

# An Analysis of the Characteristics and Practices of Selected Florida Small Livestock Producers: A Focus on Economics and Marketing

David Nii O. Tackie<sup>1\*</sup> Akua Adu-Gyamfi<sup>1</sup> Jannette R. Bartlett<sup>1</sup> Angela McKenzie-Jakes<sup>2</sup>  
Bridget J. Perry<sup>1</sup>

1.College of Agriculture, Environment and Nutrition Sciences, Tuskegee University, Tuskegee, AL 36088, USA

2.College of Agriculture and Food Sciences, Florida A&M University, Tallahassee, FL32307, USA

\* E-mail of the corresponding author: [dtackie@tuskegee.edu](mailto:dtackie@tuskegee.edu)

## Abstract

Issues regarding economics and marketing are of importance to small livestock producers, who produce and sell locally or regionally. This study, thus, assessed the characteristics and practices of selected Florida small livestock producers, emphasizing economics and marketing. Data were collected from a convenience sample of seventy small producers from several Florida counties, and were analyzed using descriptive statistics, including chi-square tests. The findings showed that there were many more: full-time producers; producers with at least a two-year/technical degree, and producers with at, least, a \$40,000 annual household income. Most had been farming more than fifteen years, on at least 50 acres, and had small herds. Furthermore, very few of them made profits; they mainly sold animals live on-farm or at the auction/stockyard, and many of them kept records. Chi-square tests showed that gender, age, education, and household income had statistically significant effects on selected marketing characteristics. The findings suggest that educational programs that emphasize economic and marketing issues should be taken into consideration when designing programs for small producers in the study area.

**Keywords:** Livestock Producers, Small Producers, Characteristics and Practices, Economics and Marketing

## 1. Introduction

The face of the U.S. agriculture is changing because of new technologies, environmental concerns, and food safety issues. Duffy & Nanhou (2012) observed that the loss of farmers and the corresponding increase in farm size are other phenomena that account for the changes to U.S. agriculture. Some observers, such as Newton & Hoppe (2001), are alarmed about the latter phenomenon and the fate of small farms, because these farms represent a significant proportion of all U.S. farms. Newton (2014) further noted that although 13% of U.S. farms operated on 10 acres or less in 2007, many attained sizeable sales despite their limited land base. According to MacDonald, Korb, & Hoppe (2013) several factors have contributed to the shift in farm size distribution. These include better financial performance of larger farms than smaller farms, and an increase in farm productivity caused by an increase in technological advances.

Despite the above, Hoppe & Banker (2010) argued that the number of small farms; that is, those with less than \$10,000 in annual sales and with fewer than 70 acres of farmland, especially in rural areas, have increased. They attributed the increase in the number of small farms to a growing number of people who prefer a rural lifestyle, and have acquired ownership of small amounts of cropland or livestock in these rural areas for farming. MacDonald & McBride (2009) emphasized that in the livestock sector, the issue of increasing concentration and high volume animal agriculture are affecting the ability of small livestock producers to remain viable operations. This makes it difficult for small livestock operations to be sufficiently profitable to survive, or significantly supplement revenues. Hinrichs (2003) pointed out that many consumers and small producers are dissatisfied with the industrial food system, resulting in a national resurgence of interest in local foods. Due to the above reasons, Springer, Biermacher, Childs, Alkire, & Grooms (2009) explained that the sales of locally produced fruits, vegetables, and beef products are on the rise.

Additionally, Martinez et al. (2010) reiterated the increased interest in local foods and markets. They based their observation on the resurgence of farmers markets, community gardens, growth of food coops, increase in media coverage of food issues, inclusion of local foods in restaurant menus, and pressure to include sourcing information in grocery stores. Relatedly, Collart, Palma, & Hall (2010) were of the opinion that the demand for locally produced beef products, for instance is expected to increase as consumers are exposed to advertising and educational messages about production and product attributes. According to Loueiro & Umberger (2007), consumers tend to buy more locally produced foods because they value attributes such as freshness, organic, differentiated products, place of origin, supporting local producers, eco-friendly, animal welfare, and development of the local economy. Ernst & Darby (2008) also stated that because of these attributes, consumers pay premium prices for locally grown products.

The rapidly growing interest in local foods represents a market niche, which has the potential to enable

small producers to command a higher price for their products. In fact, although all local foods have high market potential, one such product is locally or regionally produced beef cattle and meat goats. Small producers in the Southeastern U.S. can take advantage of such production, because the region is very conducive to such production; the region also has many small producers who own beef cattle and meat goats. There is a need, therefore, to examine the economic and marketing aspects of small livestock production.

Thus, the purpose of this study was to analyze the characteristics and practices of selected Florida small livestock producers, focusing on economics and marketing. The specific objectives were to: (1) identify and describe socioeconomic characteristics, (2) describe and assess selected farm, economic and marketing characteristics and practices, and (3) examine the relationships between socioeconomic characteristics and the other characteristics or practices. This study is patterned after identical studies done by Bartlett, Tackie, Jahan, Adu-Gyamfi, & Quarcoo (2015) for Alabama and Tackie et al. (2018) for Georgia.

## 2. Literature Review

The literature examined in this section focuses on farm characteristics, economic issues, and marketing issues. The discussion is sequentially presented. Furthermore, the discussion highlights selected studies in order to elucidate the importance of each aspect to small livestock production in general and the focus areas in particular.

### 2.1 Farm Characteristics

Percival (2002) evaluated the economic characteristics of the meat goat industry in the Southeastern U.S. The results showed that 48% of the goat farmers were 41-60 years; 33% had an associate's degree or lower educational levels; 64% were males, and 75% were Whites. Also, 38% were part-time farmers; 60% raised meat goats, and 58% had herd sizes of 5-50.

Anderson, Brownie, Luginbuhl, & Mobley (2004) assessed farm characteristics of meat goat producers. They reported that the average herd size as 35; 67% of the producers raised goats for meat, while 27% raised goats for both meat and milk. They also reported that the majority of operations were small and goat production was not the major source of income for the producers.

Gwin, Larson, Rilla, & Bush (2005) examined alternative livestock production and marketing among Marin and Sonoma livestock producers. They found that 72% of the respondents were males; the average age was 55 years, and the average number of years in farming was 34. About 78% owned their operations; 63% were financially viable, and average size (in owned land) was 429 acres. The livestock enterprises varied, including sheep, dairy cattle, poultry, goats, and hogs, but the main enterprise was beef cattle production.

Jensen, English, & Menard (2009) analyzed livestock farmers' use of animal or herd health information sources. They reported that the average age among farmers was 59 years; 71% stated that, at least, 50% of their income was from full-time farming, and 94% raised beef cattle.

USDA National Agricultural Statistics Service [NASS] (2015) evaluated the 2012 Census of Agriculture, focusing on family farms. It reported that only 16% of small family farms depended on the farm for the majority of their household income. The youngest operators (average age of 53 years) were those whose primary occupation was off the farm. However, the oldest operators (average age of 69 years) was eleven years more than average for all U.S. principal operators (i.e., 58 years). The oldest operators usually own what is termed retirement farms. The majority of operators of retirement and low-sales farms were females. More small family farms specialized in beef cattle than any other enterprises; 32% had more than half of their sales from beef cattle production.

Bartlett et al. (2015) examined the characteristics and practices of selected Alabama small livestock producers, with a focus on economics and marketing. They found that producers had relatively high educational levels, with more part-time producers, with mostly mid-age to older producers, and many of them with an annual household income of \$40,000 or less. Fifty-three percent owned their farms outright (i.e., no mortgage) or were paying with a mortgage. Fifty-six percent raised livestock only; 58% had been farming for more than 30 years, and another 58% operated on more than 60 acres of land. Chi-square tests between socioeconomic characteristics and farm characteristics revealed that age and education had statistically significant effects on acreage farmed, and annual household income had a statistically significant effect on beef cattle herd size.

Qushim, Gillespie, & McMillin (2016) analyzed the cost and returns of U.S. meat goat farms. The results showed that 64% of the producers had some college education or a college degree; 65% had off-farm jobs; 41% were females. The average total acreage for the whole farm and for the goat operation in particular were, respectively, 113 and 45 acres.

Tackie et al. (2018) evaluated the characteristics and practices of selected Georgia small livestock producers, emphasizing economics and marketing. They also reported that producers had relatively high educational levels, with slightly more full-time producers, with relatively less mid-age to older producers, and many of them with household income of over \$40,000. Forty-three percent owned their farms outright; whereas, 35% were paying with a mortgage. Sixty-three percent raised livestock only; 53% had been farming at most 25 years; 47% had

been farming for more than 25 years, and 55% operate on over 60 acres of land. Chi-square tests between socioeconomic characteristics and farm characteristics showed that race/ethnicity and age had statistically significant effects on beef cattle herd size.

### *2.2 Economic Issues*

Stanton (2004) in assessing starting a meat goat enterprise observed that many producers start their enterprises with little or no financial planning. The author mentioned four financial areas to consider when venturing into meat goat production, including the approximate annual costs of rearing a doe and her kids, average market value of slaughter goats, the carrying capacity of land and facilities, and the productivity that can be expected from the doe under farm conditions.

Leite-Browning, Bukenya, Correa, Batiste, & Browning (2006) conducted a statewide survey of goat producers in Alabama. The results showed that 24% of the respondents made less than \$10,000 annually in total gross off-farm income; 18% made between \$30,000-49,000 annually in total gross farm income, and 19% made \$50,000-99,000 annually in total gross off-farm farm income. According to the authors, the proportion of total household income from goat production ranged from 0 to 10% for about 93% of the producers.

Tackie et al. (2012) examined the characteristics and status of small and limited resource meat goat farmers in the Alabama Black Belt region. They reported that 78% of the respondents had total cost of below \$5,000, and 22% had total cost of over \$5,000 in the previous year. In addition, 18% did not have gross receipts the previous year; however, 68% had gross receipts of \$1-5,000, and 13% had gross receipts of above \$5,000. Consequently, 35% indicated that they made losses; 30% broke-even, and a low of 15% made low profits of \$500 or less in the previous year.

Bartlett et al. (2015) assessed the characteristics and practices of selected Alabama small livestock producers focusing on economics and marketing. The results indicated that 56% of the producers had total costs of less than 12,000 for beef cattle in the previous year; 59% had gross receipts of less than \$10,000 for beef cattle in the previous year. Approximately 34% had losses or broke-even, and 34% made profits of at most \$5000 for beef cattle in the previous year. Additionally, 22% of the producers had total costs of at most \$3,000 for meat goats in the previous year, and 18% had gross receipts of at most \$3,000 for meat goats in the previous year. About 11% made losses or broke-even, and nearly 10 % made profits of at most \$2,000 for meat goats in the previous year.

Qushim, Gillespie, & McMillin (2016) analyzed the economics of Southeastern U.S. meat goat production. They found that for small farms (<10 acres), producers' total expenses were \$558 per acre; variable and fixed expenses were \$398 and \$161 per acre, respectively. Total revenues were \$213 per acre. They also found that for medium-sized farms (<30 acres), producers' total expenses were \$349 per acre; variable and fixed expenses were \$207 and \$142 per acre, respectively. Total revenues were \$131 per acre.

Tackie et al. (2018) evaluated the characteristics and practices of selected Georgia small livestock producers, emphasizing economics and marketing. The results showed that 30% of the producers had total costs of less than \$10,000 for beef cattle in the previous year, and 25% did not know their total costs or did not respond. About 16% had gross receipts of \$5,000 or less for beef cattle the previous year, and 28% did not know their gross receipts or did not respond. About 10% made losses or broke-even for beef cattle the previous year, and 45% made profits for beef cattle the previous year. For goat meats, 28% had total costs of \$3,000 or less the previous year; 13% did not know their total costs or did not respond. Approximately 28% had gross receipts of \$3,000 or less the previous year; 13% did not know their gross receipts or did not respond; 15% made losses or broke-even, and 10% made profits the previous year. Chi-square tests between socioeconomic characteristics and economic characteristics showed that farming status and gender had statistically significant effects on beef cattle profits.

### *2.3 Marketing Issues*

Gwin et al. (2005) examined alternative livestock production and marketing among Marin and Sonoma livestock producers. They reported that the producers used multiple outlets; 72% sold their animals at the livestock auction; 49% sold to individual buyers, and 39% sold at the farmers market, on-farm, or through neighbor-to-neighbor channels. Also, 57% of the producers were interested in selling their products to specialty markets, such as 100% grass-fed, natural, direct-to-consumer certified organic, restaurants, branded programs, and regular retail stores.

USDA, APHIS (2012) analyzed the characteristics of small-scale U.S. livestock operations. It found that an auction/sale barn was the main marketing outlet used by small-scale operators to market animals or products, by 88% of operators. Almost 25% marketed animals or products directly to individuals or consumers. The sales comprised direct sales through farmers' markets, community supported agriculture, the Internet, and to other producers.

USDA NASS (2012) assessed cattle and calf sales from the 2012 Census of Agriculture. It found that cattle and calf sales were up relative to 2007; the sales of cattle and calves were \$76.4 billion, an increase of \$15.2 billion from 2007. Total sales of cattle and calves constituted 35% of all agricultural products sold in the U.S. in

2012. The highest sales were in Texas (\$11.16 billion), followed by Nebraska (\$6.38 billion), Kansas (\$5.92 billion), Iowa (\$3.89 billion), and Colorado (\$2.63 billion). Moreover, it reported a decrease of 17% in sales of sheep and goats in the U.S. in 2012. Total goat sales, in 2012, were about \$152 million, with Texas leading with \$49 million, followed by California with \$8.5 million, and Missouri with \$ 6.5 million.

Tackie et al. (2012) evaluated the characteristics and status of small and limited resource meat goat farmers in the Alabama Black Belt region. Their results revealed that 75% of the respondents sold at most 50 goats in the previous year; 78% sold goats on-farm, and 25% goats sold at the auction/stockyard. Further, 80% sold goats directly to individual consumers, while 60% sold to other goat farmers. On the issue of requests for goats, 83% indicated that they were asked for goats frequently or could not keep up with requests for goats. The producers also sought technical assistance mostly on health (75%), production (70%), and marketing (63%).

Bartlett et al. (2015) analyzed the characteristics and practices of selected Alabama small Livestock producers emphasizing economics and marketing. They reported that 69% of the producers sold 30 or fewer beef cattle in the previous year; 51% sold on-farm or at the auction/stockyard; 23% sold 30 or fewer meat goats in the previous year, and 17% sold on-farm or at the auction/stockyard. Also, 15% indicated that they knew the price per head of animal and 48% indicated that they knew the price per pound of live animal for their beef cattle; and 12% indicated they knew the price per head of animal and 8% indicated that they knew the price per pound of live animal for their meat goats. Chi-square tests showed that farming status, gender, race/ethnicity, age, and education had statistically significant effects on the number of beef cattle sold; farming status, race/ethnicity, age, and education had statistically significant effects on the number of meat goats sold. Further, all the socioeconomic variables (farming status, gender, race/ethnicity, age, education, and household income) had statistically significant effects on record keeping.

Tackie et al. (2018) assessed the characteristics and practices of selected Georgia small Livestock producers, with emphasis on economics and marketing. The authors reported that 45% of the producers sold 30 or fewer beef cattle in the previous year; 45% sold on-farm or at the auction/stockyard; 30% sold 30 or fewer meat goats in the previous year, and 20% sold on-farm or at the auction/stockyard. Additionally, 18% indicated they knew the price per head of animal for their beef cattle, and 25% indicated they knew the price per pound of live animal for their beef cattle. Correspondingly, 25% indicated they knew the price per head of animal for their meat goats, and 5% indicated they knew the price per pound of live animal for their meat goats. Chi-square tests showed that gender had a statistically significant effect on number of beef cattle sold, and farming status, gender, and race/ethnicity had statistically significant effects on record keeping.

### 3. Methodology

#### 3.1 Data Collection

The study used a questionnaire, which was divided into four sections, consisting of questions on farm, economics, marketing, and demographic issues. The questionnaire was submitted to the Institutional Review Board, Human Subjects Committee for approval. Upon approval, it was used to gather data from a convenience sample of livestock producers. This method was used because it was the most readily convenient as there was no known sampling frame from which the respondents could be selected.

The data were obtained by interviewing a group of small beef cattle and meat goat producers in several counties of northern and central Florida (Alachua, Broward, Calhoun, Franklin, Gadsden, Hardee, Jefferson, Leon, Madison, Orange, Polk, Taylor, and Wakulla). Data were collected in the summer of 2013 through the summer of 2016. Extension agents in the counties, other technical personnel from Florida A&M University, as well as a graduate student from Alabama participated in the data collection. The total sample size was 70.

#### 3.2 Data Analysis

Data were analyzed by means of descriptive statistics, including, frequencies, percentages, and chi-square tests. The description for the chi-square test is adapted from Tackie et al. (2015). The chi-square test enables a scientist to state a null hypothesis ( $H_0$ ), such as two variables are independent of (or not related to) each other and an alternative hypothesis is ( $H_a$ ) such as two variables are not independent of (or related to) each other. They are stated, respectively, as:

$H_0$ : A practice or characteristic is independent of (or not related to) selected socioeconomic variables.

$H_a$ : A practice or characteristic is not independent of (or related to) selected socioeconomic variables.

In order to calculate the chi-square,  $\chi^2$ , the formula below is used:

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(fo_{i,j} - fe_{i,j})^2}{fe_{i,j}}$$

Where:

$\chi^2$  = chi-square

fo = observed frequency

$f_e$  = expected frequency

$i, j$  = values in the  $i^{\text{th}}$  row and  $j^{\text{th}}$  column, respectively

$\sum$  = summation

The observed frequency is the frequency that comes from the survey, and the expected frequency is derived from each cell in a contingency table as the product of the row total and the column total divided by the grand total. If the chi-square is significant, then the null hypothesis that the two variables are independent of each other is rejected. On the contrary, if the chi-square is not significant, then the null hypothesis that the two variables are independent of each other is not rejected. In the study, hypotheses were stated for acreage farmed, beef cattle herd size, meat goat herd size ( farm characteristics), beef cattle profits, meat goat profits (economic characteristics), number of beef cattle sold, number of meat goats sold, keeping records (marketing characteristics), and socioeconomic characteristics. Using herd size and education as an example, the hypotheses were stated as:

Ho: Herd size is independent of (or not related to) education

Ha: Herd size is not independent of (or related to) education

Similar hypotheses were stated for the other socioeconomic characteristics: farming status, gender, race/ethnicity, age, and annual household income. Identical hypotheses were stated for the other characteristics and socioeconomic characteristics. The data were first coded into SPSS 12.0© (MapInfo Corporation, Troy, NY); second, frequencies and percentages were determined, and third, the chi-square tests were conducted to ascertain the relationships between the selected variables and socioeconomic variables.

#### 4. Results and Discussion

Table 1 represents the socioeconomic characteristics of the respondents. Sixty percent of the respondents were part-time farmers; equal proportions (50% each) were males and females, and 47% were Whites. Also, 91% were over 45 years, with 52% in the 45-64 year range. Moreover, 73% had a two-year/technical degree, some college education, or a lower educational level; 26% had at least a four-year college degree; 60% had annual household incomes of at most \$40,000, and 36% had an annual household income of over \$40,000. The results are consistent with Bartlett et al. (2015) for Alabama and Tackie et al. (2018) for Florida, in terms of education, where there were more respondents with at most a two-year/technical degree, or some college education, respectively, 65 and 53%. Further, the results are in agreement with Bartlett et al. (2015) for Alabama, in terms of farming status, age, and annual household income, where they found more part-time farmers, more middle-aged farmers, and more farmers with annual household income of \$40,000 or lower. With regard to age, Percival (2002) also found that many meat goat producers in the Southeastern U.S. were middle-aged. The study agrees with Tackie et al. (2018) for Georgia, in terms of race/ethnicity, where they found more White producers than Black producers.

Table 1. Socioeconomic Characteristics (N = 70)

Variable	Frequency	Percent
<b>Farming Status</b>		
Full-time	24	34.3
Part-time	42	60.0
No Response	4	5.7
<b>Gender</b>		
Male	35	50.0
Female	35	50.0
No Response	0	0.0
<b>Race/Ethnicity</b>		
Black	29	41.4
White	33	47.1
Other	7	1.4
No Response	1	10.0
<b>Age</b>		
20-24 years	0	0.0
25-34 years	1	1.4
35-44 years	5	7.1
45-54 years	13	18.6
55-64 years	23	32.9
65 years or older	27	38.6
No Response	1	1.4
<b>Educational Level</b>		
High School Graduate or Below	23	32.9
Two-Year/Technical Degree	7	10.0
Some College	21	30.0
College Degree	16	22.9
Post-Graduate/Professional Degree	2	2.9
No Response	1	1.4
<b>Annual Household Income</b>		
\$10,000 or less	5	7.1
\$10,001-20,000	5	7.1
\$20,001-30,000	18	25.7
\$30,001-40,000	14	20.0
\$40,001-50,000	2	2.9
\$50,001-60,000	14	20.0
Over \$60,000	9	12.9
No Response	3	4.3

Table 2 shows the farm characteristics of the respondents. Fifty-four percent either purchased their farms outright or purchased with a mortgage; 33% inherited their farms. Twenty percent had been in their farm ownership status 10 years or less; 46% had been in their ownership status 11-20 years, and 31% had been in their ownership status 21-30 years. Thus, most (78%) of the respondents had been in their ownership status for over 10 years. The findings are consistent with Bartlett et al. (2015) for Alabama and Tackie et al. (2018) for Florida, where they also found majorities (respectively, 53% and 78%) either purchased farms outright or purchased with a mortgage, (respectively, 75% and 66%), and had been in their farm ownership status for over 10 years, a reflection of stability.

What is more, 64% were in livestock production, and 36% were in a combination of livestock and crop production; 26% had been farming 10 years or less; 49% had been farming 11-20 years, and 26% had been farming for over 20 years. The findings, in terms of enterprises, compare very well with Bartlett et al. (2015) for Alabama and Tackie et al. (2018) for Georgia. The former study found that 56% of small producers were in livestock production and 44% had a combination of enterprises. Corresponding percentages for the latter study were 63% and 33%.

Table 2. Farm Characteristics (N = 70)

Variable	Frequency	Percent
<b>Ownership Status</b>		
Purchased (paid-off)	9	12.9
Purchasing with mortgage	29	41.4
Leased	5	7.1
Inherited	23	32.9
Multiple	4	5.7
<b>Years in Ownership Status</b>		
1-5 years	7	10.0
6-10 years	7	10.0
11-15 years	21	30.0
16-20 years	11	15.7
21-25 years	7	10.0
26-30 years	15	21.4
More than 30 years	1	1.4
No Response	1	1.4
<b>Enterprises</b>		
Row Crops	0	2.5
Livestock	45	64.3
Fruits and Vegetables	0	0.0
Multiple	25	35.7
Other	0	0.0
No Response	0	0.0
<b>Years in Farming</b>		
1-5 years	10	14.3
6-10 years	8	11.4
11-15 years	21	30.0
16-20 years	13	18.6
21-25 years	7	10.0
26-30 years	8	11.4
More than 30 years	3	4.3
No Response	0	0.0
<b>Total Acreage Owned</b>		
10 acres or less	10	14.3
11-20 acres	16	22.9
21-30 acres	21	30.0
31-40 acres	4	5.7
41-50 acres	4	5.7
51-60 acres	4	5.7
More than 60 acres	10	14.3
No Response	1	1.4

Table 2. Continued

Variable	Frequency	Percent
<b>Total Acreage Farmed</b>		
10 acres or less	4	5.7
11-20 acres	5	7.1
21-30 acres	13	18.6
31-40 acres	19	27.1
41-50 acres	5	7.1
51-60 acres	9	12.9
More than 60 acres	15	21.4
No Response	0	0.0
<b>Years Involved with Livestock</b>		
1-5 years	14	20.0
6-10 years	8	11.4
11-15 years	13	18.0
16-20 years	15	21.4
21-25 years	7	10.0
26-30 years	10	14.5
More than 30 years	2	2.1
No Response	1	1.4
<b>Animal Type</b>		
Beef Cattle	13	18.6
Meat Goats	57	81.4
Both	0	0.0
No Response	1	0.0
<b>Beef Cattle Herd Size</b>		
10 or less	3	4.3
11-20	3	4.3
21-30	3	4.3
31-40	1	1.4
41-50	1	1.4
51-60	1	1.4
61-70	1	1.4
More than 70	0	0.0
No Response	0	0.0
No Applicable	57	81.4
<b>Meat Goat Herd Size</b>		
10 or less	19	27.1
11-15	10	14.3
15-20	7	10.0
21-25	4	5.7
26-30	4	5.7
31-35	3	4.3
36-40	5	7.1
More than 40	5	7.1
No Response	1	1.4
Not Applicable	12	17.1

However, the findings, in terms of years in farming, are different from those of Bartlett et al. (2015) for Alabama and Tackie et al. (2016) for Georgia. In the Alabama and Georgia studies, 76% and 63%, respectively, of small producers had been in farming for over 20 years compared to the only 26% in this study.

Also, 37% owned, at most, 20 acres of land; 36% owned 21-40 acres of land; 11% owned 41-60 acres of land, and 14% owned over 60 acres of land. This notwithstanding, 13% farmed on at most 20 acres of land; 46% farmed on 21-40 acres of land; 19% farmed on 41-60 acres of land, and 21% farmed on more than 60 acres of land. Thirty-one percent of the respondents had been in livestock farming for at most 10 years; 39% had been in livestock farming 11-20 years, and 25% had been in livestock farming for 21-30 years. Again, the findings in this study regarding acreage owned and farmed, especially over 60 acres, as well as years involved in livestock farming, are in opposition to those of Bartlett et al. (2015) for Alabama and Tackie et al. (2018) for Georgia. In this study, only 14% of small producers owned more than 60 acres of land compared to 50% in the Bartlett et al. study, and 48% in the Tackie et al. study. Further, in this study, only 21% farmed over 60 acres of land



compared to the 58% in the Bartlett et al. study, and 55% in the Tackie et al. study. The differences in percentages may stem from the differences in enterprise mix. Overall, since the acreage farmed exceeds the acreage owned, it is likely that some producers may be farming on leased land. The numbers for years in livestock farming follow a similar pattern. In this study, only 27% of small producers had been in livestock farming for over 20 years compared to 56% in the Bartlett et al. study and 58% in the Tackie et al. study.

Nearly 19% of the producers were in beef cattle production and 81% were in meat goat production. The main breeds of beef cattle were Angus and Angus mixed breeds (not shown in Table), and the main breeds of meat goats were Boer and Kiko mixed breeds (not shown in Table). The main breeds of beef cattle and meat goats found were consistent with Bartlett et al. (2015) for Alabama and Tackie et al. (2018) for Georgia. They also reported that producers raised mainly Angus and Angus mixed breeds and Boer and Kiko mixed breeds.

Thirteen percent had beef cattle herd sizes of 30 heads or less; only 4% had beef cattle herd sizes of 31-60 heads. For meat goats, 51% had herd sizes of 20 heads or less; 23% had herd size of 21-40 heads. The herd sizes were generally small, both for beef cattle and meat goats. The results are similar compared with those of found by Bartlett et al. (2015) for Alabama and Tackie et al. (2018) for Georgia, where they also found that most of the producers had small herd sizes, a reflection of their classification as small producers.

Table 3 reflects economic characteristics of the respondents. Nine percent of the producers indicated total costs of \$5,000 or less for beef cattle in the previous year; 6% indicated total costs of more than \$5,000 for beef cattle in the previous year, and 3% indicated not knowing their total costs. Also, 4% indicated gross receipts of \$5,000 or less for beef cattle in the previous year; 6% indicated gross receipts of more than \$5,000 for beef cattle in the previous year, and 4% indicated not knowing their gross receipts. Thus, 6% made losses or broke-even; 6% made profits of \$5,000 or less, and 4% made profits of more than \$5000.

In addition, 36% of the producers indicated total costs of \$3,000 or less for meat goats in the previous year; 16% indicated total costs of more than \$3000 the previous year, and 30% indicated not knowing their total costs. Correspondingly, 26% indicated gross receipts of \$3,000 or less for meat goats in the previous year; 13% indicate gross receipts of more than \$3,000 the previous year, and 43% indicated not knowing their gross receipts. Thirty-three percent indicated they made losses or broke-even; nearly 13% made profits of \$2,500 or less, and 7% made profits of more than \$2500 for meat goats in the previous year.

The results for beef cattle, in terms of making losses or breaking-even are in disagreement with Bartlett et al. (2015) for Alabama and Tackie et al (2018) for Georgia, where more producers made losses or broke-even compared to this study. Furthermore, 34% and 45%, respectively, made profits for beef cattle in the Bartlett et al. (2015) study for Alabama and the Tackie et al. (2018) for Georgia study compared to only 10% in this study. For meat goats, the results agree with Tackie et al. (2012) in terms of breaking-even and

Table 3. Economic Characteristics (N = 70)

Variable	Frequency	Percent
<b>Beef Cattle Total Costs in Previous Year</b>		
\$3,000 or less	2	2.9
\$3,001-5,000	4	5.7
\$5,001-7,000	1	1.4
\$7,001-9,000	3	4.3
\$9,001-11,100	0	0.0
\$11,101-11,300	0	0.0
More than \$11,300	0	0.0
Don't Know	2	2.9
No Response	1	1.4
No Applicable	57	81.4
<b>Beef Cattle Gross Receipts in Previous Year</b>		
\$5,000 or less	3	4.3
\$5,001-5,500	2	2.9
\$5,501-6,000	1	1.4
\$6,001-6,500	0	0.0
\$6,501-7,000	1	1.4
\$7,001-7,500	0	0.0
More than \$7,500	2	2.9
Don't Know	3	4.3
No Response	1	1.4
No Applicable	57	81.4
<b>Beef Cattle Profits in Previous Year</b>		
Less than Zero (Loss)	2	2.9
Zero (Break-even)	2	2.9
\$1,500 or less	1	1.4
\$1,501-2,000	1	1.4
\$2,001-2,500	0	0.0
\$2,501-3,000	0	0.0
\$3,001-3,500	0	0.0
\$3,501-4,000	0	0.0
\$4,001-4,500	0	0.0
\$4,501-5,000	2	2.9
More than \$5,000	3	4.3
Don't Know	0	0.0
No Response	2	2.9
No Applicable	57	81.4
<b>Meat Goat Total Costs in Previous Year</b>		
\$1,501-2,000	3	4.3
\$2,001-2,500	4	5.7
\$2,501-3,000	6	8.6
More than \$3,000	11	15.7
Don't Know	21	30.0
No Applicable	13	18.6

Table 3. Continued

Variable	Frequency	Percent
<b>Meat Goat Gross Receipts in Previous Year</b>		
\$1,000 or less	5	7.1
\$1,001-1,500	2	2.9
\$1,501-2,000	4	5.7
\$2,001-2,500	3	4.3
\$2,501-3,000	4	5.7
More than \$3,000	9	12.9
Don't Know	30	42.9
No Response	0	0.0
<b>Meat Goat Profits in Previous Year</b>		
Less than Zero (Loss)	19	27.1
Zero (Break-even)	4	5.7
\$500 or less	2	2.9
\$501-1,000	3	4.3
\$1,001-1,500	0	0.0
\$1,501-2,000	0	0.0
\$2,001-2,500	4	5.7
More than \$2,500	5	7.1
Don't Know	19	27.1
No Response	1	1.4
No Applicable	13	18.6
No Applicable	13	18.0

making losses, where a sizeable proportion fell in this category, 33% in this study, and 65% in the Tackie et al. (2012) study. In terms of the proportion making profits for meat goats, the results compare fairly well for all four studies; 20% in this study; 15% in the Tackie et al. (2012) study for Alabama; 10% for the Bartlett et al. (2015) study for Alabama, and 10% for the Tackie et al. (2018) study for Georgia. An interesting observation is that 30% and 43%, respectively, did not know their total costs or gross receipts for meat goats; this is worrying. It may be a case of improper record keeping.

Table 4 depicts the marketing characteristics of the respondents. Seventeen percent of the producers sold at most 25 heads of beef cattle in the previous year; 13% sold on-farm or at the auction/stockyard, 11% sold to special buyers or wholesalers; however, 14% sold directly to individual consumers, special buyers, and wholesalers. Also, 74% sold at most 30 heads of meat goats in the previous year; 54% sold on-farm or at the auction/stockyard; 14% sold directly to individual consumers, and 44% sold to other goat producers; however, 6% sold to all three groups. The findings are contrary to those obtained by Bartlett et al. (2015) for Alabama and Tackie et al (2018) for Georgia for beef cattle, where producers sold more beef cattle in the “at most 30 animal” category, and sold more beef cattle on-farm and at the auction/stockyard compared to the findings of this study. When it comes to meat goats, the findings are also different; more farmers sold animals in the “at most 30 animal” category in this study compared to the Bartlett et al. (2015) study and the Tackie et al. (2018) study. The differences may be attributed to enterprise mix and/or preferences for specific marketing outlets. Added to this, the findings on who usually buys animal or animal products were also different for this study compared to the Bartlett et al. (2015 study for Alabama and the Tackie et al. (2018) study for Georgia. In this study, 12% sold beef cattle or products to direct buyers and special buyers; whereas, in the Bartlett et al. and Tackie et al. studies, 23% and 27%, respectively, sold beef cattle or products to direct buyers and special buyers.

Table 4. Marketing Characteristics (N = 70)

Variable	Frequency	Percent
<b>Beef Cattle Sold in Previous Year</b>		
5 or less	5	7.1
6-10	4	5.7
11-15	2	2.9
16-20	0	0.0
21-25	1	1.4
26-30	0	0.0
More than 30	0	0.0
No Response	1	1.4
Not Applicable	57	81.4
<b>Where Beef Cattle is Normally Sold</b>		
On-farm	2	2.9
Auction	7	10.0
Wholesale	0	0.0
Multiple	3	4.3
Other	0	0.0
No Response	1	1.4
Not Applicable	57	81.4
<b>Who Usually Buys Beef Cattle or Products</b>		
Direct Consumers	1	1.4
Special Buyers	8	11.4
Wholesalers	1	1.4
Processors	0	0.0
Multiple	1	1.4
Other	1	1.4
No Response	1	1.4
Not Applicable	57	81.4
<b>Meat Goats Sold in Previous Year</b>		
10 or less	26	37.1
11-15	10	14.3
16-20	9	12.9
21-25	2	2.9
26-30	5	7.1
More than 30	5	7.1
No Response	13	18.6
Not Applicable	0	0.0
<b>Where Meat Goat is Normally Sold</b>		
On-farm	33	47.1
Auction	5	7.1
Wholesale	0	0.0
Multiple	15	21.4
Other	1	1.4
No Response	3	4.3
Not Applicable	13	18.6

Table 4. Continued

Variable	Frequency	Percent
<b>Who Usually Buys Meat Goats or Products</b>		
Direct Consumers	10	14.3
Other Goat Farmers	31	44.3
Wholesalers	1	1.4
Processors	0	0.0
Multiple	5	7.1
Other	8	11.4
No Response	2	2.9
Not Applicable	13	18.6
<b>Beef Cattle Sold</b>		
Price per Live Animal	5	7.1
Price per Pound of Live Animal	2	2.9
Price per Pound of Beef	4	5.7
Multiple	0	0.0
No Response	2	2.9
Not Applicable	57	81.4
<b>Meat Goat Sold</b>		
Price per Live Animal	43	61.4
Price per Pound of Live Animal	9	12.9
Price per Pound of Goat Meat	1	1.4
Multiple	1	1.4
No Response	3	4.3
Not Applicable	13	18.6
<b>Goat Meat</b>		
Rarely	9	12.9
Frequently	15	21.4
Cannot keep up with Requests	19	27.1
Don't know/Not Sure	8	11.4
No Response	6	8.6
Not Applicable	13	18.6
<b>Education and Technical Assistance</b>		
University/Research Institution	34	48.6
Government Agency	4	5.7
Community-Based Organization	1	1.4
Multiple	21	30.0
Other	10	14.3
No Response	0	0.0
<b>Type of Information and Assistance</b>		
Production	7	10.0
Marketing	4	5.7
Health	5	7.1
Grant/Loan assistance	2	2.9
Multiple	39	55.7
Other	1	1.4
No Response	12	17.1

Table 4. Continued

Variable	Frequency	Percent
<b>Record-Keeping</b>		
Yes	57	81.4
No	13	18.6
No Response	0	0.0

In a similar vein, in this study, 58% sold meat goats or products to direct consumers and other goat farmers; whereas, in the Bartlett et al. and Tackie et al. studies, 17% and 20%, respectively, sold meat goats or products to direct buyers and special buyers.

Seven percent stated that they knew the price per head of their beef cattle; 3% stated that they knew the

price per pound of live animal for their beef cattle, and 6% indicated they knew the price per pound of their beef. For goats, 61% stated that they knew the price per head of their meat goats, and 13% stated that they knew the price per pound of live animal for their meat goats. Compared to the Bartlett et al. (2015) study for Alabama and the Tackie et al. (2018) study for Georgia, it appears that the respondents in the aforementioned studies knew more about the price per head of beef cattle or per pound of live beef cattle than those in the Florida study. However, the opposite holds true for meat goats. Additionally, it appears that the respondents in the Florida study knew more about the price per head of meat goat or per pound of live meat goat than those in the Alabama and Georgia studies.

When producers were asked how frequently people asked them to buy goats or goat meat, 49% indicated “frequently” or “cannot keep up with requests.” When asked where they get educational and technical assistance, another 49% stated that they use university/research institution, and 30% stated that they use multiple sources. Fifty-six percent of the respondents also stated that they get information and assistance on multiple issues, mainly a combination of production, marketing, and health. Also, 81% of respondents revealed that they kept records. The frequency of enquiry for meat goats or goat meat is higher than the studies for Alabama and Georgia. The information on educational and technical assistance, compares favorably with the Alabama study (47%) for multiple sources, but not so with the Georgia study, where multiple sources was 18% and university/research institution was 35%. However, in all three studies producers were interested in a combination of production, marketing and health information and assistance. Moreover, the results on record keeping compares very well with the other two studies; all three studies reported a higher proportion of respondents keeping records than not.

Table 5 shows the chi-square test results between selected farm characteristics (acreage farmed, beef cattle herd size, and meat goat herd size) and socioeconomic variables. None of the socioeconomic variables had a statistically significant effect on the farm characteristics. This means that the socioeconomic variables and farm characteristics are independent of each other; the null hypotheses that these variables are independent of each other are not rejected. The findings are in opposition to Bartlett et al. (2015) for Alabama, where age and education had statistically significant effects on acreage farmed; household income had a statistically significant effect on beef cattle herd size; and gender, race/ethnicity, age, and education had statistically significant effects on meat goat herd size. The results are also in opposition to Tackie et al. (2018) for Georgia, where race/ethnicity and age had statistically significant effects on beef cattle herd size.

Table 5. Chi-Square Tests between Farm Characteristics and Socioeconomic Variables

Variable	df	$\chi^2$	p value
<b>Acreage Farmed</b>			
Farming Status	12	14.769	0.254
Gender	6	2.970	0.813
Race/Ethnicity	18	9.971	0.933
Age	30	27.413	0.602
Education	30	33.795	0.289
Household Income	42	49.839	0.190
<b>Beef Cattle Herd Size</b>			
Farming Status	14	8.845	0.841
Gender	7	8.526	0.288
Race/Ethnicity	21	16.195	0.759
Age	35	16.633	0.996
Education	35	19.350	0.985
Household Income	49	43.895	0.680
<b>Meat Goat Herd Size</b>			
Farming Status	18	15.151	0.652
Gender	9	13.710	0.133
Race/Ethnicity	27	28.300	0.396
Age	45	36.626	0.809
Education	45	39.802	0.691
Household Income	63	51.288	0.854

Table 6 represents the chi-square test results between selected economic characteristics (beef cattle profits and meat goat profits) and socioeconomic variables. In this case also, none of the socioeconomic variables had a statistically significant effect on the economic characteristics. This implies that socioeconomic variables and the economic characteristics are independent of each other; the null hypotheses that these variables are independent of each other are not rejected. The results are not in

agreement with Bartlett et al. (2015) for Alabama where they reported that gender, race/ethnicity, and age, had statistically significant effects on beef cattle profits; farming status, gender, race/ethnicity, and age had statistically significant effects on meat goat profits. What is more, the results are not in agreement with Tackie et al. (2018). The authors found that farming status and gender had statistically significant effects on beef cattle profits.

Table 6. Chi-Square Tests between Economic Characteristics and Socioeconomic Variables

Variable	df	$\chi^2$	<i>p</i> value
<b>Beef Cattle Profits</b>			
Farming Status	14	8.081	0.885
Gender	7	7.860	0.345
Race/Ethnicity	21	26.641	0.183
Age	35	16.873	0.996
Education	35	20.857	0.972
Household Income	49	47.728	0.525

Table 6. Continued

Variable	df	$\chi^2$	<i>p</i> value
<b>Meat Goat Profits</b>			
Farming Status	14	10.153	0.411
Gender	14	10.250	0.104
Race/Ethnicity	21	10.856	0.335
Age	35	27.657	0.425
Education	35	24.690	0.473
Household Income	42	43.846	0.195

Table 7 reflects the chi-square test results between selected marketing characteristics (number of beef cattle sold, number of meat goats sold, and keeping records) and socioeconomic variables. Gender had a statistically significant effect on the number of beef cattle sold,  $p = 0.059$ . This means that gender is not independent of the number of beef cattle sold; the null hypotheses that this variable is independent of number of beef cattle sold is rejected. Farming status, race/ethnicity, age, education, and annual household income were not statistically significant. The null hypotheses that these variables are independent of each other are not rejected. The results are largely different from Bartlett et al. (2015) for Alabama, where they found that farming status, gender, race/ethnicity, age, and education had significant effects on the number of beef cattle sold. However, in terms of gender, the results agree with Bartlett et al. (2015). These results agree with Tackie et al. (2018) for Georgia. In this study, they also found that gender had a statistically significant effect on the number of beef cattle sold.

Gender, education, and household income had a significant effects on the number of meat goats sold, respectively,  $p = 0.025$ ,  $p = 0.000$ , and  $p = 0.072$ . This means that gender, education, and household income are not independent of the number of meat goats sold; the null hypotheses that these variables are independent of each other is rejected. Farming Status, race/ ethnicity, and age were not statistically significant. The null hypothesis that the variables are independent of each other are rejected. The results are contrary to those found by Bartlett et al. (2015); they found that farming status, age, education, and household income had statistically significant effects on the number of meat goats sold.

Table 7. Chi-Square Tests between Marketing Characteristics and Socioeconomic Variables

Variable	df	$\chi^2$	p value
<b>Number of Beef Cattle Sold</b>			
Farming Status	10	7.470	0.680
Gender	5	10.660*	0.059
Race/Ethnicity	15	16.872	0.327
Age	25	16.204	0.909
Education	25	19.106	0.792
Household Income	35	32.528	0.588
<b>Number of Meat Goats Sold</b>			
Farming Status	12	12.965	0.372
Gender	6	14.431**	0.025
Race/Ethnicity	18	11.900	0.852
Age	30	18.527	0.949
Education	30	65.830***	0.000
Household Income	42	56.059*	0.072

Table 7. Continued

Variable	df	$\chi^2$	p value
<b>Keeping Records</b>			
Farming Status	2	4.503	0.105
Gender	1	0.094	0.759
Race/Ethnicity	3	1.281	0.734
Age	5	18.912***	0.002
Education	5	9.825*	0.080
Household Income	7	15.125**	0.034

\*\*\* Significant at 1%; \*\*Significant at 5%; \*Significant at 10%

Further, the findings are different from those found by Tackie et al. (2018) for Georgia, where none of the socioeconomic variables were statistically significant.

Age, education, and household income had statistically significant effects on keeping records, respectively,  $p = 0.002$ ,  $p = 0.080$ , and  $p = 0.034$ . This implies that age, education, and household income are not independent of keeping records; the null hypotheses that these variables are independent of keeping records are rejected. Farming Status, gender, and race/ethnicity were not statistically significant. The null hypotheses that these variables are independent of each other are not rejected. The findings are partially consistent with Bartlett et al. (2015) for Alabama, where they reported that all the socioeconomic variables had statistically significant effects on record keeping. Furthermore, the findings in this study regarding record keeping are in opposition to Tackie et al. (2018), where they reported that farming status, gender, and race/ethnicity had statistically significant effects on record keeping.

## 5. Conclusion

The study analyzed the characteristics and practices of selected Florida small livestock producers, focusing on economics and marketing. It identified and described socioeconomic characteristics; described and assessed selected farm, economic, and marketing characteristics and practices; and examined relationships between socioeconomic characteristics and other characteristics or practices. The data were collected using convenience sampling, and analyzed using descriptive statistics and chi-square tests. The results showed that, there were more part-time farmers than full-time farmers (respectively, 60 and 34%); equal proportions (50% each) of male and female producers; more Whites producers than Black producers (respectively, 47 and 41%); more producers over 45 years than producers below 45 years (respectively, 91 and 9%); more producers with a two-year college/technical degree, some college education, or lower educational levels than those with a four-year college degree or higher level of education (respectively, 73 and 26%); and more producers with an annual household income of at most \$40,000 than those with an annual household income of over \$40,000 (respectively, 60 and 36%). A majority, 54%, either purchased farms outright or paid with a mortgage; 33% inherited their farms. In addition, a majority, 74%, had been farming more than 10 years; a majority, 67%, owned at most 30 acres of



land, but a majority, 68%, farmed more than 30 acres of land. Most of the respondents owned small herds (40 or less for beef cattle, and 20 or less for meat goats).

Moreover, a relatively small percentage of producers made profits the previous year, respectively, 10% for beef cattle and 20% for meat goats. Many sold animals live on-farm or at the auction/stockyard; used universities/research institutions as the main sources of educational and technical assistance (49%), and kept records (81%). The chi-square tests showed that gender, education, and annual household income had statistically significant effects on the number of meat goats sold; age, education, and annual household income had statistically significant effects on record keeping.

Based on the results, six main observations or recommendations are made. First, since many of the producers farm on more acreages of land than they own, it is likely that some are leasing land to farm. Thus, it is suggested that producers be assisted to purchase more land to meet their farming needs. Second, since many of the producers own very small herds of animals, there is a need to assist them to increase their herd sizes; as herd size increases per unit costs decreases. The larger herd sizes could result in increased incomes and/or profits. Third, since many of the producers do not sell a large quantity or volume of animals, they could market their animals by using strategies, such as, niche marketing. For instance, they could market their animals as “locally” or “regionally” produced. By doing that, they could increase their incomes. Fourth, since most affirmed that they receive educational and technical assistance or information from university/research institutions, Research and Extension have a critical role to play in order for the small producers to reach their full potential. Fifth, the findings suggest that Research and Extension programs that stress enhancing economic and marketing aspects of small producer livestock production should be given consideration in designing programs in the study area. Finally, since gender, age, education, and household income appear to be important in selected marketing characteristics, these factors should be considered in marketing training programs, in particular, to assist producers in the study area. Future studies involving in-depth statistical analysis is suggested.

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