

# ASSESSMENT OF THE MEAT GOAT INDUSTRY AND FUTURE OUTLOOK FOR U. S. SMALL FARMS



Sandra G. Solaiman, PhD, PAS

Professor  
Animal and Poultry Sciences  
Tuskegee University  
Tuskegee, AL 36088  
[ssolaim@tuskegee.edu](mailto:ssolaim@tuskegee.edu)

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## INTRODUCTION

Goats are the most popular animals in the world, and goat meat and milk consumption is most widely distributed in the world. Goats are popular with small holders because of their efficient conversion of feed into edible and high-quality meat, milk and hide. Goats are also used as holistic tools for land vegetation management and fire fuel load control. With proper grazing management, goats can eliminate noxious weeds, restore native grasses and prevent fires through fuel load reduction.

The purpose of this paper is to assess the current meat goat status in the world and meat goat industry in the United States to determine its future outlook. The data presented in this paper is drawn from five different sources—the 2000 population Census, the USDA 2002 Census of Agriculture, the USDA National Agricultural Statistic Service, the USDA Foreign Agricultural Service and United Nations Food and Agricultural Organization Statistic (FAOSTAT). In the United States, meat goat production has been gaining popularity in recent years particularly because of a growing population of ethnic and faith-based groups who consume goat meat. The national estimates, based on import data only, indicate that the United States is more than 750,000 head deficient in meeting current demands for goat meat.

Ethnic populations and faith-based consumers in the United States have increased more than 100% during the last decade, and this change may provide a great opportunity for meat goat production. A small herd of meat goats can be produced on 10 to 15 acres of pastureland and can fit into more than 90% of the U.S.'s farmsteads and enhance small farm diversity and profitability. Goat meat is also lean and healthier than other meats and can play a major role in the diet of health-conscious people.

## GLOBAL GOAT STATUS

According to FAOSTAT, 2005, world goat population was almost 800 million goats, up 165% from 485 million in 1985. World goat population has been increasing about 8% to 10% per year in last twenty years (Figure 1).

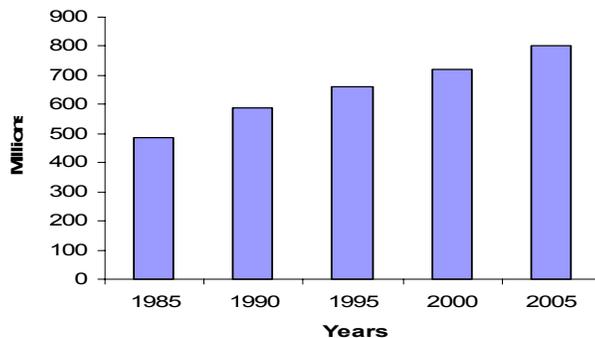


Figure 1. Goat population changes in the world.  
Source: FAOSTAT, 2005.

Most of the goats in the world are produced in Asia, followed by Africa. The top three producers of goats are China, India and Pakistan, all located in Asia (Table 1). Although Australia and New Zealand are two major exporters of goats, they are not major producers of goats.

Table 1. Top countries in goat population

	Goat Numbers	% of total
World	807,600,000	100
China	195,758,954	24.2
India	120,000,000	15.0
Pakistan	56,700,000	7.0
Bangladesh	36,900,000	4.6
Nigeria	28,000,000	3.5
Iran	26,500,000	3.3
Indonesia	13,182,100	1.6
Kenya	12,600,000	1.6
Tanzania	12,550,000	1.6
Mongolia	12,238,000	1.5
Mali	12,050,000	1.5
Others		34.6
U.S.	2,522,500	
Australia	400,000	
New Zealand	155,000	

Source: FAOSTAT, 2005.

According to FAOSTAT, total world meat inventory in 2005 was 265.1 million MT (metric ton). In the world, most consumed meat is pork followed by chicken, beef, lamb, turkey and goat (Figure 2). In the United States, total meat inventory in 2005 was 39.6 million MT. Chicken is most consumed meat (40%) followed by beef (29%) and pork (24%). Goat meat represents only 2% of global meat inventory. However, it must be noted that goat meat may not be traded as other major meats and it is mostly consumed locally. Goat meat inventory for United States did not exist in 2005.

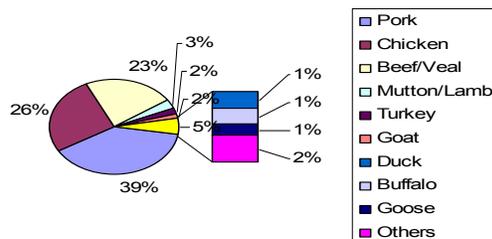


Figure 2. World meat inventory.

Source: FAOSTA, 2005.

In 2005, reported global goat meat production was 4.6 million MT, up 174% from 2.0 million MT in 1985 (Figure 3).

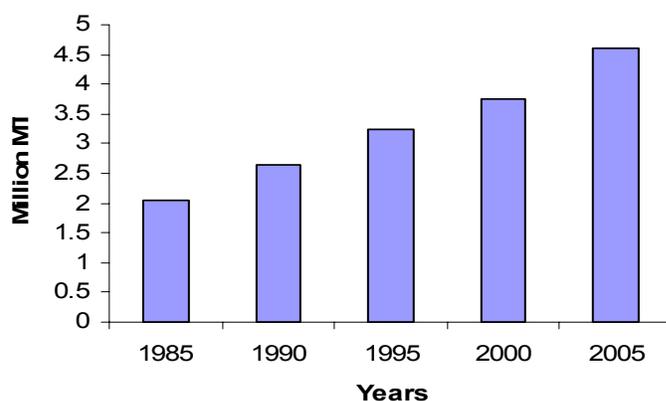


Figure 3. Changes in global goat meat production.  
Source: FAOSTAT, 2005.

China leads the world in goat meat production, claiming more than 42% of the world's share, followed by India and Pakistan (Table 2).

Table 2. Top producers of goat meat

	Goat Meat (MT)	%
World	4,562,054	100
China	1,926,914	42.2
India	475,000	10.4
Pakistan	370,000	8.1
Nigeria	147,066	3.2
Sudan	126,000	2.8
Iran	105,000	2.3
Indonesia	57,130	1.2
Mali	48,510	1.0
Turkey	45,000	1.0
Greece	43,000	0.9
Nepal	41,698	0.9
Mexico	41,626	0.9
Others	1,135,110	25.0

Source: FAOSTAT, 2005.

Australia leads goat meat exports in the world with 16,431 MT and 50% of the total world market. China, France and New Zealand claim 12.1, 8, and 3.6% of world market respectively (Table 3).

Table 3. Top exporters of goat meat

	Goat Meat (MT)	%
Australia	16,431	50
China	3,999	12.1
France	2,628	8
New Zealand	1,198	3.6
Industrialized Countries	21,194	64
World	33,087	

Source: FAOSTAT, 2005.

Total goat meat imported in the world is 52,477 MT. Top importers of goat meat are United States with 18% of the market, followed by China, with 10.9% and Italy, Canada and France each about 2% of the market (Table 4).

Table 4. Top importers of goat meat

	Goat Meat (MT)	%
U.S.	9,551	18.2
China	5,709	10.9
Italy	1,451	2.8
Canada	1,374	2.6
France	1,151	2.2
Industrialized Countries	16,097	30.7
World	52,477	

Source: FAOSTAT, 2005.

## GOAT INDUSTRY IN THE UNITED STATES

### Changes in Farms and Farming Acreage

According to the USDA Census (2002), the total number of U.S. farms and farming area has decreased; however, the average number of acres per farm increased slightly between 1997 and 2002 (Table 5).

Table 5. Changes in farm status from 1997 to 2004 in the United States

	1997	2002	2004
Number of Farms	2,215,876	2,128,982	2,113,170
Area in Farming (ac.)	954,752,502	938,279,056	936,600,000
Avg. Farm Size (ac.)	431	441	443

According to the 2004 USDA-NASS sample data, USDA-NASS, the average number of acres per farm was 443 acres. The majority of farms (84%) in the United States are considered small farms. Almost 35% of farms in the United States are less than 50 acres, more than 50% are below 100 acres, and almost 84% are less than 500 acres in size (Figure 4, Table 6).

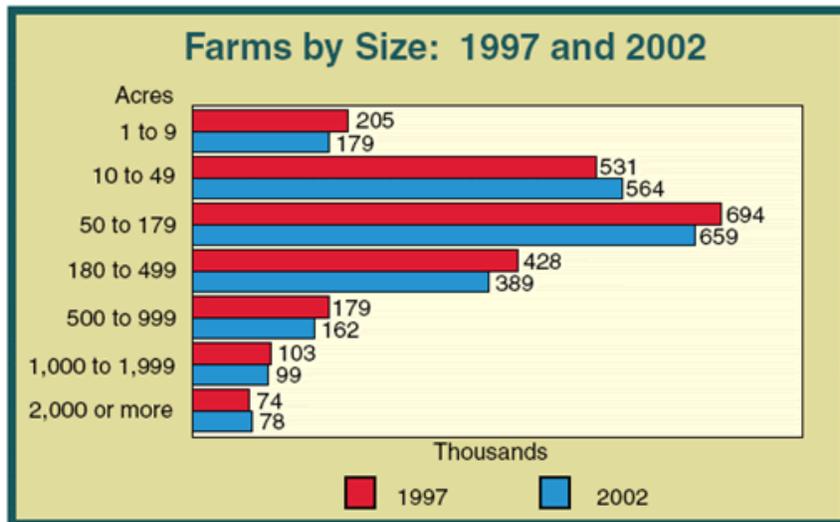


Figure 4. U.S. farm sizes and numbers

Source: [http://www.nass.usda.gov/Census\\_of\\_Agriculture/2002/Quick\\_Facts/farms.asp](http://www.nass.usda.gov/Census_of_Agriculture/2002/Quick_Facts/farms.asp)

Table 6. The U.S. farm profile by size (acres) and number

Farm Size Acres	Farm Numbers	%	Accumulated %
1-9	179,346	8.4	8.4
10-49	563,772	26.5	34.9
50-99	342,551	16.1	51
100-179	316,154	14.8	65.8
180-499	388,617	18.3	84
500-999	161,552	7.6	91.7
1000-1,999	99,020	4.6	96.3
2000 or more	77,970	3.7	100

Source: USDA Census (2002).

According to the 2002 USDA Census, while the number of acres in total woodland, pastureland and rangeland in the United States decreased from 1997 to 2002, the number of farms claiming pastureland and rangeland increased (Table 7). This could be an indication that more numbers of smaller farms are practicing and utilizing grazing and browsing animals like cattle and goats.

Table 7. Number of farms and acreage in woodlands and pasturelands in the United States

	1997	2002	% of 1997
Farms w/woodlands	858,438	818,105	95.3
Total woodlands (ac.)	76,854,833	75,878,213	98.7
Farms w/woodlands pastured	402,490	379,795	94.4
Woodlands pastured (ac.)	31,078,705	31,128,955	100.2
Farms w/pasturelands/rangelands	645,548	850,913	131.8
Pasture/rangelands (ac.)	398,232,125	395,278,829	99.2
Farms w/all types pastureland	1,429,638	1,384,798	96.8
All types pastureland (ac.)	495,699,214	486,965,589	98.2

Source: USDA Census, 2002.

### Status of Goat Farms in the United States

According to the USDA Census (2002), the number of goat farms increased more than 19% with over a 12% increase in the goat population from 1997 to 2002; however, the number of farms selling goats increased by over 45%, and goat sales were up by more than 55% (Table 8). USDA-NASS (2006)

sample data indicated that goat numbers are up 16% from the 2002 USDA Census and over 30% up from the 1997 USDA Census.

Table 8. Changes in all goat farming from 1997 to 2002 in the United States

	1997	2002	2006*	% of 1997
Number of farms	76,543	91,462		119.5
Number of goats	2,251,613	2,530,466	2,934,000	130.3*
Number of farms selling goats	29,937	43,495		145.3
Number of goats sold	843,773	1,314,310		155.8

\* Reflects the 2006 USDA-NASS sample data.

It is notable that during the same period the number of Angora goat farms declined with over a 63% decrease in the Angora goat population. The number of farms selling Angora goats declined with over 61% fewer goats sold (Table 9) and farms selling mohair declined more than 36% with over 54% less mohair sold (Table 10). The number of Angora goats declined another 11% from 2002 to 2006 as indicated by sample data.

Table 9. Changes in Angora goat farming from 1997 to 2006 in the United States

	1997	2002	2006*	% of 1997
Number of farms	5,485	5,075		92.5
Number of goats	829,263	300,753	238,000	28.7*
Number of farm selling goats	1,883	1,662		88.3
Number of goats sold	238,674	91,037		38.1

\* Reflects USDA-NASS sample data.

Table 10. Changes in mohair production from 1997 to 2002 in the United States

	1997	2002	% of 1997
Number of farms selling mohair	3,826	2,434	63.62
Pounds of mohair sold	5,287,312	2,416,376	45.70

Source: USDA Census (2002).

The number of U.S. dairy goat farms increased by 45% and dairy goat numbers increased by 52% from 1997 to 2002. The number of farms selling them increased by 71%; the number of goats sold increased 57% (Table 11). According to the 2006 USDA-NASS sample data, dairy goats gained another 10% in numbers from the 2002 USDA-Census.

Table 11. Changes in dairy goat industry from 1997 to 2006 in the United States

	1997	2002	2006*	% of 1997
Number of farms	15,451	22,389		145
Number of goats	190,588	290,789	296,000	155.3*
Number of farm selling goats	5,163	8,850		171.4
Number of Dairy goats sold	72,307	113,654		157.2

\* Reflects USDA-NASS sample data.

The number of meat goat farms increased by 18%, and the number of meat goats increased more than 57% from 1997 to 2002 (Table 12). The number of farms selling meat goats increased by 48% with an 108% increase in meat goats. Although there was a drastic reduction in Angora goat numbers (530,000) and sales, the increase in total goat population (over 250,000) in the United States can be attributed partially to a small increase in the numbers of dairy goats (over 100,000), and a major increase in the number of meat goats (over 700,000). The 71% increase in the number of dairy goats sold may have also contributed to the rise in the meat goat market. According to the 2006 USDA-NASS sample data, meat goat population was up another 38% from the 2002 USDA Census.

Table 12. Changes in meat goat farming from 1997 to 2006 in the United States

	1997	2002	2006*	% of 1997
Number of farms	63,422	74,980		118.2
Number of goats	1,231,762	1,938,924	2,400,000	194.8*
Number of farm selling goats	24,539	36,403		148.3
Number of goats sold	532,792	1,109,619		208.3

\* Reflects USDA-NASS sample data.

### Goat Industry Profile in the United States

According to the 2006 USDA-NASS, the U.S. goat population is almost 3 million heads. Goat numbers increased 10% annually from 1985 to 2006. More than 82% of goats in the United States are meat goats, 10% are dairy goats and 8% are fiber goats (Figure 5, Table 13).

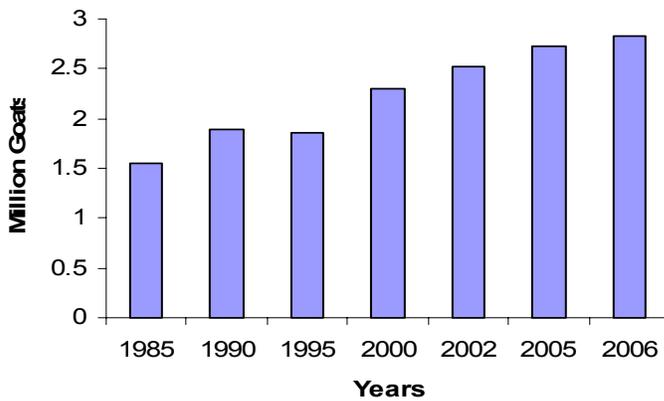


Figure 5. U.S. goat population changes from 1985 to 2006.

Table 13. Goat industry profile in the United States

	2002		2006*		Change
	Number	%	Number	%	% of 2002
All goats	2,530,466	100	2,934,000	100	115.9
Meat goats	1,938,924	76.6	2,400,000	81.8	123.8
Milk goats	290,789	11.5	296,000	10.1	101.8
Fiber goats	300,756	11.9	238,000	8.1	79.1

\* Reflects USDA-NASS sample data.

Most of the goats in the United States are produced in the South (Texas) and the Southeast (Tennessee, Georgia, Kentucky, North Carolina, Florida and Alabama), the Midwest (Oklahoma, Missouri) and the West (California). More than 44% of all goats are produced in the state of Texas alone. The number of goats in the state of Texas is 1.3 million, up 9% from the 2002 USDA Census. More than 70% of the total goat population in the United States is produced in the top ten states in goat numbers (Table 14). Many states experienced an increase in the goat numbers from the 2002 USDA Census. The state of Florida with 73,000 goat numbers experienced the highest gain (up 183%). The state of California claimed second place after Texas and moved Tennessee to third place. The state of Georgia claimed fourth place, surpassing Oklahoma. Missouri with more than 166% increase in goat population surpassed Kentucky, North Carolina and Alabama and claimed 6<sup>th</sup> place in the nation for goat production. The state of Florida with the highest jump in goat population, made the top 10 list as the 9<sup>th</sup> producer of goats in the nation.

Table 14. U.S. top ten states for numbers of all goats in 2006\*

	All Goats	% of Total	% of 2002
U.S.	2,934,000	100	116
Texas	1,300,000	44.3	109
California	133,000	4.5	129
Tennessee	123,600	4.2	108
Georgia	98,000	3.3	141
Oklahoma	90,000	3.1	109
Missouri	81,000	2.8	166
Kentucky	79,300	2.7	116
North Carolina	75,000	2.6	111
Florida	73,000	2.5	183
Alabama	50,000	1.7	99

\* Reflects USDA-NASS sample data.

More than 75% of meat goats are produced by the top ten states in number of meat goats. According to USDA-NASS sample data, Texas leads the nation with over 1 million meat goats and 45% of meat goat population, followed by Tennessee (Table 15). With a 63% increase in meat goat population, California surpassed Oklahoma, Georgia and Kentucky and claimed 3<sup>rd</sup> place. Georgia with a 44% increase in the goat numbers claimed 4<sup>th</sup> place, surpassing Oklahoma. Missouri with an 183% increase in meat goat numbers ranked 8<sup>th</sup>, and Florida with an 180% increase made the top 10 list as the 9<sup>th</sup> producer of meat goats in the nation.

Table 15. U.S. top ten states for numbers of meat goats in 2006\*

	Meat Goats	% of Total	% of 2002
U.S.	2,400,000	100	124
Texas	1,090,000	45.4	116
Tennessee	117,000	4.9	109
California	100,000	4.2	163
Georgia	95,000	3.9	144
Oklahoma	81,000	3.4	110
Kentucky	74,000	3.1	120
North Carolina	70,000	2.9	119
Missouri	68,500	2.8	183
Florida	65,000	2.7	180
Alabama	48,000	2.0	101

\* Reflects USDA-NASS sample data.

More than 57% of dairy goats are produced in the top ten states in number of dairy goats (Table 16). Most of the dairy goat producing states are located in the Midwest (Wisconsin, Iowa, Ohio, Michigan and Indiana), the Northeast (New York, Pennsylvania, and New England), and the South (Texas). Wisconsin, with a 27% increase in number of dairy goats from the 2002 USDA Census, leads the nation in the number of dairy goats, the position held by California in 2002. With more than a 200% increase in dairy goat numbers, Iowa surpassed Ohio, New York, Pennsylvania, Michigan and Missouri, claiming 4<sup>th</sup> place in the nation in the number of dairy goats. Although the state of Missouri showed an increase in the number of meat goats, the number of dairy goats declined in this state as well as in the state of Ohio.

Table 16. U.S. top ten states for numbers of dairy goats in 2006\*

	Dairy Goats	% of Total	% of 2002
U.S.	296,000	100	102
Wisconsin	33,000	11.1	127
California	30,000	10.1	80
Texas	30,000	10.1	133
Iowa	17,700	6.0	208
New York	12,000	4.0	94
Pennsylvania	11,800	4.0	93
New England <sup>1</sup>	11,000	3.7	165
Ohio	9,500	3.2	66
Michigan	8,600	2.9	96
Indiana	8,400	2.8	111

<sup>1</sup> CT, ME, NH, RI, VT

\* Reflects USDA-NASS sample data.

More than 75% of the fiber goats are produced in the state of Texas, and almost 90% are produced in the top 8 states in the number of fiber goats (Table 17). Most of the fiber goats are produced in the South (Texas), the Southwest (Arizona, New Mexico) and the West (California, Oregon), with little production in the Midwest (Nebraska, Missouri, Minnesota). Although the number of fiber goats continued to decline from the 2002 USDA Census, Nebraska experienced more than an 80% and Minnesota experienced more than a 30% increase in the number of fiber goats and claimed 5<sup>th</sup> and 7<sup>th</sup> rank in the nation, respectively.

Table 17. U.S. top ten states for numbers of fiber goats in 2006\*

	Fiber Goats	% of Total	% of 2002
U.S.	238,000	100	79
Texas	180,000	75.6	78
Arizona	18,000	7.6	65
New Mexico	7,000	2.9	99
California	3,000	1.3	66
Nebraska	1,800	0.8	185
Missouri	1,500	0.6	60
Minnesota	1,300	0.5	132
Oregon	1,300	0.5	60
Others	≤ 1,000		

\* Reflects USDA-NASS sample data.

## Goat Herd Size

An average goat herd size in the United States is highest for fiber goats followed by meat and then dairy goats (Table 18). Fiber goats are mainly concentrated in large herds and in the hot and dry climates of the South and the Southwest. Dairy goats are mainly located in the cooler environment such as northern California, Wisconsin and the Northeast. Meat goats are more produced in the South, the Southeast, the Midwest and the West. Meat goats are more widely distributed all over the United States as an indication of their adaptability to different environments. Occasionally dairy and fiber goats are sold for meat.

Table 18. Average goat herd size in the United States and select states for meat, dairy and fiber goats

	All goats	Meat goats	Dairy goats	Fiber goats
U.S.	28	26	13	60
Texas	69	59	14	254
Tennessee	22	23	--	--
California	29	24	29	19
Oklahoma	24	25	10	--
Georgia	24	24	--	--
Kentucky	20	21	--	--
Wisconsin	--	--	39	--
Ohio	11	11	9	--
New York	--	--	11	--
Arizona	--	--	--	527
New Mexico	--	--	--	72
Missouri	21	21	12	16
Alabama	23	23	9	10

Source: USDA Census (2002).

## Import and Export of Goat Meat

The United States was a net exporter of goat meat up until 1990. Exports ceased due to increased domestic demand after 1994. This shift is another indication of increased interest in goat meat consumption nationally. In 2006, the U.S. imported nearly 25 million pounds of goat meat. With an average carcass weight of 32.5 pounds., an estimated 750,000 goat carcasses were imported. This number of goats imported is a potentially viable value-added enterprise opportunity for U.S.-based goat farmers to diversify small farms in the United States.

## Goat Meat Imports

In 2006, the United States imported more than 11,000 MT (nearly 25 million pounds) of goat meat valued at \$41.8 million, up 131% from 8,462 MT in 2003; its total value was up 194% from \$21.5 million in 2003. However, goat meat imports in 2006 were up 329% from 3,360 MT in 1999; its total value was up 535% from \$7,850 million in 1999 (Table 19). The main exporters of goat meat to the United States are Australia and New Zealand with 92.5% of the contribution coming from Australia. As

indicated by Figures 6 and 7, there is a sharp increase in goat meat imports and dollars spent for goat meat. This trend will most probably continue unless there is an increase in domestic production.

Table 19. U.S. Goat meat imports (MT) and its value (\$1000)

	1999	2003	2006*	% of 1999
Goat meat	3,360	8,462	11,070	329
Dollar Value	7,850	21,484	41,816	535
\$/lb	1.06	1.15	1.72	162

\* Reflects USDA-NASS sample data.

Australia has been experiencing enormous growth in export of its goat meat (Figure 6), and this has pressured Australian exporters to market their bush or feral goats to fulfill their existing contracts.

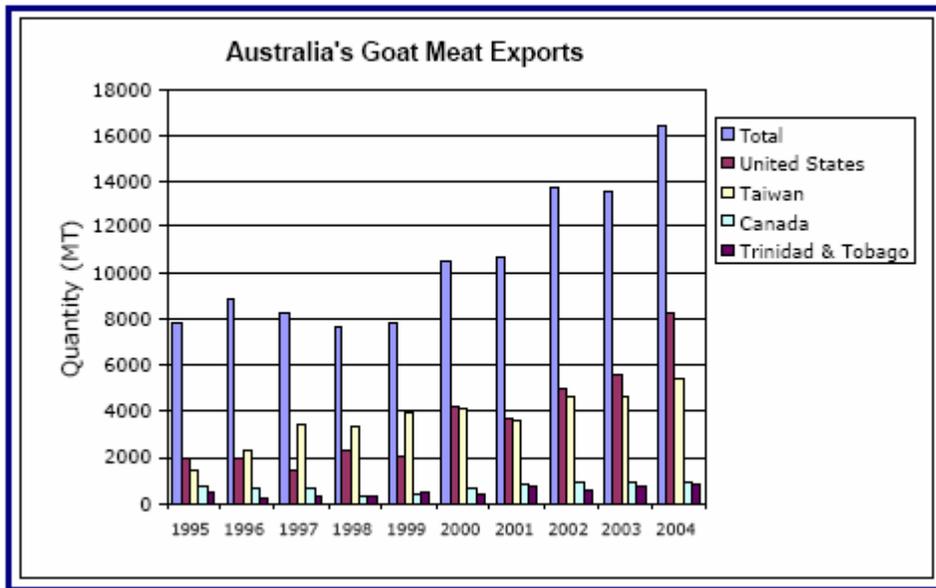


Figure 6. Australia exports to all destination of the world.

Source: USDA Foreign Agricultural Service, GAIN Report.

According to the 2006 USDA-FAS, the United States imported 5 and 18 MT of goat meat from Mexico in 2005 and 2006, respectively that are calculated in the total import (Figure 7).

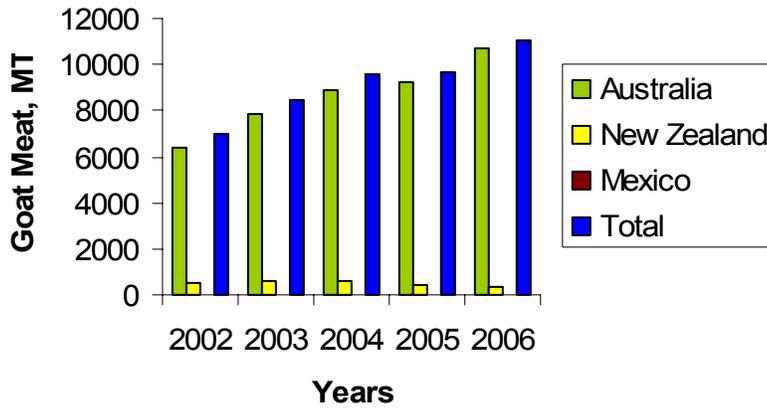


Figure 7. Changes in the goat meat imported to the U.S. from 2002 to 2006.

The United States continues to pay higher prices for imported goat meat. Imported goat meat prices increased sharply from 2003 to 2006. According to the USDA-FAS, price paid per pound of imported goat meat in 2006 was \$1.72, up 50% from \$1.15 per pound in 2003 and up 62% from \$1.06 per pound in 1999 (Table 19 and Figure 8).

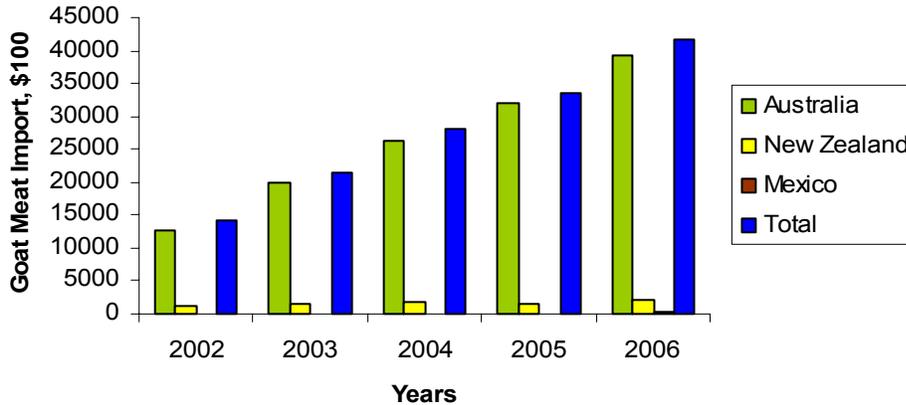


Figure 8. \$ Value of goat meat imported to the United States

Source: [www.fas.usda.gov/ustrade](http://www.fas.usda.gov/ustrade)

According to the 2006 USDA-FAS, the United States exported a little over 11,000 live goats and about 469 MT of goat meat mainly to Caribbean countries, a trend started in 2002 (Table 20).

Table 20. U.S. live goats and goat meat export(MT)

	2002	2003	2004	2005	2006
Live goats	26,081	29,579	3,775	3,976	11,075
Goat meat (MT)	61.5	54.8	84.4	883.2	469.0

Source: [www.fas.usda.gov/ustrade](http://www.fas.usda.gov/ustrade)

### Goats Slaughtered in Inspected Plants

The number of all goats slaughtered at the state and federally-inspected plants in 2006 were nearly 750,000, up 2.5 folds from 1990. Meat goat slaughter numbers have shown a solid increase since 1990 (Table 21 and Figure 9), and they likely will continue to increase due to trends in population growth that promote meat goat production. The meat goat industry in general is in its infancy; therefore, many on-farm slaughters are probably not reported. It can be conjectured that for every goat reported, there are at least four (estimated later in this report) that are not reported. Also it must be noted that 2006 was the first year that goat slaughtered in the state-inspected units were reported.

Table 21. Goats (numbers) slaughtered at the inspected plants in the United States

	1990	2006	% of 1990	% of 1990
U.S. Federal	229,600	581,743	254	
Total Inspected		749,300*		326

<sup>a</sup> First reported year for non Federally inspected units.

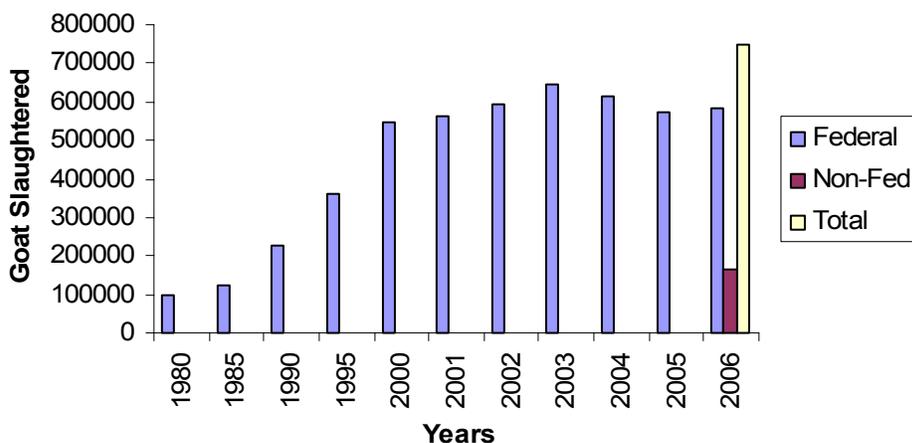


Figure 9. Goats slaughtered in federally and state-inspected plants in the United States

## Goat Consumption Based on Import and Slaughter Data

Goat consumption in the United States can be estimated based on imported goat meat and slaughter data. Goats consumed in the United States are nearly 1.5 million heads of goats annually. This represents an increase of 150% from 2002 and over 320% increase from 1999. Total goats imported were estimated based on total goat meat import and an average carcass weight of 32.5 pounds (65 pounds of live weight is average slaughter weight reported by USDA). Goat consumption in the United States has increased steadily since 1999 and will likely continue to increase as the demand is growing (Figure 10). The sharp increase in the number of slaughtered goats may be a reflection of the reported data from the state-inspected plants initiated in 2006.

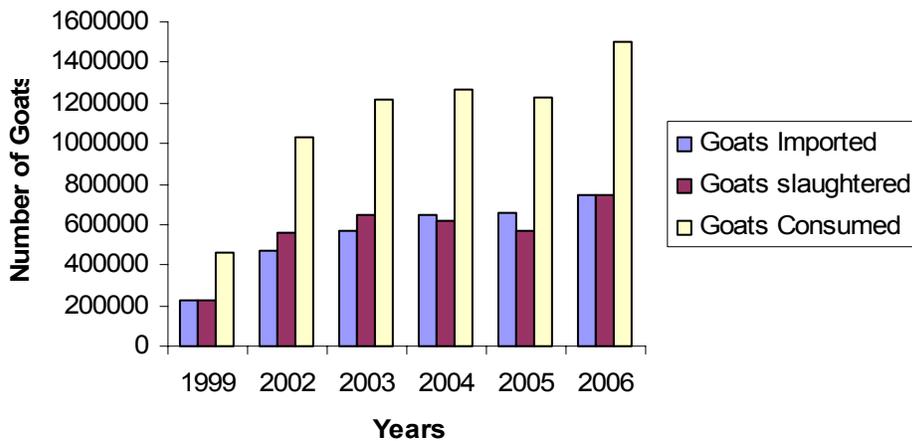


Figure 10. Changes in goat consumption in the United States

## FACTORS THAT MAY AFFECT GOAT MEAT CONSUMPTION

### U.S. Population Changes

The major contributing factor for the rise in interest in goat meat production in the United States is the shift in demographics. According to the 2000 Population Census, the foreign-born population in the United States is up 57% since 1990, from 19.8 million to 31.1 million and continues to increase on an upward trend that started in 1970. As of 2000, 51.7% of the foreign-born population was from Latin America and 26.4% from Asia. It is projected that the U.S. Hispanic population is rising at a rapid rate and will reach over 100 million or 25% of the population in the year 2050 (Table 22). This group of immigrants has a strong preference for goat meat and will add to the opportunity for this sector of agriculture to grow.

Table 22. Projections of total U.S. population changes by ethnic groups from 2000 to 2050

	2000	%	2005	%	2050	%
Total	281,421,906		295,507,000		419,854,000	
Asian	10,242,998	3.6	12,419,000	4.2	33,430,000	7.9
Black	34,658,190	12.3	38,056,000	12.9	61,361,000	14.6
Hispanic	35,305,818	12.5	41,801,000	14.1	102,560,000	24.4

Source: U.S. Population Census (2000)

Because of differences in growth rates, regional shares of the population have shifted considerably in recent decades. Between 1950 and 2000, the South's share of the population increased from 31% to 36%, in the West it increased from 13% to 22% and for the Midwest and Northeast it dropped (Table 23).

Table 23. Total U.S. population changes and changes by region from 1990 to 2000

	1990	2000	2005*	% Change		% of total		
				1990-2000	2000-2005	1990	2000	2005
U.S. total	248.7	281.4	293.6	13.2	4.3	100	100	100
Northeast	50.8	53.6	54.6	5.5	2.0	27	19	19
Midwest	59.7	64.4	66.0	7.9	2.4	29	23	23
South	85.4	100.2	107.5	17.3	7.3	31	36	37
West	52.8	63.2	68.3	19.7	8.1	13	22	23

\* Estimate

Most populous states in the nation were California with more than 36.1 million people, followed by Texas and New York with more than 22.9 and 19.3 million population, respectively. Among the top ten counties in population growth, seven were in the South and four of them were in Georgia, according to the U.S. Census Bureau (Population Distribution in 2005) report.

### Hispanic Population Changes in the United States

According to the U.S. Census Bureau (2005), Hispanics represent 42.7 million people or 14% of the U.S. population, up from 13% in 2000. This group is the second fastest growing group (after Asians) in the United States from 2000 to 2005. Table 24 indicates the changes of Hispanic population in different regions of the United States. In 2000, the Hispanic population was mostly concentrated in the West and the South.

Table 24. U.S. Hispanic population changes in the United States and by region

	1990	% of total	2000	% of total
U.S.	22,354,056	9.0	35,305,818	12.5
Northeast	3,754,389	7.4	5,254,087	9.8
Midwest	1,726,509	2.9	3,124,532	4.9
South	6,767,021	7.9	11,586,696	11.6
West	10,106,140	19.1	15,340,503	24.3

States with the highest Hispanic population in the Western and the Southern regions of the United States were New Mexico (43%), California (35%), Texas (35%), Arizona (29%), Nevada (24%), Colorado (19%) and Florida (19%), according to the U.S. Census Bureau (Race and Hispanic Origin In 2005) report.

### Asian Population Changes in the United States

According to the U.S. Census Bureau (2005), Asians represent 12.7 million of the population or 4.3%, up from 3.8% in 2000. About 50% of the U.S. Asian population resides in the West with more than 70% in California alone. Goat meat is a popular staple food for this group of immigrants and represents an opportunity for increased goat meat production (Table 25).

Table 25. Asian population changes in the United States and by region

	1990	% of total	2000	% of total
US	6,908,638	2.8	10,242,998	3.6
Northeast	1,324,865	2.6	2,119,426	4.0
Midwest	755,403	1.3	1,197,554	1.9
South	1,094,179	1.3	1,922,407	1.9
West	3,734,191	7.1	5,003,611	7.9

According to the U.S. Census Bureau (Race and Hispanic Origin in 2005), the fastest growing ethnic group in the United States was Asian (24%) followed by Hispanics (21%). The U.S Asian population mainly lives in Hawaii (41% of state's population) followed by California (12%), New Jersey (7%), New York (7%) and Washington (6%).

### Black Population Changes in the United States

According to the U.S. Census Bureau (2005), Blacks represent 37.9 million people or 12.8% of the population, up from 12.7% in 2000. More than 54% of the black population resides in the South, and some of them are undoubtedly new immigrants from Africa or Caribbean countries that have a preference for goat meat and warmer climates (Table 26). According to the U.S. Census Bureau (2005), almost 3.32 million of 34.2 million foreign-born populations are Caribbean and almost 1 million are

African. If climate affects one's choice of residence, probably a substantial percentage of these two groups reside in the South and consume goat meat.

Table 26. Black Population distribution in the United States and by regions

	<u>2000</u>	<u>% of total</u>
U.S.	34,656,000	12.9
Northeast	6,100,000	17.6
Midwest	6,500,000	18.8
South	18,982,000	54.8
West	3,077,000	8.9

Black population in the United States mainly resides in Mississippi (37% of the state's population), followed by Louisiana (33%), Georgia (30%), Maryland (29%) and South Carolina (29%).

### U.S. Foreign Born Population

In 2004 more than 32.4 million of the U.S. population or nearly 12% were foreign-born (Figure 11). Most foreign-born populations, Caribbean, South and Central American and Asian, historically have the preference for goat meat. This sector of population has increased in numbers during the last ten years, which may have contributed to the increased demand for goat meat.

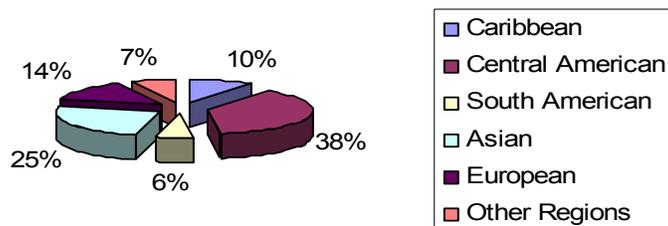


Figure 11. U.S. foreign-born population profile.

### Changes in Ethnic and Faith-Based Populations in the United States Having Preference for Goat Meat

Although ethnicity and faith tradition undoubtedly overlap, as of 2000 over a million Buddhists and a million Muslims, over 10 million Asians and over 35 million Hispanics are reported as residing in the United States (U.S. Census, 2000). Again, this increase from 1990 to 2000 creates an opportunity for

U.S. agriculture to produce new products to serve the food preferences of this ever-increasing population (Table 27).

Table 27. Percent changes in selected U.S. ethnic and faith-based population changes from 1990 to 2005

	1990	2000	2005*	% change	
				1990-2000	2000-2005
Muslims	0.53	1.1	--	109	--
Buddhists	0.40	1.1	--	170	--
Hispanics	22.4	35.3	42.7	58	21
Asians	6.91	10.2	12.7	48	24

\* Estimate, -- no data reported

### Socioeconomic Changes Among Ethnic Populations

The average household income increased 18.79% with incomes of African Americans and Asians increasing by 25.76 and 51.32%, respectively (Table 28).

Table 28. Changes in household income in the United States from 1990 to 2000

Household Income	1990 Income (in 2000 \$)	2000	% Increase
All Households	48,024	57,047	18.79
White	49,962	59,280	18.65
African American	31,860	40,067	25.76
Hispanic	35,915	42,411	18.09
Asian	46,412	70,231	51.32

Socioeconomic changes in Hispanic populations are indicated by the increase in the number of Hispanics who are principal operators of farms or farm owners (Table 29). The increase in income could possibly lead to more disposable income in ethnic households, which may result in more consumption of goat meat in this population group.

Table 29. Hispanics as principal farm operators or farm owners from 1997 to 2002

	1997	2002	% Change
Farm operators	33,450	50,592	51.2
Full ownership	21,742	36,650	68.5

## **ESTIMATED DEMAND FOR GOAT MEAT IN THE UNITED STATES**

The largest group of ethnic consumers of goat meat is Hispanics, with an increase of 57.94% in population from 1990 to 2000. Muslims, Asians and Africans also consume considerable amounts of goat meat. Goat consumption is steady except for special holidays when goat meat consumption increases three- to four-fold. There are increases in demand for goat meat for Easter, the 4th of July and certain Muslim holidays such as Aideh Ghorban or Aideh Fatre. Among Chinese, goat meat consumption is usually higher in colder months, between October and February. Understanding these ethnic traditions and matching the demand with production requires marketing education and techniques. Also, the special handling and harvesting procedures may differ according to different religions and traditions and can contribute to the value of the goat meat. Halal harvesting procedures for Muslims and Kosher techniques for Jews may add value to goat meat.

### **Estimating Population Having Preference for Goat Meat in the United States**

An attempt will be made to estimate demand for goat meat based on Hispanic, Asian, foreign-born African and Caribbean populations in the United States. Based on the U.S. Census Bureau (2005), there are about 12.4 million Asians and about 41.8 million Hispanics in the United States. Among an estimated 7 million illegal immigrants (U.S. Census, 2000), over 90% are Mexican and other Latin Americans that consume goat meat. There are almost three million foreign-born Caribbean and almost one million Africans in the United States. In total there are about 62.4 million potential goat meat consumers in the United States (Table 30).

### **Estimating Goat Meat Consumption and Meat Goats Needed in the United States**

The average number of persons living in a U.S. household is 2.59 (U.S. Census, 2000). For the ethnic population under consideration, a slightly higher number of 3 persons per household are used. Assuming conservatively that only 10% of these ethnic households consume goat meat, a total of 20.8 million households may consume goat meat in the United States (Table 30). According to the Agriculture Fact Book (2001-2002), Americans consume on average annually 195 pounds of red meat and poultry per capita in the year 2000. If every ethnic household (three persons) consumes only 72 pounds of goat meat annually, including holidays, there will be a projected demand for 149.76 million pounds of goat meat. Assuming a 32.5-pound carcass weight per goat (according to the 2006 USDA-NASS, average weight of goat slaughtered in the federally inspected plants was 62 pounds) the total number of goats needed is 4.08 million per year (Table 30). This is a modest estimate of the numbers of meat goats needed for the United States.

## Estimating the Numbers of Goats Processed on Private Establishments (Unaccounted)

Based on the import and slaughter data, more than 1.5 million goats were consumed in the United States in 2006. Undoubtedly, there are more meat goats consumed in the United States that are not reported. The remaining 2.58 million goats (4.08 million – 1.5 million) represent unaccounted numbers of meat goats that are consumed in the United States. With almost 750,000 goats slaughtered in state- and federal-inspected plants, for each reported goat there are almost four that are not reported and most probably are processed at a farm or a private establishment. This estimate may bring a closure to various numbers ranging from five to ten unaccounted goats for every reported one (Table 30).

It is notable that estimated demand does not include general population because goat meat is generally not available in the supermarkets and to general public. It is usually sold at ethnic markets and specialty stores. Making goat meat available to the general public will increase demand. Given these simple facts, it is clear that there is a great potential for the goat industry to grow and be organized in the United States. The small farm sector of the U.S. agriculture especially the Western, the Midwest and the Southeastern regions, have tremendous potential for meat goat production and can easily supply the demand for other metropolitan areas in the North and the Northeast.

Table 30. Estimated demand for goats and goat meat in the United States based on ethnic populations

	U.S.
Total Population (Asian and Hispanics and others)	62.4 millions
Number of households based on three persons	20.8 millions
Households that consume goat meat	2.08 millions
Annual household consumption including holiday, pounds	72
Total pounds of goat meat consumed/year	149.76 millions
Average goat carcass weight, pounds	32.5
Total goats in demand	4.08 millions
Total number of goats consumed (slaughter plus import)	1.50 million
Total number of goats consumed (not reported)	2.58 million
Ratio of goats reported: not reported	1: 4

## CONDITIONS PROMOTING GOAT PRODUCTION

### Women as Principal Operators

The number of women principal farm operators in the United States reached 13% in 2002. A goat is a smaller animal than a cow and very popular with women producers. Increasing numbers of women farm operators may promote and encourage meat goat production. Proper knowledge of goat husbandry, budgeting and marketing techniques will ensure a profitable agribusiness for them.

## Farm Size in the United States

The majority of farms in the United States are small farms and conducive to small-scale meat goat production. According to the USDA definition, small farms are those farms with total cash value sales of less than \$250,000. This category will include more than 90% of farms in the United States. Almost 80% of the U.S. farms are very small with cash value sales of less than \$50,000 (Table 31). Thus, the majority of U.S. farms are appropriate for goat production and can benefit from diversity of farm products and value-added through introduction of goats into the farming.

Table 31. U.S. farm profile by value of sale

Farms by value of sales	Number of Farms	% of total	Accumulated %
Less than \$2,500	826,558	38.82	38.82
\$2,500 to \$4,999	213,326	10.02	48.84
\$5,000 to \$9,999	223,168	10.48	59.32
\$10,000 to \$24,999	256,157	12.03	71.35
\$25,000 to \$49,999	157,906	7.42	78.77
\$50,000 to \$99,999	140,479	6.60	85.37
\$100,000 to \$499,999	240,746	11.31	96.68
\$500,000 or more	70,642	3.32	100.00
Total	2,128,982	100.00	—

Source: USDA Census 2002.

## Sources of Feed

Forages for hay and pasture are grown throughout the United States. Forages are the most inexpensive feed sources for goats. The Southeastern United States has great potential for available forage year-round. With proper management, cool season grasses such as Marshal ryegrass can be grazed from December until the end of April; warm season grasses can then serve as feed sources for summer. Under-story brush and other browse species are a goat's favorite meal. Crops such as cotton, corn, peanuts, soybeans, Irish potatoes, sweet potatoes, wheat and their by-products can serve as energy or protein supplements as needed, especially when the quality of pasture or hay is low. Cottonseed, peanut hay and sweet potato by-products are feedstuff appropriate for feeding goats. Garden products available in early spring and throughout the summer also can be used as goat feed. Commercial energy and protein supplements are also available; however, due to their cost, they should be used sparingly.

The Midwest region also produces the best quality pastures and forages. Good quality forages can be used for meat goat production, which reduces the requirement for supplemental grain feeding. Ryegrass, orchardgrass, bluegrass, festuloliums (cross between fescue and ryegrass) and other grasses as well as alfalfa, clover and other legumes are common forages produced in this region. Protein supplements such as soybean meal, linseed meal, sunflower meal and by-products such as corn stovers, soy hulls and others are also available for meat goat production. Also distillers' grain by-

products are plentiful in the Midwest and can be used as a good source of feed energy and protein for livestock including goats. These are by-products of the ethanol industry, one of the fastest growing segments of U. S. agriculture. These by-products include wet and dried distillers' grain, wet and dry distillers grain with solubles, modified wet cake and condensed distillers solubles.

California has the highest product value per acre in the United States and a large variety of agricultural products are grown on its fertile land. Energy-source cereal grains such as wheat, barley and sorghum are grown locally. Protein feeds such as cotton seeds, sunflower meal and other by-products are readily available. Roughages such as good quality hays and silages and by-products such as rice bran, wheat bran and sugar beet pulp are common. All kinds of leftover garden produce, sometimes sold in farmers' markets as compost, are a goat's favorite meal. California's diverse topography--valleys, foothills, coastal areas and deserts--make this diverse western state suitable for production of a variety of agricultural products including goats.

Goat production in rangeland, chaparral of Texas, Arizona and New Mexico can support minimum input goat production. Rangeland vegetation, brush, browse and other bushes and forbs are naturally present. Natural grassland can provide sufficient forage for growth and meat production in rainy seasons (spring and summer), and forbs, bushes, shrubs, and trees feed free-ranging goats other times of the year.

### **Health Consciousness and Goat Meat Quality**

Americans are conscious about what they eat now more than ever. Poultry consumption has increased from under 35 pounds per capita in 1980 to more than 65 to 70 pounds per capita (Figure 12). Three major factors have contributed to this increase: (1) poultry is a healthier product, being leaner than beef and pork; (2) its low cost and (3) its available. In comparison to poultry and other meats, goat meat is leaner with less fat waste, and it is high in iron and high in B12 with balanced amino acids (Table 32). Research has indicated that it has a balanced proportion of saturated/unsaturated fatty acids (Banskalieva et al., 2000), has lower n6:n3 ration (heart-friendly food) and it is a rich source of conjugated linoleic acid (anti-carcinogenic and only found in ruminants) (Chin et al., 1992). However, goat meat is more expensive than poultry, beef, lamb and pork and it is not readily available. The high price of goat meat along with the lack of availability prohibits its consumption.

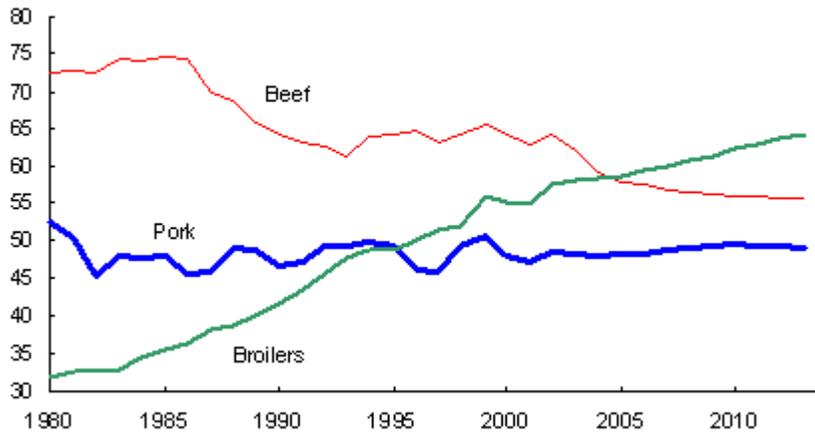
Table 32. Comparison of the chemical composition of goat meat and other meats (100 g)

Species	Energy Kcal	Fat %	Sat Fat %	Protein %	Iron mg	Cholesterol mg
Goat	144	3.0	0.93	27.1	3.8	67
Beef	288	18.8	8.0	27.1	3.0	>86
Trimmed	211	9.3	-	29.9	3.4	86
Pork	364	28.2	10.2	24.7	1.1	>86
Trimmed	212	9.7	-	29.3	1.1	86
Lamb	276	18.8	8.6	25.9	1.6	99
Chicken	190	7.4	-	24.7	1.1	>89
Skinned	141	4.1	1.3	28.9	1.8	76
Turkey	170	5.0	-	29.3	1.8	76
Ostrich	142	2.8	-	26.9	3.2	83
Veal	158	3.2	-	30.2	4.5	112

Source: South African Boer Goat Association.

### Per capita meat consumption

Pounds (boneless) per capita



Source: USDA Agricultural Baseline Projections to 2013, February 2004.  
Economic Research Service, USDA.

Figure 12. Beef, pork and broiler consumption per capita in the United States from 1980 to 2010.

## CHALLENGES ENCOUNTERED

Major challenges associated with increased goat meat production in United States are: Consumer education; producer education; lack of slaughter and processing plants; lack of organized markets and marketing channels. Consumer education could include: the dietary advantages of goat meat; why people of all the old cultures (Chinese, Mayan, African, Middle Eastern and Greek) eat this meat; and

widespread distribution of recipes for different goat meat preparations. Producers should be educated on the best management techniques to raise uniform goats for meat. Utilizing some superior breeds with fast growth rates, especially those from South Africa, have revolutionized meat goat production.

However, the most important factor in the growth of any industry is marketing. Keeping in touch with state agricultural and farmer organizations in developing new markets is important. Producers can benefit from *federally-inspected* slaughterhouses that can process goats as well as enable interstate sales. With goat meat prices high, direct marketing may be desirable, either on farm or using the Internet. Considerations should be given to proper harvesting and handling techniques of goat meat for Jewish (Kosher) and Muslim (Halal) clientele.

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. At the retail level, a recent survey conducted in the southeast by Tuskegee and other university researchers concluded that retailers carrying goat meat confirm that purchasers of goat meat are indeed the ethnic groups cited in this paper, and they should be provided the cuts and type of processing desired (which are ribs for steaks and barbecue and ground meat) (personal communication).

## CONCLUSION

There is an increased interest in goat meat consumption in the United States. Goats slaughtered in USDA-inspected plants as well as goat meat imported from Australia and New Zealand have sharply increased since 1999. The United States has changed from a net exporter to a net importer during the last decade. Increases in ethnic populations in the United States, especially Hispanics, Asians and Muslims, have contributed to this development. Also, goat meat is healthy meat and fits the designer diets of health-conscious Americans. Goat production is a great opportunity for small farm producers in United States to target these markets and diversify their farm products. There is a great opportunity for value-added products. However, consumer as well as producer education is needed and marketing structure must be strengthened.

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All inquiries should be addressed to:

Dr. Sandra G. Solaiman

105 Milbank Hall

Tuskegee University

Tuskegee, AL 36088

Phone: 334-727-8401

Fax: 334-727-8552

E-mail: [ssolaim@tuskegee.edu](mailto:ssolaim@tuskegee.edu)