REASONS FOR U.S. PRODUCER SELECTION OF A GOAT ENTERPRISE

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ABSTRACT

This paper addresses 14 possible reasons why meat goat producers selected to engage in meat goat production, with results having implications for research, extension, and teaching efforts. A survey of meat goat producers was conducted. Reasons for entering meat goat production were assessed and analyzed using ordered probit models.

INTRODUCTION

Over the past 20 years, meat goat farming has been one of the fastest growing livestock production sectors in the United States. This has been response to increased demand for goat meat due to increased immigration into the United States. Our objective is to determine why farmers have chosen to produce meat goats. Although a number of publications have addressed meat goat marketing and consumption, we are aware of none that have explored the factors driving goat producers' decisions to enter this market.

In recommending enterprise mix, technology adoption, and other farming decisions, economists generally consider profit maximization. From the farmer's perspective, however, there are likely to be a number of additional considerations taken into account before making these decisions. Reasons for entering farming have significantly influenced production enterprise selection. Goals considered by researchers have varied, ranging from maximizing profit, having significant leisure time, providing family farm experiences, maintaining land, and others (Basarir and Gillespie 2006). For instance, some cattle farmers have indicated that their main reason for becoming a farm operator was to 'live in a rural area' or that they were seeking outdoor activity while dairy and crop farmers were more interested in taking over their family farms.

Given the recent expansion of the U.S. meat goat industry, we are interested in the motivations farmers have had for opting to produce meat goats. A greater understanding of these motivations will help to provide perspective on how the industry will progress as new technologies, management practices, and marketing options are introduced to farmers.

MATERIALS AND METHODS

A survey questionnaire was developed during 2011-2012 to collect information on U.S. meat goat producers' demographic data, farm type, preferences for breeding stock, goal structure, perceptions of challenges facing the industry and use of management and marketing practices. The Internet was searched to find names and addresses of U.S. meat goat producers. Websites visited were www.eatwild.com as well as those for meat goat producer associations and individual meat goat farms. A total of 1,600 names and addresses of meat goat producers for survey were collected. The mail survey questionnaire was mailed out to the U.S. goat producers during Summer, 2012, using four contacts (two questionnaire mailings and two postcard reminders). A 43% return rate resulted, considering those who responded that they were no longer in business or were bad addresses: 584 usable returns were received. This return rate is greater than most farm surveys that have used similar approaches. For instance, similarly administered surveys have included those for crawfish, 15% (Gillespie and Nyaupane, 2010); dairy farmers, 15% (Paudel et al., 2008); and beef producers, 41% (Gillespie et al., 2007).

Respondents were asked, "To what extent do you agree or disagree that your selection of a goat enterprise as opposed to other agricultural enterprises is because of the following reasons? Please circle a number for each statement based on the headings provided." The possible responses were Strongly Agree, Somewhat Agree, Neutral, Somewhat Disagree, and Strongly Disagree. The reasons assessed were: (1) strong market demand and prices for goats, (2) low cost to purchase and raise goats, (3) sustainable control of weeds and brush, (4) goats are prolific breeders, (5) goats combine well with cattle enterprises, (6) goat production is profitable, (7) goat production is fun / a hobby, (8) my family can be involved in the goat enterprise, (9) I can raise goats on a relatively small acreage, (10) I enjoy working with goats, (11) goat production fits well into my land

management plan, (12) goat grazing preferences are different from other species, (13) goats have shorter production cycles than other agricultural enterprises, and (14) a high level of skill is not mandatory for producing goats.

Survey responses were analyzed in two different ways. First, the means and standard deviations for each response were determined. Secondly, ordered probit analyses were used to determine whether producers in various meat goat industry segments provided significantly different responses to each of the questions. As discussed in Greene (2000, p. 875), an ordered probit analysis is used in cases where multivariate analysis is conducted to determine the impact of independent variables on a dependent variable that is ordinal in nature, such as ours. In the sense of ordering, "Strongly Agree" is a stronger response than "somewhat agree", which is a stronger response than "agree" etc., but the responses are not cardinal in nature. The ordered probit model assumes that the outcome is discrete and of an ordinal nature, and has a normally distributed error term.

Independent variables were included in the ordered probit models to determine differences in the degree of agreement or disagreement of specific industry segments with the reasons for entering meat goat production statements. Independent variables included: (1) *College*, whether the farmer held a 4-year college degree; (2) *Age*, the farmer's age in 15-year increments; (3) *Male*, whether the farm operator was a male; (4) *Off-Farm Job*, the percentage of the farmer's income coming from an off-farm job; (5) *Breeding Stock*, the percentage of meat goat sales for breeding stock; (6) *Show*, the percentage of meat goat sales for show; (7) *Number Goats*, the number of meat goats on the operation; (8) *% Farm Inc Goats*, the percentage of farm income from meat goat sales; (9) *Extensive*, the percentage of the farm's breeding aged goats reared in a production system that was "extensive-range or pasture/woods, not handled much, which was described in the

questionnaire as, "Goats kept on large tracts of pasture or rangeland, mostly 'fending for themselves.' Goats forage for food and care for young with minimal assistance;" (10) *% Drylot,* the percentage of the farm's goats of breeding age that were in a drylot, described in the questionnaire as, "Goats kept in a dry lot where there is no growing forage. Purchased feeds and/or hay fed;" and (11) regions. Regional variables included (1) *Southeast*, indicating that farm was located in AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, or WV; (2) *Northeast,* indicating the farm was located in CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, or VT; (3) *Midwest,* indicating the farm was located in KS, IA, IL, IN, MI, MN,MO, ND, NE, OH, SD, or WI; and (4) W*est,* indicating the farm was located in AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA or WY. The base region was the *Southern Plains,* which included OK and TX.

RESULTS AND DISCUSSION

Table 1 provides summary statistics for 14 potential reasons for people entering the meat goat industry including means and standard deviations for each potential reason. The top 5 reasons for selecting the goat enterprise, all with mean values >4, were: "I enjoy working with goats," "Goat production fits well into my land management plan," "I can raise goats on a relatively small acreage," "Goat grazing preferences are different from other species," and "My family can be involved in the goat enterprise." The ordering of the reasons can be seen in Table 1, with "Goat production is profitable," "Low cost to purchase and raise goats," and "A high level of skill is not mandatory for producing goats" rounding out the bottom three reasons for selecting the goat enterprise. Table 2 provides beta (β) coefficients and robust standard errors for the ordered probit models. The models are discussed by reasons for selecting the enterprise.

Strong Market Demand and Prices for Goats

The mean response for this reason for electing to produce meat goats was 3.71, or 'somewhat agree." This reason was ranked 9 of the 14 potential reasons. Goat producers with at least a 4-year college degree were less likely to have entered the meat goat industry because of strong market demand and prices for goats. Larger-scale and less diversified meat goat producers, as well as those who operated extensive systems, were more likely to have entered goat farming because of strong market demand goat prices.

Low Cost to Purchase and Raise Goats

The mean response for this reason for electing to produce meat goats was 2.95, or "neutral." This reason was ranked 13 of 14. Males were more likely to have entered into meat goat production for this reason. On the other hand, those holding off-farm jobs, producing higher percentages of goats for breeding stock and/or show purposes, and/or those who were located in the Northeast were less likely to have entered into meat goat production for this reason. Those who operated drylot systems were less likely to have entered into goat farming for this reason.

Sustainable Control of Weeds and Brush

The mean response for this reason for electing to produce meat goats was 3.76, or "somewhat agree." This reason was ranked 8 of 14. Goat producers with 4-year college degrees and those raising goats for show purposes were less likely to have entered into meat goat production for this reason. Meat goat producers who raised goats under extensive systems were more likely and those raising goats under drylot systems were less likely to have entered into meat goat production for this reason.

Goats Are Prolific Breeders

The mean response for this reason for electing to produce meat goats was 3.70, or "somewhat agree." This reason was ranked 10 of 14. Goat producers with 4-year college degrees

and those who raised goats for show purposes were less likely to have entered into meat goat production for this reason.

Goats Combine Well With Cattle Enterprises

The mean response for this reason for electing to produce meat goats was 3.45, or "Neutral." This reason was ranked 11 of 14. Producers with 4-year college drees, those who raised higher percentages for show, and those who were more specialized in meat goat production were less likely to have entered into meat goat production for this reason. Larger-scale producers and those who produced higher percentages of goats under extensive systems were more likely to have entered into meat goat production for this reason.

Goat Production Is Profitable

The mean response for this reason for electing to produce meat goats was 3.34, or "neutral." This reason was ranked 12 of 14. Producers with 4-year college degrees were less likely to have entered into meat goat production for this reason, while those who sold higher percentages of their animals for breeding stock purposes and/or were larger scale were more likely to have entered into meat goat production for this reason.

Goat Production is Fun / a Hobby

The mean response for this reason for electing to produce meat goats was 3.87, or "Somewhat Agree." This reason was ranked 7 of 14. Producers who raised higher percentages of their meat goats for sale as breeding stock or show, as well as those who farmed in the Midwest relative to the Southern Plains were more likely to have entered into meat goat production for this reason. Larger-scale meat goat producers were less likely to have entered into meat goat production for this reason.

My Family Can Be Involved in the Goat Enterprise

The mean response for this reason for electing to produce meat goats was 4.05, or "Somewhat Agree." This reason ranked 5 of 14. Producers who raised higher percentages of their meat goats for sale as breeding stock or show, those who resided in the Midwest relative to the Southern Plains, and/or those who produced higher percentages of their animals in drylot production systems were more likely to have entered into meat goat production for this reason. Those who held 4-year college degrees, were older, and/or were larger-scale were less likely to have entered into meat goat production for this reason.

I Can Raise Goats on a Relatively Small Acreage

The mean response for this reason for electing to produce meat goats was 4.25, or "Somewhat Agree." This reason ranked 3 of 14. Producers raising higher percentages of their goats for sale as show, those who were more specialized in meat goat production, and/or those who raised higher percentages of their goats in drylot production systems were more likely to have entered into meat goat production for this reason. Producers with 4-year college degrees, who were older, larger scale, and/or produced higher percentages of their animals under extensive production systems were less likely to have entered into meat goat production for this reason.

I Enjoy Working with Goats

The mean response for this reason for electing to produce meat goats was 4.59, or "Strongly Agree." This reason ranked 1 of 14. Older producers and those residing in the Midwest relative to the Southern Plains were more likely to have entered into meat goat production for this reason. Those holding 4-year college degrees, who were male, operated larger-scale operations, and/or raised higher percentages of their goats under extensive production systems were less likely to have entered into meat goat production for this reason.

Goat Production Fits Well into My Land Management Plan

The mean response for this reason for electing to produce meat goats was 4.30, or "Somewhat Agree." This reason ranked 2 of 14. Older producers were more likely to have entered into meat goat production for this reason. Producers with 4-year college degrees and/or those receiving greater percentages of their income from off-farm jobs were less likely to have entered into meat goat production for this reason.

Goat Grazing Preferences Are Different from Other Species

The mean response for this reason for electing to produce meat goats was 4.17, or "Somewhat Agree." This reason ranked 4 of 14. Producers more specialized in meat goat production and/or those who raised higher percentages of their goats under extensive production systems were more likely to have entered into meat goat production for this reason. Producers holding 4-year college degrees, those who received higher percentages of their income from off-farm jobs, and/or sold higher percentages of their goats for show purposes were less likely to have entered into meat goat production for this reason.

Goats Have Shorter Production Cycles than Other Agricultural Enterprises

The mean response for this reason for electing to produce meat goats was 3.94, or "Somewhat Agree." This reason ranked 6 of 14. Producers who were more specialized in meat goat production and those who raised higher percentages of their meat goats under extensive production systems were more likely to have entered into meat goat production for this reason. Producers with 4-year college degrees and/or males were less likely to have entered into meat goat production for this reason.

A High Level of Skill Is not Mandatory for Producing Goats

The mean response for this reason for electing to produce meat goats was 2.56, or "Neutral." This reason ranked 14 of 14. Producers who raised higher percentages of their goats

under drylot production systems were more likely to have entered into meat goat production for this reason. Those holding 4-year college degrees, who raised higher percentages of goats for show sales, and/or were larger scale were less likely to have entered into meat goat production for this reason.

Summary and Implications

It appears that some of the most important reasons for producers entering into meat goat production relate to a personal / family interest in raising goats, with the top reason being "I enjoy working with goats, "My family can be involved in the goat enterprise" at number 5, and "Goat production is fun / a hobby" at 7. The United States meat goat industry is still in its early stages of development and there is ample opportunity to expand and increase in efficiency. While we attempted to identify the main reasons why goat producers entered into the goat industry, we may have excluded some reasons, such as family-related obligations. Thus, results should be viewed as producer perceptions of our identified points of interest, but should not give implications of different reasons that were not queried. Understanding the attraction and or opportunities in this industry could be further explored and shared with other producers, making the industry more competitive.

Literature Cited

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Table 1. Means of Reasons for Selecting a Goat Enterprise Responses; 1=Strongly Disagree, 5=Strongly Agree.

Reason	Mean	Standard Deviation
I Enjoy Working with Goats	4.59	0.66
Goat Production Fits Well into my Land Management Plan	4.30	0.74
I Can Raise Goats on a Relatively Small Acreage	4.25	0.94
Goat Grazing Preferences Are Different from Other Species	4.17	0.86
My Family Can Be Involved in the Goat Enterprise	4.05	1.00
Goats Have Shorter Production Cycles than Other Agricultural Enterprises	3.94	0.90
Goat Production is Fun / a Hobby	3.87	1.10
Sustainable Control of Weeds and Brush	3.76	1.04
Strong Market Demand and Prices for Goats	3.71	1.01
Goats Are Prolific Breeders	3.70	0.92
Goats Combine Well with Cattle Enterprises	3.45	1.10
Goat Production Is Profitable	3.34	1.08
Low Cost to Purchase and Raise Goats	2.95	1.12
A High Level of Skill Is Not Mandatory for Producing Goats	2.56	1.26

Table 2. Ordered Probit Results of Selection Models.

Variable	Strong Market Demand and Prices For Goats		Low Cost To Purchase and Raise Goats		Sustainable Control of Weeds and Brush		Goats Are Prolific Breeders	
	Parameter Estimate β	Robust Standard Error	Parameter Estimate β	Robust Standard Error	Parameter Estimate β	Robust Standard Error	Parameter Estimate β	Robust Standard Error
College	***-0.4176***	0.0954	0.0581	0.0958	***-0.1883***	0.1004	***-0.2585***	0.1003
Age	0.0713	0.0601	-0.0214	0.0596	0.5795	0.0658	0.0551	0.0560
Male	0.1045	0.1023	***0.2183***	0.1003	0.0523	0.1021	-0.1530	0.1083
Off Farm Job	-0.0534	0.1073	***-0.1771***	0.1059	-0.0698	0.1085	0.1112	0.1134
Breeding Stock	0.0021	0.0016	***-0.0031***	0.0017	-0.0022	0.0017	0.0028	0.0018
Show	-0.0020	0.0020	***-0.0069***	0.0019	***-0.0056***	0.0019	***-0.0090***	0.0019
Number Goats	***0.0017***	0.0008	-0.0009	0.0007	0.0006	0.0009	-0.0009	0.0009
% Farm Inc Goats	***0.0789***	0.0297	-0.0016	0.0290	-0.0446	0.0289	-0.0418	0.0296
Midwest	0.2397	0.1855	-0.0435	0.2018	-0.0093	0.1719	0.1869	0.1947
Northeast	0.1462	0.2648	***-0.6095***	0.2471	-0.1733	0.2240	0.1948	0.2610
West	0.0470	0.2394	-0.1529	0.2405	-0.2174	0.2267	-0.0158	0.2277
Southeast	-0.0422	0.1870	-0.3010	0.2016	-0.1614	0.1720	-0.0085	0.1938
% Extensive	***0.3724***	0.1827	-0.2274	0.1725	***0.4633***	0.1692	0.0627	0.1782
% Drylot	0.0620	0.2170	***-0.3887***	0.2058	***-0.5989***	0.2002	0.1336	0.1943
Observations	498		496		497		495	
Pseudo R^2	0.0359		0.0250		0.0366		0.0376	

Note: Estimates that are bold and in italics were significant at $P \leq 0.10$.

Table 2. Continued.

Variable	Goats Combine Well with Cattle Enterprises		Goat Production is Profitable		Goat Production is Fun /a Hobby		My Family Can Be Involved in the Goat Enterprise	
	Parameter Estimate β	Robust Standard Error	Parameter Estimate, β	Robust Standard Error	Parameter Estimate β	Robust Standard Error	Parameter Estimate β	Robust Standard Error
College	***-0.2273***	0.1000	***-0.2595***	0.0974	-0.0180	0.0987	***-0.2957***	0.0999
Age	-0.0691	0.0615	-0.0534	0.0587	0.0019	0.0591	***-0.2570***	0.0634
Male	-0.0294	0.1047	0.1404	0.1009	-0.0621	0.1079	***0.2072***	0.1082
Off Farm Job	-0.0605	0.1097	-0.0478	0.1090	-0.1305	0.1105	-0.1569	0.1164
Breeding Stock	0.0010	0.0017	***0.0039***	0.0016	***0.0050***	0.0017	***0.0031***	0.0018
Show	***-0.0030***	0.0018	-0.0016	0.0020	***0.0072***	0.0021	***0.0059***	0.0021
Number Goats	***0.0021***	0.0008	***0.0026***	0.0007	***-0.0034***	0.0008	***-0.0015***	0.0007
% Farm Inc Goats	***-0.1058***	0.0297	0.0240	0.0294	0.0026	0.0311	0.0397	0.0304
Midwest	-0.1337	0.1884	0.0819	0.1723	***0.2418***	0.1837	***0.4574***	0.1650
Northeast	-0.3992	0.2715	-0.2219	0.2271	0.1956	0.2618	0.2955	0.2400
West	-0.1508	0.2248	0.1381	0.2157	0.2627	0.2364	0.1526	0.2232
Southeast	-0.2070	0.1876	0.0376	0.1746	0.1444	0.1828	0.1563	0.1650
% Extensive	***0.3560***	0.1590	0.2703	0.1826	-0.1686	0.1925	-0.1466	0.1819
% Drylot	-0.2116	0.1739	-0.2761	0.2232	0.1053	0.1942	***0.4910***	0.2224
Observations	490		495		496		492	
Pseudo R^2	0.0321		0.0285		0.0367		0.0535	

Table 2. Continued.

Variable	I Can Raise Goats on a Relatively Small Acreage		I Enjoy Working With Goats		Goat Production Fits Well Into My Land mgmt. Plan		Goat Grazing Preferences are Different From Other Species	
	Parameter Estimate β	Robust Standard Error	Parameter Estimate β	Robust Standard Error	Parameter Estimate β	Robust Standard Error	Parameter Estimate β	Robust Standard Error
College	***-0.3687***	0.1078	***-0.3134***	0.1189	***-0.2956***	0.1047	***-0.3069***	0.1044
Age	***-0.1271***	0.0624	***0.1870***	0.0695	***0.1118***	0.0658	0.0026	0.0646
Male	0.1453	0.1133	***-0.4702***	0.1263	-0.1483	0.1102	-0.1212	0.1120
Off Farm Job	-0.0759	0.1224	-0.1209	0.1293	***-0.2732***	0.1151	***-0.3009***	0.1181
Breeding Stock	0.0026	0.0018	-0.0011	0.0019	0.0014	0.0017	-0.0018	0.0017
Show	***0.0036***	0.0021	0.0018	0.0024	0.0013	0.0022	***-0.0038***	0.0022
Number Goats	***-0.0031***	0.0006	***-0.0020***	0.0008	0.0004	0.0008	-0.0003	0.0008
% Farm Inc Goats	***0.0671***	0.0322	0.0439	0.0345	0.0380	0.0312	***0.0535***	0.0320
Midwest	0.2234	0.1844	***0.4581***	0.1978	0.1791	0.1819	-0.2142	0.1952
Northeast	-0.0207	0.2509	0.3616	0.2526	0.1748	0.2288	-0.0004	0.2570
West	-0.0994	0.2251	0.0641	0.2546	-0.1475	0.2429	-0.2955	0.2517
Southeast	-0.1440	0.1797	0.0876	0.1955	-0.0654	0.1745	-0.2965	0.1951
% Extensive	***-0.5709***	0.1771	***-0.8296***	0.2080	0.1316	0.2023	***0.5401***	0.1969
% Drylot	***0.3739***	0.2162	0.1185	0.2547	-0.1308	0.2120	-0.1513	0.2265
Observations	498		495		496		496	
Pseudo R^2	0.069		0.0919		0.0307		0.0326	

Table 2. Continued

Variable	Goats Have Shorter Production Cycles Than Other Agricultural Enterprises		A High Level of Skill Is Not Mandatory for Producing Goats	
	Parameter Estimate β	Robust Standard Error	Parameter Estimate β	Robust Standard Error
College	***-0.2519***	0.0998	***-0.2053***	0.0967
Age	-0.0180	0.0628	0.0672	0.0588
Male	***-0.2053***	0.1046	0.0914	0.0985
Off Farm Job	-0.1355	0.1120	0.0633	0.1095
Breeding Stock	0.0004	0.0018	0.0004	0.0016
Show	-0.0023	0.0020	***-0.0051***	0.0020
Number Goats	-0.0005	0.0008	***-0.0030***	0.0009
% Farm Inc Goats	***0.0706***	0.0288	-0.0067	0.0275
Midwest	-0.0236	0.1700	-0.2364	0.1966
Northeast	-0.1122	0.2416	-0.3121	0.2626
West	-0.3045	0.2266	0.1703	0.2263
Southeast	-0.1756	0.1662	-0.0454	0.1974
% Extensive	***0.4943***	0.1765	0.0215	0.1966
% Drylot	0.2093	0.2062	***0.4767***	0.2018
Observations	497		497	
Pseudo R^2	0.0199		0.027	