

An Examination of Selected Small Livestock Producers' Implementation of Identified Best Practices in Alabama

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Abstract

Getting small farmers to adopt “best practices” has been a key challenge in general, but particularly, in the Southeastern U.S. This study focused on selected small livestock producers' implementation identified best practices in Alabama. Data were obtained through interviews from twelve producers in, primarily, selected South Central Alabama counties emphasizing best practices as well as other production indicators. The subjects were mainly beef cattle and meat goat producers. The identified best practices were: rotational grazing, soil testing, quarantining, deworming, veterinary services, and record keeping. The data were analyzed using descriptive narrative and simple statistics. The demographics showed more male than female producers, and more meat goat producers than beef cattle producers. Also, the results revealed that the commonest best practice was deworming; followed by quarantining, soil testing and record keeping, and rotational grazing. Using veterinary services was the least practiced best practice; most producers chose to provide their own animal health services. The results provide an opportunity for assistance providers to educate producers on the importance of adopting the best practices.

Keywords: Small Producers, Livestock Producers, Best Practices, Case Study

1. Introduction

Agricultural production practices have been of interest to both scientists and practitioners. According to Tilman, Cassman, Matson, Naylor, & Polasky (2002), agricultural production practices determine the level of food production. They explained that agricultural production practices are methods that meet current and future societal needs for food and fiber by maximizing the net benefit of the practices considered. These production practices fall into two categories, crop or livestock. Padgett, Newton, Penn, & Sandretto (2000) stated that crop production practices are methods used in growing food in an ecologically and ethically responsible manner, including production practices that do not harm the environment, such as mulching and weeding. Additionally, Johnson et al. (2010) argued that livestock production practices are carried out to ensure the production of healthy, quality, and safe food for consumption. The practices include, but not limited to reproduction and genetics, feeds and feeding systems, housing conditions, and animal health and general hygiene.

Generally, best practices are a gauge to determine how well specific practices are being implemented. Pennington, Daniels, & Sharpely (2008) defined best practices as methods that have generally been accepted to produce better results compared to traditional methods of production. They emphasized that best practices for crops, for example, help to reduce the movement of sediments, pesticides and nutrients, and other pollutants from the land surface or groundwater. Thus, protecting water and soil quality from potential adverse effects of land management practices. Also, Kim, Gillespie, & Paudel (2004) stressed that substantial research effort has been devoted to developing environmentally friendly practices so as to reduce pollutants from crop production. In addition, Sharpely et al. (2006) affirmed practices such as conservation tillage and crop rotation to protect the environment. According to them, the basic goal of implementing best practices is to protect water bodies and geographical locations. However, Klitzing et al. (2014) viewed crop production best practices from the perspective of managing constraints that arise from climate changes. These constraints stem from dealing with tillage, pest management, nutrient management, and water management and irrigation.

For livestock production, Sheffield et al. (2012, p. 3) explained that best practices include efforts to reduce the amount of soil, nutrients, pesticides, and microbial contaminants entering surface and ground water while at the same time, maintaining or improving the productivity of agricultural land. Also, Eisler et al. (2014) emphasized that best practices for livestock production includes, keeping animals healthy and adopting smart supplements in animal feed. Pennington et al. (2008) argued that best practices comprise conservation of soil, water, and air resources, including nutrient management, proper manure fertilization, legume establishment, riparian buffers, stream fencing, alternative watering, and pasture fencing.

On best practices for beef cattle and meat goats, Sheffield et al. (2012) and Solaiman (2017) are instructive. Sheffield et al. (2012) reiterated that sediment run-off reduction is one of the most important best practices a beef producer can pursue taking into consideration economic and environmental implications. They argued that allowing nutrient laden soil to run-off into rivers and streams is an economic loss, because soil lost in this way cannot again be used by producer to produce forage. In other words, retaining as much soil as possible can reduce the amount of fertilizer used to produce forage as it includes nitrogen, phosphorus, and organic matter.

In addition, they argued that environmental consequences of run-off include increased water turbidity, reduced light penetration, impaired photosynthesis, and impaired oxygen relationships (affecting fish populations). The reasons for these phenomena are because of the presence of inorganic nutrients and pesticides. Therefore, beef cattle producers, among others, should handle waste properly and in a cost-efficient way. Also, Sheffield et al. mentioned other specific best practices, such as pasture and forage management, breeding and reproduction management, mortality management, soil testing, manure management, water resources management, buffers and field borders management, farmstead management, pesticide management, and record keeping.

What is more, Solaiman (2017) mentioned, what she called the “ten commandments of goat production,” implying best practices. These include: “do not buy your breeding herd from a stockyard”; “isolate new arrivals (quarantine)”; “do not confine and concentrate goats in a small area”; “practice a routine feeding program”; “do not feed sheep mineral mixes to goats”; “castration is inhumane, costly and stunt the growth of market kids”; “do use improved pasture if possible”; “deworm wisely”; “keep records”; and “use biosecurity measures.”

Despite the forgoing discussion, there has been limited research in assessing the practices of small livestock producers, especially in the Southeastern U.S. Therefore, it is critical to examine in depth the practices of such producers. Hence, the need to undertake this study, because it will add to the existing literature, and also, provide insights on the adoption of best practices. The purpose of the study was to examine the implementation of identified best practices of selected small livestock producers in Alabama. The specific objectives were to (1) identify and describe general information on producers, (2) identify and describe specific characteristics on operations, and (3) assess the implementation of best practices.

2. Literature Review

The literature review focuses on selected relevant studies. It is, respectively, divided into two sections, previous studies on best practices in general and previous studies on best practices in livestock production. These studies provide an insight into what the best practices are in the literature, especially in livestock production. They are discussed sequentially.

2.1 Previous Studies on Best Practices in General

Sims, Edwards, Schoumans, & Simard (2000) studied integrating soil phosphorous testing into environmentally based agricultural management practices. They found out that the most appropriate testing method to assess the environmental risk of phosphorus to water quality remains unresolved. Therefore, they suggested that minimizing nonpoint source pollution of water bodies by phosphorous will require a long-term commitment of resources. Soil phosphorous testing, if properly integrated into more comprehensive approaches that address phosphorous transport, can be an effective tool to help prioritize how limited resources can be allocated to protect water quality and sustain agricultural productivity.

He, Cao, & Li (2008) assessed the factors influencing the adoption of pasture crop rotation in the semiarid area of China's Loess Plateau. Their results revealed that farmer's age had a positive and significant impact on the adoption of crop rotation; the older the farmer, the higher the probability of adopting the use of crop rotation. Education had a negative and significant impact on the adoption of crop rotation; the higher the educational level, the less likely farmers were to adopt pasture crop rotation. The results also showed that income had a significant and negative impact on adoption of pasture crop rotation. The reason for this is farmers whose primary source of income was not from agriculture were less concerned about land conservation compared to other farmers whose livelihood depended solely on agriculture. Herd size had a significant and positive effect on adoption rate. The larger the herd size, the more likely farmers were to adopt pasture crop rotation.

Lamba, Filson, & Adekunle (2009) investigated the factors that affect the adoption of best management practices (BMPs) in Southern Ontario. They reported that the size of farm, level of gross farm sales, level of education, and age of the farmers had significant impacts on the adoption of BMPs. The authors also found that the most implemented BMPs were crop rotation, 56%; followed by conservation tillage, 52%; and improvements in manure storage, 46%. The farmers who had large farms were more likely to adopt BMPs than those who had smaller farms. Also, farmers with higher level of gross farm sales had higher adoption rates of BMPs than those with lower gross farm sales.

Baumgart-Getz, Prokopy, & Floress (2012) examined why farmers adopt best practices in the U.S. The results showed that age played a role in the adoption of best practices. Age had a significant and negative impact on best practices adoption. The older the farmer was, the less the likelihood of adoption. The reason may be that older farmers have shorter planning horizon than younger farmers. Also, extension training had a positive impact on farmer adoption but was not significant. Education was not significant but had a positive impact on adoption of best practices. Their findings also showed that capital was the best financial predictor of adoption of best practices, which had a significant impact on the adoption rate. Thus, the farmer's financial resources had a positive impact on the adoption rate.

Moore, Mitchell, Silva, & Barham (2016) assessed the adoption of cover cropping and its intensity on Wisconsin's organic vegetable farms. The authors found that most of the farmers, 92%, practiced cover cropping at some point in their farming career. The authors also discovered that very few of the farmers were using cover crops until the mid-1980s, but the adoption rate increased from 40% in 2000 to 92% in 2013. The increase may be due to the implementation of National Organic Program, which encourages the use of cover crops.

2.2 Previous Studies on Best Practices in Livestock Production

Rahelizatovo & Gillespie (2004) examined the adoption of best management practices for livestock farms. They reported that practices with high economic benefits had high adoption rates; for example, waste management system, with an adoption rate of 83%; followed by fence, 80%; grazing management, 82%, and conservation tillage practices, 77%. In general, older farmers were less likely to adopt best practices. Plausible reasons were that (1) a change in technology represented an untried practice with uncertain results and these farmers were less willing to try such a practice; (2) a large investment in capital and knowledge were likely to be viewed as not feasible when the planning horizon is short so these farmers preferred not to try the practice. The authors also found that producers who were members of a farmer's association were likely to keep records, a best practice.

Kim et al. (2004) investigated the effect of economic factors on the adoption of best management practices in beef cattle production. The best practices were categorized into three groups, namely, erosion and sediment control practices; grazing management; and mortality, nutrient and pesticide management. They found that for erosion and sediment control practices the adoption rates ranged from 19 to 31%; for grazing management practices the adoption ranged from 57 to 75%; for mortality, nutrient, and pesticide management practices, the adoption rates ranged from 53 to 65%. The results also showed that crop diversification had a significant and positive impact on adoption of best practices. Farmers' tendency to avoid risk had a negative impact on adoption of best practices. Also, age had a significant and positive effect on four BMPs, which were rotational grazing, mortality management, nutrient management, and pesticide management. Producers' level of education, having a college degree, had a significant and positive impact on the adoption of best practices.

Vestal (2007) evaluated the production practices and management intensity of Oklahoma cow-calf producers across income and herd size. The author found that using a computer for record keeping was related to both herd size and the importance of reducing labor. As herd size increased, a producer was more likely to use a computerized record keeping system. The author also found that producers whose households depended on beef production as their primary source of income practiced vaccination diligently.

Deshpande, Sabapara, & Kharadi (2009) analyzed the breeding and healthcare management practices followed by goat producers in South Gujarat Region, India. The results indicated that only 22% of the goat meat producers practiced deworming. However, most of them, 69%, vaccinated their animals. The low adoption rate for deworming may be due to high cost of medicines and lack of awareness. Also, 73% used veterinary services because they were locally available. Only 5% quarantined their sick animals from the healthy ones; this may be due to the lack of facilities for separate housing for the animals.

Johnson et al. (2010) analyzed factors affecting the adoption of best practices in stocker cattle production. They reported that large farm operators were more likely to use best practices than small operators. For example, 77% of large producers implanted steers compared to 38% of small producers; 94% of large producers dehorned stocker cattle compared to 71% of small producers; 48% of large producers conducted soil tests at least every 3 to 4 years, while 52% of small producers never conducted soil tests, and 62% of large producers understood and allocated stocking rate correctly compared to 36% of small producers.

Signore (2014) assessed the willingness to adopt best management practices by beef cattle producers in a Southern Tennessee watershed. The author focused on four best practices: rotational grazing, pasture improvement, stream water crossing, and water tank systems. The results showed that pasture improvement was the most frequently adopted best practice with an adoption rate of 71%, while stream water crossing was the least adopted with an adoption rate of 19%. The reasons given for the high adoption rate for the former were the burden of clearing away debris and repairing fences. On the contrary, the reasons given for the low adoption rate for the latter practice were the steep banks or badly eroded drainage areas.

Bartlett, Jahan, Tackie, & Adu-Gyamfi (2016) analyzed the characteristics and practices of small livestock producers, focusing on production and processing. Their results showed that 68% of the farmers practiced rotational grazing; 48% practiced soil testing; 66% dewormed their animals quarterly or yearly; 79% practiced quarantining their animals before introducing them to the herd, and 77% used veterinary services.

3. Methodology

3.1 Case Study Approach

A case study approach was used for the study. This method allows a more in-depth analysis of subjects. The case may be an individual, a group, city or an event (Vogt, 1993); in this case, the units of analysis were the producers, mostly small producers. Furthermore, a case study may be used when there is limited information on

the subject matter being addressed. As a matter of fact, there have been relatively limited studies examining small producers and their practices in the local or regional food supply chain, particularly in Alabama. Consequently, in order to gain more understanding on this issue it was expedient to use the case study methodology. Also, the authors wanted to focus on a few small producers in order to delve more into their practices and perceptions on those practices. In this light, Stake (1995) explained that broadly, a case study deals with exploration and description, and also, entails drawing conclusions in particular contexts.

3.2 Data Collection and Analysis

In two previous studies by Bartlett et al. (2015) and (2016), data were obtained through interviews of 121 small beef cattle and meat goat producers at several program sites in South Central Alabama on farm, production, economics, and marketing characteristics and practices, in the summer of 2013 to spring of 2014. Following these studies, a set of practices were identified as “best practices.” A best practice is defined by Tackie (2016) as a practice that theoretically and practically, many research scientists and/or practitioners will generally agree that it is good to undertake to optimize resources or returns; such a practice should have been proven over time to yield positive results. In the aforementioned studies, six (6) such practices were identified as follows: rotational grazing, soil testing, quarantining, deworming, veterinary services, and record keeping.

Based on the studies, a questionnaire was developed with two main sections focusing, respectively, on general questions and specific best practices questions. Some of the general questions included type of enterprise, acreage, herd size, sales, cost, and whether or not producer develops enterprise budgets. The best practices questions enquired if farmer used the practice, and if so, to what extent. Producers were interviewed from summer 2015 through spring 2016 to ascertain how they fared on the said questions and/or practices. A sample size (case size) of 12 producers was obtained from the interviews, being about 10% of the original sample size of 121 (from the Bartlett et al. studies). The data were tabulated and analyzed by using descriptive narrative and statistics.

4. Results and Discussion

Table 1 shows the identified practice and its recommendation, and Table 2 presents the results of the identified practice and the proportion of producers actually implementing the practice from the studies by Bartlett et al. (2015) and (2016). For the identified practices and recommendations (Table 1), for rotational grazing, it is better to practice it all the time assuming paddocks exist. Pastures are optimally used when paddocks exist compared to when they are absent. For soil testing, it is recommended that annual pasture and hay fields be tested at least once a year and perennial pasture fields be tested at least once every two to three years. The quarantine time for both beef cattle and meat goats is at least 21 days. However, for deworming for beef cattle, it is recommended that it is done two times a year and for meat goats it is three times per year. Veterinary services should be provided as often as needed; it is better to use a veterinarian in certain cases that to cut corners. Finally, good records should be kept at all times; record keeping is the bedrock of a sound livestock enterprise, and in fact, all farming enterprises.

For the identified practice and the proportion of producers that were actually implementing the practice (Table 2), nearly 68% of producers practiced rotational grazing; 48% affirmed that they regularly conducted soil tests for their pastures; 79% indicated they quarantined newly purchased animals before introducing them to their herds. The quarantine periods varied; 20% quarantined for 14 days; 30% quarantined for 21 days; 17% quarantined for 28 days, and 12% quarantined for other time periods. About 66% dewormed quarterly and yearly; whereas, 90% dewormed quarterly, semiannually, or yearly (breakdown as follows: 32% quarterly, 34% yearly, and 24% semi-annually). Also, 77% indicated they used veterinary services, and 62% affirmed that they kept records. This is encouraging as record-keeping is one of the main keys to a successful farm operation. The assessment of these results is that the proportion implementing rotational grazing could be higher; soil testing is relatively low; quarantining could be higher; deworming is okay (in the order of 90%; note: internal parasites are a problem in the Southeastern U.S.); veterinary services is okay, but could be higher, and record keeping could also be higher.

Table 1. Identified Practices and Recommendations

Practice	Recommendation
Rotational grazing	(1) Ideal to use all the time if paddocks exist
Soil testing	(1) For annual pastures and hay fields, at least, once per year (2) For perennial pastures, at least, two to three times per year
Quarantining	(1) Beef cattle: three weeks or 21 days (2) Meat goats: three weeks or 21 days
Deworming	(1) Beef cattle: two times per year (2) Meat goats: three times per year
Veterinary services	(1) As often as needed
Record keeping	(1) All the time, on everything

Producers

The following narrative describes each producer and his or her specific characteristics related to the general and identified best practices. The summaries are reflected in Tables 3, 4, and 5.

Producer A

General

Producer A was interviewed on Thursday, July 23, 2015. He raises meat goats, sheep, and free range poultry as well as produces eggs in Macon County, Alabama. He is a full-time farmer, and his farm was established in 1995. He usually buys most of his meat goats and sheep and resells them. However, he keeps 10 does on an 8-acre pasture in any one year. He normally sells his products on-farm to individual customers. For meat goats, over the course of the year (2014), he bought and sold 200 goats. Each goat weighed, on average, 60lbs and sold for \$2.25/lb, and bought each goat for \$125 per head. Total revenue was \$27,000 (200 x 60 x 2.25) and total costs were \$25,000 (200 x 125); profit was \$2,000, plus \$25 processing fee per head. For sheep, over the course of the year (2014), he bought and sold 120 sheep. Each sheep weighed 50lbs and sold for \$2.25/lb, and bought each sheep for \$125 per head. Total revenue was \$13,500 (120 x 50 x 2.25) and total costs were \$15,000 (120 x 125); profit was -\$1,500, plus \$25 processing fee per head. In addition, once a year, there is a special sale for sheep (and 2014 was no different), and he charges \$2.50/lb selling price. He makes more money this way and makes up for any shortfall in revenue; the above shortfall in revenue or loss for the sheep enterprise was rectified in this manner.

Table 2. Identified Practices and Percentage of Producers Actually Practicing Practices

Practice	Percentage
Rotational grazing	68.0
Soil testing	48.0
Quarantining	79.0
Deworming	66.0 (Quarterly, Yearly) 90.0 (Quarterly, Semiannually, Yearly)
Veterinary services	77.0
Record keeping	62.0

Table 3. General Information on Producers

Producer	Date	County	Enterprise	Status	Gender
A	7/23/15	Macon	MG	FT	M
B	9/18/15	Talladega	MG	FT	F
C	9/22/15	Wilcox	MG	FT	M
D	9/22/15	Lowndes	BC	FT	M
E	12/7/15	Wilcox	MG	FT	F
F	12/7/15	Houston	BC	PT	M
G	2/18/16	Macon	BC	FT	M
H	3/28/16	Wilcox	MG	FT	M
I	3/28/16	Sumter	MG	PT	F
J	3/28/16	Sumter	MG	PT	M
K	3/28/16	Sumter	MG	FT	M
L	3/28/16	Monroe	MG	FT	M

MG = Meat Goats; BC = Beef Cattle; FT = Full-time; PT = Part-time; M = Male; F = Female

For poultry, over the course of the year (2014), he sold 250 birds. Each bird sold for \$12, and it costs \$7.82 to raise a bird. Total revenue was \$3,000 (250 x 12) and total costs were \$1,955 (250 x 7.82); profit was \$1,045. For eggs, over the course of the year (2014), he sold 3 dozen eggs per day, and eggs are sold over 120 days, bringing the total to 360 dozen per year. The 3 dozen were sold at \$3 per dozen, and it costs \$2.05 per dozen. Total revenue was \$1,080 (3 x 120 x 3.00) and total costs were \$738 (3 x 120 x 2.05); profit was \$342. He indicated that in 2014, he made a slight profit. He also expressed that he neither develops nor uses enterprise budgets or partial budgets as planning tools.

Best Practices

He does not do rotational grazing. He indicated he does soil testing on the 8 acres where the 10 does are kept, but has not done so in 6 years; so broom sage grass has taken over pasture. Broom sage grass thrives in acidic soils; his soil needs liming. He normally quarantines his animals 28 days before slaughter, and before introducing new animals to the herd. He deworms his animals every three months or quarter, i.e., four times per year, because of smaller acreage. In addition, he gets veterinary services every three months or quarter or 4 times per year, free of charge from Tuskegee University School of Veterinary Medicine. This is a way for students to learn or have practical experience. He sometimes keeps records, by keeping receipts and assessing them once a year, at the end of the year. Of the six identified best practices, he is doing okay in three (quarantining, deworming, and veterinary services); partially okay in one (record-keeping), and not okay in two (rotational grazing and soil testing).

Table 4. Specific Characteristics on Operations

Producer	Acreage	TR	TC	π / $-\pi$	ENTB	PARB
A	8	Yes	Yes	π	No	No
B	20	NS	NS	π	No	No
C	458	N/A	Yes	BE	No	No
D	124	NS	NS	$-\pi$	No	No
E	22	NS	NS	π	No	No
F	271	NS	NS	$-\pi$	No	No
G	120	Yes	Yes	π	No	No
H	50	N/A	Yes	$-\pi$	No	No
I	7	N/A	Yes	$-\pi$	No	No
J	50	N/A	Yes	$-\pi$	No	No
K	9	N/A	Yes	$-\pi$	No	No
L	14	N/A	Yes	$-\pi$	No	No

TR = Total Revenue; TC = Total Cost; π = Profit; $-\pi$ = Loss; BE = Broke-even; ENTB = Enterprise Budget; PARB = Partial Budget; NS = Not sure; N/A = Not applicable

Producer B

General

Producer B was interviewed on Friday, September 9, 2015. She raises meat goats in Talladega County, Alabama.

She is a full-time farmer, and her farm was established in 2003. The farm is about 20 acres, and had a total of 32 goats (including 1 Kiko buck, 1 replacement Boer buck, 15 kids, and 15 does). She sold six goats in 2014 on-farm direct to customers; all of them African Americans. The goats were sold during holidays: Memorial Day, July 4, and Labor Day. She was not sure of the exact amount of total cost or total revenue in 2014; however, she surmised she broke-even because of additional sales from compost. She sells compost for \$8 for a 5lb bag or \$200 per truck load. Had it not been for the compost she would have made a loss. She indicated that she neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Best Practices

She does rotational grazing. She has four paddocks, and rotates animals depending on what is in the paddock and how fast it is growing. She does soil testing once every 2 years. She normally quarantines her animals at least 14 days before introducing new animals to the herd. She deworms her animals as needed. In addition, she does not use veterinary services; she self-treats her animals. She keeps records, by using the computer and folder (including receipts and other documents). She keeps both production and financial records. Of the six identified best practices, she is doing okay in five (rotational grazing, soil testing, quarantining, deworming, and record keeping), and not okay in one (veterinary services).

Producer C

General

Producer C was interviewed on Tuesday, September 22, 2015. He raises meat goats in Camden, Wilcox County, Alabama. He is a full-time farmer, and his farm was established in 2007. The farm is on 458 acres of land, and he had a total of 48 goats (including 11 bucks and 37 does, no kids). In 2014, he did not sell any goats, so there was no total revenue. However, his total cost was \$10,000 (investment costs), an obvious loss. The producer neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Table 5. Responses on Identified Best Practices by Producers

Producer	ROG	SOT	QUA	DEW	VES	REK
A	No	No	Yes	Yes	Yes	Yes*
B	Yes	Yes	Yes	Yes	No	Yes
C	Yes	Yes*	Yes	Yes	No	Yes
D	No	No	Yes	Yes	No	Yes*
E	Yes	Yes	Yes	Yes	No	Yes
F	Yes	Yes*	No	Yes	Yes	No
G	No	Yes	No	Yes	Yes	Yes*
H	No	Yes*	No	Yes	No	Yes
I	No	Yes	No	Yes	No	Yes
J	No	Yes	No	Yes	No	No
K	Yes	No	Yes	Yes	No	No
L	No	Yes	Yes	Yes	No	Yes
CP+PP	5	9	7	12	3	9
CP	5	6	7	12	3	6

ROG = Rotational Grazing; SOT = Soil Testing; QUA = Quarantine; DEW = Deworming; VES = Veterinary Services; REK = Record Keeping; *Partially done; CP+PP = Complete Practice and Partial Practice; CP = Complete Practice

Best Practices

He does rotational grazing; moves the animals when the grass is about 6” from the ground. He does soil testing once a while. He quarantines his animals at least 30 days before introducing new animals to the herd. He deworms his animals as needed. In addition, he does not use veterinary services; he self-treats his animals. He keeps records in a book and keeping receipts and other documents. Of the six identified best practices, he is doing okay in four (rotational grazing, quarantining, deworming, and record keeping); partially okay in one (soil testing), and not okay in one (veterinary services).

Producer D

General

Producer D was interviewed on Tuesday, September 22, 2015. He raises beef cattle in Hayneville, Lowndes County, Alabama. He is a full-time farmer, and his farm was established in 1970. The farm is on 124 acres of

land, and he had a total of 48 cattle (including 3 bulls, 29 cows/heifers, and 15 calves). In 2014, he sold 25 cattle at the stockyard in Montgomery; he made “good” profit, although he is not certain about his total revenue or total cost. The producer neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Best Practices

He does not do rotational grazing and soil testing. He quarantines for one day to give drug or deworm before introducing new animals to the herd. He deworms his animals as needed. In addition, he does not use veterinary services; he self-treats his animals. He keeps records, receipts and other documents. Of the six identified best practices, he is doing okay in two (quarantining and deworming); partially okay in one (record keeping), and not okay in three (rotational grazing, soil testing, and veterinary services).

Producer E

General

Producer E was interviewed on Monday, December 7, 2015. She raises meat goats in Camden, Wilcox County, Alabama. She is a full-time farmer, and her farm was established in 2009. The farm is on 22 acres of land, goats on 12 and produce on 10. At the time of the interview, she had only two goats. She indicated that the cold weather killed 15 goats all Boers. In 2014, she sold only 4 goats; she made a loss. However, she could not provide actual total revenue and total cost values. The producer neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Best Practices

She does rotational grazing and soil testing. She quarantines new animals at least 14 days before introducing them to the herd. She deworms her animals three times per year or once every 4 months. Also, she does not use veterinary services; she self-treats her animals. She keeps records in a book. Of the six identified best practices, she is doing okay in five (rotational grazing, soil testing, quarantining, deworming, and record keeping), and not okay in one (veterinary services).

Producer F

General

Producer F was interviewed on Monday, December 7, 2015. He raises beef cattle (mostly Angus mixes), based in Pansey, Houston County, Alabama. He is a part-time farmer, and his farm was established in 1995. The farm is on 71 acres of land, 30 in Alabama and 41 in Florida, plus a 200-acre hay field in Florida. He had over 70 cattle (including 3 bull, 40 cows, 30 heifers, and several calves). In 2014, he sold cattle at the stockyard (in Dothan); he made a profit. He could not precisely tell how many cattle he sold, his total revenue, or total cost. The producer neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Best Practices

He does rotational grazing, and does soil testing but has not done so in a while. He does not quarantine new animals before introducing them to the herd (because animals brought on farm or purchased are from the area). He deworms his animals two times per year. Also, he uses veterinary services for his animals. He does not keep records. Of the six identified best practices, he is doing okay in three (rotational grazing, deworming, and veterinary services); partially okay in one (soil testing), and not okay in two (quarantining and record keeping).

Producer G

General

Producer G was interviewed on Thursday, February 18, 2016. He raises beef cattle (mostly mixed herd, but largely Angus based) in Cotton Valley, Macon County, Alabama. He is a full-time farmer, and his farm was established in 1990. The farm is on 120 acres of land, and he had a total of 15 cattle (including 1 bull, 12 cows/heifers, and 2 calves). In 2015, he sold 3 cattle at the stockyard in Montgomery. The total revenue was \$4,000 and total cost was \$3,200; there was a profit of \$800. The producer neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Best Practices

He does not do rotational grazing. He does soil testing once a year. He does not quarantine new animals before introducing them to the herd. He deworms his animals once per year. Furthermore, he uses veterinary services. He keeps records, mainly receipts. Of the six identified best practices, he is doing okay in three (soil testing, deworming, and veterinary services); partially okay in one (record keeping), and not okay in two (rotational grazing and quarantining).

Producer H

General

Producer H was interviewed on Monday, March 28, 2016. He raises meat goats (Spanish) in Boykin, Wilcox County, Alabama. He is a full-time farmer, and his farm was established in 2011. The farm is on 50 acres of land, and had 12 on goats (5 does, 6 bucks, and 1 kid). The producer did not sell any animals in 2015. Therefore, there was no total revenue, but costs were incurred; he made a loss. The producer neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Best Practices

He does not do rotational grazing. He does soil testing, but has not done so in two years. He does not quarantine new animals before introducing them to the herd, because he buys well-kept goats. He deworms his animals two times per year or once every 6 months. Furthermore, he does not use veterinary services; he self-treats his animals. He keeps records in a book. Of the six identified best practices, he is doing okay in three (soil testing, deworming, and record keeping), and not okay in three (rotational grazing, quarantining, and veterinary services).

Producer I

General

Producer I was interviewed on Monday, March 28, 2016. She raises meat goats (Kiko) in Cuba, Sumter County, Alabama. She is a part-time farmer, and her farm was established in 2010. The farm is on 7 acres of land, and had only 3 goats (2 does and 1 buck). She did not provide a reason for the low number of goats. The producer did not sell any animals in 2015. Therefore, there was no total revenue, but costs were incurred; she made a loss. The producer neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Best Practices

She does not do rotational grazing. She does soil testing once per year. She does not quarantine new animals before introducing them to the herd. She deworms her animals two times per year or once every 6 months. Furthermore, she does not use veterinary services; she uses animal health help from the Federation of Southern Cooperatives/Land Assistance Fund. She keeps records in a book. Of the six identified best practices, she is doing okay in three (soil testing, deworming, and record keeping), and not okay in three (rotational grazing, quarantining, and veterinary services).

Producer J

General

Producer J was interviewed on Monday, March 28, 2016. He raises meat goats (Spanish) in Cuba, Sumter County, Alabama. He is a part-time farmer, and his farm was established in 1986. The farm is on 25 acres of land, and had 17 goats (7 does, 5 buck, and 5 kids). The producer did not sell any animals in 2015. Therefore, there was no total revenue, but costs were incurred; he made a loss. The producer neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Best Practices

He does not do rotational grazing. He does soil testing once per year. He does not quarantine new animals before introducing them to the herd. He deworms his animals two times per year or once every 6 months. Furthermore, he does not use veterinary services; he self-treats his animals. He does not keep records. Of the six identified best practices, he is doing okay in two (soil testing and deworming), and not okay in four (rotational grazing, quarantining, veterinary services, and record keeping).

Producer K

General

Producer K was interviewed on Monday, March 28, 2016. He raises meat goats (Boer and Spanish) in Emelle, Sumter County, Alabama. He is a full-time farmer, and his farm was established in 2008. The farm is on 9 acres of land, and had 6 goats (3 does and 3 kids). The producer did not sell any animals in 2015. Therefore, there was no total revenue, but costs were incurred; he made a loss. The producer neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Best Practices

He does rotational grazing. He does not do soil testing. He does quarantine new animals before introducing them to the herd, at least 12 weeks or 90 days. He deworms his animals two times per year or once every 6 months. Also, he does not use veterinary services; he self-treats his animals. He does not keep records. Of the six identified best practices, he is doing okay in three (rotational grazing, quarantining, and deworming), and not okay in three (soil testing, veterinary services, and record keeping).

Producer L

General

Producer L was interviewed on Monday, March 28, 2016. He raises meat goats (Boer) in Monroville, Monroe County, Alabama. He is a full-time farmer, and his farm was established in 2014. The farm is on 14 acres of land, and had 10 goats (4 does, 3 bucks, and 3 kids). The producer did not sell any animals in 2015. Therefore, there was no total revenue, but costs were incurred; he made a loss. The producer neither develops enterprise budgets at the beginning of the year nor uses partial budgets to analyze investments.

Best Practices

He does not do rotational grazing. He does soil testing, once per year. He does quarantine new animals before introducing them to the herd, at least 3 weeks or 21 days. He deworms his animals two times per year or once every 6 months. Also, he does not use veterinary services; he self-treats his animals. He keeps records on computer. Of the six identified best practices, he is doing okay in four (soil testing, quarantining, deworming, and record keeping), and not okay in two (rotational grazing and veterinary services).

The literature review focuses on selected relevant studies. It is, respectively, divided into two sections, previous studies on best practices in general and previous studies on best practices in livestock production.

5. Conclusion

The study examined the implementation of identified best practices of selected small livestock producers in Alabama. Particularly, it identified and described general information on producers; identified and described specific characteristics on operations, and assessed implementation of best practices. Data were obtained via interviewing farmers in the summer of 2015 to the spring of 2016.

Based on the analysis, several of the producers have larger acreages, but use smaller parts for production; they have very small herds, especially those producing meat goats. Several of them have not been in the meat goat business for long, particularly, farmers H through L. Also, several of them are not making money; the reason may be because they are in the start-up phase or early stages of their enterprises. In fact, some have retired from other jobs and have gone into farming, or raise other livestock or grow crops (not captured in study). Most of them neither use enterprise budgets nor partial budgets. Furthermore, the leading best practice (based on complete practice and partial practice) was deworming, followed by soil testing and record keeping, quarantining, rotational grazing, and veterinary services. However, based on complete practice only, the leading best practice was, once again, deworming, followed by quarantining, soil testing and record keeping, rotational grazing, and veterinary services. Consequently, then, deworming, soil testing, record keeping, and quarantining may mean a lot to these small producers. An additional observation can be made on the nature of record keeping, and its classification into categories. Three did not keep records at all; this is classified as bad. Three kept records as receipts; this is classified as low level record keeping. Four kept records in a book; this is classified as high level record keeping. Two kept records on a computer; this is classified as very high level record keeping.

Overall, several recommendations can be made. First, since many of the producers had very small herds it will be appropriate increase their herds. Second, most of the producers were not sure of their total revenue or total cost, and therefore, were not sure if they were making profit or not; this aspect is not encouraging. They should be given production management training, especially financial management training. Third, since all of them did not use enterprise budgets or partial budgets, it reinforces the need for financial management training or the uses of these financial planning tools. Fourth, the producers will need education on several of the best practices, namely, veterinary services, rotational grazing, soil testing, and record keeping; and to an extent quarantining. Extension educators or Specialists will be needed to provide training for the producers in order to change the pattern of lack knowing aspects of general practice and/or implementing fully a best practice. Future studies are suggested to ascertain if the results in this study will replicate.

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