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AN ANALYSIS OF THE CHARACTERISTICS AND PRACTICES OF SELECTED ALABAMA SMALL LIVESTOCK PRODUCERS: A FOCUS ON PRODUCTION AND PROCESSING

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Abstract

The study assessed the characteristics and practices of small livestock producers, emphasizing production and processing. Data were obtained from a convenience sample of 121 small producers from South Central Alabama, and analyzed using descriptive statistics, including chi-square tests. The socioeconomic factors showed most were part-time farmers; middle-aged producers; producers with at most a two-year/technical degree or some college education, and producers with $40,000 or less annual household income. A majority practiced rotational grazing, fed a combination of forage (direct from pasture), hay and concentrate, and about half conducted soil tests regularly. Furthermore, many had goats with parasite problems that were treated these primarily with anthelmintics; most sold live animals. The chi-square tests showed that farming status, gender, race/ethnicity, education, and household income had statistically significant relationships with production and processing characteristics. Socioeconomic factors should be considered in programs assisting producers in the study area.
Keywords: Livestock Producers, Small Producers, Characteristics and Practices, Production and Processing

Introduction

The demand for locally grown or raised food within the U.S. has increased in recent years. This is reflected by an increase in farmers markets, community supported agriculture (CSA), other direct-to-consumer marketing outlets, community gardens, school gardens, and food hubs (Johnson et al., 2013). Although local food sales still comprise a small share of overall sales, demand continues to grow. For example, in 2014, 12,549 farms in the U.S. marketed products through CSA outlets as a way to connect farmers with community members (USDA, National Agricultural Library, 2014). In addition, more than 3,800 school districts across the nation, representing nearly 40,000 schools, sourced food from local farmers, ranchers, and food businesses (USDA, Food and Nutrition Service, 2014).

Despite the growing popularity of the local food market, there is no established definition of what constitutes local food. Thompson et al. (2008), for instance, stressed that some researchers associate production methods with what defines local food. Martinez et al. (2010) argued that others define local food as sustainable, because it reduces the use of synthetic chemicals and energy-based fertilizers, it is environmentally friendly, and it limits chemical and pesticide residues in/on food. Furthermore, Peters et al. (2009) emphasized that local food systems are also believed to reduce food safety risks, because of the perception that they offer improved nutrition; they increase the likelihood of making healthier food choices; they facilitate obesity prevention,

and they help reduce risk of other diet-related diseases. In the light of this, the Food Marketing Institute (2009) conducted a national study asking Americans why they buy local food. The top three reasons listed were freshness (82%), supporting the local economy (75%), and knowing where the product comes from (58%).

According to Guptill and Wilkins (2002), growing interest in local foods in the U.S. is linked, for example, to the environmental movement and the local food movement. Gaytan (2003) stressed that the environmental movement focuses on the geographic dimensions in food choices. The local food movement, on the contrary, focuses on access to safe, healthy, and culturally appropriate food for all consumers. Pirog (2009) also explained that the local food movement reflects an increasing interest by consumers in supporting local farmers and in better understanding the origin of their food.

Thompson and Kelvin (1996) emphasized that besides helping the local economy, a sustainable local food supply can provide fresh, tasty, and safe foods to consumers. Indeed, many consumers also feel that local foods may have quality advantages over those imported from distant suppliers. Dahlberg (1994) and DeLind (1994), likewise, indicated that several researchers have documented the benefits of local food supply as social (knowledge of where foods come from, production practices, and interaction among consumers); economic (supporting the local economy, fewer transportation costs, and increased local employment); health (improved food safety and lower risk of bioterrorism), and environmental (maintaining biological diversity and less use of pesticides/chemicals).

The growing interest in locally and regionally grown or raised products has created an outlet for small local and regional producers to pursue in order to enhance their profitability. Two enterprises where local or regional emphasis can be pursued are the beef cattle and meat goat enterprises. In the view of Tubene and Hanson (2002), small producers should find ways of improving their operations in order to increase returns. Since most small beef cattle and meat goat producers live and farm in rural areas, the viability of their enterprises will also have a positive impact on their communities. Limited research has been conducted to assess the impact of small producers' role in the local or regional food supply chain particularly in Alabama, emphasizing production and processing. Therefore, there is a need to undertake this study to ascertain the role or contribution of the small producer to the local or regional food supply chain.

The purpose of this study, therefore, was to analyze the characteristics and practices of selected Alabama small livestock producers, emphasizing on production and processing. The specific objectives were to (1) identify and describe socioeconomic characteristics, (2) describe and assess selected production and processing characteristics or practices, and (3) examine the relationships between socioeconomic characteristics and the other characteristics or practices.

Literature Review

The literature examined in this section focuses on socioeconomic characteristics, production issues, and processing issues. They are discussed sequentially, and only key studies are discussed to emphasize the importance of each aspect to livestock production.

Socioeconomic Characteristics

Percival (2002) examined the economic characteristics of the meat goat industry in the southeastern U.S. He reported that 75% of respondents were Whites; 64% were males; nearly 50% were between 41-60 years old, and 33% had at most associate's degrees or some college education. Also, Leite-Browning et al. (2006) conducted a statewide survey of goat producers in Alabama. They reported that, 45% had completed high school, while 37% had college degrees; 28% were 55-65 years old, and 85% were part-time farmers. In addition, Tackie et al. (2012) assessed the characteristics and status of small and limited resource meat goat farmers in the Alabama Black Belt Region. They found that 55% of respondents were between 46-65 years old; 80% were males; 70% were African Americans; another 70% had associate's degrees or lower educational levels; a little more than 50% were part-time farmers.

The USDA, National Animal Monitoring System [NAHMS] (2012) analyzed the characteristics of small-scale U.S. livestock operations. It reported that 87% of small livestock operations owned beef cattle, and 47% were residential/lifestyle farms in which the operator's earned substantial off-farm income. Quarcoo (2015) also assessed the educational program needs of small and limited resource meat goat producers. The author found that 56% of the respondents were part-time farmers; 62% were males; 46% were Blacks and another 46% were Whites. In addition, 64% were between 45-64 years old; 56% had at most associate's degrees or some college education; and 49% had $40,000 or less in annual household income.

Production Issues

Wilson et al. (1993) evaluated forage grazing systems. They reported that the benefits of intensive grazing included more complete use of plant material than in extensive grazing, better consumption of less preferred forage plants and weeds than other types of plants, less hoof damage than in confinement housing, less eye irritation than in weedy pastures, more even spreading of animal waste over pastures than otherwise, less nutrient run-off into streams and rivers than otherwise, and more forage feed produced per acre than otherwise.

Hanson (1995) examined adoption of intensive grazing systems by farmers. He found average forage supplied by grazing ranged from 51% in the fall to 71% in the spring. A key finding was that intensive grazing production systems mainly reflected a transition mode in terms of the farmers' approach to grazing practices. Another key finding was that the management practices used by the farmers were different from recommended practices. The extent of difference between recommended practices and typical practices, as it relates to rotation frequency, paddock size, stocking density per paddock acre, fencing and water source technology, fertilization, and forage sampling was wide. The farmers simply practiced differently from what had been recommended.

Goetsch et al. (2011) analyzed factors affecting goat meat production and quality. They reported that high concentrate diets increased internal and carcass fat in goats, including intramuscular fat, though levels were less than in cattle or sheep. Levels of saturated and monounsaturated fatty acids were greater in goats consuming concentrate in confinement compared with goats grazing on rangeland.

USDA, Animal and Plant Health Inspection Service [APHIS] (2012a) evaluated biosecurity in small-scale U.S. livestock operations. It found that high-sales operations were more likely to have had livestock or poultry moved off the operation and returned (22%) than low-sales operations (14%) within a 12-month period. Overall, 40% of operations that brought on new animals or had animals leave and return always quarantined the new or returning animals, but almost half of operations (48%) rarely or never quarantined new or returning animals. The study also identified reasons for not quarantining animals: 18% indicated inadequate labor or time; 68% indicated trusting the source of the new or returning animals; and 30% indicated lack of a separate enclosure or extra equipment.

USDA, APHIS (2012b) conducted an in-depth study of small-scale U.S. livestock operations for 2011. It found that 62% used a veterinarian for their livestock or poultry during the previous 12-months. A higher percentage of operations in the North Central (73%) and West regions (71%) used a veterinarian during the previous 12-months in the year 2011, compared with operations in the Northeast and South regions (59% and 55%, respectively). Of the 38% of operations that did not use a veterinarian, 66% indicated that they had no disease problem or need for a veterinarian; 44% indicated they provided their own health care for their animals, and 12% indicated cost as a reason.

Ward et al. (2008) examined factors affecting adoption of cow-calf production practices. The study reported that the most important factors influencing adoption of practices were (1) if the practice would reduce operator's labor, (2) increased dependence on cattle for household income, and (3) operator's age - younger operators' were more willing to adopt recommended practices than older operators.

Processing Issues

Troy and Kerry (2010) analyzed consumer perception and the role of science in the meat industry. They reported that technological developments in product safety, to a great extent, had been adopted by the industry in terms of robust Hazard Analysis Critical Control Point (HACCP) systems and product traceability. It reported furthermore that, although there has been a recent introduction by the beef industry of an automatic carcass grading system, the grade is still based on carcass fat cover, fat depth and conformation, and not based on commercial yield or eating quality attributes. The authors concluded that the meat industry needs to invest in and embrace an innovation agenda in order to be sustainable.

Bukenya and Nettles (2010) assessed perceptions and willingness to adopt HACCP practices among goat producers. They found a diversified set of preferences among producers with over 50% of respondents indicating willingness to adopt HACCP. The study also found that health concerns, marketing, and adoption cost were the main factors that were correlated with producers' willingness to adopt HACCP. The results indicated that producers who sold more than 50% of goats on-farm, direct to consumers were 25% less likely to adopt HACCP than producers who sold to auctions and slaughter plants.

Solaiman (2007) assessed the U.S. meat goat industry and its future outlook for small farms. The researcher found that, for each reported slaughtered goat, there were almost four that were not

reported, and most probably were processed at a farm or a private establishment. Furthermore, the author identified lack of slaughter and processing plants as one of the major challenges associated with increased goat meat production in the U.S. It was also argued that considerations should be given to proper harvesting and handling techniques of goat meat for Jewish (Kosher) and Muslim (Halal) consumers. Moreover, it was argued that value can be added in terms of desired products such as specialty sausages and other ready-to-eat meat products that can enhance marketing and profit margins.

Johnson et al. (2012) examined slaughter and processing options and issues for locally sourced meat. They reported that the total U.S. slaughter plant numbers had slightly declined for cattle at almost 3% and had increased for hogs at 14% over the time period of 2001 to 2010. Among small-sized plants, the number of livestock slaughtered from 2001 to 2010 had decreased by 13% for cattle and decreased 10% for hogs. They also reported that the total number of small-scale livestock slaughter facilities had declined over the past 10 years, as slaughter volumes at these plants have increased.

USDA, APHIS (2012c) analyzed characteristics of small-scale U.S. livestock operations. It reported that about 6% of small-scale operators used a USDA mobile slaughter unit for their livestock or poultry, and nearly 40% transported live animals to a slaughter facility. A higher percentage (27%) of operations in the West transported animals to a slaughter facility compared with operations in the North Central, about 6%; Northeast, 4%; and South, 2%.

Methodology

Data Collection

A questionnaire was developed for this study with three parts, namely, production, processing, and demographic information. It was submitted to the Institutional Review Board, Human Subjects Committee of the Institution, and approved before being administered. The questionnaire was administered to a convenience sample of livestock producers. Convenience sampling was used to select subjects, because of a lack of a known sampling frame from which subjects could be drawn.

The data were obtained through interviews of small beef cattle and meat goat producers at several program sites in South Central Alabama, and the producers were from 22 Alabama counties: Autauga, Barbour, Bullock, Butler, Chilton, Dallas, Greene, Hale, Henry, Lowndes, Macon, Montgomery, Marengo, Perry, Pickens, Russell, Sumter, and Wilcox (South Central Alabama counties), Dekalb, Randolph, Talladega, and Tuscaloosa (Non-South Central Alabama counties). The data were collected from summer of 2013 to spring of 2014, with the help of, Extension agents and other county personnel, as well as graduate students. The total sample size was 121, and this was considered adequate for the study.

Data Analysis

The data were analyzed by using descriptive statistics and chi square tests. The chi-square test description is adapted from Tackie et al. (2015). The chi-square test enables a researcher to formulate a null hypothesis (Ho), which states that two variables are independent of (or not related to) each other, and an alternative hypothesis (Ha), which states that two variables are not

independent of (or related to) each other. In this study, the null hypothesis and alternative hypothesis are stated generally as:

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

To determine the chi-square, χ^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
χ^2 = chi-square
fo = observed frequency
fe = expected frequency
i,j = values in the i^{th} row and j^{th} column, respectively
$\sum$ = summation

The observed frequency is the frequency generated from the survey, and the expected frequency is estimated from each cell in a contingency table as row total times 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; otherwise it is not rejected. In this study, hypotheses were stated for rotational grazing, type of feed, veterinary services (production characteristics), and how animals are sold (processing characteristics), on the one hand, and socioeconomic variables, on the other. In the case of rotational grazing, for example, the hypotheses were stated as:

Ho: Rotational grazing is independent of (or not related to) farming status
Ha: Rotational grazing is not independent of (or related to) farming status

Similar hypotheses were stated for the other socioeconomic variables: gender, race/ethnicity, age, education, and annual household income. Correspondingly, identical hypotheses were stated for the other characteristics and the afore-mentioned socioeconomic variables. The data were input into SPSS 12.0© (MapInfo Corporation, Troy, NY), and frequencies and percentages were assessed. Chi-square tests were conducted to determine relationships between the sets of variables.

Results and Discussion

Table 1 presents the socioeconomic characteristics. A majority of the respondents (69%) were part-time farmers and 30% were full-time farmers; almost 83% were males; 81% were Blacks; 51% were between 45-65 years, and 30% were 65 years or older. In addition, 65% had a two-year/technical degree, some college education, or lower educational level; nearly 30% had a four-year college degree. Approximately 51% had an annual household income of $40,000 or less, and 40% had an annual household income of more than $40,000. The results are similar to

those reported by Quarcoo (2015) and Tackie et al. (2012) who also found more part-time farmers than full-time farmers, more males than females, more producers in the 45-64 year range than otherwise, and more producers with an associate's degree or lower than otherwise.

Table 1. Socioeconomic Characteristics (N = 121)

Variable	Frequency	Percent
Farming Status		
Full-time	36	29.8
Part-time	83	68.6
No Response	2	1.7
Gender		
Male	100	82.6
Female	17	14.0
No Response	4	3.3
Race/Ethnicity		
Black	98	81.0
White	19	15.7
Other	1	0.8
No Response	3	2.5
Age		
20-24 years	3	2.5
25-34 years	1	0.8
35-44 years	1	9.1
45-54 years	25	20.7
55-64 years	37	30.6
65 years or older	36	29.8
No Response	8	6.6
Educational Level		
High School Graduate or Below	41	33.9
Two-Year/Technical Degree	19	15.7
Some College	19	15.7
College Degree	19	15.7
Post-Graduate/Professional Degree	17	14.0
No Response	6	5.0
Annual Household Income		
$10,000 or less	1	0.8
$10,001-20,000	16	13.2
$20,001-30,000	22	18.2
$30,001-40,000	23	19.0
$40,001-50,000	14	11.6
$50,001-60,000	19	15.7
Over $60,000	14	11.6
No Response	12	9.9

Table 2 shows nutritional characteristics. Nearly 68% of producers practiced rotational grazing; 65% indicated they knew the stocking rate for their beef cattle; 19% of the producers indicated they knew the stocking rate for their meat goats. The mean stocking rate for beef cattle was two per acre and the mean stocking rate for meat goat was four per acre (not shown in table). Also, 59% fed their animals a combination of forage (directly from pasture), hay, and concentrate.

Exactly 38% purchased hay; 22% cut and baled their own hay; and 36% did both. There seemed to be a fair balance among purchasing hay, and doing both, not so much for cutting and baling hay. About 69% had grasses (e.g., Bahia, Bermuda, or Rye) in their pastures, and 22% had both grasses and legumes (e.g., Clover, Lespedeza, or Kudzu) in their pastures. Also, 48% affirmed that they regularly conducted soil tests for their pastures, and 50% did not do so regularly. Consequently, 33% fertilized their pastures based on soil tests; however, 27% fertilized once or twice a year, and 30% fertilized based on other intervals (e.g., semi-annually or as needed). Although the majority of producers were feeding correctly, not many of them were conducting regular soil tests. This could impact the conditions of their soils which could also impact the quality of their forages or pasture.

Table 2. Nutritional Characteristics (N = 121)

Variable	Frequency	Percent
Rotational Grazing		
Yes	82	67.8
No	38	31.4
No Response	1	0.8
Stocking Rate		
Beef Cattle	79	65.3
Meat Goat	23	19.0
Both	5	4.1
Don’t Know	11	9.1
No Response	3	2.5
Type of Feed		
Forage (directly from pasture)	3	2.5
Hay only	5	4.1
Concentrate only	1	0.8
Forage and Hay	33	27.3
Hay and Concentrate	4	3.3
Forage, Hay, and Concentrate	71	58.7
Other	2	1.7
No Response	2	1.7
Hay Acquisition		
Purchase	46	38.0
Cut and Bale	26	21.5
Both	43	35.5
No Response	6	5.0
Forage Materials in Pasture		
Grasses	83	68.6
Legumes	4	3.3
Both	26	21.5
Other	4	3.3
No Response	4	3.3
Soil Tests for Pasture Regularly		
Yes	58	47.9
No	61	50.4
No Response	2	1.7

Table 2. Continued

Variable	Frequency	Percent
Fertilize Pastures		
Based on Soil Tests	40	33.1
Once a year	21	17.4
Twice a year	12	9.9
Other	36	29.8
No Response	11	9.1
Not Applicable	1	0.8

Table 3 presents health characteristics. Approximately 59% of producers affirmed that they have parasite problems; 36% used anthelmintics only to treat parasites, and 19% used a combination of methods to deal with the problem; 32% dewormed their animals quarterly, and 34% dewormed yearly, and 24% dewormed at other intervals e.g., semi-annually. Also, 77% said that they used veterinary services; 92% indicated they have not had any major disease outbreak on their farms; 79% indicated they quarantined newly purchased animals before adding them to their herds. The quarantine periods varied; 20% quarantined for 14 days; 30% quarantined for 21 days, and 17% quarantined for 28 days. Although a majority used anthelmintics and/or multiple means to treat parasites, they might have to use an integrated parasite management approach, with the help of an expert, such as an animal scientist or vet, to manage the parasite problem. The proportion that used a vet or quarantined newly purchased animals is higher than that of the 62% and 40%, respectively, reported by USDA APHIS (2012b) and USDA APHIS (2012a).

Table 3. Health Characteristics (N = 121)

Variable	Frequency	Percent
Parasite Problem		
Yes	71	58.7
No	49	40.5
No Response	1	0.8
Handling Parasite Problem		
Treat with Anthelmintics	43	35.5
Call Vet	3	2.5
Home Remedy	2	1.7
Multiple	23	19.0
No Response	49	40.5
Not Applicable	1	0.8
Deworming		
Monthly	9	7.4
Quarterly	39	32.2
Yearly	41	33.9
Other	29	24.0
No Response	3	2.5
Veterinary Services		
Yes	93	76.9
No	26	21.5
No Response	2	1.7

Table 3. Continued

Variable	Frequency	Percent
Major Disease Outbreak		
Yes	3	2.5
No	111	91.7
No Response	7	5.8
Quarantine		
Yes	95	78.5
No	19	15.7
No Response	7	5.8
Length of Quarantine Period		
14 days	24	19.8
21 days	36	29.8
28 days	20	16.5
Other	15	12.4
No Response	19	15.7
Not Applicable	7	5.8

Table 4 depicts processing characteristics. About 87% of producers sold their animals live; only a few slaughtered their animals, on-farm or at a local slaughter house. All those who indicated they slaughtered on-farm also indicated usually or always they followed safety practices. There is very little processing of animals into beef, goat meat, or related products. The reason may be due to the smallness of the operations or the producers may not think it is worth processing their animals. An ultimate interpretation is they may be providing their customers what they want. This finding is also in line with USDA, APHIS (2012c) that reported that only 2% of small livestock operations in the South used slaughter facilities.

Table 4. Processing Characteristics (N = 121)

Variable	Frequency	Percent
How Animals are Sold		
Live	105	86.8
Slaughtered	2	1.7
Both	9	7.4
Other	0	0.0
No Response	5	4.1
Where Slaughtered		
On-farm	6	5.0
Local Slaughter House	5	4.1
Other	1	0.8
No Response	4	3.3
Not Applicable	105	86.8

Table 4. Continued

Variable	Frequency	Percent
Safety Practices Followed		
Never	1	0.8
Seldom	0	0.0
Usually	2	1.7
Always	4	3.3
Not Sure	0	0.0
No Response	9	7.7
Not Applicable	105	86.8

Table 5 shows the chi-square test results between selected production characteristics (rotational grazing, type of feed, and veterinary services) and socioeconomic variables. Whether producer practiced rotational grazing or not was significantly affected by farming status (whether a producer was full-time or part-time) and education, respectively, $p = 0.093$, and $p = 0.099$. This means that farming status and education are not independent of whether producer practiced rotational grazing or not; the null hypotheses that these variables are independent of rotational grazing are rejected. For farming status, it could mean that full-time farmers are more able to devote time and other resources to rotational grazing compared to part-time farmers. Similarly, for education, producers with relatively higher education were more able to appreciate or understand rotational grazing relative to those with lower levels of education. Gender, race/ethnicity, age, and annual household income were not significant. The null hypotheses that these variables are independent of each other are not rejected.

Type of feed was significantly affected by farming status, gender, race/ethnicity, education, and annual household income, respectively, $p = 0.000$, $p = 0.000$, $p = 0.024$, $p = 0.007$, and $p = 0.000$. This means that farming status, gender, race/ethnicity, education, and annual household income are not independent of type of feed fed to animals; the null hypotheses that these variables are independent of type of feed fed to animal are rejected. For farming status, it could mean that full-time farmers are more able to devote time and other resources to feeding animal appropriately compared to part-time farmers. For gender, it probably means that males more so than females feed the appropriate type of feed to their animals. For race/ethnicity, it could imply that more White producers than Black producers feed appropriately. Similarly, for education, producers with higher education would feed appropriately, because they would tend to pursue more information and assistance to cause them to feed better compared to those with lower educational levels. In the case of annual household income, because of more resources at their disposal, those with higher incomes will tend to feed more appropriately than those with lower levels of income. Age was not significant. The null hypothesis that these variables are independent of each other is not rejected.

Veterinary services was significantly affected by education, $p = 0.054$. This implies that education is not independent of using veterinary services; the null hypothesis that these variables are independent of each other is rejected. The interpretation is that those with higher educational levels are likely to use veterinary services, because of their ability to seek and understand the importance of such services compared with those with lower levels of education. Farming status,

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

Variable	df	χ^2	*p* value
Rotational Grazing			
Farming Status	6	10.840*	0.093
Gender	4	4.259	0.372
Race/Ethnicity	6	3.616	0.729
Age	14	5.333	0.981
Education	10	16.026*	0.099
Household Income	14	13.944	0.454
Type of Feed			
Farming Status	21	61.159***	0.000
Gender	14	54.898***	0.000
Race/Ethnicity	21	35.623**	0.024
Age	49	55.807	0.234
Education	35	58.588***	0.007
Household Income	49	92.266***	0.000
Veterinary Services			
Farming Status	6	6.487	0.371
Gender	4	1.613	0.806
Race/Ethnicity	6	3.440	0.752
Age	14	13.317	0.502
Education	10	18.085**	0.054
Household Income	14	11.463	0.649

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

gender, race/ethnicity, age, and annual household income were not significant. The null hypotheses that these variables are independent of use of veterinary services are not rejected.

Table 6 depicts the chi-square test results between selected processing characteristics (how animal is sold) and socioeconomic variables. How animal is sold (whether live or slaughtered) was significantly affected by farming status, race/ethnicity, and annual household income, respectively, $p = 0.061$, $p = 0.091$, and $p = 0.010$. This means that farming status, race/ethnicity, and annual household income are not independent of how animal is sold; the null hypotheses that these variables are independent of how animal is sold are rejected. Considering farming status, it could imply that part-time farmers will sell more of their animals live than full-time farmers, because the former do not have the time to devote to sell otherwise. For race/ethnicity, it is more likely than not that Black producers will sell their animals live than White producers, because of the possibility of less resources of the former than the latter. Considering annual household income, it is possible that lower income producers will sell their animals live than higher income producers.

Conclusion

The study analyzed the characteristics and practices of selected Alabama small livestock producers, focusing on production and processing. Specifically, it identified and described socioeconomic characteristics; described and assessed selected production and processing characteristics and practices; and examined the relationships between socioeconomic characteristics and other characteristics or practices. Data were obtained using convenience sampling and analyzed by descriptive statistics and chi-square tests. The results revealed that the socioeconomic factors reflected many more part-time farmers (69%); many more male producers (83%); many more Black producers (81%); many more middle-aged producers (51%); many more producers with at most a two-year/technical degree, some college education, or lower educational level (65%), and many more producers with $40,000 or less annual household income (51%).

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

Variable	df	χ^2	*p* value
How Animal is Sold			
Farming Status	9	16.280*	0.061
Gender	6	6.162	0.405
Race/Ethnicity	9	14.998*	0.091
Age	21	12.089	0.937
Education	15	10.095	0.814
Household Income	21	38.900***	0.010

*** Significant at 1%; *Significant at 10%

In addition, most (68%) practiced rotational grazing, and a majority (59%) fed a combination of forage (direct from pasture), hay and concentrate. Nearly half of them conducted soil tests regularly for their pastures. Nearly three-fifths (59%) had parasite problems, and treated primarily with anthelmintics or a combination of methods; and 87% sold animals live The chi-square tests showed that farming status, gender, race/ethnicity, education, and annual household income had statistically significant relationships with selected production and processing characteristics.

Overall, an encouraging thing was that a majority practiced rotational grazing, and also, fed a combination of feeds. This needs to be lauded in an educational program and encouraged. Probably, feeding concentrate should be discouraged as much as possible, because not feeding concentrate saves money in the long-run. That about half of the producers were conducting soil tests regularly and nearly three-fifths had parasite problems is not good. This calls once again for education and training in order to demonstrate the importance of regular soil tests, and also, dealing with and/or minimizing the incidence of parasites. Furthermore, since farming status, gender, race/ethnicity, education, and annual household income appear to be important relative to the selected production and processing characteristics, these factors should be taken into consideration when developing training programs to assist producers in the study area. It is suggested that future studies involving in-depth statistical analysis be conducted.

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Endnotes

1. This study is Part 2 to the study: "An Analysis of the Characteristics and Practices of Selected Alabama Small Livestock Producers: A Focus on Economics and Marketing", published in the Professional Agricultural Workers Journal, Volume 3 Number 1.

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