Alternative Livestock Species in the State of Minnesota

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Research for this report was conducted by:

Keith DeHaan, Ph. D
Food & Livestock Planning, Inc.

Credits

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For further information please contact:

AURI
1501 State Street
Marshall, MN 56258
Phone: (507) 537-7440
Fax: (507) 537-7441
Website: www.auri.org

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Section 1

Executive Summary

This study focuses on the current and future potential of these alternate species as meat producing animals and birds. Species identified by AURI currently being raised in Minnesota and have interest from other potential producers include bison, elk, red deer, ostrich, emu, rabbits, free-range chickens, ducks, pheasants, lambs, and meat goats. With the exception of free-range chickens, ducks, and lambs, these species were not initially raised and marketed for meat production. Breeding, hunting, milk production in goats, antler production in elk and deer, exhibition, or novelty ownership was typically the primary use of these species. Meat production became an afterthought or an outlet for cull animals. Meat production has been a focus in the last decade for many of these species and is becoming the predominate use. Most of these species have by-products or co-products that are important in augmenting revenue from their production. These by-products are discussed in detail in this report.

A cross section of different companies that market these meat products were selected and interviewed to gain an understanding of potential volume and pricing of meat from alternative species. Bison, elk, red deer venison, ostrich, emu, and pheasant are predominantly sold by purveyors or marketing companies that specialize in specialty meats and game. These companies will wholesale meat to both restaurants and retail stores throughout the United States. Rabbit meat is largely sold in urban retail centers; free-range chicken is a growing market and is largely sold through natural or conventional retail stores; duck is sold by large conventional retail stores and food service purveyors. Most respondents in market interviews were open to new suppliers from Minnesota and positive about the future for most of these species. However, a lack of optimism regarding the future of rabbit and emu was noted by producers and marketers. Interview respondents also claimed that market demand for elk and ostrich exceeded supply. Bison production has dramatically increased, however; the market value of the meat has declined predominantly due to excess meat trimmings in frozen inventory.

Elk and venison imports competing with domestic elk and deer equal $9.2 million and could be displaced by American products once supply becomes more consistent and reliable. Companies interviewed selling 10,000 pounds per week of ostrich and emu meat claim that supply has become low and unreliable. Industry reports on rabbit usage in the United States equate to $29 million in meat value. Companies interviewed selling $1 million annually in free-range chicken claim that sales growth has been excellent and continued growth is expected. Companies interviewed selling $0.5 million in pheasant meat claim volume has grown, but there is strong competition for production because of live pheasant sales for hunting purposes. According to recent USDA reports[17], 124 million pounds of chilled and frozen duck was processed in USDA inspected facilities 2001 worth $202 million.

Thirty-two packing/processing companies either federally or state inspected in Minnesota, but also in South Dakota and Iowa, were interviewed regarding their experience and charges to slaughter and process alternate species. Information from

those interviews is included in this report. According to the latest surveys, association reports and interviews, the below table shows the estimated number of alternate animals and birds raised in Minnesota:

Table: 1.1

Species	Estimated Minnesota Production No.	Estimated least possible number available for annual slaughter
Bison	8,000	2,000
Elk	11,000	3,000
Red deer	Unknown	250
Ostrich	1,200	1,200
Rabbit	12,364	12,364
Free-range chicken	375,000 (avg.)	375,000 (avg.)
Duck	25,000	25,000
Lamb	155,000	94,000
Meat Goat	All goats - 7,871	200

Cut-out yield formulas and wholesale prices derived from the composite of merchandised meat parts were estimated in this report. An income and expense model was also developed to predict the net profit of raising and selling alternate meat species and an estimated break-even meat price. From this model, bison and elk represented the greatest potential for net margins. Rabbit, free-range chicken, duck, and pheasant were all predicted to have good margins per animal or bird and per pound of product. Lamb was represented as having good margins even though these margins were based on commodity prices. Additional margins could be generated by more specialized marketing, i.e. natural lamb. Lamb markets are typically in larger population centers such as East Coast cities. Few meat goats are raised and marketed in Minnesota. The market potential is good for meat goats but only to markets targeting specific ethnic populations. Some ethnic market opportunities for goats exist in the Minneapolis area, however; lack in comparison to ethnic centers in East Coast cities and Chicago. Emu was the only species predicted to have negative margins.

Buyers will be more apt to paying higher prices when purchasing meat and by-products for higher volumes and consistent supply. Several markets interviewed made reference to minimum purchase requirements in excess of what smaller individual producers can supply. Production is generally in the hands of smaller producers. It may be necessary for several producers to band together to represent their products in the marketplace. Several producers interviewed were trying to increase size and scale necessary to create more efficiency, consistency, and have greater power in the marketplace. Many types of business arrangements can be made between producers to achieve a more competitive advantage in the marketplace.

The exact supply, demand, cost of production and expected revenue for producing and marketing alternate species of animals and birds is uncertain. Performance models demonstrated in this report show positive gross profit margins are possible for most alternate species of animals or birds.

Section 2

Introduction

Minnesota has an abundance of land, water and feed resources to raise livestock and poultry, in addition to agricultural interests and processors that can slaughter, process, and package meat. Minnesota also has large population centers that purchase all types of meat products through retail or restaurant outlets. Because of the competitive nature of commodity beef, pork, and poultry industries and high cost of raising the number of species necessary to be competitive, other specialty or alternative species may be more financially attractive or suited to Minnesota producer resources.

With the exception of lamb, all other species represent of small volume of meat handled and distributed by a relatively small number of marketers. These markets are generally very diffuse. National associations representing these species are mostly uncertain as to the volume of meat sold domestically and internationally. With the exception of free-range chickens, ducks and lambs, these alternate species were not initially raised and marketed for meat production. Breeding, hunting, goat milk production, elk and deer antler production, exhibition, or novelty ownership are typically the primary use of these species. Meat production became an afterthought or outlet for cull animals.

Several strategies were used to generate information for this report. Interviews were conducted with many of the larger marketers and distributors of these meat species. A list of marketers interviewed can be found in Appendix B. Interviews were also conducted with producers and processors of the various alternate species. USDA and other published data were used where available and the author's experience was used in documentation of production, processing, and market information.

With the exception of duck, free-range chickens, lamb or goats; it was explained by several of those involved in the meat marketing field that game, specialty, or alternative species, is collectively less than one percent of the meat sold in the United States. Because these species represent such small market volumes, any percentage of growth appears large. The consumer does not necessarily demand these products because they are not purchased routinely; but rather, are tried or tested by the curious consumer. Most of this trying or testing is done initially in a restaurant but more recently in retail stores by educating the consumer on how to prepare the product. There remains to be relatively few cooking incidences by the consumer of these alternate meats, with the exception of the fowl species. Because of the growth of specialty meat marketers there is more service and education provided to chefs and retail meat departments on proper preparation of these delicate meat products. This service and education will help the growth of the alternative or specialty meat industry.

Many of the specialty meat marketers are very protective and sensitive regarding potential competition in such small marketplace leading them to by vague as to their volumes sold. This is also the reason why national organizations have not received cooperation from producers regarding the quantity of animals or birds processed and sold on an annual basis.

Section 3

Bison

3.1 Industry overview

According to the National Bison Association[11] there are approximately 300,000 bison in North America; 200,000 in the United States and 100,000 in Canada. Sam Albrecht[2] with the National Bison Association reported that the bison industry is growing about 20-percent per year, up from 227,500 in 1997. All but about 20,000 bison reside on private ranches. As in any livestock species, cull males and females are slaughtered for manufacturing meat and variety meats. However, young bulls are desired for slaughter purposes. Statistically, 25-percent of the bison population could be males available for slaughter. Exact bison slaughter numbers are not known due to agencies not being required to report this information and many bison being slaughtered in plants without federal inspection. Many bison are fed grain diets during the last months before slaughter to spread out marketing, increase the rate and efficiency of growth, improve consistency, and improve the flavor of the meat.

3.2 Product attributes

Bison is marketed and sold on its romance, novelty and uniqueness, lean content, all natural production characteristics, as well as other health advantages. According to a USDA publication[14], a bison composite sample contains 1.84-percent fat, which is lower in fat than chicken breast at 2-percent fat (Appendix A). Bison meat has less latitude for overcooking than beef or pork. Because of its leanness it is easier to overcook, resulting in dry and tough meat. More consumer education of proper preparation and cooking of bison is needed.

3.3 Primary market analysis – size, trends, customers

Bison meat has found its way into many types of markets. Initially, bison meat was sold largely in restaurants, however; marketing efforts have resulted in many retail stores carrying different whole-muscle cuts, frozen ground products, and further processed jerky products. Ground bison has found its way into many family style restaurants as well. Native Americans are selling bison through several marketing programs in the United States and it is becoming very common in casinos. According to the North American Bison Cooperative[46] the annual per capita consumption of bison meat in the United States is 0.3-ounces. This statistic leaves much opportunity for growth. Fourth quarter sales of bison are generally the highest.

North America holds the majority population of bison, with the exception of Canada, leaving threats from importers virtually impossible. The European Union (EU) marketplace has been explored with bison and is anticipated to have continued to growth due to difficulties within the beef industry in European countries and bans on hormone treated beef imports. Bison is recently being aggressively merchandised in Europe, primarily by the North American Bison Cooperative at 15,000-pounds per week. With 450-million people in Europe one would expect the potential to be extensive. One

bison processor interviewed, Bridgewater Quality Meats[43], has the only Kosher approved bison plant in the United States and attempts to sell an average of 10,000-pounds of bison per week into Kosher markets.

Trade International, Minneapolis[8] claims that the European Union marketplace is not unlimited. There is a glut of meat protein in the European markets from both production and imports from all over the world resulting in plenty of competition. Currently, there is only Canadian and United States bison, but many specialty products are imported from other countries such as buffalo from Africa. In order for European Union countries to be successful there needs to be a marketing effort directed towards specific customers. There is also a 20-percent tariff on meat exported from the United States to European countries that needs to be accounted for.

Several companies marketing bison meat were interviewed and can be found in Appendix B of this report. Game and specialty marketing companies selling bison meat in decreasing order of volume of sales are: North American Bison Cooperative, New West Foods, Rocky Mountain Natural Meats, House of Smoke, Sayersbrook, Native Game Company, Specialty Game, Chicago Game, Prairie Harvest, and Seattle's Finest Exotic Meats. With the exception of North American Bison Cooperative, these companies collectively market in excess of 91,000-pounds of bison meat per week. Most of these companies are interested in new suppliers and, with the exception of North American Bison Cooperative, would sell in excess of 209-head of bison meat per week. This bison meat could come from several bison meat packers. North American Bison Cooperative slaughters 30,000-head per year; and process approximately 600-bison per week.

All of the retail stores or companies interviewed for this report sell bison meat, however; the volume per store is small. Lund's and Byerly's collectively sell 1,000-pounds per week throughout twenty stores. Oxford Trading Company, a retail distribution company sells 2,000-pounds per week of bison to retail customers in New England. A general theme of those interviewed claim that bison has the potential to grow in volume sold. North American Bison Cooperative[46] has increased sales 45-percent over that of the previous year. Because bison meat tends to be very sensitive to time and temperature and is easy to overcook, the North American Bison Cooperative is experimenting with pre-cooked and prepared items that the consumer can heat and serve.

As shown in the below table (table 3.4.1), bison meat consists of many different possible items sold in the marketplace. Several of the whole-muscle cuts, especially those in loin and rib areas of the carcass, sell readily. The trim products, greater than 20-percent of the carcass, have historically been problematic and tend to have slow sales movement because of limited market potential. Currently, a significant portion of the round and chuck cuts are ground for manufacture of ground bison, which meets the market demand. The trim has less market opportunity for grinding and further processing and consequently sells at low values or is placed in frozen inventory while new market opportunities are investigated. The National Bison Association[11] estimates that there are 10-million pounds of frozen bison trim in inventory at the time of this report. The Federal Distribution Program will purchase $2.775 million in bison trim in 2002 for distribution to Native American reservations. It is anticipated that this program will reduce the amount of frozen bison trim in storage.

3.4 Carcass breakdown and yields

Bison bulls are typically slaughtered between 18 and 20 months of age and around 1,000-pounds of weight. The dressing percentage is approximately 59.5-percent. The average carcass weight will range from 595 to 655-pounds. The fabrication styles of cutting up bison carcasses are similar to that of beef with the possible exception of higher percentages of whole muscles placed into trim. The below table is an example cut-out of a 620-pound bison bull carcass:

Table: 3.4.1

Primal	Sub-primal & miscellaneous cuts	Percentage of carcass weight
Chuck	Chuck roll	7.24
Chuck	Chuck tender	1.13
Chuck	Shoulder Clod	6.04
Rib	Rib eye	3.55
Loin	Strip loin	2.95
Loin	Tenderloin	1.88
Loin	Top sirloin	2.86
Loin	Bottom sirl. – Tri Tip	0.87
Loin	Bottom sirl. – Ball Tip	0.89
Round	Top Round	6.32
Round	Peeled knuckle	3.64
Round	Bottom round	7.30
Rough or thin meats	Brisket	3.37
Rough or thin meats	Flank steak	0.45
Rough or thin meats	Hanging tender	0.19
Rough or thin meats	Inside skirt – diaphragm	0.34
Rough or thin meats	Outside skirt – diaphragm	0.29
Trimmings	Lean Trimmings	21.02
Bone and fat percentage		27.67
Cutting loss & shrink		2
Total		*100*

3.5 Wholesale product value

Based on average wholesale prices of individual bison cuts reported by those interviewed and applied to the above carcass yield model, the wholesale meat value averages $2.35 for the whole carcass and $3.35 for boneless meat. Beef is typically compared to bison because it is the most competitive red meat comparison. The reported USDA wholesale value of a Choice beef carcass was $1.08 per pound in 2000 and $1.02 per pound in 1999. There is concern that price is a turn-off to many consumers. The price of bison has dropped in the last few years. The reasons for this reduced value are reduced sales of large quantities of bison trim and reduced cost of animal production.

3.6 Co-products

Buffalo hides or robes are sold either hair on or off after they have been cured and tanned. The value for these hides varies. Currently, a fresh hide direct from the packinghouse will bring $40.00 per head compared to $75.00 in 1999. There have been reports of tanned, hair-on hides selling for as high as $700. However, the net profit for a tanned hide is much lower due to high tanning costs. Bison skulls are also marketable after they have been thoroughly cleaned and boiled. There have been reports of cleaned bison skulls bringing $70.00 to $90.00 per skull.

3.7 Regional production

The Minnesota Bison Association[23] conducted a survey in October, 2000 to evaluate the number of bison within the state. The result of that survey showed a total of 8,000-bison in the state. With a new calf crop at the time of this report, it was anticipated that the bison number would exceed 10,000 for the year 2001. If 25-percent of the 2001 bison population were immature bulls grown for slaughter, this would equal 2,000 young bulls in Minnesota. According to Gail Griffin, Executive Director of the Minnesota Bison Association[23], twenty-five of their members raised bison for meat production in 1996. In 2001, that number rose to 102 members. It is unknown how many animals this increase represents.

Natural systems of bison production with spring calving and summer grazing create a disproportionate year-round supply. Peak slaughter production is through winter and spring followed with smaller production numbers during summer and fall. The strategy with beef cattle is to alter feeding regimens with some cattle aggressively fed through the winter with fast rates of gain and some cattle slow grown in order to fit into different markets. Regardless of the level of intensity of feeding through winter, bison will metabolically slow down during this season and gain poorly, resulting in summer and fall being typical feeding months.

3.8 Production costs

As an example, Terry Bison Ranch of Cheyenne, Wyoming[53] claim that the cost of bison production is approximately $0.60 per pound between the weights of 400-pounds and slaughter weights of 1,000 to 1,100-pounds, but could run higher for some individual animals. This would total $360.00 per bison to produce. The cost of production from birth would be an additional $200.00 per bison minimum. Therefore, the total cost per bison marketed would be approximately $560.00.

3.9 Recommendations

3.9.1 What to expect

a) A market industry searching for a market floor or equilibration.
b) Needed solutions for selling excessive trim reserves.
c) Genuine opportunities to make money; provided:
   i). The cost of parental breeding pairs, male and female, is significantly lower than the costs during the late 1990s'.
   ii). Meat from the entire carcass can be marketed with a minimum composite value of $1.49 per pound (Section 14.3).
d) Many customers may require assistance and education with individual meat products and proper preparation and cooking.

3.9.2 Problem areas

a) Trim

It is sound advice in the meat industry to produce to the lowest demanded item rather than the highest demanded item. In bison this would typically be the trim from boning or fabricating of the animal, which could represent at least 20-percent of the carcass or 120-pounds per head. If 2,000 bison were slaughtered per year in Minnesota, 248,000-pounds of trim would have to be sold. Trim has only three common market uses.

   i). Ground for use as frozen ground bison for patties (hamburger), chilies, etc.
   ii). Ground for the manufacture of bison sausage products.
   iii). Diced for use in stews.

There has been a diligent search for new products for bison trim with little progress. However, success has been found in adding new ground bison products to restaurant menus.

3.9.3 Suggested action plans

Producers who desire to sell meat and by-products rather than the live animal should consider the following:

a) Explore direct market opportunities in the local or regional community, selling as much of the carcass through this means as possible.
b) Cooperatively process, market, and sell with other producers as much of the carcass as possible to companies such as those represented in Section 3.3. There must be a disciplined approach to production and sales using this to ensure that the customer can depend on the supplier. This

strategy may require the formation of a new cooperative business.

c) Explore further processing capacity for the manufacturing of products from trim listed in Section 3.5 and 3.6. Perform a test market with these items to local or regional, small to medium sized, restaurants and retail stores. The approach to these firms should be professional and must be able to convince confidence in their supplier. It is also advisable to include the potential customers in product development.

d) Consistently monitor yields and costs, and strive to improve in both areas. It may be necessary to give or throw away some product while doing test marketing and product development, hopefully, this time period will be short.

Section 4

Cervidae – Elk, Domestic Deer

4.1 Industry overview

Elk, also called Wapiti, and domestic deer farming in the United States is a rather new industry and has most commonly developed for the purpose of producing breeding stock.

Domestic deer farming includes the species of fallow, red deer, and whitetail deer. Red deer or almost exclusively farmed for venison sales. Red deer are typically harvested at 13 to 15 months of age or approximately two years of age. Venison and velvet antler production are the primarily uses of red deer.

With elk, hunting bulls and velvet antler production have been primary incentives for building farming enterprises. Meat production seldom has received consideration. Given enough time, the animal price or the price of their products will equilibrate or deflate to a point that reflects a more real economic value based on supply and demand.

The harvesting of young bull elk occurs after the first antler harvest at 15 to 17 months of age but before breeding season, rut. Harvest may also occur after a suitable amount of time post-rut in order to gain weight back to the animal. This would usually occur at 24 to 30 months of age. Harvesting of cull males or females may occur at any time other than the breeding season but most often during the winter.

Melding of a farming business to produce both velvet antler and meat is possible. All harvested bulls can produce one or two velvet antler harvests before being slaughtered. There can also be a velvet antler producing herd of bulls maintained and fed along with young meat producing bulls.

4.2. Product attributes

There is a sense of adventure and curiosity amongst most consumers. The hunting experience with elk includes a sense of adventure in challenging alpine geography against a majestic trophy animal. Elk is one of the leanest and lowest in fat compared to other meats available. Table 15.3.1, located in Appendix A, shows a composite sample of elk tested 1.45-percent fat. Venison tested at over 2-percent. Another great attribute of elk and venison is that in spite of being extremely lean, it is very tender. Because of its leanness, it is easy to overcook. Overcooking does not make the meat as tough compared with some other meat products.

4.3 Market analysis, size, trends, and customers

The food service industry, supplying hotels and restaurants, has been a good market outlet for elk meat and venison. Another sign of the venison and elk's growth in the food service sector is that three of nation's largest foodservice distributors, Sysco,

Alliant, and Shamrock; carry venison and elk products. Not all elk products end up in the restaurant industry. This industry primarily utilizes the middle part of the carcass, rib and loin cuts. Although some of the leg and shoulder cuts are used, not all of it is desired in these markets. There also tends to be a lot of trim meats and end cuts remaining to be sold elsewhere. In addition, the restaurant industry demands a young animal, usually 15 to 30 months of age, and rejects mature cull males and females. Retail markets sell very small volumes of elk products today in the United States. However, Oxford Trading Company (Appendix B) sells 4,000-pounds of New Zealand venison and 200-pounds of New Zealand elk per week to retail stores in New England.

Other meat products derived from elk are ground and processed products. These products include: jerky, ground elk patties, and sausages. Ground and processed products need retail markets for their survival. Some ground elk patties sell through restaurants, but jerky and sausage are primarily sold through retail outlets and mail-order. Mature cull males and females are used for these types of processed products.

Several food service companies carry elk and venison products from New Zealand rather than the United States due to greater consistency and lower prices. The New Zealand venison industry is currently the largest and most organized in the world. A report[57] from New Zealand in 2001 claimed that venison exports were running 30-percent ahead of the previous year, with a 24-percent increase in venison sales, and 30-percent more revenue to the producer ($7.20/kg, $NZ) compared to the same time period one year earlier. The United States ranks fifth in fresh venison imports from New Zealand. The United States imports a total of 2.3-million pounds per year of Cervenna, which is a cross between North American elk and European red deer and considered the greatest competition for United States produced elk[13].

Two large Minnesota elk and deer producers and five marketing companies specializing in game were interviewed (Appendix B) were the predominant marketers of elk and venison. These companies represent over 17,000-pounds of elk sold per month. This amount of boneless elk meat would be the equivalent of 85 elk. Four of the companies interviewed sell over 9,000-pounds of venison from both New Zealand and domestically grown red deer per month. This would be the equivalent of 115 deer per month. These reported volumes of sales would equal $1.25 million in annual wholesale value. All of the elk and deer marketers were interested in additional suppliers. One Minnesota producer and marketer claimed that they could not meet the current demand. Most of the marketers require a sales relationship with their suppliers.

The 2.3-million pounds of imported venison and elk is a possible target for producers of domestic elk and deer to totally displace. This would require 11,500 elk or 29,500 deer or a combination thereof. Elk processed according to Kosher standards and approvals will be test marketed by Bridgewater Quality Meats[43]in the near future and is thought to have market potential.

4.4 Carcass breakdown and yields

Because elk is an immature industry and there has not been consistent slaughtering done by any processor in the United States, the following data does not represent high numbers. An average live weight of a bull elk between the age of 15 and 30 months is

predicted to be 500 to 600-pounds. With a 60-percent dressing percentage, this would calculate to 330-pounds carcass weight. Table 4.1 represents a young male animal of approximately 24-months of age. Twenty-four months of age represents the greatest dollar value per pound of merchandised meat. As the animal ages, the carcass weight yield increases. It is common to have an additional 200-pounds carcass weight between a 2-year old bull and a cull 5-year old bull. The average weight of a male red deer at 13 to 15 months of age is 210 to 240-pounds. With a 58.5-percent dressing percentage, this would calculate to 123 to 140-pounds carcass weight. A typical United States style boneless cut-out yield of various sub-primals for young immature males is shown in the below table.

Table 4.1

Primal/Sub-primal	Percent of carcass weight
Round[a]	7.5
Top round	3.0
Bottom round	3.0
Tip	1.5
Loin[b]	5.5
Tenderloin	0.9
Strip loin	1.8
Sirloin	2.8
Rib[c]	2.0
Rib eye	2.0
Chuck	6.0
Rough meats & trim	38.5
Bones/fat	38.0
Cutting shrink	2.5
Total	*100.0*

a. A Denver leg is a popular item and typically yields 4.5-percent.
b. A bone-in short loin is a popular item and typically yields 4.5-percent.
c. A French Rack is a popular item and typically yields 1.5-percent.

The New Zealand venison industry is the world's leader and represents thousands of numbers of animals processed per year. The New Zealanders typically break the carcass down into the saddle and end meats[13]. Tables 4.4.1 and 4.4.2 shows typical cut-out yields and uses for both New Zealand elk and red deer:

The Saddle

Table 4.4.1

Cut-out Name	Pounds of Elk	Pounds of Red Deer	Average Yield	Usage
Tenderloin	2.5	1.5	95-96%	Medallions, butterfly steaks
Strip loin	5.0-8.0	3.5	90-93%	Steaks, medallions, roasts
Short loin	3.0	1.5-2.0	100%	Steaks, medallions, roasts
Racks	3.0-4.5	1.5-2.5	75%	Roasts, chops or cutlets
Bone-in saddle	15.0-25.0	10.0-15.0	50%	All of the above, plus bones for stock

The Hind Leg

The leg is comprised of four sub-primal muscles that can be broken down into restaurant-ready cuts, or bought further desinewed and trimmed as the Denver Leg. The Denver Leg is seven or eight convenient cuts from the hind leg, depending on the New Zealand supplier. All cuts from the Denver Leg can be cut to create either portioned medallions or a combination of steaks such as butterflied steaks, mini roasts, stir fry, and kabobs.

Table 4.4.2

Cut Name	Pounds of Elk	Pounds of Red Deer	Average Yield	Usage
Denver Leg	20.0	10.0	85% to roasts or medallions, 11-12% usable trim	Steaks, medallions, roasts, butterfly steaks
Bone-in Leg	30.0	15.0	60% to roasts, steaks, medallions, etc. 20% usable trim	Steaks, medallions, roasts
Shank	3.0-4.0	1.5-2.0	100%	Slow cooking and braising
Osso Buco (Shank steaks)	3.0	1.5	100%	Slow cooking and braising

4.5 Product value

Based on reported wholesale values by those interviewed and individual product values applied to the above carcass yield model, the wholesale meat value of elk ranges from $2.50 to $3.75 per pound and $1.90 to $3.27 per pound of red deer. With wholesale prices of individual cuts added into the above cut-out model, the average wholesale value of the entire 330-pound elk carcass would be $2.50 per pound or $4.00 per pound for boneless meat. Red deer would range $2.00 per pound for the carcass and $3.60 per pound for boneless venison. At $4.00 per pound**,** the value for imported Cervenna from New Zealand is worth $9.2-million in United States dollars.

4.6 Co-products

Velvet antler has traditionally been a big market for elk producers. The velvet antler market has dropped in value considerably and is now valued at approximately $15.00 per pound. Koreans were the biggest volume buyers but have shut off imports because of Chronic Wasting Disease concerns. According to interviews with several elk producers, a one year-old bull will produce about 5-pounds of velvet antler and a 2-year old bull will produce about 9-pounds. Therefore, a one-year old bull can generate $75.00 and a two-year old bull can generate $135.00 for velvet antler. It is important to disclose that all not all males are good velvet antler producers. The ivory teeth of elk are often sold and have typically brought $4.00 per head. The hide value of elk varies but has been known to bring $10.00 to $20.00 per animal.

Velvet antler is also harvested from red deer. A typical red deer buck, 2-years old, can produce approximately 4 to 5-pounds of velvet antler. Red deer hides also have value. A fresh hide currently brings about $5.00[46].

4.7 Regional production

According to the Minnesota Agricultural Statistics Service[31] 11,000 elk were produced in Minnesota as of April 2001. The largest number elk producing operations have herd sizes of 11 to 20 elk. This study found 264 operations raising elk in Minnesota. Sixty-eight of those operations representing 238-head, had elk that were slaughtered for meat. The highest percentage slaughtered was two-year old elk. Private treaty and person-to-person sales, predominantly for breeding stock, represented the highest percentage of sales transactions at 43-percent. Assuming 25-percent of the elk population is a combination of bulls and females available for slaughter, approximately 3,000 elk would be available for slaughter in Minnesota on an annual basis.

Red deer is the predominately domesticated deer used for venison. According to a survey conducted by the North American Deer Farmers Association[28] in 1997, there were seven red deer producers in Minnesota. Through interviews with some of those producers it is estimated that only about 200 to 250-head of red deer are processed for meat on an annual basis.

Like many domestic livestock species, elk and red deer are born in the spring after the females are bred in the fall. The breeding season lasts from 30 to 60 days during the fall and referred to as rut. During this breeding season, the male animals are not acceptable for harvesting due to their behavior, weight loss, and the testosterone effects on meat quality and consistency. This physiological state of elk creates a seasonal effect on meat supply. In New Zealand the breeding season falls in April and May. As a result, supply has to be managed with customers to overcome shortcomings in the fall with a volume of suitable bulls. Perhaps, this time could be filled with cull animals for slaughter and young females that are not reproductively or structurally sound.

Because the ideal marketing age for elk is 24-months and red deer is 13 to 15-months, most of the market-ready animals will be available in the spring and summer. If young elk bulls, 15 to 17-months, are used for slaughter before the rut; elk meat would be

available in the late summer. Some methods for handling seasonality are closely manage diets to delay or accelerate growth of the animals; spread out breeding as much as possible; or freeze the meat.

4.8 Production costs

An elk enterprise model developed by the author predicted that the cost of developing a bull to market weight for meat production was $267.00. This did not include land costs, but did include pasture rent. Red deer are approximately half the size as elk and would eat half the volume of feed. Red deer would require similar fencing and other overhead costs. It may be logical to assume that red deer would cost 60-percent that of the elk to produce, resulting in an assumed figure of $160.00.

4.9 Recommendations

4.9.1 What to expect

a) A market largely geared to the restaurant industry. Many restaurant companies are very happy with Cervenna from New Zealand.
b) Interest in buying North American elk but very limited interest in buying the entire carcass.
c) Needed solutions for marketing a large quantity of trim from a carcass.
d) Genuine opportunities to make money; provided:
    i). The cost of parental breeding pairs, male and female, are significantly lower than the costs during the late 1990s'.
    ii). Meat from the entire carcass can be marketed with a minimum composite value of $1.28 per pound for elk and $1.77 per pound for red deer (Section 14.3).
e) Many customers will require assistance and education with individual meat products and proper preparation and cooking.

4.9.2 Problem areas

a) Trim

As in bison, excessive trim and underutilized whole-muscle items are a large problem. At 38.5-percent of the carcass (Section 4.4), trim and underutilized whole muscle products would represent 120-pounds of a carcass. If 3,000 elk were slaughtered per year in Minnesota, 360,000 pounds of trim would have to be sold. Trim has three common market uses:

    i). Ground for use as frozen ground for patties, chilies, etc.
    ii). Ground for the manufacture of sausage products.
    iii). Diced for use in stews.

b) Consistency
There are too many different age groups and production systems represented with processed elk.

c) Competition from Cervenna.

4.9.3 Suggested action plans

Producers who desire selling meat and by-products rather than the live animal should consider the following:

a) Explore direct market opportunities in the local or regional community. Sell as much of the carcass through this means as possible.

b) Create production standards similar to what New Zealand marketing companies have done. Perhaps the State of Minnesota, Department of Agriculture could certify those standards are being met.

c) Cooperatively process, market, and sell along with other producers as much of the carcass as possible to companies such as those represented in Section 4.3. There must be a disciplined approach to production and sales using this strategy to ensure that the customer can depend on the supplier. This strategy may require the development of a new cooperative business.

d) Try to develop market strategies where the customer doesn't have to take or leave the entire carcass but rather, purchase what they want. To sell product in this way, higher margins must be garnered. A disciplined margin approach should be used.

e) Explore further processing capacity for manufacturing of the products from trim Tables 4.4.1 and 4.4.2. Perform a test market with these items to local or regional small to medium sized restaurants and retail stores. The approach to these firms must be professional and must convince confidence in their supplier. It is also advisable to include the potential customers in product development.

f) Monitor yields and costs and strive to improve in both areas. It may be necessary to give or throw away some product while doing test marketing and product development but hopefully, this time period will be short.

Section 5

Ratites- Ostrich, Emu

5.1 Industry overview

Ostrich farming faded in the United States during the 1930's, grew dramatically during the 1980's, and declined again in the 1990's. As with bison and elk, the animal price and the price of their products have gone through a cyclic pattern and have dropped to equilibrate or deflate to a point that reflects more real economic value based on supply and demand. Ratite production can be adopted by small-scale and part-time farmers with adequate investment capital because land and husbandry requirements are minimal. Emu has recently grown in popularity because of the topical oil that is produced and marketed from them.

5.2 Product attributes

According to research reports[52], ostrich and emu have comparable meat characteristics and both are considered red meat. One study[1] demonstrated that emu steaks contained less fat and more moisture than beef rib eye steaks. Emu and ostrich meats' potential as a red meat alternative is due to its tender, juicy, flavorful, and lean qualities. Unfortunately, there is not the romance of consuming ostrich or emu as there is for bison or elk.

5.3 Market analysis – Size, trends, and customers

Ostrich or emu meat should be acceptable to persons consuming meat and poultry as there are no known religious, social, traditional, or cultural limitations on the consumption of ostrich or emu meat. Access to markets is unlimited only by marketing skill, product quality and price, and consistency of supply. According to Ostrich Breeders[38], international market demand for ostrich has continuously exceeded supply. According to the American Ostrich Association[5], ostrich has been served in fine American restaurants since 1992. Both production and sales of ostrich and emu are small in the United States. The American Ostrich Association[5] has attempted to survey producers to determine the volume of ostrich slaughtered, processed, and sold as meat. Unfortunately, the producers did not cooperate with the survey.

Australian and South African ostriches are the biggest competitive threat to American ostrich producers. Australian production of ostriches is becoming a specialized industry with professional farms and processors[54]. Australians are excellent at efficient, low cost meat production and exporting to growing markets. South Africans are significant exporters of ostriches to the European Union. In 2000, over 100,000 birds were slaughtered in Australia.

Of those interviewed, more than one ostrich processor mentioned that supply has been a problem in the United States and has led to inconsistent service to customers. One company claimed they have exported ostrich to Taiwan. Another company interviewed

claimed that the European Union had potential as a future market for United States produced ostrich.

Seven firms interviewed (Appendix B) sell significant volumes of ostrich and emu meat. Blackwing Ostrich, New West Foods, Health Rich Farms who obtain their supply from the Ostrich Producers Cooperative[25] in Decorah, IA, Oxford Trading Company., Prairie Land Ostrich, Sayersbrook, and Seattle's Finest Exotic Meats collectively sell over 10,000-pounds of ostrich meat per week. One large processor and marketer who has been in business since 1989, claims that there are seven predominant ostrich processors in the United States and sell approximately 11,000-pounds of ostrich per week in the United States. Surveys potentially represent most of the ostrich meat sold in the United States. Ten thousand pounds of ostrich meat would equate to 217 ostriches per week or 11,284 per year, and 588 emu per week or 30,576 per year.

Most retailers interviewed did not carry much ostrich or emu in their stores. According to ostrich producer, Charlie Sheets[49], there is more demand for ostrich and emu meat than there is product available. Sheets claims the ostrich industry is young with little infrastructure and producers are not very efficient. Kansas ostrich producer, Lath Wilson of Prairie Land Ostrich[51], entered the ostrich business in 1992. At that time there were 130 producers in Kansas that belonged to the State Ostrich Association. Currently, there are thirteen producers belonging.

5.4 Carcass breakdown, yields

Table 5.4.1 represents fabricated ostrich with all fat removed; however, the silver skin is included in these weights. Live weight for a market-ready ostrich is approximately 240 to 250-pounds. An emu carcass would weigh approximately 40-pounds. Live weight for a market-ready emu would be approximately 90-pounds. There is more subcutaneous fat with emu compared to ostrich. The yield as percent of carcass weight would be similar between emu and ostrich. The fabrication yield for both ostrich and emu is quite low, approximately 50-percent, compared to other livestock species. This is primarily because of the bone content in the rib cage. There are ten different muscle groups in an ostrich carcass and only three of these are tender filet-type muscles.

Table 5.4.1

Common Name	Low Weight. Range, Pounds	Medium Weight. Range, Pounds	Hi Weight. Range, Pounds	Percent of Carcass Weight
Carcass	90.0	110.0	130.0	100.0
Inside leg	2.7	3.5	4.2	3.2
Outside leg	2.8	3.4	3.9	3.1
Bnls Thigh	15.8	19.4	22.8	17.6
Round	3.2	3.9	4.6	3.5
Outside Strip	0.9	1.2	1.4	1.1
Tip	3.9	4.6	5.3	4.2
Oyster	1.3	1.6	1.9	1.5
Fan	3.0	3.8	4.7	3.5
Top Loin	1.3	1.6	1.8	1.5
Inside Strip	0.9	1.2	1.5	1.1
Tenderloin	1.5	1.9	2.3	1.7
Neck	4.1	5.0	5.9	4.5

5.5 Product value

Based on reported wholesale values by those interviewed and individual product values applied to the above carcass yield model, the wholesale meat value of ostrich ranges from $1.00 to 6.80 per pound and $2.00 to $3.00 per pound for emu. At $2.00 per pound for a carcass adjusted to a boneless meat yield, the value per pound is equal to $4.75 for both ostrich and emu. Of 572,000-pounds of ostrich, combination of boneless and bone-in, sold annually in the United States and a wholesale value at $2.50 per pound, the value of ostrich meat would be $1.4 million.

5.6 Co-products

Ratite hides represent a very significant percentage of the value of the bird. According to the American Ostrich Association[5], ostrich hides have recently dropped slightly in value, but still bring approximately $110.00 to $150.00 per bird hide. An emu hide has much less value than ostrich. One emu producer[58] reported payments of approximately $10 for a fresh emu hide.

Emu oil has recently generated market demand from several national and international cosmetic and pharmaceutical companies. Five to six liters of oil can be obtained from a single bird. Emu oil currently sells on average for $175 per gallon[60]. Different grades of oil sell at different prices and can range from $95.00 to $250.per gallon.

Cleaned, hollowed-out ostrich eggs have been known to bring $10.00 to $13.00 per egg. Some ostrich producers have also been known to sell high quality feathers. It would be too difficult to ascertain a value per bird for the sale of feathers.

5.7 Regional production

According to the American Ostrich Association[5], in Minnesota there were approximately 1,000 to 1,200 ostriches available for processing in 2001. According to an interview with Audrey Wilson[60], emu producer and representative of the Emu Association of Minnesota, the approximate number of emus raised in Minnesota in 2000 was 250 birds. Most of these birds were used for meat and oil.

In the United States, ratites are typically processed June through November at 10 to 14 months of age. The ostrich breeding season is between February and August. The female consistently lays an average of 20 eggs per year and the egg incubation process takes approximately six weeks. Hens will start laying eggs at approximately 24 to 26 months of age. The emu breeding season extends between October and April. Emu hens will lay 20 to 50 eggs in a season and incubation time ranges from 50 to 60 days.

5.8 Production costs

Of three interviewed, one producer claimed that a market-ready ostrich costs $200 to produce. Heartland Emu Marketing Cooperative claimed that it costs approximately $100 and $150 to produce an emu to market-ready weights.

5.9 Recommendations

5.9.1 What to expect

a) A very small market with only a small number of distributors.
b) Growing interest in natural and health food markets (healthy red meat alternative to beef).
c) Lower meat prices.
d) Customers looking for the tenderest parts of carcass: fan, loins, strip, tenderloin.
e) Needed solutions for marketing the entire carcass.
f) Little opportunity to make money selling emu meat.
g) Genuine opportunities to make money with ostrich; provided:
    i). The cost of parental breeding pairs, male and female, are significantly lower than the costs during the late 1990s'.
    ii). Meat from the entire ostrich carcass can be marketed with a minimum composite value of $1.82 per pound and $3.60 per pound for entire emu carcass (Section 14.3).
h) Many customers will require assistance and education with individual meat products and proper preparation and cooking.

5.9.2 Problem areas

a) Ostrich and emu do not yield well and there is a low percent of the carcass with tender muscles. The bone content of the carcass, greater than 50-percent of the carcass; leg

muscles, 1/3 of the carcass; and neck, 4.5-percent of the carcass, have low or no value.

b) Poorer image than bison or elk, according to marketers, regardless of taste and nutrition.

5.9.3 Suggested action plans

Producers who desire selling meat and by-products rather than the live animal should consider the following:

a) Explore direct market opportunities in the local or regional community. Sell as much of the carcass through these means as possible. There is a growing natural and health food retail industry in the Minneapolis/St. Paul metropolitan area.

b) Approach those already processing and selling meat regarding a supply or partnering relationship. Several of these processors and marketers are listed in Section 5.3.

c) Explore further processing capacity for manufacturing meat products from the leg muscles, such as jerky and ground products. Perform a test market with these items to local or regional small to medium sized restaurants and retail stores. The approach to these firms must be professional and portray confidence in their supplier. It is also advisable to include potential customers in product development.

d) Consistently monitor yields and costs and strive to improve in both areas. It may be necessary to give or throw away some product while doing test marketing and product development, hopefully, this time period is short.

Section 6

Rabbit

6.1 Industry overview

Unlike many of the alternate species of animals in this report, rabbit has been raised and sold commercially for many years. The domestically raised rabbit industry has gone through roller coaster seasons of production and price. Currently, production is down. Several processors have ceased or slowed down operations. Several of the processors interviewed for this report stated that the industry needs more serious producers, which will generate more sales efforts. It is assumed that more selling effort will stimulate more sales. Rabbits are difficult to raise because they are very susceptible to digestive and other diseases. In addition, rabbit meat has a short shelf life and spoils easily.

6.2 Product attributes

Rabbits are known as a pleasant tasting alternative to poultry and meats from domestic farm animals. Rabbit is low in cholesterol and high in protein and is all white meat. It is considered easily digested and is recommended by physicians to patients with sensitive digestive systems.

6.3 Market analysis – size, trends, and customers

According to a Penn State University report[41], eight to ten million-pounds of rabbit meat are consumed each year in the United States. At 10 million-pounds and a value of $2.90 per pound (Section 6.5) the meat value as an industry is $29 million. According to Ron Swope[51], rabbit was quite common in the meat markets in the 1950's and sold for the same price of chicken. Since then, the poultry industry has taken tremendous strides in production and marketing techniques, while the rabbit industry has lagged behind.

Four American rabbit processors were interviewed as part of this report. All of which were consistent about explaining a "Catch 22" in the rabbit industry. Processors are wary of expanding into the rabbit industry because of inconsistent supply. Producers are also cautious because of the reduction of processing capacity. One Ohio processor in blamed part of the problem on the fact that rabbit processors have to pay for USDA inspection whereas; poultry and other domestic farm animal processors do not. An Arkansas processor reported that the industry needs more players and more serious marketing effort.

Oxford Trading Company, Specialty Game Inc., New West Foods, and House of Smoke collectively sell 7,500-pounds per week of rabbit meat. This meat would be a combination of whole rabbit and boneless rabbit parts. At a composite value of $5.00 per pound, the annual value of the meat sold by these companies would equal $2 million. Rocky Mountain Natural Meats, Chicago Game, Lofton Ridge, Native Game Company, and Wedge Co-op also merchandise rabbit meat. R.V. Processing and J & J

Distributing (Section 13.2.4) both process and sell the equivalent of 30,000 rabbits per year or approximately 120,000-pounds. Most of the rabbit meat market is outside the Midwest.

6.4 Carcass breakdown, yields

Rabbits are divided into fryers that are typically eight weeks old and weigh approximately 4-pounds live weight; and roasters which are approximately 12 weeks old and weigh between 6 and 7-pounds live weight. The dressing percentage is approximately 55-percent. Processed rabbits are either sold as whole carcasses or broken into three boneless cuts: front leg, hind leg, and loin. The approximate percentage of carcass weight for these three cuts is: 19-perecnt for front leg, 25.4-percent for hind leg, and 29.4-percent for the loin. The remaining carcass is 26.2-percent.

6.5 Product value

Current reported rabbit meat wholesale prices were $2.90 per pound for bone-in product and $6.00 to $12.00 for a boneless rabbit carcass.

6.6 Co-Products

According to processors interviewed, there is a small value for rabbit pelts. Like all hide values, the market goes up and down. Currently, the pelt value ranges from $0 to $0.50 per rabbit. There are also some pharmaceutical uses of organs. Price of the organs depends on supply volumes and what relationship can be negotiated between the producer, processor, and company.

6.7 Regional production

According to the Minnesota Agricultural Statistics Service[22], the inventory of rabbits in Minnesota in 1997 was 12,364 rabbits. The Minnesota Commercial Rabbit Producers Association[26] could not provide a current estimated number of commercial rabbits. Because rabbit processors have reduced their slaughter numbers, it is expected that producers have also reduced production numbers.

6.8 Production Costs

There was no information was provided by those interviewed or industry personnel regarding cost and production of rabbit.

6.9 Recommendations

6.9.1 What to expect

a) Difficulty in finding processing capacity.
b) Genuine opportunities to make money with rabbits; provided:
   i). A state or federally inspected processor can be found.
   ii). Skilled production husbandry is practiced to reduce morbidity and mortality.
   iii). The minimum carcass value is $1.37 per pound (Section 14.3).
   iv.) Finding a supplemental pharmaceutical market.

6.9.2 Problem areas

a) Morbidity and mortality of raising rabbits.
b) Finding state or federal inspected facilities.

6.9.3 Suggested action plans

Producers who desire selling meat and by-products rather than the live animal should consider the following:

a) Approach those already processing and selling meat about a supply or partnering relationship. Several of these processors and marketers are listed in Section 6.3.
b) Obtain a list of rabbit processors from around the United States from the Professional Rabbit Meat Association[44], www.ardeng.net/prma. Discuss with processors the potential markets in which they cannot serve, pharmaceutical markets available, and perhaps even supply relationships if freight cost is not prohibitive.
c) Develop a plan for optimum production. Several university extension programs provide information on production and management of rabbits, i.e. West Virginia, Penn. State, Oregon State.

Section 7

Free-range chicken

7.1 Industry overview

According to the Broiler and Egg Association of Minnesota[37], there were 44.2 million broilers produced in Minnesota in 2000 with a value of $72.9 million making Minnesota a large producing state. However, a growing trend is production and marketing of free-range or pastured chickens. Traditional integrated poultry companies confine large numbers of chickens in tight quarters causing a high incidence of pecking and stress of the birds. The chickens are also not exposed to sunlight or natural habitats. These conditions have led to the production and marketing of free-range or pastured chicken. USDA standards allow any chicken with access to the outside to be labeled free-range. However, producers must demonstrate that the poultry has been allowed access to the outside. Free-range chickens are typically produced in small farm flocks and many are direct sold to consumers. Besides being pastured, additional criteria by several marketing companies for free-range chickens require that they are not fed antibiotics, coccidiostats, or artificial growth stimulants. This production environment limits stress and promotes health of the birds.

7.2 Product attributes

Marketers of free-range chickens attempt to appeal to consumers that are sensitive to how animals and birds are raised. Marketers also make suggestions as to better taste and flavor than commodity chickens.

7.3 Market analysis – size, trends, and customers

The market for free-range chicken has grown to a point where it has captured the attention of America's largest chicken producer, Tyson Foods. Tyson Foods has devoted part of its website, www.tyson.com, to a fact sheet downplaying the value and benefit of free-range chicken. One can find many direct marketing companies merchandising free-range chickens via the Internet. In a survey conducted for the North Central Initiative for Small Farm Profitability[9] of 500 households in Nebraska, Iowa, Missouri and Wisconsin; it was shown that 61-percent of free-range chicken was purchased directly from the farmer, 39-percent was purchased from conventional grocery stores, 16-percent from natural food stores, and 11-percent from farmers' markets. It is not known if this trend is consistent throughout most of the United States; however; it would be logical to assume so. With such a large percentage of free-range chickens directly sold off the farm to consumers, it would be extremely difficult to predict the total volume sold in the United States.

Free-range chickens are a popular item in retail stores specializing in natural foods. All of the natural foods stores interviewed for this report, including Lund's and Byerly's, promote free-range chicken. Oxford Trading Company specializes in distributing specialty meat items to retail operations in New England and sells approximately 10,000-pounds of free-range chickens per week. Lakewinds sell free-range chicken in

their own stores and also wholesales the birds to other natural foods stores in the Minneapolis area. Of the non-retail distributors, Specialty Game Inc. and House of Smoke collectively sell 3,000-pounds free-range chicken per week. Of those interviewed, volume sales exceed 15,000-pounds per week or 780,000-pounds per year. At $1.30 per pound as a whole bird wholesale price (Section 7.5), annual sales value would be $1 million. Director of meat operations for SuperValu, Wayne Eldridge (Appendix B), predicts that free-range chicken is the one meat species of all alternate species that shows legitimate growth promise.

7.4 Carcass breakdown, yields

Chickens can be merchandised as whole birds or for various parts. A whole free-range chicken would weigh approximately 4.5-pounds. Meat carcass cut-out percentage, of carcass weight, estimates are shown below in Table 7.4.1.

Table 7.4.1

Cut-out Name	Cut-out Percentage
Breast	20%
Thigh	20%
Drumstick	15%
Wing	10%
Giblets & bones	5%
Necks & backs	30%
Total	*100%*

7.5 Product value

Through interviews with marketers and producers, we established the wholesale whole-bird carcass price for free-range chickens at $5.75 per bird. Based on data from the Broiler and Egg Association of Minnesota[37] (Section 7.1), the value of a commercial broiler carcass in 2000 was $1.65 per bird. It would be expected that the whole-bird carcass value of a free-range chicken over a commodity chicken would be approximately three times greater.

7.6 Co-products

There were no known co-product values for free-range chicken given for this report.

7.7 Regional production

Most of the broiler production in Minnesota occurs for, Gold'n Plump, of St. Cloud. It is not known how many free-range broilers are produced in the state. However, there are at least thirteen producers that raise and sell free-range chickens according to the 1999 Specialty Meats Directory[50]. Through interviews, it is estimated that between 250,000 and 500,000 free-range chickens are produced in Minnesota for specialty markets. At $5.75 per bird as a wholesale value, the total annual value for Minnesota producers is $1.4 to $2.9 million. In a 1999 survey conducted by the National Center for Appropriate Technology[32], 46-percent of producers raising free-range chickens produce between 0 to 500 broilers per year with the remainder spread out beyond 500 birds. It would be

expected that free-range chickens come from small farm flocks in Minnesota as well. Of ethnic farming groups, Amish tend to be a large producer of free-range chickens. Amish settlements are frequently found in the Midwest; particularly in Minnesota, Wisconsin, Iowa, and Missouri.

7.8 Production costs

One would expect that it would cost slightly more to raise free-range chickens than commercial broilers. Because no growth promoting and disease fighting medications are used, growth rate would be expected to be poorer and death loss higher; therefore increasing production costs. Only one free-range chicken producer was interviewed for this report, estimating the cost of production at $2.27 per bird marketed. Broken down this would equal: $1.46 for feed, $0.73 for chicks, $0.02 bedding, $0.04 catching, and $0.02 for heating.

7.9 Recommendations

7.9.1 What to expect

a) Growing interest in conventional retail, natural and health food markets with free-range chicken.
b) Genuine opportunities to make money with free-range chickens provided:
   i). A state or federal inspected processor can be found to process the birds.
   ii). The entire processed bird can be sold at a minimum price of $0.97 per pound (Section 14.3).

7.9.2 Problem areas

a) Few state or federally inspected poultry processors who will custom process.
b) Recent rise in competition amongst many new small direct marketers.

7.9.3 Suggested action plans

Producers who desire selling processed whole birds or parts should consider the following options:

a) Explore direct market opportunities in the local or regional community. Sell as many birds through this means as possible. There is a growing natural and health food retail industry in the Minneapolis/St. Paul metropolitan area including a large number of conventional retail markets offering free-range chickens.
b) Approach those already processing and selling specialty poultry products about a supply or partnering relationship (Section 13.2.5).
c) Consider establishing a cooperative specialty poultry processing and marketing center to cooperatively process and market specialty poultry items such as pheasant, duck, free-range chicken.

d) Investigate the possibility of cooperatively representing several farm flocks in custom processing and marketing relationships.

e) Explore the further processing of free-range chicken into parts such as chicken breasts, thighs and legs, wings; and chicken sausage products made with the dark meat of the bird.

Section 8

Duck

8.1 Industry overview

Ducks predominately raised for meat production are Pekin and Muscovey, and are typically sold to high quality restaurants and retail stores.

8.2 Product attributes

Duck has been sold as having a pleasing, unique flavor. It has been considered a delicacy in restaurants for many years.

8.3 Market analysis – size, trends, and customers

According to recent USDA reports[17], 124 million pounds of chilled and frozen duck was processed in USDA inspected facilities in 2001. This compares to 116 million pounds in 2000. One large limitation for duck is the limited processing facilities available to slaughter ducks (Section 13).

Minnesota-based retail foods giant, SuperValu, reportedly purchases 200,000-pounds of duck per year for retail stores in their northern region. Chicago Game sells 80,000-pounds per year to restaurants in the Midwest. Lund Food Holdings also sells significant, undisclosed quantities of duck. Oxford Trading Company merchandises 166,000-pounds per week from Canadian suppliers for retail stores in New England. These are all examples of duck meat movement in retail stores and restaurants. Some customers interviewed for this report claim that duck has always been a good mover, but much of the margin has disappeared because large distributors are treating it as a commodity.

8.4 Carcass Breakdown, Yields

It is assumed that domestic ducks would be similar to that of free-range chickens and can be merchandised as whole-birds or for various parts. Recent USDA reports[17] show the average live weight of ducks from USDA inspected facilities was 6.64-pounds. Carcass weight would be approximately 75-percent of live weight. Ducks require an extra processing step, which is called waxing. Cut-out percentage of carcass weight estimates are shown in Table 8.4.1.

Table 8.4.1

Cut-out Name	Cut-out Percentage
Breast	20%
Thigh	20%
Drumstick	15%
Wing	10%
Giblets & bones	5%
Necks & backs	30%
Total	*100%*

8.5 Product value

According to interviews with marketers the wholesale value of whole duck is approximately $1.63 per pound. Retail stores are currently pricing whole duck between $1.99 and $2.99 per pound. Based on a wholesale value of $1.63 per pound and 124 million pounds processed through USDA inspected facilities in 2001, the wholesale value of duck would be $202 million.

8.6 Co-products

There are no meaningful co-products produced from ducks, primarily due to the small volumes of ducks.

8.7 Regional production

Through interviews with producers, only a small number of domestic ducks, approximately 5,000 to 10,000 birds, are raised in Minnesota. One large producer raises and processes the majority of these birds.

8.8 Production costs

There was no information provided by those interviewed or industry personnel regarding the production costs of the birds.

8.9 Recommendations

8.9.1 What to expect

a) Difficulty in finding processors to custom process ducks.
b) Both regional and national retail and food service market interest.
c) Genuine opportunities to make money with ducks provided:
   i). A state or federal inspected processor can be found to process the birds.
   ii). The entire processed bird can be sold for at least $0.97 per pound (Section 14.3).

8.9.2 Problem areas

a) Few state or federally inspected poultry processors who will custom process.
b) Large distributors in the business as competition.

8.9.3 Suggested action plans

Producers who desire selling processed whole birds or parts should consider the following:

a) Explore direct market opportunities in the local or regional area. Sell as many birds through this means as possible.
b) Approach those already processing and selling ducks regarding a supply or partnering relationship (Section 13.2.5).
c) Consider establishing a cooperative specialty poultry processing and marketing center to cooperatively process and market specialty poultry such as pheasant, duck, free-range chicken.
d) Explore adding value to whole processed ducks by further processing duck into trimmed duck breasts and other duck specialty items.

Section 9

Pheasant

9.1 Industry overview

Production of Chinese ring-neck pheasants is on the increase. Pheasants hatched in confinement having various purposes. Pheasants can be sold as chicks for ultimate turnout for hunting purposes, sold to shooting or hunting clubs; raised to market weights for processing; and sold as dressed pheasant.

9.2 Production attributes

Pheasant is sold as a novelty like many game animals. Like duck, pheasant has been considered a delicacy in fine restaurants.

9.3 Market analysis – size, trends, and customers

A large producer of pheasants interviewed for this report claimed that the largest market outlet for pheasant is for hunting purposes. Production for meat processing is currently a minor emphasis. Pheasant is typically marketed through high-end restaurants, frozen meat cases of retail stores, and through the Internet.

House of Smoke and Specialty Game Inc. collectively sell 1,800-pounds of pheasant per week. Through retail stores, Oxford Trading Company and Lund Food Holding distribute and sell over 1,500-pounds of pheasant per week. These four companies merchandise a total of over 171,600-pounds of pheasant per year with a wholesale value of $0.5 million at $3.00 per pound. Most other game and specialty distributors sell significant quantities of pheasant.

Production of commercial pheasant is increasing, but it is not known how much is maneuvered to meat production from sales to hunting clubs. As with ducks, the restaurant associations do not have data on pheasant use in the restaurant industry.

9.4 Carcass Breakdown, Yields

A pheasant will be smaller than a chicken and weigh 3 to 3.5-pounds[36]. Cut-out percentage of carcass weight estimates are shown in Table 9.4.1.

Table 9.4.1

Cut-out Name	Cut-out Percentage
Breast	20%
Thigh	20%
Drumstick	15%
Wing	10%
Giblets & bones	5%
Necks & backs	30%
Total	*100%*

9.5 Product value

Based on interviews with marketers; the wholesale value of a whole-pheasant ranges between $6.00 and $10.50 per bird. At a 3-pound per bird yield, the wholesale value per pound would be $2.00 to $3.50 per pound.

9.6 Co-products

Pheasant feathers have merchandisable value as decorations. The best feathers come from pheasants raised on game farms. Pheasants raised in confinement have too many damaged feathers and are of poor quality. The pheasant feather market is very diffuse and is difficult to predict a value.

9.7 Regional Production

After interviewing game producers, it was estimated that there are approximately 25,000 pheasants raised exclusively for meat processing in Minnesota. Most of these pheasants are raised for hunting purposes.

9.8 Production costs

There was no information provided by industry personnel or those interviewed regarding production costs of these birds. However, it costs $1.50 per pheasant for a day old bird. If the same costs, minus labor, as those of free-range chickens were applied, the total cost would be $3.10 per bird for production.

9.9 Recommendations

9.9.1 What to expect

a) Difficulty in finding processors to custom process pheasants.
b) Both regional and national retail and food service market interest.
c) Genuine opportunities to make money with pheasants, provided:
   i). A state or federal inspected processor can be found to process the birds.
   ii). The entire processed bird can be sold for a minimum of $1.77 per pound (Section 14.3).

iii). Game or hunting lodges can be an alternative profitable outlet for live birds.

9.9.2 Problem areas

a) Few state or federally inspected poultry processors who will custom process.

9.9.3 Suggested action plans

Producers who desire selling processed whole birds or parts should consider the following:

a) Explore direct market opportunities in the local or regional community. Sell as many birds through this means as possible.
b) Approach those already processing and selling pheasants regarding a supply or partnering relationship (Section 13.2.5).
c) Approach purveyors that market a significant quantity of pheasants (Section 9.3.) about a supply relationship.
d) Consider establishing a cooperative specialty poultry processing and marketing center to cooperatively process and market specialty poultry such as pheasant, duck, free-range chicken.

Section 10

Lamb

10.1 Industry overview

The lamb industry has been in a steady decline over the past twenty years due to Australian and New Zealand imports, competitive domestic meats, and an industry with no promotion support. Recently however, there has been a resurgence of efforts to assist the United States sheep industry. As part of USDA's Agricultural Marketing Service's Sheep 201 program, $4.85 million was allocated toward marketing and promotion of United States sheep[15]. Retail promotions, culinary education efforts, and an advertising campaign that touts the benefits of American lamb are being launched in 2002.

10.2 Product attributes

In the past, lamb was seldom advertised or promoted because of no industry supported check-off to do so. Recently there has been marketing assistance provided by USDA through USDA government programs. As a result, United States lamb has been promoted as being of high quality and great flavor. Recent advertising reaps the benefits of American lamb over Australian and New Zealand lamb. These benefits include that American lamb is young, grain fed, larger, and has a more flexible use than lamb from foreign countries[7].

10.3 Market Analysis – size, trends, customers

The greatest consumption of lamb is in population centers, largely in East Coast cities. According to the American Lamb and Wool Growers Association[3], per capita consumption is only 1.5-pounds per person, per year. This figure pales in comparison to other commodity meats, and therefore, has a lot of room for growth.

10.3.1 Traditional marketing of lambs

According to USDA-AMS 2000 figures[16], from 1998 through 2001 the average wholesale cut-out values of a 65-pound Choice or Prime carcass were $1.78 per pound, $1.96 per pound, $2.03 per pound, and 1.81 per pound. Lamb slaughter numbers in USDA inspected facilities were 3.4 million in 1998 and 1999, 3.1 million in 2000, and 2.9 million in 2001. As a result, the average wholesale prices for lamb have stayed strong during the past four years in spite of raw material costs. The commodity lamb meat industry was worth $395 million, averaged across the years 1998 to 2001.

Parts of the carcass have greater value than others. In 2000, the average trimmed rack wholesale value was $5.33 per pound and the chuck value was $1.11 per pound. November, December and January represent months with lowest wholesale prices for lamb, while May, June and July represent highest prices. Unfortunately, there is greater supply during the

fall and early winter, which are lower demand months and less supply during spring and summer, which are greater demand months.

Most large multi-store retail chains in Minnesota carry certain lamb cuts such as leg, loin and rack cuts. In addition, many high-end restaurants in the Minneapolis area offer lamb items on the menu. However, the shoulder, or chuck, is a problem item and is discounted. This item is often turned into roasts, soup stock, or further ground and processed. Most of the retail establishments interviewed for this report offer lamb. SuperValu's northern stores merchandise 6,000-pounds per week. Lund Food Holdings claim that they are one of the largest sellers of lamb in the Minneapolis area; however, would not disclose the amount. Oxford Trading Company merchandises 5,000-pounds of lamb per week to New England retail stores.

Producers of live lambs most often sell into traditional terminal markets such as the South St. Paul sale barn or Sioux Falls Stock Yards Company of Sioux Falls, South Dakota. Market prices for slaughter lambs are reported weekly on the Internet at www.ams.usda.gov/mncs/mn_reports for the South St. Paul Sale Barn. Iowa Lamb Corporation and Agri-Processors, both Iowa packers, buy direct from some larger producers.

10.3.2 Marketing of lambs to ethnic markets

Most lamb is consumed in East Coast metropolitan cities. It is not certain how much lamb is consumed in Midwestern cities because consumption patterns do not necessarily follow population. Lamb consumption is proportionally higher for non-European descent and ethnic populations such as Jewish, Muslim and Hispanic. Consumption increases around holidays of these cultures. People of Hispanic, Caribbean and African culture are often the best markets for lean, older animals.

It is estimated that producing three different types of lambs are warranted for potential ethnic markets. The first potential is hothouse lambs. Hothouse lambs are young lambs approximately 50pounds in live weight and 25-pounds in carcass weight. Hot house carcasses are most often sold as a whole carcass to a customer who likes to barbecue or cook the entire carcass as a whole. Christmas and Easters require the best quality hothouse lambs. These lambs are raised in intensive management systems. Typically, lambs are born in the colder months. As the lambs are born indoors it is easier to control the diets of the ewes and lambs. Hothouse lambs have diets similar to veal and are raised on their dam's lactation rather than bucket fed. People of Mediterranean descent, particularly Greeks and Italians, are the greatest consumers of hothouse lamb and kid goats.

Muslim families generally prefer young animals weighing around 60 to 80-pounds live weight or 35-pounds in carcass weight, especially around Islamic holidays.

The approach to ethnic markets is simply relationship selling directly to a representative of the particular ethnic group or to retail stores that cater to these groups. The relationship is based on trust and communication. Someone within the marketing company must either already possess these groups' trust or take the time to develop that trust. The marketing company must be able to supply what the customer wants and when they want it.

Lamb and sheep can typically be marketed within the same ethnic channels as goats. The price per pound of lambs or goats sold to ethnic markets is often higher than that of traditional markets and often unpredictable. The choice between goat and lamb as the main meal is often based on the price of the meat. In some cases prices will follow the traditional market. However, in most cases the price is determined by what the customer is willing to pay and what they want. Reports show that hothouse lambs have brought as much as $6 per pound of carcass and $3.25 per pound of carcass for lightweight lambs used for Muslim markets. Lamb and goats can be direct marketed to specific ethnic populations in the Minneapolis area and areas close to a meat packing industry. By performing some market research and establishing good contacts, loads of lambs or goats can be pooled for large deliveries to major metropolitan areas of East Coast cities and Chicago.

10.3.3 Other niche markets for lambs

There are some emerging markets for natural lamb. All natural and organic marketplaces are growing, demanding higher premiums for both raw materials and finished goods. According to Supermarket News[33], sales of natural foods went above $8.3 billion dollars in 1998, which was 8-percent above the previous year. Sales of meat within these stores are unknown.

Dakota Lamb Growers Cooperative of North Dakota[30] has set a goal for the marketing of 25,000 natural produced lambs per year. They are currently producing 8,400 natural lambs per year. The producer is receiving $0.06 per pound of carcass for certifying that the lamb is natural. Many of these lambs are being marketed in the Northeast. As the case with commodity lamb, the loin, rib and leg cuts of natural lamb have sold well, but the shoulder and trim products have been difficult to sell.

The selling of locally-produced and direct-marketed lambs to restaurants is another marketing opportunity. It is expected that this marketing strategy will require test marketing and product testing before a business arrangement can be garnered. Selling of the shoulder cuts and trim is very difficult under this strategy. The further processing of these poor demand products into ground lamb, sausage, and other processed meats is a strategy that could be investigated.

Heritage breeds are found on small farms where animal care, quality products, and a way of life are priority rather than high scale production

and mechanization[34]. These breeds are threatened with extinction due to changes in agriculture and many traditional breeds losing popularity because they have not been selected for maximum output in a controlled environment.

Examples of heritage breeds in sheep include Jacob, Old English Babydoll Southdown, Sennybridge, Welsh, Shetland, and Tunis. Oberhasli is a heritage breed of goat. Some producers of heritage breeds in Northeastern states are intent on developing branded meat products to be attractive to consumers. Creating a niche demand for these products would help promulgate more breeding to ensure a future for these breeds. It is anticipated that there are few, if any, heritage sheep breeds in Minnesota at this time.

10.4 Carcass breakdown, yields

Midwestern lambs are typically born in the first and second quarters of the year and are also market-ready during the first and second quarters of the year. These lambs have a live weight between 130 and 140-pounds and a dressing percentage of 55-percent. Carcass weights for these lambs average 74-pounds. Fall lambs are a bit lighter in carcass weights, averaging 67 to 71-pounds. Table 10.4.1 represents a typical boneless cut-out for a Midwestern lamb.

Table 10.4.1

Primal	Primal Percentage of Carcass Weight	Sub-primal	Mostly Boneless cuts Percentage of Carcass Weight
Shoulder	24		
		B.R.T.[a] shoulder	11.00
Rack	11		
		Rack, frenched	4.70
Loin	11	B.T.[b] loin	
Leg	31	B.R.T.[a] leg	
Lamb breast	14		14.00
Foreshank	3		3.90
Lean trim			19.21
Trim fat			12.00
Bones			17.00
Total	*94*		*99.00*

Note: [a] boneless, rolled, tied [b] boneless, tied

10.5 Product value

Using a reported USDA cut-out value for 2000, the wholesale value for lamb would be $2.03 per pound. Some ethnic markets have reported whole carcass values of over $3.00 per pound.

10.6 Co-products

Lamb pelts follow the leather industry with many ups and downs. The USDA reported five-year average, 1994-1999, show #2 shorn pelts was $9.50 per pelt. Wool is obviously a major co-product from raising lamb. Wool prices and market trends are not addressed in this report.

Small processors of lamb have found difficulty in getting rendering companies to pick up waste bone material of lamb slaughter. Some rendering companies have chosen not to handle lamb and sheep products because of sensitivities to a disease labeled, bovine spongiform encephalopathy (BSE), which surround the rendering industry. Larger lamb packing companies have worked out volume arrangements with rendering companies where products are managed separately from other livestock materials.

10.7 Regional production

According to the Minnesota Agricultural Statistics Service[48], table 10.7.1 shows the number of market lambs both produced and marketed in Minnesota in 2001.

Table 10.7.1

Weight Range of Lambs Under 1-year of Age	Number of Lambs
Less than 65 pounds	11,000
65-84 pounds	9,000
85 – 105 pounds	12,000
Greater than 105 pounds	12,000
Total	*44,000*

Bob Padula[39], a producer representing the Minnesota Lamb and Wool Producers Association, estimates that Minnesota producers feed out an additional 50,000 head of market lambs per year. Most of these lambs are sold into commodity markets or direct marketed by producers.

A glut of lambs is available for slaughter during the first and second quarter of the year with a big loss in numbers during late summer, fall, and early winter. It is no surprise that the price of market-ready sheep reflect this seasonal supply with prices for lambs lower in the spring and higher in the summer and fall. Sheep are bred to conceive their young in the late winter and early spring. Sheep also go through a seasonal anestrous, where attempts to breed them out of season have been difficult.

There have been increasing numbers of lambs successfully converted to fall lambing programs with the hope to achieve a higher market price. Breeding out of season has been accomplished by taking advantage of the ram effect to induce and synchronize estrus, or heat, by lighting both ewes and rams to mimic natural photoperiod-induced estrus, and estrus synchronizing hormones. The lamb feedlot has typically been used to manage marketing and to create a more consistent finished product.

10.8 Production costs

The currently total cost of gain for lambs is $0.35 per pound from approximately 40 to 120-pounds. The cost of raising a lamb up to 40-pounds is highly dependent upon the operation. There are some reports where the total growth cost of gain is $0.45 per pound. Therefore, the total cost of producing a lamb to market weights is estimated at $54.00 per lamb.

10.9 Recommendations

10.9.1 What to expect

a) Retail market interest in the Minneapolis/St. Paul area.
b) Some ethnic demand in the Minneapolis/St. Paul area, but is difficult to service.
c) Genuine opportunities to make money selling lamb meat rather than live animals; provided:
    i). Meat from the entire carcass can be sold at a minimum composite value of $1.45 per pound (Section 14.3).

10.9.0 Problem areas

a) Selling the entire carcass is difficult. The shoulder and trim areas of the carcass have limited uses and are difficult to sell.
b) Ground lamb products do not receive the popularity as that of beef and pork because of taste concerns.
c) Servicing ethnic customers directly is difficult.
d) Large retail companies are switching to case-ready packaged fresh lamb. It will be difficult for smaller producers and companies to supply case-ready products.

10.9.3 Suggested action plans

Producers who desire selling lamb meat rather than live market lambs should consider the following:

a) Explore selling locally grown fresh lamb to those retailers selling significant volumes of lamb.
b) Explore ethnic selling opportunities and develop a distribution system of delivery into ethnic communities in the Minneapolis/St. Paul area. This usually requires establishing the trust of a member of the ethnic group's community as a contact person. This area of business is usually a heavily negotiated cash business and can take some considerable time to establish a price.
c) Consider pooling producers and resources to make investment and/or delivery obligations into an already established lamb packing company.
d) Investigate the manufacture and test marketing of specialty lamb products, such as specialty lamb sausages and lamb stews.

Section 11

Goats

11.1 Industry overview

Meat goat production, slaughter for meat and meat sales from goats has not received much attention in the United States because it has traditionally been a very small industry and market. Currently, Texas has approximately 72-percent of the goat population in the United States. Nubian, La Mancha, or Swiss breeds are mostly raised for dairy production and Angora breeds are mostly raised for mohair production[21]. The only true meat-breed is the South African Boer goat, which has recently been imported to the United States.

Another name for goat meat is chevon. The demand for goat meat, or chevon, has increased. Current marketing channels are generally poorly organized, inefficient, and inconsistent. Areas of higher production numbers and lower production costs are often widely separated from areas of higher consumption. Perhaps this problem in the industry can be turned into an opportunity.

11.2 Product attributes

Goat meat is seldom advertised and sold with features and benefits. It typically sells because the consumer is used to buying it.

11.3 Market analysis – size, trends, and customers

In 2000, federally inspected facilities produced 26.5 million pounds of goat meat, up from 16.6 million pounds in 1995 (USDA, 2000). In 1977, which was the first year that USDA began keeping statistics on goats slaughtered at federally inspected plants; approximately 35,000 goats were slaughtered nationwide. Before 1977, goat numbers were tallied with sheep numbers resulting in no way of knowing the exact number of goats slaughtered. In 1998, there were 445,723 goats slaughtered in federally inspected plants[47]. At 40-pounds per carcass and $1.50 per pound, this volume would equate to $26.7 million in meat value. However, an extremely large number of goats are purchased live and are processed in rudimentary fashion directly by the consumer. The number of goats marketed by this method cannot be quantified. Even with the significant increase in domestic slaughter, the United States is a large importer of goat meat[24]. In 2000, goat meat imports totaled 12 million pounds. Australia and New Zealand are the only net exporters of goat meat worldwide. The value of these imports at $1.50 per pound totals $18 million.

Hispanics, Muslims, and Caribbean's are the three largest goat consuming ethnic populations. According to recent census information, there are more than 19 million Hispanics, 14 million Muslims, and slightly less than two million Caribbean's. The growth in these ethnic populations is largely the reason for the rapid increase in meat goat demand in the United States.[21/42]

The demand for goat meat seems to be seasonal. Many goat producers have cited Easter, Muslim holidays, the 4th of July, and Christmas as periods of peak demand for goat meat.[21/42] Eid al-Fitr, usually in the early winter, and Eid al-Adha, usually in the spring, are two major Islamic festivals in which sheep and goat meat play an important role. According to the National Agricultural Statistics Service[47] goat slaughter was at peak levels of 12,000 head on weeks ending April 11th and December 19th, 1998. It is doubtful that goat meat consumption will increase in Americans of European ancestry. However, the Muslim population in the United States continues to grow and has demonstrated a willingness to purchase Halal slaughtered goats (Section 13.4.2).

House of Smoke was the only marketer interviewed offering meat products from goats, however, would not disclose the volume sold.

11.4 Carcass breakdown, yields

Goats vary in market weight largely due to ethnic customer demand. An emphasis in the industry has been to move towards more meat breeds such as Boer. Live market weights for Boer goats average 90-pounds and dressing percentage is approximately 57-percent, resulting in an average carcass weight of 50-pounds. Goat meat is usually traded as whole carcasses. It is uncommon for goat meat to be sold as boneless sub-primals. A cutout similar to that of lamb (Section 10.4) would be logical.

11.5 Product value

According to Pat Webb, President of the Colorado Meat Goat Producers Association[59], goats typically sell for $1.25 to $1.66 per pound for the carcass. By increasing the percentage of Boer breeding, this value could increase to approximately $2.00 per pound for the carcass. The $3.25 per pound of carcass reported for a quality lightweight lamb (Section 10.3.2) for the Muslim market is also the price for a goat of the same weight.

11.6 Co-products

Not all goat pelts can be marketed and there are often not ready buyers for goat pelts. There have however, been reports of some hide buyers paying $5.00 per pelt. Disposal problems of waste materials from slaughter are similar to that of sheep and lambs discussed in Section 10.6.

11.7 Regional production

According to the Minnesota Agricultural Statistics Service[22], in 1997 the total goat inventory was 7,871 goats produced on 907 farms. The number of goats raised for meat purposes in Minnesota is expected to be low because goats are predominantly raised for dairy products and mohair. It is estimated by those interviewed that 100 to 200 goats are slaughtered per year in Minnesota. Some few producers interviewed raise goats for meat production for selling to African peoples residing in Minneapolis. Male dairy-type breeds and their crosses would represent the largest number of goats slaughtered for meat with Nubian representing the largest number. Several cull Angora

goats would also be available for slaughter. The meat breed, Boer, would likely represent smaller number of goats.

11.8 Production costs

The cost of production for goats is most dependent on breeding stock value, land value, and the length of time they are raised. Goats are browsers and are used on marginal land. Goats are fed very little grain. Growth rates for goats are usually lower than those of lambs. Typically, goats used for meat production have costs of production lower than most lambs used for meat production. A logical assumption is $40.00 per market weight goat.

11.9 Recommendations

11.9.1 What to expect

a) The only local or regional market would be ethnic customers in the Minneapolis/St. Paul area or around packing plant communities; i.e., Worthington, St. Cloud, and Albert Lea.

b) Genuine opportunities to make money selling goat meat rather than live market animals provided:

i). Meat breeds are established in the herd and meat production and sales are a primary focus.

ii). Serious efforts are made to sell to ethnic customers.

iii). Goat carcasses can be sold for a minimum price of $1.80 per pound (Section 14.3).

11.9.2 Problem areas

a) Limited market opportunities other than ethnic customers.

b) Difficulty in directly servicing ethnic customers.

11.9.3 Suggested action plans

Producers who desire selling goat meat rather than live market goats should consider the following:

a) Explore the ethnic selling opportunities and develop a distribution system of delivering into ethnic communities in the Minneapolis/St. Paul area. This usually requires establishing the trust of a member of the ethnic group's community as a contact person. This business is usually a heavily negotiated cash business and can take considerable time to establish a price.

b) Consider the pooling of producers, meat goat numbers, and resources to accomplish ethnic market approaches to Chicago and East Coast cities. Meat goat supplies to these areas are reported to be limited and there is little local production. This approach would require the participation of an ethnic community member and a well-organized distribution system to the deliver product.

Section 12

Competition of others in the business of producing alternate meat species

There are five principal types of competition for marketing meat from alternate species listed in this report.

12.1 Commodity livestock

Alternate species will most often be priced at a premium compared to beef, pork and poultry. Therefore, for price shoppers buying staple meat products, alternative meat products are a difficult sale.

12.2 Foreign exports

The largest competition for meat from elk, domestic deer, ratites, lamb and goats come from marketing companies selling similar products from New Zealand and Australia. These countries can supply large volumes of consistent products with low bacterial counts and good shelf life at a price that is often lower than similar species from the United States. Bison and elk from companies in Canada are also serious competition.

12.3 Other producer-owned niche meat marketing companies

In bison, the best example of a producer-owned meat business is North American Bison Cooperative.[46] Their membership is currently closed; however, they represent large quantities of bison meat domestically and in Europe. They currently slaughter 160 head of bison per day, four days a week. Dakota Lamb Growers Cooperative is a new lamb cooperative that has recently started operations and is worthy competition for producer owned, source identified, niche lamb products. Two ratite producer-owned cooperatives exist in Iowa, Heartland Emu Cooperative and Ostrich Producers Co-op. The producer cooperative, Organic Valley, sells organic free-range chicken into many natural food retail markets around Minneapolis.

12.4 Other local direct marketing companies

There are many single-producer, small, local marketing companies in Minnesota and surrounding states. These producers direct market to local retail establishments, farmer's markets, mail order, and even some Internet sales.

12.5 Regional or national marketing companies that contract production

Regional or national marketing companies potentially compete in two ways: competing for supply and competing for customers that purchase meat. These competitors can also be customers that buy live animals. There is a fine line between a customer for the meat produced and a competitor. Some of the companies listed in Appendix B could be an example of a competitor/customer. New West Foods contracts with producers for bison and elk. Kadejan Poultry contracts natural chicken. House of Smoke contracts production of several game animal species.

Section 13

Slaughter/Processing

13.1 Slaughter/Processing Inspection

Meat plant inspection requirements for animal and fowl species included in this study are confusing and complicated. Currently, statutory and regulatory provisions define the species of animals that are inspected by USDA under mandatory inspection and those that are under voluntary inspection. In certain instances explicit exemptions from inspection exist, in addition to exemptions from definitions of products that USDA inspects. States with inspection programs, like Minnesota, may also inspect the slaughter of animals and preparation of products from both amenable and non-amenable species.

13.1.1 Federal inspection

The Federal Meat Inspection Act (FMIA) mandates that USDA inspect cattle, sheep, swine, goats, horses, mules, and other equines, and food products thereof, slaughtered and prepared in Federal establishments and foreign establishments exporting such products to the United States that are intended for distribution in commerce. The FMIA provides for exemptions from inspection of the slaughter of animals and preparation of carcasses when such products are exclusively used by an individual or households and are not sold. This provision is referred to as the Custom Operation Exemption. Custom exempt plants do have some form of review or inspection by some state agencies; however, these reviews are infrequent.

The Poultry Products Inspection Act (PPIA) mandates that USDA inspects poultry and food products thereof, slaughtered and prepared in Federal and foreign establishments for export to the United States that are intended for distribution in commerce. The Federal poultry products inspection regulations define poultry as meaning any domesticated bird (chicken, turkeys, ducks, geese, or guineas), whether live or dead. In April, 2001 USDA ruled that the slaughter and processing of ratites falls under mandated poultry inspection. Ratites include ostrich, emu, and rhea. Custom exempt rules also apply to poultry. USDA has also promulgated regulations related to the voluntary inspection of poultry (9 CFR Part 362). Poultry subject to voluntary inspection regulations are defined as any migratory waterfowl, game bird, or squab (young pigeon).

USDA has published regulations for the voluntary inspection of rabbits (9 CFR Part 354) and voluntary inspection of exotic animals (9 CFR Part 352). Rabbit is defined as any domesticated rabbit and exotic animals are defined as any reindeer, elk, deer, antelope, water buffalo, or bison.

Amenable species processed under mandated federal inspection during normal business hours do not require the plant or company to pay for inspection

services. However, plant slaughtering and processing species under voluntary inspection, are required to pay the hourly rate for USDA meat inspectors. Not all states have state meat inspection programs. Minnesota has a state program, which started in 1994. The State of Minnesota began offering poultry inspection under state meat inspection in 2000. With domestic farm animals (amenable species) such as horses, beef, lambs, swine, converted to meat for resale purposes, inspection is mandatory. Inspection conducted during normal business hours, requires that the federal government and most state governments in states with state inspection laws, provide inspection services free of charge.

13.1.2 State inspection

The FMIA and PPIA authorize the cooperation with state agencies in developing and administering state meat inspection and poultry products inspection programs in any state that has enacted a state meat or poultry inspection program law that imposes mandatory ante-mortem and post-mortem inspection, re-inspection, and sanitation requirements that are at least equal to those under the provisions of the Acts. Currently, establishments under State inspection programs are prohibited from shipping their products interstate. Today, state inspection requirements and laws follow closely to those of the Federal government and must be approved by Federal as well as State government. In addition, state inspectors must follow similar training requirements as Federal inspectors. In most cases, state inspection is equal to Federal inspection. State statutes can determine what species are amenable and require mandated inspection and which ones are not. Minnesota is a good example with such statutes. Bison, elk, and domesticated deer are considered amenable and are mandated for inspection before the meat is sold. On the poultry side, pheasants are considered amenable under poultry inspection. The meat of bison, elk, domesticated deer, and pheasant can be sold in other states provided that there is no state law requiring that the meat be federally inspected. In several states it is permissible to process and sell under state inspection those species classified as non-amenable by federal statutes because it is less expensive for the plant. Federal statistics demonstrate that more non-amenable species are slaughtered under state inspection programs than federal.

It is important to note that certain national committees are being formed on meat and poultry inspection regarding the mandated inspection of all meats, regardless of the species. National committees are also evaluating whether state inspection programs should be allowed to ship products inter-state.

13.2 Survey of who can and will slaughter alternative species

A listing of plants that can and will slaughter alternative species was garnered from the Minnesota State Meat and Poultry Inspection office, USDA FSIS regional offices in Minneapolis and Des Moines, AURI, and contacts made by the author. Within the State of Minnesota, nine federally inspected plants were interviewed. Most of these plants have similar experiences to those of the state plants; however, they tend to be larger in size and process more animals. In addition, one federally inspected plant in South Dakota was interviewed and three in Iowa. Some plants in other states that process alternative species are mentioned as well.

According to Kevin Elfering, Director of the Minnesota State Meat and Poultry Inspection Program[18], there are 45 plants, both slaughter and processing, under state meat and poultry inspection. Through telephone interviews, it was found that many of these plants have experience slaughtering and processing alternative animals and fowl. Common among all state regulated plants is that their mainstay species for processing are beef, pork, and wild deer during hunting season. Most operations also have a retail store on the processing premises. Slaughtering or processing alternative species is a recent undertaking for most of these plants. It is important to note that many plants have not had the opportunity to process alternative species, but would be willing to do so.

Disclaimer: It is possible that other plants exist with capabilities to process the species being discussed and were not known to the author at the time of writing this report.

Table 13.2.1

Bison

Plant Name	Inspection	Experience (Head Per Year)	Would Further Process
J & B Meats Barnsville, MN Ph: 218-493-4290	State	50	Yes
Buckridge Meats Millville, MN Ph: 507-753-2183	State	30	Yes
Hancock Meats Hancock, MN Ph: 320-392-3143	State	12	Yes
Odenthal Meats New Prague, MN Ph: 507-364-8040	State	12	Yes
Foley Locker Foley, MN Ph: 320-968-7267	State	4	Yes
Belgrade Meats Belgrade, MN Ph: 320-254-8287	State	5	Yes
Pfeffer's Market Sauk Center, MN Ph: 320-352-6490	State	5	Yes
French Lake Shop South Haven, MN Ph: 320-286-5345	State	2	Yes
Carlson Meats Grove City, MN Ph: 320-857-2261	Federal	50	Yes
Deutschland Meats Sanborn, MN Ph: 507-648-3388	Federal	40	Yes
Lorentz Meats Cannon Falls, MN Ph: 507-263-3618	Federal	20	Yes
Rhine Lake Finlayson, MN Ph: 320-233-7360	Federal	75	Yes
Ledebuhr Meats Winona, MN Ph: 507-452-7440	Federal	165	Yes
Community Market Lindstrom, MN Ph: 651-257-1128	Federal	85	Yes
Bridgewater Meats Bridgewater, SD Ph: 605-729-9440	Federal (Kosher)	6,000[a]	Yes

Note: [a] – Have the capacity to custom process this number, but do not necessarily do this many per year.

Table 13.2.2

Elk and Red Deer

Plant Name	Inspection	Experience (Head Per Year)	Would Further Process
Foley Locker Foley, MN Ph: 320-968-7267	State	10-Elk	Yes
Buckridge Meats Millville, MN Ph: 507-753-2183	State	30-Elk 20-Red deer	Yes
Kinder Processing Carlos, MN Ph: 320-852-7742	State	25-Elk	Yes
Odenthal Meats New Prague, MN Ph: 507-364-8040	State	12-Elk	Yes
Pfeffer's Market Sauk Center, MN Ph: 320-352-6490	State	10-Elk	Yes
Hancock Meats Hancock, MN Ph: 320-392-3143	State	12-Elk 40-Red deer	Yes
Butcher Shop Watertown, SD Ph: 605-886-4561	State (South Dakota)	40-Elk	Yes
Wester Locker Westbrook, MN Ph: 507-274-5117	State	10-Elk	Yes
Belgrade Meats Belgrade, MN Ph: 320-254-8287	State	5-Elk	Yes
Lorentz Meats Cannon Falls, MN Ph: 507-263-3618	Federal	100-Elk	Yes
Community Market Lindstrom, MN Ph: 651-257-1128	Federal	100-Elk 100-Red deer	Yes
Carlson Meats Grove City, MN Ph: 320-857-2261	Federal	25-Red deer	Yes
Rhine Lake Finlayson, MN Ph: 320-233-7360	Federal	20-Elk	Yes
Ledebuhr Meats Winona, MN Ph: 507-452-7440	Federal	20-Elk	Yes
Bridgewater Meats Bridgewater, SD Ph: 605-729-9440	Federal (Kosher)	500[a]-Elk	Yes

Note: [a] – Have the capacity to custom process this number, but do not necessarily do this many per year.

Table 13.2.3

Ratites – ostrich, emu

Plant Name	Inspection	Experience (Head Per Year)	Would Further Process
Hancock Meats Hancock, MN Ph: 320-392-3143	State	4-Ostrich	Yes
Taylor Meats Watertown, MN Ph: 952-955-1155	State	2-Ostrich	Yes
City Meat Brownton, MN Ph: 320-328-4411	State	2-Emu	Yes
Beier Country Meats Grand Rapids, MN Ph: 218-326-8597	State	5-Ostrich 30-Emu	Yes
Ostrich Producers Coop Decorah, IA Ph: 319-382-0022	Federal	2,500 Ostrich 40-Emu	Yes
Bridgewater Meats Bridgewater, SD Ph: 605-729-9440	Federal	4,000-Ostrich[a]	Yes
Community Market Lindstrom, MN Ph: 651-257-1128	Federal	100-Ostrich 100-Emu	Yes

Note: [a] – Have the capacity to custom process this number, but do not necessarily do this many per year.

Table 13.2.4

Rabbit

Plant Name	Inspected	Experience (Head Per Year)	Would Further Process
Grand Meadow Market Grand Meadow, MN Ph: 507-754-5500	State	3,000 *Production was down in 2000 and 2001	
Wild Acres[b] Pequot Lakes, MN Ph: 218-568-5024	State	N/A	
Lakes Processing Detroit Lakes, MN Ph: 218-847-5403	Custom-Exempt	100	
French Lake Butcher Shop South Haven, MN Ph: 320-286-5345	State	Small numbers into sausage	
R.V. Processing Hector, MN Ph: 320-212-2302	State	5,000[c] *Prefers fryers	
J & J Distributing Lytton, IA Ph: 712-466-2981	County Health Department	25,000 *Prefers roasters	

Note: [b] – Wild Acres has considerable experience processing birds and rabbits; however, the numbers they will process are proprietary.

[c] – Will purchase rabbits from Minnesota suppliers to slaughter, process and resale to wholesalers.

Table 13.2.5

Fowl – pheasant, duck, free-range chicken

Plant Name	Inspection	Experience (Head Per Year)	Would Further Process
Hector Meat & Poultry Hector, MN Ph: 320-848-2622	State	100-Free-range chicken 300-Pheasant	Yes
Wild Acres [b] Pequot Lakes, MN Ph: 218-568-5024	State	Free-range chicken Pheasant Duck	Specialty Cutting
Lindenfeiser Monticello, MN Ph: 763-295-2037	State	100-Free-rance chicken 12-Duck	Yes
French Lake Shop South Haven, MN Ph: 320-286-5345	State	100-Free-range chicken 100-Duck (process only)	Yes
Farmers Produce Ashby, MN Ph: 218-747-2749	State	150,000-Free-range chicken 30,000-Pheasant 2,000-Duck	Specialty Cutting
Wapsie Produce Decorah, IA Ph: 319-382-4271	Federal (Halal)	52,000-Free-range chicken[a]	Mechanical Deboning
Grand Meadows Grand Meadows, MN Ph: 507-754-5500	State	3,000-Free-range chicken	Yes
Kadejan Inc. Glenwood, MN Ph: Ph: 320-634-3561	Federal	4,000-Free-range chicken	Do not custom process, but purchase birds from suppliers under contract and wholesale the meat.

Note: [a] – Have the capacity to custom process this many, but do not necessarily do that many per year.
[b] – Wild Acres has considerable experience processing birds and rabbits; however, the numbers they will process are proprietary.

Table 13.2.6

Sheep and Lamb

Plant Name	Inspection	Experience (Head Per Year)	Would Further Process
Lindenfeiser Meats Monticello, MN Ph: 763-295-2037	State	500	Yes
Buckridge Meats Millville, MN Ph: 507-753-2183	State	100	Yes
Conger Meat Market Conger, MN Ph: 507-265-3340	State	30	Yes
Kinder Processing Carlos, MN Ph: 320-852-7742	State	30	Yes
J&B Meats Barnesville, MN Ph: 218-493-4290	State	50	Yes
Schmidt Meat Market Nicollet, MN Ph: 507-232-3438	State	70	Yes
Steve's Meat Market Ellendale, MN Ph: 507-684-2331	State	30	Yes
Plattenburg's Market Richmond, MN Ph: 320-597-3620	State	12	Yes
French Lake South Haven, MN Ph: 320-286-5345	State	35	Yes
Taylor Meats Watertown, MN Ph: 952-955-1155	State	50	Yes
Belgrade Meats Belgrade, MN Ph: 320-254-8287	State	12	Yes
Pfeffer's Market Sauk Center, MN Ph: 320-352-6490	State	10	Yes
Lorentz Meats Cannon Falls, MN Ph: 507-263-3618	Federal	250	Yes
Geneva Meats Geneva, MN Ph: 507-256-7214	Federal	200	Yes

Table 13.2.6 (continued)

Rhine Lake Finlayson, MN Ph: 320-233-7360	Federal	60	Yes
Ledebuhr Meats Winona, MN Ph: 507-452-7440	Federal	100	Yes
Iowa Lamb Corporation Hawarden, IA Ph: 712-551-1126	Federal	500,000[a]	Case-ready
Carlson Meats Grove City, MN Ph: 320-857-2261	Federal	100	Yes
Bridgewater Meats Bridgewater, SD Ph: 605-729-9440	Federal	25,000[a]	Yes
Huckstad Meats Chatfield, MN Ph: 507-867-4180	Federal	75	Yes
Community Market Lindstrom, MN Ph: 651-257-1128	Federal	100	Yes

Note: [a] – Have the capacity to custom process this many, but do not necessarily do that many per year.

Table 13.2.7

Goats

Plant Name	Inspection	Experience (Head Per Year)	Would Further Process
Lindenfeiser Meats Monticello, MN Ph: 763-295-2037	State	1,000	Yes
Buckridge Meats Millville, MN Ph: 507-753-2183	State	80	Yes
J&B Meats Barnesville, MN Ph: 218-493-4290	State	15	Yes
Kinder Processing Carlos, MN Ph: 320-852-7742	State	12	Yes
Steve's Meat Market Ellendale, MN Ph: 507-684-2331	State	15	Yes
Iowa Lamb Corp. Hawarden, IA Ph: 712-551-1126	Federal (Halal)	5,000[a]	No
Huckstad Meats Chatfield, MN Ph: 507-867-4180	Federal	75	Yes
Lorentz Meats Cannon Falls, MN Ph: 507-263-3618	Federal	15	Yes

Note: [a] - Have the capacity to custom process this many, but do not necessarily do that many per year.

13.3 Slaughter/processing custom charges

13.3.1 Bison

Slaughter fees for bison range from $28.00 to $87.50 per head. Fees for cutting, wrapping, and freezing range from $0.27 to $0.55 per pound, dressed cold carcass weight. Vacuum packaging charges range from an added $0.05 per pound to $0.40 per pound. Grinding, sausage and jerky manufacturing, and portion control vary in cost according to what is desired. Bison cut into sub-primal and trim, vacuum packaged, and boxed will cost approximately $250.00 to $300.00 per animal. Some of this cost will be offset by hide and head value.

13.2.2 Cervidae - elk and red deer

Slaughtering fees for elk and red deer range from $20.00 to $75.00 per head. Charges for cutting, wrapping and freezing can range from $0.30 to $0.65 per pound of dressed cold carcass weight. Vacuum packaging fees will range from an added $0.05 to $0.40 per pound. Grinding, sausage and jerky manufacturing, and portion control have varied costs according to what is desired. Elk cut into sub-primal and trim, vacuum packaged, and boxed will cost approximately $175.00 to $200.00 per animal. Because red deer are much smaller than elk, the total processing cost would be approximately $65.00 to $100.00 per animal.

13.3.3 Ratites - ostrich, emu

Total processing fees for ostrich and emu range from $60.00 to $112.00 per bird, which includes slaughter, cut into sub-primal and vacuum packaging. Grinding, sausage, jerky manufacturing, and portion control will have varied costs according to what is desired.

13.3.4 Rabbit

Total processing fees for rabbit are listed at $1.25 per rabbit for slaughtering, wrapping and freezing the whole carcass. French Lake Butcher Shop (Table 13.2.4) processed rabbit into sausage at $0.90 per pound.

13.3.5 Fowl - pheasant, duck, free-range chicken

The price per bird reported by the two largest custom processors interviewed was $1.35 per bird for an unpackaged, whole bird or $1.75 per bird for dressing, packaging, and freezing a whole bird with no de-boning. Charges for breaking the bird into chicken breasts and other parts list at $1.90 per bird. Packaging either whole birds or chicken parts is $0.15 to $0.18 per bird. Only one processor interviewed had experience slaughtering and processing ducks. This processor charged $1.50 per pound for a 3.5-pound duck. Another processor interviewed who had experience in smoking fowl charged $12.00 per bird to smoke a whole duck.

13.3.6 Sheep and lamb

Slaughter fees for sheep and lamb range from $30.00 to $60.00 per head for full slaughter, cutting, and packaging services. Some processors interviewed include a $5.00 per head fee for disposal of the offal. Others send the head and offal home with producers. Grinding, sausage, jerky manufacturing and portion control vary in cost according to what is desired.

13.3.7 Goats

Slaughter fees for goat are equally compared to those stated for sheep and lamp in Section 13.3.6.

13.4 Markets requiring special plant certification

All of the species represented in this report have market opportunities to specific religious and ethnic groups in addition to some export markets such as Europe. This section details each of the special requirements necessary to produce and sell products directed towards these markets.

13.4.1 Kosher

Kosher slaughter requires rabbinical services to inspect the animal live, perform the actual sticking procedure and inspect the internal organs. Typically this requires special welfare areas for the rabbis and special neck restraining equipment for larger ruminants. There must also be segregation of Kosher from Non-Kosher inspected carcasses. With split-hooved animals, Kosher certification is only representative of the fore-quarter of the animal and some internal organs. The greatest cost is the ongoing fees for these rabbinical services. One such service claims that there are special arrangements with individual packing companies, but typical rabbinical services have a very expensive monthly bill.

There is a full range of rabbinical services for a company wishing to produce Kosher meats. A company can develop their own market and labels for Kosher products and use the rabbinical services only to certify the meat for sale. To the opposite extreme are rabbinical services providing financing for their services and assistance in selling Kosher meat products. The first is a high risk; high reward approach to the Kosher market by the packer; the second is a low risk, low reward approach. Because of the highly political nature of the Kosher market, many packers in the United States have deemphasized Kosher in favor of Halal slaughter. Direct marketing of Kosher meat products will be difficult without a Jewish connection to the marketplace. Several packers already have this connection and may be willing to purchase live animals destined for this marketplace on an on-going basis. Agri-Processors of Postville, IA (lambs) and Bridgewater Quality Meats of Bridgewater, SD (lambs, bison, cervidae, ratites) are two such plants.

13.4.2 Halal

Halal means “permissible” in Muslim culture. The actual procedure of Halal slaughter is similar to that of Kosher slaughter in that the animal must be facing the East, towards Mecca, when being expired. However, for Halal slaughter, any Muslin can perform the slaughter or sticking ritual. There is no internal organ inspection as in Kosher slaughter and the entire carcass is eligible for marketing of certified Halal products. There is also a cost required for Halal certification. Lamb and goats pose greatest opportunity for meat products in the Halal marketplace. It can be difficult finding a Halal certified plant amongst smaller state or federal inspected plants in Minnesota. Iowa Lamb Corporation is a Halal certified plant. A new small Halal beef plant, Dakota Halal, was recently started in Harvey, North Dakota. With Halal certified meat, additional premiums may be achieved when selling to Muslim customers.

13.4.3 European Union (E.U.)

Only a small number of slaughter plants and further processing facilities in the United State are approved for processing meat that would be permitted for export to European Union countries. Many would say that this is due to political control by European Union countries. However, European Union certification is quite strict and very specific on requirements. Many United States plants would not qualify. European Union officials make the final decision for certification; however, USDA Food Safety Inspection Services conduct the day-to-day inspection and monitor European Union requirements.

One of the strictest requirements of the European Union is certification by a veterinarian that an animal was not implanted with growth modulating compounds. This ruling by the European Union is being severely challenged by the United States. European Union officials are currently holding tight to their requirements. North American Bison Cooperative has found a substantial market for bison meat, especially the rounds, in European markets. Lorentz Meats of Cannon Falls, MN is also seeking European Union certification. O’Neill Packing Company of Omaha, Nebraska is European Union certified for custom processed bison. Bison, being only raised in North America, has great potential for export to European Union countries because it does not compete with European farmer’s products and is not typically implanted with growth modulating compounds. Currently, there is a 20-percent tariff on meat products exported to European countries.

13.4.4 Organic

On December 21, 2000 the final national organic standards were published in the Federal Register. Meat is not considered organic unless the animals are raised on certified farms. The Food Safety and Inspection Service (FSIS) must approve the application for certified organic labeling. Certification requires that farms should be operating for three years before being certified. Meat plants that process organic certified animals must also be certified. USDA has published a listing of approved organic certifiers. It is possible that all the species listed in this report could be certified as organic. Currently, there are only certified organic beef, pork and poultry products in the marketplace. Alternate species could easily qualify for organic certification.

Section 14

Financial analysis

14.1 Overview

There are four major elements when investigating the financial opportunities of raising and marketing alternative animals or birds.

- Market prices of the collective animal or bird. This collective price is the individual prices for all parts of the animal or bird sold and the prices of the by-products from that animal or bird.
- Cost of production of that animal or bird.
- Cost of processing the animal or bird.
- Cost of marketing, distribution and general overhead expense.

14.2 Cost of marketing, distribution and general overhead expense

After the meat product has been produced and processed, there are expenses associated with delivery of the product to customers, advertising and promotion to make potential customers aware of the products, and accounting activities. Obviously, these costs have to be accounted and budgeted for.

14.3 Financial review

Consolidating all the information generated in this report into a snapshot of potential financial viability for raising and marketing the various species is difficult. The marketplace is not static, but rather, changes frequently. Cost of production is not as unpredictable as market price, but still varies. Table 14.3.1 is a projected income and expense model developed using information from this report.

Table 14.3.1

Projected income and expense model

Species	Market value of meat ($/hd)	Hide value ($/hd)	Other by-product value [1] ($/hd)	Total market value ($/hd)	Total process cost ($/hd)	Cost of production + overhead [2] ($/hd)	Total expenses + over-head ($/hd)	Net profit ($/hd)	Meat price break-even ($/lb)
Bison [a]	1,410.00	40.00	70.00	1,520.00	275.00	728.00	1003.00	517.00	1.49
Elk [b]	825.00	20.00	79.00	924.00	175.00	347.00	522.00	402.00	1.28
Red deer [c]	260.00	5.00	45.00	310.00	80.00	200.00	280.00	30.00	1.77
Ostrich [d]	220.00	110.00	0	330.00	80.00	230.00	310.00	20.00	1.82
Emu [e]	120.00	20.00	21.00	161.00	70.00	115.00	185.00	-24.00	3.60
Rabbits [f]	8.99	0.25	0	9.24	1.25	3.50	4.75	4.49	1.37
Free-range chicken [g]	5.75	0	0	5.75	1.75	2.61	4.36	1.39	0.97
Duck [h]	5.75	0	0	5.75	1.75	2.59	4.34	1.41	0.97
Pheasant [i]	7.50	0	0	7.50	1.75	3.57	5.32	2.18	1.77
Lamb [j]	134.90	9.50	0	144.40	45.00	67.50	112.50	31.90	1.45
Goat [k]	100.00	5.00	0	105.00	45.00	50.00	95.00	10.00	1.80

Disclaimer: Table 14.3.1 was formulated with the best information available at the time and is not a guarantee that certain market events will happen.

Assumption, Table 14.3.1:

1. Bison heads, velvet antler from elk and deer, oil from emu
2. Overhead costs: breeding costs, freight to customer, marketing cost and miscellaneous overhead expenses. Bison and elk equal 30-percent; red deer, lamb, and goat total 25-percent; all other species equal 15-percent over total cost of production.

a. Based on $2.35 per pound cut-out value for 600-pounds
b. Based on $2.50 per pound cut-out value for 330-pounds
c. Based on $2.00 per pound cut-out value for 130-pounds
d. Based on $2.00 per pound cut-out value for 110-pounds
e. Based on $3.00 per pound cut-out for 40-pounds
f. Based on $2.90 per pound for bone-in cut-out value for a 3.1-pound carcass
g. Based on $1.28 per pound for whole birds for a 4.49-pound carcass
h. Based on $1.28 per pound for whole birds for a 4.49-pound carcass
i. Based on $2.50 per pound for a 3-pound dressed weight
j. Based on USDA (’98-‘01) wholesale cut-out value of $1.90 per pound for a 71-pound carcass
k. Based on $2.00 per pound for a 50-pound carcass

Information in Table 14.3.1 demonstrates the financial potential for alternate species of animals and birds represented in this report. Emu was the only calculated to result in negative margins. High production costs, a small, poor yielding carcass and a very low hide value compared to ostrich resulted in the negative margins. Lower production costs, higher hide values, and potentially greater oil values could significantly impact emu margins.

Bison and elk represented the greatest potential net margins. Errors in the cut-out value, because of several individual products sold into fluctuating markets, and cost of production will have a large impact on profit potential. The cost of breeding stock also plays an impact on net margins. Of fowl species, pheasants appeared to generate the largest margin per bird. This was largely due to the higher estimated meat market value. However, ducks and free-range chicken resulted in the lowest product break-even prices per pound. Lamb was represented with very good net margins. The cost of production was reflective of an efficient, low cost lamb operation and may or may not represent Minnesota producers.

It is important to realize that it is highly likely that an aggressive marketer may achieve better revenue for these species. It is also possible that costs of production could be lower in individual cases. The numbers represented in table 14.3.1 are considered to be conservative. These estimated net margins are encouraging for current or future producers for most of these species of animals or birds. The breakeven price for meat from all the species listed in this report, with the exception of emu, is lower than wholesale meat values as reported each individual species section of this report. These breakeven values could be used as a guide for producers entering the meat business.

It is well known in business that customers find greater value in consistent product quantities that fit their business needs. Several markets interviewed made reference to requirements of minimum supplies that cannot be met by individual small producers. With alternate species, production is generally in the hands of smaller producers. It may be necessary for several producers to band together to represent their products in the marketplace. Several producers interviewed were trying to get to the size and scale necessary to create more efficiency, consistency, and have greater power in the marketplace. Many types of business arrangements can be made between producers to achieve a competitive advantage in the marketplace.

Section 15

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Appendixes

Appendix A: Table of fat content for various meat species of animals and birds

Table 1

Species and Cut	% fat [a]
Elk, composite	1.45
Ostrich, tenderloin (raw)	3.19[b]
Ostrich, outside leg (raw)	1.96[b]
Emu, composite	2.00
Chicken breast	2.00
Pork, ham (raw)	5.41
Beef, strip loin (raw)	5.50
Bison, composite	1.84
Lamb, composite	5.25
Goat, loin	3.40[c]
Duck	5.95
Deer, venison	2.42
Rabbit	5.55

NOTE: a - Source of information, Composition of Foods: Consumer and Food Econ. Inst., Agric. Handbook, 8-17. USDA 1991, unless otherwise noted
b - Ostrich Meat Guide, American Ostrich Association. 1st Ed. 1996[4]
c - Casey and Van Niekerk. 1988

Appendix B: Companies and groups interviewed

Large wholesale/retail chains that handle specialty meats:

- SuperValu-Northern Region, Minneapolis, MN
- Lund Food Holdings, Lund's and Byerly's, Minneapolis, MN

Small natural food retailers in Minnesota and Wisconsin:

- Willy Street, Madison, WI
- Copp's, Steven's Point, WI
- Lakewinds, Minnetonka, MN
- Wedge Co-op, Minneapolis

National and international marketing companies specializing in specialty meats and game:

- North American Bison Cooperative, New Rockford, ND
- New West Foods, Denver, CO
- Rocky Mountain Natural Meats, Denver, CO
- House of Smoke, Fort. Lupton, CO
- Oxford Trading Company, Boston, MA
- Seattle's Finest Exotic Meats, Seattle, WA
- Native Game Company, Brighton, CO
- Specialty Game, Lyons, IL
- Arrowhead Meats, Kearney, MO
- Chicago Game & Gourmet, Chicago, IL
- Sayersbrook, Patosi, MO
- Dakota Country Buffalo, Jamestown, ND
- Durham Meat Company, San Jose, CA
- Prairie Harvest, Spearfish, SD
- Blackwing Meats, Antioch, IL

Producers that market their own alternate animals:

- Health Rich Farms, Decorah, IA
- Lofton Ridge Farms, Chisago City, MN
- Elm Creek Meats, Dayton, MN
- Farmers Produce, Ashby, MN
- Sayersbrook, Patosi, MO
- Dakota Country Buffalo, Jamestown, ND
- H & S Elk, Kirksville, MO
- Prairie Land Ostrich, McPherson, KS
- Several additional producers interviewed wish to remain unlisted.

International exporter of game and specialty meats:

- Trade International, Minneapolis, MN