

# Effects of Selected Characteristics on General and Financial Record Keeping Practices of Small Producers in South Central Alabama

David Nii O. Tackie<sup>1</sup>, Khali N. Jones<sup>1</sup>, Francisca A. Quarcoo<sup>1</sup>, Gwen J. Johnson<sup>1</sup>, Jeffrey Moore<sup>1</sup>  
& Alphonso Elliott<sup>1</sup>

<sup>1</sup> College of Agriculture, Environment and Nutrition Sciences, Tuskegee University, Tuskegee, AL, USA

Correspondence: David Nii O. Tackie, College of Agriculture, Environment and Nutrition Sciences, Tuskegee University, Tuskegee, AL 36088, USA. Tel: 1-334-727-8813. E-mail: dtackie@tuskegee.edu

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## Abstract

Record keeping is important because it has several benefits such as enhancing performance, planning, organization, filing taxes, access to credit, and access to programs; however, many producers do not keep records. Thus, the study examined the effects of selected characteristics on general record keeping and financial record keeping practices by small producers. Data were collected from a purposive sample of producers from several counties in South Central Alabama and analyzed using descriptive statistics and binary logistic regression analysis. The results showed that a majority were part-time producers; males; over 55 years of age; had less than a 4-year college degree, and earned less than \$40,000 in annual household income. Additionally, a majority had a farming experience of over 10 years; acreage owned of 30 acres or less; even a higher majority had acreage farmed of 30 acres or less (73 vs. 24%), and a third earned a profit of less than \$5,000. Although over half kept general records, about a third, did not see the importance or the usefulness of record keeping in their operations. Not surprisingly, under 40% kept financial records, and are therefore not familiar with financial ratios. The binary logistic regression analyses showed that only gender had a statistically significant and negative effect on general record keeping; age had a statistically significant and negative effect on financial record keeping, and annual household income had a statistically significant and positive effect on financial record keeping. To sharpen knowledge and skills in record keeping of producers, workshops are recommended.

**Keywords:** socioeconomic and farm characteristics, general record keeping, financial record keeping, small producers, South Central Alabama

## 1. Introduction

Record keeping is important, and all producers have to, or should, keep records. According to Tackie (2005), record keeping is a systematic way of gathering and storing documents and/or data over a period of time. He argued that the practice is necessary for preserving critical data and information on a business' activities. He also provided five main reasons why record keeping is important; namely, it allows the business owner to ascertain how the business is performing; it allows the business to have access to government benefits and programs; it allows the business relatively easy access to credit; it makes filing taxes relatively easy, and it helps the business owner to be organized. He provided a sixth reason (Tackie, 2017); that record keeping makes planning relatively easy. What is more, Tackie (2005) maintained that, although record keeping is important, many small business owners do not keep records. According to him, they normally provide reasons why they do not keep records such as "too cumbersome"; "not that important"; "waste of time"; "have a good memory and remember activities"; and "have been in business for years and do not keep organized records."

Additionally, Massey, Friesen, and Powell (1992) mentioned that record keeping is a "task" and many apparent enthusiastic producers have started it only to drop it at a future date. They also alluded to reasons provided by such producers as the lack of time and lack of motivation. They argued that record keeping is productive work and must be performed tactfully. Kantrovich (2011) stressed that farming is a business and should be considered as such. However, he was of the view that the reason why many producers do not keep records is they feel overwhelmed because good record keeping takes a lot of time. Further, he contended that many producers do not want to change old habits of lax record keeping, no record keeping, or they do not want to learn a new skill because record keeping, in some cases, requires learning how to use new software. According to him, good

record keeping requires discipline to record the requisite transactions or activities. Also, Massey et al. (1992) mentioned that record keeping should be simple enough to capture the needs of the producer. They suggested starting with a simple system and adding “complexity” as time goes on.

Not only is it important to keep records in general, but it is also important to keep financial records. This applies in particular to small producers. Usually, small producers may collect some amount of production and other records but neglect or downplay financial records. Lewis (2012) emphasized that financial record keeping has two parts, specifically, collecting source data and entering the data into a journal or computer software spreadsheet. The author suggested diligence in keeping records. The Community Involved in Sustaining Agriculture [CISA] (2010) also argued that thorough record keeping allows more effective analysis of financial information. It is surmised that the reason why financial record keeping is even more important for small producers is that they have a small margin of error, and more importantly, it will help them to be more sustainable or viable, tracking where every cent is going.

One region in Alabama where there are many small producers is South Central Alabama. Many of these small producers do not usually keep general records, let alone financial records; if they do keep the former, the records are not necessarily in an organized manner or complete. Being able to track or assess financial status or situation would make it easier for the producer to make critical decisions. Yet, until now, there have been limited studies, particularly examining the general and financial record keeping practices of small producers in South Central Alabama. Also, other factors may impinge on the general record keeping and financial record keeping practices of producers, issues worth looking into. Thus, the purpose of this study is to assess the effects of selected characteristics on the general and financial record keeping practices of small producers in South Central Alabama. The specific objectives were to (1) describe socioeconomic characteristics, (2) examine farm characteristics, (3) examine record keeping practices, and (4) estimate the extent to which socioeconomic characteristics and farm characteristics affect general and financial record keeping practices. The rest of the article covers the relevant literature, methodology, results and discussion, and conclusion.

## 2. Literature Review

A selection of studies is briefly mentioned and discussed chronologically (by author grouping) in this section. The literature review is divided into two subsections, socioeconomic and farm characteristics, and farm record keeping.

### 2.1 Socioeconomic and Farm Characteristics

Socioeconomic and farm characteristics describe the nature of producers and/or farms. For instance, according to the United States Department of Agriculture [USDA] NASS (2014a), based on the 2012 Ag Census, the average age for producers in 2012 was 56.3 years, compared to 54.9 years in 2007. Based on annual sales categories, 57% had sales of less than \$10,000; 19% had sales of \$10,000-49,999; 6% had sales of \$50,000-99,999, and 18% had sales of \$100,000 or more. In other words, about 75% of farms made sales of less than \$50,000. By minority grouping, 79% of Black producers made sales of less than \$10,000; 68% of Hispanic producers made sales of less than \$10,000, and 78% of American Indian producers made sales of less than \$10,000.

Also, USDA NASS (2014b), based on the 2012 Ag Census, reported that 11% of farms had farm sizes of 1-9 acres; 28% had farm sizes of 10-49 acres, and 30% had farm sizes of 50-179 acres. Correspondingly, USDA NASS (2016) reported several statistics on small farms and small farmers, based on the 2012 Ag Census. It noted that; 85% of all small farms were operated by males and 15% were operated by females; 64% of small farmers worked off-farm as opposed to 36% who did not have off-farm jobs; 23% of small farmers had a farming experience of fewer than 10 years; whereas, 77% had a farming experience of 10 years or more; 41% of small farmers had a positive income from farming and the remaining 59% did not have a positive income from farming, and 16% of small farmers had 50% or more of their household income from farming, but the other 84% did not have 50% or more of their household income from farming.

Additionally, USDA NASS (2019a), based on the 2017 Ag Census, found that the average age of producers was 57.5 years, compared to 56.3 years in 2012, and 54.9 years in 2007. It also provided other socioeconomic characteristics on age, farming experience, farming status, and race/ethnicity. Regarding age, 8% were 34 years or less, 58% were 35-64 years, and 34% were 65 years or above. Considering farming experience, 27% had a farming experience of 10 years or less and 73% had more than 10 years of farming experience. Based on farming status, 42% were full-time farmers and 58% were part-time farmers. On race/ethnicity, 95% were Whites, 1% were Blacks, and 3% were Hispanics.

Furthermore, USDA NASS (2019b), based on the 2017 Ag Census, reported that 13% of farms had farm sizes of 1-9 acres; 29% had farm sizes of 10-49 acres, 28% had farm sizes of 50-179 acres, and 15% had farm sizes of 180-499 acres. Also, USDA NASS (2019c), based on the 2017 Ag Census, found that 76% had sales of less than \$50,000; 12% had sales of \$50,000-249,999. Yet, 39% of farms had sales of less than \$2,500; 20% had sales of \$2,500-9,999, and 19% had sales of \$10,000-49,999.

Moreover, Bartlett, Tackie, Jahan, Adu-Gyamfi, and Quarcoo (2015) analyzed the characteristics and practices of selected Alabama small livestock producers concentrating on economics and marketing issues. They obtained their data through a questionnaire and analyzed the data using descriptive statistics. About 39% of beef cattle producers had total costs of \$5,000 or less; 24% had total costs of more than \$5,000, and 9% did not know their total costs. Also, 35% had gross receipts of \$5,000 or less; 24% had gross receipts of more than \$5,000, and 12% did not know their gross receipts. Yet, 33% either had losses or broke-even; 31% had profits of \$5,000 or less, and 3% had profits of more than \$5,000. About 19% of meat goat producers had total costs of \$2,500 or less; 3% had total costs of more than \$2,500, and 6% did not know their total costs. Also, 17% had gross receipts of \$2,500 or less; 5% had gross receipts of more than \$2,500, and 6% did not know their gross receipts. Eleven percent (11%) either had losses or broke-even; 9% had profits of less than \$2,500, and 7% did not know their profits.

Tackie et al. (2018) also analyzed the characteristics and practices of selected Georgia small livestock producers concentrating on economics and marketing practices. They used a survey to acquire the data and assessed the data using descriptive statistics. Twenty percent (20%) of beef cattle producers had total costs of \$5,000 or less; 28% had total costs of more than \$5,000, and 20% did not know their total costs. Also, 8% had gross receipts of \$5,000 or less; 38% had gross receipts of more than \$5,000, and 15% did not know their gross receipts. Yet, 3% either had losses or broke-even; 38% had profits of \$5,000 or less, and 8% had profits of more than \$5,000. Twenty-eight percent (28%) of meat goat producers had total costs of \$2,500 or less, 3% had total costs of more than \$2,500, and 13% did not know their total costs. Also, 28% had gross receipts of \$2,500 or less; 5% had gross receipts of more than \$2,500, and 8% did not know their gross receipts. Fifteen percent (15%) either had losses or broke-even; 10% had profits of \$2,500 or less, and 13% did not know their profits.

Further, Tackie, Bartlett, and Nunoo (2019) assessed if socioeconomic factors do matter in acreage owned and farmed by small livestock producers in Alabama. They collected data using a questionnaire and analyzed these data by descriptive statistics and ordinal logistic regression analysis. Regarding socioeconomic statistics, they reported that 30% were full-time producers and 69% were part-time producers; 83% were males and 14% were females; 81% were Blacks and 16% were Whites; 3% were 34 years or less; 60% were 35-64 years, and 30% were 65 years or more; however, 60% were 55 years or older. What is more, 34% had a high school education or less; 31% had two-year college degree/some college education, and 30% had a four-year college degree/post-graduate degree; 51% earned \$40,000 or less as annual household income, and 39% earned over \$40,000 as an annual household income. Regarding other characteristics, they found that 12% had a farming experience of 10 years or less and 86% had a farming experience of more than 10 years; however, 58% had a farming experience of more than 30 years. They also found that 22% owned 30 acres or less land and 77% owned more than 30 acres of land. Relatedly, 16% farmed 30 acres or less land and 82% farmed more than 30 acres of land.

Again, Tackie et al. (2020a) assessed if socioeconomic factors do matter in acreage owned and farmed by small livestock producers in Florida. The authors gathered data through a survey of participants and analyzed these data using descriptive statistics and ordinal logistic regression analysis. On socioeconomic statistics, the researchers found that 34% were full-time producers and 60% were part-time producers; males and females were each 50%; 41% were Blacks and 47% were Whites; 1% were 34 years or less; 59% were 35-64 years, and 39% were 65 years or more; yet, 72% were 55 years or older. Further, 33% had a high school education or less; 40% had two-year college degree/some college education, and 26% had a four-year college degree/post-graduate degree; 60% earned \$40,000 or less as annual household income, and 36% earned over \$40,000 as an annual household. Pertaining to other characteristics, they found that 26% had a farming experience of 10 years or less and 74% had a farming experience of more than 10 years; only 4% had a farming experience of more than 30 years. They also reported that 67% owned 30 acres or less land and 31% owned more than 30 acres of land. Correspondingly, 31% farmed 30 acres or less land and 69% farmed more than 30 acres of land.

Yet again, Tackie et al. (2020b) investigated if socioeconomic factors do matter in acreage owned and farmed by small livestock producers in Georgia. In this case, also, they obtained their data via a survey of participants and assessed the data by descriptive statistics and ordinal logistic regression analysis. Focusing on the socioeconomic statistics, they found that 50% were full-time producers and 48% were part-time producers; 43% were males and

55% were females; 35% were Blacks and 58% were Whites; 3% were 34 years or less; 50% were 35-64 years, and 40% were 65 years or more; however, 63% were 55 years or older. Also, 23% had a high school education or less; 30% had two-year college degree/some college education, and 45% had a four-year college degree/post-graduate degree; 15% earned \$40,000 or less as annual household income, and 63% earned over \$40,000 as an annual household income. For the other characteristics, they found that 20% had a farming experience of 10 years or less and 80% had a farming experience of more than 10 years; yet, 18% had a farming experience of more than 30 years. Additionally, they reported that 30% owned 30 acres or less land and 68% owned more than 30 acres of land. This notwithstanding, 22% farmed 30 acres or less land and 78% farmed more than 30 acres of land.

## 2.2 Farm Record Keeping

As indicated earlier, farm record keeping is essential for the viability of the producer, and as such studies have been conducted to examine aspects of this. For example, Gustafson, Nielsen, and Morehart (1990) compared the financial record keeping and other characteristics of farmers in North Dakota belonging to a farm management association and a random sample of farmers who did not belong to such an association. Those farmers who belonged to the association were enrolled in adult farm management courses, and they maintained a farm record book. The researchers analyzed requisite data by descriptive statistics and other statistical tests and found that farms that belonged to association members had more acreage, more hired labor, more gross income, more expenses, and more assets and liabilities compared to farms that belonged to non-association members. They also found that the equity levels of the farms that belonged to association members were higher than those that belonged to non-association members.

Further, Devonish, Pemberton, Ragbir, and Dolly (2002) assessed the characteristics of record keepers and non-record keepers among small producers in Barbados. The authors obtained their data from a random sample of producers and assessed the data using descriptive statistics and chi-square tests. They reported that 43% of the respondents kept records, while 57% did not. Reasons given for not keeping records were “lack of time”, “hobby”, “record keeping not being beneficial”, “no particular reason”, “too old”, and “afraid to know losses.” The most common records kept were sales and costs, and most of the producers entered records daily or weekly. A majority, 81%, of those who kept records did so manually; only 3% kept records using computers; however, 15% used both methods. Also, the results showed that there were significant relationships between record keeping and farming status, getting credit, farm size, and net farm income. However, there were no significant relationships between record keeping and age, gender, and education.

Additionally, Tham-Agyekum, Appiah, and Nimoh (2010) examined farm record keeping behavior among small-scale poultry farmers in the Ga East Municipality, Ghana. Similarly, they collected data from a random sample of farmers and also evaluated the data by descriptive statistics and chi-square tests. They found that the mean age of farmers was 45 years; the mean farming experience was 11 years, and the mean number of birds (representing farm size) was 1,722. Also, 72% were males; 34% had post-secondary education; 60% were full-time farmers, and another 60% belonged to a farmers’ association. All farmers kept some type of production and financial records; 92% entered records daily or weekly, and 82% entered records manually. However, when farmers were asked why they did not keep comprehensive records, 68% indicated “records not beneficial”, or “no particular reason.” The chi-square tests revealed significant relationships between record keeping and age, education, farming experience, farming status, farm size, and membership in an association.

Moreover, Dudafa (2013) analyzed record keeping among small farmers in Nigeria. Data were acquired from a random sample of farmers and assessed the data by descriptive statistics. The results showed that 68% did not keep records and 32% kept some records. Of those who kept records, 62% primarily kept purchases, sales, and profit and loss records; also, 76% indicated one of the following reasons for keeping records: “to remember when farm operation was started”; “to know if profit was made or not”; or “to help in planning for the future.” Again, of those who kept records, when they were asked about problems they encountered in keeping records, they mentioned four main problems in the following order: “no formal training in record keeping”; “do not remember to keep records regularly”; “have not been able to use records for bank loans”; and “have high tax assessment for keeping records.” Of those who did not keep records, a little over 50% stated, “do not know how to keep records”; and 33% stated, “no need for records” as reasons for not keeping records.

Also, Abdul-Rahamon and Adejare (2014) evaluated the impact of accounting records keeping on the performance of small-scale enterprises in Nigeria. They generated their data using stratified sampling, purposive sampling, and simple random sampling of a group of farmers. They analyzed the data by descriptive statistics and chi-square tests. The authors reported that, at least, 60% of the respondents agreed or strongly agreed with

statements of the “positive” impact of accounting records keeping on small-scale business performance. The exception was in one case, where a statement, “accounting records being essential for the preparation of financial statements”, was 35% for “agreed” or “strongly agreed”, and 51% for “neutral.” In the researchers’ view, this response may reflect uncertainty among the respondents about the importance of accounting records. They further found a significant and positive relationship between accounting records keeping and small-scale business performance, and a significant and positive relationship between accounting records keeping and the chances of a small-scale business achieving success.

Furthermore, Ezejiofor, Emmanuel, and Olise (2014) assessed the relevance of accounting records in small-scale businesses in Nigeria. Data were obtained from a sample of small businesses, using judgmental sampling and were analyzed by descriptive statistics. According to the researchers, over 60% agreed or strongly agreed with statements on the positive effects of record keeping. They also reported that accounting records keeping contributed immensely to the performance of small-scale businesses that kept appropriate accounting records.

Moreover, Prajapati, Vahoniya, and Lad (2016) investigated the status of farm record keeping practices among the farmers in Anand Taluka, India. They used convenience sampling and a questionnaire to collect the data and used descriptive statistics as well as chi-square tests to analyze the data. They reported that about 50% of the respondents were 50-57 years; 64% had at most a high school education; 59% had between 20 to 50 years of farming experience; 60% had a farm size of 10 acres or less, and 26% had a farm size of greater than 10 acres. In addition, they found that equal proportions (50% each) of the producers either kept records or did not. The common types of records kept were production, expenses, revenues, agri-input, and financial records. Of those that kept records, 77% kept or maintained records daily or weekly. The top three reasons producers gave for not keeping records were “not knowledgeable about keeping records”, “lack of time”, and “lack of awareness regarding various types of records.” Also, there were significant relationships between record keeping and education, farm size, and annual income.

Finally, Tackie et al. (2021) undertook a comparative analysis of selected producer characteristics and production practices of small livestock producers in three southeastern states of the U.S., Alabama, Georgia, and Florida. They collected data through questionnaires and evaluated the data using descriptive statistics. The findings revealed that in Alabama, 62% of the respondents kept records, whereas 31% did not; in Georgia, 75% kept records, whereas 15% did not; in Florida, 81% kept records, whereas 19% did not. When asked how they kept the records, in Alabama, 34% of the respondents indicated manually and 22% indicated by the computer; in Georgia, 25% indicated manually and 20% indicated by the computer; in Florida, 29% indicated manually and 27% indicated by the computer. Respectively, for Alabama, Georgia, and Florida, 13, 40, and 26% of the surveyed producers did not respond to this question.

From, the preceding discussion of the relevant literature, although several researchers have examined the issue of record keeping, not many have examined it from the perspective of the influence of socioeconomic characteristics and farm characteristics on record keeping by producers, and if they did, many did not use robust statistics, let alone in South Central Alabama. Hence, the use of robust statistics to assess the issue. Only Devonish et al. (2002), Tham-Agyekum et al. (2010), and Prajapat et al. (2015) used some semblance of higher-level statistics, chi-square tests, in their assessment of record keeping practices of small farmers.

### **3. Methodology**

#### *3.1 Data Collection*

The study used a questionnaire, which comprised three parts, specifically, farm information, record keeping practices, and demographic information. The questionnaire was submitted to the Institutional Review Board of the researchers’ Institution for review and approval before it was administered. The questionnaire was administered to a purposive sample of small producers. This method of sampling was used because there was no appropriate sampling frame from which the subjects of interest could be drawn. Additionally, in surveying the producers of interest an appropriate and easier way, based on past experience, is to use the “relationship method” with which the producers are comfortable. Some of this was used in this study.

The data were obtained by interviewing small producers in several counties of South Central Alabama, including, Barbour, Bullock, Dallas, Greene, Hale, Lowndes, Macon, Marengo, Perry, Sumter, and Wilcox. The interviews were conducted by Extension agents and other outreach professionals in the various counties, from the fall of 2020 to the summer of 2021. The total sample size was 51.

### 3.2 Data Analysis

At this point, it is fit to make a distinction between general record keeping and financial record keeping. General record keeping is where a producer keeps records but does not venture into the “financial space”, such as keeping production records, general sales, or costs records. However, financial record keeping entails when a producer goes on further to keep records, such as balance sheet, income statement, and/or financial ratios. The data were analyzed by using descriptive statistics (frequencies and percentages) and binary logistic regression analyses. The general model of the logistic regression used is stated as follows:

$$Y_i = \ln[P_i/(1 - P_i)] = \beta_0 + \beta_1 X_{i1} + \dots + \beta_j X_{ij} + \varepsilon \quad (1)$$

Where,  $Y_i = \ln[P_i/(1 - P_i)]$  = the natural log (or the log odds) of the probability that the  $i^{\text{th}}$  observation of the dependent variable belongs to a particular group to the probability that it does not belong to that particular group;  $\beta_i$  = coefficients;  $i$  = number of observations;  $j$  = number of independent variables;  $X_i$  = independent variables;  $\varepsilon$  = error term.

Although the total sample was 51, for the binary logistic regression analyses, the number of observations used varied, after eliminating “no responses” to some questions. As explained by Gujarati and Porter (2009), the sample size is acceptable insofar as the number of observations is more than the number of independent variables. Further, it is well known that record keeping is important in farm production because it impinges on the outcomes of a farm’s operation. Based on the preceding, four estimation models were developed and used.

The estimation model for Model 1 is stated as:

$$\ln[P_{\text{GRK}}/(1 - P_{\text{GRK}})] = \beta_0 + \beta_1 \text{FAS} + \beta_2 \text{GEN} + \beta_3 \text{RAE} + \beta_4 \text{AGE} + \beta_5 \text{EDU} + \beta_6 \text{AHI} + \varepsilon \quad (2)$$

Where,  $\ln[P_{\text{GRK}}/(1 - P_{\text{GRK}})]$  = the natural log (or the log odds) of the probability that a producer practices general record keeping to the probability that a producer does not practice general record keeping; FAS = Farming status; GEN = Gender; RAE = Race/ethnicity; AGE = Age; EDU = Education, and AHI = Annual household income.

In sum, model 1 hypothesizes that the natural log of the probability that a producer practices general record keeping to the probability that a producer does not practice general record keeping is influenced by farming status, gender, race/ethnicity, age, education, and annual household income. The overall null hypothesis is that all of the regression coefficients are equal to zero or the independent variables together do not affect general record keeping. The hypothesized signs were as follows: farming status (+/-); gender (+/-); race/ethnicity (-); age (+/-); education (+), and annual household income (+). These mean that the sign on general record keeping based on farming status could go either way; the sign on general record keeping based on gender could go either way; Blacks will more likely keep relatively less general records than other races/ethnicities; the sign on general record keeping based on age could go either way; more educated producers will more likely keep general records, and higher annual household income producers will more likely keep general records. The details of the variable names and descriptions used for model 1 are shown in Appendix Table 1.

The estimation model for Model 2 is stated as:

$$\ln[(P_{\text{GRK}}/(1 - P_{\text{GRK}}))] = \beta_0 + \beta_1 \text{FEX} + \beta_2 \text{ACO} + \beta_3 \text{ACF} + \beta_4 \text{PRO} + \varepsilon \quad (3)$$

Where,  $\ln[(P_{\text{GRK}}/(1 - P_{\text{GRK}}))]$  = the natural log (or the log odds) of the probability that a producer practices general record keeping to the probability that a producer does not practice general record keeping; FEX = Farming experience; ACO = Acreage owned; ACF = Acreage farmed, and PRO = Profit.

In brief, model 2 hypothesizes that the natural log of the probability that a producer practices general record keeping is influenced by farming experience, acreage owned, acreage farmed, and profit. The overall null hypothesis is that all of the regression coefficients are equal to zero or the independent variables together do not affect general record keeping. The hypothesized signs were as follows: farming experience (+); acreage owned (+); acreage farmed (+), and profit (+). These mean that producers with much more experience will more likely keep general records; producers who own more acreage will more likely keep general records; producers who farm more acreage will more likely keep general records, and producers who earn higher profits will more likely keep general records. The details of the variable names and descriptions used for model 2 are shown in Appendix Table 2.

The estimation model for Model 3 is stated as:

$$\ln[P_{\text{FRK}}/(1 - P_{\text{FRK}})] = \beta_0 + \beta_1 \text{FAS} + \beta_2 \text{GEN} + \beta_3 \text{RAE} + \beta_4 \text{AGE} + \beta_5 \text{EDU} + \beta_6 \text{AHI} + \varepsilon \quad (4)$$

Where,  $\ln[P_{FRK}/(1 - P_{FRK})]$  = the natural log (or the log odds) of the probability that a producer practices financial record keeping to the probability that a producer does not practice financial record keeping; FAS = Farming status; GEN = Gender; RAE = Race/ethnicity; AGE = Age; EDU = Education, and AHI = Household income.

In summary, model 3 hypothesizes that the natural log of the probability that a producer practices financial record keeping to the probability that a producer does not practice financial record keeping is influenced by farming status, gender, race/ethnicity, age, education, and annual household income. The overall null hypothesis is that all of the regression coefficients are equal to zero or the independent variables together do not affect financial record keeping. The hypothesized signs were as follows: farming status (+/-); gender (+/-); race/ethnicity (-); age (+/-); education (+), and household income (+). These imply that the sign on keeping financial records based on farming status could go either way; the sign on keeping financial records based on gender could go either way; Blacks will more likely keep relatively less financial records than other races/ethnicities; the sign on keeping financial records based on age could go either way; more educated producers will more likely keep financial records, and higher annual household income producers will more likely keep financial records. The details of the variable names and descriptions used for model 3 are shown in Appendix Table 3.

The estimation model for Model 4 is stated as:

$$\ln[(P_{FRK}/(1 - P_{FRK}))] = \beta_0 + \beta_1FEX + \beta_2ACO + \beta_3ACF + \beta_4PRO + \varepsilon \quad (5)$$

Where,  $\ln[(P_{FRK}/(1 - P_{FRK}))]$  = the natural log (or the log odds) of the probability that a producer practices financial record keeping to the probability that a producer does not practice financial record keeping; FEX = Farming experience; ACO = Acreage owned; ACF = Acreage farmed, and PRO = Profit.

In short, model 4 hypothesizes that financial record keeping is influenced by farming experience, acreage owned, acreage farmed, and profit. The overall null hypothesis is that all of the regression coefficients are equal to zero or the independent variables together do not affect financial record keeping. The hypothesized signs were as follows: farming experience (+); acreage owned (+); acreage farmed (+), and profit (+). These imply that producers with much more farming experience will more likely keep financial records; producers who own more acreage will more likely keep financial records; producers who farm more acreage will more likely keep financial records, and producers who earn higher profits will more likely keep financial records. The details of the variable names and descriptions used for model 4 are shown in Appendix Table 4.

The various analyses were conducted using SPSS 12.0<sup>®</sup> (MapInfo Corporation, Troy, NY). For the logistic regression analyses, the criteria used to assess the models were the model chi-squares, beta coefficients, and *p* values.

#### 4. Results and Discussion

Table 1 shows the socioeconomic characteristics of the respondents. Most of them were part-time producers (82%); were males (63%), and were Blacks (84%). Also, 6% were 34 years or less; 59% were 35-64 years, and 35% were 65 years or older; however, 53% were 55 years or older. Furthermore, about one-third (33%) had a high school education or lower; 31% had a two-year/technical degree or some college education, and 35% had a four-year college degree/post-graduate degree. What is more, 18% had an annual household income of \$19,999 or less, 45% had an annual household income of \$20,000-39,999, 18% had an annual household income of \$40,000-\$59,999, 16% had an annual household income of \$60,000 or more. That is, 63% had an annual household income of less than \$40,000, and 33% had an annual household income of \$40,000 or higher.

The results on farming status, gender, and race compare favorably with Tackie et al. (2019) who reported part-time farmers as 69%, male producers as 83%, and Black producers as 81%. Similarly, USDA NASS (2019a) reported more part-time farmers than full-time farmers (58 vs. 42%); also, USDA NASS (2016) found that more small farmers worked off-farm than on-farm (64 vs. 32%) and that 85% of small farms were operated by males. The findings on age, education, and income also compare favorably with other studies. For instance, Tackie et al. (2019) found proportions for age ranges 34 years or less as 3%, 35-64 years as 60%, and 65 years or older as 30%; 60% were 55 years or older. USDA NASS (2019a) found age ranges of 34 years or less as 8%, 35-64 years as 58%, and 65 years or older as 34%. Since 53% were 55 years or older in this current study, it means that a majority are closer to the average age of 57.5 years reported by USDA NASS (2019a). With regards to education, Tackie et al. (2019) found that 34% had a high school education or less; 35% had two-year/technical degree, and 30% had a four-year/post-graduate degree. For annual household income, they found that 51% earned \$40,000 or less, and 39% earned over \$40,000. That is, proportions earning less than \$40,000 were higher in both studies than those earning over \$40,000, 63 vs. 33% for the current study, and 51 vs. 39% for the Tackie et al. (2019) study.

Table 1. Socioeconomic characteristics of respondents (N = 51)

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
<i>Farming Status</i>		
Full-time	9	17.6
Part-time	42	82.4
<i>Gender</i>		
Male	32	62.7
Female	19	37.3
<i>Race/Ethnicity</i>		
Black	43	84.3
Other	8	15.7
<i>Age</i>		
25-34 years	3	5.9
35-44 years	8	15.7
45-54 years	13	25.5
55-64 years	9	17.6
65 years or older	18	35.3
<i>Educational Level</i>		
High School Graduate or Below	17	33.3
Two-Year/Technical Degree	10	19.6
Some College	6	11.8
College Degree	13	25.5
Post-Graduate/Professional Degree	5	9.8
<i>Annual Household Income</i>		
\$19,999 or less	9	17.6
\$20,000-29,999	14	27.5
\$30,000-39,999	9	17.6
\$40,000-49,999	5	9.8
\$50,000-59,999	4	7.8
\$60,000-69,999	5	9.8
\$70,000 or more	3	5.9
No response	2	3.9

Table 2 depicts the farm characteristics of the producers. About 37% had crop operations only, 29% had livestock operations only, and another 29% had mixed enterprises of crop and livestock production; for specific enterprises, 26% had vegetable enterprises and 24% had livestock and related enterprises. Forty-three percent (43%) had a farming experience of 10 years or less, and 57% had a farming experience of more than 10 years; however, 12% had a farming experience of over 30 years. Although the proportion of those with farming experience of more than 10 years is higher, it is lower compared to findings in other studies. For example, Tackie et al. (2019) found a proportion of 12% for a farming experience of 10 years or less and 86% for a farming experience of more than 10 years. USDA NASS (2014a) found proportions of 22% for a farming experience of 10 years or less and 78% for a farming experience of more than 10 years, and USDA NASS (2019a) found proportions of 27% for a farming experience of 10 years or less and 73% for a farming experience of more than 10 years. Moreover, 55% owned 30 acres or less land, and 45% owned more than 30 acres of land; however, 18% owned over 60 acres of land. Relatedly, 73% farmed 30 acres or less land, and 24% farmed more than 30 acres of land; however, 33% farmed 10 acres or less of land.



Table 2. Farm characteristics (N = 51)

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
<i>Enterprises</i>		
Crop	19	37.3
Livestock	15	29.4
Both	15	29.4
Other	2	3.9
<i>Specific Enterprises</i>		
Vegetables	13	25.5
Livestock & related enterprises	12	23.5
Timber	1	2.0
Mixed Enterprise	3	5.9
No Response	22	43.1
<i>Farming Experience</i>		
1-5 years	11	21.6
6-10 years	11	21.6
11-15 years	9	17.6
16-20 years	6	11.8
21-25 years	3	5.9
26-30 years	5	9.8
More than 30 years	6	11.8
<i>Total Acreage Owned</i>		
10 acres or less	14	27.5
11-20 acres	8	15.5
21-30 acres	6	11.8
31-40 acres	5	9.8
41-50 acres	2	3.9
51-60 acres	7	13.7
More than 60 acres	9	17.6
<i>Total Acreage Farmed</i>		
5 acres or less	13	25.5
6-10 acres	4	7.8
11-15 acres	4	7.8
16-20 acres	8	15.7
21-25 acres	2	3.9
26-30 acres	6	11.8
More than 30 acres	12	23.5
No Response	2	3.9
<i>Estimated Operating Expenses</i>		
\$1,999 or less	17	33.3
\$2,000-5,999	18	35.3
\$6,000-11,999	5	9.8
\$12,000-15,999	3	5.9
\$16,000 or more	2	3.9
Don't Know	5	9.8
No Response	1	2.0
<i>Estimated Gross Receipts</i>		
\$1,999 or less	18	35.3
\$2,000-5,999	15	29.4
\$6,000-15,999	6	11.8
\$16,000-23,999	4	7.8
\$24,000 or more	1	2.0
Don't Know	7	13.7

<i>Estimated Profits</i>		
Less than Zero (Loss)	11	21.6
Zero (Break-even)	10	19.6
\$1-\$2,499	10	19.6
\$2,500-4,999	6	11.8
\$5,000 or more	4	7.8
Don't Know	9	17.6
No Response	1	2.0

It appears that, on an acre-to-acre basis up to 30 acres, more producers were farming more acreage than what they owned (73 vs. 55%). Also, the Tackie et al. (2019) study showed that more producers farmed more acreage than what they owned (58 vs. 50%). In this case, there is the possibility of producers renting additional land to farm.

Additionally, 69% indicated operating expenses of less than \$6,000 and 20% indicated operating expenses of more than \$6,000, and 10% did not know their operating expenses. About 65% indicated gross receipts of less than \$6,000 and 22% indicated gross receipts of more than \$6,000, and 14% did not know their gross receipts. Not surprisingly, therefore, 41% of the respondents, either made losses, or broke-even; 20% made profits of less than \$2,500; 12% made profits of \$2,500-\$4,999; 8% made profits of equal to, or greater than \$5,000, and 18% did not know whether they made profits or not. Overall, a higher proportion had operating expenses of less than \$6,000 than gross receipts of less than \$6,000 (69 vs. 65%). Compared to the sales of less than \$10,000 for Black producers (79%), Hispanic producers (68%), and American Indian producers (78%) reported by USDA NASS (2014a), the producers in this study are making fewer sales, 65%, making less than \$6,000 in sales. Consequently, the producers are not making much money out of farming. This phenomenon is not surprising as many of them are part-time, and have other sources of income. Also, since nearly 18% did not know their profits, it speaks to the lack of adequate record keeping.

Table 3 shows record keeping practices of the producers. When producers were asked to comment on the statement, "record keeping is important to your farm operation", 34% indicated strongly disagree or disagree, 14% indicated neutral, and 49% indicated strongly agree or agree. That about one-third did not think record keeping was important to their farm operation is worrying because record keeping provides critical information to producers. Also, when they were asked to comment on the statement, "record keeping is useful for decision-making", 31% indicated strongly disagree or disagree, 26% indicated neutral, and 43% indicated strongly agree or agree. Again, that about one-third of the respondents strongly disagreed or disagreed with the statement is worrying. Furthermore, when producers were asked to comment on the statement, "record keeping increases the chance of being successful in my farm operation", 34% indicated strongly disagree or disagree, 24% indicated neutral, and 41% indicated strongly agree or agree. Yet, again, that about one-third of the respondents strongly disagreed or disagreed with the statement is worrying. In the preceding cases, when neutral responses are added to the strongly disagree or disagree responses, the proportions are respectively, 48, 57, and 58%. This notwithstanding, it is satisfactory that in all three cases a higher proportion indicated strongly agree or agree (relative to strongly disagree or disagree) with the statements, respectively, 49, 43, and 41%. Taking into consideration the preceding responses, producers should be educated on the importance of record keeping via workshops.

When producers were asked if they keep records, 53% indicated "yes", and 47% indicated "no." The result is consistent with the Tackie et al. (2021) study on small livestock producers in three southeastern states of the U.S., Alabama, Georgia, and Florida in terms of whether small producers keep records or not. However, the ratio is lower in the current study compared to the Tackie et al. (2021) study; the ratios of those who keep records versus those who do not keep records in the 2021 study were; Alabama, 62 vs. 31%; Georgia, 75 vs. 15%, and Florida, 81 vs. 19%. When they were asked to indicate by what means they kept records, 4% indicated box/envelopes, 16% indicated papers/folders, 10% indicated book/farm record book, and 20% indicated computer. In short, 30% kept records manually and 20% kept records by electronic methods (computer). The question did not apply to 47% of the respondents, because they did not keep records. Again, when the results are compared with the Tackie et al. (2021) study on the three southeastern states, Alabama, Georgia, and Florida, they are consistent. More producers used manual methods of keeping records than electronic methods. Also, about 14% indicated that they fully keep

records; 39% indicated that they partially keep records, and the question did not apply to 47%. Another way of assessing this is that of those who keep records, about 26% (7/27) keep records fully and 74% (20/27) keep records partially. Either way, it is not encouraging that a majority of those who keep records, keep records partially, let alone that almost half do not keep any records at all. This does not augur well for farm production as records are a cornerstone of farm viability.

Table 3. Record keeping practices (N = 51)

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
<i>Record Keeping is Important to Farm Operation</i>		
Strongly Disagree	15	29.4
Disagree	3	5.9
Neutral	7	13.7
Agree	13	25.5
Strongly Agree	12	23.5
No Response	1	2.0
<i>Record Keeping is Useful for Decision-making</i>		
Strongly Disagree	15	29.4
Disagree	1	2.0
Neutral	13	25.5
Agree	11	21.6
Strongly Agree	11	21.6
<i>Record Keeping Increases the Chance of Being Successful in any Farm Operation</i>		
Strongly Disagree	15	29.4
Disagree	3	5.9
Neutral	12	23.5
Agree	10	19.6
Strongly Agree	11	21.6
<i>Generally Keep Records?</i>		
Yes	27	52.9
No	24	47.1
<i>If Yes, How do you Keep Them?</i>		
Box	1	2.0
Envelopes	1	2.0
Folders/Papers	8	15.7
Book/Farm Record Book	5	9.8
Computer	10	19.6
Not Applicable	24	47.1
No Response	2	3.9
<i>Generally Keep Records?</i>		
Fully	7	13.7
Partially	20	39.2
Not Applicable	24	47.1

Table 4 presents financial record keeping practices by respondents. About 37% said they keep financial records, whereas 16% said that they do not keep financial records; of course, 47% do not keep any records at all and the question did not apply to them. When one compares those that keep financial records (37%) with those that keep general records (53%), it shows that the figure has dropped by 30%. This is a serious situation because when a sizeable proportion of respondents are not practicing financial record keeping, it will make planning and performance assessment inadequate. To put it in a metaphor, the producer is “flying blind.” This goes to the very core of the argument made by CISA (2010), that the reason why financial record keeping is even more important for small producers is that they have a small margin of error, and therefore, it will allow them to be more viable by “following” where every cent is going.

Also, about 35% of respondents indicated that they keep a myriad of financial records; the question did not apply to 63% (that is, those who do not keep general and financial records). The breakdown of those who keep financial records were balance sheet, 10%; income statement, 4%; cash flow statement, 6%; cash flow budget, 10%, and multiple financial records, 6%. Additionally, 18% indicated that they assess/keep financial ratios and 14% do not do so; of course, the question did not apply to 63%. Again, this is a very low percentage, as consistent ratio assessment and/or keeping help ascertain the performance of a business. In this case, also, it shows that between keeping financial records (37%) and assessing/keeping financial ratios (18%), the figure has dropped by almost 51%; again, this is a serious situation. When asked which of the ratios they keep, only 14% responded; 10% said they keep profitability ratios and 4% said they keep liquidity ratios, and 4% did not respond. This means that very few respondents are making use of the financial records, such as the balance sheets, income statements, and cash flow statements, that they keep.

Table 4. Financial keeping practices (N = 51)

Variable	Frequency	Percent
<i>If You Keep Records, Do You Also Keep Financial Records?</i>		
Yes	19	37.3
No	8	15.7
Not Applicable	24	47.1
<i>If Yes to Previous Question, Which of the Financial Records Do You Keep?</i>		
Balance Sheet	5	9.8
Income Statement	2	3.9
Cash Flow Statement	3	5.9
Cash Flow Budget	5	9.8
Not Applicable	32	62.7
Multiple	3	5.9
No Response	1	2.0
<i>If You Keep Financial Records, Do You Assess/Keep Financial Ratios?</i>		
Yes	9	17.6
No	7	13.7
Not Applicable	32	62.7
No Response	3	5.9
<i>If You Assess/Keep Financial Ratios, Which Do You Keep?</i>		
Profitability Ratios	5	9.8
Liquidity Ratios	2	3.9
Solvency Ratios	0	0.0
Efficiency Ratios	0	0.0
Not Sure	0	0.0
Not Applicable	42	82.4
No Response	2	3.9
<i>Are Familiar With the Term Return on Assets?</i>		
Yes	20	39.2
No	30	58.8
No response	1	2.0
<i>Are Familiar With the Term Return on Equity?</i>		
Yes	14	27.5
No	36	70.6
No response	1	2.0
<i>Are Familiar With the Term Current Ratio?</i>		
Yes	10	19.6
No	40	78.4
No response	1	2.0
<i>Are Familiar With the Term Debt-Equity Ratio?</i>		
Yes	15	29.4
No	35	68.6
No response	1	2.0

<i>Are Familiar With the Term Asset Turnover Ratio?</i>		
Yes	8	15.7
No	42	82.4
No response	1	2.0
<i>If You Keep Financial Records, Why Do You Keep Them?</i>		
Keep Track of Finances	1	2.0
Plan for the Future	0	0.0
Keep Track of Progress	0	0.0
To have Information for the Bank/ Government and/or Other Outside Entity	2	3.9
Other/Multiple	7	13.7
Not Applicable	32	62.7
No Response	9	17.6
<i>If You Generally Do Not Keep Records, Why So?</i>		
Time Consuming/Do not have time	3	5.9
Cumbersome	2	3.9
Not that Important	2	3.9
Other/Don't Know How	9	17.6
Not Applicable	27	52.9
Not Response	8	15.7

Furthermore, producers were asked about their familiarity with several specific ratios, return on assets, return on equity, current ratio, debt-equity ratio, and asset turnover ratio. At least 59% were not familiar with the specific ratios. Specifically, 39% indicated that they were familiar with the term return on assets and 59% indicated that they were not familiar; 28% indicated that they were familiar with the term return on equity and 71% indicated that they were not familiar; 20% indicated that they were familiar with the term current ratio and 78% indicated that they were not familiar. Further, 29% indicated that they were familiar with the term debt-equity ratio and 69% indicated that they were not familiar; 16% indicated that they were familiar with the term asset turnover ratio and 82% indicated that they were not familiar. This implies that, on average, 26% were familiar and 72% were not familiar with any of the specific five ratios. This calls for training workshops to enhance familiarity.

When producers were asked why they keep financial records, nearly 20% responded and the breakdown was as follows: keep track of finances, 2%; to have information for bank/government and/or other outside entity, 4%, and other/multiple, 14%, (combination of “keep track of finances”; “plan for the future”; “keep track of progress”; “to have information for bank/government and/or other outside entity”). The question did not apply to 63%; 18% did not respond. Finally, when producers were asked why they do not keep general records at all, 31% responded and the breakdown was as follows: time-consuming/do not have time, 6%; cumbersome, 4%; not that important, 4%, and other/do not know how to keep records, 18%. The question did not apply to 53%; 16% did not respond. The reason given seems to align with those obtained by Devonish et al. (2002), Tham-Agyekum et al. (2010), Dudafa (2013), and Prajapati et al. (2016). Devonish et al. (2002) mentioned “lack of time” and “not beneficial”; Tham-Agyekum mentioned “records not beneficial” and “no particular reason”; Dudafa mentioned “do not know how to keep records”, and “no need for records”, and Prajapati et al. mentioned “not knowledgeable about keeping records”, lack of time”, and “lack of awareness regarding various types of records.”

Table 5 reflects the estimates of the effects of socioeconomic characteristics on general record keeping. The model chi-square, which relates to the overall significance of the model, was not statistically significant ( $p = 0.02$ ). This implies a weak fit between the socioeconomic characteristics and general record keeping. Only the coefficient of gender (-1.299) was statistically significant ( $p = 0.060$ ) with the expected sign. This may imply that female producers are more likely to practice general record keeping than male producers. All other coefficients follow the expected signs. It may mean that part-time producers are less likely to practice general record keeping; other races/ethnicities are more likely to practice general record keeping; younger producers are more likely to practice general record keeping; more educated producers are more likely to practice general record keeping, and producers with higher annual household incomes are more likely to practice general record keeping than their counterparts.

Table 5. Estimates for socioeconomic characteristics model and general record keeping

Variable	$\beta$	$p$	Odds Ratio
FAS	-0.374	0.673	0.688
GEN	-1.299*	0.060	0.273
RAE	0.390	0.697	1.477
AGE	-0.373	0.178	0.689
EDU	0.223	0.366	1.249
AHI	0.226	0.267	1.254
Constant	1.639	0.538	5.151
Chi-square	8.528	df = 6	$p = 0.202$

Note. \* Significant at 10%.

Table 6 reflects the estimates of the effects of farm characteristics on general record keeping. In this case, also, the model chi-square was not statistically significant ( $p = 0.778$ ). This implies a weak fit between the farm characteristics and general record keeping. None of the coefficients was statistically significant. However, three coefficients, farming experience, acreage farmed, and profits had the expected signs. This implies that the more the farming experience, the more likely it is for the producer to practice general record keeping; the more the acreage farmed, the more likely it is for the producer to practice general record keeping, and the more the profits earned, the more likely it is that the producer will practice general record keeping.

Table 6. Estimates for farm characteristics model and general record keeping

Variable	$\beta$	$p$	Odds Ratio
FEX	0.129	0.445	1.138
ACO	-0.045	0.791	0.956
ACF	0.135	0.393	1.145
PRO	0.003	0.987	1.003
Constant	-0.825	0.334	0.438
Chi-square	1.771	df = 4	$p = 0.778$

Table 7 depicts the estimates of the effects of socioeconomic characteristics on financial record keeping. The model chi-square was statistically significant ( $p = 0.065$ ). This means a fairly strong fit between socioeconomic characteristics and financial record keeping. The coefficient of age (-0.586) and annual household income (0.645) were statistically significant, respectively, ( $p = 0.061$ ) and ( $p = 0.016$ ); they both had the expected signs. This means that younger producers are more likely to practice financial record keeping than older producers, and producers with higher annual household incomes are more likely to practice financial record keeping than those with lower annual household incomes. Also, although the other coefficients were not statistically significant, with the exception of education, they followed the expected signs. For farming status, it means that part-time producers are less likely to practice financial record keeping than full-time producers; for gender, it means that female producers are more likely to practice financial record keeping than male producers, and for race/ethnicity, it means that Black producers are less likely to practice financial record keeping than other race/ethnicity producers. For education, a plausible interpretation is that less educated producers are less likely to practice financial record keeping than more educated producers.

Table 7. Estimates for socioeconomic characteristics model and financial record keeping

Variable	$\beta$	$p$	Odds Ratio
FAS	-0.337	0.740	0.714
GEN	-1.284	0.101	0.277
RAE	-0.386	0.719	0.680
AGE	-0.586*	0.061	0.557
EDU	-0.135	0.638	0.874
AHI	0.645***	0.016	1.906
Constant	2.268	0.433	9.657
Chi-square	11.885*	df = 6	$p = 0.065$

Note. \*\*\* Significant at 1%; \* Significant at 10%.

Table 8 depicts the estimates of the effects of farm characteristics on financial record keeping. The model chi-square was not statistically significant ( $p = 0.466$ ). Again, this means a weak fit between the farm characteristics and financial record keeping. Here also, just as in the case of general record keeping, none of the coefficients was statistically significant. However, two coefficients, acreage farmed and profits had the expected signs. This means that the more the acreage farmed, the more likely it is for a producer to practice financial record keeping, and the more the profits earned, the more likely it is for a producer to practice financial record keeping. For farming experience, the interpretation is that less experienced producers are less likely to practice financial record keeping than more experienced producers. Similarly, for acreage farmed, it may mean that producers who owned less acreage are less likely to practice financial record keeping than those who owned more acreage.

Table 8. Estimates for farm characteristics model and financial record keeping

Variable	$\beta$	$p$	Odds Ratio
FEX	-0.100	0.592	0.905
ACO	-0.039	0.835	0.962
ACF	0.212	0.208	1.236
PRO	0.198	0.344	1.219
Constant	-1.756	0.065	0.173
Chi-square	3.579	df = 4	$p = 0.466$

## 5. Conclusion

The study assessed the effects of selected characteristics on general and financial record keeping practices of small producers in South Central Alabama. Particularly, it described socioeconomic characteristics, examined farm characteristics, examined record keeping practices, and estimated the extent to which socioeconomic characteristics and farm characteristics affected record keeping practices. The data were collected by purposive sampling using a questionnaire and were analyzed by descriptive statistics and binary logistic regression analysis. The results showed that a majority of the respondents were part-time producers; were males; were middle-aged or older; had less than a four-year college degree, and had an annual household income of less than \$40,000. Furthermore, a majority had a farming experience of over 10 years than 10 years; with acreage owned of 30 acres or less; and acreage farmed of 30 acres or less. About a third had a profit of less than \$5,000, and 41% made losses or broke-even. Also, over half keep records; however, more of them keep records manually than via computer. Yet, only 37% keep financial records, and only 18% assess/keep financial ratios. Not surprisingly, on average, 72% were not familiar with specific financial ratios.

The binary logistic regression analysis for socioeconomic characteristics and general record keeping showed that only gender had a statistically significant effect on general record keeping. For the binary logistics regression analysis for farm characteristics and general record keeping, none had a statistically significant effect on general record keeping. The binary logistic regression analysis for socioeconomic characteristics and financial record keeping showed that age and annual household income had statistically significant effects on financial record keeping. For the binary logistics regression analysis for farm characteristics and financial record keeping, none had a statistically significant effect on financial record keeping.

The findings show that farming experience is quite high; yet, many farm relatively small acreages, and are not making much money out of farming. Many do not see the “importance” of record keeping being that quite a sizeable proportion thought record keeping was not “important to farm operation” or “useful for decision-making.” The findings also suggest that, of the socioeconomic characteristics, at least, gender is important to general record keeping, and age and annual household income are important to financial record keeping. It is plausible that other factors may also be important to both general and financial record keeping though they are not observed in this study. It is recommended that workshops on the importance of general and financial record keeping should be conducted in the study area. The reason is that knowledge of record keeping enhances the practice of record keeping, which affects the performance of farm businesses. What is more, for the financial record keeping aspects of the workshops, emphasis should be placed on financial statements and financial ratios. This will help producers to track their activities better. The main contribution of this study is that it has added to the literature on small producers and record keeping, especially, financial record keeping, and using robust statistics to analyze effects. Future studies may entail, but are not limited to, replicating this study, using a larger sample size, and/or covering a larger geographical area.

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**Appendix A****Variable Definitions and Description of Data for the Various Models**

Table A1. Variable definitions and description of data for socioeconomic characteristics and general record keeping model (N = 49)

<b>Variable</b>	<b>Description</b>	<b>Mean</b>	<b>Standard Deviation</b>
Farming status	1 = full-time 2 = part-time	1.83	0.37
Gender	1 = male 0 = female	0.63	0.48
Race/ethnicity	1 = Black 2 = Other	1.14	0.35
Age	1 = 20-24 2 = 25-34 3 = 35-44 4 = 45-54 5 = 55-64 6 = 65 or above	4.57	1.29
Education	1 = high school or less 2 = two-year/technical 3 = some college 4 = college degree 5 = post-graduate/professional	2.55	1.44
Annual Household income	1 = \$19,999 or less 2 = \$20,000-29,999 3 = \$30,000-39,999 4 = \$40,000-49,999 5 = \$50,000-59,999 6 = \$60,000-69,999 7 = \$70,000 or more	3.16	1.84
General Record Keeping	1 = yes 0 = no	0.53	0.50

Table A2. Variable definitions and description of data for farm characteristics and general record keeping model (N = 48)

Variable	Description	Mean	Standard Deviation
Farming experience	1 = 1-5 years	3.31	2.00
	2 = 6-10 years		
	3 = 11-15 years		
	4 = 16-20 years		
	5 = 21-25 years		
	6 = 26-30 years		
	7 = More than 30 years		
Acreage owned	1 = 10 acres or less	3.50	2.24
	2 = 11-20 acres		
	3 = 21-30 acres		
	4 = 31-40 acres		
	5 = 41-50 acres		
	6 = 51-60 acres		
	7 = More than 60 acres		
Acreage farmed	1 = 5 acres or less	4.04	2.36
	2 = 6-10 acres		
	3 = 11-15 acres		
	4 = 16-20 acres		
	5 = 21-25 acres		
	6 = 26-30 acres		
	7 = More than 30 acres		
Profit	1 = Less than zero (loss)	3.15	1.81
	2 = Zero (break-even)		
	3 = \$1-\$2,499		
	4 = \$2,500-4,999		
	5 = \$5,000 or more		
	6 = Don't know		
General Record Keeping	1 = yes	0.50	0.51
	0 = no		

Table A3. Variable definitions and description of data for socioeconomic characteristics and financial record keeping model (N = 49)

<b>Variable</b>	<b>Description</b>	<b>Mean</b>	<b>Standard Deviation</b>
Farming status	1 = full-time 2 = part-time	1.83	0.37
Gender	1 = male 0 = female	0.63	0.48
Race/ethnicity	1 = Black 2 = Other	1.14	0.35
Age	1 = 20-24 2 = 25-34 3 = 35-44 4 = 45-54 5 = 55-64 6 = 65 or above	4.57	1.29
Education	1 = high school or less 2 = two-year/technical 3 = some college 4 = college degree 5 = post-graduate/professional	2.55	1.44
Household income	1 = \$19,999 or less 2 = \$20,000-29,999 3 = \$30,000-39,999 4 = \$40,000-49,999 5 = \$50,000-59,999 6 = \$60,000-69,999 7 = \$70,000 or more	3.16	1.84
Financial Record Keeping	1 = yes 0 = no	0.39	0.49

Table A4. Variable definitions and description of data for farm characteristics and financial record keeping model (N= 48)

Variable	Description	Mean	Standard Deviation
Farming experience	1 = 1-5 years	3.31	2.00
	2 = 6-10 years		
	3 = 11-15 years		
	4 = 16-20 years		
	5 = 21-25 years		
	6 = 26-30 years		
	7 = More than 30 years		
Acreage owned	1 = 10 acres or less	3.50	2.24
	2 = 11-20 acres		
	3 = 21-30 acres		
	4 = 31-40 acres		
	5 = 41-50 acres		
	6 = 51-60 acres		
	7 = More than 60 acres		
Acreage farmed	1 = 5 acres or less	4.04	2.36
	2 = 6-10 acres		
	3 = 11-15 acres		
	4 = 16-20 acres		
	5 = 21-25 acres		
	6 = 26-30 acres		
	7 = More than 30 acres		
Profit	1 = Less than zero (loss)	3.15	1.81
	2 = Zero (break-even)		
	3 = \$1-\$2,499		
	4 = \$2,500-4,999		
	5 = \$5,000 or more		
	6 = Don't know		
Financial Record Keeping	1 = yes	0.33	0.48
	0 = no		

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