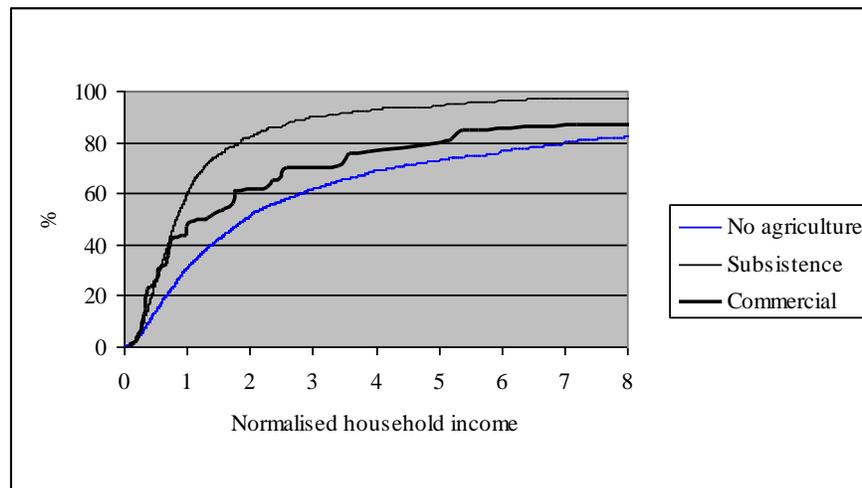
In terms of per capita income, households in which agricultural production takes place, excluding those operated as commercial enterprises, are concentrated in the lower income quintiles. Although a small proportion of the total population, commercial producers are over-represented in the lowest and highest quintiles, suggesting that at least some of these are in fact involved in subsistence production.

**Table 10: Households in which someone had farmed in past 12 months by quintile**

<b>Income Band</b>	<b>Subsistence producers</b>	<b>Commercial producers</b>	<b>Subsistence as % of income band</b>	<b>Subsistence producers %</b>	<b>Commercial producers %</b>
Quintile 1: R0-275	458,529	29,185	18.9	29.2	26.5
Quintile 2: R276-486	461,340	18,204	20.7	29.4	16.5
Quintile 3: R487-873	314,631	14,576	13.6	20.1	13.2
Quintile 4: R874-1905	215,341	21,419	8.0	13.7	19.5
Quintile 5: R1905-high	119,213	26,699	2.9	7.6	24.3
	1,569,054	110,083	11.4	100.0	100.0

Turning to the differences between non-producers, subsistence producers and commercial producers in terms of poverty status, the following cumulative income distributions show that while subsistence producers are poorer than the other groups, at the lowest income levels, there is some ambiguity with the commercial producers.

**Figure 3: Cumulative income distribution**



Households who had engaged in farming in the last 12 months and in which these activities were not part of a commercial farm were asked a set of questions concerning type of land on which these activities had been undertaken. The following land access was reported.

**Table 11: Households in which some had farmed in past 12 months: land access<sup>2</sup>**

Land Access type	Have cultivated	% of subsistence farm Hhds
Activities on a commercial farm owned by the household	119,902	7.3
Activities on a commercial farm as employee	40,246	2.4
Activities on a land reform project	12,533	0.7
Activities on an equity share scheme	5,056	0.3
Activities on a portion of land in communal area	229,026	14.1
Activities on land in/near an informal area/urban area	945,695	57.9

Most farming is reported to take place on land in or near and informal area. This result seems unlikely given the concentration of farming in KwaZulu-Natal and in tribal areas. It seems possible

<sup>2</sup> Multiple response was possible in this question.

that this question was misunderstood. The weighted up number of households accessing land through a land reform is low compared to the estimated 100,000 beneficiaries that are reported by DLA to have received land through the land tenure and land redistribution programmes by 2005. Households in the survey that reported that they had received land via land restitution, around 3 percent of the total sample, were twice as likely to be involved in agricultural production as those that had not.

## 6. Outcomes, technology indicators and potential for income increases

The penultimate topic for analysis concerns the outcomes that are achieved from agricultural production. Section H4.1 contains questions on what was cultivated and includes harvests, sales and home consumption. As already noted, it seems likely that substantial under-reporting of yields has occurred, along with confusion over the unit of measurement that has been used. Further, just 11 cases reported sales of the most frequently grown field crop, maize, with less than 10 cases reporting sales from horticulture such as potatoes or spinach. This suggests that there is little to be achieved from a detailed analysis of output data and we will confine ourselves to a brief commentary on the crops that are grown. Mielies are by far the most popular crop among subsistence producers, followed by spinach and potato.

**Table 12: Households in which some had farmed in past 12 months: crops**

<b>Crop</b>	<b>Subsistence producers %</b>	<b>Crop</b>	<b>Subsistence producers %</b>
Mielies	77.2	Potato	17.5
Sugar cane	2.6	Pumpkin	15.3
Deciduous fruit	7.7	Carrots	11.0
Citrus fruit	5.5	Other tuber	7.8
Sub-tropical fruit	10.6	Onions	9.3
Wild spinach	16.3	Green beans	8.6
Spinach	25.1	Legumes	6.3
Cabbages	13.8	Other vegetables	6.6

Turning to livestock, overall 53 percent of subsistence producers owned livestock, with chickens and cattle most frequently reported. One case owned ostriches and none owned rabbits suggesting that these options can be dropped from future waves.

**Table 13: Households in which some had farmed in past 12 months: livestock**

<b>Animal</b>	<b>Subsistence producers %</b>	<b>Animal</b>	<b>Subsistence producers %</b>
All livestock	53.0	Pigs	8.0
Cattle	46.6	Horses/donkeys	4.3
Sheep	13.2	Chickens	65.2
Goats	46.2	Ducks/geese	6.5

Sales of livestock were more common than those of crops, but still negligible with 28 cases reporting sales of chickens, 32 cases, sales of cattle and 63 cases in which there were sales of goats. However the amounts involved are substantial in comparison to the incomes of these households, with a median of R6,000.00 in the last 12 months for those households in which cattle sales had taken place compared to their median monthly income of R2,944.00. In the case of goat sales, the median amount received was R2,400.00 compared the median monthly income of these households of R1,687.00.

Finally relatively large numbers of the farming households had invested in inputs in the past 12 months. Fertilizer, seeds and animal feed are the most frequently purchased inputs, although the amounts spent were small at an annual median of R48.00 for fertilizer, R30.00 for seeds and R56.00 for animal feed.

**Table 14: Households in which some had farmed in past 12 months: Inputs**

<b>Inputs</b>	<b>Subsistence producers %</b>	<b>Inputs</b>	<b>Subsistence producers %</b>
Labour	5.0	Ploughing	5.5
Fertilizer	15.3	Seeds	29.8
Manure	9.8	Dipping	6.9
Agri-chemicals	5.6	Vet	5.0
Maintance	1.4	Animal feed	14.4

# 7. Poverty and subsistence income

Mindful of the caveats concerning imputed income from subsistence agriculture, the following table shows the mean and median net monthly incomes from subsistence agriculture for the 648 cases for whom such incomes could be calculated. This is shown by quintile of non-agricultural per capita income and compared to the mean and median per capita monthly incomes from all other sources.

**Table 15: Households in which some had farmed in past 12 months: Incomes**

Income Group	Subsistence Income		Per Capita income	
	Mean	Median	Mean	Median
R0-R275	87.48	13.08	173.26	178.07
R276-R486	54.76	6.50	366.44	353.60
R487-R873	119.17	13.47	628.27	601.36
R874-R1905	60.82	8.50	1246.73	1261.82
R1905+	149.85	42.17	3879.35	2761.18

Incomes from agriculture are low in all income bands, and imply that subsistence cultivation contributes greater than 10 percent of the poverty line for just 30 percent of the households in which production takes place. However, poor reporting of own consumption may result in an under-estimate of the contribution of this activity.

An alternative opportunity is provided through questions D36 and D37. Respectively these questions on food security ask: “In the past 12 months, did any adult in this household go hungry because there wasn’t enough food?” and “In the past 12 months, did any child in this household go hungry because there wasn’t enough food?” Responses are a five point scale ranging from none, through seldom, sometimes, often and always. The results of these questions reveal at least some degree of adult hunger in 28.9 percent of households, weighting up to 3.9 million households. Obviously child hunger can only be reported for households with children, and this shows child hunger in 24.0 percent of these households. The next table shows the odds of an adult being sometimes or more frequently hungry in the past 12 months for households in which no subsistence agriculture is undertaken compared to households in which this activity occurs. This is also calculated for the odds of an adult having ever been hungry and are shown for five poverty groups: households in which per capita incomes are less than 0.5 of the poverty line, 0.5 to 1 times the poverty line, 1 to 1.5 times the poverty line, 1.5 to 2.5 times the poverty line, and more than 2.5

times the poverty line. Finally the odds of child hunger in households in which no subsistence production takes place is shown for households in which a child is present.

**Table 16: Odds of adult hunger by poverty category**

<b>Multiple of PL</b>	<b>Odds of some adult hunger</b>	<b>Odds of any adult hunger</b>	<b>Odds of any child hunger</b>
< 0.5 PL	0.97	0.99	0.97
0.5 - 1 PL	0.89	0.85	0.77
1 - 1.5 PL	0.87	0.92	0.83
1.5 - 2.5 PL	0.73	0.79	0.65
> 2.5 PL	0.32	0.29	0.37

This result suggests that if anything both adult and child hunger is more frequently associated with households in which agriculture is undertaken at all income levels. This is a difficult result to interpret without further analysis and it may be that households are pushed into subsistence production because of the presence or threat of hunger.

## 8. Comments on existing data and future questionnaire design

A number of minor changes have been identified from this analysis which can be incorporated into future versions of the data or questionnaire. The label for Question H4\_3\_38 is incorrect. This should be “Unit in which Beetroot were measured”.

Question H1 should be changed to read: Over the past 12 months has anyone in this household participated in growing food or other crops, or raising livestock other than as part of paid employment?

It is recommended that the filter question H2 be removed or amended to ensure that small scale agricultural micro-enterprises are not excluded from data collection. Further it is recommended that land size and value be asked in the second wave, but that question H3 be dropped from the questionnaire. The detail concerning crops and livestock units can also be reduced. It is also recommended that the question on consumption of own production be reinstated and separated from questions concerning the use of shop stock.

## 9. Conclusion

This brief analysis has shown that the results of NIDS concerning subsistence agriculture are broadly consistent with the results of large sample national surveys. Inconsistent measures, under-reported own consumption and the difficulty of valuing such consumption continue to dog analysis of the contribution made by agriculture to household welfare. A clue is provided through the questions on food security in which adult hunger is found to be associated with participation in subsistence agriculture. While the direction of causality is not established by this paper, it seems unlikely that growing food results in hunger, and it is tempting to conclude that adults who are hungry attempt to offset this by resorting to cultivation.

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