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# Relationships Regarding Incentives, Recordkeeping Propensity, and Selected Factors of Small Producers in Alabama Back Belt and Surrounding Counties

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# RELATIONSHIPS REGARDING INCENTIVES, RECORDKEEPING PROPENSITY, AND SELECTED FACTORS OF SMALL PRODUCERS IN ALABAMA BACK BELT AND SURROUNDING COUNTIES

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## Abstract

The study assessed the relationships regarding incentives, recordkeeping propensity, and selected factors of small producers. The data were collected from a selected group of small producers and were analyzed using descriptive statistics. The results showed that a majority were part-time producers, males, Blacks, and older. They had below a four-year college education and an annual household income of less than $40,000. The correlation analyses revealed that farming status and recordkeeping propensity had statistically significant relationships with the incentives. Despite this, the relationships were negative for farming status and positive for recordkeeping propensity. The findings suggest that some demographic characteristics may have "important" relationships with incentives, though only farming status had a significant relationship. However, this could not be effectively ascertained as several producers did not respond to the questions. Moreover, incentives may have relationships with recordkeeping propensity, which has been established to an extent in this study.

**Keywords:** Alabama Black Belt, Incentives, Recordkeeping Propensity, Selected Factors, Small Producers

## Introduction

Incentives are supposed to influence the behavior of recipients to do something they would normally not do. For instance, Laman et al. (1996) explained that incentives are any form of inducement from an external source, such as a governmental agency, non-governmental organization, or any other entity, meant to motivate recipients, collectively or individually, to adopt new techniques or methods with the goal of improving the use of some resource or product. Gneezy et al. (2011) stated that incentives are essential in the modification of behavior. They indicated that the provision of incentives may cause a change in the behavior of recipients for the better. However, they also recognized that the issue of incentives has generated a debate among researchers. Whereas some are of the opinion that incentives can bring about a positive or desired change in the behavior of recipients, others argue that the use of incentives could backfire and not yield the intended results.

Longhurst (2019) viewed incentives from six perspectives, namely, financial, nonfinancial, economic, social, moral, extrinsic, and intrinsic. Of course, financial incentives are always monetary; however, non-financial incentives are in the form of recognition, an award, or a privilege. Economic incentives are material gains, social incentives are reputation gains, and moral incentives are conscience gains. Additionally, rewards such as praise, fame, money, and other external factors are considered extrinsic incentives. For intrinsic incentives, the focus is mainly on

behavioral change without any obvious external rewards. He argued that providing incentives is not a guarantee of behavioral change, but they can lead to a desired change in the individual concerned.

Despite the preceding, empirical studies have shown that people respond to incentives. According to Gneezy et al. (2020), incentives can cause recipients to change their behaviors. Several studies have distinguished between direct and indirect incentives. For example, Sanders and Cahill (1999) stated that direct incentives can be in the form of cash payments for labor, grants, subsidies, and loans, and also in the form of in-kind payments, such as the provision of food aid (food-for-work). They also indicated that indirect incentives can be in the form of fiscal and legislative measures, such as tax concessions, secure access to land, and the removal of price distortions. Also, incentives have been used to increase response rates in surveys. A study by Shettle and Mooney (1999) postulated that in situations where moderately high response rates are desired, incentives can be used as a cost-effective tool for stimulating the desired response rates.

Indeed, Hellin and Schrader (2003) mentioned that the government and non-governmental organizations use incentives in the agricultural sector when farmer responses and adoption rates are low, and the entities want to increase the adoption rates. In such cases, direct incentives, such as cash payments and food-for-work, attract participating farmers to adopt practices. Pretty (1999) also mentioned that several studies have shown that incentives stimulate the adoption of technology or practices by farmers; however, a majority quit using the technology or practice once the incentives are withdrawn.

Nevertheless, in agriculture, farmers can find themselves in a dilemma regarding personal and environmental benefits when adopting practices or technologies. Brewer and Goodell (2012) found farmers in a dilemma regarding selecting Integrated Pest Management (IPM) activities for their farms based solely on market benefits versus one best applied regionally with long-term benefits. The authors further observed that combining private investments with public support may effectively address this incentives dilemma when the farmers are convinced that the best applied IPM strategies will provide a beneficial public good, resource conservation. Kazakopoulos and Gidarakou (2003) stressed that responses to incentives in agriculture can also vary depending on individual perceptions, needs, and priorities. For instance, they reported that incentives have been used in setting up a farm modernization scheme, where participating young women farmers were promised that the use of the benefits derived would be based, in part, on their contributions to the decision-making process regarding their farm holdings.

Based on the examples mentioned above, the authors of the study argue that producers, especially small producers, need to keep records. However, most of them do not keep records, or it is very difficult to get them to keep records. However, incentives may be able to cause them to keep the requisite records to improve the viability of their farms. In furtherance of the preceding argument, the Alabama Black Belt is an area with a sizeable number of small producers, many of whom hardly keep records. There is a need to ascertain if the provision of incentives will be able to break the unwillingness or low tendency to keep records. Therefore, the purpose of the study is to assess relationships regarding incentives, recordkeeping propensity, and selected factors of small producers in the Alabama Black Belt and surrounding counties. The specific objectives are to (1)

examine producers' demographic characteristics, (2) examine recordkeeping propensity based on incentives category, and (3) examine specific relationships between selected demographic characteristics and incentives category.

## Literature Review

### A Brief Description of Demographic Characteristics

Prior surveys or studies by the United States Department of Agriculture National Agricultural Statistics Service [USDA NASS] (2014) and (2019), Tackie et al. (2019), and Tackie et al. (2020) reveal several statistics about the demographics of producers in the U.S. in general or particular states, such as Alabama and Florida. According to the USDA NASS (2014), the average age for all producers in 2012 was 56.3 years. However, the USDA NASS (2019) reported the average age of all producers in 2017 as 57.5 years. The agency also reported that 8% of producers were either 34 years or less, 58% were in the inclusive ages of 35-64 years, and 34% were either 65 years or higher; 42% were classified as full-time farmers, and 58% were classified as part-time farmers; 95% were Whites, 1% were Blacks, and 3% were Hispanics.

Tackie et al. (2019) examined whether demographic characteristics matter in acreage owned and acreage farmed by small livestock producers in Alabama. They found that a majority of them (69%) were part-time producers; most of them were males (83%) rather than females (14%); most of them were Blacks (81%) rather than Whites (16%). They also found that most of them were 35-64 years (60%), followed by those 65 years or more (30%), and those 34 years or less (3%); nevertheless, 60% were 55 years or older; about equal proportions had a high school education or less (34%); a two-year college degree/some college education (31%), or a four-year college degree/post-graduate degree (30%); a higher proportion (51%) earned $40,000 or less as annual household income, and a lower proportion (39%) earned over $40,000 as an annual household income.

Tackie et al. (2020) also assessed whether demographic characteristics matter in acreage owned and acreage farmed by small livestock producers in Florida. They reported that most of them (60%) were part-time producers rather than full-time producers (34%); equal proportions were males and females (50% each); slightly more of them were Whites (47%) rather than Blacks (41%). They also reported that most of them were 35-64 years (59%), followed by those 65 years or more (39%), and those 34 years or less (1%); however, 72% were 55 years or older; also, two-fifths (40%) had a two-year college degree/some college education (40%), followed by a high school education or less (33%), and a four-year college degree/post-graduate degree (26%); moreover, a higher proportion (60%) earned $40,000 or less as annual household income, and a lower proportion (36%) earned over $40,000 as an annual household income.

### Incentives, Socioeconomic Factors, and Non-Producers

Wineman and Durand (1992) studied incentives and rewards for subjects in nursing research. They stated that a combination of tangible and intangible incentives, including cash, has more potential to recruit subjects for research and lessen attrition. In recruiting subjects for participation, the degree of inconvenience associated with their participation was considered before designing or coming up with the incentives; subjects were paid cash directly. The incentives led to a high response rate; 67% agreed to participate in the research. The researchers concluded that with

appropriate incentives for a study, there is likely to be an improvement in response rates and minimize attrition.

Bresnen and Marshall (2000) evaluated the motivation, commitment, and use of incentives in partnerships and alliances. They found that certain cognitive and social dimensions affect the use and impact of incentives, sometimes in ways contrary to those intended. For instance, there are limitations to the use of incentives as a means of strengthening collaboration and developing commitment and trust. These limitations include the disjointed way in which incentives are developed and applied. They stressed the need for more research to further explore the impact of incentives on project performance in partnerships and alliances.

Sierzchula et al. (2014) analyzed the influence of financial incentives and other socioeconomic factors on electric vehicle adoption. They reported that financial incentives, charging infrastructure, and the local presence of production facilities were positively and significantly correlated with a country's electric vehicle market share. Additionally, charging infrastructure was strongly correlated with electric vehicle adoption. Overall, electric vehicle-specific factors were positively and significantly correlated with the country's electric vehicle market share, while socioeconomic factors, such as income, educational level, and environmentalism, were not significant.

Gaalema et al. (2016) investigated the use of financial incentives to promote cardiac rehabilitation participation and adherence among Medicaid patients. They reported that participants who were given financial incentives completed more rehabilitation sessions than those who were not given incentives. Specifically, 80% of those who were given incentives completed all the sessions, compared to only 8% of those who were not given incentives completed all the sessions.

Xue et al. (2021) assessed the impact of incentive policies and socioeconomic factors on the electric vehicle market share in twenty countries. The results showed that tax reduction as an incentive policy, charger density, and income had significant and positive effects on the penetration of electric vehicles. Furthermore, household income also played an important role in the adoption of electric vehicles. They concluded that governments should maintain tax incentives and focus on the deployment of more charging infrastructure.

**Incentives, Socioeconomic Factors, and Producers**

Biltonen (2001) examined economic incentives and the adoption of soil conservation practices by small producers. The researcher provided economic incentives based on credit availability, land tenure status, and data available to producers. Biltonen found that farmers' adoption of soil conservation practices varied with the economic incentives offered by competing alterations of "with" and "without" conservation scenarios. He found that the alternatives are influenced by socioeconomic factors, resources, cost-benefit analysis of technologies, and the value of farm labor.

Hellin and Schrader (2003) assessed direct incentives and the search for alternative approaches to better land management by producers. Direct incentives included the remuneration of farmers'

labor costs with food, cash payments, and other material goods. The incentives caused the adoption of better land management practices by the producers.

Olsen and Lund (2011) analyzed the impact of socioeconomic factors and incentives on farmers' investment behavior. They found that farmers who considered economic incentives crucial to making investments had the best financial results compared to farmers who considered incentives as not crucial. The former group also obtained higher off-farm incomes and productivity compared to the latter group. Olsen and Lund stated that improved knowledge of participants and the positive effects of incentives on investment behavior may help in the implementation of more efficient policies by farmers.

Farquharson et al. (2013) examined the use of incentives for adopting agricultural innovation (rhizobium inoculation in legume seeds) to improve legume yield. They reported that the relative advantage of having access to the inoculation technology (that is, the incentive), whether farmers grew legumes or not, their source of first contact with the inoculation technology, the period since the technology innovation was first introduced, and farm size had significant effects on the adoption of the rhizobium inoculation technology. However, the age and gender of the farmers did not have significant effects on the technology.

McMillan and Li (2015) assessed the impacts of price incentives, costs, and management awareness on maize (corn) supply in two regions of the U.S.: the South region and the North region. They found that price incentives (offer of higher prices for products or reduction in input costs) slightly increased revenues and made the farmers more sensitive to changes in maize (corn) prices compared to the period before the price incentives were offered.

**Incentives, Producers, and Recordkeeping**

Miller (2000) analyzed the education-based incentive program to enhance the long-term adoption of sustainable nutrient/pest management among participant farmers in Iowa. Overall, the retention of participants was lower than expected; 23% of the first group dropped out of the program before completing the first season's cropping records, while 44% of the second group left before the end of the first year. Initially, the study required that records be completed to receive payment for each year in the program. However, the format of the study had to be fine-tuned during the research to improve producer participation and their use of recordkeeping tools. According to Miller, the average incentive payment of $220 per farm was insufficient to motivate the participants; hence, they partially completed the requisite record book.

Tefera et al. (2003) evaluated market incentives, farmers' responses, and a policy dilemma with a focus on chat production. The incentives were improved access to market opportunities and better prices. They reported that the market incentives had a major influence in encouraging the activity of farmers despite the absence of functional research and extension systems. However, the producers had limited recordkeeping abilities, which made the recorded income data questionable and unreliable.

Gedikoglu and McCann (2007) analyzed the impact of off-farm income on the adoption of conservation practices. They found that off-farm work had a positive impact on the adoption of

capital-intensive practices but a negative impact on the adoption of labor-intensive practices. The results also showed that off-farm work had a positive and significant effect on the adoption of injecting manure into the soil, a capital-intensive practice, and off-farm work had a negative and significant effect on the adoption of recordkeeping, a labor-intensive practice. Off-farm income, in this case, can be viewed as an incentive.

Drexler et al. (2014) examined how differences in the format and complexity of financial training programs affect small business owners' performance. Hence, the standard financial training program and the rule-of-thumb (simpler) financial training program was offered to small business owners. There were no overt incentives. They found that small business owners who participated in the rule-of-thumb training displayed significant improvements in how they dealt with their finances and in the relative preciseness and internal consistency of numbers reported. These participants were more likely to keep orderly financial records. The significance was more pronounced in a subsample of the participants who were relatively less skilled or initially used less astute financial practices. On the flip side, there were no significant changes for the small business owners who participated in the standard financial training. The simpler financial training may be considered an incentive to do well.

Hukom et al. (2020) assessed if aquaculture farmers had the incentive to maintain good water quality. They reported that an intrinsic incentive motivated selected farmers to maintain good water quality, thereby decreasing the need for public interventions. They also reported that many producers did not have adequate knowledge and training on maintaining water quality and the importance of recordkeeping. As a result of this, they kept very few records.

## Methodology

### Design, Data Collection, and Data Analysis

The producers in the study were recruited from two sub-regions of the Alabama Black Belt, the West Alabama Black Belt (WABB) and the East Central Alabama Black Belt (ECABB). They were recruited mainly based on their place of residence. The participants were given monetary incentives; those who belonged to the WABB group were the immediate incentives group, and those who belonged to the ECABB group were the delayed incentives group. Those in the immediate incentives group received a set dollar amount of incentive every month for a set period. Those who were in the delayed incentives group received double the amount of the immediate incentives group. In the final analysis, the two groups received the same incentives. There were 14 producers in WABB and 15 producers in ECABB, making 29 producers. Producers in surrounding counties qualified to be in the groups.

The premise is that when small producers are given incentives, they will keep records and use the given recordkeeping templates. So, they were given both incentives and specific recordkeeping templates. The data for the research were derived from a questionnaire developed by Tackie (2021), which had two sections: farmer classification and demographic characteristics. Before the questionnaire was administered, it was submitted to the Institutional Review Board of the researchers' Institution for review and approval. It was administered to the producers in the two sub-regions in the Alabama Black Belt described above. The Alabama Black Belt mostly occupies the South Central part of the State and stretches from the Georgia border in the East to the

Mississippi border in the West. In particular, the participants were from Autauga, Barbour, Butler, Dallas, Greene, Hale, Jefferson, Lowndes, Macon, Montgomery, Sumter, Talladega, and Wilcox counties. The data were collected by interviewing the producers who participated in the project and availed themselves to be interviewed. Interviews were conducted by selected members of the research team, in the first quarter of 2022. However, those who did not avail themselves were also captured in the study. Not availing themselves was an indication that they did not use the templates.

The data analysis was based on descriptive statistics, specifically frequencies and percentages, and Pearson's correlation analysis. The frequencies and percentages were used for all data, however, the correlation analysis was used only for selected data; specifically for incentives and selected demographic characteristics, farming status, and gender, as well as for incentives and whether participants used recordkeeping templates. The incentives were labeled as 1 for immediate incentives and 0 for delayed incentives; the farming status was labeled as 1 for full-time producers and, 0 for part-time producers; gender was labeled as 1 for male and 0 for female, and recordkeeping propensity was labeled as 1 for more/less detailed recordkeeping and 0 for did not use recordkeeping templates. All the analyses were run using SPSS 12.0© (MapInfo Corporation, Troy, NY).

## Results and Discussion

Table 1 shows the demographic characteristics of the producers. About 24% were full-time producers and 66% were part-time producers; 79% were male producers and 21% were female producers; 97% were Black producers, and 3% were White producers. Furthermore, 7% were 34 years or younger, 17% were 35-64 years; 21% were 65 years or older, and 55% did not respond to the question; 10% had either a high school education or less; 21% had either a two-year/technical degree or at the most, some college education, and 14% had either a four-year a four-year college degree or post-graduate/professional degree, and 55% did not respond to this question. Additionally, 31% earned less than $40,000 as annual household income, 14% earned $40,000 or more as annual household income, and 55% did not respond to this question; 24% were married, 17% were single, 7% were widowed, and 52% did not respond to this question.

The demographic results compare favorably with those of Tackie et al. (2019) and Tackie et al. (2020), respectively, for small livestock producers in Alabama and Florida. For instance, for farming status, Tackie et al. (2019) found full-time producers at 30% and part-time producers at 69%; Tackie et al. (2020) found full-time producers at 34% and part-time producers at 60%. Furthermore, they found that farming status follows those reported in, for example, USDA NASS (2019), respectively, 42% full-time producers v. 58% part-time producers. For gender, Tackie et al. (2019) found 83% of male producers and 14% of female producers. For age, Tackie et al. (2019) reported 60% of producers were 35-64 years and 30% were 65 years or older, and Tackie et al. (2020) reported 59% of producers were 35-64 years and 39% were 65 years or older. Moreover, the USDA NASS (2019) found that 58% of producers in the U.S. were 35-64 years and 34% were 65 years or older. Educational level and annual household income followed quite similar patterns. For Tackie et al. (2019) and Tackie et al. (2020), there were more producers with a two-year/technical degree and some college education than a four-year college degree, respectively, 31 v. 30% and 40 v. 26%. Also, for Tackie et al. (2019) and Tackie et al. (2020), more producers made $40,000 or less in annual household income than over $40,000, respectively, 51 v. 39% and 60 v. 36%. The proportions for age, education, and annual household income appear slightly off

Table 1. Demographic Characteristics of Respondents (N = 29)

| Variable | Frequency | Percent |
|---|---|---|
| **Farming Status** | | |
| Full-time | 7 | 24.1 |
| Part-time | 19 | 65.5 |
| No Response | 3 | 10.3 |
| **Gender** | | |
| Male | 23 | 79.3 |
| Female | 6 | 20.7 |
| **Race/Ethnicity** | | |
| Black | 28 | 96.6 |
| White | 1 | 3.4 |
| **Age** | | |
| 20-24 years | 0 | 0.0 |
| 25-34 years | 0 | 0.0 |
| 35-44 years | 2 | 6.9 |
| 45-54 years | 1 | 3.4 |
| 55-64 years | 4 | 13.8 |
| 65 years or older | 6 | 20.7 |
| No Response | 16 | 55.2 |
| **Educational Level** | | |
| High School or Below | 3 | 10.3 |
| Two-Year/Technical Degree | 2 | 6.9 |
| Some College | 4 | 13.8 |
| College Degree (4-year) | 3 | 10.3 |
| Post-Graduate/Professional Degree | 1 | 3.4 |
| No Response | 16 | 55.2 |
| **Annual Household Income** | | |
| $19,999 or less | 1 | 3.4 |
| $20,000-29,999 | 4 | 13.8 |
| $30,000-39,999 | 4 | 13.8 |
| $40,000-49,999 | 2 | 6.9 |
| $50,000-59,999 | 1 | 3.4 |
| $60,000-69,999 | 0 | 0.0 |
| Over $70,000 | 1 | 3.4 |
| No Response | 16 | 55.2 |
| **Marital Status** | | |
| Married | 7 | 24.1 |
| Single | 5 | 17.2 |
| Other | 2 | 6.9 |
| No Response | 15 | 51.7 |

compared to Tackie et al. (2019) and (2020). However, this may be attributed to the several "no responses."

The producers were provided with five recordkeeping templates focusing on the economic, marketing, and financial aspects of production. Table 2 depicts responses reflecting incentives category and recordkeeping propensity. Forty-eight percent (48%) comprised the immediate incentives group, and 52% comprised the delayed incentives group. Almost 7% of the producers kept more detailed records using the recordkeeping templates; 10% kept less detailed records, and 83% did not use the recordkeeping templates. The researchers argued that if producers are given incentives, they would keep the requisite records. However, it appears as if the assumption or "hypothesis" did not materialize. It could be that incentives alone may not be enough; more must be done. Furthermore, it confirms what is in the literature that incentives sometimes work (Tefera et al., 2003; Hukom et al., 2020) and sometimes do not (Miller, 2000; Hellin and Shrader, 2003).

Table 2. Responses Reflecting Incentives Category and Recordkeeping Propensity (N = 29)

| Variable | Frequency | Percent |
|---|---|---|
| **Incentives** | | |
| Immediate | 14 | 48.3 |
| Delayed | 15 | 51.7 |
| **Records** | | |
| More detailed | 2 | 6.9 |
| Less detailed | 3 | 10.3 |
| Did not use | 24 | 82.8 |

Also, correlation analyses were conducted between incentives and two demographic characteristics, farming status, and gender. The remaining demographic characteristics did not have enough observations as the respondents chose not to respond to them. Table 3 shows the estimates for the correlation analyses between incentives and farming status and incentives and gender. The results show that incentives and farming status had a strong negative association, and the relationship was statistically significant at the 1% level, $r(24) = -0.709$, $p = 0.000$. The significant correlation between the incentives and farming status reveals a strong linear relationship between the two variables. Conversely, the result between incentives and gender showed a weak positive association and was not statistically significant, $r(24) = 0.023$, $p = 0.912$. Probably, farming status should be closely examined when giving incentives to producers.

Additionally, a correlation analysis was run between incentives and recordkeeping, whether more detailed or less detailed recordkeeping, and did not use the templates. Table 4 shows the estimates for the correlation analysis between incentives and recordkeeping. The results show that there was a positive association between incentives and recordkeeping. Despite this, the relationship was statistically significant at the 1% level, $r(27) = 0.472$, $p = 0.010$. The results imply a strong linear relationship between these two variables. This outcome should be assessed more closely in future studies.



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Table 3. Correlation between Incentives and Demographic Characteristics

| Variable | N | *r* | df | *p* |
|---|---|---|---|---|
| INC/FAS | 26 | -0.709*** | 24 | 0.000 |
| INC/GEN | 26 | 0.023 | 24 | 0.912 |

***Significant at 1%

Table 4. Correlation between Incentives and Recordkeeping

| Variable | N | *r* | df | *p* |
|---|---|---|---|---|
| INC/REK | 29 | 0.472*** | 27 | 0.010 |

***Significant at 1%

## Conclusion

The study assessed relationships regarding incentives, recordkeeping propensity, and selected factors of small producers in the Alabama Black Belt and surrounding counties. It examined demographic characteristics, recordkeeping propensity, and specific relationships between selected demographic characteristics and incentive categories. Data were collected using a questionnaire and analyzed using descriptive statistics. The results revealed that a majority of the producers were part-time farmers, were males, Blacks; also, a majority were older, had below a four-year college degree, and had an annual household income of less than $40,000. Furthermore, about equal proportions got immediate and delayed incentives; most producers did not use the recordkeeping templates. Of the few producers who used recordkeeping templates, 10% kept less detailed records, and 7% kept more detailed records than the others. The correlation analyses showed that selected factors, specifically, farming status and recordkeeping propensity, had statistically significant relationships with incentives. However, the farming status relationship was negative, and the recordkeeping propensity was positive.

The findings suggest that demographic characteristics have relationships with incentives. However, in the study, it could not be effectively ascertained as only farming status showed such a relationship; also, a majority of the producers did not respond to the questions. Moreover, the incentives, immediate or delayed, may have a relationship with recordkeeping propensity which was established to an extent in the study. It would have been helpful if all the producers in the sample had used the recordkeeping templates. This research has laid the groundwork for further studies, including replicating the study and using a larger sample size.

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