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## *Record Keeping Among Small Farmers in Barbados*

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### *Abstract*

This study was undertaken to determine the characteristics of record keepers and non-record keepers among small farmers in Barbados. This analysis is based on a random sample of 160 small farms operating throughout the island. The study compared the characteristics of the two groups – record keepers and non-record keepers using chi-square analysis.

The survey found that out of the 160 farmers surveyed, 57% did not keep records, while 43% kept records. The majority of those who did not keep records stated that they had no time to do so.

With respect to the characteristics, the majority of the farmers surveyed fell within the 36 to 45 age group, followed by the 46 to 60 age group. There was no significant relationship between the age of the farmers and whether they kept records.

The majority of farmers were part-time farmers and the results showed that there was a significant relationship between farmer status and record keeping.

There was also a significant relationship between record keeping and the receipt of credit. A higher proportion of farmers who kept records had obtained credit.

The more frequently used method of recording data (81%) was manual and most of these were kept on a weekly basis.

A very high percentage of farmers keeping records (73%) thought that the level of benefit of record keeping was 'very good'.

No significant relationship was found between gender and record keeping. However, there was a significant relationship between farm size and record keeping. Farmers who owned the larger farms tended to keep records. There was also a significant relationship between farm net income and record keeping.

## INTRODUCTION

Agriculture plays a vital role in the development process of any country. As a foreign exchange earner, it allows countries to import commodities which are not produced locally. It was once the most important sector of the Barbadian economy, contributing over 50% of total GDP (current price) in the 1950s. With the rise in tourism over the past decades, coupled with the many problems of agriculture both domestically and internationally, the decline of the agricultural sector began.

Barbados, with its limited physical resources, has made substantial progress since independence in 1966, improving the living standards of its people and diversifying its economic base. Thus the contribution of the agricultural sector to Real Gross Domestic Product (GDP) has decreased dramatically over the past decade: from an average of 26.3% in 1960 -1962, to 11% in 1975 - 1977 and 6.5% in 1985 -1987 (MAR 1998). This downward trend has continued so that in 1998, the contribution was only 4%. (MAR 2000).

Today, tourism is considered to be the leading sector for economic development, foreign exchange earnings and investment.

Nurse (1970) cited problems associated with agriculture in Barbados. These problems included small size of holdings, poor soils in some areas, variable weather, land fragmentation, lack of access to agricultural credit, weak marketing systems, labour unavailability, high cost of investment and poor attitudes toward farming. Though Nurse's observations were made in 1970, currently, farmers still

encounter these identical problems in their farming activities (Sondeo Report 1998). Since small farmers constitute a significant portion of the farmers in Barbados, their contribution to the survival of agriculture is important.

One possible approach to improving small farming is record keeping. Farm records are considered a vital tool in farm management (Henderson & Gomes 1974). Nurse (1970) noted the importance of record keeping in Barbados. He also stated that there was a dire shortage of production information on small farming. This shortage, he added, was due to the fact that very few farmers keep records of any sort and there was no machinery in place to collect agricultural data as they become available.

The common view is that there is a lack of record keeping in Barbados, and this has often been considered a major deterrent to data collection for purposes of policy formulation and improvement of the quality of agricultural planning and development in Barbados. This paper describes a survey conducted among farmers in Barbados to discover their record keeping behaviour and also presents the characteristics of record keepers and non-record keepers.

## METHODOLOGY

### *The Survey*

The data used for the study was collected from a survey which was conducted throughout the island of Barbados. This was due to the relatively small size of the island. The technique used to conduct the survey was the personal interview method with the use of a formal questionnaire. The data was

derived from a cross-sectional survey conducted for the production year June 1<sup>st</sup> 1998 -May 31<sup>st</sup> 1999. The field work was conducted during the period July to August 1999.

It must be noted that all farmers surveyed had some form of record of their farm activities, either written or in their memory. However, the study considered the farmers who kept written records in any form as record keepers and the other farmers (those who relied on memory) were categorized as non-record keepers.

*Questionnaire Design:* The design of the questionnaire was guided by the type of data that was needed to meet the objectives of the study. The focus was therefore on the record keeping of farmers and the benefits that were derived by those keeping records as well as the reasons for not keeping records by the other farmers. The personal characteristics of all farmers were also recorded.

Questionnaires were pre-tested using twelve randomly chosen farmers to discern problems and to clarify questions. Appropriate adjustments were made after the pre-test.

*Sampling Design:* A sample frame was developed from the Ministry of Agriculture and Rural Development in Barbados which consisted of a list of registered farmers. From this list, only farmers whose holdings ranged between 0.2 - 10 hectares were chosen. These farmers numbered approximately 1,150. This was considered the sampling frame of small farmers from which a table of random numbers was used to

select the sample, using the simple random sampling method. A sample of size 200 was selected. However, only 160 respondents were located and interviewed. The other 40 persons selected were either deceased or were no longer farming.

*Collection of Data:* As mentioned previously, the personal interview technique was employed to collect data from the respondents. Enumerators were trained to conduct the survey and to ensure complete understanding of the questionnaire and its procedure. This exercise was performed to avoid interviewer bias.

## RESULTS

### *Level of Record Keeping among Farmers*

Of the 160 farmers surveyed, it was found that 43% kept some form of records, while 57% did not keep records (Table 1).

Table 1. Record Keeping on Farms

Category	No. of respondents	Percentage
Keeping records	68	43
Not keeping Records	92	57
Total	160	100

The majority of farmers who did not keep records (32%) stated that this was due to 'lack of time' and because farming was a hobby (Table 2). Sixteen percent stated that record keeping was not beneficial to them while another 15% had no reason for not keeping records. Eight percent indicated that

they were too old and 3% said that they did not want to know their losses.

Table 2. Reasons for not Keeping Records

Reasons offered	No. of farmers	% of responses
Too old	7	8
No time	30	32
Farming is a hobby	24	26
Records not beneficial	15	16
Afraid to know Losses	2	3
No particular Reason	14	15
Total	92	100

The farmers who were keeping records were asked how long they had been doing so. Fifty-five percent said that they had been keeping records for more than five years and approximately 35% said that they had been keeping records for a period between 1-5 years, while 10% had been recording less than one year (Table 3).

Table 3. Number of Years Keeping Records

Time period (yrs.)	No. of Farmers	% in Sample
< 1	7	10
1 - 5	24	35
5 - 10	14	21
>10	23	34

#### Nature of Record Keeping

Table 4 illustrates the various types of records kept by farmers. Most farmers keeping records kept more than one type of record. Sales and expenditure records were the most commonly kept (77% and 75%

respectively). Thirty-nine percent of the farmers kept production records (i.e. the yield of crops harvested), and 24% kept labour records. Twenty-one percent reported that they kept a variety of other records which included inventory and service (1%), mortality and birth (3%), breeding (5%) and feed (8%).

Table 4. Type of Records Kept by Farmers

Type of records kept	% of responses*
Production / crop yield	39
Sales	77
Expenditure	75
Labour	24
Miscellaneous (feed, birth etc)	21

\*Total percentage exceeds 100% since all respondents kept more than one type of record.

Variations in the frequency with which farmers recorded their data were also reported. Table 5 shows that 38% of the farmers prefer to record their data weekly while 28% recorded daily or otherwise. The 'other' category of farmers' responses (32%) were of two types - 'monthly' or 'whenever they felt like it'. Only one respondent indicated that data is recorded every other day.

Table 5. Frequency of Recording Data

Frequency	No. of farmers	% of record keepers*
Daily	19	28
Every other day	1	2
Weekly	26	38
Other (e.g monthly)	22	32

\*Total percentage exceeds 100% since all respondents kept more than one type of record.

Iton (1999) stated that regardless of its form, from sophisticated computerized systems to rudimentary loose-leaf files, a farm record should provide timely and consistent information to assist the farm management process. To discover in what form farmers keep or store their records they were asked the question, "How are the records stored?" As seen in Table 6, 81% of the record keepers kept their records hand written, that is in books, ledgers bills and other loose leaves, 4% of them stored their records on the computer using some type of accounting software and 15% of the record keepers kept both hand written and computerized records.

Table 6. Storage of Records by Farmers Keeping Records

Type of storage	No. of farmers	% of sample
Written only	55	81
Computerized only	3	4
Written and computerized	10	15
Total	68	100

Records, to be an integral part of farm management, must not only be kept, but must also be used to increase farmer's productivity and efficiency. When asked how beneficial the records were, the responses obtained were as shown in Table 7.

The majority of farmers (73%) stated that record keeping provided 'very good' benefits; 18% stated that they got 'good' benefits, while 6% and 3% respectively found the benefits to be 'fair' or 'of little benefit'.

Table 8 lists the major uses of the recorded data. It must be noted that farmers

gave more than one use for their records. 'To determine profit' was the major reason which was given by 81% of the farmers, another 38% used their records for 'decision-making', 19% for 'tax purposes' and another 19% 'to determine market trends'. Only 3% of farmers used their records for 'obtaining loans'. Other uses listed were 'breeding', 'husbandry practices' and 'budgeting'.

Table 7. Level of Benefit of Record-keeping

Level of Benefit	No. of farmers	% of record-keepers
Little	2	3
Fair	4	6
Good	12	18
Very good	50	73
Total	68	100

Table 8. Use of the Records

Use of records	% of responses
Tax purposes	19
To determine profit	81
To determine market trends	19
Decision-making	38
Miscellaneous (breeding growth rate etc.)	28

#### *Record Keepers Versus Non-Record Keepers*

As stated earlier the characteristics of record keepers and non-record keepers were compared using chi-square analysis. The results of these comparisons are now presented.

#### *Gender*

Table 9 gives the gender distributions of record keepers versus non-record keepers.

The chi-square test shows that there is no significant relationship between gender and record keeping, although 53% of the female farmers as compared to 40% of the male farmers were keeping records.

**Table 9. Gender - Distribution of Record Keepers vs Non-record Keepers**

Category	Male	%	Female	%	Total
Record keeper	52	40	16	53	68
Non-record keeper	78	60	14	47	92
Total	130	100	30		160

Chi-square = 1.77      *df* = 1  
*p*-value = .183      0.05 Significant level

Iton (1999) stated that the importance of having adequate funds to operate a business is appreciated even by small farmers. Without written records of one's farm operations to provide an indication of the viability of the business, obtaining a farming loan may be an uphill battle. Therefore, from the data supplied by Table 10, it is ironic that from a total of 160 farmers interviewed more than half (57%) of them were obtaining credit and from this figure 43% were not record keepers. Table 10 shows, however, that there was a significant relationship between record keeping and receipt of credit with record keepers being more likely to have had received credit.

Table 11 shows that there was a significant relationship between record keeping and farming status. Of the farmers keeping records, 50% reported to be full-time farmers and 50% were part-time

farmers. However 68% of the non-record keepers were part-time farmers.

**Table 10. Record-keepers vs Non-record-keepers - Receipt of Credit**

Category	No. of farmers	No. of farmers receiving credit
Record keepers	68	50
Non record - Keepers	92	88
Total	160 (100%)	88 (57%)

Chi-square 59.95 at 40  
0.05 significant level      *p*-value = .02

**Table 11. Record Keepers vs Non-Record Keepers - Farming Status**

Category	No. of farmers	No. of full-time farmers	No. of part-time farmers
Record keepers	68	34	34
Non-record keepers	92	18	74
Total	160	52	108

Chi-square 16.51      *df* 1  
0.05 significant level      *p*-value <0.0005

#### *Educational Attainment*

The results in Table 12 show that there is no significant relationship between the education attainment of record keepers and non-record keepers. One hundred and one of the farmers indicated that they have obtained secondary education, compared to 43 who only completed primary level education. A further 15 completed tertiary level education and one reported that he was an air force academy trained officer.

Fifty percent of the secondary level graduate farmers and all the tertiary level trained farmers kept records. For the primary level trained farmers 28% of them kept records.

The data suggests that Barbadian farmers have a high literacy rate since over 70% of the farmers had reached the secondary level and beyond. This result is not surprising since the Government of Barbados offer free formal education to all nationals, up to tertiary level.

Table 13 shows that the majority of farmers (103) had farms under three acres. In this category, approximately one-third of the farmers kept records. However, as farm size increased farmers were more inclined to keep records. For farms over 6.1 acres almost all the farmers kept records. For farmers with farms between 3.1 and 6 acres almost 43% kept records and for farmers with farms between 6 and 10 acres, 83% kept records. This may indicate that the larger farmers were more business-orient

Table 14 indicates that the majority of farmers (102) fall within the 36-60 age group. Of these, 53 (33.1%) are within the age group 36-45 years and 49 (30.6%) within the 46-60 age group. Thirty-two farmers (20%) are within the age group 61-75. The youngest age group (20-35) contain

25 farmers (16%). One farmer reported to be over 75years.

The data also revealed that of the 68 farmers who were keeping records, 52 (77%) are within the 36-60 age group. Eight farmers keeping records were each in age groups 20-35 years and 61-75 years. The farmer who was in the 76 - 100 age group did not keep records.

As could be expected, the majority of farmers were found in the age groups over 36 years and less than 20% were in the youngest age group of 20-35 years. This finding supports the MAR/IICA Draft Report of 1999, which stated that "the rapid ageing of the farm work force is a reflection of disdain among youths for agricultural work".

A chi-square test shows that there is no significant relationship between record keeping and the age of the farmer.

Table 15 indicates that the farmers who were the high-income earners were the ones who were keeping records. In the category of over \$50,000, more than 50% of the farmers kept records. The table also indicates that the low-income earners are less inclined to keep records.

The chi-square analysis shows that there is a significant relationship between the record keeping and the income earned by the farm.

Table 12. Record Keepers Vs Non-Record Keepers - Educational Attainment

Category	No of Farmers	Primary	Secondary	Tertiary	Other
Record keepers	68	12	49	7	0
Non-record keepers	92	31	52	8	1
Total	160	43	101	15	1

Chi-square 6.09 df 3 0.05 significant level p-value = .107



Table 13. Record Keepers Vs Non-Record Keepers - Farm Size

Category	No. of Farmers	0-3 acres	3.1-6 acres	6.1-10 acres	10.1-25 acres
Record Keepers	68	35	16	10	7
Non-Record Keepers	92	68	21	2	1
Total	160	103	37	12	8

Chi-square 17.88      df 3      0.05 significant level p-value <0.0005

Table 14. Record Keepers Vs Non-Record Keepers - Age

Category	No. of farmers	20-35 yrs.	36-45 yrs.	46-60 yrs.	61-75 yrs.	76-100 yrs.
Record keepers	68	8	28	24	8	0
Non-record keepers	92	17	25	25	24	1
Total	160	25	53	49	32	1

Chi-square 9.03      df 4      0.05 significant level p-value = 0.06

Table 15. Record Keepers Vs Non-Record Keepers - Value of Farm Net Income (Bds \$)

Category	No. of Farmers	\$0-\$9,999	\$10,000-\$49,999	\$50,000-\$99,999	\$100,000-\$3,000,000
Record keepers	68	8	28	12	16
Non-record keepers	92	39	40	7	4
Total	160	47	68	19	20

Chi-square 27.47      df 3      0.05 significant level p-value <0.0005

## CONCLUSION

The survey found that out of the 160 farmers surveyed, 57% did not keep records, while 43% kept records. It was found that the majority of those who did not keep records stated that they had no time to do so.

Of the 43% of record keepers, 34% were keeping records for more than 10 years, with the majority (77%) keeping records of sales followed by the second highest percentage (75%) who reported that they keep records on expenditure. There is need to keep records on the whole farm/family household,

since in the Caribbean context it is difficult to separate the farm from the home. As documented, for the smaller farmers most of the money obtained from farming is spent on the home.

The more frequently used method of recording data (81%) was manual and most of these were kept on a weekly basis. If this is the case, use can be made of the younger children who are home from school during the weekends.

A very high percentage of farmers (73%) thought that the level of benefit of record

keeping was 'very good'. This finding could be used to educate other farmers on the desirability of record keeping.

Eighty-one percent of record keepers stated that they used the records to determine their profits, and in fact there was a significant relationship between record keeping and the receipt of credit. This may imply that farmers who keep records actually stand a better chance to access credit.

The data was disaggregated according to gender in order to determine if there was a significant relationship between record keeping and the gender of farmers. No significant relationship was noted.

In terms of farmer status, the majority of farmers were part-time farmers (108), with 52 full-time farmers. This implies that the farm income for the majority of farmers was subsidized by other income sources. If this is so then for the part-time farmers, farming may not have been an important activity to warrant time spent on record keeping. The data thus showed a significant relationship between farmer status and record keeping with a greater degree of record keeping among full-time farmers.

Barbados farmers were of a high literacy level with 70% attaining secondary level education and beyond. This could also explain why the majority of farmers farmed on a part-time basis, as farmers may very well have other jobs which they do during the week. There was no significant relationship between record keeping and educational attainment.

The survey revealed that there was significant relationship between farm size and record keeping. Farmers who owned the larger farms tended to keep records,

implying a more business like approach to their farming activity. Related to farm size is the farm net income. The farmers who were getting a higher farm net income were more likely to be keeping records.

The Caribbean is experiencing an ageing farm population. Consistent with this observation are the findings in Barbados. The majority of the farmers fell within the 36 to 45 age group, followed by the 46 to 60 age group. There was no significant relationship between age of the farmer and record keeping activity however.

#### RECOMMENDATIONS

The role of farm record keeping cannot be emphasised enough. Records are used for guiding future management decisions, for comparing levels of performance among farmers, facilitate credit acquisition, making possible tax assessments and others.

The study in achieving its objective has revealed that there is an overwhelming need for farmers to keep records, not only for their farm analysis but also for Government to inform policies relating to agriculture. In this regard the following are recommended for Barbadian small farmers:

- The design of a simple method of record keeping that would encourage the farmers to log their data as the need arises.
- Farmers should be encouraged to keep proper records not only for tax and profit and loss purposes but as a farm managerial tool.
- Farmers should be trained, irrespective of their academic attainment, in proper farm record keeping.

- The Agricultural Planning Unit of the Ministry of Agriculture establish an Agricultural data bank, which should be designed and structured to disseminate information effectively, reliably and efficiently. (e.g. cost of production data).
- Further to the establishment of the data bank, an analysis section should be incorporated in the Unit to acquire and analysis farm level data, which can be used for policy making and the designing of agricultural programs within the Ministry.

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