**RES-167-25- 0746 ES/1034242/1**

**Farm scale and viability: an assessment of black economic empowerment in sugar production in Mpumalanga Province, South Africa.**

**Survey Design**

The purpose of the survey was to provide an analysis of the small-scale grower production system and to identify factors that distinguish those growers that were more successful from those that appeared to be failing. The sample was generated from a list of growers supplied by the sugar company (TSB) extension services. Although this list was found to be not entirely up to date - some growers interviewed appeared not to be on it - such cases were rare, and we believe the list included the great majority of ‘active’ small-scale growers with contracts to deliver cane. There are 1243 registered small-scale sugarcane growers in Mpumalanga. In 2011-12 there were 888 growers who Mpumalanga Canegrowers recorded to have delivered cane. Of the 355 not registered as delivering cane, the majority were farmers who carried over their cane to the following season (did not harvest in time before the mill closed or replanted their field and therefore skipped a harvest season). Others had abandoned their fields, although a small number continued deliveries to TSB of cane harvested from projects that had effectively ceased operation.

The TSB list contained 920 growers, from which a sample of 120 was selected. In total 112 questionnaires were completed, of which two were duplicates (different plots of the same grower) and another was excluded as insufficiently complete. This provided sample data for 109 growers, or a sample of 11 percent. Missing data resulted in a further reduction in the sample to 104 growers.

The sample was constructed according to the following criteria:

* 1. Distribution of growers between cane mills:

1/3 Malalane (40 questionnaires);

2/3 Komati (80 questionnaires).

* 1. Projects:

The selection of projects was made using criteria of: average area per grower; and average cane yield (Tons per ha). These data were obtained from CANEGROWERS for each project. The selection of projects, and the number of growers sampled in each project, reflects approximately the proportions in the total population of growers, as defined by these project-level characteristics.

* 1. Productivity level of each grower:

The grower lists supplied by TSB classified each grower into ‘top’, ‘medium’ or ‘bottom’ third in terms of cane productivity. The sampling within each project sought to generate a random sample within each of these productivity categories. In practice, there was an over-representation of about 4% in the higher productivity category and an under-representation of 12% in the lowest productivity category. In part, this reflected difficulties in contacting the specific individuals identified for the sample, and their substitution by others. Such substitutions were made, as far as possible, within the same productivity class. This did not always prove possible, and a tendency emerged for more ‘available’ growers to be in medium or high productivity categories. It also needs to be observed, however, that the productivity categories used in sampling needed further adjustment during data analysis to more accurately reflect sugarcane yields actually attained by the growers in the sample. This adjustment placed 47% of the sample in the ‘low’ productivity class.

**Table 1. Distribution of sample between projects.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mill and project name | Number of growers\* | Percent of total | Number of growers in sample | Percent of sample |
|  | Komati - Figtree C | 48 | 8.3 | 8 | 7.3 |
| Komati - Figtree D | 58 | 10.1 | 10 | 9.2 |
| Komati - FigtreeB | 19 | 3.3 | 5 | 4.6 |
| Komati - Madadeni | 45 | 7.8 | 9 | 8.3 |
| Komati - Mbunu B | 63 | 11.0 | 12 | 11.0 |
| Komati - Sibange | 45 | 7.8 | 10 | 9.2 |
| Komati - Spoons 8 | 65 | 11.3 | 12 | 11.0 |
| Komati - Walda | 69 | 12.0 | 12 | 11.0 |
| Malalane - Buffelspruit | 27 | 4.7 | 7 | 6.4 |
| Malalane - Mbongozi | 26 | 4.5 | 6 | 5.5 |
| Malalane - Nhlangu W | 39 | 6.8 | 7 | 6.4 |
| Malalane - Ngogolo | 69 | 12.0 | 11 | 10.1 |
| Total | 573 |  | 109 | 100.0 |

 \*data from Mpumalanga Canegrowers

**Table 2. Questionnaire sample for different grower productivity ratings.**

|  |  |  |
| --- | --- | --- |
| Project name | Grower productivity class | Total |
| High | Middle | Low |  |
| Komati - Figtree C | 1 | 1 | 6 | 8 |
| Komati - Figtree D | 2 | 6 | 2 | 10 |
| Komati - FigtreeB | 2 | 3 | 0 | 5 |
| Komati - Madadeni | 8 | 1 | 0 | 9 |
| Komati - Mbunu B | 6 | 3 | 3 | 12 |
| Komati - Sibange | 3 | 5 | 2 | 10 |
| Komati - Spoons 8 | 2 | 3 | 7 | 12 |
| Komati - Walda | 1 | 3 | 8 | 12 |
| Malalane - Buffelspruit | 5 | 1 | 1 | 7 |
| Malalane - Mbongozi | 0 | 6 | 0 | 6 |
| Malalane - Nhlangu W | 3 | 4 | 0 | 7 |
| Malalane - Ngogolo | 4 | 5 | 2 | 11 |
| TOTAL | 37 (34%) | 41 (38%) | 31 (28%) | 109 |
| Percent distribution in grower population (TSB data). | 29.5% | 29.9% | 40.6% | 904 |

Growers were contacted for interview via the project offices. Generally a project secretary had lists of growers’ cell-phone numbers. Interviewing teams also used meetings of project members as opportunities to contact individual growers. Growers were asked to make available cane delivery statements to enable interviewers to verify data on cane delivery, RRV (the ‘recoverable value’: an index based on sucrose content measured by the mill for each cane delivery and that determines payments made to growers), and the deductions made from payments. Deductions include levies, payments for electricity and water, payments to contractors for cane-cutting, loading and transport, loan repayments and ‘retention savings’ deducted to provide finance for field costs (fertilizer, labour and herbicide) to grow the following year’s crop.

All data were entered directly into questionnaire forms constructed using *SPSS data entry builder* software on a laptop computer. The resulting database was scrutinised for consistency and errors and analysed using SPSS. All participants were asked for written consent to allow the project to seek records of their production in past years from cane delivery records held by the milling company, and records of loans from the industry credit agency, Akwandze. In all cases this consent was provided, and further data on production (tons per hectare and RRV) for 2008-2013 were obtained from TSB. Data on loans were also obtained for the period 2002-2013. Variables derived from these data were added to the database. Early in the survey process it was recognised that a number of growers had more than one sugar cane plot, registered in different codes with the milling company (e.g 123456a, 123456b, 123456c etc). Where the survey identified such cases, production data was requested for all plots held by a single grower. The loan data did not discriminate between different plots, all loans being identified only with a particular grower.

The dataset contains a number of derived variables concerned with production costs and net earnings. These are expressed in terms of monetary values per unit area (per hectare). They were estimated largely from data contained in ‘cane delivery statements’ issued by the sugar company to the sugarcane growers and detail the weight of cane delivered, its ‘recoverable value’ (RRV) on which the grower’s earnings are calculated, and a series of deductions: for contract services, water fees, electricity payments and loan repayments. Since a cane delivery statement generally refers to only one plot, and a third of the sample had multiple plots, derived variables for production costs were estimated for the area harvested (STMTAREA) that corresponded to the delivery statement. For those growers with multiple plots further derived variables were calculated for total gross earnings based on total deliveries (RRV2012) from all their plots, as recorded by TSB.

A preliminary analysis of the survey data is available at: <http://www.seed.manchester.ac.uk/medialibrary/IDPM/working_papers/farmscale/farmscale-wp1.pdf>